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Naturalism, nature and questions of style in Jinsha River rock art, Northwest Yunnan, China

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Abstract

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The naturalistic rock art of Yunnan Province is poorly known outside of China despite two decades of investigation by local researchers. The authors report on the first major international study of this art, its place in antiquity and its resemblance to some of the rock art of Europe, southern Africa and elsewhere. While not arguing a direct connection between China, Europe and other widely separated places, this article suggests that rock-art studies about the nature of style, culture contact and the transmission of iconography across space and time need to take better account of the results of neuroscience research, similar economic/ecological circumstances and the probability of independent invention.

Since Palaeolithic rock art was first recognized by science in 1902 (Bahn & Vertut 1988, 25) there have been many lively debates about the nature of style, stylistic longevity, its cultural significance and whether or how it can be used as an indicator of cultural presence (e.g. papers in Lorblanchet & Bahn 1993). Pigeaud (2007) has recently further examined these questions in regard to various phases of European rock art, introducing a methodology to help distinguish subtleties of change. After a detailed study of all Pleistocene phases of rock art from different parts of Europe, of varying age but seemingly similar iconography, he concludes: 'the break between the Magdalenian world and that of "silhouette art" is a preliminary theoretical stance; it probably was neither so distinct nor so rapid' (2007, 420). Pigeaud (2007, 420) also argues:

The Magdalenian naturalistic tendency is not all-encompassing; it is mainly a feature of a specific geographical zone, which runs from the Aquitaine to Cantabrian Spain and the Basque Country as far as the Ardèche. The remainder of the Mediterranean arc (the Italian peninsula, eastern Spain, the central plateau of the Spanish Meseta and the valley of the Douro in Portugal) experiences a slightly different development.

The 'style' defined as classic Magdalenian thus has similarities both to aspects of earlier traditions and

to contemporaneous art of other geographic regions, while at the same time it is a distinct and relatively long-lasting stylistic entity in and of itself. But how can we explain other bodies of naturalistic rock art, far removed from western Europe, that are in appearance Magdalenian-like?

In this article we examine naturalistic paintings from the Jinsha Jiang (Yangtze Kiang) River region of northwestern Yunnan Province, China and report on the initial results of a new international investigation into its age, origins and cultural significance. If these paintings were discovered in Europe they would most likely be classified as Magdalenian, making them a fascinating case study in their own right, particularly for those interested in style. Thus we describe and analyse some rock art of the Jinsha River region from temporal, landscape, cultural and stylistic perspectives, as well as in relation to similar looking rock art from elsewhere, such as the Magdalenian art of France and Spain and hunter-gatherer rock art from southern Africa. By comparing and contrasting it to other rock art of similar appearance its subtleties can be better elucidated.

Although some sites were found in the mid 1970s (e.g. at Lamajugu, graffiti in Mandarin suggests the site was found in 1976 by He Jyong Qian), Jinsha River rock art was 'discovered' by the outside world in 1988

after Naxi villager He Zhubao (Fig. 1), now in his late sixties, reported it to government authorities. When he was young, He Zhubao was a hunter who travelled through the Jinsha River area hunting wild goats, snow goats, bears and other animals. His father and grandfather, who were also hunters (before hunting was forbidden by the government: Chen *et al.* 2003, 8), had encountered many rock-painting sites while on their excursions (He pers. comm. 2008). They had told He Zhubao about the paintings on the rock walls of limestone shelters, but they lacked knowledge of their cultural meaning. He Zhubao reported these paintings to government authorities in order that this valuable part of his cultural heritage should be known to the outside world and protected for future generations (He pers. comm. 2008).

In 2005, Li Gang began a comprehensive study of Jinsha River rock art (Li & Yang 2008), working with He Zhubao and his relatives. This work became part of a much larger international research project in 2008 (see Saidin *et al.* 2008) involving collaboration between Chinese and Australian scientists from multiple institutions. The research focuses on the late Pleistocene origins of modern humans in Yunnan Province, including: studies of fossil human skeletal morphology; re-evaluating and synthesizing archaeological evidence (including rock art) for early modern behaviour; constructing a chronological framework for modern human evolution in southwest China; and reconstructing a late Pleistocene climate-environment history for the region. Rock-art studies focus on the dating, description, animal species identification and environmental relationship of painting sites of northwest Yunnan, near Jinsha River. This is one of a small number of large-scale palaeoanthropological/archaeological studies which has included rock art as a key element of research.

