



## BRIEF REPORTS

### *A new calibration coefficient for microerosion analysis secured in southeast China*

By JIN ANNI and CHAO GE

Microerosion analysis, known as a specialised dating method for petroglyphs based on field microscopy, was proposed by Robert G. Bednarik in the 1980s and has been applied to a lot of rock art-related scientific activities in various countries around the world (e.g. Bednarik 1992, 1993, 1995, 2001, 2002, 2019; Bednarik and Khan 2005; Kumar et al. 2019; Santos Junior et al. 2018; Tang et al. 2017, 2018; Jin et al. 2016; Jin and Chao 2019, 2020, 2021). Its effectiveness and accuracy used to highly depend on local calibration curves secured from dated inscriptions which in many cases can hardly be found. Such a contradiction between the theoretical precondition and reality hindered the method's broader utilisation for decades until the Universal Calibration Curve was introduced (Beaumont and Bednarik 2015; Bednarik 2019), making dating feasible even without local calibration data. However, the advent of the UCC also brought a long-term task of its verification and adjustment to the analysts. In 2019, its effectiveness was preliminarily proven in the research of the cupule sites and standing stones at Lianyungang City, east China (Jin and Chao 2020). This paper reports a case in southeast China about a recently secured coefficient of quartz for calibration

matching the UCC, and its first use in dating a local historic building is also reported.

On the southeast margin of mainland China lies the province of Fujian. More than 80% of Fujian's territory consists of mountains and valleys, while the rest are some narrow coastal plains along the shoreline of the East China Sea. This has thus fostered a cultural dualism between a fishing tradition along the eastern seashore and a mixed economy of agriculture, hunting and gathering in the western hilly land for thousands of years. In the mountainous area of the province exist many traditional earth architectures (most of them are still in use) of a particular type called '*tulou*', which are commonly round or rectangular, giant castle-like defensive houses built by the *Hakka* people<sup>1</sup>. The origin of *tulou* has been a controversial issue for decades. Some researchers majoring in local history and family genealogies claimed that the construction of such buildings began in the 8th century CE (the late Tang or early Song dynasty) (Xie 2005; Lin 2006: 26; Hu 2006: 6; Chen 2009; Mao 2018), while some other viewpoints based on field surveys and radiocarbon dating suggested that the appearance of *tulou* to shelter people from the attacks of the *Wokou* pirates<sup>2</sup> was not earlier

1 *Hakka* means 'guest families' in Chinese. It is a Han Chinese ethnic subgroup living in most of the southern provinces of China, speaking an ancient dialect of the Chinese language, and whose ancestors moved from the area of the Yellow River over one thousand years ago.

2 *Wokou* refers to the pirates who raided the coastlines of China and Korea from the 13th to the 16th century.

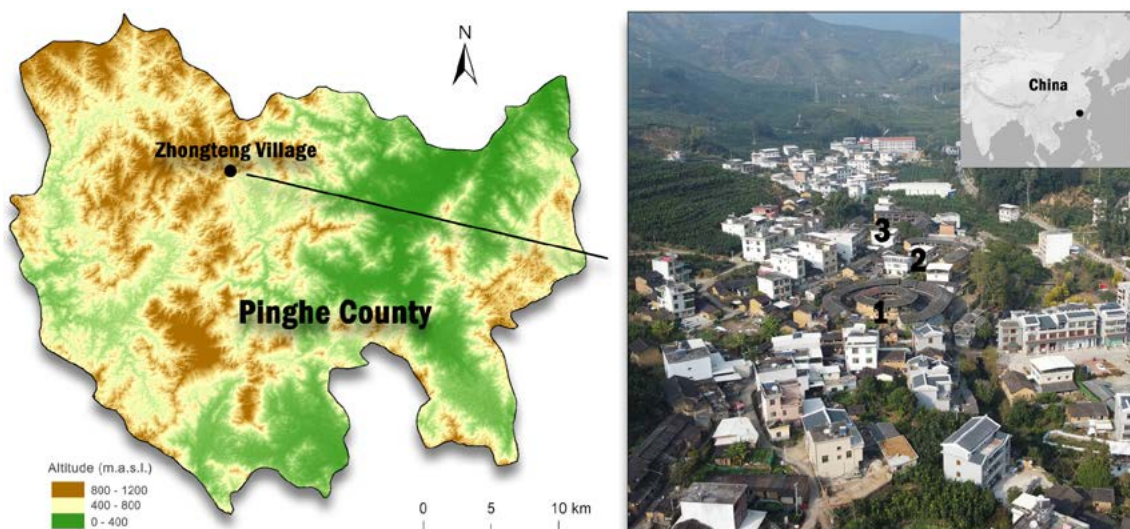
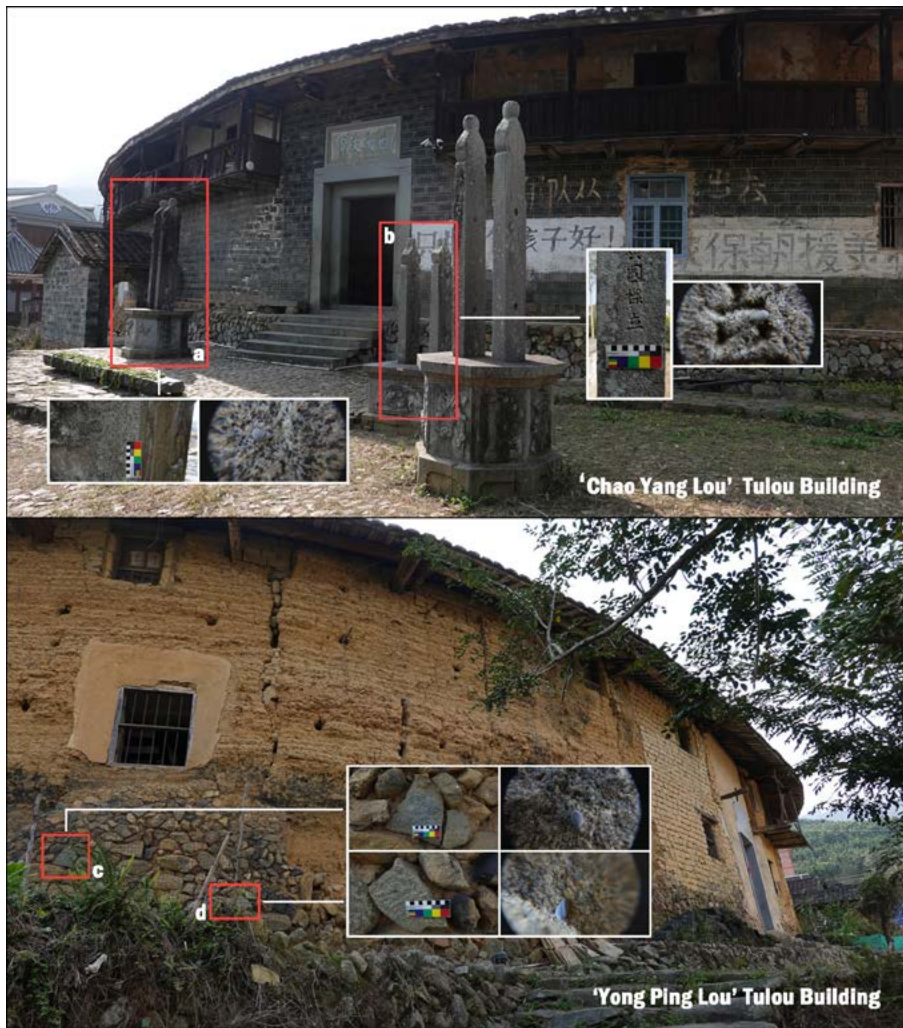


Figure 1. (Left) Location of Zhongteng village; and (right) aerial view of the studied *tulou* buildings in the village (1 - Chao Yang Lou, 2 - Yong Ping Lou, 3 - Yu Qing Lou), photographed by a UAV.



