BRIEF REPORTS

An example of cave art from northeast Aegean, Türkiye: Andık Cave

By DERYA YALÇIKLI

Introduction

The İnboğazı region, located near the Edremit Gulf, which served as the northeastern port of the Aegean coastline in western Anatolia, appears as an important pre-Historic living area. Caves found in the İnboğazı region turned into pre-Historic settlements thanks to the Havran Creek and preserved their status as such for a long time. The first studies in Andık Cave, one of these caves, were carried out by İ. K. Kökten (1949), and then it was examined by us during our surface survey in 2017 (Yalçıklı 2018). Excavations have been carried out in Andık Cave, which stands out among the caves found in western Anatolia with its Neolithic and Chalcolithic Age layers, since 2022 (Yalçıklı and Yılmaz 2023). The wall painting detected on the cave wall during these studies represents a rarely-learned feature.

The location of the cave

The İnboğazı Caves are located within the Balıkesir provincial borders, 6.5 km northeast of Havran. This region is located at the point where Troas and Mysia regions merged in Antiquity, on the southeast slopes of Mount Ida which holds an important place in mythology (Fig. 1). There are two caves, Andık Cave

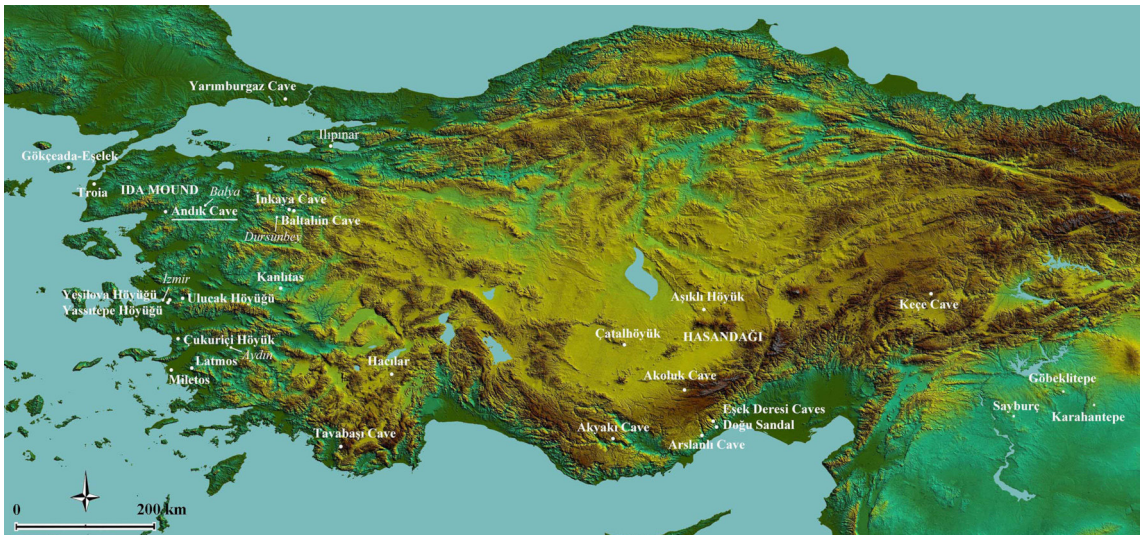

Figure 1. *Map of place names in the text.*

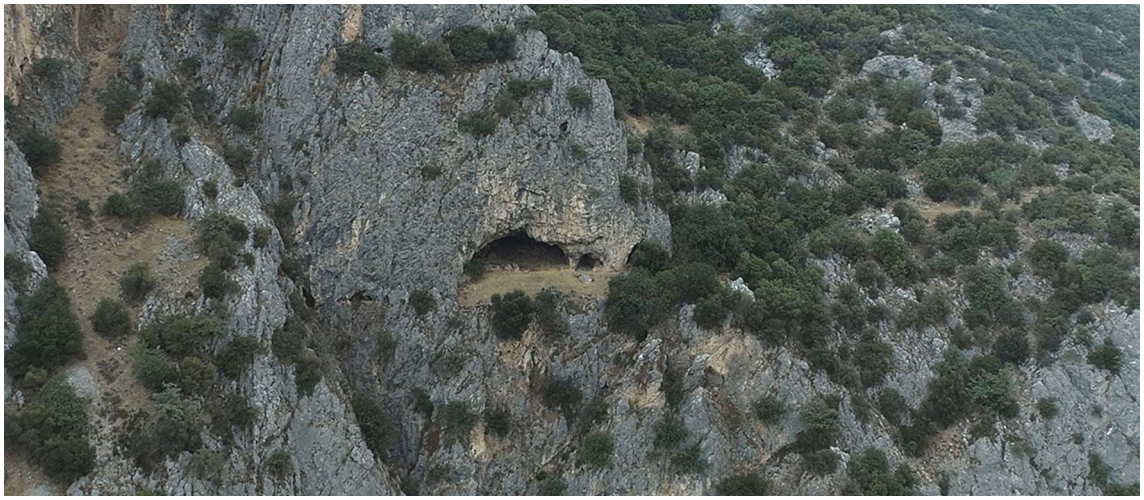

Figure 2. *Andık Cave.*

Figure 3. *Andık Cave, location of the cave art.*

and Aydınlık Cave, on the steep southern slope of Kocaçal Hill, which forms the natural border where the Havran Creek—which feeds the Edremit Plain—begins to flow. The relatively well-preserved Andık Cave complex consists of two galleries (Fig. 2). There is one large gallery entrance at the mouth of the cave and two smaller ones in the east. The gallery found in the west measures 16.3 m in width, 6.2 in height, and 19.5 m in depth and constitutes the area where we describe as the *Entrance Gallery*. The *Northern* and *Eastern Galleries* that split and stretch out from this gallery are found in the inner area of the cave. The *Northern Gallery* is the longest one and measures 56 m in length.

Description of the cave art

During our study of the cave walls, it was determined that a painting was present on the western wall of the entrance gallery (Yalçıklı and Yılmaz 2023: 507–508, Fig. 3) (Fig. 3). The painting, found approximately 8 m from the cave entrance and 1.5 m from the floor, encompasses an area of 37×14 cm. The painting is done on the limestone layers formed on the cave wall, using red-coloured ochre paint. To the north of the preserved painting, a destroyed area measuring 170×80 cm stands out. The destruction in this area, which is the direction the preserved figure in the painting seems to be moving toward, suggests that the painting continues in this area, and the small ochre paint traces found at different distances from each other in the northern part of the destroyed area suggest that paintings spread over a wider area.

The preserved section of the paintings can be studied in two parts (Figs 4, 5). One of these is the red-coloured vertical-strip-shaped adornment found to the north of the painting (Figs 4, 5.1). Three poorly preserved figures are placed on top of each other in this part. The figure in the middle, the one bearing comprehensible qualities, stands on two hind legs and its front is aimed north, into the cave. The head of this presumed leopard figure found here is depicted from the front with its two upright 'ears', two large 'eyes', and round 'face', whereas its 'body' is depicted in profile (Figs 4, 5.2). The 'leopard' is suggested reaching forward with both forelegs and 'holding' an 'object'. The figure's long and upright 'tail' is present behind it. As for the other figure seen above this one, it is quite hard to describe. The traces of paint, preserved in small portions, on the broken limestone layers below the 'leopard' and the lines drawn towards the 'leopard' suggest that there is a destroyed motif in this area. As for the other part of the arrangement, it consists of the adornment found

Figure 4. *Andık Cave rock art (red colour boosted).*

to the south of the leopard. A portrayal reminiscent of a mountain peak formed by two oblique thin lines intersecting each other is seen here. The underside of this figure is left open.

