

Review

## Pleistocene Palaeoart of the Americas

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Received: 7 July 2013 / Accepted: 27 February 2014 / Published: 4 April 2014

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**Abstract:** In contrast to the great time depth of Pleistocene rock art and mobiliary ‘art’ in the four other continents, the available evidence from the Americas is very limited, and restricted at best to the last part of the final Pleistocene. A review of what has so far become available is hampered by a considerable burden of literature presenting material contended to be of the Ice Age, even of the Mesozoic in some cases, that needs to be sifted through to find a minute number of credible claims. Even the timing of the first colonization of the Americas remains unresolved, and the lack of clear-cut substantiation of palaeoart finds predating about 12,000 years BP is conspicuous. There are vague hints of earlier human presence, rendering it likely that archaeology has failed to define its manifestations adequately, and Pleistocene palaeoart remains almost unexplored at this stage.

**Keywords:** rock art; portable palaeoart; Pleistocene; misidentification; North America; South America

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### 1. Introduction

The number of realistic theories about the provenance of the initial colonizers of the Americas is very limited indeed, and there is only one serious candidate—that which refers to Asian origins. The alternatives offered in the literature, such as Solutrean sailors from western Europe or Australian Aborigines crossing the Pacific are not reasonable propositions: there is no credible evidence for either possibility. It is widely thought that Asian settlers first crossed Beringia to reach Alaska. There is no consensus agreement concerning the timing of this first human settlement of the New World, but with evidence of art-like and possibly symbolic productions extending back some hundreds of thousands of years now, in Eurasia and Africa (Bednarik 1994, 2003, 2013, 2013; Beaumont and Bednarik

2013) [6,11,18,23,24], it is reasonable to attribute to the very first Americans the ability of producing forms of art-like objects or markings. At whatever time these people arrived in the far northwest of North America, they would probably have possessed the technological, cognitive and cultural faculties that are a precondition for rock art and portable 'art' production. Their technology may well have included seaworthy watercraft, which was used to cross the open ocean between the Pleistocene regions of Sunda and Sahul (Greater Australia) at least 60,000 years ago, and to cross Wallace's Barrier (most probably between Bali and Lombok) at least 800,000 years ago (Bednarik 1999) [16].

It is therefore more than possible that the first rock art of America has its origins in eastern Asia. Nevertheless, eastern Asian rock art of the Late Pleistocene has not captured the attention of American rock art specialists. The most likely foreign rock art to attract their attention remains that of south-western Europe, and even when drawing inter-continental comparisons, some American scholars have referred to the Franco-Cantabrian traditions. Asian Pleistocene art had never even been studied on a pan-continental basis until recently (Bednarik 1994) [11], but a comprehensive review of the empirical evidence has just appeared in this journal (Bednarik 2013) [24].

A second, perhaps even more severe limitation to the study of North American Pleistocene occupation is that the timing of the first colonization of the Americas remains one of the major archaeological controversies of our time (Bednarik 1989; Dillehay and Collins 1988; Jelinek 1992) [10,41,62]. Many North American archaeologists reject the pre-13,000 BP occupation evidence from South America. Niède Guidon (1984) [57], Fabio Parenti (1993) [81] and others have argued persuasively that human occupation in north-eastern Brazil extends back about 40–50,000 years. The sandstone shelter Pedra Furada in Piauí has yielded a series of fifty-four radiocarbon dates from occupation horizons with many stone implements. The dates are stratigraphically consistent and if the hypothesis that the Americas were occupied via an Alaskan bridgehead were correct, the South American Pleistocene archaeological finds from Brazil, Venezuela, Peru, Argentina and Chile would suggest that humans must have reached North America somewhat earlier (Bednarik 1989) [10]. The circumstances of this colonization remain entirely unknown and archaeology has consistently failed to produce any acceptable evidence of such early human presence in North America. The type of evidence offered includes that from such sites such as Calico in California, which in reality contains not a single stone implement below the uppermost few centimetres of its massive sediments; China Lake, also in California, which lacks a stratigraphic context for its two flake tools; and Old Crow in Yukon, with its inadequately dated bone artefact. Meadowcroft Rockshelter at perhaps up to 19,000 years still falls short of the South American evidence. The Valsequillo site complex near Puebla, Mexico, remains thoroughly controversial.

