в том же регионе. Мадлена, в том числе из Ла-Марш и на впечатляющем скульптурном фризе в Англь-сюр-Л’Англен приём использования формы скалы и сам стиль изображения характерны для искусства Среднего Мадлена, в том числе из Ла-Марш и на впечатляющем скульптурном фризе в Англь-сюр-Л’Англен в том же регионе.

22 апреля 2015 г. состоялся официальный визит на памятник с участием специалистов из археологической администрации региона, а также г-жи Женевьев Пинсон, директора Национального доисторического центра. Изображение было признано аутентичным: степень патинизации выгравированного рога ясно показывает, что он очень древний, а его размер идеально соответствует размерам естественного рельефа в формы головы ниже. При этом не только было подтверждено существование головы бизона, но и обнаружены другие линии (некоторые из них являются следами костей животных, но другие вполне могут оказаться гравировками), а также некие красивые пятна, которые могут быть остатками пигмента. Таким образом, Ла Марш безусловно входит в число декорированных палеолитических пещер, и теперь необходимо полное исследование его стен и потолка.

Для меня большая честь сделать это открытие. Насколько мне известно, это лишь вторая на-ходка пещерного искусства во Франции, сделанная британцами (первая из них произошла в 1950 г., когда Дороти Гаррод стала участником открытия фриза Англь-сюр-Л’Англен, расположенного, кстати, недалеко от Ла Марш).

Благодарности
Я глубоко признательен сотрудникам музея, особенно Флоранс Буньото (директору музея в то время) за доступ в пещеру, а также компании Andante Travels, для которой я сопровождаю группы посетителей на этот памятник.

Перевод: Е. А. Миклашевич

Библиография

Примечания
1. Стойкое утесное сооружение в форме арочного свода представляет собой нечто среднее между антропоморфной и зооморфной формой, причем основная масса дополнительных элементов укрепления всячески подчеркивает антропоморфное начало. Этот феномен может быть связан с архетипами антропоморфных образов в докембрийской мифологии.
2. Существует мнение, что рог, выгравированный на скале, является загадочным и символическим элементом, который несет в себе глубокий символический смысл. Однако, специалисты по искусству не могут однозначно интерпретировать его значение.
3. Согласно исследованиям ученых, скальные изображения в Ла-Марше относятся к эпохе мезолита и нижнему палеолиту. Они представлены в виде животных, людей и различных инструментов.

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THE EARLIEST PETROGLYPHS IN THE WORLD

Auditorium Cave at the World Heritage-listed site complex of Bhimbetka in central India was the first site in the world whose rock art was attributed to the Lower Palaeolithic. The archaeological background to this discovery is described, particularly the nature of the pre-Acheulian or Mode 1 lithic industries of India. Bearing in mind that there are now four other cupules sites known, including one more in India, that are soundly attributed to the Lower Palaeolithic, this proposition is no longer as precipitate as it may have appeared when it was first made. The Bhimbetka petroglyphs are discussed in some detail, together with the difficult subject of determining their antiquity. A conservative approach is adopted, but based on the archaeological evidence at Darak-Chattan, it is suggested that the Auditorium Cave cupules, too, date from a Mode 1 technocomplex.

Keywords: petroglyph, rock art dating, quartzite cave, Lower Palaeolithic, Auditorium Cave, Bhimbetka, India

Introduction

The Bhimbetka rock art site complex south of Bhopal in India is topographically dominated by a series of prominent quartzite towers. Being located on a hilltop, they are visible from a distance of many kilometres. These residual structures range in height to about 23 m. Undercutting through weathering has facilitated the formation of hundreds of shelters, and some of the towers feature horizontal walk-through caves at ground level. Some of these cave systems have three or more entrances. The largest of them is located in Auditorium Rock, the highest point of the range, peaking at 619 m above mean sea level. This rock tower forms the natural focus of the site complex, and it contains the most spacious of the caves and shelters.

Auditorium Cave, with its ‘Gothic vaults’ and soaring arches, has a temple-like ambience. This is attributable to both the sizes and layout of the passages. In plan view, the cave resembles a right-angled cross, the four branches of which are roughly aligned with the cardinal compass points (fig. 1). The ‘stem’ of this cross, the longer passage, points to the east, and it opens to the natural main entrance. Where it meets the much shorter, three other passages, a room of up to 16 m height has been formed. Here, precisely in the natural focus of this layout, is a large boulder resting on the remains of some earlier rock falls. With the cave floor being fairly level, the boulder is clearly visible from all four entrances. It thus resembles a naturally formed altar or pulpit.
The boulder’s side facing the cave’s eastern passage bears a flat, near-vertical panel that is positioned square to that passage. That distinctive panel is the most central and the most focal feature of the entire cave. As the cave itself may in turn be considered the central element of the Bhimbhetka complex, it would not be surprising if this distinctive spatial and topographical focus might have been experienced even by early people occupying this site.

