# BRIEF REPORTS

## *'Interpreting' polychrome paintings using DStretch*

By R. G. GUNN, L. C. DOUGLAS and R. L. WHEAR

**Introduction**

The computer program Decorrelation Stretch (DStretch) has proven its value and versatility in the colour enhancement of rock art images (Harman 2008, 2009; Gunn et al. 2010). The process, however, has mainly been useful in highlighting monochrome motifs, or images in which one colour predominates. Using the same DStretch enhancement and a graphics program previously employed, a comparable technique is presented here that allows poorly preserved polychrome images to be similarly enhanced for visual reproduction, and then 'interpreted' for clarification, discussion and analysis. For us, this then presented a problem: as with DStretch and other objective enhancement methods (e.g. Brady 2006), the technique does not distinguish between the pigment image and similar colours pertaining to either other motifs or natural background marks and stains (which may have the same chemical composition as the pigments).

**Designation**

To use colour-enhancement for archaeological purposes requires that the procedure be replicable. To achieve this, DStretch was designed with pre-determined colour enhancements, with designations such as 'lre', 'lds' 'yds' and 'lab' (Harman 2008, 2009). These codes appear as suffixes on the photograph label (e.g. A139-01 Jabiru_yds). However, what is not readily displayed is the (variable) level of the tolerance scale used within the program to produce the image. While this may be described in the text or figure caption (e.g. Huntley 2012: 81), if a variety of levels are used on the one set of photographs it would be more appropriate for the level to be attached to the photograph's label. Hence, it is suggested that, until this can be an automated process, the tolerance scale level be manually added after the colour space designation: 'photo name_DStretch correlation code and scale value'. For example 'A139-01 Jabiru_yds10'; or 'A139-01 Jabiru_lab15', as appropriate.

**The example**

On the Arnhem Land Plateau, a deep and cave-like art site was encountered with a very dark, horizontal ceiling (ARN-0139/01; Fig. 1). The site was recorded as part of the Jawoyn Rock Art and Heritage Project in 2011 (Gunn and Whear 2007). The outer wall and ceiling (near the dripline) of the shelter has a quantity of pigment artwork. At the time of recording, due to poor lighting, the two large central motifs, a 'jabiru' and a 'female figure', were considered to be two of a number of purely white paintings. Reviewing the flash-filled photograph of these motifs at the time it was clear that other colours, red and yellow, were present although their full extent was unclear (Fig. 2 upper left).

Back in the office[1], the DStretch enhancement program showed that the 'jabiru' motif was painted with three colours (white, red and yellow; Fig. 2) and the 'female figure' in two (white and red). The enhancements also clarified the shape of two ovals (eggs?), adjacent to the bird's breast. At this stage then we have a standard photograph and three objectively enhanced photographs of the image and surrounding panel.

1 Jon Harman has recently developed a camera that enables DStretch enhancements to be viewed in the field. This camera allows apparently bare walls suspected of having paintings to be examined on the spot and either photographed in more detail, if motifs are present, or ignored if nothing is detected.

***Figure 1.*** *The Jarnarran shelter.*

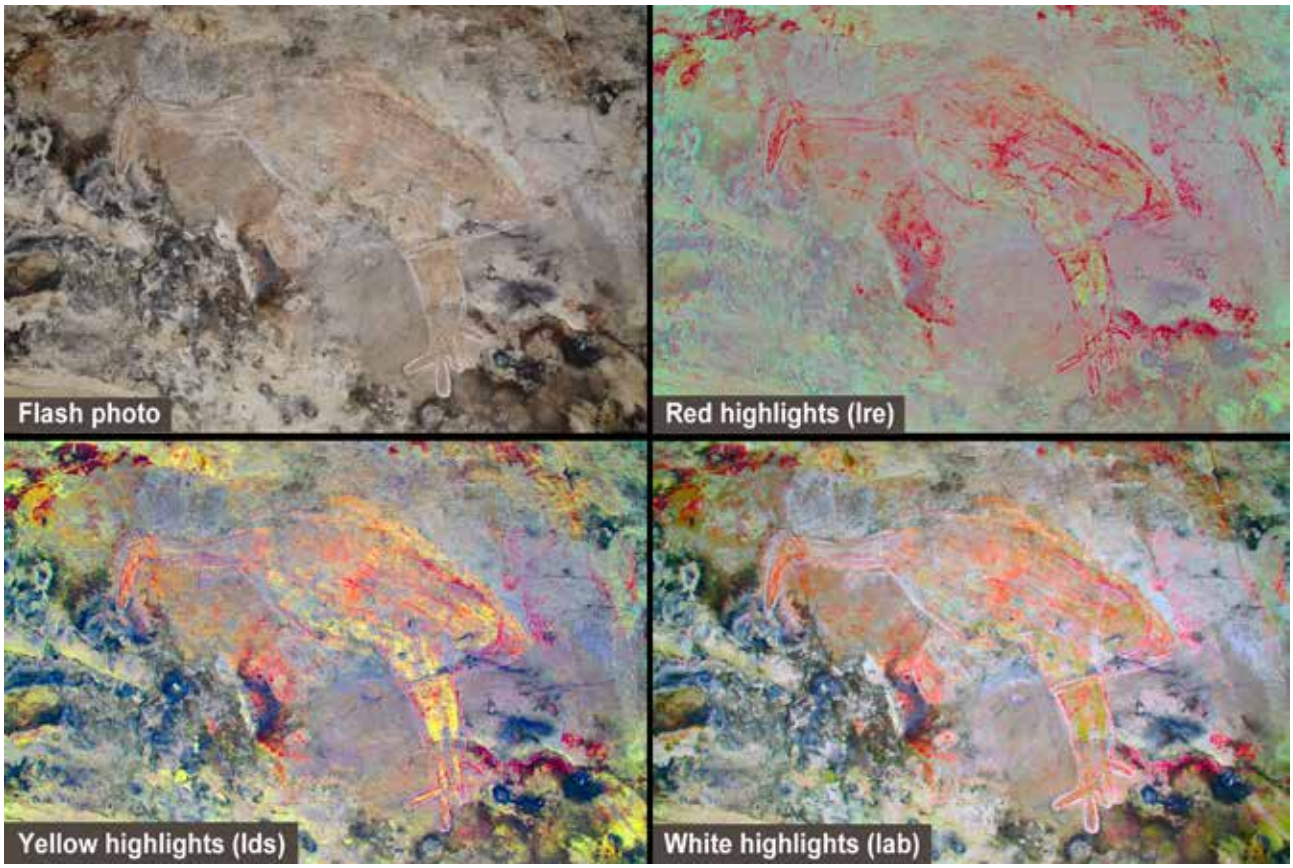


***Figure 2.*** *The Jarnarran 'jabiru' motif, standard photograph (upper left) and three DStretch enhancements.*

**The departure**

At this point we can leave the image split as three separate colour-enhanced images, with each image showing objectively where the individual colours are. It was also clear, however, that each photographic image contained extraneous colour that was not related to the painted image under consideration and was therefore considered to be visual 'noise'. Hence, while photographing a particular motif of interest, we still do not have an enhanced image that allows us to clearly show others what areas of colour we are talking about. For instance, if we say that we are showing a DStretch image of a 'jabiru' (as in Fig. 2), others seeing the images will understand what we are looking for (and hence at) within the image. But if the audience viewers do not know the schema of a 'jabiru', will they see it? Or will they instead see just an amalgam of abstract colours? As researchers, it is our job not only to show what is there, but also to *interpret* what is there so that our argument can be followed by others. (Note the debate revolving around whether sets of hollows in the Sydney sandstone are of human or natural origins [Cairns and Branagan 1992; Bednarik 2008; Welch 2012]). In archaeology, a similar parallel can be drawn from the retrieval of quartz pieces from an excavation: at some point a decision needs to be made as to which ones are residues from artefact manufacture and which are from natural processes (Holdaway and Stern 2004: 116–118). With such difficult material, the interpretation will often depend on the familiarity of the assessor with the

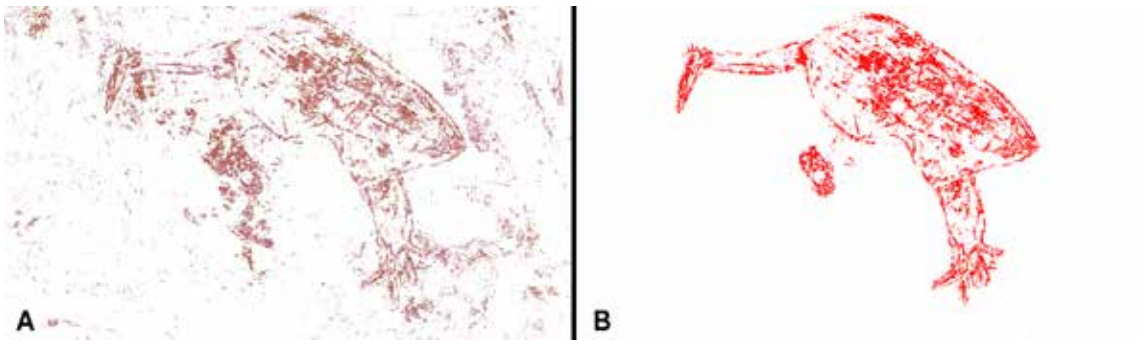


***Figure 3.*** *Red target colour (lre): (A) isolated onto flat background; and (B) colour standardised and image selectively 'cleaned' (right).*

material and the time available for thorough, often microscopic, analysis. This also applies to rock art.

Opening these enhanced images in Adobe Photoshop© (or using a similar image program), the high-lighted colour was isolated with the 'magic wand' feature. Here the wand tolerance scale was set at 30. Note that the hue and tone of any rock art painting will randomly vary across the image due to varying lighting conditions, pigment density, pigment impurities and weathering agencies. To select all sections of the image, the shift key is held down, and other appropriate tones added to the selection. The resulting frame can then be pasted into a layered image over either the original photograph or a flat coloured sheet (Fig. 3A). At this point, if the requirement is simply to interpret a particular and recognised image, extraneous surrounding colour can be deleted with the eraser tool (Fig. 3B). This process is undertaken for the other required colours and a composite image developed that can be arranged according to the order in which the colours were applied on the painting. The layers are then flattened into a single image for reproduction (Figs 4 and 5; cf. Harman 2008).

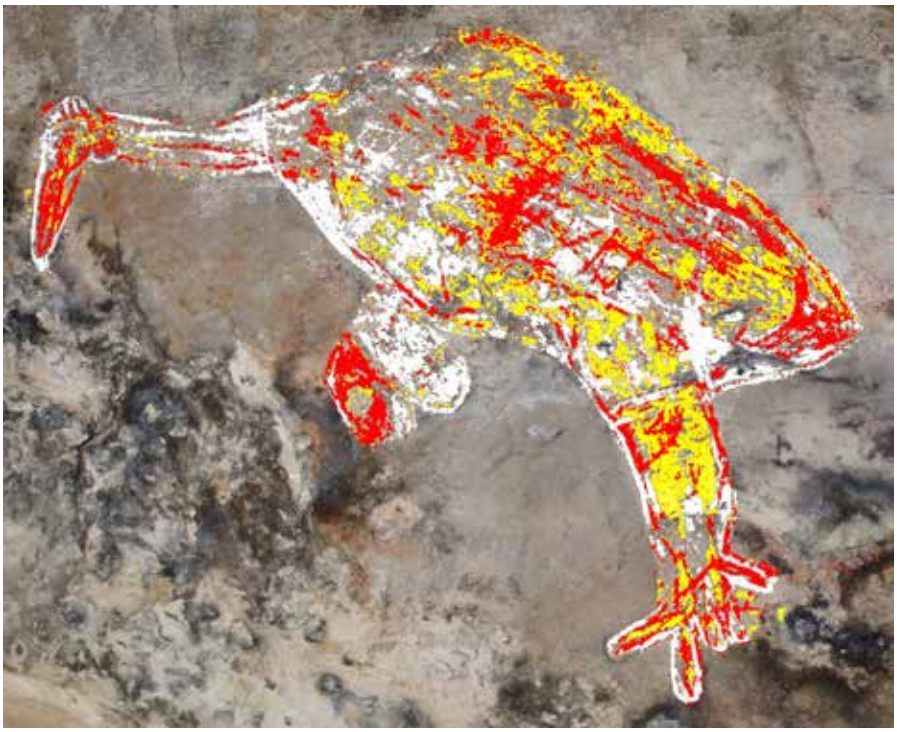

***Figure 4.*** *Compilation of enhancements superimposed over original photograph.*

The same technique when applied to the 'female figure' accentuated an otherwise very indistinct red barred and chevron body-pattern (Fig. 6).

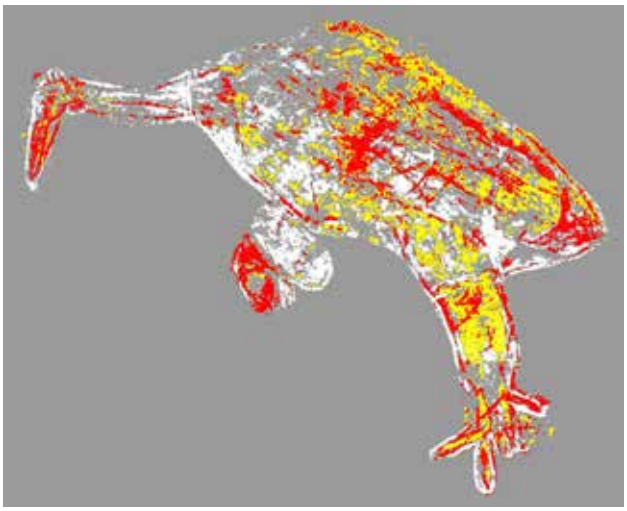

***Figure 5.*** *Compilation of enhancements onto flat grey background.*

**Conclusion**

A simple variation of the previously reported DStretch methods has been applied to poorly preserved or poorly displayed polychrome paintings and found to be particularly useful in their interpretation. It is stressed, however, that as this becomes a more subjective

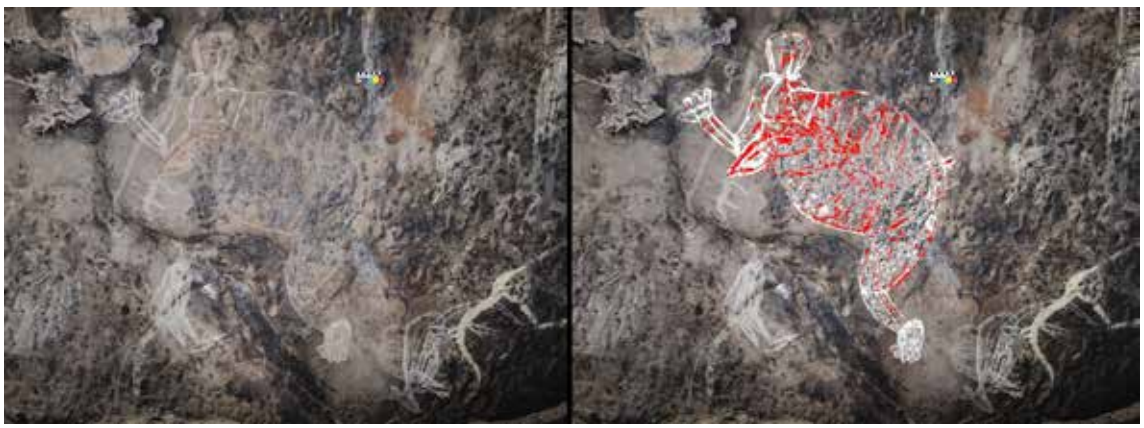

***Figure 6.*** *Photographed and enhanced 'female figure' motif.*

process, the original photograph, unenhanced, should always be reproduced alongside the interpretation. This then provides yet another tool for site recorders and analysts to use, to improve their perceptions and presentations of polychrome images.

