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The Road to Iconicity in the Paleoart of the American West

Introduction

Throughout the world, all paleoart traditions considered to be the earliest uniformly display a remarkable noniconicity, whether they occur as portable objects or in the context of rock art. This uniformity is believed to be attributable not to cultural diffusion but to an evolved, predisposing neurobiology shared by all human beings. This panglobal similarity of the most basic phosphene-like motif repertoires also holds for the Pleistocene-Holocene transition period in the American West. From Canada to Northwest Mexico and from Texas to the Pacific Coast, canyon walls, boulder faces and rock shelters served as canvases for the arriving Paleoamericans and their descendants. Their non-figurative, geocentric marking systems, summarily labeled here Western Archaic Tradition (Fig. 1), lasted for thousands of years until in very limited areas full-blown iconicity in the form of distinct biocentric styles set in around the Middle Holocene (Fig. 2). Many regions, however, remained committed to the graphic Western Archaic Tradition mode until A. D. 600 or later or never developed representational motifs. Preceding the onset of imagery featuring anthropomorphs and zoomorphs, a seemingly restricted vocabulary of figurative designs –, primarily animal and bird tracks as well as hand- and footprints – that can be regarded as proto-iconic forerunners along the developmental path of rock art, observable in the American West.

Fig. 1: Typical WAT petroglyphs from a site north of St. George, Utah (photograph E. Malotki).

Fig. 2: Typical »biocentric« style imagery of the Middle/Late Holocene that marks an ideological shift from the long-lasting noniconic rock art of the WAT (photograph E. Malotki).

Chronological issues

Establishing a solid foundation for the existence of North American paleoart during the Pleistocene-Holocene transition is difficult without the availability

of reliable, credible direct dating strategies. As of today, no such chronometric technique has been developed to meet the scientific expectations of contemporary rock art research. X-ray fluorescence dating, for example, is still very much in its infancy and is affected by large error parameters. Cation-ratio dates are considered particularly »unreliable and inaccurate,« and for this reason they were not included in a review of »725 global rock art dating attempts« (TAÇON/LANGLEY 2010: 2). Varnish microlamination dating is currently perhaps the method with the most promise (MARSTON 2003), provided it is used in conjunction with a solidly developed calibration curve. With inaccuracies resulting primarily from the error value that is associated with the chronology it is correlated to, it offers only broad date ranges. Most significantly, and as pointed out by Marvin Rowe (2010), many of the rock art age determinations obtained by these methods and cited in the literature (FRANCIS/LOENDORF 2002; TRATEBAS 2004; LOENDORF 2008; WHITLEY/DORN 2010) have as yet not been independently replicated by other researchers and are therefore not considered here.

Given that most American archaeologists now subscribe to a pre-Clovis colonization of the Americas, one can also safely assume that Paleoamericans were artifiers sensu Ellen Dissanayake's Artification Hypothesis (DISSANAYAKE 2009, 2010) and that among their various artifying activities and behaviors was the making of rock art. As Robert Bednarik (1993: 4) has pointed out, every continent except Antarctica has its share of Ice Age art, »although in the Americas evidence remains limited to the very final phase of that period.« In the absence of direct chronometric dating, especially of petroglyphs and cupules, which taphonomically seem to make up the oldest surviving rupestrian stratum in North America, it becomes necessary to rely on more traditional techniques. These techniques operate with such criteria as differential repatination and weathering, superimposition, image content, stratigraphic relationship to datable deposits, apparent association with other datable archaeological remains, and stylistic cross-dating. To be sure, stylistic and archaeological dating methods suffer from non-falsifiability and provide only relative age clues, but they may be sufficient here to sketch out a rough temporal framework for the rock art of the Pleistocene-Holocene transition period in the American West.

Evidence for Paleoamerican artification

World-wide, in the grand scheme of rupestrian paleoart, a growing number of scholars seems to acknowledge a chronological development from non-

figurative, abstract-geometric graphic primitives to complex representational imagery. Paul Bahn (1998: XVI), for example, stresses that »apparently non-figurative art – motifs which convey nothing to our eyes other than patterning – has existed from the beginning,« and Derek Hodgson (2000: 4) sees the genesis of art with a discernible trend from pre-representational or proto-art phases to eventual representation. This global evolutionary trend of art from schematism to naturalism, which is believed to have begun with simple noniconic markings in the late part of the Lower Paleolithic (BEDNARIK 2003: 102), is also mirrored in the natural unfolding of children's drawings (KELLOGG et al. 1965). In the same vein, Susan Sheridan (2005: 423) proposes that »early hominins scribbled first, drew schematically second, and then developed observational/representational drawing.«

Pleistocene-Holocene paleoart of the American West is very much in tune with this planet-wide observable pattern. Based on my personal observations at hundreds of rock art sites, both painted and engraved, from Texas to Arizona and New Mexico, and from Nevada to Utah and Idaho, noniconic motifs precede iconic traditions focusing on life forms. According to Bednarik (1990: 79), all motifs preceding the introduction of iconicity resemble phosphenes, and their frequency in a given rock art tradition is a good indicator of archaicness. His phosphene theory is a perfectly clear proposition that could easily be falsified if an extensive body of pre-iconic motifs that are clearly non-phosphenic were to be discovered. I doubt that such a large body of clearly non-phosphenic pre-figurative motifs will ever be found in the American West.