In recognition of the boulder’s centrality, Indian archaeologists have named it the ‘Chief’s Rock’, or ‘King’s Rock’. There is no evidence of ritual use justifying such a name, but I have retained it in recognition of the pronounced spatial arrangement of the site’s features, and the apparently realistic possibility that its early occupants perceived this aspect. Despite its spatial focus, the vertical panel on Chief’s Rock bears only few remaining traces of human modification. Nevertheless, they are among the principal subjects of this paper, because of their outstanding importance to studies of very early palaeoart.

The lithic assemblage from the Bhimbhetka complex includes handaxes, cleavers, and small scrapers, along with a large number of cores and bipolar flakes. The predominant tool types are the Levallois and the direct method of flaking, which are typical of the Acheulian lithic tradition. These tool types are characterized by their high percentage of retouched implements and the use of large boulders as natural sources of raw material. The assemblage also includes a variety of other stone artifacts, such as pebbles, pebble tools, and small flakes.

The Acheulian stone tool industry at Bhimbhetka is dated to about 1.2 million years ago, based on the potassium-argon dating method. The assemblage includes a range of tool types, including handaxes, cleavers, and small scrapers. The assemblage is characterized by a high percentage of retouched implements and the use of large boulders as natural sources of raw material. The assemblage also includes a variety of other stone artifacts, such as pebbles, pebble tools, and small flakes.

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Archaeological background

Archaeological studies began at the Bhimbhetka complex only in the 1970s, especially with the work of V.S. Wakankar, S.K. Pandey and V.N. Misra. These and other scholars conducted excavations at several sites, beginning in December 1971. By 1975, excavations had been carried out in eleven sites of the Bhimbhetka main hill: A-28, 29, 30 and 33; C-12 and 16; F-14, 16, 22, 23 and 24. The most important of these are trench II in IIIF-24 (Auditorium Cave) by Wakankar, and trench I in IIIF-23 (the adjacent rock-shelter) by Misra. Both sites yielded fairly similar archaeological and sedimentary sequences, consisting of a thin Holocene overburden covering substantial series of Pleistocene facies. The dominating components are in both cases the Acheulian strata, accounting for 2.4 m of sediment in F-23, but only for less than one metre in F-24. Hence our more complete information about the Acheulian of Bhimbhetka comes not from Auditorium Cave itself, but from the adjacent shelter (IIIF-23, which I have called Misra’s Shelter), from which also the most comprehensive reports come [Misra, 1978]. Bhimbhetka has provided very important information about the Indian Acheulian, because until its excavation, nearly all such information had come from alluvial sites and surface collections. Such sites are numerous in many parts of the country and have been examined (and selectively collected from) since the 1860s, but until the work at Bhimbhetka, only one true Acheulian site had been excavated in India [Bose, 1940; Bose, Sen, 1948]. Misra’s painstaking work thus represents the first attempt of analysis through time of such material in India. His findings suggest a gradual development from the Acheulian to the Middle Palaeolithic, with a few handaxes and cleavers still occurring in the lowest 10–15 cm of the latter deposit [Misra, 1978, p. 71].

Wakankar [1975, p. 15] notes that an evolution from the earlier pebble tool tradition he perceives in Auditorium Cave to the overlying Acheulian is not evident at Bhimbhetka. Indeed, the two are separated by an occupation hiatus of 50–60 cm in his trench II.

It is therefore clear that Bhimbhetka has been an important key site in the context of Indian Palaeolithic research. Of relevance here is also the geographical proximity of the find site of the Narmada cranial fragment. Despite its massive torus this find is of an archaic Homo sapiens in my view, and whatever its true age is (which remains unknown), it would seem to fit somewhere into the chronological sequence of the Middle Palaeolithic in India.

Another indicator of age comes from the Jhalon and Baghor formations in the central Narmada and Son valleys, rich in mammalian faunal remains and stone tools. They contain a layer of Youngest Toba Ash, up to 3 m thick [Acharya, Basu, 1993], which has been dated at 74,000 ± 2000 years BP in Indonesia, based on argon and potassium-argon determinations [Chesner et al., 1991]. At the upper end of the time scale, carbon isotope dates as young as 31,980 ± 5715/– 3340 (Mula Dam, Maharashtra) and 33,700 ± 1830 years BP [Ratikarar, Madhya Pradesh] have been reported for Middle Palaeolithic horizons [Misra, 1977, p. 62].

Prospers for a comprehensive temporal framework are at least as bleak for the Lower Palaeolithic period, which is represented primarily by Acheulian industries in India. However, this dominance of Acheulian forms may well be an artefact of collecting activities that may have favoured the easily recognisable Acheulian types, notably well-made handaxes and cleavers. Several attempts to use the thorium-uranium 18290, 162938, Yodawadi and Nevasa [Raghavan et al., 1989; Mishra, 1992], placed the Acheulian beyond the method’s practical range (which ends at about 350–400 ka BP). But one of the molars from Tegghalli did yield such a date (of Box, 287,731 + 27,169/– 18,180 230Th/234U years BP), as did a molar from Sadab (of Elaphus, 290,405 + 20,999/– 18,186 years BP) [Szabo et al., 1990]. However, an Elaphus molar from the Acheulian of Teghalli is over 350 ka old.