**Figure 2.** The granite flagpole pedestals in front of the Chao Yang Lou building (the upper half, a & b); and the rock blocks in the foundation of the Yong Ping Lou (the lower half, c & d), analysed by field microscopy.

than the mid-Ming dynasty, i.e. the 16th century CE (Zeng 2006: 154; Huang and Mu 2012: 139; Cai 2020).

In January 2022, the authors visited a *tulou* village called Zhongteng, which is located in a small valley among mountains about 400–500 m a.s.l., 26 km west of Pinghe City, near Zhangzhou City, Fujian Province (Fig. 1). Over 96% of the villagers are of the Huang's clan with the same ancestor who first moved to the place in 1458 CE, as recorded in their family history. Three *tulou* buildings stand in the centre of the village which, from north to south, are the buildings of Yu Qing Lou, Yong Ping Lou and Chao Yang Lou<sup>3</sup>. The building of Chao Yang Lou is the best-preserved and has the most complete records of construction and preservation. It was built by one of the male descendants of the Huang family's 16th generation, Huang Guoliang (1756–1795), who lived during the governing period of the emperor Qianlong (1711–1799), the sixth ruler of the Qing dynasty. According to Zhang

<sup>3</sup> In Chinese, 'Yong Ping', 'Chao Yang' and 'Yu Qing' mean 'eternal peace', 'rising sun' and 'inherited happiness'.

Zhou Fu Zhi, the official urban history during the last Chinese empire, Guoliang was granted the honorary title of 'Bangyan' by the emperor. Three granite pedestals of flagpoles bearing dated inscriptions were also built in 1777 and 1781 CE (the years *Dingyou* and *Xinchou*<sup>4</sup> of the Qianlong period) outside the entrance of the building, as awards for his success in the provincial and court exams<sup>5</sup>. The authors observed two micro-wanes of quartz at 90° with a fixed power monocular microscope of 100× (see Fig. 2). One was in the groove of the last character 'li' (means 'set' in Chinese) of the inscription on the pedestal of 1777, yielding a length of 50 μm and widths of 3, 4, 5, 4, 5, 5, 5 = 31 / 7 = 4.43 μm. The other one was on the edge of a relief on the pedestal of 1781, yielding a length of 100 μm and widths of 5, 5, 5, 4, 4, 4,

<sup>4</sup> *Dingyou* and *Xinchou* are the thirty-fourth and thirty-eighth terms of the Chinese sexagenary cycle, also known as the Stems-and-Branches or *Ganzhi* calendar. This calendric system is a cycle of sixty terms, each corresponding to one year, thus a total of sixty years for one cycle, historically used for recording time in China and the rest of the east

Asian cultural sphere.

<sup>5</sup> The imperial examination or *Keju* was a civil-service examination system in Imperial China, administered to select candidates for the state bureaucracy. The concept of choosing bureaucrats by merit rather than by birth started early in Chinese history, but using written examinations as a selection tool began in earnest during the Sui (581–618 CE) and Tang (618–907 CE) dynasties. The system became dominant during the Song dynasty (960–1279 CE) and lasted almost a millennium until its abolition in the late Qing dynasty (1636–1912 CE) reforms in 1905. Generally, the system consisted of four levels of exams which were *Yuanshi* (college exam), *Xiangshi* (provincial exam), *Huishhi* (national exam) and *Dianshi* (court exam), and the students or participants who passed the exams were called *Xiucan* (college level), *Juren* (provincial level), *Gongshi* (national level) and *Jinshi* (court level). There were also specific titles for the top-ranked examinees, such as *Anshou* (the 1st place in the college exam), *Jieyuan* (the 1st place in the provincial exam), *Huiyuan* (the 1st place in the national exam), *Zhuangyuan* (the 1st place in the court exam), *Bangyan* (the 2nd place in the court exam) and *Tanhua* (the 3rd place in the court exam). Huang Guoliang's title 'Bangyan' bestowed by the emperor thus indicates that he ranked second in the ultimate court exam.

3, 4, 5 = 39 / 9 = 4.33  $\mu\text{m}$ . The former provides a coefficient of 18.1  $\mu\text{m}/\text{ka}$ , and the latter offers 18.0  $\mu\text{m}/\text{ka}$ . According to the meteorological records, the annual precipitation in Zhangzhou varies from 1100 to 1800 mm, and the average value in the recent fifty years in Pinghe County is 1734.5 mm (Yang et al. 2018), which equals 18.2  $\mu\text{m}/\text{ka}$  on the UCC, closely approximating the two coefficients secured from the granite pedestals.

The authors then visited the building Yong Ping Lou, about 50 m north of Chao Yang Lou. This architecture with the earth-made upper structure and the foundation consisting of crushed granite blocks seems to be the most primitive and has been partially reconstructed several times (see Fig. 2), yet no one knows when it was built. Some locals believe it was created during the Southern Song dynasty from the 12th to 13th century CE; however, there is no evidence supporting the guess. On the fracture planes of two rock blocks forming the building's foundation, two more micro-wanes of quartz at 90° were successfully located. The first one yielded the length of 70  $\mu\text{m}$  and the widths of 13, 13, 12, 11, 10, 10, 10, 9, 9, 9 = 106 / 10 = 10.6  $\mu\text{m}$ , and the second one yielded the length of 50  $\mu\text{m}$  and the widths of 8, 10, 10, 11, 12, 13, 13, 12 = 89 / 8 = 11.13  $\mu\text{m}$ . After being calibrated by the above-mentioned new coefficient of 18  $\mu\text{m}/\text{ka}$ , two age estimates of E590 +130 / -90 and E620 +100 / -180 years BP ('BP' refers to 'before 2022') have been provided, which indicate that the construction of Yong Ping Lou possibly occurred within the period between the 2nd and the 5th emperors' reign of the Ming dynasty. This result strongly supports the theory of the mid-Ming origin of *tulou* buildings and even slightly antedated it to the early Ming dynasty.

In this research, a new calibration coefficient of quartz for microerosion analysis has been secured and soon used in dating a nearby historic building, contributing new evidence to the debate about the origin of *tulou* architectures. Methodologically, the case represents a more adequate test of the validity of the UCC. However, the scientific potential of microerosion analysis to extensively serve various academic fields is not limited to rock art research but has been long underestimated. The method is not to be regarded as serving only the estimation of petroglyph ages but also as a necessary tool for archaeologists, antiquity connoisseurs, art and architectural historians.

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RAR 40-1408

## *Anbangbang, Two Leg Rock and Dendrobium affine: Aboriginal painting on two rock surfaces in Arnhem Land*

By MICHAEL EASTHAM

Speculation about the relative durability of the various Aboriginal methods of making pigment adhere to a support when making a drawing or painting has continued for a long time (Spencer 1914: 407–440; Chaloupka 1993: 83–86). Josie Gumbuwa Maralngurra, talking to Sally May and others in 2017 about work carried out by Nayombolmi assisted by Djimongurr at Anbangbang in the Kakadu National Park, northern Australia, said that he mixed *djalamardi*, the pseudo-bulb sap of the orchid *Dendrobium affine* with his paint (May et al. 2019: 205). In 2019, in conversation with the same group of anthropologists, three generations of matrilineal descendants of Billy Miargu agreed that he also used *djalamardi* when painting at a site to the northeast of Anbangbang in 1972 (Goldhahn et al. 2021). The assumption made in both accounts is that *djalamardi* was used to improve adhesion of the pigment to the support and is taken to refute George Chaloupka's concise account of the use of organic binders in Aboriginal painting (1993: 85).