The rock art of China

Rock art, consisting mainly of paintings and petroglyphs, is found throughout China. There are also rare examples of prints and stencils, such as red and black hand stencils discovered in western Inner Mongolia in 1993. According to Chen, interest in Chinese rock art predates that of other parts of the world by millennia.

The earliest record of rock art is *Han Fei zi*, written 2,300 years ago by the ancient philosopher Han Fei (280–233 BC). A geographical book about rivers, *Shui Jing Zhu*, was written over 1,500 years ago by Li Danyuan, a geographer of the Northern Wei dynasty (AD 386–534). It records many rock art sites in regions covering half the area of China (Z. Chen 2001, 762).

The exact number of rock-art sites within China has not been calculated but it is surmised there are at least 10,000 known images (Li 2005, 3). Most rock art is found in the open, in shelters and on boulders; 'cave pictures are very rare' (Jiang 1991, 5). Chen (Z. Chen 2001) divides the rock art of China into six large geographical areas but other scholars, such as Jiang (1991), have further subdivided. Certainly regional differences are apparent from one province to another and some areas have been studied in more detail (Chen 2002). A few regional monographs are available in various languages (Tibet, see Li & Huo 1994; Yunnan, see Deng 2004; and the Wenshan Prefecture, see Li 2005). The tropical/mountainous region of Yunnan and Guangxi is particularly 'rich in content and style' (Li 2005, 4; see also Deng 2004; Li 1991) but also 'is one of the least explored parts of the world, with very little known about it until recently' (Z. Chen 2001, 765). Within Yunnan, the Cangyuan and Jinsha River areas have some of the most varied imagery (Z. Chen 2001; Deng 2004; Wang 1984). Most Chinese rock art is believed to be less than 3000 years of age (Bednarik & Li 1991; Tang 1993), although Chen (Z. Chen 2001) suggests some sites of the Xinjiang Area (Chinese Turkestan) and engravings of Jiangsu Province are over 5000 years old. There has, however, been minimal direct dating of Chinese rock art.

Jinsha River: the rock art and its initial investigation

Topography and setting

The Jinsha River (Figs. 2 & 3) flows down from the Tanggula Mountains of the Qinghai-Tibet Plateau, abruptly changing direction at several key locations between Zhongdian (Shangri-La), Lijiang, Ninglang and Muli, and passing through spectacular Tiger Leaping Gorge as it winds its way over 1560 km east (e.g. see Deng 2004, 212). In this area it forms a large north-south open triangle shape and it is here, and along the banks of its adjacent branches, that most Jinsha River rock art is located. This is an area of high, steep mountains and deep valleys, with an average valley depth of about 2000 m. The terrain consists of three zones — plateau, hillside and valley bottom — in addition to snow-covered peaks. The plateau is over 5000 m above sea level and hillsides have an altitude of 3000–5000 m, while the valley bottom is located at 1100–3000 m above sea level. The geological structure along the bank is complicated, with steep cliffs. The river opens out into a narrow estuary with greatly varying water heights and a narrow valley zone. Flat areas are rare, vegetation is sparse, a wide range of wild animals live in the valleys and mountains, and



Figure 1. Naxi villager He Zhubao, Zhari Village, October 2008.



Figure 2. The Jinsha River at Tiger Leaping Gorge.

many medicinal plants are collected by local people (e.g. Chen *et al.* 2003, 19–21).