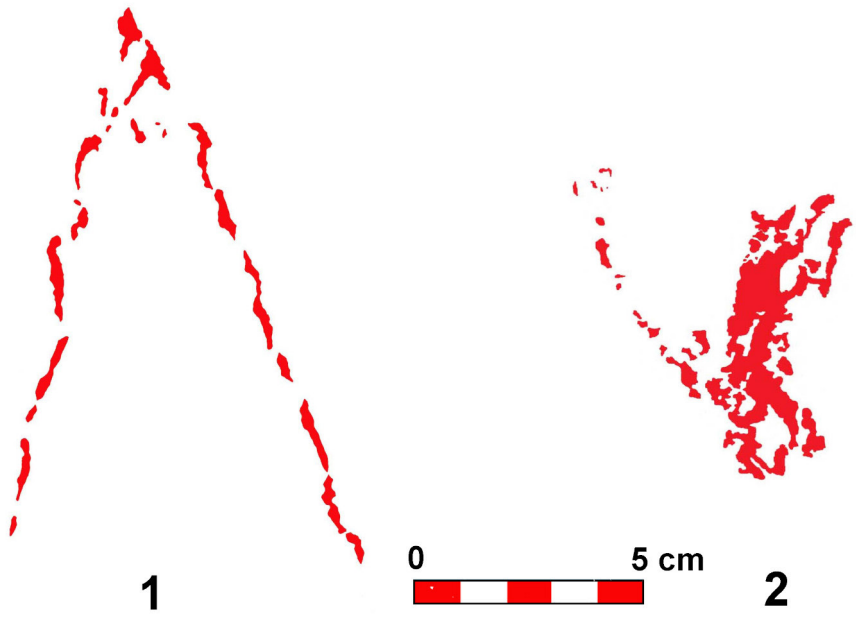

Figure 5. *The two motifs.*

Presumed depiction of the leopard in Anatolia

In Anatolia, pre-Historic paintings are encountered in different application areas, subjects, and techniques. Applications such as carving, painting, relief and sculpting can be found among the techniques. In recent years, there has been an increase in the number of paintings made with the painting technique on cave walls and rock surfaces found in Anatolia. Paintings from Keçe Cave in Kahramanmaraş (Yaman 2019), Aslanlı Cave, Eşek Deresi Cave and Doğu Sandal Rockshelter in Mersin (Kaycı et al. 2020; Altınbilek-Algül et al. 2021), Akoluk Cave in Karaman (Karakoç 2023) and Kanlıtaş Rockshelter in Kula (Ulusoy et al. 2019) constitute the newly discovered finds in southern Anatolia. In western Anatolia, the Latmos rock paintings dated to the 6th–5th millennium BCE by ceramic fragments (Late Chalcolithic–Early Chalcolithic Age) are one of the well-known groups (Peschlow-Bindokat 2006: 96). Among other notable finds are the paintings found in the Arsaköy region of Muğla, done on the outer surface of Tavabaşı Cave with paint, attributed to the Middle Chalcolithic Age (Korkut et al. 2015: 49). Another group of cave paintings belonging to this period in Anatolia are the Baltalıin and İnkaya Caves paintings found in Balıkesir-Dursunbey province assigned to the Late Neolithic Age (Yalçıklı 2018, 2019). A painting indicating that the wall paintings have expanded from the borders of Anatolia and reached all the way to Çanakkale-Gökçeada was found near Eşelek Village (Erdoğu et al. 2023).

The presumed leopard depictions are among the oldest subjects in Anatolia's rock art. An important example is the relief and leopard head statue found in Göbeklitepe, dated to the PPN (Pre-Pottery Neolithic) phase in southeastern Anatolia (Schmidt 2007: 130, 183, Fig. 54; Karul et al. 2017: Fig. 114), the human statue carrying a leopard on its back found in Karahantepe (Karul et al. 2023: 210, Fig. 7) and leopard and male figure reliefs on a large panel unearthed in Sayburç (Özdoğan 2022: 1601, Figs 4–6). As for the leopard depictions known in central Anatolia, they are known from Çatalhöyük in the Neolithic Age. The 'hunters' are depicted with leopard pelts wrapped around their waists, indicating that the leopard—formalised variously as reliefs (Mellaart 1967: Figs VI, X), sculptures (Mellaart 1967: Figs IX, XIII) and clay stamp seals (Meece 2006: Fig. 3) in the settlement—are regarded as symbols of power (Mellaart 1967: Pls 61–63). Leopard depictions are also seen among the Late Neolithic figurines found in Hacılar, a Lakes Precinct settlement (Mellaart 1970: 171, Fig. 196, 174–175, Fig. 228). In western Anatolia, 'leopard' depictions emerge as relief adornments on Neolithic Age vessel fragments found in Yeşilova (Derin 2017). The Andık Cave 'leopard' painting constitutes the first example of cave wall painting found in the western Anatolian coastal region. Considering the clay fragments from the Neolithic Age unearthed during our study in Andık Cave and the wall paintings from central Anatolia and western Anatolia, we believe that this painting might date to the Late Neolithic Age.

Summary

Andık Cave, located in western Anatolia on the southeast slopes of Mount Ida where Troas and Mysia regions merge on the Edremit Gulf, is an important settlement of this region with its finds belonging to the Neolithic and Chalcolithic Ages. A small section of the painted panel found on the western wall of the Andık Cave entrance gallery was preserved. The northern part of the painting, which was painted on a surface covered with limestone layers, was possibly destroyed. Three figures placed on top of each other and an angular design are on the preserved part of the paintings. In between the hard-to-describe top and bottom figures, a leopard(?) figure standing upright and perhaps holding an object is present.

The leopard was commonly depicted throughout the Neolithic in many Anatolian settlements. Leopard depictions, which increased towards central and west-

ern Anatolia in the late phase of the Neolithic, emerged as part of the wall painting applications that became widespread in this period.

The Andık Cave painting represents the first example of a cave wall painting discovered in the pre-Historic Age in the western Anatolian coastal region. Because of this, it holds a unique position in the Aegean geography. It is appropriate to tentatively date the Andık Cave paintings to the Late Neolithic Age, taking into account the Late Neolithic ceramic fragments found in the cave and the painting applications on cave and rock surfaces in central and western Anatolia.

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RAR 42-1460

The status of petroglyphs in Rising Star Cave, South Africa

By ROBERT G. BEDNARIK

1. Introduction

The Rising Star Cave system in South Africa has yielded remarkable discoveries that can significantly advance our understanding of human evolution. Notably, the Dinaledi Chamber within this extensive cave system has yielded the remains of fifteen hominins, now widely recognised as a new human species, *Homo naledi*. These hominins are characterised by their small body size and brain volume, presenting a compelling combination of archaic and modern traits. However, two claims regarding the interpretation of the site remain controversial: the suggestion of burial practices and the attribution of geometric petroglyphs to *H. naledi*.

The 2013 discovery of *H. naledi* in this cave system was a groundbreaking event in palaeoanthropology (Berger et al. 2015). These hominins exhibit a unique combination of anatomical features. The small-bodied nature of *H. naledi*, along with its relatively small brain, challenges widely held previous assumptions, particularly about the evolution of cognition in early hominins. The dating of these remains is a subject of ongoing research, but initial assessments indicate they may be between 236 ka and 335 ka old, placing

them in the Middle Pleistocene era (Dirks et al. 2017). The dating evidence derives from OSL analyses of sediments, U–Th dating of flowstone samples and palaeomagnetic analyses, supplemented by combined U-series and ESR dating of three *H. naledi* teeth. Stratigraphical sub-unit 3b, which yielded most of the hominin remains, was deposited from 414 ka to 236 ka BP. Notably, the dating work was carried out by various laboratories around the world and 'the scientists conducted the tests without knowing the results of the other laboratories' (op. cit.).

Dinaledi Chamber has already produced over 1550 human bone pieces representing 737 anatomical elements, with much sediment remaining unexcavated. Nine of the fifteen individuals are immature, and six are adult. The chamber is about 90 m from the nearest entrance, and the entire sub-system is difficult to access. Further hominin remains were excavated elsewhere in the extensive cave system, e.g. in the Lesedi Chamber (Hawks et al. 2017). So far, this part of the system has yielded 131 hominin specimens from three locations, representing at least three further individuals of *H. naledi*. Two male skulls from the Dinaledi Chamber had endocranial volumes of c. 560 cm^3, and two female skulls 465 cm^3. A male cranium from Lesedi Chamber yielded a volume of 610 cm^3. The reason for *H. naledi's* small brain size in a late Middle Pleistocene context remains unsolved, but possible explanations exist. It could have derived from a last common *Homo* ancestor (Dembo et al. 2016), or it could have evolved secondarily and more recently (Holloway et al. 2018; Hurst et al. 2024). It shares morphological features with early *Homo erectus*, such as the Dmanisi specimens (Ponce de León et al. 2021). Hurst et al. (2024) contrast *H. naledi* with *Homo habilis* or the putative *Homo floresiensis* and place *H. naledi* among the larger *H. erectus* and *Homo sapiens* samples.

Caldararo (2024) offers a potential explanation for the small body size by proposing that several viral infections could account for populations of small-bodies hominins if they allowed the reaching of maturity. He lists some potential conditions: congenital rubella syndrome, other TORCH (toxoplasmosis, other [syphilis, varicella-zoster, parvovirus B19], rubella, cytomegalovirus and herpes simplex virus) infections, endogenous hypervitaminosis A and infection by the Zika virus. Importantly, he notes that such conditions could have been expressed differently in the remote past. In his scheme, Caldararo omits the Dmanisi and Mata Menge hominins (Brumm et al. 2016). If they are added, the occurrence of small-bodied humans could be attributed to many phases of the Quaternary.

2. Burial: a contested hypothesis

One of the most contentious claims regarding the *H. naledi* remains is that at least some of them were intentionally interred, suggesting the involvement of a form of ritual burial. Proponents of this hypothesis argue that placing the bodies in isolated and difficult-to-access chambers, almost devoid of artefacts or evidence of habitation, indicates a deliberate act by these hominins. This would imply a level of cognitive and cultural sophistication previously unattributed to hominins with such small brains. 'These discoveries show that mortuary practices were not limited to *H. sapiens* or other hominins with large brain sizes' (Berger et al. 2023a).