*Acknowledgements*

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RAR 31-1116

# *Morricone del Pesco rockshelter, a new rock art discovery in southern Italy*

By DARIO SIGARI and CARLO PERETTO

### Introduction

Fieldwork co-ordinated by the University of Ferrara, has recently recognised a rock surface with paintings and engravings in Molise. The rock art site, a rockshelter, was initially discovered by a local inhabitant, Guido Lastoria, in the nearby village of Civitanova del Sannio in 2011. The shelter opens in a rocky promontory along the northern bench of the Serrata valley and is crossed by the *tratturo* Lucera-Castel di Sangro, an ancient path that connects the inner part of Abruzzo with the Gargano area, in Puglia. The authors of this paper try to add a little to our knowledge about the rock art in central and southern Italy by introducing this newly discovered site.

### Morricone del Pesco rockshelter

The shelter is oriented westwards and sloping towards the Adriatic Sea, at c. 750 m a.s.l. It is in a relatively accessible location, on a steep slope covered with grass and bush scrub and was formed on a geological fault line which typically has highly polished surfaces. Areas of the rockshelter show evidence of frost action and natural weathering processes (Fig. 1). Both the Gargano area, in Puglia, and the Majella area, in Abruzzo, are rich in pre-Historic archaeology (e.g. Palma di Cesnola 2003; Mattioli 2007; Pessina and Tinè 2008; Gravina 2010; Gravina and Mattioli 2010; Di Fraia and Manzi 2012).

The panel measures c. 8 m wide with a small overhang above it. The engraved and painted panel is a Miocene limestone marl. The landscape around the shelter is mainly mountainous, reaching up to 1450 m a.s.l. The rock surface has been painted black, probably with charcoal, and engraved, probably with a metal chisel. A number of engravings have

***Figure 1.*** *Panoramic view of Morricone del Pesco shelter (photo D. Sigari).*

eroded since their production, making their identification difficult. Similar problems exist for paintings damaged from periodic floodwater episodes and run-offs. Figures present on the rock surface have been grouped into four sectors (from west to east, sectors A to D) of the panel.

The imagery can be grouped into five clear categories, which are anthropomorphs, geometrics, zoomorphs, simple groups of lines and unidentifiable figures. These categories are arguably schematic in form and are typical of imagery found within the central Italian later pre-Historic and Historic rock art tradition (see Graziosi 1973; Mezzena and Palma di Cesnola 1987; Palma di Cesnola 1987; Mattioli 2007, 2012; Gravina and Mattioli 2010; Di Fraia and Manzi 2012). Due to weathering and recent human actions, it is not possible to give the exact number of the images present.

Paintings include on sector A: a meander-labyrinth superimposed on three zoomorphs (labelled A1, A2 and A3), organised in three rows. A1 and A3 are not complete: A1 has the ventral line, forelegs, one hind leg and the muzzle; A3 has hind legs and a tail. A2 is complete. It has a triangular muzzle and two small lines representing the ears or the antlers. Forelegs were sketched with two parallel oblique lines, whilst hind legs have a curved appendix, like a tail (Fig. 2).

A black painted reticulate shape and an anthropomorph are just above the zoomorphic figures. Further eastward is the last painted anthropomorph with one clear 'leg', 'sex' and 'trunk'. At the bottom of the panel there is a reticulate motif, while at the top other scratched lines result from some scratching activity.

At sector B's top are five groups of lines in a reticulate shape. In the upper part they are just scratched, while a painted one is in the middle (Fig. 3). A black-painted zoomorph (12 cm × 8 cm), though not easy to define as the 'animal' has neither a head nor a tail, has been represented in the naturalistic, with its head downward. Under its dorsal line are five dots, possibly to represent the animal's hair, its ventral line curves in correspondence to the 'legs'. Several black painted dots are below the ani-

***Figure 2.*** *Painted zoomorphs on panel A (photo D. Sigari).*

***Figure 3.*** *Black painted zoomorph on panel B (drawing D. Sigari).*

***Figure 4.*** *Scratched anthropomorphs and painted geometrics on east side of panel C (photo D. Sigari).*

mal. The palimpsest continues downward with two horizontal and parallel zigzag lines (12 cm long).

Then there is sector C which is the best preserved and largest one and it presents the richest and most complex palimpsest of figures and motifs. Its figures are both scratched and painted in black. Almost all of the engravings overlie painted images suggesting a crude chronology. Among the paintings there are a black motif in the upper right of the east section of the panel includes a vertical line across a circle, in a flower-shape. Just above it, is a possible schematic zoomorphs (Fig. 4). This enigmatic schematic figure consists of a central line from which three perpendicular couples of lines radiate from the central body. Near it a circular image is within other non-concentric circles. Under this figure are clear traces of black paint interrupted by a calcareous film deposit on the rock surface.

Concerning the petroglyphs, all of which are executed as engravings, anthropomorphs, geometrics, ladders, symbols and groups of lines are present. The anthropomorphs are the most recurrent theme with five or six figures. In addition there are two circular motifs which probably form part of an anthropomorphous figure; both types of figures possess a similar decorative patterning. Other geometrics are spread around the panel, some of them schematic. Within the same sector are several engraved anthropomorphs, one complete with the clear outline of an exaggerated breast and large hips.

At last a black painted inscription in sector D, behind the overhang, reads: 'L[a] f[iss]a di Pina […] è un[a] pot[…]'. The sentence is not entirely readable because of its bad conservation; the sector is exposed eastward and eroded.

## Conclusions

In order to attempt to give a chronological and cultural attribution to the carved and painted figures it is necessary to consider the Lucera-Castel di Sangro *tratturo*, in that its path leads to places where a number of rock art sites have been recently discovered. These sites could be markers within a wider landscape, connecting Abruzzo and Gargano, the Appennines and the Adriatic Sea. Recent discoveries of rock art sites, mainly in Abruzzo, have been useful in understanding the rock art of Morricone del Pesco. The shelter in Civitanova del Sannio fills an important gap in assessing the later pre-Historic chronology of the area.

Most of the repertory of Morricone del Pesco seems to be comparable with other Italian and European figurative art and rock art traditions (see Borzatti von Lowenstern 1971; Graziosi 1973, 1980; Nash 2001; Clottes 2008; Pinheiro 2010; Fossati and Arcà 2012; Martini 2012), suggesting a long history of the shelter. However, giving a precise chronological estimate would be untimely and risky, with the great number of stylistic and chronological comparisons.

In summary, the rock art contained within the Morricone del Pesco shelter is the first rock art discovery in the Molise region. The hope is to establish a more precise chronology of the paintings, in order to better understand the cultural context of the shelter itself.

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RAR 31-1117

# *Data and interpretation in the Côa valley, Portugal*

By ROBERT G. BEDNARIK

**Substantial agreement**

In view of the controversial status of the archaeological data from Portugal's Côa valley (Bednarik, 1995, Watchman 1995; Zilhão 1995) is perhaps more constructive to explore areas of agreement than to dwell needlessly on areas of disagreement between the warring factions. The paper of Aubry et al. (2002, henceforth referred to as 'the Paper') provides an excellent basis for exploring such areas of agreement. It shows that there is much more consensus than the polemic on this subject might suggest.

For instance, the Paper affords great care to the geological circumstances of the valley, its lithology, to how and when it was formed. It agrees that in geological terms it is a very young feature. That it has been cut into a Plio-Pleistocene planation surface has been universally accepted now it seems. The Paper even shows how the valley truncates a fluviatile terrace of the Middle or Lower Pleistocene (in Fig. 4, Penascosa section), which grants the valley an age lower than that of these deposits. It is also noted how Acheulian handaxes and cleavers can be found in the Pleistocene sediments high along the Douro, where they occur also in the vicinity of the Côa valley. The complete absence of such finds in the lower reaches of the valley confirms that all sediments close to valley floors are very young, and that they are mostly Holocene is also the finding of the Paper. The mention of occasional Pleistocene pockets and sediment residues on valley slopes agrees with the discovery of a Late Pleistocene deposit previously found at Penascosa, 40 m above the present river (Zilhão et al. 1997: Fig. 3). Since the formation of the valley began, apparently during the Middle Pleistocene, erosion of the soft schists and phyllites has cut over 300 m deep into the planation surface. So 20 000 years ago the river might have been perhaps 10 m above its present level. This illustrates once again the absurdity of the cosmogenic radiation results from the valley (Phillips et al. 1997), according to which rocks at its base would have become exposed to the atmosphere hundreds of millennia ago, when the river was in fact at an elevation at least 100 m higher than today.

Even on the subject of the Fariseu site, the Paper agrees largely with those sceptical of the precipitous Palaeolithic claims. It accepts, for instance, the criticism by Abreu and Bednarik (2000) that the stratigraphy consists entirely of layers of lake sediment, alluvial and colluvial deposits, and that much of this detritus postdates the establishment of the Pocinho dam about 15 years ago. But perhaps most importantly, the Paper concedes that there is currently no form of radiometric or other objective dating evidence from the excavation of Fariseu. It states quite explicitly that TL analysis of the Fariseu samples is currently still in progress (p. 71), three years after these samples were submitted. Therefore the Paper also agrees, at least implicitly (because Fariseu is the only site of dozens excavated where rock art has been claimed to be relatable to archaeological evidence), that there is currently no evidence linking any of the rock art of the Côa valley to any of the archaeological dates so far presented.

The Paper disagrees, however, with an earlier Instituto Português de Arqueologia (IPA) report on the nature of the lithic industry found in the Fariseu excavation. Whereas Anonymous (2000) reports that the lithic sample 'is not big enough to allow a precise diagnostic of the assemblage', the Paper is much more confident: the very few lithics are now attributed to the Early Magdalenian or Proto-Solutrean. It would help us to have confidence in these pronouncements if the purported artefacts had been illustrated, in the Paper or in any other publication. The only lithics ever published from the lower Côa valley (e.g. Carvalho et al. 1996; Zilhão 1997) are a few mostly microlithic pieces from Cardina 1 and Quinta da Barca, nearly all of them backed bladelets and geometric forms such as trapezoids, most being under 15 mm long (Bednarik 2003: Fig. 3). Again the Paper is in agreement with this concern by reporting that the few lithics found at lower Côa sites are largely microlithic. None of these specimens are diagnostic of an Upper Palaeolithic period, and bearing in mind that most were found in the same horizons as decorated ceramic shards (e.g. at Quinta da Barca, cf. Zilhão 1997: Fig. 4; and Salto do Boi - Cardina 1, cf. Zilhão 1997: Fig 5) it seems reasonable to assume that they are perhaps Neolithic. Here the

Paper disagrees significantly with previous evidence published by some of its authors. At Quinta da Barca, the ceramics clearly extend down to bedrock according to the section drawings they themselves provided in the past (Zilhão et al. 1997), yet the Paper now places them in the Palaeolithic.

**Some disagreement**

The Paper generally fails to address the concerns of sceptics of the claims of Palaeolithic occupation evidence at the base of the Côa valley. Besides failing to present any of the claimed lithics, particularly those from Fariseu, it also provides no details of the dating claims implied in its Figure 8. Indeed, if we look at this graph closely we see that there is a line under Fariseu, implying that dates of between 10 000 and 11 000 BP were obtained from samples C3 and C4a. Yet in the text it is stated unambiguously that no dates are available from this site. So which evidence does this mark refer to? Other samples from this site are implied to be 18 000 to 19 000 years old, yet they are from the very same level, C4. In other words, the upper two thirds of the site's alluvial/colluvial series is agreed to be under 15 years old, the lower third is claimed to be tens of thousands of years old without any dating evidence. In the case of Quinta da Barca Sul the basis are apparently three TL determinations, also of 10–11 ka, but unless it is proposed that the accompanying ceramics are also of the Pleistocene these three TL 'dates' are of little consequence. Not only is the detail of much of Figure 8 perplexing, the value of the TL analyses and purported stone tools is itself questionable. The Fariseu sediment consists entirely of a series of colluviums and alluviums, lacking any definable occupation levels. It is agreed that most or all of the constituents have been transported from somewhere else, especially from upslope, so their position within the sediment is fortuitous and of little or no archaeological significance. Moreover, we know from other examples how severely misleading TL results from poorly stratified deposits tend to be. For instance the claims of up to 176 000 TL years for Holocene sediments at the Jinmium site in Australia were conclusively disproved by OSL and radiocarbon analyses, and such error sources are well understood (Fullagar et al. 1996; Roberts et al. 1998). The complete lack of any reported $^{14}C$ results, not only from Fariseu but from all the dozens of Côa excavations (except a 1000-year-age from the Penascosa terrace), is particularly disconcerting, and OSL analysis might have provided more secure luminescence results (the site was sampled for OSL by Norbert Mercier, but the results are not mentioned; cf. Anonymous 2000). The truncation of Figure 8 at 10 000 BP points to yet another major concern: in view of the large number of carbon and luminescence samples processed from Côa sites since 1995, why are only about two dozen TL results summarised in this graph? It would have been appropriate to list *all* results secured, and not only those implying Pleistocene ages. Many of those shown in Figure 8 are not related to purported archaeological finds, and almost none are even suggested to be related to any rock art. So the relevance of these incompletely presented data needs to be questioned, and until the Holocene dates are located on the section drawings and listed in tabular form, the data presented in the Paper are far too incomplete to be considered, particularly in this controversial context.