Rock art scholars convinced of a pre-Clovis settlement of the Americas have always assumed that Paleoamericans made art, both in rupestrian and mobiliary form. Definitive proof was expected to come in the depiction of Pleistocene megafaunal motifs. After all, Paleoindians were big-game hunters, and numerous kill sites are evidence that they hunted and ate mammoth and mastodon. So the search has been on for graphic portrayals of these icons of the Ice Age, yet no bona fide image of a proboscidean creature had been scientifically confirmed from anywhere in North America until 2009 when the unprecedented discovery of a mammoth engraving on fossil bone from Vero Beach, Florida, was announced in the media (RAWLS 2009). Now authenticated through a variety of tests (PURDY 2010), the artifact is indeed a truly remarkable piece of pictorial evidence for the contemporaneity of Paleoamericans with Ice Age megafauna.

To this notable specimen of mobiliary art can now be added the equally spectacular depictions of two proboscids (referred to as Mammoth 1 and

Mammoth 2 in MALOTKI/WALLACE 2011) in the rock art of the Upper Sand Island site along the San Juan River near Bluff, Utah. Although the image of Mammoth 1 had been known to a few archaeologists and rock art enthusiasts and has been depicted in print (MALOTKI/WEAVER 2002, Plate 1), it had never been scientifically described or investigated, most likely because of its difficult access some 5 meters above ground level. Probably also impeding its recognition as a mammoth is the fact that it is partially superimposed by a much larger portrayal of what appears to be a bison (Fig. 3). A visual examination of the engraved contours of the pachyderm by archaeologist Henry Wallace using a hand lens with 5X magnification revealed no evidence for any use of metal tools as might be anticipated in a modern forgery (MALOTKI/WALLACE 2011: 146).

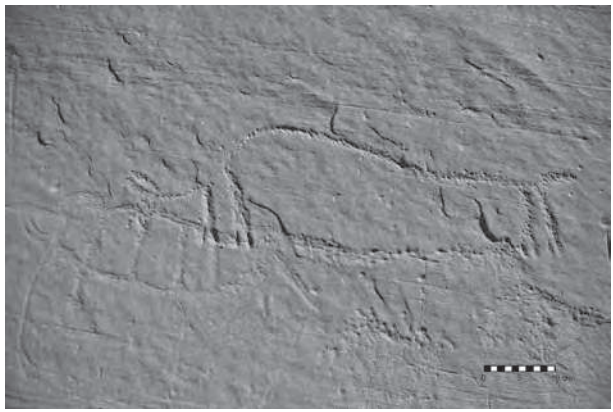

Fig. 3: Close-up of Mammoth 1 and partially superimposed bison at the Upper Sand Island site. Width from the tips of the mammoth tusks to the end of the bison tail 87 cm (photograph H. Wallace).

Identification of the San Juan River megamammal was accomplished by a combination of anatomical details observable in the portrayal itself. It clearly shows all the diagnostic features of a Mammuthus columbi, or Columbian mammoth, resident in western North America during the Pleistocene: a dome-shaped head, long trunk, and two relatively short tusks which, according to paleontologist David Gillette (pers. comm. 2010), may indicate that the artist intended to portray a young or female animal. Particularly noteworthy is the depiction of an anatomical detail no hoaxer would be likely to have known about: the strikingly bifurcated tip of the mammoth's

trunk, known as fingers by mammalogists. Additional evidence for the beast's authenticity may be seen in the well-established fact that modern counterfeit designs are nearly always done in isolation, whereas the San Juan River mammoth is part of a panel that includes not only the dominating bison but also several other petroglyph designs that, based on stylistic criteria and weathering, appear to have been made at about the same time as the joined megamammals. In drawing these adjacent elements from photographic documentation (MALOTKI/WALLACE 2011: 150, Fig. 11), sensationally, a second mammoth portrayal came to the fore (Fig. 4) that had not been seen on location. Mammoth 2 also has the dome-shaped head, small tusks and trunk, although much of the rest of the body is severely weathered or was never clearly pecked. What is convincing in this case is that the portion still visible shows the diagnostic traits of Mammuthus. While there is low likelihood that the two pachyderms were inspired by the tribal memory of an archaic hunter-gatherer, Winston Hurst (pers. comm. 2010) nevertheless points out that elephants are very impressive creatures, and reminiscences of their proven existence on the Plateau (AGENBROAD/MEAD 1989) may have been carried forward into prehistoric mythology and iconography. What speaks favorably also for the deep-time authenticity of the paleopanel is its relative proximity to the large Clovis site of Lime Ridge (DAVIS 1994: 5).