The evidence provided includes two excavated pits on the floor of the Dinaledi Chamber into which bodies were placed. These pits were identified by analyses of the 'stratigraphy, textures, geochemical composition and granulometry of the sediments around and within the burial features' (op. cit.), together with their anatomical coherence. No indications of water saturation are evident in the sediment, which is said to exclude the transport of hominin remains by water. Both burial features were left in situ, largely intact. A similarly delimited burial was extracted *en bloc* in the Hill Antechamber near the entrance Chute in three portions encased in plaster jackets. These were examined by CT scanning. The identifiable postcranial elements, many in articulation, appear to be attributable to a single individual. However, additional dental elements suggest that at least two or even three juveniles may be represented. Close to the feature's articulated hand and wrist bones, the only artefact so far found in the cave remains still in situ (Berger et al. 2023a: Suppl. Inf. 3). The stone blade is 138.5 mm long, of curved shape and up to 49 mm wide. Its concave longitudinal edge bears a series of about a dozen parallel serrations that occur on both ventral and dorsal sides. They have not been explained but appear inherent in the lithic material. The presence of what is presumed to be a dolomite artefact is surprising, as there are five chert seams in the Chaos Chamber. It would be interesting to know if the system's chert layers, up to 1.3 m thick (Elliott et al. 2021), bear chert mining evidence in the form of percussion fractures. Chaos Chamber has provided further remains of juvenile *H. naledi*, 28 cranial fragments.

As the information about the Rising Star Cave became progressively available, its wider debate inevitably began addressing the cognitive implications of these findings. Some authors suggested that a species with *H. naledi's* brain volume would not have been capable of the complex behaviour involved in mortuary practices (Val 2016). Others contended that natural processes, especially water transport, might explain the accumulation of human remains. In view of the severe inaccessibility of much of the cave, several authors suggested that there may have been another entrance to this part of the system that has remained undiscovered. This is a realistic possibility, in view of the progressively modified cave plans as new passages were added to the complex morphology of the cave. The severe access restrictions imposed by the layout of the passages renders it difficult to accept that the many corpses were lowered down the Chute and then

transported for 90 m along very narrow crevices. The cave seems dominated by geometrically arranged fissures that are often too narrow for human access, and there is limited published information about sectional layout. The occurrence of articulated body parts is no proof of intentional burial; it can be attributable to their mummification before their final deposition and settling, as Dirks et al. (2016) acknowledge. Therefore, the claimed burial pits are the only empirical evidence for deliberate interment. They have been analysed in considerable detail, and the thorough description of these features supports the view of the Rising Star Cave team. There is just one troubling thought. The lone stone artefact implies that *H. naledi* was a toolmaker—and we would expect no less from that species. Why would the only lithic find be of a material as poorly suited as dolostone in a cave rich with chert seams? These layers were probably only accessible within the cave passages. Therefore, if there are no traces of subterranean silica mining (Bednarik 1992) in the cave, the presumed Middle Stone Age toolmakers probably never entered it alive.

That would exclude deliberate burial, but not necessarily mortuary practice or 'caching' (Pettitt 2022)[1]. Disposal of corpses by throwing them down cave shafts is documented from various Middle and Late Pleistocene sites (e.g. Sima de los Huesos, Spain; Mladeč Cave, Czechia). This would indicate mortuary behaviour and could have been part of a ritual, but it does not constitute burial. However, we have no sound reason to involve the issue of mortuary ritual at Rising Star Cave. Hominins occupying sites for long periods faced two basic needs: the disposal of human waste (the oldest known latrine is 200 ka old) and human cadavers. Corpses and their inevitable odour attracted scavenging carnivores that were dangerous to the bands. They could be either buried or thrown down shaft caves, a practice dating back at least 430 ka. It does not involve great cognitive skills; Pettitt (2022) reminds us that even termites 'remove their dead from nests and cover them with sediments', and numerous other animals treat conspecifics similarly. Many also hide their faecal matter or hatched eggshells, and no sharp line separates homeostasis from 'cultural behaviour'. After all, both are 'chemically induced'.

3. The petroglyphs of Rising Star Cave

Adding to the allure of the Dinaledi Chamber is the reported presence of 'geometric' petroglyphs, which some have attributed to *H. naledi* (Berger et al. 2023b). This is one of the very few examples in which palaeoart has been credited to a species other than *Homo sapiens sapiens*. Anthropogenic rock grooves occur in the southern part of the Hill Antechamber, c. 4 m SW of the hominin remains recovered there, or c. 6 m NE of the site of the Dinaledi specimens. Three vertical engraving panels, A to C, were noticed there in July 2022, occurring near one another. Fortunately, the authors of the paper reporting this important rock art qualify the article's purpose by stating that it 'is not to describe these complex panels and the many … engravings on them, but to simply note their presence'. As the eight authors include no specialists on cave petroglyphs or on distinguishing them from natural cave markings, it would be churlish to focus on perceived flaws attributable to this limitation. However, Berger et al.'s (2023b) paper presents this rock art prominently as being between 241 and 335 ka old and the work of *H. naledi*. These crucial claims derive no support from the available empirical evidence. The two dates bracketing the proposed age refer to current estimates of the deposition of fossiliferous sediment or nearby speleothems, and there is no proof that these hominins (or any others) did not enter the cave outside that identified period. The authors acknowledge this, yet their paper's title states that these dates bracket the antiquity of the rock art. Moreover, to create rock art, its makers had to be alive, and we lack certainty that living *H. naledi* entered the cave at any time. As noted above, we have no clear evidence that the hominin remains were not thrown into shaft openings and dispersed by water action and gravity. If that were the case, we would even face the possibility that the human remains predate 335 ka. The 'excavated pits' could derive from turbulent water action in the cave during a climatic phase of high precipitation.

Determining rock art age via nearby excavated finds is only acceptable with a sound stratigraphical connection, just as a lens cap found nearby does not date ancient rock art. Places such as caves, rockshelters and desert water-holes are 'occupation foci': 'The probability that two types of traces of occupation at one site are contemporaneous is perhaps a million times greater at some random location on the featureless Nullarbor Plain than in, for instance, Koonalda Cave, which was a focus of much activity' (Bednarik 1989: 10). Superimposed on this massive bias is the artefact created by such sites being also favoured by archaeologists. Hence, the probability of two human activity traces being contemporary at such places is very low indeed.

Hominins had several reasons for entering caves that were very difficult to negotiate. They may have wanted to flee and hide, search for subterranean water during severe drought, or mine siliceous stone seams in carbonate rock. The apparent presence of a dolostone tool in the absence of chert mining traces remains perturbing because the petroglyph incisions could not have been made with dolomite, considering its hardness of 3.5 – 4.0 on the Mohs scale. The grooves were incised in broad sweeps of much harder tools, none of which have been found so far. Similarly, traces of charcoal or, preferably, soot are required to demonstrate the use of artificial lighting. The authors believe that Panel A was smoothed, and dirt or sand

1 The choice of terminology is questionable: 'caching' implies 'storing in hiding or for future use'.

was applied before the grooves were cut. I perceive no evidence for such treatment in the photographs provided and note that the technique would be extremely rare in world rock art. The brown surface deposit ('patination') derives largely from airborne fine-fraction mineral matter settling according to airflow, consistent with other South African veldt caves.

This accretionary deposit offers some insight into the possible age of the engravings. Two types of linear rock markings occur on the panel: friction-created anthropogenic grooves of distinctive tribology, and natural fissures extending deeper into the rock. A few examples can even be observed of natural cracks having been 'emphasised' with a stone tool, as in Groove 18. This exposed the fissure's deeply patinated interior, demonstrating the panel accretion's thinness (Fig. 1).

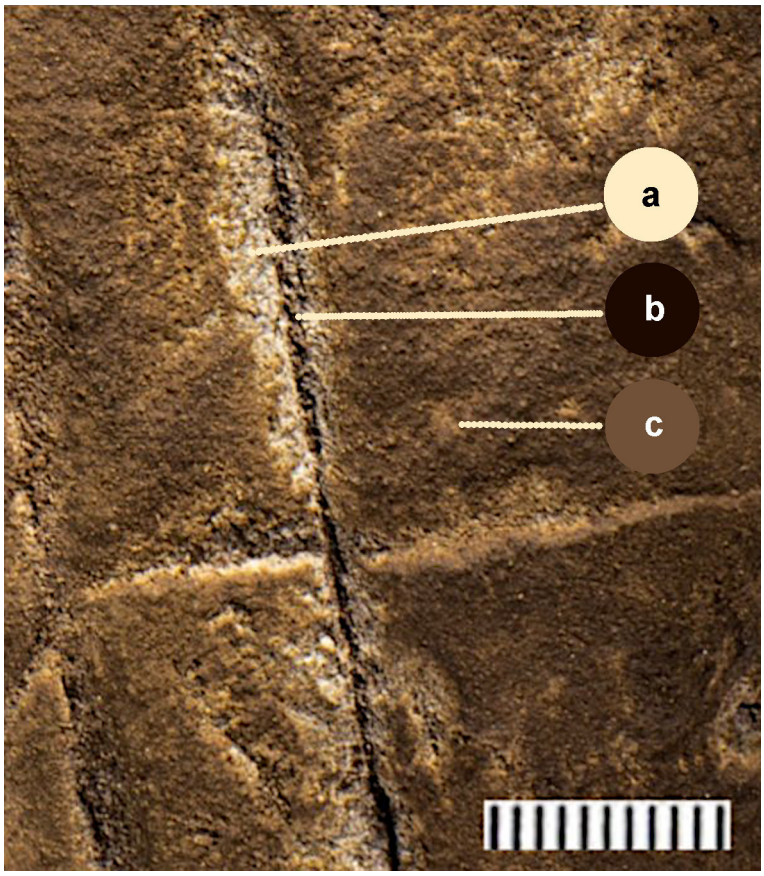

Figure 1. *Closeup of the upper part of Groove 18, Panel A, showing the great colour contrast between petroglyph groove (a), earlier natural fissure (b) and the typical patination of the panel (c). Adapted from Figure 13 of Berger et al. (2023b), scale in millimetres.*