The archaeology from the Côa sites seems to be best characterised as a series of very small microlithic assemblages found either stratified with ceramic remains, or in poorly stratified, largely colluvial deposits. No radiometric dates from charcoal have been reported, and all dates the Paper presents seem to be from supposedly heated quartzite detritus. There are no identified faunal remains, no palynological analyses or other support for these dubious results. None of the stone artefacts of which illustrations have been provided display any diagnostic features one can reasonably attribute to a Palaeolithic industry. Instead these backed bladelets and tiny trapezoids match precisely the Neolithic assemblages that are so plentiful elsewhere in northern Portugal (Silva 1993).

Aubry et al. turn the customary convention of presenting empirical data and then arguing for one or the other interpretation on its head. They base their interpretation of the Côa valley's archaeology on omitting or excluding most of the crucial data (such as all Holocene dates). In proposing to demonstrate Pleistocene occupation of this Holocene valley they present no radiometric or other dates, they offer no illustrations of stone implements, report no occupation floors, faunal or human remains, pollen, sedimentary analyses or any of the other forms of documentation usually expected from Upper Palaeolithic excavation reports. Nowhere in the world would such a reluctance to depict lithics or present dates be accepted as adequate evidence for Pleistocene occupation.

Finally, Aubry et al. make no attempt to respond to the dozens of objections to a Palaeolithic age of the rock art or the occupation evidence at the base of the Côa valley. They need to respond to the evidence that most engraved motifs were made with metal implements (in one case the claim is that carbonised steel was used; Eastham 1999); that the distribution of Côa petroglyphs matches precisely the distribution of historical water mill structures; that the 'Palaeolithic' images are often much less weathered or patinated than engraved dates and inscriptions on the same or adjacent panels, that one of the horse pictures at Fariseu is shown wearing a bridle (Abreu and Bednarik 2000; Bednarik 2003: Fig. 2); that the petroglyphs within the annual flood-zone of the river bear very little or no fluvial wear; that their weathering and patina is no more than a few centuries old; that the schist hydrates and disintegrates rapidly; that all of the animals depicted in the valley occurred there in the most recent history; that there is a complete absence of the diagnostic form of Upper Palaeolithic rock art, the so-called signs; that the grooves of numerous purported

Palaeolithic motifs dissect lichen thalli and must thus be younger than these thalli; that the style of most Côa images is not Palaeolithic, but Roman or later; that the specific motifs identified as the oldest are geometric and schematised zoomorphs, not remotely resembling any art of the Upper Palaeolithic; that the Vermelhosa figures are of the Iron Age (Abreu et al. 2000); that the Mazouco figures are not Palaeolithic (Baptista 1983); that all of the nearby and very similar Siega Verde petroglyphs must postdate the Roman period and have now been shown to be all under 200 years old, dating mostly from the 20th century (Bednarik 2009); that the local villagers at Siega Verde claim that the petroglyphs were made by shepherds and 'had a good laugh when archaeologists told them that the art was Palaeolithic' (Hansen 1997); that a 4-m-high and 2-km-long stone wall near Castro, in the same area as Siega Verde, bears literally hundreds of horse pictures like those at Siege Verde and Côa; that the Lascaux late phase, with which some Côa motifs were compared to show that they must be Pleistocene (Zilhão 1995), is in fact of the Holocene (Bahn 1994, 1995). In considering just one of these objections, the archaeozoologist Thomas Wyrwoll has examined all semi-naturalistic animal images in the Côa valley and has concluded that

> the idea that some of the Côa rock engravings would date to the Palaeolithic, as expressed by some Portuguese archaeologists because of the mere existence of ibex representations amongst them, is based on incorrect assumptions regarding the distributional history of this species. There is also no other zoological reason to date any piece of Côa rock art to the Palaeolithic (Wyrwoll 2000: 95, my translation).

Wyrwoll explicitly rejects Zilhão's (1995) claim that there were no ibex in the region during the Holocene, arguing that the Côa ibex figures must be of the Pleistocene. Wyrwoll points out that all the ibex-like figures in the Côa valley resemble *Capra ibex lusitanica* or *victoriae*. The Portuguese ibex, *C. i. lusitanica*, became extinct only in 1892, and not as Zilhão (1995) claims at the end of the Pleistocene. The Gredos ibex (*C. i. victoriae*) still survives in the region. The body markings depicted on one of the Côa zoomorphs, a figure from Rego da Vide, resemble those found on *C. i. victoriae* so closely that this typical Holocene sub-species rather than a Pleistocene sub-species (notably *Capra ibex pyrenaica*) is almost certainly depicted (Bednarik 2003: Fig. 2).

These issues need to be addressed by those claiming a Palaeolithic age of Côa rock art. But most of all, what we need especially from Fariseu are illustrations of the purported lithics; a complete list of all dating results, relating these to the stratigraphy; and comprehensive sedimentary data of the type usually provided by large projects such as this one.

What Aubry et al. (2002) present is a case for Palaeolithic occupation of the planation surface overlooking the valley, extending to the Acheulian, and perhaps sporadic residues at elevations well above the river. Their intensive search for Pleistocene sediments on the valley floor has been negative, apart from occasional transported residues that may or may not contain older colluvial lithics. Hopes to find occupation floors in situ near the river are thus fading, and with them the hopes of relating such deposits to engraved rocks. The Côa research also suggests that undisturbed Neolithic deposits seem to occur above the present valley's flood-zone, but not in its current flood-zone. All sediments of any substance found on the valley floor appear to be of the late Holocene, and there are thus no Pleistocene sediments in the vicinity of the rock art sites. Bearing in mind that even the presence of preserved Palaeolithic occupation floors has little significance for the question of the rock art's age if it cannot be related stratigraphically, this means that a first precondition for dating the Côa rock art archaeologically has not been met so far. In 2003, twenty-two scientific questions were addressed to Zilhão in this journal. In the decade since he has not responded to a single one of them.

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RAR 31-1118

# *Proposed age of recently discovered petroglyphs of Iran's Toos Plain*

By ELYAS SAFFARAN and ZAHRA MOZHDEKANLOO

The Toos Plain is located in the north-east of Iran, at Mashhad (Jafari 2000: 125). The extent and height of the surrounding mountains ranges are such that they almost prevent moist air mass from reaching this area. Geological evidence also shows that, 800 000 years ago, it was a wide and shallow lake on the confines of which early communities of humans lived (Bakhtiarishahri 2009: 23). Stone tools near this area are estimated to be between one million to 800 000 years old (Amirloo 1986: 16); they have been claimed to be the earliest not only in Iran, but in all of south-western Asia (Bakhtiarishahri 2009: 23). Philip Smith believes these stone tools are comparable to those which have been found in Pakistan, central Asia and Africa (Mousavi 1991).

The Toos petroglyphs are located at the altitudes 980–1640 m above sea level and extend over 40 km (Bakhtiarishahri 2009: 24). They generally comprise anthropomorphs, zoomorphs, purported plant images and 'symbolic signs'. Among them zoomorphs, especially 'ibex', are the most common (Fig. 1). In these petroglyphs, the horns were portrayed in an exaggerated way, which has been suggested to increase the magical power of the image (Parham 1999: 42). The petroglyphs are relatively shallow and heavily patinated.

Petroglyphs usually do not have a direct relationship with the layers of archaeological deposits, so their dating is not simple, but there are some methods for relative historiography. It can be useful to compare petroglyphs with similar dated objects. Stylistically similar presumed images of ibex have been observed on pre-Historic pottery attributed to the fourth millennium BCE. In the pre-Historic civilisations of Iran, with the passage of time, presumed ibex motifs have gradually changed from being shown with oversized horns into being more naturalistic; moreover, the 'ibex' motifs of the Toos plain petroglyphs are similar to the pottery motifs of the Nahavaand Gyan Hill civilisation, Dameghan Hesar Hill civilisation, Persepolis Talebakun civilisation and Shoosh civilisation, all of which are of the fourth millennium BCE (Fig. 2), and the Kashan Silak Hill civilisation (5100 BP). In addition, the 'ibex' motifs of the Toos Plain petroglyphs are dissimilar from the pottery motifs of Nahavaand Gyan Hill civilisation (3800–3400 BP), Lorestan civilisation (3800–2600 BP) and Kurdistan Zivieh civilisation (2800 BP), which date from later periods. Therefore, the Toos Plain petroglyphs probably do not date to 3800–2600 BP.

Secondly, the face-like Toos motifs are comparable

***Figure 1.*** *'Ibex' motifs of the Toos Plain petroglyphs, Iran.*

***Figure 2.*** *'Ibex' motif on pottery in the Shoosh civilisation of the fourth millennium BCE.*

***Figure 3.*** *Anthropomorphs and zoomorphs of the Toos Plain petroglyphs.*

to the paintings on the pre-Historic potteries of Iran, such as those of Shoosh, Dameghan Hesar Hill, Kashan Silak Hill and Persepolis Talebakun, all of which are of the fourth millennium BCE.

Thirdly, the invention of writing dates back to 5500 BP. The lack of scripts in the vicinity of the more than one thousand petroglyphs of Toos Plain may be due to the fact that writing had not been introduced when the motifs were engraved. Morgan, in his classification of human history, believes that the invention of the bow and arrow caused the termination of the 'primitivism' period (Morgan 1992: 74). V. Gordon Childe (1978) believes that the use of the bow and arrow has become common since the Mesolithic. Also, Professor Hatam indicated that some weapons like the bow and arrow became common by 8000 BCE (Hatam 2009: 21–22).

Furthermore, the discovered petroglyphs of Meymand of Kerman (south-east of Iran), which Leroi-Gourhan estimated to date back to 10 000–7000 BCE, show hunters with the bow and arrow. The hunter motifs of the Toos Plain petroglyphs can be comparable to these petroglyphs regarding the form and its presentation (Bakhtiarishahri 2009: 31). The use of bow and arrow documented in them implies that they postdate 10 000 BP (Fig. 3).

From these strands of information it can be inferred that the petroglyphs of the Toos Plain can be estimated to date back to the Neolithic period. The longest realistic timeframe for them is probably to 10 000–4000 BP and the shortest may be to 6000–5000 BP.

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RAR 31-1119

# *The role of engraved inscriptions in the dating of Iranian rock art*

By SIRVAN MOHAMMADI GHASRIAN, MOZHGAN KHANMORADI and TAHER GHASIMI

## Introduction

There are a few known rock art sites in different part of Iran containing datable engraved inscriptions in close proximity to petroglyphs. In this study, against the current approach among Iranian research to date rock art to pre-Historic periods, we try to demonstrate the potential use of these engraved inscriptions as an experimental tool to date a number of these petroglyphs to Historic times, particularly Parthian (238 BCE–224 CE) and Sasanian (224 CE–632 CE) times. We hope that this paper would open new insights for further studies on the dating problems and the main methodological limitation of rock art studies in Iran.

It is not only in Iran but also in other parts of the world that showing exactly when rock art was created is a quite difficult and complicated process. Clearly, there is a great range of possible dating techniques which have been used by researchers, but results are often controversial, particularly when archaeological and scientific results clash (e.g. Bahn 1995 and Zilhão 1995 vs Bednarik 1995, 2009 and Watchman 1995, 1996; Anati 1974 vs Bednarik and Khan 2005; Fullagar et al. 1996 vs Roberts et al. 1998).

None of the scientific dating techniques have yet been applied in Iranian rock art studies, which remain in their infancy. Such studies began in 1969 when H. Izad Panah rediscovered the Mir Mallas and Doushe rock paintings in the Kouh Dasht area of western Iran (Izad Panah 1969). McBurney had earlier proposed chronological arguments after rediscovering the Kouh Dasht area rock paintings; he attempted to date the hunting scenes of 'ibex' and horse riders to 2000 BCE, based on the presence of horse depictions, contemporary with the arrival of Aryan populations in Iran. He also concluded that other schematic human and animal motifs of the Kouh Dasht area rock paintings were painted in more ancient times (4000 BCE) (Izad Panah 1969). Other researchers nearly always used the same imagery criteria (such as horse depiction) to date the Kouh Dasht area and other rock art sites in Iran. These include Lahafin (2004: 8) for the Kurdistan petroglyphs, Heidari (2002: 39) for a number of petroglyphs in Sarawan area located near the south-eastern border of Iran, and Garazhian et al. (2001: 96) for the Houmian paintings. It is clear from previous studies that


***Figure 1.*** *Map of Iran showing the locations of known rock art sites containing engraved inscriptions.*

iconographic motifs play a key role in Iranian rock art dating arguments; using iconic themes as evidence cannot determine the time of rock art creation and applying them led only to relative dating (pre- or post-dating of art). Regarding the current lack of scientific direct dating techniques in Iran, we discuss the experimental potential of dating a few petroglyph sites to Historic periods due to the existence of datable inscriptions located beside the engraved motifs.

## Rock art of the Kurdistan area

Bisotun historical site is located some 26 km east of Kermanshah and is characterised by a rich collection of archaeological sites comprising several Palaeolithic cave sites, Historical bas-reliefs, Historical inscriptions

***Figure 2.*** *Location of Parthian or Sasanian(?) inscription under the first column of the old Persian version of the well-known Darius bas-relief.*

(Achaemenid, Seleucid-Parthian, Islamic) and various Historical monuments belonging to the Parthian, Sasanian and Islamic periods. Bisotun is famous for the 6th century BCE mid-Achaemenid period tri-lingual bas-relief by Darius I, carved on the prominent rock of Bisotun (Trinkaus and Biglari 2006: 105). Recently, Fereidoun Biglari informed us about the existence of a short (it seems just one word) inscription (Parthian or Sasanian?) in the lowest part of the first column of the old Persian version of the well-known Darius bas-relief, accompanied by a long-horn 'ibex' carved below it (Fig. 2). The main difference between this newly discovered inscription and other Bisotun inscriptions can be seen in the presence of a long-horn 'ibex' (the most common motif not only in the Kermanshah area, but throughout Iran) carved below the inscription. In other words, rock art is also present in Bisotun.

Karaftou Cave is located 53 km east of Saqez, Kurdistan province (western Iran). Foreign researchers, including Kerporter, H. Rawlinson, Stein and Norman, and also a few Iranian archaeologists surveyed and visited the site from 1822 until recently, resulting in the publication of brief reports and notes about Karaftou Cave (Lahafian 2004). Several rooms and lobbies which have been artificially cut from the natural part of the cave have resulted in building construction that includes four stories arranged in various floors (Lahafian 2004: 8; Ghasimi 2006).