Today Yunnan Province is the most ethnically diverse region of China, containing close to half of China's ethnic minorities (Cavalli-Sforza 1998, 11,501). It is also considered a biodiversity 'hotspot' (Chen *et al.* 2003; Jianchu & Wilkes 2004; Pu *et al.* 2007). The Jinsha River has been the main migration route for ethnic people from the northwest and southeast, with exchanges occurring between the ethnic people of Yunnan, Sichuan and Tibet for probably thousands of years. At present, different ethnic people such as the Naxi, Lisu, Pumi, Yi, Bai, Tibetan, Zang and Han live in this area. They cultivate rice, maize, wheat, highland barley, buckwheat, potato, and various local or introduced vegetables. They also raise sheep, cattle, yak, mule, horse and other domesticated animals, with hunting officially practised until the late 1980s (Chen *et al.* 2003; Deng 2004, 212; Li 1999). Most agriculturalists whose ancestors have been in the area more than two generations are descendants of hunters, especially the Naxi in whose traditional lands most naturalistic rock paintings are located (Deng 2004, 212; Li & Yang 2008; Fig. 3).

Preliminary research

Jinsha River rock art has been studied by many local scholars in the past two decades. This history of research, summarized below, is considered very important for Naxi, Han and other scholars in order to contextualize our current rock-art investigation. After He Zhubao reported the rock art to government cultural authorities in 1988, Lan Wenliang (Cultural Society of Zhongdian County) and He Shangli (Cultural Station of Sanba Township) investigated three rock-art sites near Zhari Village. The following year, Pan Shunsheng, Zhang Zuoliang, Duan Zhicheng, Xu Yongtao and He Shangli described four rock-art sites near Zhari Village (Duan 1989, 844–5; Zhang 2001). In 1990, Xi Yinxiang located rock paintings near Mushengtuo Village, Luoji Township, Zhongdian County. In 1991, He Limin (Dongba Culture Research Institute of Lijiang) discovered further rock art at the Lijiang side of Tiger Leaping Gorge. That same year, Duan Zhicheng and Xu Yongtao investigated three rock-art sites in the Mushengtuo area (Duan 1991). In 1992, He Limin located three rock-art sites near the Gaohan Administrative Village, Baoshan Township