It has been suggested that the initial occupation of North America was restricted largely to coastal corridors, with only low population densities further inland (Bednarik 1989) [10]. Rapid expansion along the western coast by an essentially coastal people could have led to a speedy colonization of South America. Due to the significantly lower sea-level during the Late Pleistocene all coastal evidence of the time is now submerged, which may help explain the state of the evidence. Globally there is a complete lack of direct Pleistocene evidence about coastal navigation, and very little about exploitation of marine environments, coastal settlement patterns and marine ecologies of the Ice Age. This massive hiatus has resulted in a completely distorted picture of Pleistocene societies, with a heavy emphasis on inland ecologies and economies. The oldest direct evidence for the use of watercraft we

have is all from the early Mesolithic of Europe, 8000 to 9500 years old (Bednarik 1999, 2003) [16,19]. Beyond this time, the present coasts of the world were all at higher elevations, continuously for perhaps 60,000 years, and it is not likely that boats, rafts, oars or paddles were frequently taken to such elevations, let alone survived.

To avoid viewing early American palaeoart in isolation it needs to be considered what is currently known about Asian Pleistocene ‘art’. Although such palaeoart is found in several regions of Asia, the existing record is extremely fragmentary, disconnected spatially as well as chronologically, and no doubt distorted taphonomically in a most severe form (Bednarik 1994, 2013) [13,24]. It includes tantalizing glimpses of extremely early examples, but these are so frustratingly isolated that it is easy to challenge them. Nevertheless, they do include one of the oldest known figurative sculptures in the world, an animal head from Tolbaga in Siberia; one of the earliest known objects suggestive of hominin iconic perception, from Berekhat Ram in Israel; and the oldest known rock art in the world. Some of the eleven petroglyphs found in Auditorium Cave, India, were concealed under undisturbed Middle Palaeolithic occupation deposits, as well as the upper part of the substantial Acheulian strata. They are undated, but the Indian Acheulian is of ages similar to that of Europe and Africa and ended around 200,000 to 170,000 years ago, *i.e.*, before the Americas are assumed to have been settled. All attempts to date the Indian Acheulian radiometrically showed it to be 290,000 years or greater, and it seems to commence about 1.4 to 1.51 million years ago (Misra and Rajaguru 1994; Badam and Rajaguru 1994; Pappu *et al.* 2011) [2,76,80]. The 540 cupules of another central Indian quartzite cave, Daraki-Chattan, have been safely attributed to the site’s Mode 1 (Oldowan-like) tool industry, underlying Acheulian strata (Kumar 1996; Bednarik *et al.* 2005) [27,66].

Rock art of extremely great antiquity in other parts of the world also consists of cupules (Bednarik 2013; Beaumont and Bednarik 2013) [6,24]. Early last century, a large limestone slab was found placed over a Neanderthal child’s burial in La Ferrassie, France (Peyrony 1934) [84]. On its underside, facing the corpse, 18 cupules were found, 16 of them arranged in pairs. Both North America and Australia seem to have been colonized from Asia, and in both cases, cupule traditions are among the earliest found in rock art. Cupules at the Sandy Creek I site in Queensland are undated, but were partly covered by sediment containing occupation evidence reaching to 32–40,000 BP. Even in eastern Asia, the region which both major colonizations of the Pacific Rim (the Americas as well as Australia) seem to have originated from, provides supporting evidence. The earliest petroglyphs so far detected in China also consist of deeply carved cupules (Tang and Mei 2008; Tang 2012) [96,97].