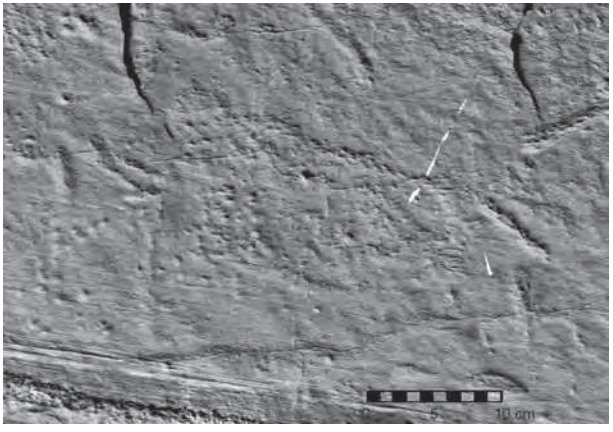

Fig. 4: Close-up of Mammoth 2, approx. length 30 cm (photograph H. Wallace).

A few other claims exist for evidence of Pleistocene megafauna, among them early cation-ratio dates for various non-proboscidean biomorphs.

These include a suite of bighorn sheep in the Coso Range of California (WHITLEY et al. 1999: 23), a possible »extinct Equus occidentalis« at Legend Rock, Wyoming (WHITLEY et al. 1996: 96), and the alleged depiction of an extinct »camelid« in the Mojave Desert of California (WHITLEY 1999: 107f.; WHITLEY/DORN 2010: 144). However, all of them are subject to question based on the poor resolution of cation-ratio dating, the as yet unproven value of the interesting new varnish microlamination approach (LIU/BROECKER 2008), and the subjective identification of the extinct Pleistocene species.

As it turns out, presently the only reliably dated paleoart in the American West is portable, primarily incised stones, bones and ivory, all of which, without exception, feature noniconic designs. Most famous in this respect are the many limestone plaquettes that the Clovis layer of the Gault site, Texas, has yielded (COLLINS 2002: Fig. 7). Some 104 specimens have been retrieved to date, 8 of which can be confidently placed in Clovis context (WERNECKE/COLLINS 2010). All of them are finely engraved with curvi- and rectilinear geometric markings, among them spirals, sets of paired lines, diamond-shaped grids, checkerboard configurations and herringbone-type crosshatches.

Two engraved stone tablets with non-figurative designs are also reported from Barton Gulch, southwest Montana. According to Leslie Davis et al. (2009: 42), the site »contains abundant evidence of a Paleoarchaic, Alder complex foraging adaptation« ranging from 9410 ±140 RCYBP to 9340 ± 120 RCYBP. Interestingly, one of the tablets is elaborately incised on both sides with crosshatchings, subparallel lines and chevrons. Additional pebbles, finely engraved in this abstract-geometric manner, have been recovered at several other sites, including Wilson-Leonard, an 11,000-year old hunter-gatherer site in central Texas (COLLINS 1998: Figs. 7-16e); Folsom-associated campsites such as Blackwater Draw in eastern New Mexico (HESTER 1972: Fig. 93g) and Lindenmeier in northeastern Colorado (WILMSEN/ROBERTS 1978: Fig. 128); Clovis-age Kincaid Shelter, Texas (COLLINS et al. 1989); the Levi site, Texas (GREER/TREAT 1975: Fig. 1); as well as numerous other sites in the state of Texas (Turpin, pers. comm. 2009).

A rather spectacular and unique ivory find in the form of an incised proboscidean tusk hails from the Barnes site in the Big Horn Basin of Wyoming. Although it was discovered in a Late Archaic context, Surovell et al. (2008) do not believe that it was deposited there by some natural geologic event, such as a flood. Instead, they see the tusk's simple geometric engravings – a

series of bisected triangles and a webbing design – as stylistic evidence for an early Paleoindian provenience (WALKER et al. 2010). However, additional research, for example whether the ivory was carved when fresh or fossilized, may be necessary to decide whether this age attribution is indeed justified.

These and other noniconically modified paleoartifacts – such as several cylindrical rods fashioned from mammoth bones featuring decorative incisions that were retrieved from the East Wenatchee Clovis site in central Washington (GRAMLY 1993: 52), or the remains of a 10,000 year-old bison skull with a red zigzag painted on it at the Cooper site in western Oklahoma (BEMENT 1999: Fig. 49) – support my contention that the prevailing graphic mode of expression during the Pleistocene-Holocene transition in the American West was almost exclusively non-representational. Why this is so, when the New World was settled long after iconic artification had developed in Eurasia, is a fascinating issue that for space reasons cannot be addressed here.