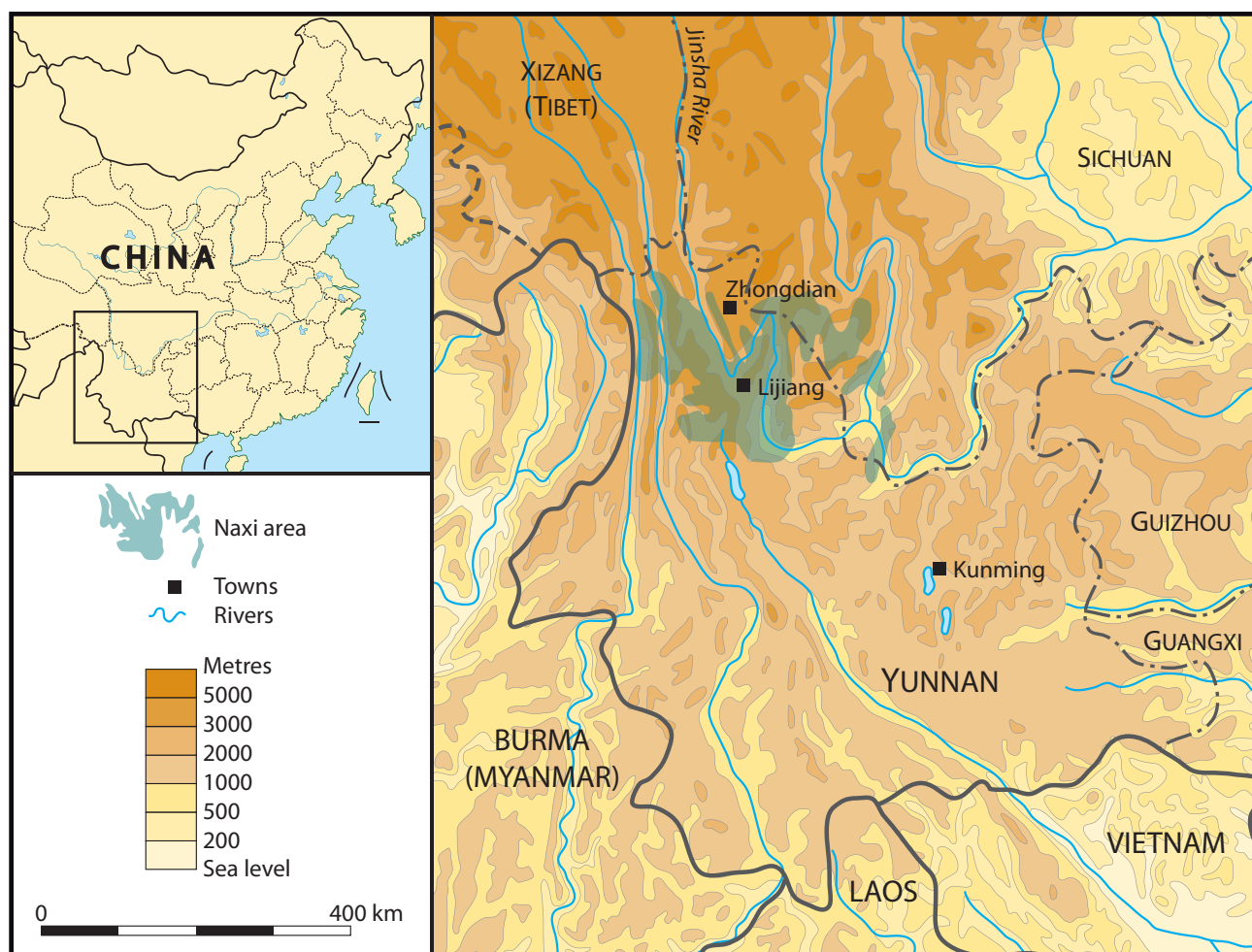


Figure 3. Map of Yunnan province, China, showing the Jinsha River which flows through the middle of Naxi traditional land (green area). Rock-art sites are located near the river and its tributaries.

and ten sites near Tuoliu Village, Jinshi Township (He 1993; 2005). In 1992 and 1993, Wang Zhihong, Yang Zhijian and Niu Zengyu (Lijiang Dongba Museum) studied rock-art sites in Fengke and other places near Lijiang. In 1995, He Limin worked at sites in Mingyin Township of Lijiang County and Jinmian Township of Ninglang County (He 1996), while He Yuquan and He Guihua reported on three rock-art sites near Zhari.

After a hiatus of two years, research resumed in 1997, when He Pinzheng and Bao Jiang located three rock-art sites in Luoji Township (Bao & He 1999). That same year, Li Gang discovered his first rock-painting site in Kongjiaping, Luoji Township (Li & Yang 2008). In 2001, Chen Dengyu (2001) located rock art at Taiziguan, Fengke Township. Also in 2001, He Limin spent four days recording rock art near the banks of the Jinsha River in Baoshan Township. In 2002, Xiao Liangzhong discovered a rock-painting site at Guan-

men Mountain, Chezhou Village, Jinjiang Township (Xiao 2004, 15–20). In 2004, Yang Zhengwen located another site in Mushengtou Village, Luoji Township. In the same year, Chen Dengyu and other people recorded six sites in Cuiyu Township while they undertook an archaeological investigation on the area to be flooded by the construction of the Jin'an Power Station and dam. The Diqing Prefecture commenced a second survey in 2005, with Jinsha River rock art a focal point. Also in 2005, Ji Xueping found a site at Huba village on the eastern bank of the Baima River, a Jinsha River tributary (Ji & Xiao 2006). Sites have continued to be found, with a further four important localities discovered during 2008.

The character of Jinsha River rock art

The first comprehensive volume in English on the rock art of China (Jiang 1991) does not mention the Jinsha

River naturalistic paintings. More recently, naturalistic rock art received some attention in a compilation in Mandarin made by Chen (2002). Importantly, both volumes provide excellent region-by-region coverage of China's rock art, but no naturalistic animal rock art, apart from that of the Jinsha River, is discussed or illustrated from anywhere else in China (see also Chen 2002; Li 1991; Li 2005; Wang 1984). Furthermore, Jinsha River rock art lacks any resemblance to other rock art in East Asia, including nearby Myanmar, Thailand, Vietnam and other parts of Southeast Asia. It also differs greatly from most of the rock art found across India to the west and Siberia, Russia, to the far north, in that it is much less schematized with little abstraction (e.g. see Z. Chen 2001).