## 2. North America

In North America it has long been proposed that the ‘pit-and-groove’ petroglyphs or ‘pitted boulder’ genres are the oldest ‘style’ (Heizer and Baumhoff 1962; Grant 1967; Baumhoff 1980; Parkman 1992) [5,52,59,82], and that *some* cupule traditions date back to ‘pre-Hokan’ times, *i.e.*, that they are of the final Pleistocene (Parkman 1992) [82]. They are not, however, soundly dated. Cupules occur in much of North America, but they are especially common in the west of the United States. They occur also in Mexico (Mountjoy 1974, 1987; Grove 1987; Clewlow *et al.* 1967; Gay 1973; Grove 1981; Grieder 1982; Mercer 1895: 28; Valentine 1965; Strecker 1983) [53,56,73,77,78,93,102], Costa Rica (Kennedy 1973) [64], and a cup-and-groove boulder has been reported from Panama (Rau 1882: 60; Stone 1972) [86,91], but none of them are suggested to be of the Pleistocene.

There is no shortage of claims for such age from the United States, of both rock art and portable palaeoart. Most notably there are numerous propositions that extinct Pleistocene species have been depicted. Particularly popular are designations as proboscideans, which have appeared throughout the 20th century and into the present. Both the Columbian mammoth and mastodon were certainly met by the early colonizers of the continent, but all proposals of their depiction could not so far be credibly substantiated. Some, such as the purported mastodon engraving on a pendant made of whelk shell from Holly Oak, Delaware, are clearly fakes. This object, supposedly found in 1864 (Kraft and Thomas 1976) [65], was eventually radiocarbon-dated to about 1500 years BP (Griffin *et al.* 1988) [54]. Further unambiguous fakes are the two red elephant paintings at Birch Creek, Ferron, Utah (Malotki and Weaver 2002: 192) [70]. The petroglyph of a mastodon near Moab, Utah was reported by Gould (1935) [51], but has been partially destroyed by vandalism subsequently and more probably depicts a bear with a fish in its mouth (Malotki and Weaver 2002: Pl. 200) [70]. An elephant-like image in Yellow Rock Canyon, Nevada (Tuohy 1969; Clewlow and Uchitel 2005) [35,101] was probably made in the 1840s (Layton 1976) [67]. A petroglyph at China Lake Naval Air Weapons Station presented as a possible proboscidean by Kaldenberg (2005) [63] has been refuted by Malotki and Wallace (2011) [69], as has been another from Hieroglyphic Canyon, Arizona, and one more from near Suwanee, New Mexico. Malotki and Wallace also discredit the elephantine status of a ‘mammoth’ image at Manila, Utah (Thompson 1993) [100], and the ‘mastodon’ at Craneman Hill near Mayer, Arizona. All of these images are thought to depict something other than proboscideans, and Malotki and Wallace (2011) [69] correctly attribute these ‘identifications’ to pareidolia.

**Figure 1.** Petroglyph arrangement of unrelated elements on cliff at Upper Sand Island, Bluff Utah, thought to depict a mammoth, but less than 4000 years old.



The status of two elephantine petroglyphs at Track Rocks near Barnesville, Ohio, has remained uncertain until recently. Early descriptions of the site (e.g., Ward 1872; Read and Whittlesey 1877; cf. Swauger 1974) [87,94,103] make no mention of them, but they are all significantly incomplete. A recent scientific investigation confirmed that the ‘mastodons’ date from between 1910 and 1980, based on granular exfoliation calibrated by numerous engraved dates (Bednarik 2013) [25]. Two further arrangements high up on a cliff at Upper Sand Island near Bluff, Utah, have been attributed to the Columbian mammoth (Malotki and Wallace 2011) [69]. Intensive microscopic examination (Bednarik



2013) [25] and geological study (Gillam and Wakeley 2013) [50] show that a Pleistocene antiquity of the petroglyph panel is geologically not feasible, and that the groups of markings concerned are fortuitous arrangements of unrelated elements (Figure 1). The petroglyphs are less than 4000 years old, which falls significantly short of the presumed end-Pleistocene extinction date of the species (Faith and Surovell 2009) [47]. This leaves just one more American palaeoart depiction of a proboscidean, the engraving on a bone fragment from the Old Vero Site, Vero Beach, Florida. Purdy *et al.* (2001) [85] have presented empirical evidence in favor of the marking's authenticity, but several aspects remain to be clarified further (Figure 2). Presently the case for the image's authenticity rests mostly on the continuity of mineralisation across the indentations (Purdy *et al.* 2001: 2911) [85], other indicators being essentially inconclusive (Bednarik 2013) [25].