Carved Abstract Style Petroglyphs of the American West

Corroborating evidence for this contention about the primacy of non-representational markings comes from a rock art site in the Warner Valley of Lake County, Oregon. The site is remarkable in that it has provided a minimum age for possible Pleistocene-Holocene transition rock art. I have named it Mazama (Fig. 5) because it was buried by the primary ashfall from the climactic eruption of Mount Mazama, now Crater Lake National Monument. Based on a radiocarbon date for the ash of 6,845 ± 50 years B. P., this eruption took place some 7,700 calendar years ago (BACON 1983). After noting unauthorized digging at the site, which had exposed an exceptionally well-preserved assemblage of buried glyphs, William Cannon and Mary Ricks (1986) test-excavated the disturbed area, squaring it off to 1x2 meters (CANNON/RICKS 2007: Figs. 8.1 - 8.3). In the process they found that a thick layer of volcanic tephra was deposited over the lower segment of the petroglyph panel, which extends more than 90 centimeters below the present soil level, at about 20 centimeters above its base.

The exposed panel consists of the most basic graphic primitives, engraved as much as 12 millimeters deep, including straight and sinuous lines, concentric rings, and multiple dot fields, all of which are tightly integrated into a coherent composition. Intrigued by the bas-relief, sculptured effect

Fig. 5: Exposed petroglyphs at the Mazama site, Oregon, that extend below a 7,700 years old ash layer, thereby providing a minimal age for the Carved Abstract style of the American West (photograph E. Malotki).

of the deeply hammered engravings, Cannon and Ricks, who found no fit for them in the then-prevailing standardized typology of Great Basin styles proposed by Heizer and Baumhoff (1962: 200), decided to name it Great Basin Carved Abstract style (RICKS 1996: 54).

Supposedly, world-wide only about twenty instances exist where datable sediments have provided reasonably convincing minimum ages for buried rock art (BEDNARIK 2008b: 1942). The Mazama site is an excellent example, with Mazama tephra representing a stratigraphic time marker of exceptional importance for Pleistocene-Holocene transition paleoart in the Americas. Considering that it took some 7,700 years for the 70 centimeters of alluvial silts to accumulate above the ash layer, laid down primarily by aeolian deposition and winnowing of soil from the rim of the shallow plateau above the cliffs that support the panel, it should be possible for a geomorphologist to estimate how many additional years it might have taken to bury the 20 centimeters of imagery below the ash (CANNON/RICKS 1986: Fig. 4). Assuming further that the glyph maker did not lie on his stomach when pecking out the lowermost designs, they could have been made several thousand years earlier, perhaps about the same time the Paisley Caves, only about 50 kilometers distant from the Mazama site, were occupied. Dried coprolites from one of these caves, containing human mitochondrial DNA,

were recently AMS radiocarbon-dated and calendar calibrated to between 13,000 and 14,300 years ago (GILBERT et al. 2008).

Jack Steinbring et al. (1987: 156), finding fault with the radiometric age obtained by Cannon and Ricks for the volcanic material at the Mazama site, have described the sample as »patently unacceptable« due to the illegal digging activities that occurred there. According to Bill Cannon (pers. comm. 2010), this criticism is not warranted. After squaring out the disturbed area, undisturbed deposits of the ash layer were found to cover the petroglpyhs on both sides of the excavated pit. It was from these deposits that the samples for analysis and dating were obtained. Additionally, it was observed that the thick tephra layer, as well as the rock art panel, extended well beyond the excavation area.

As it turns out, Great Basin Carved Abstract rock art, deeply grooved, heavily revarnished, and often severely weathered when occurring in unburied contexts, is not limited to the Great Basin but is encountered in other regions throughout the American West (Fig. 6). Since these glyphs constitute a very early graphic expression, I consider them an important identifiable substyle of the Western Archaic Rock Art Tradition that, at the suggestion of Henry Wallace (pers. comm. 2009), can be conveniently termed Carved Abstract. In addition to its deep-time occurrence, the style clearly shows a preference for simple noniconic, unalloyed geometric markings. These include cupules, grooves, lines, hatchmarks and dots; lattices, grids and crosshatchings; untold varieties of circle configurations and spirals, starbursts and radial designs; and zigzags, meanders, chain and chevron arrangements, and ladder- and rakelike motifs. Based on the dating information associated with the sites discussed below, I regard Carved Abstract petroglyphs as the oldest surviving rock art in the American West.

Significantly, at least three prominent Carved Abstract sites are associated with dated archaeological remains that appear to corroborate the style's antiquity. Premier among them is a petroglyph site on a large tufa deposit along the western shore of the Winnemucca Dry Lake Basin in Nevada (CONNICK/CONNICK 1992). The tufa was exposed when the lake level lowered between 11,000 and 10,000 years B. P. Cedar bark matting recovered from Fishbone Cave across the valley from the tufa formation and elevated 80 meters above it yielded radiocarbon dates of around 11,000 years B. P. (ORR 1956). Human presence in the area at the end of the Ice Age from 11,000 B. P. on is further confirmed by a mummy find adjacent

Fig. 6: Carved Abstract style glyphs from a site north of Las Vegas, Nevada (photograph E. Malotki)

to Pyramid Lake, a remnant of ancient Lake Lahontan immediately to the west of Winnemucca Dry Lake. Radiocarbon dating has established that the skeletal remains, called the Wizard's Beach Man, are around 9,200 years old (TUOHY/DANSIE 1997).