To date, 55 rock-art sites have been found in the Jinsha River region. Since 2005, Li Gang has undertaken a comprehensive study, documenting 33 sites with photographs and written notes (Li & Yang 2008). Almost all previous research has been conducted by local Naxi scholars, including Li. A few sites have been published by them and other Chinese researchers in Mandarin (e.g. Deng 2004) but nothing detailed has yet been published in English or outside of China, with the exception of part of a book chapter and a very brief report by Peng Fei (1995; 1996) of Japan.

Three of the 55 Jinsha River rock-art sites consist of engravings on boulders in open areas. These are characterized by lines, abstract geometric designs and plant-like figures. They appear more recent than much of the pigment art, and may be linked to a late Holocene engraving and painting tradition found in many nearby parts of China (e.g. see Bednarik & Li 1991; Chen 2002; Deng 2004; Jiang 1991; Li 1991). A few sites contain painted depictions of people, including riders on horseback, human hands and other subjects that are similar to recent schematized art, less than 3000 years in age, found in other parts of Yunnan Province (e.g. see Li 1991; Wang 1984). There are a few sites with geometric designs and/or finger marks and 38 sites contain naturalistic paintings of wild animals and human-like forms, mostly in outline. Hundreds of individual naturalistic images have been reported but, as thorough recordings did not take place at many sites, there are probably many more faint images. Common subject-matter includes various species of deer (possibly muntjac, elk and other species), wild goat, bison, wild cattle (aurochs), horse and human-like forms (without tails). In 2008, human-like forms holding artefacts were discovered. These figures were previously suggested to be depictions of monkeys but the artefacts suggests otherwise. At some sites, however, there also are clear depictions of what appear to

either be macaques or Yunnan snub-nosed monkeys. Less common subjects include bharal (Himalayan blue sheep), bear, boar, donkey, snake-like designs, a tapir and a tiger. Sometimes only the heads of animals were depicted, especially deer and goat (see Deng 2004; Li & Yang 2008).

Animals are shown in a range of poses, from standardized profiles to highly innovative and creative positions. They appear to be running, standing, climbing, leaping — either on their own or as part of a group. Some of the human-like figures appear to be falling forward; most are portrayed standing upright. The colour of the figures varies from orange to red, and from brown to mulberry (dark purple). At many sites there are clusters of overlapping designs. Their condition mostly varies from very poor to fair, but a few paintings are relatively well preserved. At many sites they are so faded they can only be viewed clearly by using digital enhancement. At other sites the rock wall is heavily weathered, cracked and crumbling, with only fragments of some paintings left *in situ*. In a few locations flowstone covers parts of paintings, thus opening up dating possibilities.

Various researchers, such as Deng (2004, 213), have suggested that naturalistic Jinsha River rock art may be the precursor of Dongba pictorial script, a form of 'writing' invented by Naxi people for the production of Dongba ritual texts in particular. The link is based on similarities between rock paintings and Dongba script in which outline animals and outline animal heads are frequent. Dongba is characterized by 'little stylized drawings of men, animals, stones, etc.' (Jackson 1979, 60). However, Dongba developed 'in a context of contact with other writing systems, among them Chinese and Tibetan' (Milnor 2005, 30), and no Dongba texts predate 1703 (Milnor 2005, 34). The role the Jinsha rock paintings may have played in the development of pictorial script, although not well researched, serves as a reminder that rock art (naturalistic and otherwise) has been used to tell stories and convey ritual information in many parts of the world, and that proto-writing may have developed from earlier pictorial traditions such as this; some rock art even has a 'grammar' (Sauvet & Włodarczyk 2008).

New investigations in 2008

During 2008 eight sites were recorded, four of the most significant in great detail: Huajizhu, Lamajugu, Baiyunwan and Luodjihekou (Taçon & May 2008). One site, Baiyunwan, was also sampled for uranium series dating. Two key interrelated factors restricted the recording of sites in extensive detail — time and



Figure 4. *Huajizhu rock shelter with collapsed floor. The highest paintings are across and above Li Gang at right.*

accessibility. Sites were difficult to reach with some requiring over 6.5 hours of walking and climbing in very difficult terrain (e.g. Baiyunwan). However, the sites chosen are some of the most significant for learning about the subject matter of Jinsha River rock art, superimposed layers and style sequences, dating, landscape context and contemporary ethnographic significance.