The engraved motifs found at Karaftou Cave appear to depict horses and riders, human figures, wild goats, cervids, camels, human hands, geometric shapes and apparently signs (ibid.). There is also an engraved (Greek) inscription on the entrance of the third floor of the cave (Figs 3 and 4), which again determines the experimental dating potential of the Karaftou Cave petroglyphs to the Historic period.

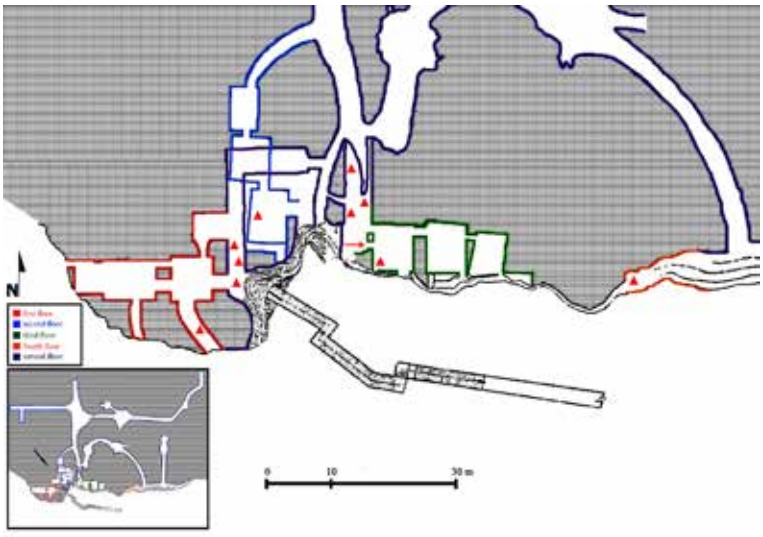

***Figure 3.*** *Plan of Karaftou: triangles represent the location of rock art, the location of Greek inscription is shown by an arrow on the map, drawn by Taher Ghasimi.*

***Figure 4.*** *Greek inscription on the entrance of third floor of Karaftou Cave.*

**Lakh Mazar and Kal Jangal petroglyphs**

Lakh Mazar and Kal Jangal open air petroglyphs are two major Iranian rock art sites located near the south-eastern border of Iran (Fig. 1). Lakh Mazar includes around 308 rock engraved motifs (anthropomorphs, zoomorphs, 'flora motifs'), Historic (particularly Parthian, Sasanian and Islamic) inscriptions and several geometric 'signs' (Khaniki 1994). A large number of small schematic motifs were engraved on the face of the Lakh Mazar cliffs. Khaniki used datable criteria like inscriptions and also the engraved posture of one of the Sasanian kings as indicators of the antiquity of a high percentage of Lakh Mazar rock art to the Parthian and Sasanian periods. He did not deny the possibility of the existence also of Islamic petroglyphs, based on the observation of some Islamic inscriptions. Kal Jangal, located a few km away from Lakh Mazar, has the same character as Lakh Mazar rock art (Fig. 5).

**Taimareh rock art**

Taimareh is a historical name of some part of the central region of Iran which currently includes the northern part of Isfahan, southern part of Markazi and most of the Qom provinces. Numerous petroglyphs, at Hâjile, Qorqan, Tang-e Gharghab-gheidou, Gar Eselak, Bar Galla, Farnam, Ashmsian and Haftad Ghale, have been recorded in the Taimareh region of central Iran (Farhadi 1996: 65–74). The Taimareh area is regarded as containing Iran's largest concentration of rock art,

***Figure 5.*** *Kal Jangal petroglyph, presumed fighting scene, approximately 164 × 123 cm, with engraved Parthian inscription in two lines. Photo from* www.Iranatlas.infoparthkaljangal.html.

comprising at least 30 000 petroglyphs. The discovery of a new petroglyph site (Sangestoon) in the Kahak region (Mohammadi Ghasrian 2007a, 2007b), near the well-known rock art of Taimareh, as well as oral and published information about the existence of many rock art sites in the surrounding area suggest that central Iran should be considered as a main region for future Iranian rock art studies. Like other rock art sites in Iran, animal and human figures form a large number of Taimareh rock art depictions (Farhadi 1996). There are also some inscriptions (Sasanian and Islamic) present in this assemblage. Farhadi, who published his extensive studies of the Taimareh petroglyphs in a well-illustrated volume, discussed the antiquity of rock art hesitantly at the beginning of his studies in this area and believed that Taimareh rock art is relatively recent. Later, with the discovery of Sasanian inscriptions in Tang-e Gharghab-gheidou, his insight changed regarding the antiquity of petroglyphs and led to his hypothesis that the surfaces of rock boulders and cliffs in the Taimareh area preserved all kinds of engraved motifs from the Sasanian period onward.

**Discussion**

As noted, Iranian rock art studies is in the early stages of development, and given the lack of the application in Iran of the prevailing direct dating methods currently used in rock art studies we propose the experimental utilisation of datable Historic inscriptions as indicators of the antiquity of rock art sites. Sometimes there is an inherent tendency among Iranian researchers to attempt to date Iranian rock art sites to pre-Historic times, as McBurney did for the Kouh Dasht area paintings (Izad Panah 1969: 13), and Heidari (2002), Naserifard (2007), Golzari (1987) and Pedram (1994: 81) for petroglyphs at other sites. There are no credible criteria in these claims and they are based on invalid and even personal assumptions. We do not deny the possibility of the existence of pre-Historic rock art sites in Iran, but argue only that presently available data to support this hypothesis is inadequate. In contrast, there is this experimental ability, based on current criteria, to attribute some rock art sites (particularly the small number of petroglyphs discussed here) to the Historic period between 250 BCE and 630 CE (Parthian and Sasanian) and even to the Islamic period. It should be noted that use of inscriptions as an indicator of antiquity is a new and tentative approach in the Iranian chronological debate, but is well established in Saudi Arabia (Bednarik and Khan 2005) and other regions (Bednarik 2009). Microscopic analysis designed to determine various technological comparisons between petroglyphs and inscriptions, such as the direction of tool application, handedness of the operator and multiple tool application, is crucial. It is also possible to determine the types of materials used in the creation of petroglyphs and inscriptions with microscopic studies (Bednarik 2007).

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RAR 31-1120

## Forthcoming events

**IFRAO Congress 2014**, to be held from 15 July to 19 July 2014 in Guiyang City, Guizhou Province, China, by the Rock Art Research Association of China (RARAC). Details are available on pp. 123–126 and at *http://www.chinarockart.com/*.

**Rock Art Symposium in Brazil**, to be held by the Associaçao Brasileira de Arte Rupestre (ABAR) in Teresina, Piauí, 21–27 July 2014. For details please see announcement on pp. 126–127 or contact *comunicacao@abar.org.br*.

**First International Rock Art and Ethnography Conference**, to be held in September 2014 in Cochabamba, Bolivia, organised by the Asociación de Estudios del Arte Rupestre de Cochabamba (AEARC). For details please see announcement in *RAR* 30: 258 or contact Professor Roy Querejazu Lewis at *aearcb@gmail.com*.

**17th UISPP Congress**, Melbourne, Australia, to be held in September 2017 by the International Union of Prehistoric and Protohistoric Sciences, an affiliate of IFRAO.

**Fourth AURA Congress,** to be held by the Australian Rock Art Research Association Inc. (AURA) in Australia in 2017. Proposals are invited concerning all principal aspects of the event, such as site, venue and fieldtrip opportunities.

# *RAR* REVIEW

***Images and power: rock art and ethics***, by POLLY SCHAAFSMA. 2013. Springerbriefs in Anthropolgy and Ethics Series, Springer, New York, 116 pages, ISBN 978-1-4614-5821-0; ISBN 978-1-4614-5822-7 (eBook).

Who owns rock art? Who owns the past? Who owns the truth? These are anything but trivial questions, and they arise, as Schaafsma shows, precisely because rock art matters — to many people and in varied ways, spiritual, aesthetic and scientific. What 'matters' engages issues of power relationships, especially, though not solely, cross-cultural ones, and that in turn prompts the need for an ethical way of negotiating power — or rather knowledge as power. Ethics, however, is not to be confused with political correctness, which looks suspiciously like a way of avoiding ethical choices. Slavoj Zizek (not cited by Schaafsma) said that p.c. exposed an inability to overcome the actual causes of discrimination. Schaafsma's whole argument is for an honest dialogue, for speaking out, for admission of and tackling of all those cross-cultural difficulties thrown up by the study of rock art.

Schaafsma begins by outlining the basic problematics of diverse worldviews, those of indigenous metaphysics and Western science. In the course of discussion of the Judaeo-Christian inside/outside dichotomy (which defines the first as sacred and the second as reprehensible, i.e. reverses the value systems intrinsic to rock art) she makes the witty observation that recorders of rock art who 'box up' their data and place it in a building are, with the best of intentions, furthering the removal of rock art from its essential 'outside' space. But her stress is on readings of the past and the attempt to recuperate original meaning — which, given the necessity of consultation with indigenous authorities, must be where cross-cultural dialogue begins. What if science, represented by archaeology, ethnography and the like, contradicts oral traditions? Do rock art scholars opt for the 'cultural imperialism' which excludes indigenous views, or that uncritical acceptance of oral traditions which may be termed political 'desired knowledge' — or something else again? Are there two equal but different ways of knowing, scientific and traditional? Are we to say — an Australian example — that humans have lived here for c. 60 000 years . . . or 'forever'? Schaafsma rejects answers to such questions that would compromise science. At the same time she thinks it perfectly reasonable to accept 'parallel views', provided this entails avoidance both of methodological arrogance on the part of Western researchers and, on the part of acculturated indigenous people, the confusion that comes from thinking that Western science is on the same wavelength as traditional knowledge — in which scenario the two will be seen as mutually exclusive when this need not be the case.

Much of Schaafsma's book concerns the problems of cross-cultural consultation. The real or supposed indigenous authority may or may not know answers to questions. They may want to please the researcher, or may see an opportunity to gain status for themselves. They may, willingly or otherwise, become an 'instant authority'. They may think, or others may think of them, that they are authorities simply because they are indigenous. They may be anxious to maintain secrecy, sometimes in the situation in which previous ethnography has already made knowledge public. Then there are researchers, possibly encouraged by indigenous consultants, anxious to sanitise the meaning of some rock art. (Schaafsma takes the examples of shamanic 'vision quest' images, and images depicting brutal warfare practices.) Of course indigenous views vary greatly. The same person may offer different interpretations of images at different times, perhaps with good indigenous reason . . . or because they have been reading Western scholarly texts in the meantime. Schaafsma gives a telling example of Christian-influenced people who regard rock art as witchcraft, as against others who read it as a book of traditional knowledge. Above all, there is the fact that, like all interpretations, indigenous readings are liable to change over historical time. Reinvention of meaning is highly problematical for the researcher who is after the original intention behind the making of the image. But it may make excellent political sense, as well as sense in the context of group identity, to indigenous people. Schaafsma gives the example of Comanche Gap (New Mexico), whose Pueblo rock art has no connection with the Comanche but is enthusiastically claimed by them, mostly because someone (railway engineers in the 1880s?) chose to name the place Comanche Gap!

The issues keep coming. What about the question of conservation, the protection of rock art? Western governments inevitably prioritise a good highway, as with Paseo del Norte (Albuquerque, New Mexico) which punches a hole in the petroglyph-rich ridge

which includes, somewhat precariously, the very fine Petroglyph National Monument. On the other hand, some indigenous groups actually want rock art to grow old and die gracefully. There is the 'desecration site' on the San Juan (Utah), deliberately defaced by the Navajo who now live in the area. One thinks of the supposedly well-intentioned vandalism of the youths who repainted sites in the Australian Kimberley. And what about the appropriation of images, out of pride or profit or both? Schaafsma mentions the commercial theft of images by business interests, say for T-shirts, and borrowings of images by unrelated indigenous groups, e.g. the non-Mescalero Apache casino which advertises itself with a Mescalero Apache rock art logo. In Australia we could contrast the case of Lin Onus who went to some trouble to obtain permission for the use of Arnhem Land cross-hatch in his paintings, with other Aboriginal city-based artists who produce a pastiche of modified Western Desert motifs without permission.

In the end, Schaafsma does not offer answers valid for all situations. She sets out the problems, insisting both on respect for indigenous knowledge and fidelity to scientific method. Where the two appear to be in opposition, the Western researcher has many options — but not that of suppressing scientific data. Who owns rock art? Is it the heritage of all humanity? Or is this very notion a Western construct? Whatever else, Schaafsma will not apologise for non-indigenous interest in indigenous images. Nor will she conflate cross-cultural ethical obligations with the easy p.c. bypass. Her argument is judicious and measured, well aware of complexities. It is also bracingly open-air. She addresses herself chiefly to archaeologists and anthropologists, but what she has to say is relevant to anyone studying rock art. She also chiefly addresses the situation in the United States, and with a wealth of revealing examples, but in a way entirely applicable elsewhere in the world. It comes as no surprise that she is able to take a large intellectual perspective on her subject. She is after all the foremost authority on rock art of the American southwest, with books which are required reading for those interested in both regional and global rock art. The series, of which this book is the first publication, intends to stir the academic pot. May there be more stirring, and more publications.

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***Kimberley rock art. Volume three: rivers and ranges***, by MIKE DONALDSON. 2013. Wildrocks Publications, Mount Lawley, Western Australia, profusely illustrated throughout with more than 500 colour plates, 527 pages, 28 × 28 cm, 3.38 kg, bibliography, $A145.00 plus postage $A20.00 in Australia, hardcover, ISBN 987-0-9805890-4-7.

Mike Donaldson's final volume of his monumental Kimberley trilogy completes the largest single rock art publishing project in history (see *RAR* 29: 260–1; 30: 126–7). The three books weigh in at close to 10 kg and with around 1500 photographs, most of them full page format, they present a record of unequalled coverage of one of the world's great concentrations of rock paintings. Bearing in mind that these books are self-published, Donaldson's personal achievement is particularly remarkable; it shows what someone of consummate determination and boundless dedication can achieve. Every photograph in these books is the author's, and many of them are the result of arduous expeditions into some of the most inaccessible parts of Australia. It needs to be appreciated that the Kimberley, three times the size of England and currently occupied by only 40 000 people, is one of the most sparsely populated regions on the planet. Much of it consists of very rugged terrain, and much of it is of extraordinary natural beauty.