Some 160 kilometers to the east of Pyramid Lake is the locale where Spirit Cave Man, another famous mummy, dated to 9,400 B.P (KIRNER et al. 1997), was found. Spirit Cave is part of the extensive Grimes Point archaeological complex east of Fallon, Nevada, with several dry caves and more than 1,000 glyph-bearing basalt boulders (NISSEN 1982: 296). The majority of engravings, often revarnished to the point of near invisibility, match the Carved Abstract profile. Of particular interest are deep cupules, some connected with grooves, that Heizer and Baumhoff (1962: 19) attribute to the Pit-and-Groove style, the oldest tier in their Great Basin chronology, with an age range of 5,000 to 7,000 B. P. Pitted boulders like Spyrock and Keystone near Ukiah, California, heavily revarnished and weathered, betray similar deep antiquity and seem to relate stylistically to the Carved Abstract expression. The same may be true for the unique petroglyphs of

the Pecked Curvilinear Nucleated (PCN) style in California's Coastal Ranges (GILLETTE/HYLKEMA 2010: 16). Affinities with Carved Abstract may also hold for the so-called ribstones in the Canadian provinces of Alberta and Saskatchewan (STEINBRING 2008). Grimes Point additionally offers boulders with deeply serrated edges (Fig. 7). Intermediary between a cupule and a groove, I have labeled this hitherto undescribed rupestrian phenomenon serriform. Serriforms clearly occur in the context of early archaic art, for instance near Long Lake, Oregon, at Chalfant, California, and in Upper Arrow Canyon, Nevada.

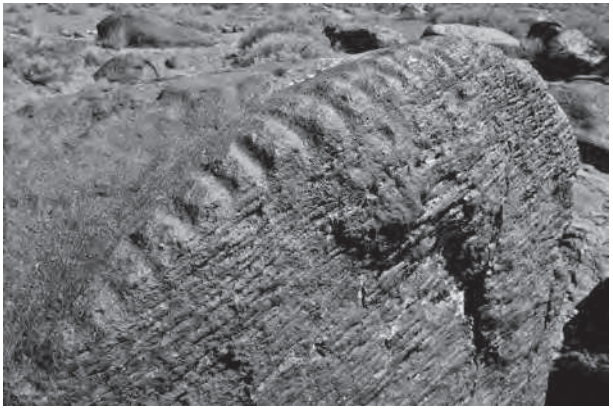

Fig. 7: A notched boulder edge or »serriform« from Grimes Point, Nevada (photograph E. Malotki).

Numerous other sites throughout the American West feature Carved Abstract petroglyphs, often embedded or overlain by more recent art. Alanah Woody (2000: 215) refers to multiple panels exhibiting the characteristic style at Massacre Lake, Nevada. Based on both relative patination and stylistic differences, she distinguishes at least four separate generations of petroglyphs of which the earliest »may be as old as 11,000 years if temporally diagnostic projectile points at the site are associated with the art.« Another excellent example is reported by the Connicks (1990) at Willow Creek near Susanville, California, featuring completely patinated designs grooved up to one centimeter wide. Prominent specimens are also encountered along the Snake River of Idaho, in Warshield Canyon, Nevada, north of St. George, Utah, in the Cave Creek area and the Sierra Ancha of Arizona, on Mesa Prieta and along the Rio Grande

corridor north of Espanola, New Mexico. Finally, the style occurs at two cave sites, one located at Parowan Gap, Utah, the other in the Aravaipa drainage of Arizona.

A gradualist model for Western Archaic Tradition rock art

While a deep grooving technique, when accompanied by heavy patination and weathering, may be a reliable indicator for some of the most ancient Western Archaic Tradition carvings, and while its iconography appears to remain true to its repertoire of geometric abstracts, gradual changes do become noticeable over time. This is not surprising, given the extensive geographic distribution of the art and the many thousands of years during which it was produced. Most obvious perhaps is an observable tendency towards lighter pecking and greater motif complexity. Not borne out, however, is the stylistic sequence from Abstract Curvilinear to Abstract Rectilinear as posited by Heizer and Baumhoff (1962). I therefore do not concur with Whitley et al. (1996: 95) that »geometric and representational motifs were used simultaneously throughout the entirety of the rock art making tradition« in the American West. From all empirical evidence and in concurrence with a panglobally observable pattern, I see an overall gradualist, evolutionary development of paleoart from non-representational imagery to full iconicity in North America. Bednarik (1987: 160) offers a similar assessment. In rejecting Steinbring's (STEINBRING et al. 1987: 8) intimation that petroglyphs at Mud Portage, Lake-of-the-Woods, Canada, could have been the result of Old World Palaeolithic influence, he argues that paleocolonizers of North America would almost certainly have lacked a figurative art tradition, which would mean »that the discovery of iconicity was an indigenous innovation« and that all oldest American rock art »is exclusively noniconic, as it is in other continents.«

I am fully aware, of course, that due to the lack of absolute chronometric techniques rock art researchers may too readily attribute Pleistocene antiquity to rock art that may be significantly younger. Nevertheless, though Western Archaic Tradition paleoart can safely be considered younger than that found in Eurasia or Africa, simply because it is located in North America, it seems to show a remarkable conformity in its evolutionary change from an early pan-regional noniconic sameness to a whole series of later styles that are regionally varied and distinct in their depiction of animal and human (biocentric) motifs. This evolution, however, which probably

took many millennia, should not be seen in a Darwinian sense, that representational images are somehow the result of more evolved cognitive capabilities and in this way contributed to greater human survival and reproductive success.