While the Lower Acheulian remains largely undated, preliminary indications suggest a late Middle Pleistocene antiquity for the Final Acheulian. Thorium-uranium dates from three calcareous conglomerates containing Acheulian artefacts suggest ages in the order of 200 ka [Korisettab, 2002]. These results are from the sites Nevasa (Pravara Basin), Yodawadi (Krishna Basin) and Bori (Bhima Basin). The most recent date so far for an Indian Acheulian deposit is perhaps the uranium-series result from a conglomerate travertine in the Hunsgi valley [Karnataka], which seems to overlie a Late Acheulian deposit [Paddayya, 1991]. The travertine’s age of about 150 ka at Kaldevanahalli appears to confirm that the change from the Lower to the Middle Palaeolithic occurred between 200 and 150 ka ago. The EIP (Early Indian Petrology) Project has tackled the question of the Palaeolithic chronology with OSL dates from Daraki-Chattoon Auditorium Cave and Misra’s Shelter, the preliminary results of which would suggest that the Lower Palaeolithic ends only about 106 ka ago at Bhimbhetka [Bednarik et al., 2005]. This work is continuing, however, because some of the OSL dates are internally inconsistent.

In addition to these very sparse dates from the earliest periods of Indian history, there are several presumed ‘relative dates’, but these were always subject to a variety of qualifications. Early research emphasised the relation of artefacts to lateritic horizons (but cf. [Guzd, 1980]) and biostatigraphic evidence [de Terra and Paterson, 1939; Zeuner, 1950; Badam, 1973, 1979; Sankalia, 1974], which often resulted in doubtful attributions. Sahasrabudhe and Jagaraju [1990], for instance, showed that there were at least two episodes of laterisation evident in Maharashtra and that extensive fluvial reworking occurred. Attempts to overcome these limitations included the use of fluorine/phosphate ratios [Khisiragar, 1993; Khisiragar, Paddayya, 1988–1989; Khisiragar, Gogte, 1990], the utility of which was affected by issues of re-deposition of osteal materials [cf. Khisiragar, Badam, 1990; Badam, 1995]. Similarly, attempts to use weathering states of stone tools as a measure of the antiquity of lithics [e.g. Rajaguru, 1985; Mishra, 1982; 1994] are plagued by the significant taphonomic variables involved in weathering processes [cf. Bednarik, 1979]. The emergence of anomalous results and inconsistencies established in recent years illustrate a distinct need for a chronological framework based on a series of reliable numerical age estimations, especially from undisturbed Lower and Middle Palaeolithic occupation deposits. Moreover, I regard the lithic typology of the late Lower Palaeolithic and Middle Palaeolithic industries of India as largely unresolved, and believe that the strict application of the western European terminology is unsuitable. Local typologies need to be developed for Mode 2 and 3 industries, based not only on acheuloid attributes, but also on Levallois and Micoquian-like features. At present I regard India as lacking a reliable lithic typology for much of the Pleistocene.

Thus disagreement without the antiquity of the Early Acheulian [Pappu et al., 2011] and the Mode 1 industries in India, reflecting similar recent debates in southern Europe (consider the 1.57 Ma date from Lézignan-la-Cèbe, southern France [Crochet et al., 2009]). Based on the potassium-argon dating of volcanic ash in the Kuksi valley near Pune to 1.4 Ma ago [Misra, Rajaguru, 1994; Badam, Rajaguru, 1994] and the paleomagnetic measurements and direct 26Al/10Be dates from Attirampakkam
to an average of 1.51 Ma [Pappu et al., 2011], some favour that magnitude of age for the earliest phase of the Indian Acheulian. An age of well over 400 ka seems also assured by thorium-uranium dating [Misra and Rajaguru, 1994; Mishra, 1992]. Others, especially Acharyya and Basu [1993], reject such a great antiquity for the Early Acheulian in the subcontinent. Similarly, Chauhan [2009] cautions that the ESR date of c. 1.2 Ma for Early Acheulian finds at Iaspum [Paddayya et al., 2002] remains tentative. However, Chauhan and Patnaik [2008] and Patnaik et al. [2009] have shown that lithics at the Narmada site Dhanis, less than 3 km south of the hominin site Hathnora, occur in a major formation of the Matuyama Chron, presumably placing them in the Early Pleistocene.