As in the two previous volumes, that aspect is amply evident from the numerous landscape panoramas liberally sprinkled through the pages of this book — not only providing a context for the rock art, but also an acute sense of the splendour of the Kimberley riverscapes. Just leafing through the location photographs, each one more enthralling than the previous, makes this volume a pleasure to behold, as the viewer is enticed to see this magnificent land through the adoring eyes of the author. The book should be compulsory viewing for anyone thinking of 'developing' this pristine wilderness, one of the last such places on earth.

But then there is still the rock art, and in that sense this third volume seems to be the culmination of Donaldson's labour of love. He began the series with reviewing just the Mitchell Plateau in the first volume, an area of less than one twentieth of the Kimberley. Volume 2 considered the adjacent northern Kimberley, accounting for roughly a quarter of the Kimberley's land area. That left a very significant portion for the last volume, which perhaps accounts for the great diversity of rock art presented here. In this volume Donaldson focuses his attention mostly on various drainage features, the Roe, Glenelg, Sale, Calder, Charnley, Isdell and Chapman Rivers, and the Bachsten and Manning Creeks. The rationale is that the major concentrations of rock art tend to follow the river systems. The remaining rock art regions considered in this volume are those of Raft Point on the west coast, the extensive limestone ridges in the south-west, and finally the east Kimberley, which comprises the Kununurra-Wyndham area and south to the Bungle Bungle Range. The volume therefore covers a great deal of ground and it is clear that no comprehensive coverage of this vast region is attempted. Although there are no credible estimates of overall numbers, it is acknowledged that the Kimberley contains in the order of millions of rock art motifs, and even Donaldson's epic effort can only provide a cross-section of what is hidden in the hundreds of canyons

and gullies of this rather inaccessible territory. Some of his access was with the help of helicopters, which provides not only an inkling of the remoteness of these sites, but also of the magnitude of his personal economic investment in this study. Those who enjoy the support of public funding of their rock art studies might pause to consider, for a moment, the cost of Donaldson's fieldwork over more than two decades. It seems very unlikely that he would ever recover it from the sales of these books.

To attempt describing the rock art in a mere book review would only result in trite commentary on a subject that even the author, with his extensive familiarity with it, wisely avoids, aside from basic explanations of each photograph. There are glimpses of deeper understanding, in the form of Indigenous commentary, but fortunately there is little endeavour to taxonomise, to explain, to interpret. Nor is there any need. The images convey, more eloquently than words ever could, the poignant humanity expressed in these masterworks on rock. They are not, as one might expect from scholarly treatises, manifestations of rigorous stylistic conventions, they imply ample artistic freedom and individuality. Whilst the acuity of the complex beliefs they seem to communicate may have been rigorous, the artistic interpretations of them seen in the rockshelters of the Kimberley are probably less regimented than those of most extant belief systems in the rest of the world. Certainly images such as that of Ungud (35) are just as awe inspiring as those of contemporary religious iconography in Europe or India, and define a spiritual universe of the greatest complexity. Numerous of the book's images are of large complex panels bearing many dozens of motifs, but the overarching impression is that Kimberley rock art is a great deal more than a series of defined 'styles'; a large part of it is not represented in the current stylistic tables.

Again, as in the previous two volumes, nearly all of the rock art seems to be of paintings and stencils, with only a minimal proportion being petroglyphs. Among the latter, cupules clearly precede all other rock art (420, 471), and other petroglyphs (434, 473, 477) are also completely patinated and appear to be relatively early. Many of the painted panels are of such attributes that they seem to be among the most complex in Australian rock art. Examples include not only the many Gwion traditions sites so well known by now (the best examples of which in this volume are from the Roe River), but also many of the Wanjina sites, such as the huge panel in Garimbu Gorge (207) or a stunning panel of dozens of 'brolgas' at a Manning Creek Wandjina site (432). The countless anthropomorphs at a Roe River Wanjina site, which Donaldson sees as Dalal Gwions (112), are another example.

This volume, especially in combination with the previous two, ultimately presents a persuasive case for preserving the Kimberley region's integrity, be it for its immense art galleries or its stark natural beauty. Roughly a tenth of the region is now protected either as National Parks or as Nature Reserves. Donaldson's trilogy offers a strong case for expanding the protected areas, in much the same way as the integrity of the Tasmanian wilderness is preserved by gradual enlargement of the listed areas. The author is to be congratulated for completing this almost incredible publishing feat entirely on his own, in the face of a huge commercial risk. No Australian publisher would have had the courage to do what Donaldson simply went and did, and if this project had been undertaken by one of the large publishing houses abroad the cost of the books would have been exorbitant. Thanks to Donaldson's initiative these books are available at prices major publishers see fit to charge for minor volumes lacking any colour images. These books, therefore, are relative bargains, and the obvious fact that they are going to appreciate in value as rapidly as quality artworks defines them as excellent investments.

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# RECENT ROCK ART JOURNALS

***International Newsletter of Rock Art***. Newsletter of the Association pour Rayonnement de l'Art Pariétal Européen (ARAPE). Edited by JEAN CLOTTES. Bilingual newsletter (French and English). Recent issues include these research articles:

Number 65 (2013):

HERMANN, L., B. ZHELEZNYAKOV and A. N. MARYASHEV: New discoveries at Kulzhabasy in Kazakstan (Otar, Djamboul Oblys).

AUJOULAT, N., V. FERUGLIO, N. FOURMENT, D. HENRY-GAMBIER and J. JAUBERT: The Gravettian sanctuary of Cussac (Le Buisson-de-Cadouin, Dordogne, France): first results of a team research project.

ALLEN, C. D. and K. M. GROOM: A geological assessment of Grenada's Carib stones.

BÉGOUËN, É. and M.-B. BÉGOUËN: Centenary of the discovery of the Tuc d'Audoubert Cave (Ariège) and of its 'clay bison'.

GAO QUIAN: Rock art international conference held in the Archaeology Museum of Catalonia, Barcelona (15–16 November 2012).

COULSON: D.: Alec Campbell (1932–2012).

Number 66 (2013):

BEJINARIU, J. and R. POP: Prehistoric petroglyphs recently discovered in the Someş valley (Sălaj County), Romania.

BANERJEE, R., A. W. G. PIKE and R. K. VERMA: Preliminary report of the newly discovered site of Uraihava, Mirzapur District, India.

DUBEY-PATHAK, M.: The Dharkundi rock art sites in central India.
SCHAAFSMA, P.: Petitions for rain: textile and pottery designs in rock art.
MAZEL, A. and A. GALANI: Experiencing Northumberland rock art the mobile way.

***Boletín APAR***. Quarterly newsletter of the Peruvian Rock Art Association (APAR). Edited by GORI TUMI ECHEVARRÍA LÓPEZ. The following issues have been published:

Volume 1, Number 1, August 2009:
El 'Turulaco', símbolo de identidad / *The 'Turulaco', symbol of identity* (Sp..). Gori Tumi Echevarría López and Jesús Gordillo Begazo.
Tercer ciclo de conferencias sobre arte rupestre: 'Arte rupestre en los Andes del sur'. Resúmenes / *Third cycle of conferences on rock art: 'Rock art in the south Andes. Abstracts* (Sp.).
Breve comentario sobre el 1er Ciclo de Conferencias de Arte Rupestre: "Arte Rupestre, Arqueología e História del Arte" / *Brief comment about the First Cycle of Conferences on Rock Art: Rock Art, Archaeology and History of Art"* (Sp.): Rodolfo Monteverde Sotil y Gori Tumi Echevarría López.
Segundo ciclo de conferencias sobre arte rupestre: "Arte Rupestre - Arte en Roca" / *Second Cycle of Conferences on Rock Art: Rock art - Art on rock* (Sp.): Gori Tumi Echevarría López.
Código de ética para visitas a sitios arqueológicos con arte rupestre / *The APAR Code of Ethics for visits to rchaeological sites with rock art* (Sp.-En.).
La Escala APAR / *The APAR Scale* (Sp.): Rodolfo Monteverde Sotil y Gori Tumi Echevarría López.

Volume 1, Number 2, November 2009:
APAR, dos años / *APAR, Two Years*. (Sp.).
El 3er ciclo de conferencias de APAR – Tacna / *The 3th cycle of APAR conferences* (Sp.): Gori Tumi Echevarría López and Jesús Gordillo Begazo.
Lógica tafonómica para principiantes / *Taphonomic logic for dummies* (Sp.): Robert G. Bednarik.
Arte rupestre peruano, algunos comentarios acerca del caso Macusani - Corani / *Peruvian rock art, some comments about the Macusani - Corani case* (Sp.): Gori Tumi Echevarría López.
El Simposio de Arte Rupestre en el XVI Congreso Peruano del Hombre y la Cultura Andina y Amazónica / *The Rock Art Symposium in the XVI Peruvian Congress of the Man and the Andean and Amazonian Culture.* UNMSM 2009 (Sp.): Gori Tumi Echevarría López.
Coloquio interdisciplinario: II encuentro de historiadores del arte y arqueólogos / *Interdisciplinary talk: 2nd meeting of history of art researchers and archaeologists.* UNMSM 2009 (Sp.): Rodolfo Monteverde Sotil.

Volume 1, Number 3, March 2010:
Los petroglifos de Turulaca en el contexto del arte rupestre regional de Tacna / *The Turulaca petroglyphs in the regional context of Tacna's rock art* (Sp.): Jesús Gordillo Begazo.
Geoglifos y contexto arqueológico en la Quebrada Santo Domingo, Valle de Moche, Perú / *Geoglyphs and archaeological context in the Santo Domingo Basin, Moche Valley, Peru* (Sp.): Víctor Corcuera Cueva and Gori Tumi Echevarría López.
Defensa del patrimonio arqueológico (glosa) / *Defense of the archaeological patrimony (fragment)*: Julio C. Tello.

Volume 1, Number 4, May 2010:
Los petroglifos de La Galgada / *The Galgada petroglyphs* (Sp. – En.): Alberto Bueno Mendoza and Terence Grieder.
Introducción a la secuencia estilística del arte rupestre peruano / *Introduction to a sequence of the Peruvian rock art* (Sp.): Daniel Morales Chocano.
Las quilcas de Pacarán, yunga del río Lunahuaná. 'La piedra de los monos' / *The quilcas of Pacarán, yunga of Lunahuná river. 'The stone of the monkies'* (Sp.): Isaak Echevarría, Gori Tumi Echevarría López and Enrique Ruiz Alba.
La escritura peruana y los vocabularios quechuas / *The peruvian writing and the quechuas vocabularies* (Sp.): Victoria de la Jara.

Volume 2, Number 5, August 2010:
Petrograbados en la cuenca del río Cachiyacu, una aproximación arqueológica en contexto industrial / *Petroglyphs in the Cachiyacu river basin, an archaeological approach in industrial context* (Sp.): Gori Tumi Echevarría López.
Análisis de los petroglifos de Sonomoro, San Martín de Pangoa, provincia de Satipo / *Analisis of the Sonomoro petroglyphs, San Martin of Pangoa, Province of Satipo* (Sp.): Pieter Van Dalen Luna.
Los petroglifos de la Convención entre La Verónica y El Pongo de Mainique (Valles del río Vilcanota y Ocobamba) / *The Convención petroglyphs between La Verónica and the Pongo of Mainique* (Sp.): Raúl Tarco Sánchez.
Los petroglifos de la Convención / *The petroglyphs of La Convención* (Sp.): Luis A. Pardo.
Nuevos grabados en la cuenca del río Chunchuca / *New petroglyphs in the Chunchuca basin* (Sp.): Ulises Gamonal Guevara.

Volume 2, Number 6, November 2010:
Las pictografías y los petroglifos del departamento de Lima / *The pictograms and the petroglyphs from the Department of Lima* (Sp.): Pedro Eduardo Villar Córdova.
A propósito de 'Las pictografías y los petroglifos del departamento de Lima' del Dr. Pedro Eduardo Villar Córdova.
Comentario / *A comment about the 'The pictograms and petroglyphs from the Department of Lima' of Pedro Eduardo Villar Córdova* (Sp.): Daniel Morales Chochano.
Checta, una propuesta sobre su cronología y secuencia I / *Checta, a proposal about its chronology and sequence I* (Sp.): Gori Tumi Echevarría López y Enrique Ruiz Alba.
Arte rupestre en el valle de Chillón: el abrigo rocoso con pinturas del sitio Quivi / *Rock art in the Chillón valley: the rockshelter with paintings from the site Quivi* (Sp.): Wilber Martín Saucedo Olano.
El sitio de Quivi, petrograbados en la margen izquierda del río Chillón / *The Quivi site, petroglyphs on the left margin of the Chillón river* (Sp.): Débora Infazón Soriano.
La quilca de Pucará, valle de Yangas, Lima / *The quilca of Pucará, Yangas valley, Lima* (Sp.): Gori Tumi Echevarría López.
El petrograbado de Chocas, costa central del Perú / *The petroglyphs of Chocas, central coast of Perú* (Sp.): Gori Tumi Echevarría López y Enrique Ruiz Alba.

Volume 2, Number 7, February 2011 - Homenaje a Eloy Linares Málaga:
Carta de la Escuela de Arqueología de la Universidad Nacional Mayor de San Marcos / *Letter from the San Marcos University's Archaeology school* (Sp. - En).
Eloy Linares Málaga 1926 - 2011 (Sp.-En): Gori Tumi Echevarría López.
Eloy Linares Málaga: rock art pioneer / *Eloy Linares Málaga, pionero del arte rupestre* (En.-Sp.): Robert G. Bednarik.
Entorno a la figura académica del Dr. Eloy Linares Málaga / *About the academic figure of Dr Eloy Linares Málaga* (Sp.): Guillermo Muñoz.

Prólogo a la obra del Dr. Eloy Linares Málaga / *Preface to Eloy Linares Málaga's work* (Sp.): Alberto Bueno Mendoza.
Entrevista al Dr. Eloy Linares Málaga / *Interview with Dr Eloy Linares Málaga* (Sp.): Gori Tumi Echevarría López.
Las 'memorias' del Dr. Eloy Linares Málaga / *The 'memories' of Dr Eloy Linares Málaga* (Sp.-En.): Gori Tumi Echevarría López.
Breve informe de las Memorias del Dr. Eloy Linares Málaga / *Brief information of Eloy Linares Málaga's memories* (Sp.): Eloy Linares Málaga.
Algunas notas sobre Toro Muerto / *Some notes on Toro Muerto* (Sp.-En.): Eloy Linares Málaga.
Arte rupestre e identidad en Arequipa / *Rock art and identity in Arequipa* (Sp.-En.): Eloy Linares Málaga.
Arte mobiliar con tradición rupestre en el sur del Perú / *Eloy Linares's Movable art with rupestral tradition. A synopsis* (Sp.-En.): Eloy Linares Málaga.
Toro Muerto una reSp.uesta a una opinión / *Toro Muerto, an answer to an opinion* (Sp.): Eloy Linares Málaga.
¿Por qué se quiere irrigar Toro Muerto? / *Why they want to irrigate Toro Muerto?* (Sp.): Eloy Linares Málaga.
Síntesis de los datos biográficos del Dr. Eloy Linares Málaga / *Biographic synthesis of Dr Eloy Linares Málaga* (Sp.).