*Dendrobium affine* is not a common plant in Britain, so I have been unable to test the sap. However, I expect that it is like the sap of other Australian *Dendrobium* orchids, such as *Dendrobium bigibbum* and *Dendrobium canaliculatum*, that are hybridised and marketed extensively as house plants in Europe. In Australia, they are epiphytes that derive very little nutrition from their host plant. *Dendrobium canaliculatum* is not only referred to in the literature as the paperbark orchid but is epiphytic on the *Melaleuca argentea* and *Melaleuca cajaputi*, paperbark trees said to host *Dendrobium affine* (Brock 2001: 250–252; May et al. 2019; Waddy 1988). The sap of these epiphytic dendrobiums

is viscous in dry conditions, but it absorbs moisture and becomes very fluid as the humidity of the air increases. The elongated pseudo bulbs demonstrated by Stephanie Djandjul in the photograph taken by Paul Taçon function as aerial roots (May et al. 2019: Fig 10). They absorb moisture from the air (Rittershausen and Rittershausen 2006: 40). Using the sap of the orchid *Dendrobium affine* as a pigment adhesive would seem counterproductive as the pigment would wash away when it rains. Only in body painting is easy removal of patches of colour an advantage.

During the 1963/1964 wet season, Nayombolmi was working as *djungkay* at Anbangbang and was assisted by Josie Gumbuwa's father Djimongurr, who followed him as *djungkay* in 1967. As Sally May and her co-authors make clear, a *djungkay* is a Gundjeibmi/Kundjeyhmi name for a man who has been selected to look after a politically and socially significant painting to an Aboriginal language group. A *djungkay* combines the roles of curator, restorer and exponent of the information content of the painting (see May et al. 2019: 210). The names of four 20th-century Anbangbang *djungkay* are known: Barkal, Nayombolmi, Djimongurr and Djorlom (Attenborough 1963 and 2003; Stewart 1969; Haskovec and Sullivan 1989; Chaloupka 1993). According to Laurie Nelson, an Aboriginal employee of the Kakadu National Park and a fine draftsman with whom I spent some time in 2003, Djorlom worked in the early 1970s on the last work to be painted or repainted at Anbangbang. It is the depiction called Nambulwindjbulwindj, the first depiction one sees when approaching the site from the car park.

Andrea Jalandoni's 2017 photograph on the cover and page 200 of May et al. (2019), Eric Brandl's 1968 photograph (op. cit. Fig. 4 and David Attenborough's two 1962 photographs of the same rock wall area (only the right-hand one of which is reproduced in the article by Sally May and colleagues; Fig. 3), when compared, shows the changes. The 1963/1964 additions have disappeared but not the earlier 20th-century *delek* white clay marks. In the row of human depictions that used to comprise one depiction of a man and seven depictions of women, the central female depiction was scrubbed out in 1963/64 and replaced in a different position. A woman and a depiction of a recumbent boy were added to the left-hand group without disturbing the positions of the man and two women. A man was inserted into the group of four women in the right-hand group involving considerable scrubbing out and repainting of the group. It is this group of which very little evidence remains.

In 1963 Nayombolmi, as the Anbangbang *djungkay*, was asked to make some of the depictions more explicit. He was asked to modify the images instead of merely repairing them as he and other men in the same role before him had done for many years. With Djimongurr assisting, he set about it in the wet of 1963–1964, as is well known (Chaloupka 1963: 238–241; May et al. 2019; Goldhahn et al. 2021, 2022).

Consequently, after 1964 there were paintings at Anbangbang whose validity as information had not been tested by time. They are the paintings for which *Dendrobium* additive was obtained from the orchids growing on the paperbark trees, *Melaleuca argentea* and *Melaleuca cajuputi*, growing beside the nearby billabong and creek (Brock 2001: 250–252).

The use of a *Dendrobium* sap that is re-soluble by water when dry rather than an adhesive sap used for bark painting is as explicable for the small Two Leg Rock painting as it is for the large and complex painting at Anbangbang. *Acacia difcilis* sap hardens irreversibly and is usually used as an adhesive, a binder and fixative when painting on wooden surfaces: 'bark' paintings, shields, didgeridoos and the like. In this function, it is replaced by commercially produced polyvinyl chloride emulsion by painters selling 'bark' paintings through Injalak Arts, Gunbalanya, north of the East Alligator River from Anbangbang. *Acacia difcilis* sap appears to be like polyvinyl chloride, a resinous substance that is more or less insoluble in water but can be combined with it as a boundary emulsion. When the water evaporates from the emulsion, the polymer hardens almost irreversibly, and it builds up a paint film on an impermeable surface that is as strong as when the evaporite is polymerised linseed oil, left by readily soluble volatile oils such as turpentine.

For penetration into a porous rock surface, the pigment particles have to be suspended in an aqueous suspension. At both Anbangbang and Two Leg Rock, particles of pigment painted onto the rock are retained by the sandstone of the Kambolgie formation in much the same way as lime plaster retains pigment particles in Italian Medieval frescoes. The various shades of red obtained by ferric and ferrous iron particles are retained best, but they must have been ground very fine into an aqueous medium, usually just water. George Chaloupka's photograph of Billy Miargu and his wife Daphnie Baljur with their youngest daughter on his hip on the eastern side of Two Leg Rock shows that the older depictions of a macropod are absorbed into the rock. However, the *delek* painting, the white painting, is an impasto painted like Italian secco paintings and painted with a medium that inhibits pigment penetration into the rock (Goldhahn et al. 2021: 60, Fig. 1).

On the 2nd June 2019, the daughters of Billy Miargu and his wife Daphnie Baljur; Julie Blawgur and Linda Biyalwanga, their daughters, and Linda's granddaughter visited Two Leg Rock. They told Joakim Goldhahn, who accompanied them, that in 1972 their father painted the white macropod holding the stick on the rock's surface. It was partially superimposed on at least two earlier superimpositions, in a ferric red ochre, of a macropod, presumably either the agile wallaby *Macropus agilis* or the antilopine wallaroo, *Macropus antilopinus*, from the proportion of the body to the head. When I went there in August 2003, it was apparent that the red ochre marks deeply stained the rock's silica crystal structure, but there was no trace

of a white macropod with a stick on the rock that I could see.

Christopher Chippindale showed me the way to Two Leg Rock. Standing beside it, we discussed the timing of the superimposition on the red ochre macropod. We thought it had been partially over-painted with the aggressive white macropod image as a protest against the proposed lease of the land to the southeast of the col for uranium ore extraction. The boundary fence of the Koongarra Mineral Lease beyond which we were not permitted to pass was little more than a hundred metres distant from the painted rock. He told me he thought the white macropod had been removed because George Chaloupka and Robert Edwards objected to its crudity. He thought they had acted in the belief that it had been painted by someone who was not only incompetent but also not entitled to paint at the site and had had it washed off. I did not ask how Chippindale had acquired the information but assumed it came from George Chaloupka.

Interpreting the lost white macropod as the work of an irresponsible and angry lad did not seem an unreasonable explanation for its disappearance at the time. However, I did not know then that Paul Taçon had seen the remains of the outline in 1985, at least eleven years after George Chaloupka and Robert Edwards had supposedly acted (Goldhahn et al. 2021: 61, refers to Taçon's unpublished PhD statement). Billy Miargu was already experienced in painting on bark and proficient in selling his paintings to dealers. He chose not to use the bark painting techniques he was already familiar with when he painted on Two Leg Rock, his only known painting on rock.

I conclude that *djalamardi*, *Dendrodium* sap, was used as a medium at Anbangbang and Two Leg Rock with the expectation and intention that the paint would not be permanent. Miargu used the water-soluble binder because the image he painted relates to the Wubarr ceremony and consequently claimed the place for the exclusive use of initiated Aboriginals (Spencer 1914: 133–144). It was a temporary demand. The older red ochre drawings that remain assert the preferential use of the place by a patrilineation, who his matrilineal kin are, and is a constant expectation. Similarly, Nayombolmi at Anbangbang replaced a conventional representation of the fundamental relationships of Aboriginal matrilineal cousin marriage with a simpler temporary version for tourists, European settlers and the Australian government.