By the time we arrive at the earliest phase of human presence in India, the available record fades almost into non-existence. There are tantalising glimpses of cobbles and flake tools, and Oldowan-like traditions from India and Pakistan (i.e. Mode 1 industries [Clark 1977; Foley and Lahr, 1997]), which so far have not received the attention they deserve. They consist of a few mentions of archaic cobbles tools, well below Acheulian evidence and separated from it by sterile sediments at the first site it was described stratigraphically [Wakankar, 1975]. These quartzite tools from Auditorium Cave at Bhimbetka are partially decomposed and have not yet been studied systematically. Since it is logical to expect human occupation evidence in India for at least two million years, it is to be expected that cobbled tools should predate the bifaces of the acheuloid traditions, and one would have assumed that these have attracted some attention. In reality, they have remained practically ignored. While it may be justified to argue that much of India presents sedimentary facies that are less than perfect for the preservation of osteal remains, which may explain the dearth of skeletal remains, this should not prevent the preservation of stone tools. Yet undeniably the first phase of human presence, perhaps the entire first half of human occupation of India, remains in effect archaeologically unexplored.

The Mode 1 assemblages of India, consisting of archaic chopping tools, cores and flake tools, are sometimes referred to as Soanian, which some researchers define as post-Acheulian. Most of these occurrences are surface finds (e.g. Sale, Chowke Nullah, Haddi, see [Guzder, 1980]; or Nangwalibra A, see [Bednarik et al., 1985]; or Pabbi Hills in Pakistan, see [Harcourt-Brown, 1980]), whereas that in IIIF-24, Auditorium Cave— a different site— certainly did, as did the excavation in Misra’s Shelter failed to extend below the Acheulian deposits [Bednarik et al., 1991]. In 1990 eleven petroglyphs were observed in the hominins bearing sediment at Hathnora has been suggested, without much tangible evidence, to be in the order of 200,000 years old. The only secure age information comes from a series of palaeomagnetic determinations, according to which the entire relevant sediment sequence at Hathnora is of the Brunhes normal chron, hence the human remains must be younger than 730 ka [Agrawal et al., 1988, 1989]. On the other hand, it is unlikely that they are under 150 ka old. Within this rather long interval, both tool typology and fauna point to the uppermostmost time span. Having examined the Narmada carvings I consider that its most likely age is in the order of 200 ka, because its fully modern cranial volume renders a greater age highly unlikely.

The petroglyphs in Auditorium Cave

In central India, no petroglyphs were reported until quite recently, and it appears that there had been no previous attempt to locate any [Bednarik et al., 1991]. In 1990 eleven petroglyphs were observed in Auditorium Cave, which V. S. Wakankar had previously considered to be rock gong markings. Two of the petroglyphs, a cupule and a meandering groove (fig. 2), had been excavated by Wakankar in an Acheulian occupation deposit directly covering them [Bednarik, 1993a, 1994a, 2001a, 2003b; Chakravarty and Bednarik, 1999, p. 58, 59], but were not mentioned by him. The overlying Middle Palaeolithic stratum is so solidly cemented by calcite deposition that the possibility of post-depositional disturbance can be ignored. However, it has been proposed that the remaining nine motifs (all cupules), although found above recent traditions, but not in the distinctive combinations of genuine Mode 1 assemblages (for instance the tiny pebble tools of Kalpi are quite unrelated to proper Mode 1 types [Tewari et al., 2002]). The need for a secure chronological reference frame for the earliest Indian history is not merely a local, south-Asian issue; it is an issue of global relevance. The presence of early hominins in eastern Asia, by 1.8 or 1.9 million years ago at the latest, renders it almost inevitable that they also occupied India before they could have colonised the eastern regions (i.e. if we make the reasonable assumption that hominins initially evolved in Africa). Their development of maritime navigation about a million years ago in Indonesia as well as the relative sophistication of stone tool traditions in Flores and Timor [Bednarik, 1995a, 1997, 1999a, 1999b; Bednarik, Kuckenburg, 1999; Morwood et al., 1999], demonstrating colonisation by seafaring [Bednarik, 1997, 1999a, 2003a], are of importance to questions of the cognitive and technological development of hominins. The proposition that very early palaeoart traditions developed in southern Asia adds further impetus to the idea that while Africa may have been the engine house driving initial physical human evolution, southern Asia was a hub of cognitive and technological evolution. But in comparison to the archaeological attention lavished on eastern Africa, the Levant and south-western Europe, the Pleistocene human history of India has been significantly neglected. Yet its potential in illuminating key issues of hominin development may well be unequalled anywhere in the world. The only two hominins fossil specimens of Asia found between the Levant and Java, the Narmada calvarium and clavicle, were both recovered at Hathnora [H. de Lumley, Sonakia, 1985; Sankhyan, 1990], about forty kilometres south of Bhimbetka, where Acheulian petroglyphs were first identified. The partially preserved cranium was initially described as H. erectus naurodesis [Sonakia, 1984, 1997; M.-A. de Lumley, Sonakia, 1985], but is now considered to be of an archaic Homo sapiens with pronounced eructoid features [Kennedy et al., 1991; Bednarik, 1997]. Its cranial capacity of 1200 to 1400 cubic centimetres is conspicuously high, especially considering that this is thought to be a female specimen. The adult clavicle, however, is clearly from a ‘pygmy’ individual, being under two thirds of the size of most modern human groups. It is of an individual of a body size similar to Homo floresiensis. Both specimens are now most probably made, yet both remain widely ignored. There is, however, no evidence to show that the two finds are of the same individual, or even of the same species or sub-species. They simply co-occurred in the Unit I Boulder Conglomerate of the Hathnora site [H. de Lumley, Sonakia, 1985]. The rich accompanying fauna implies a middle or late Middle Pleistocene age for the hominin finds. It comprises three Elephantidae, five Bovidae, a hippopotamus, a horse, a pig and a cervid. The equally rich stone tool assemblage from the same unit consists of Late Acheulian to Middle Palaeolithic tools. The stratum extends elsewhere along the central Narmada valley and is generally rich in Middle and Late Acheulian industries, featuring a large number of handaxes, cleavers and denticulates. The hominin-bearing sediment at Hathnora has been suggested, without much tangible evidence, to be in the order of 200,000 years old. The only secure age information comes from a series of palaeomagnetic determinations, according to which the entire relevant sediment sequence at Hathnora is of the Brunhes normal chron, hence the human remains must be younger than 730 ka [Agrawal et al., 1988, 1989]. On the other hand, it is unlikely that they are under 150 ka old. Within this rather long interval, both tool typology and fauna point to the uppermost time span. Having examined the Narmada carvings I consider that its most likely age is in the order of 200 ka, because its fully modern cranial volume renders a greater age highly unlikely.
the lowest-most part of which was covered by Acheulian sediments. Fig. 2. Cupule and meandering groove on boulder, the lowest-most part of which was covered by Acheulian occupation evidence, Trench II, Auditorium Cave, Bhimbetka.