Volume 2, Number 8, May 2011:
Arte rupestre y escritura, el caso de Checta, Perú / *Rock art and writing; the Checta case, Peru* (Sp.): Antonio Rubén Wong Robles and Gori Tumi Echevarría López.
El arte rupestre de Lachay, una introducción a su estudio / *Lachay's rock art; an introduction to its study* (Sp.) (Incluye un post scriptum: Las quilcas de Lachay, crítica y contribución): Gori Tumi Echevarría López.
Los petroglifos o killkarumi de Lachay y su interpretación mesológica y ecológica / *The petroglyphs or killkarumi from* Lachay and its ecological and mesological interpretation (Sp.): Andrés Marmol.
Dos sitios con pinturas rupestres en la cuenca alta del río Mala, distrito de Huarochirí / *Two sites with rock paintings in the upper Mala basin, Huarochiri district* (Sp.): Pieter D. Van Dalen Luna and Pedro G. Patrocinio Marcos.
Arte rupestre en la cuenca baja del río Lurín, Pachacamac, Perú / *Rock art in the Lurin lower basin, Pachacamac, Peru* (Sp.): Gori Tumi Echevarría López.
Estilos cognitivos de aprendizaje en el arte rupestre peruano / *Cognitive styles of learning in the Peruvian rock art* (Sp.): Enrique Ruiz Alba.
Logo-centrismo y arte rupestre / *Logo-centrism and rock art* (Sp.): Enrique Ruiz Alba.
Geoglifos en las lomas costeras del Cerro Campana, Valles de Chicama y Moche. Informe preliminar / *Geoglyphs in the hills of Cerro Campana, Chicama and Moche valleys. Preliminar Inform* (Sp.): Víctor Corcuera Cueva and Gori Tumi Echevarría López.

Volume 3, Number 9, Augusto 2011:
La escritura ideográfica en el antiguo Perú / *The ideographic writing in the ancient Peru* (Sp.): Toribio Mejía Xesspe.
Sitios arqueológicos con quilcas del Perú – Inventario (I) / *Archaeological sites with quilcas, Inventory (I)* (Sp.): Gori Tumi Echevarría López and Jesús Gordillo Begazo.
Aplicación de la fi losofía de la ciencia en la investigación del arte rupestre / *Application of philosophy of science in rock art research* (Sp.-En.): Robert G. Bednarik.
Macrofunciones de las quilcas o el arte rupestre en el Perú / *Macrofuntions in peruvian quilcas or rock art* (Sp.): Enrique Ruiz Alba.
Teoría del aprendizaje y arte rupestre en el Perú / *Learning theory and peruvian rock art* (Sp.): Enrique Ruiz Alba.
La creación artística / *The artistic creation* (Sp.): Alberto Bueno Mendoza.
Refl exiones sobre la utilidad del arte rupestre / *Reflections on the rock art utility* (Sp.): Edgar Barrón Trujillo.
La mesa de arte rupestre Andino y Amazónico del XVII Congreso Peruano del Hombre y la Cultura Andina / *The rock art symposium in the XVII Peruvian Congress of the Man and the Andean and Amazonian Culture. UNFSC 2011* (Sp.): Gori Tumi Echevarría López.

Volume 3, Number 10, November 2011:
Los geoglifos de Cerro Campana, segundo informe / *The geoglyphs of Cerro Campana, second report* (Sp.): Gori Tumi Echevarría López y Víctor Corcuera.
Exploración del Templo Pintado de El Ingenio, Nasca / *The exploration of the Painted Temple, El Ingenio, Nasca* (Sp.): Federico Kauffmann Doig y Evaristo Chumpitaz Cuya.
Hacia la definición de un sistema de escritura en el Formativo Andino I. Los ojos en el arte de Chavín de Huántar: una propuesta desde el Obelisco Tello / *Towards a definition of a writing system in Andean Formative I. The eyes in Chavín de Huantar art: a proposal from Tello's Obelisque* (Sp.): Pedro Carlos Vargas Nalvarte.
Desarrollo del lenguaje en el Perú / *Language development in Peru* (Sp.): Enrique Ruiz Alba.
Second language acquisition and written language; a new perspective for the study of rock art / *Teoria de adquisicion de segundo idioma y lenguaje escrito; una nueva perSp.ectiva para el estudio de la quilcas* (En.-Sp.): Enrique Ruiz Alba.
Quilca del cielo: Valle Calchaquí, Salta, Argentina. / *The Quilca del Cielo: Calchaquí valley, Salta, Argentina* (Sp.): Cristian Jacob, Ricardo Moyano, Félix Acuto e Iván Leibowicz.
Firma de la declaración por la defensa, conservación, protección y promoción del complejo de petroglifos de Toro Muerto / *Declaration for the defense, conservation, protection and promotion of Toro Muerto's petroglyphs complex* (Sp.): Alba Choque Porras.

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El sitio arqueológico de Quilla Rumi, Huánuco, Perú / *The archaeological site of Quilla Rumi, Huánuco, Peru* (Sp.): Daniel Morales Chocano y Gori Tumi Echevarría López.
La investigación toponímica y el hallazgo de los centros pictográfi cos en la cuenca del río Huallaga - Introducción / *Toponymic research and discovery of pictographic centers in the Huallaga's River basin - Introduction* (Sp.): Javier Pulgar Vidal.
La investigación toponímica y el hallazgo de los centros pictográfi cos en la cuenca del río Huallaga - informe / *Toponymic research and discovery of pictographic centres in the Huallaga's River basin - report* (Sp.): Máximo Barrantes Zamora.
Hacia la definición de un sistema de escritura en el Formativo Andino II. Boca, narices, orejas y apéndices en el arte de Chavín de Huántar: una propuesta desde el Obelisco Tello / *Towards a definition of a written language system during the Andean Formative II. Mouths, noses, ears and appendices in the Chavín de Huantar art* (Sp.): Pedro Carlos Vargas Nalvarte.
Registro e implicancias preliminares de quilcas en la cuenca alta del río Zaña, distrito de Nanchoc, región Cajamarca / *Record and preliminary implications in the study of quilcas; Zaña's high river basin, Nanchoc district, Cajamarca region* (Sp.): Rosalba García.
Quilca en el distrito de Huanchaco, La Libertad / *Quilca in Huanchaco district, La Libertad* (Sp.): Percy Manuel Valladares Huamanchumo.

Las quillcas en territorio Ashaninka. Análisis de quillcas en San Martín de Pangoa / *The quillcas in Ashaninca land. Quillcas analysis in San Martín de Pangoa* (Sp.): Pieter Van Dalen Luna.
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Application of second language acquisition theory in rock art / *Aplicación de la teoría de adquisición del segundo idioma en arte rupestre* (En.-Sp.): Enrique Ruiz Alba.
Guía para la gestión pública de los monumentos arqueológicos de la región Lima. Sinopsis / *Guide for public administration of archeological monuments of Lima eegion. Synopsis* (Sp.): Daniel Cáceda Guillén.
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I ciclo de conferencias sobre la escritura en el Perú antiguo / *First cycle of conferences about writing in ancient Peru* (Sp.).

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Leyenda y detalles arqueológicos del plano correspondiente al valle de 'Kopara' (Trancas, Nasca) - Avenidas y trazos ceremoniales / *Legends and archaeological features of the Kopara's valley (Trancas, Nasca) – Avenues and ceremonial lines* (Sp.): Toribio Mejía Xesse.
Ritual y arte rupestre en el valle de Nasca, Perú / *Ritual and rock art in the Nasca valley* (Sp.): Ana Nieves.
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Petroglyphs near Huancor / *Los petroglifos de Huancor* (En.-Sp.): Max Uhle.
Las quilcas de Huancor, nuevas hipótesis sobre su cronología y asociación cultural / *The quilcas from Huancor; new hipothesis about its chronology and cultural association* (Sp.): Gori Tumi Echevarría López and Enzo Mora.
Dos sitios con pictografías en la cuenca alta del río Cañete (margen derecha), provincia de Yauyos / *Two sites with pictograms in the high valley of Cañete, Yauyos province* (Sp.): Pieter D. Van Dalen Luna and Hans G. Grados Rodríguez.
Quilcas en la cuenca del río Hatun Mayu, Lucanas, Ayacucho / *Quilcas in the Hatun Mayu river basin, Lucanas, Ayacucho* (Sp.): José A. Quispe Huamaní.
Redes de desarrollo y transversalidad en el valle de Cañete / *Networks and Transversal development in Cañete* (Sp.-En): Enrique Ruiz Alba and Jorge Yzaga.
Debate *RAR* (Sp.): Gori Tumi Echevarría López / Robert G. Bednarik.
Noticias arqueológicas. Nuevos trazos ceremoniales semejantes a los Nasca / *Archaeological news. New ceremonial lines similar to Nasca* (Sp.): Toribio Mejía Xesspe.

Volume 4, Numbers 13 and 14, November 2012:
Nociones mínimas para conocer el Centro Arqueológico de Arte Rupestre: Toro Muerto, Arequipa, Perú / *Minimal notions to know the Archaeological Rock Art Centre: Toro Muerto, Arequipa, Peru* (Sp.): Eloy Linares Málaga.
Evaluación de la técnica de fotografía computacional 'reflectance transformation imaging' (RTI) en las quilcas (petroglifos) de la cuenca del Río Grande de Nasca (Ica) / *Evaluation of the computational photography technique 'reflectance transformation imaging' (RTI) in the quilcas (petroglyphs) of the Rio Grande basin of Nasca (Ica)* (Sp.): Ana Nieves and Gori Tumi Echevarría López.
Diagnóstico del estado de conservación de las pinturas rupestres de Toquepala, Tacna – Perú / *Diagnosis of the conservation state of Toquepala's rock paintings, Tacna - Peru* (Sp.): Jesús Gordillo Begazo.
Image and rock art research, a Peruvian case / *Imagen e investigación rupestre, un caso peruano* (En.-Sp.): Gori Tumi Echevarría López and Enrique Ruiz.
Pashash, Perú: hoyos y figuraciones significativas / *Pashash, Peru, cupules and significant figurations* (En.-Sp.): Alberto Bueno Mendoza.
Prospección arqueológica y quilcas en la provincia de Espinar, Cusco / *Archaeological survey and quilcas in the province of Espiinar, Cusco* (Sp.): Raúl Tarco Sánchez.
Concavidades circulares en el arte rupestre de la cuenca del río Cachiyacu, Loreto, Perú / *Circular concavities in the rock art of the Cachiyacu river basin, Loreto, Peru* (Sp.): Gori Tumi Echevarría López .
Petroglifos de Chontayacu: santuario, arte y símbolos de los uchicinos ancestrales (Región San Martín) / *Chotayacu´s petroglyphs: sanctaury, art and simbols of the ancestral uchucinos (San Martín Region)* (Sp.): Alba Choque Porras.
Arte rupestre en el límite andino–amazónico. Bolivia / *Rock art in the Andean-Amazonic border. Bolivia* (Sp.): Roy Querejazu Lewis.
25 centuries of Peruvian culture without writing? / *¿25 siglos de cultura peruana sin escritura?* (Sp.-En.): Victoria de la Jara.
Escritura pre-Chavín en Lima, dimensión y descubrimiento / *Pre-Chavin writing in Lima,* dimension and discovery (Sp.): Gori Tumi Echevarría López.
La escritura de Chavín: buscando el código de la unidad en la variedad / *The writing of Chavín: looking for code unit in the variety* (Sp.): Pedro Carlos Vargas Nalvarte.
Arte rupestre, chamanismo y estados alterados de conciencia: una revisión crítica / *Rock art, shamanism and altered states of consciousness: a critical review* (Sp.-En.): Mario Consens.
Visiones y modelos de estudio de las quilcas o arte rupestre, nuevas alternativas metodológicas / *Visions and models for rock art research, new methodological alternatives* (Sp.): Enrique Ruiz Alba and Jorge Yzaga.
Don Eloy Linares Málaga un hombre de ciencia y de su tiempo / *Eloy Linares Málaga, a man of his time and science* (Sp.): Racso Fernández Ortega.
Homenaje al Dr. Eloy Linares Málaga / *Tribute to Dr Eloy Linares Málaga* (Sp.): Manuel Zevallos Vera / Gori Tumi Echevarría López.
Rutas nómadas / *Nomadic routes* (Sp.).

This new journal is available from APAR, Plaza Julio C. Tello 274 No 303, Torres de San Borja, Lima 41 Peru; *goritumi@gmail.com*

# RECENT BOOKS OF INTEREST

***The Signs of which times? Chronological and palaeo-envirenmental issues in the rock art of northern Africa,*** edited by D. HUYGE, F. VAN NOTEN and D. SWINNE. 2012. Royal Academy for Overseas Sciences, Brussels, 377 pages, featuring 19 contributions, illustrated with colour and monochrome images, softcover, ISBN 978-90-756-5251-2.

***LagrotteChauvet-Pontd'Arc:sanctuairepréhistorique***, by JEAN CLOTTES. 2013. Les patrimoines, Éditions Le Dauphiné Libéré, Veurey, 50 pages, richly illustrates in colour, softcover, ISBN 978-2-8110-0038-7. (An English language version is planned.)

***Art as a source of history. XXV Valcamonica Symposium 2013, Capo di Ponte, 20–26 September 2013***. 2013. Centro Camuno di Studi Preistorici, Capo di Ponte, Italy, 470 pages, featuring 60 contributions, monochrome illustrations, ISBN 978-88-86621-39-7.

## RECENT PAPERS OF INTEREST

**L'art rupestre grvé du Rio Vermelho (Rondonópolis, Mato Grosso, Brésil). De nouvelles découvertes dans l'Abri Morro Solteiro**, by PATRICK PAILLET. 2010. *Anthropologie*, Volume 48, Number 3, pp. 209–230.