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RAR 40-1409

## A new look at the rock art on the island of Gökçeada, northeast Aegean

By BURÇIN ERDOĞU, NEJAT YÜCEL, ERKAN GÜRÇAL, KEREM DEMİR and NAZLI ILGIN IZLIER

### Introduction

The island of Gökçeada features a unique rock art location in the Aegean. The rock paintings are made with red ochre and include 'human' depictions, geometric designs and abstracts. Some depictions are similar to the Latmos rock art of western Anatolia, thought to be of the 6th and 5th Millennium BCE, while others have no analogues. The rock paintings near the Village of Eşelek, on the Island of Gökçeada (Imbros), northeast Aegean, were first discovered by E. and I. Andreou more than a decade ago (Andreou and Andreou 2017). Some anthropomorphs, geometric designs

and many other indistinct forms of paintings were reported on the walls of a large rock. In the summer of 2022, the site was revisited by the authors to document and study the rock art in detail, and new previously unrecorded motifs were also discovered.

The rock paintings are located on a large block of rock on the western face of the hill called Çadır (Harkovo in Greek), north of the village of Eşelek (Fig. 1). There is a round, niche-shaped recess on the middle of the rock boulder. The paintings are located on the broken and angular rock surfaces next to this recess (Fig. 2). All rock paintings are made from a red pigment, presumably derived from haematite. The rock paintings are difficult to notice because of a thin layer of iron oxide formed on the rock surface. The paint was applied with the use of a brush. There is only a single panel with thick lines indicative of having been painted with fingers rather than brushes. This suggests that the images on the rock walls might have been created at different times.

The rock art can be divided into three panels. Panels 1 and 2 appear to have been made on the same rock surface at different times (Fig. 3). Panel 3 is located on the other side of the round, niche-shaped recess and

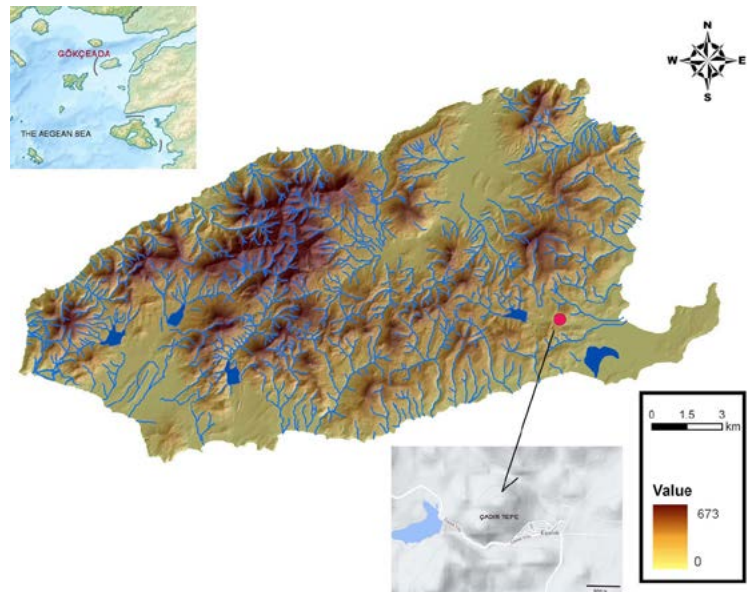


Figure 1. Location of the Eşelek rock art site in Gökçeada, NE Aegean.



Figure 2. View of the large rock boulder with rock art.



Figure 3. Panels 1 and 2.



Figure 5. Checkerboard motif at Panel 2.

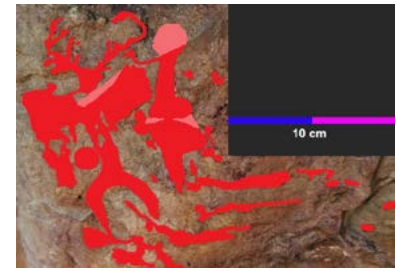
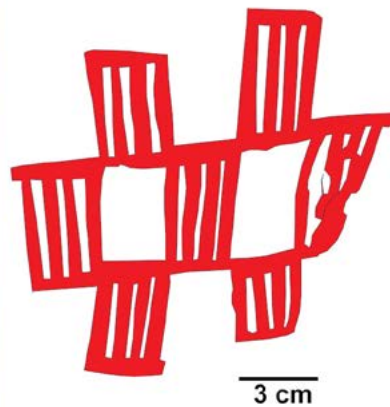


Figure 4. Emphasised anthropomorphs at Panel 1.

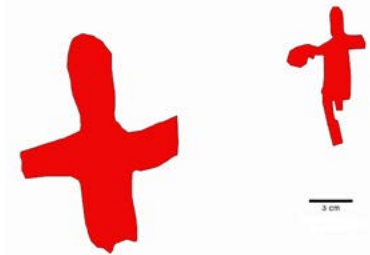


Figure 6. Presumed human depictions with outstretched arms at Panel 2.

consists of a single figure. Very faint traces of red paint can also be seen on the recess.

### Description of the rock art

Panel 1 is a small collection of paintings located about a metre above the present floor level. It is easily overlooked due to its small size of c. 16×12 cm. The brighter red paint appears to have been applied with fingers. The prominent elements of Panel 1 are two 'human' depictions. A possibly female figure with full buttocks and breasts is seen, apparently depicted from the side. The other 'human' depiction might be of a shaman, possibly wearing a headdress made of deer antlers and a shamanic costume. There are also some abstract and dot-like figures around them (Fig. 4).

Panel 2 covers a surface of 60×60 cm. Many of the paintings are highly faded. On the left is a square checkerboard motif of 14×14 cm made with thin lines (Fig. 5). The filled parts of the checkerboard are formed by vertical lines parallel to each other. Approximately 25 cm above the checkerboard motif are two presumed anthropomorphs with their 'arms' outstretched (Fig. 6). The larger one, measuring c. 13×10 cm, has a rectangular body and

a round head, and the feet are not depicted. The other 'human' figure, measuring c. 9×4 cm, is depicted with one 'leg' and one 'arm' shorter than the other. It seems to hold an object. On the left side of these figures are two circles with diameters of 20 and 15 cm with a diagonal line through the middle (Fig. 3).

Panel 3 is situated in a remote part of the site. Located about a half metre above the present floor level, it consists of a single figure that vaguely resembles a human form (Fig. 7). The figure, apparently depicted from the side, shows an exaggerated 'buttock' and 'breast'.

### Discussion and concluding remarks

Eşelek has revealed an important rock art composition on the island of Gökçeada. Although



Figure 7. A possible anthropomorph at Panel 3.

there is no dating for this rock art, it is quite a unique find for the Aegean islands. No archaeological material was found around the block of rock except for a few chipped stones.

The apparently human shapes in Panel 1 are quite interesting. A 'female' figure that is similar to the figure with full hips and breasts in this panel can be found in the Latmos Mountains of western Anatolia (Fig. 8). Although uncertain, the Latmos rock art has been attributed to the 6th and 5th millennium BCE (Peschlow-Bindokat and Gerber 2003). In addition, the checkerboard motif of Panel 2 also appears in Latmos rock art.