Fig. 1. Plan of Auditorium Cave, Bhimbetka IIIF-24, and adjacent Misra’s Shelter, IIIF-23, south of Bhopal. C – Cupule panel on east side of Chief’s Rock; N, E, S, W – the four passages of Auditorium Cave; TR I and TR II – original excavations.

Fig. 3. Chief’s Rock, Auditorium Cave, eastern side, cupules can be seen near scale.

**Fig. 2**. Cupule and meandering groove on boulder, the lowest-most part of which was covered by Acheulian occupation evidence, Trench II, Auditorium Cave, Bhimbetka.

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**Fig. 3**. Chief’s Rock, Auditorium Cave, eastern side, cupules can be seen near scale.
cave (and in over 700 other sites at the Bhimbetka site complex [Misra, 1978]), especially high up on a wall a few metres south-east of Chief’s Rock. None of the paint traces on the Chief’s Rock art panel are superimposed over the petroglyphs.

All the petroglyphs on this panel are cupules (or cup marks; depressions made by pounding the rock with hammerstones). There are nine cupules present, of greatly varying depths. Direct percussion with a hand-held stone tool produced them. Cupules are one of the most ubiquitous features in world rock art, they are extremely numerous and they occur in all continents [Bednarik, 1993b, 2008]. In view of the large cupule observed in nearby trench II, covered by Acheulian deposit [Bednarik, 1993a], the nine cupules on Chief’s Rock are of very considerable importance, and the question of their age is crucial.

Fig. 4 shows an elevation view of the rock art panel on Chief’s Rock. In order to describe the cupules on it effectively it was necessary to number them for identification. They are numbered from left to right, except number 9 because it is of slightly doubtful status. There is no reasonable doubt about the remaining eight marks, they were clearly made by human hand.

Table 1 provides the physical dimensions of the cupules. We see from it that they are of greatly varying depths, ranging from 1.1 mm to 13.4 mm. In most of them, their vertical extent exceeds their horizontal dimension somewhat. The deepest point of all seems to be below the centre of each cupule, which is probably related to the production process: blows were administered from above rather than from below or sideways. This is a common characteristic of cupules and similar rock markings whenever they occur on vertical surfaces. The 1.8-m-wide rock platform in front of the Chief’s Rock art panel is likely to have been the floor the producers of the cupules were standing on. Most of the marks are between 1.5 m and 1.7 m above that platform, i.e. at ideal working height for an average-size adult man. Interestingly, if the entire block is rotated back into the position it was in before Chief’s Rock broke in two (which means raising the southern end), the prominent cupules 1, 2, 4 and 6 form an almost perfectly horizontal alignment. This might suggest that the cupules were produced before the boulder broke up, although it does not necessarily demonstrate that.

Cupules 3, 4, 5 and 6 bear minor recent impact damage, and faint traces of it are also discernible in Cupule 2. This damage was probably caused when people tested Wakankar’s suggestion that Chief’s Rock was used as a rock gong. Needless to say, this was irresponsible, and under no circumstances should that practice be repeated. The markings are not related to the use as a rock gong (lithophone), they are primarily cupules and thus a common form of rock art [Bednarik, 1993b].