The putative Neanderthal petroglyphs in Gorham's Cave, Gibraltar, underlie sediment layer IV, which dates to ~39 cal ka BP (Rodríguez-Vidal et al. 2014) and they are illustrated by Berger et al. to show how similar their 'geometric' design is to the Panel A arrangements. A more relevant insight gained from the comparison is how much younger the latter appears. The Gibraltar grooves bear massive accretions, identical to those of the unmarked surrounding surface and, in some cases, almost filling the grooves. Had the two sets of petroglyphs been subjected to identical environments, the Gibraltar rock art would be several dozen times as old as that in Rising Star Cave, which ranges from unpatinated to barely patinated. While we lack such palaeoenvironmental knowledge, it seems untenable to attribute to the latter markings antiquity six to eight times as great as the former. Realistically, the Rising Star petroglyphs would fit much better into a final Late Pleistocene or even Holocene slot than a 241–335 ka range. Concerning the comparison, I should also note that no geometric motifs are apparent in either case. Groups of multidirectional and superimposed linear markings will always appear to form geometric entities. However, this is almost certainly an incidental characteristic rather than a deliberate effect.

4. Conclusion

Having argued almost countless times that hominins have created palaeoart for hundreds of millennia, I would have no hesitation accepting the Middle Pleistocene age of the Rising Star Cave petroglyphs if there were credible empirical evidence for this. After all, we have an even earlier proposal for two other South African petroglyph sites (Beaumont and Bednarik 2015) and one proposal of 200 ka from Sudan (Van Peer et al. 2003), in addition to Lower Palaeolithic petroglyphs in central India. The record of portable palaeoart also extends well into the Middle Pleistocene. The problem with the Rising Star rock art is that the age claim is based entirely on the proximity of the skeletal remains and the view that no humans other than *H. naledi* entered the cave until recent decades. However, mere proximity to other material evidence provides fragile support, and we cannot even be sure that *H. naledi* entered the cave alive. Some evidence renders that unlikely, including the lack of lighting traces, the dearth of stone artefacts, the apparent absence of chert mining signs, the presence of subsurface drains and the intermingling of the human remains.

The Rising Star Cave continues to be a site of profound importance for the study of human evolution. While the classification of *H. naledi* as a new species is widely accepted, and I fully support the identification of *some* of the rock art, the interpretations of mortuary practices and petroglyph attribution remain contentious (Martinón-Torres et al. 2024). I emphasise that this is not because such findings are unrealistic; they are perfectly reasonable, as indicated by evidence elsewhere. However, they need to be better presented precisely because of their far-reaching implications.

Ongoing research and technological advancements will undoubtedly shed more light on these issues. In the case of the petroglyphs in the Hill Antechamber, the collaboration of specialists in distinguishing natural from cultural rock markings and estimating the latter's age is mandatory. What the authors have provided so far is a preliminary report of significant finds and discoveries. However, their *eLife* article falls short of the requirements of presenting such important linear cave petroglyphs.

Acknowledgment

I am grateful for Dr Charles W. Helm's peer review of this paper. However, I am solely responsible for its shortcomings.

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RAR 42-1461

Survey and dating of the Baiyunwan rock art in the Jinsha River Basin, China

By TANG HUISHENG, YU YANG, ZHANG HAIWEI, LI GANG, LI MAN and SHI LANYING

Since the discovery of rock art along the Jinsha River in Yunnan in the late 1980s, more than 80 sites have been identified. These rock paintings are located in Yulong County and Shangri-La Prefecture along the banks of the Jinsha River. More specifically, they can be found downstream of the Jinsha River north of the Tiger Leaping Gorge, in the villages of Sanba, Luoji and Shangjiang in Shangri-La County of the Diqing

Tibetan Autonomous Prefecture, as well as in Bayang, Fengke, Baoshan and Mingyin in the Yulong County of Lijiang City. Other locations include Dadong Township in the Ancient Town District and Cuiju and Jinjin Townships in Ninglang County, all situated along the Jinsha River and its tributaries.

The Baiyunwan rock art site is the most challenging to access among the Jinsha River rock paintings. The images are found at a height suitable for painting, between 1.3 and 1.7 m on the rockshelter wall, extending intermittently for nearly 20 m. Although the images are currently faded and damaged, the original artwork must have been spectacular, making it one of the highlights of the Jinsha River rock art. Most importantly, this location has garnered significant attention from rock art scholars, being the site where the most scientific dating has been conducted.

The earliest foreign visitors to Baiyunwan were Australian rock art researchers Paul Taçon and Maxime Aubert in December 2008. After spending a day climbing to the site to complete their survey, Taçon refused to return the same way due to safety concerns, opting instead to take a longer route that would require an additional two days. He considered Baiyunwan the most remote and dangerous rock art site he had ever visited.

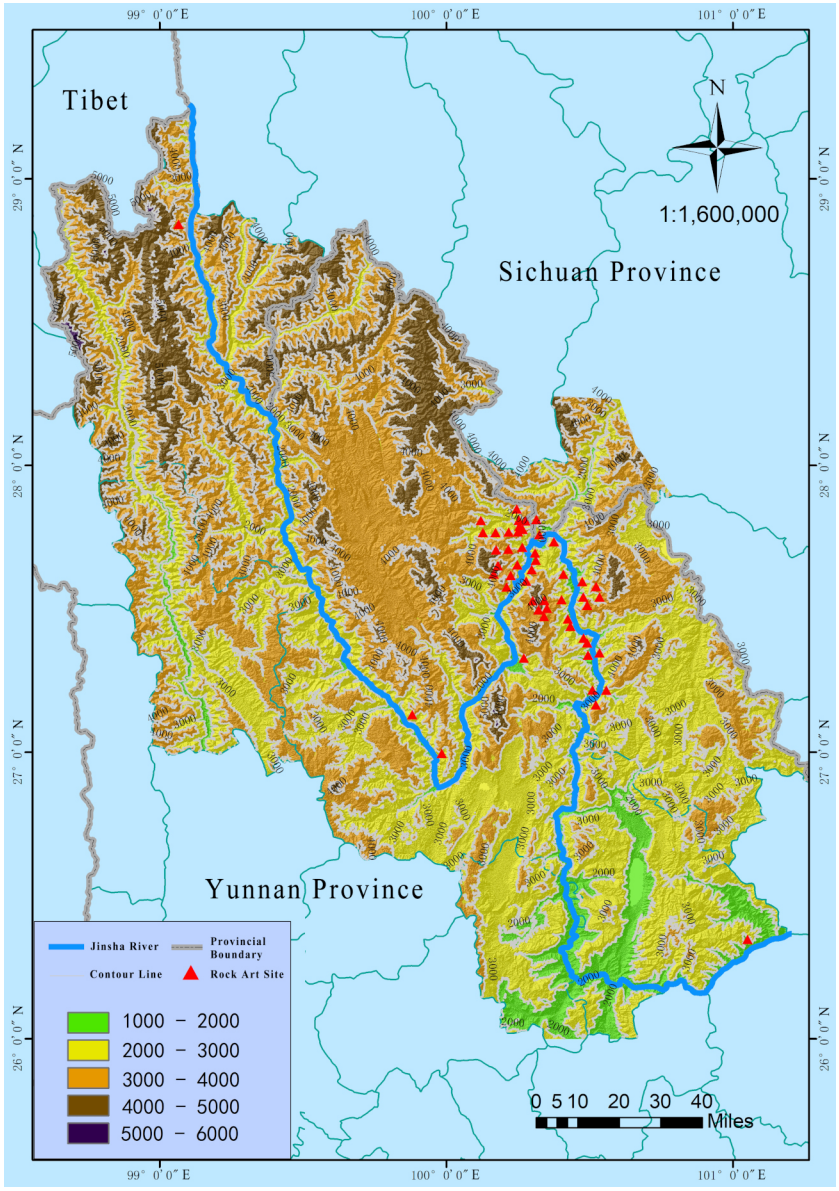

Figure 1. *Distribution map of painted rock art sites in the Jinsha River Basin.*

Taçon et al.'s (2012) dating results indicated a minimum age of 2300±250 years and a maximum of 9400±6000 years by uranium series dating. The minimum age for radiocarbon dating was 4475±57 years, and the maximum age was 10,335±97 years. Both the uranium series and carbon-14 results require calibration. Uranium series dating necessitates a correction using ^{230}Th, but the results can vary significantly, which is why Taçon et al. ultimately did not use them. For radiocarbon dating, the presence of dead carbon in the carbonate samples, which exceed 50,000 years and cannot be accurately dated using the radiocarbon method, complicates the results. Assuming a constant amount of dead carbon in the strata, if we apply a correction curve of 55–45% to the carbon-14 date of 10,335±97 years, the maximum age range would be approximately 5738–4694 years ago. Taçon et al. (2012) ultimately chose to use the carbon-14 dating results. However, even if this date is accurate, it can only indicate a specific period within the timeframe of the Jinsha River rock art—it cannot be considered the earliest. It may, however, represent the latest date.