The depiction of a 'human' wearing a 'deer head-dress and costume' is also remarkable. There are depictions of human representations wearing deer headdresses in Upper Palaeolithic paintings in Europe (Clottes and Lewis-Williams 1998). Antlered figures are known in the rock art of pre-Historic Europe (Mykhailova and Garfinkel 2018). Rituals such as deer offerings and the burial of deer antlers are widespread in deer hunter societies. The zooarchaeological data from the excavations in the pre-Historic site of Uğurlu in Gökçeada showed that there was an increase in deer around the 6th millennium BCE (Atici et al. 2017). In this period, deer motifs can be seen on pottery in addition to ritual pits that contain deer antlers. Therefore, we suggest that this figure can be interpreted as a shaman wearing a headdress, possibly made of deer antlers and a costume.

The vaguely 'human' figures in Panel 2 stand out. Below a round head with no detail and a short neck, their torsos are of roughly rectangular shape and arms outstretched. Although the anthropomorph seen in Panel 3 has no analogues, such depictions can be seen on Upper Palaeolithic ivory figurines and Neolithic clay figurines in Europe (see the bird goddess; Gimbutas 1989). In addition, there are no similar examples to the circle motifs with a central line in Panel 2.

Considering that there is no published evidence of



Figure 8. Comparison of presumed female figures in Gökçeada (left) and Latmos (right) rock art.

other rock art made with red ochre in other Aegean islands, the importance of rock art in Gökçeada in the region becomes more prominent. Further research may reveal additional information in the future.

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## RAR REVIEW

*The domestication of humans*, by ROBERT G. BEDNARIK. 2020. Routledge, Taylor & Francis Group, London and New York, 243 pages with 30 monochrome illustrations, extensive bibliography and index, hardcover, ISBN 978-0-367-89787-1.

*The domestication of humans* is a short but stimulating, highly readable volume that proceeds from a wide and very deep analysis of the current state of knowledge about human evolution to presentation of several interrelated hypotheses suggesting how the later phases of our relatively recent human evolutionary transformations have occurred. Robert Bednarik is an acknowledged expert — arguably the world's leading expert — on rock art, in pursuit of which expertise his studies have expanded widely into a great many contiguous aspects of archaeology and anthropology. He is also professionally conversant with human biology, including molecular genetics, as well as psychology, history and philosophy. We would have described him by the overly used term 'Renaissance scholar' were it not for fear that the mantle more comfortably worn in that earlier historical period might cause his comprehensive knowledge to be perceived as outdated in our own time. It is not. In fact, the author is a genuine 21st-century scholar of the highest calibre in the social and natural sciences and broadly familiar with the literature of both domains. His volume succeeds in genuinely delivering what most scientific authors promise to publishers but nearly always fail to produce: a book that can be read profitably by the 'general educated reader' and professional scientist alike. This outcome arises from a combination of organisation and passion.

The organisation is achieved partly by opening each chapter with an abstract of its contents and ending with a paragraph that provides a transition to the chapter that will follow. Chapters themselves contain several sub-heads that signal coherent blocks of text that advance the author's arguments. Illustrations complement presentation of the major ideas that are being developed. Passion can be seen in Bednarik's pervasive sense of purpose. His Renaissance breadth arises from the base of a Reformation of sorts, with scholarship that is pursued with the sense of mission reminiscent of a historical tradition that is neither the author's nor our own, but the spirit of which in some ways still lives in our shared culture: Martin Luther nailing his Ninety-five Theses on the door of All Saints Church in Wittenberg during 1517. Although the intellectual

context here certainly is secular (as is our own frame of reference, as well as his) rather than religious, there is more than a little overlap in intent: to take knowledge from the hands of a narrow priestly class and make it more readily available to members of a wider audience genuinely in need of individual understanding.

The result is a coherent book, having three strains that are blended with skill into a refreshingly original whole. The first strain comprises an informed review of the scholarship covering the last 5.3 million years of hominin evolution, with an emphasis on the later phases of the last several hundred thousand years that encompass members of our own genus, *Homo*. This most recent phase of our evolution — which the author shows to be widely misunderstood, misrepresented and intellectually confused in many other sources — is clarified substantially here. On this subject, Bednarik's knowledge is encyclopaedic, and his explanations are enlightening. Many authors writing about the evolution of the genus *Homo* and its antecedents largely play a 'name game' that simply catalogues and describes various putative 'species' of humans. This 'family photo album' approach produces a static record of descriptions and reconstructed images, along with the places and dates of specific finds. Many creators of those multiple human taxa flourish their professional authority by claiming to have discovered the 'oldest' or 'most advanced' or 'most complete' specimens. Exciting this competitive approach may be, but it does little to explain how evolution occurs, because the processes leading from one putative 'species' to the next rarely are discussed and described. The author's critique of this present state of the discipline is accomplished by Chapter 1 ('Introduction: the empirical context').

The second strain of inquiry helps to explain just why the latest phase of human evolution is so widely misunderstood. In the quasi-commercialised world of research grants and contracts, investigators hoping to secure as much financial support for their work as possible commonly leap aboard the main bandwagon of opinion, to which the majority of the field's professionals already are clinging. Some younger authors exercise self-censorship in order to avoid criticism from senior researchers that could prevent publication in a 'leading journal' or otherwise make their career progress difficult. Thus, as Professor Bednarik elaborates, while the overlapping traditions of palaeoanthropology and Pleistocene archaeology purport to inform and

influence the public's perception of the human past, instead, they very largely have reflected and amplified some rather hackneyed public, and particularly sociopolitical, opinion. As a prime example, for most of the last three decades, the pattern of later human evolution has been forced into the Procrustean bed of the 'African Eve' myth that uses a seemingly sophisticated molecular biological framework to paraphrase the Biblical story of Genesis. Just as the Biblical Eve is a character of historical revelation, so is the mitochondrial Eve equally an imaginary construct for different didactic purposes. The familiar Biblical referent helps with acceptance, though not genuine understanding.

Early in Chapter 3 ('Evolution and pathologies'), in a section titled 'Narratives of evolution', the author comments on the perennial battle in human palaeontology between 'lumpers' and 'splitters' that commonly is treated as a matter of taste, rather comparable to preference for eye of newt over toe of frog in the brew concocted by proverbial witches. He notes that in many other sciences (such as ethology, genetics, geology), there are more objective frameworks for assessing evidence than competition for popular coverage in mass media of the newest new thing. (Sadly, in a time when media companies are booming financially, 'economies' have ensured that there are no replacements with the intellectual stature of John Noble Wilford, who for decades was a voice of objectivity in his coverage of human evolution and other areas of science at the *New York Times*.) Stating explicitly that this faddishness is neither necessary nor desirable, the author comments 'Palaeoanthropology, in common with most archaeology, operates like alchemy and is much in need of a theoretical framework, as Eckhardt (2007) so rightly observes'. The author's quote was made in the context of the dispute over just 100 bones, including a single skull, from Liang Bua, Flores, first described in 2004. 'Homo floresiensis' was invented from sparse evidence that plainly was misinterpreted from its inception yet sustained by journalistic enthusiasm in the face of blatant contradictions within and between the biological and cultural bodies of evidence. The inherent contradictions would have caused the 'species' to be dismissed as theoretically impossible — if palaeoanthropology in fact had a body of theory and a tradition of hypothesis testing, which it manifestly lacks. The rest of Chapter 3 builds on the preceding two chapters and provides a transition to the third strain, which addresses the title of the book. It introduces a powerful, biomedically-based argument for the self-domestication hypothesis by way of exploring the possible reasons why humans have a multitude of mental problems that do not appear in related hominoid primate species. Many of these disorders seem to occur in more recently evolved portions of the human brain, and survival of those who suffer from cognitive disorders is more likely in closely knit communities that practise collaborative care for children, the elderly and disabled people of any age.