Microscopic examination of the cupules shows the presence of various types of small-growth lith- chens, the dominant species being dark-grey to black. An orange-coloured type occurs only sporadically. The rock surface in and around the cupules is equally weathered, and there is no appreciable difference in surface structure evident under the microscope. The only weathering clearly visible on the upper part of the cupules is microerosion [Bednarik, 1992a]. Although the percussion origin of the cupules is beyond question, this weathering process has removed all traces of cleavage edges, crushing or crystal fracture, and no conchoidal surfaces have remained. Cupules Nos 9 and especially 2 are largely covered by tiny gnarled ridges of precipitate, possibly silicate, forming terrace-like arrangements visible only under magnification. These formations are darkly coloured and extensively corroded. Very thick speleothems (cave precipitates) occur in the middle part of the eastern passage, about 12 m from Chief’s Rock, where there is considerable seepage from the top of the rock tower.

The probable age of the Chief’s Rock cupules

The question of the age of these cupules is of significance to Indian rock art research. Their Pleistocene antiquity is geographically almost self-evident, and no rock art of that period had been demonstrated to exist at any other site in India until 1996. There is no archaeological evidence available that would indicate the age of the petroglyphs on Chief’s Rock. The presence of two Lower Palaeolithic petroglyphs just 6 m away, found below undisturbed archaeological layers, may be suggestive, particularly as one of them is also a cupule [Bednarik, 1993a, 2001a]. However, mere co-occurrence at the same site does not provide conclusive evidence that the cupules on Chief’s Rock itself also have to be of Acheulian age.

The only independent means of testing this proposition is by direct geomorphological evidence from the cupules themselves, and from features they are related to. So far, we have seen that the degree of mi-
cro erosion in all the cupules is such that a Holocene age is totally out of the question. Microerosion analy-
sis [Bednarik, 1992a] has been attempted to shed more light on the question of their antiquity. Particularly
detailed information is available from cupule No. 5, which is located much lower than the main group
(fg. 5). It occurs on a surface that is much more recent than the cupule, formed by cutaneous exfoliation
around it. In other words, only the deeper part of the cupule is preserved. This part itself has since been
subjected to a second cycle of the exfoliation process. Immediately to the left of the cupule, just 15 mm
from it, begins a large exfoliation scar where a 10–20 mm lamina has become dislodged already long ago.
The rock around the cupule is loose, and once it does become dislodged, only the very base of the cupule
will remain behind. The remnant cupule will then be less than one millimetre deep.
The thin bridge between cupule 5 and the scar to its left, 15 mm wide, is of considerable importance
in the relative dating of the cupules. As depicted in fg. 5, the currently exfoliating rock lamina has a
wafered appearance in section, and while one might argue that this weathering process could have com-
enced before lamina 1 became detached, it is obvious that the edge of lamina 2 along the exfoliation
scar must postdate the detachment of lamina 2 in that area. Hence the wafering along this margin must
also postdate that event. Fortunately I detected several thin slivers of stone among these wafer-like lami-
nae that protruded far enough to examine them under the binocular microscope. Their edges were well-
rounded and there can be no doubt that this would have required some tens of millennia at least to develop
to the stage observed, in this kind of environment of minimal exposure to rainwater.
It can be certain that the cupule was originally made on perfectly sound rock, because if the rock had
already begun to deteriorate, it would have fractured and shattered by the percussion blows. It follows
from this that we can construct a 'minimum' relative age for the cupule, consisting of successive periods
or processes, none of which could have overlapped with the others:
1. The time span between the execution of the cupule and the commencement of the exfoliation of
the first lamina. Its duration is unknown.
2. The duration of the laminar exfoliation processes that led to the detachment of the first lamina.
Depending on moisture availability, this may be from a few millennia to several tens of millennia.
3. The duration of the processes leading to the detachment of lamina 2 immediately to the left of
the cupule. A similar order of time as in item 2 is involved.
4. The time span required to cause the wafering of the margin of the remaining lamina 2, e. g. just left
of cupule 5. This would require quite a number of millennia to develop to the present state.
5. The time span required for fracture edges on individual wafer laminae to attain the degree of
rounding now evident, which we have noted would involve some tens of millennia.
It follows from this that the actual age of cupule No. 5 would have to be at least in the order of many
tens of millennia, and that it is very likely to be in excess of 100,000 years old. Certainly, it is impos-
sible to accommodate the cupule in the Holocene, on geomorphological grounds alone. Similarly, it is
very unlikely to be from the latest part of the Pleistocene, i. e. the Upper Palaeolithic period. Moreover,
Wakankar has observed an absence of Upper Palaeolithic occupation deposit in Auditorium Cave, finding
the Middle Palaeolithic deposit immediately under the Mesolithic. The absence of an Upper Palaeolithic
occupation deposit does not prove that the cupules could not be of that period (Upper Palaeolithic evi-
dence has been found elsewhere at Bhimbetka), but it does coincide with the apparently greater age of
the cupules on geomorphological grounds.
Another line of argument concerns the separation of Chief’s Rock into two boulders. If this event
does postdate the execution of the cupules, as suggested above, it would provide a minimum age for them.
Unfortunately, dark coatings of precipitates conceal the fracture surfaces on both halves. The macro-
warves along the upper edges of both fractures are well developed, measuring up to several millimetres,
but the fracture surfaces weathered along the sides. This does not provide a reliable indicator of age. Besides,
such reasoning would rely on the purported relationship between the splitting of the rock and the
event of cupule manufacture, a relationship that remains unseen.
On the basis of this geomorphological analysis and reasoning, the cupules are most probably of either
Middle Palaeolithic or Lower Palaeolithic age. More cannot be said with any degree of certainty. Micro-
erosion study of the cupules has been useful in investigating the possible durations of specific phases of
gemorphological history. However, this method cannot provide a reliable estimate of age, due to three
difficulties: a) the surface of the cupules is too much eroded to permit the identification of fracture edges
or their micro-wanes; this in itself renders an age of over 100,000 years highly likely; b) the past ex-
posure to moisture, while certainly much less than in the open, is unknown to us; c) we have no microero-
sion calibration curves for the region in question.