Each site was extensively photographed, recording landscape context, panels and individual designs. Shelters were sketched and measured. At Lamajugu, it was possible to record some ethnographic information relating to the paintings from local Naxi community members who accompanied us to the sites, as well as from some elderly Naxi members in nearby Zhari village. However, the great age of the rock art and the fact that the Naxi people now seldom camp in caves, meant that ethnographic information about the sites is minimal. Today, they use old hunting trails for a variety of purposes, including gaining access to remote high-altitude pasture and areas for crop growing. In this way Naxi people maintain traditional sites, including rock shelters with art.

Huajizhu

The first site recorded, Huajizhu (Fig. 4), was found in 1988 by the Naxi villager He Zhubao (see above). It contains at least 23 paintings and many unidentifiable fragments clustered in four main areas, and in up to four overlapping layers. The shelter is about 26 m long and 5–6 m deep (wide). The shelter wall with art faces due south. The painted area consists of a 12 m long panel, about 1 m high at each end and about 2 m in the middle. The original floor has collapsed and washed away, leaving some paintings up to 8 m above current ground level. However, one can climb up at the eastern end and just reach up to the bottom of the easternmost painting. The paintings must have been produced before the ground surface washed away, suggesting considerable antiquity.

Four paint colours are found at Huajizhu: red, purple, dark orange and light orange. In the first area, at the western end, a red outline deer is painted over a purple outline deer. The second area contains a red outline deer and many undecipherable fragments. The third area consists of a partial purple deer head over a large purple deer with line infill, which was itself painted over a large red deer with a long neck. This figure disappears inside the rock and has a thick outline, as do some paintings at other sites. Both this figure and the purple infill deer overlie a small light orange outline deer.

The fourth area has 16 paintings, including a number of human-like figures with artefacts: two large red outline deer, two light orange outline deer, a red outline deer, a red outline deer head, two dark orange outline goats, a red outline goat, five light orange outline human-like figures (Fig. 5), a red outline human-like figure with dot infill and a large red linear design. The human figure with red dot infill is holding a large bow-like object in its middle (Fig. 6), while one of the orange human figures grasps what appears to be a curved throwing stick or small bow by one end. All lack breasts and genitalia.

At the far eastern end of the panel, the first painted layer consists of a row of dark orange outline deer, while a red-purple stag appears to be the most recent painting. Stylistically, the paintings from Huajizhu closely resemble many at other recorded sites, especially Lamajugu, and may be of a similar age.

Lamajugu

The Lamajugu rock-painting site (Fig. 7) is located an hour's walk from the nearest village, Zhari. This site is dramatically situated at the top of a steep hill side. The paintings have clearly been exposed to the weather, as they are now faded and the rock surface



Figure 5. *Overlapping outline paintings of deer and human-like figures, Huajizhu.*



Figure 6. *Human-like figure with dot/dash infill and holding a large bow, Huajizhu.*