The book's title relates more directly to the re-

mainder of the work: Chapter 4 ('Human self-domestication'), Chapter 5 ('The unstoppable advance of exograms'), and Chapter 6 ('Effects of the domestication hypothesis'). In Chapter 4, only after having thoroughly criticised the current state of knowledge and providing a very broad factual background of palaeoanthropology, archaeology, human cognition, molecular genetics, psychology and psychiatry, Professor Bednarik develops his thesis in persuasive detail. Being a meticulous scholar, he gives the background for this idea. Although others have presented some of it before, his explication of the idea thoroughly makes it his own. Readers familiar with this subject's intellectual history will be aware that the topic of domestication has some roots that go as deep as Charles Darwin's volume, *The variation of animals and plants under domestication*, published in 1868, nearly a decade after the *Origin* and still elaborating the evidence on which that epic intellectual insight was based. Some previous authors also have argued that humans who accomplished domestication of plants and animals, eventually domesticated themselves by creating artificial living conditions that resulted in larger, settled and stratified human communities. However, Professor Bednarik's proposition regarding the self-domestication of humans cuts through intricacies of food production, organisation of proto-cities, incipient social stratification and complex cultural rituals in the best scientific tradition of parsimony. His thought centres on the single essential feature that is necessary for domestication: assortative breeding. He argues that toward the end of the Pleistocene, by some 50-30 thousand years ago, Palaeolithic humans had developed complex social relations and cognitive processes that resulted in sexual selection for youthfulness and gracility of the body structure. Assortative mating for these characteristics produced a fairly rapid change of human morphology from 'robust' humans with heavy bony structures supporting large muscle mass to a gentler, more gracile morphology characteristic of younger individuals. Since Palaeolithic technological advances allowed people to survive by the intelligence made possible by evolved brains rather than just by sheer physical strength, this assortative mating for reduced physical development did not lower their reproductive fitness. According to the author, modern human males characteristically prefer to mate with youthful-looking, gracile females. As Professor Bednarik argues, the assortative mating for gracility that occurred some 50-30 thousand years ago gradually but rapidly changed human morphology from robust forms (e.g. Neanderthal-looking) to gracile ones, essentially similar to humans who live today. Formulated in this way, the 'self-domestication hypothesis' is clear and unencumbered by a multitude of cultural and sociological details; and by this virtue, it also is easily testable and potentially falsifiable. However, we must leave this task of hypothesis testing to future researchers. At the moment, Bednarik's idea explains the origin of 'anatomically modern humans' better than

the flimsily constructed and now thoroughly falsified (though still widely accepted) 'African Eve' hypothesis. In place of hominins with more robust anatomy being replaced wholesale by more gracile African invaders, Bednarik offers an intriguing nexus among mate selection, increasing self-awareness, plus abundant and suggestive archaeological objects depicting the female body and its decoration.

Chapter 5 follows the implications of these inter-related shifts into the realm of reduction in hominin brain volume resulting from gracility of bodies, and improvements in cognitive functioning made possible by exograms (externalised memory traces); this is fresh material, comprehensively and compellingly assembled. Chapter 6 weaves all of these strands together, providing an explanatory framework that unifies the observed evidence of hominin neoteny and gracilisation with abundant material exograms that improve the cognitive functioning of communities. All of these elements combine to provide a compelling alternative to the 'African Eve' replacement hypothesis, still widely accepted by academics who find safety in numbers rather than independent analysis and by the 'science writer' camp followers in need of the latest storyline, however unrelated it might be to the problem as a whole. To help readers understand why this jarring frame of reference — scholars exposed as popular fad followers rather than thought leaders — is important, it is worth a bit of what might seem like a digression. In an essay on the techniques taught by the great American actor Gena Rowlands, Andrew Wood referred to the history of art criticism. To paraphrase Wood, in the earlier period prior to the end of the 18th century, art had been conceived as a mirror. It reproduced life; it showed you what life was like; figuratively, it reflected the surfaces of life. In the later age of Romanticism, art was thought to allow us to see things concealed beneath the surfaces of life and not normally visible; it served as a source of illumination — a lamp. These contrasting metaphors served as context for Wood's larger point: the truth is not always what you think it is. In the context of these contrasting metaphors for art, Bednarik's view shows palaeoanthropology and Pleistocene archaeology to be representing a human past not as illuminated by data collection and hypothesis testing, but instead, as factoids distorted in the fun-house mirrors of academic cliques, 'leading' journals and the popular science industry. Sadly, he is correct. Happily, there are alternatives provided by models from other fields of science. As just one example, Barry Marshall, along with his colleague Robin Warren, was in pursuit of a practical problem, the cause of stomach ulcers. Marshall's Nobel Prize lecture explicates a model of curiosity-driven research accomplished with little financial support. Especially notable is his introductory quote, which he attributed to the author and librarian Daniel J. Boorstin: 'The greatest obstacle to discovery is not ignorance — it is the illusion of knowledge.' Bednarik exposes the 'African Eve' illusion, replacing

it with testable hypotheses, including the self-domestication of humans.

We have little doubt that some reviewers of this book will fault the author for his departure from what has been a mainstream of sorts for several decades, with its enthusiasm for 'African Eve' and the 'Hobbits' of Flores. Before taking comfort in the security seemingly afforded by large numbers of like-minded people, however, such critics would do well to read *Extraordinary popular delusions and the madness of crowds*, written by the Scottish journalist Charles Mackay. First published in 1841, Mackay's work is a classic better known among economic historians than students of the far deeper human past. He chronicled some of the major extreme financial escapades up through his time, including the Dutch tulip mania of the early 17th century, the Mississippi Company Bubble of 1719–1720, and the nearly decade-long South Sea Company bubble of 1711–1720 that it overlapped. In all of these phenomena, some new idea or concept lay at the core (as PCR and mitochondrial gene sequencing lay at the core of 'African Eve's' invention). As the mania gained currency (figuratively and then quite literally), whatever plausible core had existed at the outset (in the financial cases, a promise of a new product or territory, in palaeoanthropology, a new dimension of diversity) became exaggerated by retelling and sustained by spreading belief. No doubt it will be argued that highly educated people, particularly scientists, would not be drawn into error by such common enthusiasms. That argument would be wrong based on known facts. No less a scientist than Sir Isaac Newton was swept up in the South Sea Bubble. *Twice*. The first time he bought shares at a low price and sold them at a higher one, making a profit. But then, as South Sea Company shares continued to rise, he bought in again, very near the peak of the bubble. Prices plunged, including those owned by the discoverer of the Laws of Motion. Newton went bankrupt. Even genius can be overcome by failure to question widespread belief. Against the seeming safety afforded by numbers, Mackay's judgment stands: 'Men, it has been well said, think in herds; it will be seen that they go mad in herds, while they only recover their senses slowly, and one by one.'

As anyone who has read our review to this point will realise, the introductory evaluative summary we provide here does not constitute a *pro forma* promotional piece dashed off to aid a colleague to sell a few more copies of a book. Both of us have been aware of Professor Bednarik's work for more than a decade; however, we never have met him in person. We both reviewed the prospectus of this book and recommended its publication by Routledge. We have read the entire text — several times — with great professional attention. In the final analysis, we respect the work because it is rooted in critical examination of existing dogmas, is rich in previously overlooked information, and is bristling with new ideas that deserve the widest possible critical scrutiny rather than being ignored. This is not

a book that can be allowed to go down the memory hole: 'Who controls the past controls the future. Who controls the present controls the past. – George Orwell.

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RAR 40-1411

*Ausgewählte Säugetierdarstellungen in der Eiszeitkunst und der Versuch ihrer zoologisch-ethologischen Interpretation*, by INGMAR MICHAEL BRAUN. 2022. Universitätsforschungen zur prähistorischen Archäologie 373, Verlag Dr. Rudolf Habelt GmbH, Bonn; 234 pages, 501 monochrome illustrations, with summaries in German, English, French and Spanish, extensive bibliography, list of image sources and DVD of all images, softcover, 61.00 €, ISBN 978-3-7749-4326-1.