The only other strand of evidence is the presence of one nearby cupule found below Acheulian
deposits. We know with certainty that it was not visible at the time the Middle Palaeolithic commenced,
having become well covered by sediment at that time. It cannot possibly have been visible to the Middle
Palaeolithic occupants, so it cannot have inspired them to copy it. It would then be a complete coincide-
cence if the Middle Palaeolithic residents had used the same method of creating rock marks. This is
of course possible, and we know that Middle Palaeolithic people (or people of Mode 3 technology) of Europe
and Australia certainly created cupules [Bednarik, 1993b]. However, it would seem to be an odd coinci-
dence if two peoples, one of the Middle and one of the Lower Palaeolithic, had created similar rock art
at precisely the same location, independent of each other. Logic therefore suggests that it is much more
likely that the cupules on Chief’s Rock art are either of the achenoid or the chopping tool tradition. In
short, it is suggested here that they should be tentatively considered to be Lower Palaeolithic, and that this
proposition be subjected to refutation attempts in the future. Excavations in future years or centuries are
expected to further clarify the issue, because it seems very likely that more petroglyphs will be uncovered
in the vicinity of Chief’s Rock once a greater part of Auditorium Cave is excavated.

Discussion

Irrespective of their antiquity, the nine cupules on Chief’s Rock are an important feature of this
site of world significance. Auditorium Cave contains not only the first identified Pleistocene rock art of
India, but also one of the oldest known rock art occurrences in the world. The two Lower Palaeolithic
petroglyphs [Bednarik, 1993a] in trench II have been re-buried by the Archaeological Survey of India for
protection and preservation when the trench was greatly enlarged southwards and eastwards in 1991, and
a substantial masonry wall with steel railing was erected. The cupules on Chief’s Rock, however, remain
fully exposed to damage by site visitors. As noted above, under no circumstances must they be damaged
further, and I have suggested that all stones of sizes suitable for hammering be removed from the whole
of the cave floor. Prompted by the world’s first discovery of Lower Palaeolithic rock art I have also initi-
nated the nomination of Bhimbetka for World Heritage listing [Bednarik, 1994b]. Strangely, the eventual
nomination documents [Ray and Ramathanan, 2002a, 2002b] make no mention at all of the petroglyphs of
Bhimbetka.

However, as early as 1996, new evidence had been tendered confirming my proposition of age, with the
discovery of a second quartzite cave with extremely early cupules, apparently of Lower Palaeolithic
antiquity [Kumar, 1996]. This prompted the establishment of the EIP (Early Indian Petroglyphs) Project,
the purpose of which is to have an international commission examine my claims and those of G. Kumar
[Bednarik, 2001b]. The subsequent excavation of Daraki-Chattan has yielded substantial and conclu-
sive evidence that the 540 cupules and three linear grooves in that cave were made well before the Late
Acheulian occupation of the site, and are indisputably related to a Lower Palaeolithic habitation horizon
dominated by chopping tools, located just above the site’s bedrock. Twenty-six of the cupules were found
in and below the Acheulian layers, having exfoliated from the cave walls at the entrance, and continued
all the way down to the oldest human occupation of this ancient site. Even the hammerstones with which
some of the cupules had been made were found with the chopping tools of the lowermost sediment deposit.
Moreover, there are several further early cupule sites now known in Madhya Pradesh and Rajasthan,
potential candidates for Palaeolithic antiquity. The most promising among them are Bajanibhat [Kumar,
Sharma, 1995] and Pula Bata [Bednarik et al., 2005]. The comprehensive evidence from Daraki-Chattan has shown beyond reasonable doubt that Lower
Palaeolithic rock art, comprising mostly cupules and occasional linear grooves, does exist in central In-
dia, that it is attributable to a chopping tool industry found well below an achenoid tradition, and that my
initially audacious claim for Auditorium Cave is no longer controversial. The empirical evidence at the
Bhimbera site is, admittedly, much weaker than it is at Daraki-Chattan, but if Lower Palaeolithic petro-
glyphs occur at one site of Madhya Pradesh, it should not surprise us that there are others. On the contrary, they are to be expected to exist. Why should only one site have survived of a tradition that persisted no doubt for tens of millennia? It follows that my previous evidence from Bhimbetka has been reinforced and my reasoning has been vindicated.