**Figure 2.** Engraving on a fossil bone fragment from Vero Beach, Florida, bearing a proboscidean engraving.



This long list of purported elephantine rock art motifs from the United States can be supplemented by a series of spurious claims for other Pleistocene faunal depictions in American rock art. Among them are Whitley's (1996) [107] assertion that the extinct Western horse has been depicted at Legend Rock, Wyoming; and his contention that a partially patinated petroglyph at Surprise Tank, California, is of a camelid (Whitley 1999) [108]. The second claim cites the opinion of a palaeontologist in support (Whitley 2009) [109], which is of no relevance. Palaeontologists or zoologists are trained to identify species or their remains; they have no innate understanding whatsoever of alien palaeoart imagery and their pronouncements about it are less relevant than those of illiterates or infants (Bednarik 2011) [22].

Even more bizarre are the various proposed depictions of dinosaurs or pterosaurs in the rock art of North America. The perhaps earliest claim of this nature concerns a pair of paintings first described by Marquette (1855) [71] who saw them in 1673. It is the first published record of rock art north of Mexico (Bednarik 2007: 8) [20]. Armstrong (1887) [1] regarded the images as depicting pterosaurs, as

did Gibbons and Hovind (1999) [49], among others. The 1924 Doheny expedition into Havasupai Canyon, northern Arizona, reported an image of *Diplodocus* (Hubbard 1927) [60], seen as *Edmontosaurus* by Taylor (1987) [99]. Since then Beierle (1980) [29] has described a second motif from the same panel as an unspecified dinosaur. Senter (2012) [89] has examined both petroglyphs and considers the first to be of a bird, the second of a bighorn sheep.

One of the most spectacular misidentifications is the alleged pterosaur painting in Black Dragon Canyon, Utah (Barnes and Pendleton 1979: 201) [4]. Warner and Warner (1995) [104] have analyzed the assemblage and determined that five separate pictograms, two anthropomorphs and three zoomorphs, have been combined as one hypothetical motif. This has been confirmed by Senter (2012) [89]. Then there is the purported sauropod petroglyph at Kachina Bridge in the Natural Bridges National Monument, also in Utah (Butt and Lyons 2004; Isaacs 2010; Lyons and Butt 2008; Nelson 2011; Swift 1997; Taylor 1999) [32,61,68,95,98]. Senter and Cole (2011) [90] have debunked this myth by showing that the ‘legs’ of the perceived image are natural mineral stains and the body consists of a pair of sinuous, snakelike petroglyphs. Further afield we have one more claim by Gibbons and Hovind (1999) [49] of a dragon or dinosaur, from the Agawa Rock site in Lake Superior Provincial Park, Ottawa. It occurs together with several other motifs, the meaning of which is known (Dewdney and Kidd 1967; Meurger and Gagnon 1988) [40,75]. The group of pictograms depicts a lake crossing by a war party, and the horned creature represents Underwater Panther, a mythical creature of the region.

Tracks of dinosaurs have apparently been depicted in North American rock art: a pictogram in Utah close to sets of fossil dinosaur footprints seems to depict them, and petroglyphs of such tracks have been found in Arizona and Wyoming (Mayor and Sarjeant 2001) [72]. However, there is only one instance known of rock artists actually having depicted dinosaurs. In Mokhali Cave, Lesotho, a red painting of a saurian track appears together with three images of the ornithopod that caused them (Ellenberger *et al.* 2005) [46]. The reconstruction of the live animal by a San/Bushman ethnoscientist, applying his magnificent tracking skills, represents a splendid scientific deduction that greatly surpasses the endeavor of celebrated palaeontologist Sir Richard Owen to reconstruct the same animal.