This impressive volume is about selected representations of mammals in Ice Age 'art' and attempts at their zoological-ethological interpretation. It derives from a PhD thesis by the author, who selected from the known corpus of Upper Palaeolithic, apparently mammalian zoomorphs those images he considered are identifiable at the species or subspecies level. Where he felt confident, he also endeavoured to determine the sex and age of the specimens or sought to identify seasonal characteristics and behavioural clues in these images. The book is divided into chapters by genera: equids, bovids, cervids, proboscideans, rhinos, ursids and felids; and it separates the palaeoart into three groupings: cave art, open-air rock art and mobiliary 'art'.

The book is lavishly illustrated with drawings of rock art recordings and black and white photographs of both rock art motifs and their assumed live models. The author attempts to determine each case's genus, species and subspecies but also addresses other aspects, including ethological information implied in the ancient imagery. The basis of all these determinations is exclusively the visual experience of the author in examining the subjective recordings of these images or their photographs. He provides no indication that he has visited the sites and seen all the examples he cites.

Rather than reviewing the numerous attempts to interpret the featured palaeoart and disagreeing with

individual cases, this commentator prefers to address the underlying issues. The book's author has to contend with five epistemological difficulties. First, most of the rock art he considers has not been dated effectively or has been dated through the purported identification of species or genera extinct in the Holocene. In this example of circular argument, the imagery must be Pleistocene because we think it depicts an extinct animal, and it can be of an extinct species because we know it is Pleistocene. In effect, some of the cases presented are certainly not of the Pleistocene, while others are *probably* not of that antiquity.

Second, the purported Pleistocene age of the second grouping of evidence the author employs, the open-air petroglyphs, mainly reported from Iberia, remains unsubstantiated at all sites concerned. For instance, the Ice Age attribution of the petroglyphs on the schist of Siega Verde (Spain) and Gondershausen (Germany) has been soundly refuted (see p. 5; cf. Bednarik 2009, 2016), and there are no open-air petroglyphs known in Europe that have been credibly shown to be Pleistocene. None of these sites of what appear to be depictions of horses and Spanish fighting bulls (Bednarik 2015) feature representations of now extinct species, nor do they include any of the motifs that are the hallmark of Pleistocene rock art in Europe: the so-called signs. For instance, the claimed rhinoceros and megaloceros images of Siega Verde are figments of the imagination: the first is a natural feature, and the second did not occupy the region in the late Quaternary.

The third impediment in accepting this book at face value is that it deals only with European rock art, practically ignoring the Pleistocene heritage of other continents (except for the Berelekh engraving from Siberia). Therefore, the word 'European' should have been inserted in the book's title. After all, Ice Age palaeoart has been described from all continents bar Antarctica, and the *purportedly* earliest known animal representation has been reported from Borneo.

A pivotal limitation in this book is its author's belief that he shares the perception and cognition of the long-gone producers of Ice Age palaeoart. This corpus is the work of hominins whose construct of reality must have differed significantly from that of any 21st-century hominin (Helvenston 2013). Even Europeans of the Middle Ages existed in conceptual worlds considerably different from today. For instance, the brain of a non-literate individual necessarily differs from that of a literate, as the human brain's plasticity facilitates its modification by ontogenic experience. Cultural activity modifies the chemistry and structure of the brain, affecting the flow of neurotransmitters and hormones (Smail 2007) and the quantity of grey matter (Maguire et al. 2000; Draganski et al. 2004). Ultimately, all individual human constructs of reality differ, even today, as they are all the result of the individuals' ontogenic experiences. Or, as Midnight Oil put it in *Barest degree*, 'remember nothing you've been told means anything to me, and everything you hold is mine to the barest de-

gree'. Perceptive strategies of detecting iconicity would have differed radically in the distant human past, as would approaches to depicting it. Today's Eurocentric beholder merely interprets depressions in rock surfaces or applied pigment traces by pareidolia. Scientific tests have shown that even the meaning or subject matter of recent Aboriginal rock art are not accessible to such explanation by cultural outsiders (e.g. Macintosh 1977). Many present-day artists complain that their work is being misinterpreted, and the main reason for the avid interpretation of Palaeolithic 'art' seems to be that the 'artists' are in no position to contradict the interpretations of the self-appointed interpreters. It is also unclear why their accounts should have precedence over those of, for instance, rock art tourists or children or what qualifies them to claim their special status. How did they acquire this unique ability?

In pareidolic determination, the modern beholder tends to respond spontaneously to a subconscious experience that some formal aspects of an image are naturalistic, others are poorly drawn or somehow not relevant. The beholder essentially claims to know which formal aspects are diagnostic and which are not. As he cannot know this, he applies his own values subjectively. Forming an opinion, he notes any confirming aspects and discounts any disconfirming ones. This is a profoundly unscientific procedure in which validating and invalidating elements must be considered equally. Looking through this book, there seem to be no Palaeolithic mammal depictions entirely free of disconfirming features. Indeed, many examples provide no justification for determination, such as Fig. 84 from Les Combarelles I, or Figs 187, 229, 268, 280, 281, 304, 309, 313, 318, 331, 338, 347, 453, 473 and others.

The final epistemological limitation of this volume concerns the scientific method, which is based on the principle of falsifiability. Since all of Braun's interpretations are based on his own pareidolic perception, they are not accessible for testing. They are simply statements of opinion. Some of them are no doubt valid, perhaps even most of them. The observation that he has included a good deal of evidence that is not of the Palaeolithic, such as the several open-air petroglyph sites, Ignatievskaja, Cuciulat, Church Hole and the Swabian Alb sites, challenges the integrity of the work. The Pleistocene antiquity of the rock art at these sites has been discredited.

In summary, a great deal of painstaking work has gone into this volume, ignoring that in Australia, it has long been discovered that the perception of an alien to the culture that produced the palaeoart in question is not able to determine its meaning. This is an easily testable proposition: we have a good number of secure ethnographic interpretations of Australian rock art motifs, so we could test prospective rock art interpreters' ability to determine the meaning of rock art motifs.

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RAR 40-1412

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**Figurations inédites de la galerie a de la grotte de Rouffignac (Dordogne, France)**, by FRÉDÉRIC PLAS-SARD, MORGANE DACHARY and JEAN PLAS-SARD. 2021. *Paleo: Revue d'archéologie préhistorique*, Volume 31, pp. 244–266.

**'They are all dead that I could ask': indigenous innovation and the micropolitics of the field in twentieth-century southern Africa**, by RACHEL KING, ADELPHINE BONNEAU and DAVID PEARCE. 2022. *Cambridge Archaeological Journal*, Volume 32, Number 1, pp. 137–152.

**Making a mark: process, pattern and change in the British and Irish Neolithic**, by ANDREW MEIRION JONES and MARTA DÍAZ-GUARDAMINO. 2022. *Cambridge Archaeological Journal*, Volume 32, Number 3, pp. 389–407.

## *First issue of Journal of Rock Art published*

*Journal of Rock Art* (岩画学报) Volume 1, Number 1, has been published in November 2022, presenting the following papers in Chinese:

ABUNDANT AND CONTINUOUS: PETROGLYPH FIELDS FROM MULTIPLE DIMENSIONS AND THEIR CHARACTERISTICS – CASE STUDY OF PETROGLYPHS IN BADAIN JARAN DESERT, by Yuhong Wang, Siwo, Feng

AUSTRONESIAN CULTURE OF WANSHAN IN TAIWAN: AN ETHNO-ROCK ART RESEARCH, by Jiaxin Zhang

THE SPECIAL CONNECTION BETWEEN NEW YEAR PAINTINGS AND ROCK PAINTINGS IN THE DEVELOPMENT OF CHINESE CULTURE by Youpeng Gao, Can Liu

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The journal is devoted to developing theory and methodology for the systematic and rigorous understanding of palaeoart and related phenomena. Emphasis is given to communication across the various disciplines related to the study of global rock art, and to synthesising related subjects around the journal's focus: the surviving externalisations of early world views.