Indeed, Bednarik (2003: 104) has called it an error by the Paleolithic art lobby to assume that realistic or naturalistic depiction equates to sophistication in graphic art. Against this widely held »myth«, he asserts that non-figurative motifs are cognitively more sophisticated, semiotically more informative, and more likely to be symbolic than the usually favored representational figures (BEDNARIK 2003; GUTHRIE 2005). Not everybody agrees with his assertion. Chakravarty (2003: 108), for example, warns of »the danger of veering to any extreme position [...] to accept the priority of noniconic over iconic art, as a more complex and sophisticated art.« Dissanayake, too, believes that an either-or stance is not advised, since the intentions and motivations of early paleoartists are unknowable to us. Instead of fitting all earliest rock markings on every continent into a »Procrustean bed of Symbolic« (DISSANAYAKE, pers. comm. 2009) and focusing solely on the cognitive resources and benefits for artifying with noniconic images, she also recognizes presymbolic or analogic aspects in paleoart as precursors or companions of the origins of symboling (DISSANAYAKE 2010).

The developmental scheme that I am proposing for Pleistocene-Holocene transition rock art in the American West posits a long-lasting macrotradition distinguished by predominantly noniconic abstract-geometric imagery that comes to an end when a representational revolution seems to be taking place around the Middle to Late Holocene. As to the reasons that might have brought about full-blown iconicity, one can only speculate. It is probably safe to assume, however, that the drastic break with the established and long-lived noniconic imagery was the result of an equally dramatic innovation in the lifeway and worldview of the cultural groups responsible for the art (MALOTKI 2007: 56). Be that as it may, where before there was panregional homogeneity in the form of a noniconic artistic tradition, we now find heterogeneity manifested in a series of regionally varied styles that share an emphasis on life forms such as full-bodied anthropomorphs and zoomorphs. Although geometric elements do not disappear, they are now much more marginalized and usually integrated into the bodies of the animals and humans. Prominent among the biocentric corpora presently named are the Glen Canyon Linear (MALOTKI 2007: 60ff.), Grand Canyon Polychrome (MALOTKI 2007: 68ff.), Palavayu Anthropomor-

phic (MALOTKI 2007: 76ff.), Coso Range (YOUNKIN 1998), Barrier Canyon (COLE 2004), Pahranagat (WHITE 2005), Dinwoody (FRANCIS/LOENDORF 2002), and the Pecos River (BOYD 2003) styles.

Proto-iconic forerunners in Western Archaic Tradition rock art

Various authors have addressed the graphic vocabulary of Western Archaic Tradition paleoart and offered insightful tabulations and classifications of its most typical motif elements (HEIZER/BAUMHOFF 1962; SCHAAFSMA 1980; WALLACE/HOLMLUND 1986; COLE 1990; HEDGES 1993; WOODY 2000; TURPIN 2001). To my knowledge, however, none of them have recognized that the developmental path that I am proposing for Western Archaic Tradition imagery contains a number of simple figurative designs that gradually occur in the mix of abstract-geometrics and may have functioned as bridging elements between noniconic and more fully developed representational art. For this reason, they may be regarded as proto-iconic precursors to full-fledged iconicity (Fig. 8). Among the elements most frequently observed in this role are animal and bird tracks as well as human hand- and footprints. I am fully aware, of course, that due to dating uncertainties and the lack of absolute dating methods my proto-iconic hypothesis is currently not scientifically testable. It is therefore being offered as a predictive model that is verifiable or falsifiable as rock art researchers pay greater attention to the observed phenomenon. Nor must my hypothesis be understood in terms of a Darwinian model of evolution. After all, the earlier noniconic markings were not replaced by iconic ones. What is very obvious, however, is that when looking at the broad spectrum of Western Archaic Tradition rock art sites, a pattern with apparent evolutionary traits emerges: All earliest paleoart seems characteristically devoid of iconic markings over a long time period. Within this framework of fundamentally stylistic continuity, a gradual emergence of proto-iconic motifs becomes apparent. This admixture of pre-figurative motifs can thus be regarded as an inceptive or transitory step towards fully developed, two-dimensional iconicity at the end of the Pleistocene-Holocene transition. Typically, all subsequent representational art, then, occurs coevally with abstract-geometric forms.