In the depictions of animals in the rock art, we identified an animal image as the 'tapir', which, according to archaeological data, became extinct in the Jinsha River region after 8000–6250 years ago (Tangzigou fauna in Baoshan, Yunnan; Huang and Zhang 2006; see also Ma and Tang 1992; Yang and Yang 1995). The retention of the tapir's image in rock art suggests that it is an artefact dating back at least to early Holocene times. Moreover, regarding the themes, content and artistic style, the Jinsha River rock art is consistent with the rock art from Sulawesi that dates back 40,000 years, and it bears strong similarities to Late Palaeolithic rock art in Europe, leading rock art scholars to classify it as 'naturalistic-style rock art' (Taçon et al. 2010). What significance does the Jinsha River rock art hold in relation to the rock art of Sulawesi and Upper Palaeolithic European rock art? What implications does it have

Figure 2. Sampling was conducted using an 8 cm hollow drill; the carbonate that is precipitated on the rock art, resembling a cluster of corals, can be scraped off using a small knife or chisel; the columnar accumulation of calcium carbonate can be removed from the bedrock using a chisel. We divided this sample into three parts: one was sent to the Isotope Laboratory of Xi'an Jiaotong University, and two were sent to Beta Laboratories for uranium series dating and carbon-14 dating, respectively.

for the origin of global rock art or symbolic systems? These are the reasons why we returned to the Jinsha River and revisited Baiyunwan.

There was essentially no path to the rock art site; as the guide put it, "There are no roads, only directions". The route became increasingly treacherous during the nearly five hours of climbing the steep mountainside to the Baiyunwan rockshelter. It is located at a summit, and the rock art is impressive in scale. It features a multitude of animal figures, with 'bison' and 'sheep' being the predominant images. While the preservation of the images is not great—likely due to the strong winds at the summit—the remaining rock art still boasts an awe-inspiring presence. The vibrant, naturalistic animal rock art here can be compared to Europe's Upper Palaeolithic cave paintings, resembling a version of the Sulawesi rock art. The calcium carbonate here is well-developed and quite thick. Clearly, this was an excellent shelter for hunters or their prey to escape the elements, as there was a thick layer of animal dung accumulated on the ground beneath the rock overhang. On some cliffs, we could also find soot marks left by shepherds or hunters who had made fires.

In the Chauvet Cave in France, many images of rhinoceroses and wild horses are drawn with black lines and rock art researchers believe these black line drawings were created by humans using burned wood charcoal. At the Jinsha River rock art site, traces of early human fire were found, but no animal figures drawn in black charcoal lines have yet been discovered in the rock art, though it is possible that they may be found in the future.

The naturalistic animal figures in the rock art feature typical styles of Palaeolithic art: mulberry-coloured pigments, animal figures depicted at their actual size, outlines often drawn with double or multiple lines, overlapping rock art images, and a thick layer of calcium carbonate covering the rock art. The animals shown include 'bison', 'deer' and 'musk deer', all rendered at their true sizes, with overlapping figures that intersect one another.

At the Baiyunwan rock art site, we used an 8 cm hollow drill for sampling; we also used chisels to chip off the carbonate that covered the rock art for uranium series and carbon-14 dating (Figs 2 and 3). Some large samples were divided into three parts: one was sent to

Figure 3. The uranium series dating samples and their locations from the Baiyunwan rock art show three layers: bedrock, rock art layer, and carbonate layer. Powdered subsamples were drilled from these three layers, with ages of approximately 11,265±2167 years, 9464±1322 years, and 4479±2251 years, respectively.

the Isotope Laboratory of Xi'an Jiaotong University, and two were sent to Beta Laboratory for uranium series dating and carbon-14 dating, respectively. Among the two sets of dating data from Beta Laboratory, the uranium-series age was consistently older, at approximately 9766±110 years, while the carbon-14 age was younger, at approximately 6310±30 years.

In the uranium series dating data from the Baiyunwan site, samples BYW-5-1 and BYW-9-1 were both drilled from the bedrock layer, which is the painting over the stone, so they are very old but unrelated to the rock art. However, the other samples in this group are from carbonate precipitated over the paintings, with the oldest dating back to about 13,382±1104 years ago, sample number BYW-3-2, and the latest date for sample BYW-2-1T being only 4479±2551 years ago.

Sample/ split	Over rock art	Under rock art	Laboratory	^{14}C result	U-Th result
BYW-2-1T	x		A		4479±2551
BYW-2-1M	x		A		9464±1322
BYW-2-1B		x	A		11,265±2167
BYW-3-1		x	A		333,930±11107
BYW-3-2	x		A		13,382±1104
BYW-4-1	x		B	6310±30	
BYW-4-2	x		B		9766 ±110
BYW5-1		x	A		23,727±5828
BYW6-2		x	A		445,208±48636
BYW7-1		x	A		405,225±26188
BYW9-1		x	A		77,148±5757
BYW10-1	x		A		13,075±3145

Laboratories: A = Xi'an Jiaotong University; B = Beta

Table 1. *The results of the rock art dating attempts at Baiyunwan, Jinsha River Basin, China.*

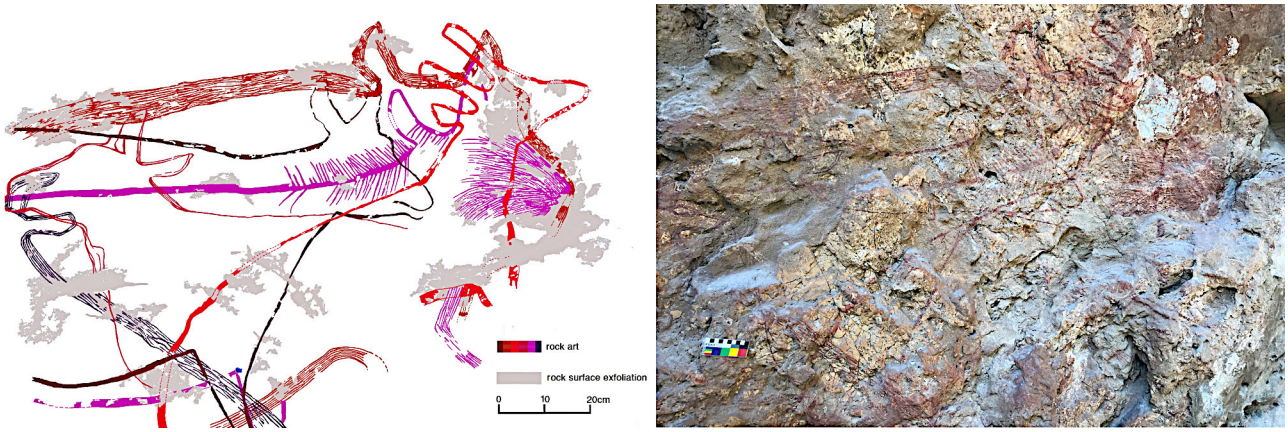

Figure 4. *The naturalistic animal figures in the rock art exhibit typical styles of Palaeolithic art: the use of mulberry-coloured pigment, animal figures depicted at their actual size, outlines of animals often drawn with double or multiple lines, and overlapping rock art images, as well as a thick covering of calcium carbonate over the rock art. The animals depicted in the images include 'bison', 'deer' and 'musk deer', all rendered at their true sizes, with overlapping figures that intersect with one another. All the animal figures in the rock paintings were drawn with red ochre pigment. But in our tracing, we used different colours to identify and highlight different animal figures and to show their overlapping relationships.*

^{230}Th dating results. The error is 2σ error.