The world's earliest reports of rock art derive from China, having been provided by Han Fei (2nd century BCE) and Li Daoyuan (469–527 CE). This was long before any such accounts by Europeans began

to appear, which commenced only in the late 16th century CE (reporting rock art from Mexico and Brazil). European rock art was not recorded until Peder Alfssön provided drawings of Swedish petroglyphs in 1627, but they were not published until 1784. Thus, Chinese interest in rock art precedes such curiosity elsewhere by a very considerable margin. However, with the world's colonisation by Europeans, they eventually acquired much knowledge about global rock art. By the early 19th century, they advanced to developing an academic interest in the subject, which, as Professor Chao Ge has pointed out in China, only took place there in the early 20th century. Similarly, scientific rock art research, commencing about 1980 elsewhere, took hold in China only with the turn of the present century.

Seen in this historical context, the establishment of *Journal of Rock Art*/岩画学报 is most timely indeed. It occurs during the transition of Chinese rock art research from its pre-scientific to its scientific paradigm, a process also underway in much of the rest of the world. Bearing in mind that the first report about Chinese rock art in a foreign language was only published in 1984 (by Wang Ningsheng in *RAR*), this journal's bilingual format is of particular importance. Just as the now-defunct *International Newsletter on Rock Art* by Jean Clottes sought to communicate across language barriers, *Journal of Rock Art*/岩画学报 will project quality rock art research to the world as well as absorb key developments taking place elsewhere. Progress in science is one of the most unifying forces of humanity, and it is entirely dependent upon effective communication. As Chao Ge correctly noted, the study of rock art is only at the very beginning of becoming a science. That process will be chronicled on the pages of this journal, which offers a global platform to the most innovative scholars in the field.

*Journal of Rock Art*/岩画学报 is conceived as a sister journal of *Rock Art Research*, the strictly scientific periodical of the International Federation of Rock Art Organisations (IFRAO) that was founded in 1984. The establishment of the new journal by Prof. Liu Zhenling is an important milestone in Chinese rock art studies and will track the development of the discipline in China and elsewhere. *JORA* will be guided by the same standards as *RAR*: the divine thirst for better understanding that has driven science since its very beginnings. I hold the greatest hopes and offer my best wishes for the magnificent journey *JORA* has embarked upon.

Prof. Robert G. Bednarik  
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## Synopses of articles published in JORA

### The special connection between New Year paintings and rock paintings in the development of Chinese culture

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As the most important festival in China, the spring festival originates from the belief in heaven, earth and deities, and every link of it driven by faith, especially symbolising the celebration of the harvest, it has been endowed with the significance of dispelling evil, eliminating disasters and bringing joy and blessing. New Year paintings are a kind of pictures displaying rich emotions, such as carnival and solemnity, reflect faith, pleasure and aesthetics. The earliest rock paintings were actually primitive New Year paintings, which were consciously shaped on the earth by the ancient people. It can be inferred that from the perspective of modern anthropology, the commonality of New Year paintings and rock paintings lies in the fact that both transcend the natural world and social reality – both have a typical carnival consciousness, especially the expression of people's belief in the soul.

What New Year paintings and rock paintings have in common is that they both embody the transcendence of the natural world and social reality and a typical carnival consciousness, and express people's belief in the soul. There are various forms of carnival. New Year paintings and rock paintings are the results of carnival. Carnival is an important symbol and function of traditional festivals. Through carnival, people engage in all kinds of intoxicated performances to achieve spiritual and emotional pleasure. In the process of carnival, the two worlds of man and deities communicate with each other and reach the free and unrestrained state of mind.

Exaggeration and deformation are common expressions in both Chinese rock and New Year paintings. The meaning of deformation is related to witchcraft worship and is universal in religious and cultural life. This is true of rock paintings and New Year paintings. The content of rock paintings is related to the local natural environment, to the historical and cultural origin of a certain region. More importantly, it is relevant to the civilisation characteristics formed by the natural environment and has become a symbol of a certain region. Later, it becomes either New Year paintings or murals.

Of course, rock paintings are not only carriers of New Year paintings. The rock paintings undoubtedly showcase the theme of early civilisations. As the main content of rock paintings, ancient mythology and primitive art are mythical art. Myth is an important source of culture. In terms of the significance of sacrifice, belief and carnival, rock paintings are the earliest New Year paintings. The forms of cultural inheritance and memory are usually physical, documentary and social customs. Maybe we can get a better answer from life. Behind the rock paintings is faith. This is true of the New Year paintings. Faith has become the core of culture, which can be inherited, spread and changed infinitely. It

should be said that it took a long period of time for the rock paintings to be transformed in New Year paintings. Various connections cannot be grasped easily. The narrative theory by image tells us that there is an undercurrent among all kinds of pictures, patterns and images, forming different ideological and cultural trends and artistic trends.

In short, in the transformation and undertaking of cultural narrative, the New Year paintings have effectively completed the manufacture of various media, from ancient stone carvings to gold and stone carvings and are closely related to primitive civilisations, such as rock paintings. New Year paintings have gradually turned to clay sculptures, wood carvings and other cultural forms, and converted to paper printing, forming the root of the New Year paintings we see today. New Year paintings belong to history, reality, life, culture and faith.

### A survey of Wanshan rock art, Kaohsiung City, Taiwan

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Wanshan rock art is located in the southwest of the Central Mountain Range (中央山脉), Wanshan tribe, Maolin District (茂林区), Kaohsiung, Taiwan, on the upper reaches of Zhuokou River (浊口溪), and at the northern foot of the Wantoulan Mountain (万头兰山) (22°57'N, 120°47'E). Wanshan rock art contains four groups: Kopaca'e, Tsubulili, Sanaginaeh, Takalravoe.

Kopaca'e (TKM 1) is located on the top of a 1430 m cliff, 7.5 m high, 11.4 m long, 6 m wide, with an area of about 802 m<sup>2</sup>. Located on a gentle slope at the top of the mountain, about 400 m from the Zhuokou River valley, the rock mass can be reached at the junction of the north side and the gentle slope. Kopaca'e mainly has 'mask' figures and concentric circles. There is a cavity at the lower edge of the south side of the rock mass, which can be used as a shelter from wind and rain. Occasionally, hunting aborigines take a rest here or stay overnight.

Tsubulili (TKM 2) is located in the south of Wanshanxi Gorge, at the northern foot of Wantoulan Mountain, 940 m above sea level. The rock mass is about 400 cm long, 360 cm wide and 220 cm high. The rock has collapsed into two pieces. On the east side of the rock are cliffs, under which lies a ravine. Tsubulili mainly has cupules and grooves. On the east and west sides of the rock are the remains of a slate house, which, according to local aborigines, should be a hunting lodge; there are also signs of farming near Tsubulili.

Sanaginaeh (TKM 3) is 1080 m above sea level, with a drop of 50 m from the river valley, and an area of about 300 m<sup>2</sup>. It is composed of two pieces of sandstone, with artificially piled slabs in the cracks (about 30–80 cm) between the two pieces of sandstone. Sanaginaeh's images are dominated by cupules and grooves, but the weathering and moss are so severe that the images are hard to identify.

Takalravoe (TKM 4) is adjacent to Tsubulili. There are images of 'human masks', 'human figures', grids, whirls, cupules, concentric circles, 'snake' veins etc., among which the most common pattern is cupules. It is due to the influence of rainfall in rainy season and terrain characteristics, Takalravoe is not suitable for long-term residence, so it is difficult to form a large-scale settlement here.

Further synopses will appear in the next issue of RAR.