**The hunting scene on rock No. 3 from Mana (Philippi, eastern Macedonia, Greece)**, by FERNANDO COIMBRA and GIORGOS ILIADIS. 2011. *Arkeos*, Volume 29, pp. 83–92.

**Animals as landscape: rock art within a cave on the Gower Peninsula, South Wales**, by GEORGE NASH. 2011. *Arkeos*, Volume 29, pp. 93–105.

**Why are so few plants depicted in rock art?**, by HELMKE HENNING and FRANCES LE CLUS. 2011. *The Digging Stick*, Volume 28, Number 3, pp. 1–4.

**Interaction studies: a rich field for San studies**, by PIETER JOLLY. 2011. *The Digging Stick*, Volume 28, Number 3, pp. 11–14.

**The use of weathering indices in rock art research**, by ROBERT G. BEDNARIK. 2011. In M. J. Colon (ed.), *Weathering: types, processes and effects*, pp. 1–67. Earth Sciences in the 21st Century, Nova Science Publishers, Inc., New York.

**An archaic face from the Woodstock Abydos Protected Reserve, northwestern Western Australia**, by LIAM M. BRADY and ANNELIESE CARSON. 2012. *Australian Archaeology*, Number 74, pp. 98–102.

**The utility of schist in rock art studies**, by ROBERT G. BEDNARIK. 2012. *Horizons in Earth Science Research*, Volume 8, pp. 1–36.

**Why the Malotki and Wallace paper is scientific**, by ROBERT G. BEDNARIK. 2012. *La Pintura*, Volume 38, Number 1, pp. 5–7.

**A discovery of possible Upper Palaeolithic parietal art in Cathole Cave, Gower Peninsula, South Wales**, by GEORGE H. NASJ, PETER VAN CALSTEREN, LOUISE THOMAS and MICHAEL J. SIMMS. 2012. *Proceedings University of Bristol Sp.elæological Society*, Volume 25, pp. 327–336.

**Temporal modes in rock art: how passive superimposition tamed the Iron Age warriors of the Valcamonica, Lombardy, northern Italy**, by GEORGE NASH. 2012. *Arkeos*, Volume 32, pp. 91–102.

**Rock art and the memory of unusual astronomical events**, by FERNANDO COIMBRA. 2012. *Arkeos*, Volume 32, pp. 103–112.

**Arqueologia rupestre da Bacia do Tejo: RUPTEJO**, by LUIZ OOSTERBEEK, HIPÓLITO COLLADO GIRALDO and SARA GARCÊS. 2012. *Arkeos*, Volume 32, pp. 133–173.

**Mide rock paintings: archaeology by formal and informed methods**, by REX WEEKS. 2012. *Cambridge Archaeological Journal*, Volume 22, Number 2, pp. 187–207.

**Bears and meanings among hunter-fisher-gatherers in northern Fennoscandia 9000–2500 BC**, by KNUT HELSKOG. 2012. *Cambridge Archaeological Journal*, Volume 22, Number 2, pp. 209–236.

**Mokhali Cave revisited: dinosaur rock art in Lesotho**, by CHARLES HELM, KEVIN CRAUSE and RICHARD McCREA. 2012. *The Digging Stick*, Volume 29, Number 1, pp. 6–9.

**Petroglyphs of the world** (in Chinese), by ROBERT G. BEDNARIK. 2012. *Chinese Social Sciences Today*, Volume 2012, Number 7, pp. A-04 – A-06.

**Dating the present at Nawarla Gabarnmanh: time and function in the art of a major Jawoyn rock art and occupation site in western Arnhem Land**, by R. G. GUNN, R. L. WHEAR and L. C. DOUGLAS. 2012. *Australian Archaeology*, Number 75, pp. 55–65.

**Endangered rock art**, by NOELENE COLE and ALICE BUHRICH. 2012. *Australian Archaeology*, Number 75, pp. 66–77.

**Taphonomy or paint recipe: in situ portable x-ray fluorescence analysis of two anthropomorphic motifs from the Woronora Plateau**, by JILLIAN HUNTLEY. 2012. *Australian Archaeology*, Number 75, pp. 78–94.

**The archaeological significance of calcite**, by ROBERT G. BEDNARIK. 2012. In Joana Dobrev and Petra Markoviæ (eds), *Calcite: formation, properties and applications*, pp. 69–94. Nova Science Publishers, Inc., New York.

# ORIENTATION

## IFRAO Congress 2014, China: important announcements

In previous announcements it was stated that this event will be held in Nanning, China, in November 2014. The central government of China then relocated it to Guiyang City and to late July 2014. However, it will now be from 15 July to 19 July 2014, in Guiyang City, Guizhou Province. This is located in a rock art-rich, mountainous region of south-western China.

The following schedule provides an initial and preliminary program:

| | AM: 8:00–12:00 | PM: 14:00–18:30 | Evening19:30–21:30 |
|---|---|---|---|
| 15 July | Registration | Registration | 17:00–19:30 opening ceremony and banquet |
| 16 July | Symposia | Symposia | Lectures |
| 17 July | Symposia | Symposia | Lectures |
| 18 July | Rock art site visits | Rock art site visits | Lectures |
| 19 July | Symposia | Symposia or other item | 17:30–19:00 concluding ceremony |

The congress is to have 16 sessions:

1. Oceanian rock art
2. African and Mid-Eastern rock art
3. European rock art
4. North American rock art
5. South American rock art
6. Southeastern, southern Asian and South-west China's rock art
7. North Asian and north China's rock art
8. Rock art in east China and north Pacific Rim
9. Rock art and Chinese archaeological cultures
10. Theory and methodology in rock art studies
11. Iconography and meaning of rock art
12. Symbol and rock art
13. Techniques of rock art
14. Conservation and management of rock art
15. Rock art and megalithic culture
16. Dating research of rock art

## Calls for papers

Here are the rationales and calls for papers that are available at the time of going to press:

**Symposium 2: African and Mid-Eastern rock art**
Chaired by Majeed Khan, David Coulson and Daifallah al-Talhi
*Majeedkhan1942@yahoo.com, tara@swiftkenya.com and Dat19@hotmail.com*

Africa and Middle-East are among the richest rock art regions of the world. They show great similarity in their contents, contexts and compositions. This symposium shall highlight new discoveries, new researches and new theories and points of view on the symbolic, semantic and semiotic aspects of both African and Arabian rock art. New methodologies of documentation, preservation and protection of rock art in these regions and hypothetical interpretations and meanings will be the main object of the symposium. Thus, this symposium will be a broad based in is scope and subjects. The contributors are invited to present any aspect of Arabian and African rock art and send the title and abstract of about 100–150 words to one or both of the chair persons.

**Symposium 3: European rock art: the act of performance**
Chaired by George Nash
*George.nash@bristol.ac.uk*

One can argue, albeit tentatively Europe, is one of the key prehistoric rock art areas of the world. Over the past five years or so scientists have managed to push back the dates for the earliest evidence for artistic endeavour to the frontier between Neanderthals moving to the peripheries of Europe and the emergence of modern humans. It is conceivable that the rock art may have been produced by Neanderthals.

Elsewhere, and at later times within the European prehistoric sequence, both engraved and painted forms of rock art become the main focus for communities to express ritual and symbolic behaviour through artistic endeavour. This medium, along with other modes of visual expression become incorporated into various events and episodes associated with the cycle of life such as death, economy and gender relations. Based on the archaeological record, both abstract and representative forms of rock art influence or are influenced by other forms of material culture

such as the production and use of ornamented antler, bone, ceramics and metalwork. Over time, this rich and varied cultural package colonises those areas of Europe where rock art is not present.

This general session will, from the various rock art assemblages and chronologies from around Europe, discuss new approaches to rock art studies. In particular, session organisers are interested in papers that deal with rock art as performance. How did this special act of visual communication influence and manipulate society? This archaeological phenomenon formed part of an essential cultural and ritual package that extends 30 000 years.

From northern Norway to the islands of the Mediterranean, and from the White Sea in western Russia to the Atlantic Seaboard, rock art was expressed in many forms and produced in a variety of locations, making this archaeological resource altogether unique.

**Symposium 5: South American rock art**

Chaired by Gori Tumi Echevarría López and Jesús Gordillo Begazo

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A long and at the same time little known tradition of rock art research extends through the South American continent, covering all major geographical areas, such as the Andes, the Amazon Basin, the circum-Caribbean area, the Chaco and Patagonia. Nevertheless, most of the research traditions have not yet developed an explicitly scientific direction, having developed in parallel with different research objectives, but above all following different theoretical and methodological parameters. Although this variation reflects a positive academic contemplation, rock art research in South America may still be understood in the context of world rock art research, stating its own idiosyncrasy and its own scientific advances, especially considering the enormous ethnographic and archaeological richness of the continent's human past, the great development of postcolonial thought and the rationality of the actual and diverse native population. This symposium will contribute to the inclusion of the South American rock art studies in a global context by providing a forum for the evaluation of their large and systematic contributions to the discipline. Contributions in all aspects of South American rock research, theory and method, historiography, scientific research and others are welcome to this symposium of the IFRAO 2014 Congress. Please provide your proposed paper title and abstract, of about 100 to 150 words, to the above chairpersons, before 31 December 2013.

**Symposium 6: Rock art of Southeast Asia, southern Asia and southwest China**

Chaired by Paul S. C. Taçon, Li Yongxian and Giriraj Kumar

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This symposium focuses on a vast area with much cultural, archaeological, biological and rock art diversity. Yet until recently much less has been known about the rock art of this region than most other parts of the world. Snapshots of the rock art of parts of this region were presented together for the first time during the First AURA Congress, Darwin in Australia in 1988. Since then, a great deal of scientific work on the rock art of Southeast Asia, South Asia and south-western China has been undertaken by international teams. Pleistocene rock art has been confirmed in a number of locations and new dating techniques are being used to confirm or refute its existence across the region. We are also now getting a clearer picture of rock art change during the Holocene and its persistence in some areas until very recent times. In this symposium a comprehensive picture of recent developments in rock art research in different parts of Southeast Asia, southern Asia and southwest China will be presented, from varying cultural and disciplinary perspectives. Besides contributing to a better understanding of the human past of the region it is expected that some papers will also focus on the conservation and management of rock art in the region, especially areas that have limited resources and extreme climates. Papers are cordially invited on any aspect of the rock art of the region. Please provide proposed paper titles and abstracts of 100–150 words in English to any or all of the session chairs before 31 December 2013. For further details about the Congress please visit the official web site: *www.chinarockart.com*

**Symposium 10:**
**Theory and methodology in rock art studies**

Chaired by Gori Tumi Echevarría López and Robert G. Bednarik

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The establishment of a scientific discipline of rock art studies involves the creation of a universal theory and of a methodology deriving from its first principles. Selective uniformitarianism, simplistic ethnographic analogy or mechanistic reductionism provide no promising approaches, and the relegation of indigenous perceptions to subordinate status in the interpretation of rock art is in need of review. Scientific access to rock art is inevitably contingent upon the coherent identification of that part of the extant characteristics of the evidence that is not the result of taphonomic processes. This symposium is intended to become a forum for offering progressive ideas and viewpoints about an epistemologically sound theory of rock art research, and for offering promising methods and techniques that could help in furthering the presentation and testing of hypotheses within such a framework. Thus this symposium will be as broad as possible in its scope, and forward looking in its philosophy. Contributions will hopefully address many aspects of rock art related to this general subject: how to improve both theory and methodology in

our discipline. Papers on topics commensurate with these goals are cordially invited from researchers for presentation at this symposium of the 2014 IFRAO Congress. Please provide your proposed paper title and abstract, of about 100 to 150 words, to one or both of the above chairpersons, before 31 May 2014.

**Symposium 12: Symbols, myths and cosmology in rock art: archaeological material and anthropological meanings**

Chaired by Dario Seglie, Enrico Comba and Ahmed Achrati

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The Symposium seeks to occasion new ideas and innovative research, to afford fresh theories and bold hypothesis together with unpublished information and recent discoveries relative to the study of rock art in general and in particular to the philosophies and practices it implies. The Symposium thus provides an opportunity to discuss the roles played by iconography and myth in archaeological times, thanks, in part, to the light which can be shed thereon by insights emerging from the anthropological study of peoples whose material life styles and assimilated mentalities can be plausibly paralleled to those of our prehistoric forebears.

There is no third way beyond conscious or unconscious ethnocentrism. It must consequently be recognised that anthropology and archaeology with their respective categorisations of empirical reality (amongst which 'art' and 'prehistory', 'ritual' and 'myth') are pure products of recent Western history. This recognition, rendered creative as well as critical, could lead, far beyond the usual interdisciplinary syncretism, to radically new hermeneutical systems able to attribute less ambiguous meaning to the very terms under discussion such as 'artistic production', 'primitive religion' and 'hunter-gatherers'.

In particular, such issues as the following will be debated:

- problems emerging with regards the archaeological and anthropological documentation of art sites, with special reference to symbolic systems and ritual practices;
- the correlations, synchronic and diachronic, between palaeo-ethnocultural areas at different periods and in various places;
- the iconography found in rock art as a reflection of world-views and cosmologies of the past;
- ceremonial aspects and underlying meanings of the material; the possible roles and function of rock art in keeping with ecological-social-cultural changes;
- data from sites that are still in use, insofar as they can be related to rock art sites and to their meanings for contemporary native peoples.

**Symposium 13: Techniques of rock art**

Chaired by Robert G. Bednarik and Giriraj Kumar

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The technology or techniques of rock art production can be examined from several perspectives: through replicative studies reproducing specific forms of rock art; through the microscopic analysis of work traces, both in the rock art or on the tools used to create it; through the detection of inclusions in paint residues that permit deductions about the used technology; through the study of rock paint recipes; and through the investigation of similar empirical characteristics permitting scientific deductions about rock art production. Another approach is to consider the available ethnographic information about how rock art was produced. Typical issues to be resolved by technological analyses include whether engravings were made by metal or stone points, or some other material, including their discrimination from non-anthropogenic rock markings such as animal scratch marks; or where pigments or other paint components originate from. The clarification of issues of rock art technology and production technique assists in a variety of other issues, including dating the rock art, distinguishing it from phenomena resembling rock art, and providing important information to archaeology. For instance the reliable identification of hammerstones used in the creation of percussion petroglyphs can link occupation strata to rock art production events. Detailed study of striations or profiles caused by specific stone tool points can be found in engraved grooves, and the sequence of such rock markings may then be verifiable. Papers on these and similar topics are invited from researchers for presentation at this symposium of the 2014 IFRAO Congress. Please provide your proposed paper title and abstract, of about 100 to 150 words, to one or both of the above chairpersons, before 31 May 2014.