It follows from this review of the empirical evidence that there is currently no credible evidence of Pleistocene (or Mesozoic) rock art in North America. Even plausible datings from the early Holocene are surprisingly rare. Despite many endeavours to find early material, all claims of this nature appear to be unsubstantiated. For instance, Dorn and Whitley (1984) [45] obtained a series of cation-ratio minimum ‘dates’ from Coso Range (California) petroglyphs ranging up to about 11,500 years BP, but numerous writers have rejected the method’s reliability (Beck *et al.* 1998; Bednarik 1988; Bierman and Gillespie 1991; Bierman *et al.* 1991; Watchman 1989, 1992) [7,8,30,31,105,106] and Dorn himself has effectively withdrawn all his results (Dorn 1996a, 1996b, 1997) [42–44]. Nevertheless, final Pleistocene petroglyphs may well exist in North America (Parkman 1992; Bednarik 1995a) [14,82], but that still remains to be demonstrated scientifically. At present the most credible claim is that of Steinbring (2013) [92], concerning the Hensler Petroglyph Site in Dodge County, Wisconsin. Its excavation yielded peck marks below sediments that are up to 10,000 years old, containing bifacial projectile points (of Hardin Barbed type; Figure 3). There are even two petroglyphs at the site that seem to depict such stone points, one superimposed over the other (Steinbring 2013: Fig. 7) [92].



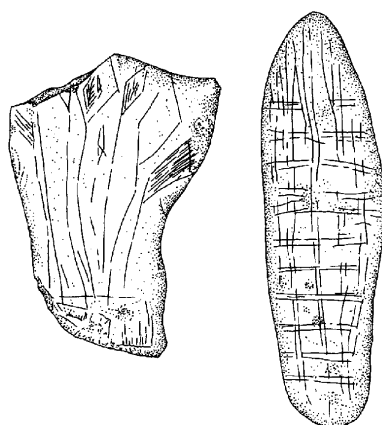
There are several purported Pleistocene portable art objects from North America, but some have been exposed as fakes (Bednarik 2013c) [25]. The only exceptions (apart from beads from the Jones-Miller site in Colorado) seem to be a mineralized sacrum from Tequiquiac, Mexico, which has been modified to look like an animal head (Bahn 1991: Pl. 18a) [3]; possibly the Vero Beach specimen mentioned above; and the limestone plaques from the Clovis layer of the Gault site, Texas. Other examples are less well authenticated, but a bone with an engraving of a rhinoceros from Jacob's Cave, Missouri, has been suggested to be of the final Pleistocene (Messmacher 1981: 84; Bahn 1991: 92) [3,74]; Bahn fails to question why there could be an American Pleistocene depiction of a rhinoceros, an animal that did not exist in the New World. This illustrates how skeptical one needs to be in reviewing claims of Pleistocene palaeoart from North America, and especially from the United States—the only world region apart from western and central Europe that has yielded fakes of Ice Age 'art'.

**Figure 3.** Peck marks at Hensler Petroglyph Site, Dodge County, Wisconsin, shown to be at least 10,000 years old (after Steinbring 2013).



The numerous limestone plaques from the Clovis layer of the Gault site, Texas, with their 'geometric' (non-iconic) engravings (Collins 2002; Collins *et al.* 1991, 1992; Robertson 1999) [36–38,88] are generally accepted as authentic. So far, at least 134 specimens have come to light at this site, but the provenience of many is not secure (D.C. Wernecke, pers. comm.). Nevertheless, eighteen good examples are clearly from the Clovis deposits, and they represent some of the most important palaeoart the Americas have yielded (Figure 4).