As Jean Clottes (2002: 92) has pointed out, with the exception of cupules and other abstract signs, hands, feet, and animal prints are among the most common universal depictions. Animal tracks are especially frequent, which makes sense considering that most rock art in the world was produced by

Fig. 8: Several paired animal »tracks« stand out at this WAT site along the Rio Grande in New Mexico. Note the cupules and notched boulder edge or »serriform« (photograph E. Malotki).

hunter-gatherer societies. The ability to read animal spoor appears to be uniquely human. Of the three forms of symbolism that Bednarik differentiates, he finds iconicity of purely natural, i. e., unmodified forms, the most direct. »It occurs when an object of the natural world offers sufficient visual clues to prompt the mental bridge to be made between referent and referrer« (BEDNARIK 2008a: 86). Animal tracks, essentially »indexical signs« (HODGSON/HELVENSTON 2007: 122) with explicit visual resemblance, certainly qualify for this definition. Usually, their referential properties are such that the referent animal is easily identifiable.

Hodgson and Helvenston (2006: 12f.), in the context of hominin evolution, actually suggest that archaic humans, by initially scratching animal tracks in mud and sand and then later fixing them on rock surfaces in the form of paintings and engravings, »were already commandeering ›representation‹ to gain advantage in the cut and thrust of survival.« John Feliks (1998: 109) has proposed that it was primarily through fossils that early hominins »came to understand the concept of ›imagery‹« before they began to evolve graphic representation. For example, by collecting shells, fossils and quartz crystals, all featuring basic angles characteristic of the outspread hand, early humans discovered the fan motif (FELIKS 2006).

One wonders, though, how often such finds could have been made to develop this abstract concept of convergent lines. In my opinion, three-toed, trident-shaped bird tracks might have served as more suitable models for this evolutionary scenario. Not only do they occur naturally with much greater frequency than the above-mentioned collectables, but as hunters and trackers, early humans must have been keen observers of their own prints as well as those of animals, both predators and prey. Tracks, indeed, may have played a significant role in the development of visual representation and cognitive evolution overall. It thus comes as no surprise that they are integrated into Pleistocene paleoart on a global basis.

To my knowledge, none of the animal tracks so far discovered in the Western Archaic Tradition rock art are indicative of extinct megafauna. Most frequently depicted, in pars-pro-toto fashion, seem to be cloven-hoofed ungulates such as deer, wapiti or elk, pronghorn, mountain sheep and bison. Even though not verifiable with an absolute degree of confidence, specific species can often be discerned due to the rather naturalistic portrayal of their tracks. For example, quite distinct are the imprints of »deer« and »wapiti« whose hooves register vestigial toes known as dewclaws, generally represented by two round points behind the twinned spoor (Fig. 9). »Pronghorn prints«, on the other hand, overall more pointed, are lacking in dewclaws. »Bison tracks« seem to occur with and without the vestigial toes (Fig. 10). They can generally be recognized by their cloven-hearts shape and they are also much rounder than those of other artiodactyls. »Bear paws« are easily identifiable due to their claw marks (Fig. 11), and so are the »feline prints of mountain lion or cougar.« Characteristically, their depictions feature a hemispherical central heel pad surrounded by four circular hollows symbolizing toes. Finally, most bird tracks seem to be species-indeterminate, the schematic representations usually consisting of linear trident-shaped designs, sometimes with the posterior addition of a spur (Fig. 12) (but see CARDEN 2009: 33f.).

Ranking among the most frequently depicted rupestrian motifs on every continent, hand- and footprints are easily recognized and usually stand out quite vividly in assemblages of otherwise abstract-geometric paleoart. Obviously symbolizing humans in employing a pars-pro-toto approach, isolated examples of hands or feet are attested early in Western Archaic Tradition art and for this reason are considered proto-iconic forerunners here (Figs. 13 and 14).

Fig. 9: A pair of deeply grooved »deer« or »wapiti tracks« in the context of Carved Abstract style rock art at Parowan Gap, Utah (photograph E. Malotki).

Fig. 10: Bison tracks« and »feline tracks« at a WAT site along the Rio Grande, New Mexico (photograph E. Malotki).

Fig. 11: Geometrized »bear track« recognized at Tom Springs, Idaho (photograph E. Malotki).

Fig. 12: »Bird tracks«at one of the Glorieta Mesa sites, New Mexico (photograph E. Malotki).

Fig. 13: »Human handprint« incorporated into a maze of curvilinear engravings at a site north of Springerville, Arizona (photograph E. Malotki).

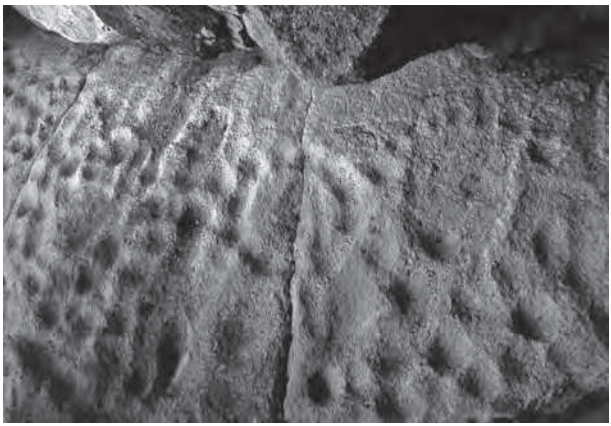

Fig. 14: »Human footprint« or possible »bear paw« embedded in an array of cupules at a site near Taos, New Mexico (photograph E. Malotki).