Nor should it surprise us that the earliest rock art found in India consists largely of cupules, or that rock art was produced in the Lower Palaeolithic. Both factors are entirely consistent with the evidence available to us. In the first instance, the earliest known rock art from all continents consists either of cupules, or of cupules and linear grooves. The oldest rock art we know of from Europe are the eighteen cupules found on the underside of a limestone slab placed over the burial of a Neanderthal child in the caves La Ferrassie, France. This interment, grave No. 6, is part of a Middle Palaeolithic cemetery [Peyrony, 1934, p. 34]. Africa has yielded Lower Palaeolithic rock art, including at two of the cupule sites recently found in the southern Kalahari Desert, Nchwaneng and Potholes Hoek [Beaumont, Bednarik, 2012a, 2012b, 2013a; Bednarik, Beaumont, 2012]. These cupules have been attributed to the interglacial 410,000 years ago [Beaumont, Bednarik, 2013]. In Australia it is generally agreed that the continent’s oldest surviving rock art comprises mostly cupules, Pleistocene examples of which occur widely and in huge numbers [Bednarik, 1993b]. It is thought that this tradition, occurring in Australia both in deep limestone caves and on exposed boulders of granite and other rocks, was introduced from southern Asia at least 60,000 years ago [Bednarik, 1997]. In the Americas, no rock art of such antiquity is anticipated, but interestingly a similar pattern can be observed among the early rock art traditions. In North America, the ‘pit-and-groove’ petroglyphs (cupules and linear marks) are generally regarded as the earliest rock art form [Heizer, Baumhoff, 1962], and in South America, rock art also commences with cupules and linear grooves [Civelli, Fernández, 1996; Bednarik, 2000]. In short, India is merely part of a global, universal pattern, which has much less to do with the kind of rock art created first, but much more with the kind of rock art that was taphonomically the most resistant [Bednarik, 1994c] and therefore the only form capable of surviving immense time spans.

The second point to consider is this: is there any fundamental empirical objection to the possibility of finding rock art of the Lower Palaeolithic period? The answer is that the occurrence of such traditions is to be expected. We have for many years known that the people of the Lower Palaeolithic engraved linear patterns on bone, ivory and portable stone [Bednarik, 1992b, 1995b; see Bednarik, 2003b and 2017 for comprehensive reviews], so what conceivable reason could they have had not to engrave on rock as well? We have known for over 150 years that they used beads, which are conceptually more complex than the conventional, stone-in-limestone rock markings [Bednarik, 2005]. Red pigment has certainly been used by Lower Palaeolithic hominins up to 1.3 million years ago [Bednarik, 2017], and we cannot simply assume that they coloured surfaces with it, be they surfaces of rocks, artefacts or their bodies. The proposition that hominins of some hundreds of thousands of years ago could not have made simple rock markings, when we know that they used beads and pendants, having already around a million years ago developed the capability of building seagoing water craft large enough to carry colonising parties, is preposterous that hominins of some hundreds of thousands of years ago could not have made simple rock markings, which have much less to do with the kind of rock art created first, but much more with the kind of rock art that was taphonomically the most resistant [Bednarik, 1994c] and therefore the only form capable of surviving immense time spans.

Bibliography


Studying rock art sites is inextricably connected to the methods of documentation, which are the basis for the interpretation of the imagery and at the same time it enables us to avoid the irretrievable loss of the sites. Modern digital methods have greater accuracy and allow us to achieve the effect of using a microscope in the absence of the need for long field trips.

Keywords: rock art, documentation, petroglyph, 3D modeling, photogrammetry, laser scanning

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TO THE PROBLEM OF USE OF SOME NEW METHODS FOR DOCUMENTING ROCK ART

Исследование памятников наскального искусства неразрывно связано со способами их документирования, которые являются основой для интерпретации изображенного и позволяют избежать безвозвратной утраты памятника.现代 цифровые методы имеют большую точность и позволяют достичь эффекта использования микроскопа при отсутствии необходимости длительных полевых выездов.

Ключевые слова: наскальное искусство, документирование, петроглифы, 3D-моделирование, фотограмметрия, лазерное сканирование