**Symposium 15: Rock art and megalithic culture**

Chaired by George Nash and Tang Huisheng

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By the mid-fifth millennium BCE, Neolithic communities along the Atlantic seaboard and the western Mediterranean coast of Europe began to witness the emergence of a pictographic language based on a common repertoire of abstract, geometric and figurative motifs. This distinct art form is arguably an extension of a much wider pan-European schematic art tradition which was mainly confined to communities involved in the construction and use of stone chamber burial-ritual monuments. At this time, the megalithic art tradition unified much of the Neolithic world along the coastal fringes of Europe, between the Iberian Peninsula and northern Scotland, extending around 4500 km and lasting some 3000 years. The art itself appears to have acted as a personal signature that was unique to each monument and its builders but drawing on a limited set of symbols that included chevrons, concentric circles, cupules, lozenges, spirals and zigzag lines. The majority of this repertoire was engraved, although there is clear evidence that

many sites were also painted. Recognised along the Mediterranean and Atlantic coastal fringes are around eight core areas; of these, four are islands. Each area appears to have had its own unique and distinct artistic repertoire.

This session will explore new areas and avenues of research within this complex area of the prehistoric rock art world advocating the link between the art, the architecture in which it is housed and the aspect - the landscape in which both stand. The session rationale advocates that all three elements are fully integrated and form a homogenous coherent ritualised communal association in the ritualised construct that is the megalithic world.

**Symposium 16: Dating research of rock art**
Chaired by Robert G. Bednarik and Tang Huisheng
*robertbednarik@hotmail.com, tanghuisheng@163.com*

The age estimation of rock art has long been a key aspect of rock art research, but continues to be attended by difficulties over methodology, misinterpretation of findings and overconfidence in the reliability or precision of results. In this symposium it is intended to pursue not only new dating results and new insights, but also ponder the issues of the uses the results of rock art dating attempts have been applied to. The symposium is intended to consider the multitude of methods and approaches that have been used in securing age estimates, how they compare in determining the timing of rock art production, and how results of multiple method strategies might cluster around the target event. It is also intended to cover all new rock art dating results and developments, and to consider reviews of earlier determinations produced over the past few decades. Some of the topics to be hopefully included are minimum dating by archaeological excavation, radiocarbon analyses of mineral accretions or their inclusions, radiocarbon analyses of paint residues or their inclusions, geomorphological methods, minimum or maximum ages derived from biological accretions, lichenometry, colorimetry of patinae, radiocarbon analyses of charcoal and beeswax figures, and any other methods of 'direct' dating of rock art. Papers on these and similar topics are invited from researchers for presentation at this symposium of the 2014 IFRAO Congress. Please provide your proposed paper title and abstract, of about 100 to 150 words, to one or both of the above chairpersons, before 31 May 2014.

## Field trips

The following is a preliminary list of the field trips following the 2014 IFRAO Congress:

*I. North China Line*

i. (Line 1) Line of rock art in Chifeng, Inner Mongolia (Yin River rock art, rock art in Ongniud Banner, Bai Cha River rock art)
ii. (Line 2) Line of Yin Mountains and Wuhai rock art (Yin Mountains rock art, rock art in Wuhai)
iii. (Line 3) Line of Alxa rock art (Mandela rock art, Camel Mountain rock art)
iv. (Line 4) Line of Helan Mountain rock art (Shizui Mountains, Helankou and Damaidi rock art)
v. (Line 5) Line of rock art in Yin Mountain, Wuhai and Helan Mountain (major rock art sites in Ningxia and Inner Mongolia)

*II. Northwest China Line*

vi. (Line 1) Line of rock art in Ürümqi and Altai, Xinjiang (Rock art in Altai Region, Xinjiang)
vii. (Line 2) Line of rock art in Ürümqi and Ili, Xinjiang (rock art in Ili Region, Xijiang)
viii. (Line 3) Line of rock art in Ürümqi and Tian Shan (rock art in Hutubi and Changji, Xinjiang)
ix. (Line 4) Line of rock art in various regions of Xinjiang (rock art in Altai, Ili, Changji and Hutubi)

*III. Southwest China Line*

x. (Line 1) Line of Huashan rock art, in Guangxi (rock art along Zuo River valley, Guangxi)
xi. (Line 2) Line of Jinsha River rock art, Yunnan (rock art along Jinsha River valley, in Diqing, Yunnan)
xii. (Line 3) Line of rock art in Canyuan, Yunnan (rock art in Canyuan, Yunnan)
xiii. (Line 4) Line of rock art in Guizhou (rock art in Longli, Guangjialing, Guizhou)
xiv. (Line 5) Line of rock art in various regions in southwest China (rock art in Guizhou, Huashan, Wenshan and Canyuan)

*IV. East China Line*

xv. (Line 1) Line of rock art in Juci Mountain, Henan (rock art in Central China's Juci Mountain)
xvi. (Line 2) Line of rock art in Fangcheng and Wugang (rock art in Fangcheng, Biyang and Wugang)
xvii. (Line 3) Line of rock art in Lian Yungang, Jiangsu (general cliff rock art, cupules in Lian Yungang)
xviii. (Line 4) Line of rock art in various regions in east China (central China's cupules and rock art in Lian Yungang)

*Note:* Lines 5, 9, 14 and 18 belong to comprehensive fieldtrips of rock art sites. Arranged in accordance with all rock art sites in some major region, they are therefore lines involving long travel times and include three or more rock art areas. They usually take one more than 20 days.

## Rock Art Symposium in Brazil

Teresina, Piauí, 21–27 July 2014

To be held by the Brazilian Association of Rock Art (ABAR), in association with the Undergraduate and Postgraduate Studies Department in Archaeology at the Federal University of Piauí (UFPI). There will be the following academic sessions:

1. *Archaeometry and rock art*, coordinated by Luis

Carlos Duarte Cavalcante, *cavalcanteufpi@yahoo.com.br* and José Domingos Fabris, *jdfabris@gmail.com*
2. *Conservation of rock art sites*, coordinated by Maria Conceição Soares Meneses Lage, *meneses.lage @ gmail.com*, Joëlle Riss, *joelle.riss @u-bordeaux1.fr*, Jacques Brunet, *philippe.malaurent @u-bordeaux1.fr* and Lorraine Ferraro.
3. *Tourism and management of archaeological sites*, Claudia Alves, *olivas@hotlink.com.br*; Jacionira Coêlho Silva, *jaconira@hotmail.com* and Domingos Alves de Carvalho Jr, *domingosjr @IFPI.edu.br*
4. *Research in rock art and social inclusion*, Carlos Etchevarne, *etchevarnebahia@gmail.com*, Rosiane Limaverde, *rosilimaverde@hotmail.com* and Joina Freitas, *joinaborges@hotmail.com*
5. *New discoveries of rock art sites in Brazil*, Edithe Pereira, *edithepereira@hotmail.com*, Sonia Maria Magalhães Campelo, *campelosonia2@hotmail.com* and A. Isnardis.
6. *Palaeoindian and archaic rock art in the Americas*, Matthias Strecker, *siarb@acelerate.com* and Carlos Etchevarne, *etchevarnebahia@gmail.com*
7. *Rock art of Europe, Asia, Africa and Oceania*, Suely Amancio Martinelli, *suelyamancio@hotmail.com* and Renata Grifoni Cremonesi, *grifoni@arch.unipi.it*
8. New methods of study and analysis of rock art, Ana Clelia Barradas Correia, *ana.c.correia@ufpi.edu.br*, Cynthia Jalles and Rundsthen Vasques de Nader.

Contact for more information: *comunicacao@abar.org.br* or *siar2014@gmail.com*

## *Arts*: a new journal

The first issues of the new open access journal *Arts* are dominated by articles about rock art, forming part of a special issue edited by R. G. Bednarik. The contributions in *Arts* are very well refereed. The following are the first batch of papers published in the special issue entitled 'World rock art', with many more to follow. It is recommended to visit the webpage at *http://www.mdpi.com/journal/arts/special_issues/world_rock_art* and to download selected articles.

- Robert G. Bednarik 2013. Pleistocene palaeoart of Africa. *Arts* 2(1): 6–34; doi: 10.3390/arts2010006.
- Susan Searight 2013. Morocco's rock art: age and meaning. *Arts* 2(1): 35–43; doi:10.3390/arts2010035.
- Robert G. Bednarik 2013. Pleistocene palaeoart of Asia. *Arts* 2(2): 46–76; doi: 10.3390/arts2020046.
- Ebrahim Karimi Mobarakabadi 2013. Rock art of the Howz-Māhy region in central Iran. *Arts* 2(3): 124–133; doi: 10.3390/arts2030124.
- Manager Singh and Babasaheb Ramrao Arba 2013. Architectural history and painting art at Ajanta: some salient features. *Arts* 2(3): 134–150; doi: 10.3390/arts2030134.
- Esther Jacobson-Tepfer 2013. Late Pleistocene and early Holocene rock art from the Mongolian Altai: the material and its cultural implications. *Arts* 2(3): 151–181; doi: 10.3390/arts2030151.
- Davida Eisenberg-Degen and Steven A. Rosen 2013. Chronological trends in Negev rock art: the Har Michia petroglyphs as a test case. *Arts* 2(4): 225–252; doi:10.3390/arts2040225.
- Diego Garate, Aude Labarge, Olivia Rivero, Christian Normand and Joëlle Darricau 2013. The cave of Isturitz (west Pyrenees, France): one century of research in Paleolithic parietal art. *Arts* 2(4): 253–272; doi: 10.3390/arts2040253.

# IFRAO Report No. 52

## Minutes of the 2013 IFRAO Business Meeting

Albuquerque, U.S.A., 31 May 2013

*Organisations represented:* American Rock Art Research Association (ARARA), represented by Mavis Greer (U.S.A.); Asociación Cultural 'Colectivo Barbaón' (ACCB), represented by Hipólito Collado Giraldo (Spain); Associacion pour le Rayonnement de l'Art Pariétal Europeén (ARAPE), represented by Jean Clottes (France); Australian Rock Art Research Association, Inc. (AURA), represented by Robert G. Bednarik (Australia); Cave Art Research Association (CARA), represented by Robert G. Bednarik (Australia); Grupo Cubano de Investigaciones de Arte Rupestre (GCIAR), represented by Racso Fernández Ortega Cuba); Mid-America Geographic Foundation, Inc. (MAGF), represented by Jack Steinbring (U.S.A.); Rock Art Research Association of China (RARAC), represented by Zhang Yasha (China); Sociedad de Investigación del Arte Rupestre de Bolivia (SIARB), represented by Matthias Strecker (Bolivia); Società Cooperativa Archeologica Le Orme dell'Uomo, represented by Jane Kolber (U.S.A.); Société Préhistorique Ariège-Pyrénées

(SPAP), represented by Jean Clottes (France).

The meeting was held in the Marriott Pyramid North Hotel in Albuquerque, New Mexico, U.S.A., on 31 May 2013, and it commenced at 3.30 p.m. It was chaired by Jean Clottes, the Immediate-Past President of IFRAO. The minutes were recorded by the Convener of IFRAO.

1. *Apologies and declaration of proxies*. There were no apologies, and the proxy by Società Cooperativa Archeologica Le Orme dell'Uomo was declared.

2. *Confirmation of previous minutes*. The minutes of the previous IFRAO Business Meeting (La Paz, Bolivia, 29 June 2012) have been published in *Rock Art Research* 29(2): 270–271. MAGF moved to accept them, seconded by ARARA, and they were accepted unanimously.

3. *Matters arising from these minutes*. No matters arising from the previous meeting were raised or discussed.

4. *Report of the IFRAO President*. No report was tabled.

5. *Report of the IFRAO-UNESCO Liaison Officer*. No report was tabled.

6. *Report by the IFRAO Convener*.

6.1. The concern by SIARB about frequency of IFRAO meetings: the matter was discussed and it was decided that the current policy be continued.

6.2. The issue of global rock art protection is raised, citing examples in Chile, Peru, France, U.S.A., Canada, Australia, etc. Members are encouraged to solicit IFRAO's support in such matters.

6.3. The developments in prioritising World Heritage listing criteria, pursued by the Immediate-Past President and Convener, are reported. In response the nomination of Petroglyph National Monument is suggested by ARARA.

6.4. IFRAO members are reminded of the established policy not to publish geographical coordinates of rock art sites.

7. *RARAC proposal*. The Rock Art Research Association of China presented its official bid to host the 2014 IFRAO Congress in Guiyang City, Guizhou Province, China, in July 2014. MAGF moved to accept the proposal, seconded by ARARA, and it was accepted unanimously.

8. *Reports of IFRAO Representatives*.

8.1. ARARA reported that over much of the previous year, attention was focused on the extensive preparations for the Albuquerque congress.

8.2. SIARB is engaged in the publication of the proceedings of the La Paz IFRAO Congress and reports that the level of protection of rock art is declining.

8.3. MAGF is conducting significant excavations at a petroglyph site and investigating petroform sites, as well as producing a newsletter.

8.4. ARAPE's newsletter *INORA* is now in its 23rd year and the organisation manages the funding of the Chauvet Cave research project.

8.5. RARAC reported that the preparations for the Guiyang rock art congress in 2014 are in full progress.

8.6. ACCB noted that its research institute has been renamed Instituto de Estudios Prehistorico, and that it operates in Spain, Angola and Brazil.

8.7. GCIAR is engaged in rock art conservation, recording, and in producing a map of Cuban rock art sites, currently featuring 286 localities. Its next rock art conference will be in 2014.

8.8. AURA has held its Inter-Congress Symposium in Adelaide in September 2012, is continuing its extensive publishing program and conducting research in many parts of the world. Its refereed journal *RAR* is in its 30th year.

9. *Further matters raised by delegates*. A vote of thanks to ARARA, for the efforts made in organising and executing the 2013 IFRAO Congress, was proposed and carried unanimously.

10. *General matters*. Mavis Greer was unanimously elected as the IFRAO President for the new term, beginning immediately.

11. *Adjournment*. The new President adjourns the meeting at 4.30 p.m.

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**The IFRAO Congress 2014** is to be held from 15 July to 19 July 2014 in Guiyang City, Guizhou Province, China, by the Rock Art Research Association of China (RARAC). Some details are available on preceding pages 123–126; for ongoing announcements please go to

*http://www.chinarockart.com/*