Sample Number	^{238}U (ppb)	^{232}Th (ppt)	^{230}Th / ^{232}Th (atomic x10^{-6})	δ^{234}U (measured)	^{230}Th / ^{238}U (activity)	^{230}Th Age (yr) (uncorrected)	^{230}Th Age (yr) (corrected)	δ^{234}U$_{Initial}$ (corrected)	^{230}Th Age (yr BP) (corrected)
BYW-2-1 T	68.3 ±1.5	8636 ±210	10 ±1	118.5 ###	0.0781 ±0.0093	7883 ±1076	**4550 ±2551**	120 ±64	**4479 ±2551**
BYW-2-1 M	78.4 ±0.2	4207 ±85	31 ±2	32.9 ±3.7	0.0997 ±0.0067	11057 ±778	**9535 ±1322**	34 ±4	**9464 ±1322**
BYW-2-1 B	88.7 ±0.2	4340 ±91	38 ±6	34.6 ±4.4	0.1140 ±0.0165	12719 ±1958	**11336 ±2167**	36 ±5	**11265 ±2167**
BYW-3-1	197.9 ±0.3	4065 ±82	885 ±18	117.2 ±2.6	1.1025 ±0.0052	334463 #####	**334001 ±11107**	301 ±12	**333930 ±11107**
BYW-3-2	67.5 ±0.1	1684 ±35	83 ±6	24.3 ±3.7	0.1248 ±0.0082	14164 ±989	**13453 ±1104**	25 ±4	**13382 ±1104**
BYW-5-1	709.1 ±1.5	207464 ±4170	15 ±0	70.8 ±2.2	0.2732 ±0.0014	32008 ±204	**23798 ±5828**	76 ±3	**23727 ±5828**
BYW-6-2	378.7 ±0.9	6121 ±127	1139 ±25	97.9 ±3.1	1.1163 ±0.0088	445634 #####	**445279 ±48636**	344 ±50	**445208 ±48636**
BYW-7-1	331.6 ±0.6	24223 ±487	247 ±5	87.4 ±2.7	1.0927 ±0.0064	406980 #####	**405296 ±26188**	274 ±22	**405225 ±26188**
BYW-9-1	997.0 ±2.5	286580 ±5776	33 ±1	64.3 ±2.3	0.5812 ±0.0039	85247 ±912	**77219 ±5757**	80 ±3	**77148 ±5757**
BYW-10-1	83.0 ±0.2	11955 ±241	17 ±1	28.8 ±5.4	0.1510 ±0.0094	17292 ±1175	**13146 ±3145**	30 ±6	**13075 ±3145**

Table 2. *Based on the above uranium-series and carbon-14 dating data, we estimate that the earliest age of the Baiyunwan rock art is approximately 13,382±1104 years ago, sample number BYW-3-2, and the latest date for sample BYW-2-1T being only 4479±2551 years ago.*

Lab ID	Submitter ID	Material	Uncorrected Age (y BP)	± 95% CI	Corrected Age (y BP)	± 95% CI
IS-0447-U	BYW-4	Calcium Carbonate Rock	9950	105	9766	110

Table 3. *The uranium-series age estimate from Beta Laboratory.*

Figure 5. *We set off before dawn, took a boat upstream, and started climbing upon reaching the mountain base. The mountain path was steep and the vegetation was dense. In many places, we needed to support each other to pass. It took us five hours to reach the summit.*

In the columnar calcium carbonate sample in Figure 4, three strata can be seen: bedrock, rock art layer, and carbonate layer. Powdery sub-samples were drilled from these three strata, and the dates are 11,265±2167 years ago, 9464±1322 years ago, and 4479±2251 years ago, respectively.

Paul Taçon and others (2012) established a timeline for the making of rock art at Baiyunwan, including five periods. The large deer head image is relatively young; glazing and carbon-14 dating conducted on the carbonate plate and pigments covering the large deer head indicate its earliest date is 5738 years ago. The deer head covers smaller realistic style images, thus determining its relative chronology. Dating results show the latest date for the realistic style images is 3400 years ago, with the most recent date being 2050 years ago, but the question of their earliest date remains unresolved (Taçon and Tan 2012). After analysing and filtering these sets of dating data, we have compiled a set of valid and reliable dating data that should represent the approximate time of the rock art production at Baiyunwan, from over 13,000 years ago to over 4000 years ago.

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RAR 42-1462

RAR REVIEW

Theatres of imagery - a performance theory approach to rock art research, by DAVID M. WITELSON. 2023. BAR International Series 3149, Oxford, 224 pages, illustrated throughout in monochrome and colour, 13 pages of References Cited, Annexes, ISBN 978-1-4073-5619-8.

This well-illustrated monograph confirms, once and for all, the benefits of multidisciplinary approaches to rock art research. By applying timid but nonetheless persuasive concepts borrowed from the field of Performance Theory, the author, David M. Witelson, ushers rock art research into new investigative horizons. It is important to note that this analytical approach is not new, but what is new is how concepts such as restored behaviour, liminality and rites of passage are being applied to clusters of rock art in the Stormberg mountains in the Wodehouse District in South Africa's Eastern Cape Province. Performance Theory, which today is more easily identified in the academic landscape as Performance Studies, is a discipline that finds its emergence in the anthropological work of Arnold van Gennep, Victor Turner, Erving Goffman and Richard Schechner, to name a few. What all these scholars have in common is their dedication to probe the cultural depth and impact of liminality. Since liminality is defined as that which is performed on the cultural threshold between the regulated and the contested, it provides rock art researchers with an opportunity to paradigmatically shift their focus from quantitative fieldwork-generated data to qualitative musing into the complexities of analogic reasoning—the signature of ethnoarchaeology. Needless to say, this represents a fundamental paradigm shift for rock art research.

The monograph is strategically structured into fourteen chapters that together present the reader with a robust investigation into a substantial body of evidence for what the author defines as 'an irreducible aggregate of interrelating performances'.

The first chapter sets the stage. Chapter 2 lays out the methodological foundations. Chapter 3 details typologically the complexity of San performances. Chapter 4 brings a 'voice' to the iconographic manifestation in the Wodehouse district. Chapter 5 scaffolds the ethnographic evidence. Chapter 6 reviews the precarious and contested discourses about image making. Chapter 7 establishes the changing cultural landscape responsible for shifts in iconographic manifestations. Chapter 8 highlights the social impacts of alterity. Chapter 9 brings the concept of colour as a witness to cultural changes. Chapter 10 reinforces the role of colour in the local socio-economics. Chapter 11 introduces the symbolic weight of polysemic pairing of zoomorphic attributes in rock art. Chapter 12 reminds the reader about the deep connections between liminal behaviour and thematic common to traditional performances and iconography. Chapter 13 projects rock art research in a new paradigm: image-making performances. Chapter 14 concludes with the author providing an 'extraordinary site' that in and of itself embodies the author's thesis and effectively brings closure to this fascinating investigation.

If we combine the above brief descriptions of the fourteen chapters, we begin to see the contours of what I consider one of the most innovative approaches to rock art research in recent years. Without delving into the substance of each chapter for fear of trivialising Witelson's masterly weaved progression, I will nonetheless attempt a vulgarisation of his thesis. As I understand it, following major climate change shifts, nomadic agro-pastoralist population movements from northern areas gradually encroached onto southern local hunter-gatherers. The contact between these two populations triggered a cultural shift where alterity became a prominent concern in the process of integration. The paradigmatic and syntagmatic landscapes of the residing populations morphed and expanded by necessity. The local mythogenetic structures were gradually altered with insertions from foreign liminal behaviour. Performance as a social cathartic process was instrumental in the 'peaceful' integration process. This cultural shift resulted in new indexes of restored behaviour transcribed into iconographic entities and symbolic representations of fundamental belief systems. The rock art in the Wodehouse District and the current liminal register all bears the 'scars' of this cultural shift. Embedded in the iconography are behavioural narratives which are the Rosetta Stones for rock art research.

Witelson's monograph concludes with the following statement:

> I have endeavored in this book to develop performance theory in relation to the rock paintings of the Wodehouse District. The novel consideration of San images-making as performance goes some of the way to reaffirming why the detail of San ethnography—even that which does not directly concern the practice of image making—cannot reasonably be

separated from the rock paintings themselves: performances, past and present, bind the two through an intricate latticework of multiple iterations of interrelated performances (162).

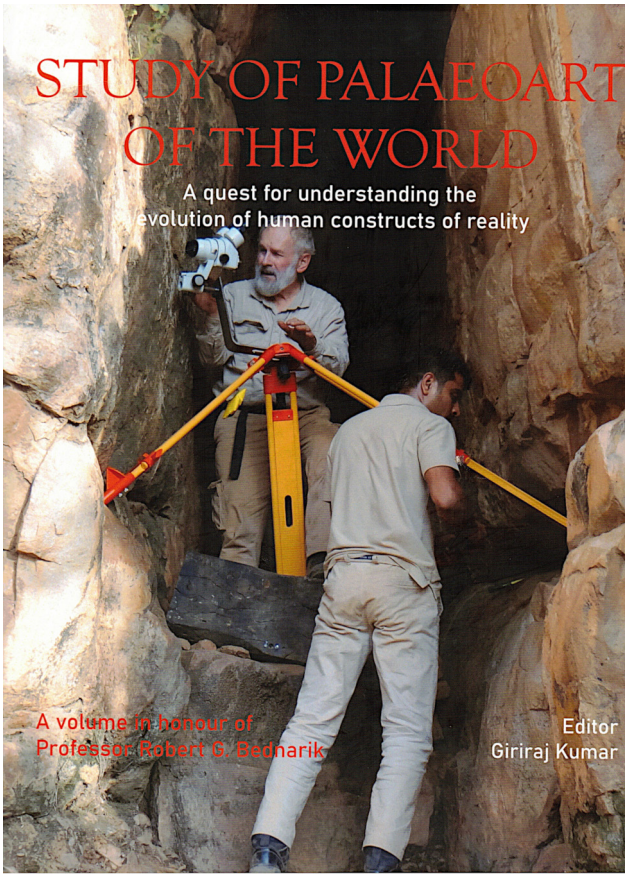
Witelson has provided the discipline with a blueprint; it is now up to us to apply this new architectonic to rock art research.