Proto-iconic forerunners in parietal paleoart of other continents

My proto-iconic hypothesis may also hold for several other rock art corpora of Pleistocene-Holocene antiquity in the world. A strong case can definitely be made for Australia. While early claims for tracks of extinct megafauna such as Genyornis, an emu-like bird, Procoptodon, a giant short-faced kangaroo, and Diprotodon, a wombat-like marsupial of enormous proportions, have been refuted because most Australian megafauna had disappeared by around 20,000 years ago (Bednarik 2010: 96), the majority of Australian rock art researchers seem to be in agreement that Panaramitee Tradition petroglyphs are the country's oldest known form of rupestrian art. Bednarik (pers. comm. 2009), who attributes most of the Panaramitee sites to the late Holocene, concedes, however, that »there are some included that are 30,000 years old.« Occurring continent-wide, the tradition predominantly consists of avian, macropod, and human prints intermixed with non-figurative motifs.

Apparently considerably older than Panaramitee rock art are the deeply pounded non-figurative Karake Tradition cave petroglyphs found in the Mount Gambier district along the southern coast of Australia. Some of the markings, for example those in Melangine Cave (BEDNARIK 2010: Fig. 11), »that can safely be assumed to include Pleistocene elements« (BEDNARIK 2010: 102), clearly resemble avian tracks. Natalie Franklin (pers. comm. 2010) also confirms that »bird tracks are very common at many early engraving sites in Australia, but particularly in the Laura region where they are incorporated into other designs.« André Rosenfeld (1981: 54), one of the principal investigators at the Early Man Shelter, actually acknowledges the presence of both »fairly naturalistic bird tracks and linear tridents« among the Laura rock engravings, readily evident also from the many drawings and photographs in her report. Bednarik (2010), on the other hand, prefers to interpret the trident-like configurations as »convergent line motifs (CLMs)«. When spontaneously asked to draw a bird track, people unfailingly respond with a three-toed schema, betraying perhaps the existence of a universal mental template for this design. Ancestral hunter-gatherers would have reacted the same, perhaps even more accurately. Regardless of what the verdict eventually turns out to be, there seems to be ample rupestrian evidence that throughout Australia proto-iconic elements in the form of tracks precede full-blown iconic imagery, with some clearly datable to the terminal Pleistocene.

Confirmation for the early appearance of tracks in Pleistocene rupestrian iconography is also found in the Patagonian landscape at the southern tip of South America where hunter-gatherers made a living as early as 12,000 years ago (SALEMME/MIOTTI 2008: 437). Specific evidence for this early human presence comes from, among other sites, the locality of Piedra Museo whose immediate vicinity has yielded Paleoindian materials testifying to the locale's functionality »as a killing and primary butchering site, with dates from ca. 13,000 to 9,000 B. P.« (CARDEN 2009: 31). Among the faunal remains recovered at the site are those of Hippidion saldiasi, also known as »American horse«, which became extinct in this part of South America »between 15.0 and 8.5 ka B. P.« (SALEMME et al. 2008: 456).

The two rockshelters that make up Piedra Museo contain numerous large boulders whose horizontal surfaces are densely covered with both noniconic and iconic motifs. The latter include a large quantity of animal and bird tracks, including entire trails of avian prints, several human hand- and footprints, and also vulviforms (CARDEN 2009: Figs. 4, 12 and 13). Easily identifiable among the mammalian tracks are pawprints of felines, assumedly puma, the cloven hoofprints of guanacos and, most remarkably, horse (CARDEN 2008: Figs. 10 and 11; CARDEN 2009: Fig. 10). The hoof imprints realistically show the V-shaped »frog« feature necessary for the determination of a horse's hoof. Menghin's (1957: 68) conclusion that they were schematizations of the labyrinth motif can therefore be dismissed. Nor is their interpretation as vulvar representations warranted, as the one slab on which they occur actually shows a distinct diminutive vulviform (CARDEN 2009: Fig. 4). Both the site's deep placement in time and its sensational depiction of the hooves of Hippidion, an extinct Ice Age animal, make Piedra Museo one of the most significant rupestrian sites in the New World.

Concluding remarks

In summary, my proto-iconic hypothesis proposes that in Pleistocene-Holocene paleoart full two-dimensional iconicity was attained via a bridging element: animal tracks and human imprints. Without the support of reliable and independently verifiable chronometric dating, this must remain hypothetical. If not verifiable for the end of the Pleistocene, it remains perfectly possible that these proto-iconic elements preceded other figurative imagery in the early Holocene. Equally or even more important is the finding that there may be a near universal here of early noniconic de-

pictions plus a limited repertoire of the same representational bridging designs. Finally, it is hoped that in presenting a predictive yet falsifiable model, this paper will help steer attention within the international rock art community to a hitherto under-researched phenomenon in rock art studies.

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