**Figure 4.** Engraved plaques of the Clovis layer of Gault site, Texas, of the final Pleistocene.



### 3. South America

With the exception of the common occurrence of fakes or hoaxes in North America, similarly severe limitations apply to the current knowledge about the early rock art of South America. In the Americas we know of no Pleistocene tradition of cave art, hence we would expect the earliest surviving rock art to consist of deeply carved, rather simple but very prominent designs. The above shows that what can be regarded as the possibly earliest surviving rock art in North America consists precisely of these types of markings: cupules and deep linear incisions on pavements, cliffs and large boulders, and perhaps simple geometric designs of a very specific range. Significantly, this is in agreement with the Old World continents (Bednarik 2013a, 2013b) [23,24] and Australia (Bednarik 2010) [21]. To a major extent this is a taphonomically determined outcome (Bednarik 1994) [13] although to some degree it also reflects a widespread uniformity in the cultural conventions that contributed to the surviving record.

For instance the oldest rock art this author has seen in Bolivia, at such sites as Inca Huasi, Mizque valley (Figure 5), and Bola Chanka, Santivañez petroglyph complex, includes non-figurative linear groove arrangements and especially cupules (Bednarik 2000; Bednarik *et al.* in press) [17,28], as do more recent sites such as Toro Muerto (Bednarik 1988b) [9]. These corpora remain undated, however, and their antiquity is only estimated by their relative weathering state and other factors. A site with similar petroglyphs, also in the eastern foothills of the Andes, but 2500 km to the south, in Argentina, is Cueva Epullán Grande, which includes Pleistocene bedrock grooves resembling very early petroglyphs in Australia (Figure 6), and there are cupules and non-figurative linear petroglyphs on the walls (Crivelli M. and Fernández 1996) [39]. Early petroglyphs in Brazil, such as those at Caiçaras or Riacho Santana, Piauí, are also deeply carved, fully patinated and simple designs that could survive the longest (Bednarik 1989) [10], but are unlikely to date from beyond the Holocene. The deeply hammered and heavily weathered dense cupules on the granite boulders at Lungumari Puntilla, southern Peru, may also be of considerable age (Parkman 1994) [83], but are undated. The region of their occurrence features extensive Pleistocene terrace systems and the various lithic industries found on them (for instance those the author studied on the Río Majes and Río Sigüas) feature massive evidence of very early traditions of cobble tools and handaxes, no different from those found in Eurasia and Africa. Oddly, these have not attracted any interest from the local archaeologists, who seem to be preoccupied with the rich ceramic traditions of the region. As in North America, cupules



occur in many parts of this continent, but they have not been soundly dated to beyond the last millennia so far (Bednarik *et al.* in press) [28]. Occurrences include those in Guyana, Surinam, Chile and Argentina, besides Peru, Bolivia and Brazil.

**Figure 5.** Oldest petroglyph tradition of Inca Huasi, Mizque valley, central Bolivia, probably early Holocene or very final Pleistocene.



**Figure 6.** Engraved grooves on bedrock of Cueva Epullán Grande, Neuquén Province, Argentina, probably more than  $9970 \pm 100$  years old (after Crivelli M. and Fernández 1996).



An exceptional site of early South American rock art is Toca do Baixao do Perna I, where numerous red paintings have been excavated in unusually dry sediments that are up to 9,500 years old (Guidon and Delibrias 1986; Bednarik 1989: 105) [10,58]. They occur immediately above a thick layer of charcoal (Bednarik 2013) [26]. A fragment of a pigment ball bearing signs of having been worn as an ornament was found at the site, providing an AMS radiocarbon date of  $15,250 \pm 335$  years BP (Chaffee *et al.* 1993) [33]. Although that age cannot be extrapolated to the rock art, it seems that pictograms at the site date from the final Pleistocene, and are therefore among the oldest surviving rock art of the Americas (Figure 7).