Dr Yann-Pierre Montelle
New Zealand
RAR 42-1463

STUDY OF PALAEOART OF THE WORLD:
A QUEST FOR UNDERSTANDING THE EVOLUTION OF HUMAN CONSTRUCTS OF REALITY
A volume in honour of Prof. Robert G. Bednarik, Convener, IFRAO

Edited by Prof. Giriraj Kumar, India; first edition 2024, by Pathak Publisher and Distributors, New Delhi, India; 400 pages, 22 × 29 cm, hardcover with dustjacket, high production quality, richly illustrated in colour and monochrome, ISBN 978-93-91952-70-9.

TABLE OF CONTENTS



Chapter 24. Hand and footprints at Qiusang in Tibet and related issues. Tang Huisheng, China
Chapter 25. On the relationship of the squatting-figure-rock art in Guangxi and Yunnan, China. Xiao Bo, Che Jing and Cao Yujie, China
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Chapter 27. Petroglyphs on Murujuga, western Australia – unique, endangered, and disappearing – the R. G. Bednarik legacy for hope. John L. Black and Robin H. Chapple, Australia
Chapter 28. Quantifying the sustainable development of rock art heritage. Ram Krishna, India

Study of palaeoart of the world: a quest for understanding the evolution of human constructs of reality is a volume in honour of Professor Robert G. Bednarik, Convener, International Federation of Rock Art Organisations (IFRAO). It consists of 28 articles by 25 scholars, which have been presented in two parts. Part I comprises 11 articles highlighting the personality, contributions and achievements of Robert G. Bednarik in the field of palaeoart research and memories of working with him by different scholars from all over the world. Part II contains 17 articles by veteran scholars in their fields of research. The areas covered are rock art research, the cognitive and cultural development of humans, the development of the brain, cognitive capabilities, language, different aspects of the cultures of humans and their reflections in rock art, scientific dating and other areas of rock art science such as protection, conservation and management of rock art heritage sites. The articles echo the life-long experiences and in-depth study of the subjects in palaeoart by the scholars from many different parts of the world.

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A study of petroglyphs unearthed at the ancient cemetery sites of Garangash and Habaikhan n Habahe County, Xinjiang

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In 2012, eight petroglyphs were unearthed from the ancient cemetery sites of Garangash and Habaikhan in Habahe County, Xinjiang. These petroglyphs can be regarded as important materials for dating petroglyphs. By analysing these petroglyphs and general combing the dating research methods of petroglyphs, the excavators put forward the relative dating research method of standard petroglyphs, which is a beneficial exploration of dating petroglyphs.

Analysis of vehicle image in Yinshan Mountain petroglyphs and car-shape structure seen in petroglyphs

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Since the late 1970s, Mr Gai Shanlin has been instrumental in discovering numerous vehicle and wheel-shaped images among the Yinshan Mountain petroglyphs. Building upon prior research, the authors systematically review the data of vehicle petroglyphs discovered in this region, offers insights regarding the distribution areas of these petroglyphs and the identification of vehicle images, and discuss twelve individual vehicle images found on eleven groupings of petroglyphs that have been preliminarily identified. In the analysis of vehicle petroglyphs, the study provides a detailed description of the overall context while also comparing and interpreting the structural characteristics of all vehicle images. Furthermore, initial hypotheses regarding the chronology of the vehicle petroglyphs in the Yinshan area are proposed. Regrettably, due to space limitations, an in-depth discussion on the identification and categorisation of related wheel-shaped images cannot be included.

Distribution and types of the cupules in Anshan High-tech Industrial Development Zone

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The Anshan High-tech Industrial Development Zone constitutes the epicentre of the cupules concentration within the Anshan region, boasting a plethora of cupules characterised by diverse and intricate designs, notably including the 'plum blossom' motifs, engraved 'turtle stones' and intricate grid motifs. Based on the extensive field investigations conducted over successive years, this paper presents an in-depth examination of the geographical distribution, motifs, classifications, and inspirations behind the cupules situated within the high-tech industrial development zone.

Similarity recognition and interpretation of typical graphic symbols in Damaidi rock art

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The rock art of Damaidi is a system of graphical symbols created by various northern nomadic peoples and tribes in the region. This study focuses on three typical graphic symbols frequently appearing in Damaidi rock art: '  ', '  ', and '  '. These symbols function similarly to oracle bone script in terms of pictographs and ideographs. By integrating computer pattern recognition technology with traditional methods in the study of rock art, the similarity recognition between typical rock art symbols and oracle bone script forms can break through the limitations of traditional interpretation, providing a new medium for the interpretation of rock art. This study also considers different rock arts with similar graphic symbols and their historical contexts to identify and interpret rock art symbols, exploring new methods and theories for rock art research. Furthermore, it aims to scientifically determine whether rock art symbols might represent an early form in the development of Chinese characters, providing evidence and clues for the study of the origins of Chinese civilisation.

A summary of the research on Huashan rock art in China

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The Huashan rock art of China is one of the largest distributions of rock art in the world, which is located in Guangxi Zhuang Autonomous Region. It is the first world cultural heritage of rock art in China with great historical and cultural value. Based on the main websites and some periodicals databases in China, we found some major research literatures on Huashan rock art since 1949. Through analysing, we clarified the development context of the research on Huashan rock art research, summarised the academic point of view of the research of the Huashan rock art, and pointed out its existing problems and the direction of further development, in order to clarify the significance of Huashan rock art, and attract more attention of scholars' attention both at home and abroad for further research.

A quantitative analysis on the funded articles of Chinese rock art research

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To sort out the development process of Chinese rock art research, the funded papers containing the '岩画 (Rock Art)' by title are collected and summarised in the CNKI's 'China Knowledge Resources Database' and the four core journals in the 'China Academic Journals Online Publishing Database' (CAJD). As of September 2024, 413 funded papers of Chinese rock art research are selected that supported by 258 various fund projects, including 75 national projects. The first funded paper was published in 1990, later than the first unfunded one in 1930 in China. The quantitative analysis results of funded papers show that Chinese rock art research can be roughly divided into the initial stage from 2001 to 2008, the development stage from 2009 to 2013, and the steady development stage from 2014 to the present. Mostly projects had one paper published, and the national and ministerial projects had increased number of papers in the four Chinese core databases.

Unveiling the tapestry of ancient imaginings: a review of 'Study of palaeoart of the world : A quest for understanding the evolution of human constructs of reality'

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This review consists in the written scholarship in honour of the Professor Robert G. Bednarik, which is published in the '*Study of palaeoart of the world: a quest for understanding the evolution of human constructs of reality*' under the editorship of Giriraj Kumar. This encyclopedia is not only an academic book, rather it is a tribute to one of the pioneering researchers in rock art, integrating various regions and literatures on palaeoart. The review also highlights the multidimensional coverage of the book,

such as the achievements of Bednarik and his personal life, and his impact, if any, on the methods of rock art dating. Furthermore, it addresses the new geographical and thematic areas and approaches covered in the work, revealing the state of the art and technological advances in palaeoart research. Moreover, the review illustrates why the work is crucial to both specialists and the public in that it connects the audience to the past via the analysis of rock art as a pathway to the development of the mind of modern human beings. It concludes by commending the editor and contributors for their efforts towards the production of an informative and durable book about the legacy of rock art and all those who have striven to understand this art form throughout history.

The birdman of Lascaux: a note

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The so-called 'shaft scene' at Lascaux, representing the mortal conflict between a hunter and a bison, rewards frequent re-examination. This one concentrates on the nature of the supposedly human hunter (in reality a bird-man composite), his context, and his parallels in other caves, and reinforces those (few) interpretations that consider the scene a mythological narrative.

Shamanism and brain illness in rock art production

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Among the many generic explanations offered over the past two centuries for rock art production, those involving several brain illnesses and shamanism are selected for detailed analysis. These proposals are reviewed in light of the aetiologies of the psychiatric conditions linked to rock art. Some are related to the assumption that palaeoart was introduced through shamanism. Although no simplistic link between shamanism and brain disorders has been demonstrated, relevant susceptibility alleles might be involved in some shamanic experiences. No connection between rock art and shamanism has been credibly demonstrated to date. Moreover, the assumption that neuropathologies and shamanism preceded the advent of palaeoart also appears to be mistaken. It derives from the belief that palaeoart was introduced by 'anatomically modern humans' and on the discredited replacement hypothesis. These interlinked issues are discussed.