**Figure 7.** Pictograms of Perna I rockshelter, São Raimundo Nonato, Piauí, Brazil, at least 9500 years old.



#### 4. Discussion

One valid line of reasoning would note that the presumed parent traditions of Pleistocene arts in Asia, both on rock surfaces and on portable objects, exhibit an almost complete absence of graphic, *i.e.*, two-dimensional figurative art from that entire continent. Generally, Pleistocene graphic arts in Asia consist of geometric patterns (Bednarik 1994, 2013) [12,24], just as in the very early Australian rock art (Bednarik 2010) [21]. If, as is almost universally assumed, the Americas were colonized from the far north, essentially via Beringia, it stands to reason that their earliest palaeoart traditions would derive from those of eastern Asia. That does indeed seem to be the case, with the Gault plaques representing an American version of the sometimes very complex engraved plaques of Upper Palaeolithic Asia, especially evident in Siberia and European Russia.

Seen in its metamorphological context (Bednarik 1995) [15], the beginnings of graphic art production in the Americas are part of a universal pattern. Taphonomic logic (Bednarik 1994) [13] renders certain consistencies likely, in terms of the types of art we are most likely to find in the

Pleistocene. They may be interpreted as confirming general, perhaps global trends, and it would be only too easy to jump to the apparently self-evident conclusion that this pattern marks a developmental trend in very early world rock art. This author finds the epistemologically more elegant explanation more persuasive: the conformity of American evidence with that elsewhere marks primarily a taphonomic trend, as is almost certainly the case in the Old World continents. The most convincing hypothesis is that a general trend in early palaeoarts has been significantly emphasized by the selective processes of taphonomy. Hence it is easy to define the rock art that is most likely to emerge as the oldest to have survived in the Americas, and taphonomic logic could to some extent guide our search for it.

In the absence of any rock art in deep caves in the Americas that might be over 2000 years old (cave art of less than 2000 years age occurs in three regions of the Americas: the Caribbean, Yucatan and Kentucky), the earliest surviving rock art of the Americas is most likely one of petroglyphs. The Perna 1 pictogram corpus is exceptional due to its unusual sedimentary context, because pictograms rarely survive below sediment. They are the only documented case in the world of pictograms having been dated via concealing sediment. In most cases, the earliest surviving rock art will consist of the types most resistant to deterioration. The cup-and-groove tradition is particularly conspicuous along western coastal regions of both Americas, and it is also there that the earliest examples seem to occur. They are sometimes found on particularly weathering-resistant rock types, even on granite and in ultra-arid environments, and their state of weathering or patination can be suggestive of great antiquity. If any Pleistocene rock art is to be found in the Americas, this form of petroglyph is the principal contender—which is entirely consistent with the evidence in the remaining continents.

In Canada, which with Alaska is the region most likely first occupied by human colonizers, this author is not aware of any rock art which one would expect to be of the Pleistocene. One is tempted to consider the western coast as the most likely area to contain the earliest rock art of the northern regions. However, most west-coast rock art seems related to the present shoreline, and is thus most likely of the Holocene. Minor tectonic and even eustatic sea level changes still occurred in the Holocene, and they can account for the location of some petroglyphs found at or even below water level. This includes those on the ‘Shaman Rock’ in Kulleet Bay, Vancouver Island, and the massive granite boulder in Case Inlet at Victor, Washington State. The latter is of particular interest here because its base has not been excavated, being below the sea level.

At North American sites that offer a well-spaced chronological sequence of several discrete petroglyph traditions, the earliest component tends to display a similar motif repertoire as the early traditions of Asia, Australia and South America. A good example is Parowan Gap in Utah, where several art traditions can easily be discerned by patination and carbonate encrustation, degree of kinetic as well as exfoliation damage, style and content, weathering, microerosion, spatial distribution and method of production (Bednarik 1995) [14]. The oldest phase consists of deeply carved concentric circles, radial figures, single and multiple wave lines or zigzags, sets of cupules, barred elongate ovals, multiple arcs, sets of parallel lines, and a variety of maze designs. Much of this range of motifs could have been taken straight from Australia’s earliest petroglyph phases, the ‘archaic linear petroglyph’ traditions (Bednarik 2010) [21]. In short, the forms of early American palaeoart match those of other continents rather closely.

## Conflicts of Interest

The author declares no conflict of interest.

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