Continuity in the rock art tradition of the Siberian lower Amur Basin

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This paper explores the problem of the correlation of rock art traditions and archaeological cultures of the lower Amur basin (Russian Far East) in the Neolithic period. The aim of the paper is to reconsider established chronology based on recent archaeological findings and advances in rock art data. This researcher's previous paper on this topic only considered face design, but in this article, zoomorphic images are also examined. A recently discovered pattern of a long-lasting rock art tradition is explained through an anthropological perspective on ethnicity, identity, social practice, symbolism and community.

RECENT BOOKS OF INTEREST

A comprehensive survey of rock art in Upper Tibet: Volume III - Stod (eastern half) by JOHN VINCENT BELLEZZA. 2024. Archeopress Archaeology, Oxford; 1093+xxvi pages, 215 colour illustrations, 18 maps, extensive bibliography, paperback, £160.00 (includes PDF), ISBN 978-1-80327-773-8. Also available open access, ISBN 978-1-80327-774-5 (e-PDF), downloadable at *https://www.archaeopress.com/Archaeopress/Products/9781803277738*.

Les gravures rupestres du Bego. Recherches sur le statut et les interprétations des pétroglyphes protohistoriques by HENRY DE LUMLEY. 2024. CNRS Éditions, Paris; 515 pages, 381 colour and monochrome illustrations, with commentaries by Emmanuel Anati, Robert G. Bednarik, Stanislas Dehaene, Michel de Jaeghere, Marcel Otte and Antonella Traverso. Extensive bibliography, paperback, 49 euros, ISBN 978-2-271-14900-8.

RECENT PAPER OF INTEREST

Petroglyphs in context: another look at the Chillihuay Archaeological Complex in southern Peru, by DANNY ZBOROVER, ALEX ELVIS BADILLO, MARÍA CECILIA LOZADA, ERIKA SIMBORTH LOZADA and DAMASO WILE HUASHUAYO CHÁVEZ. 2024. *Andean Past*, Volume 14, pp. 101–138.

ORIENTATION

Elfriede Bednarik

11 March 1945 to 3 September 2023

Elfriede Schipfer was born on 11 March 1945 in Graz, Austria, to Kaethe and Franz Schipfer, just weeks before the end of World War II. Elfriede contracted typhoid fever almost immediately and almost died. Her mother thought it was a miracle that she survived. Elfriede had one brother. She grew up in Graz, the second-largest city in Austria, and attended school in Graz-Andritz. When she finished school she trained as a bookkeeper in a large wholesaling company, and she worked in this capacity for several years.

In late 1970 Elfriede travelled to Melbourne, Australia, to marry Robert Bednarik in February 1971. They had a daughter, Cathrin, born in 1972, and a son, Robert junior, born in 1975. Both children graduated from Melbourne University. Cathrin now works with severely handicapped people and Robert junior is a biologist.

Elfriede was highly intelligent and well-travelled. She was interested in the world around her. Though she lived most of her adult life within the more relaxed social norms of Australia, Elfriede's gentle and courteous manner held an echo of Central European formality. She was fluent in French, English, German and Austrian, and she spoke Spanish and some Russian. However, she was gentle and soft-spoken. Her natural modesty prevented her from displaying her skills in any way. Her husband Robert Bednarik states that 'She genuinely regarded herself as "uninteresting", which I can assure you was a severe mischaracterisation. It took me a long time to convince her of my belief that she was fascinating—in all her modesty. In particular, she was completely unable to brag or show off, and she was basically a genuinely humble person'.

Figure 1. *Elfriede Bednarik in 2019. Photo by Robert Bednarik junior.*

Elfriede Bednarik became an Australian citizen in 1976. She proved her adaptability by becoming an expert caver and rock art researcher. Elfriede and Robert Bednarik shared a great love for the outdoors and for rock art. Elfriede learned basic archaeology from working with Robert Bednarik, reading, attending public lectures and participating in excavations.

Elfriede Bednarik had strong family values. Her parents, especially her mother, visited her in Australia several times, and the Bednarik family regularly went to Austria for extended visits. On one occasion in the mid-1980s, Elfriede's mother lived with the family in Melbourne for half a year. In her spare time, Elfriede loved reading and knitting, travelling and, of course, bushwalking.

In the 1970s, when a controversy developed concerning markings found in Australian caves, Elfriede and Robert Bednarik conducted extensive research to determine how to distinguish between human and natural markings, establishing the Parietal Markings Project in 1980. Elfriede was instrumental in obtaining a grant of $5000 from the National Estate Grants Program, for 'Minor protection works, gridding and security at various caves in the South-East of South Australia', including Paroong Cave in South Australia, and a further grant of $4200 from the Australian Institute of Aboriginal Studies Rock Art Protection Program (Bednarik and Bednarik 2002:4). This Parietal Markings Project, still operational, became a forerunner of Australian Rock Art Research Association (AURA), which was founded in 1983. While Elfriede Bednarik's publications are few, they include the reporting of previously unreported petroglyph sites in Tasmania (Bednarik et al. 2007, 2010). She also played an important role in the ongoing

Figure 2. *Elfriede Bednarik at the First AURA Congress in Darwin, Australia, 1992, with Maria Mercedes Podestá from Argentina. Photo by Robert Bednarik.*

campaign to protect rock art sites on the Dampier Archipelago in Western Australia.

During the early, heady years when the Australian Rock Art Research Association was being established, Elfriede Bednarik was a quiet, determined and steady force. She worked alongside Robert Bednarik as he nurtured AURA into a globally significant membership organisation with an internationally recognised, highly ranked journal, *Rock Art Research*. Elfriede was the Treasurer of AURA for some decades and was meticulous in her duties and reporting. The AURA Congresses transformed rock art research in Australia, providing new and sustained energy for a sub-discipline that had been, at best, marginal, until that time. In her role as Registrar, Elfriede Bednarik was a reliable presence at three AURA Congresses and five of the six AURA Inter-Congress Symposia.

Over more than forty years, Elfriede Bednarik contributed much to the rock art research community, both in Australia and globally. Her sustained and outstanding support for AURA's Congresses and publications is well recognised. What is less known is that she conducted rock art research alongside Robert Bednarik in hundreds of caves. Elfriede travelled widely in all states of Australia and in many parts of the world, including Bolivia, China, India, Austria, Italy, Switzerland, France and Germany.

On 3rd September 2023 Elfriede Bednarik died of pneumonia contracted in hospital. She will be much missed by the rock art research community, not only in Australia but globally.

Prof. Claire Smith

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RAR 42-1464

Save Rock Art – Salviamo L'Arte Rupestre

CeSMAP (the Centro Studi e Museo Arte Preistorica) of Italy has long been one of the most active and innovative members of IFRAO. For instance, recently, the Centro organised the hugely successful Neander-ART2018 international conference at the University of Turin. Held under the auspices of UNESCO and IFRAO, the event addressed the problematic topic of art-like productions by robust hominins, rendered necessary by the ever-increasing number of such discoveries from four continents.

Last year, to celebrate the 60th anniversary of its founding, CeSMAP prepared an international exhibition on the crucial topic of rock art preservation. The sixty member organisations of IFRAO were invited to submit visual exhibits, which accounted for the wide coverage, as all continents were represented. The event was supported by UNESCO, the Region of Piemonte, IFRAO and the International Union for Prehistoric and Protohistoric Sciences.

The exhibition, held at the Palazzo Vittone in CeSMAP's hometown of Pinerolo, was a testament to the leadership of Prof. Dario Seglie and Dr Piero Ricchiardi. After a grand opening on 28 September, the exhibition was open to visitors every day until 22 December 2024, attracting a significant number of visitors.

The exhibition is now available to other IFRAO member organisations to stage in their home countries. Its front poster depicts the classical case of a corpus of rock art subjected to systematic destruction by poorly planned development. The massive body of petroglyphs in the Dampier Archipelago of Western Australia is gradually degraded by acid rain deriving from industry it shares its location with unnecessarily. Numerous alternative locations for the development (chemical industry and loading harbours) were ignored in a planning blunder of the 1960s and perpetuated ever since.

CeSMAP was established in 1964 in Pinerolo and is one of the field's most important institutions. Research led by the Centro has focused on two topics: the pre-Historic spiritual sphere throughout the millen-

nia, as expressed in rock art, and the evolution of pre- and proto-Historic culture in the archaeological, climatic and environmental context of the western Alps. The rock art missions of CeSMAP cover all the continents, and the international rock art collections of the Museum of Prehistoric Art of Pinerolo, Italy, are unique in the world in representing this phenomenon. The specialised library of CeSMAP is open to scholars and students and online and has over 15,000 volumes.

R. G. Bednarik
Convener of IFRAO
RAR 42-1465

On left, Dampier Archipelago, Western Australia: millions of tonnes of acidic emissions per year pour over the world's largest rock art concentration, destroying what took hundreds of generations to create.

Website: https://www.grrrhc.com/

For queries/submissions: submissions@grrrhc.com

Conference dates: 2–5 July 2025

Venue: Queensland, Australia

Selected outstanding articles will be published in *Rock Art Research* (ISSN 0813-0426), with no additional publication fees. Indexed by Scopus (Q1) and Web of Science: AHCI.