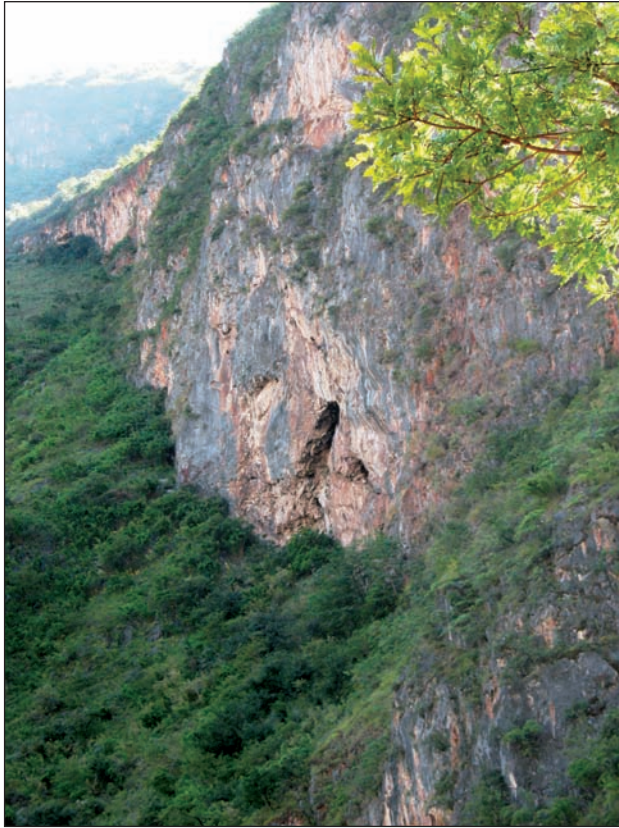


Figure 7. Lamajugu rock shelter is located at the scree slope-cliff interface near Zhari village.

is cracking. A few paintings have disappeared due to exfoliation since Li Gang visited in 2005, including one of a deer head.

The site is known to local Naxi people as one of their most significant cultural heritage sites. The name Lamajugu means Buddha's sitting place or literally 'Buddha sitting down', emphasizing the special nature of the site. The site consists of a fragmenting panel of purple haematite outline animals, mainly deer and goats, with many superimposed over top of each other. It is located at the top of a large, steep scree slope and base of a cliff face that rises another 60+ m to the top of the mountain. The painted panel measures 1.35 m wide × 1.7 m high. The lowest painted area is 2.2 m above the floor, while the highest is 3.9 m. The ceiling of the shelter is about 50 m high. Fourteen paintings are visible, consisting of eight outline deer, three outline deer heads, two outline male goats and one outline human-like figure, all in purple. The human figure is in profile, as at Huajizhu, but in this case a small breast and more rounded belly suggest it is a depiction of a female, possibly one who is pregnant (Fig. 8).

Senior villager Zhu Ziming informed us that Naxi people believe rock-art sites to be landmarks, particularly Lamajugu. The direction of the head of an animal contains meaning — heads point to places in the landscape. One can follow the direction of different animals depicted at Lamajugu to certain places



Figure 8. A rare female human-like figure with breast indicated can be seen near the top of the main Lamajugu panel.



Figure 9. *Baiyunwan rock shelter is located in extremely rugged terrain and can be seen just left of centre.*

in order to find local landscape exits/pathways. But if one still cannot find a way out of the twisted network of foothills and mountains one must follow the head of another animal.

Lamajugu is threatened by the construction of a nearby hydro-electric power station and dam, with much of the area to be demolished so that the rock can be used to form the dam wall. However, there is a proposal to remove the rock art and reassemble the pieces in a museum.

Baiyunwan

Baiyunwan (Fig. 9) was the most challenging site to reach, involving a very demanding 4.5-hour walk up and over difficult, and at times dangerous, terrain. The team camped overnight near the top of a mountain before proceeding on an even more difficult and dangerous 2-hour walk to the site. The effort was rewarded with a large complex of rock art and ideal conditions for sampling for uranium-series dating.

The site consists of a long limestone rock shelter located about half way up a mountain and a few hundred metres above the Jinsha River, on a very steep slope. Like Huajizhu, Baiyunwan faces due south. The shelter is 22 m long and is up to 5.7 m high. Its depth varies between 4.0 to 4.9 m.



Figure 10. *The Baiyunwan bison was painted showing hair on its back and arrows piercing its body in a similar way to bison depictions at Niaux, France.*



Figure 11. *The lower panel of Luodjihekou rock shelter.*



Figure 12. *Outline deer head with snout pointing up as if sniffing the air, Luodjihekou upper panel.*

Baiyunwan has a diverse range of subject matter. Fifteen paintings were identified:

- three large red outline stag heads;
- three red outline deer heads;
- a dark red partial outline deer;
- an unidentified red outline quadruped/animal;
- a red outline bison with arrows piercing its body (Fig. 10);
- a dark red outline deer;
- a red outline male goat;
- a red outline horse with lines for hair on its back;
- a purple-red outline male goat head;
- a red outline bull with solid infill horns; and
- a small red outline deer, partly under the bull.

There are also many unidentifiable paintings, including some linear and snake-like designs with line infill and a patch of finger-print marks.

A sample of flowstone was removed for uranium-series dating, 4 m in from the western end of the shelter, 1.6 m above the floor. At this location there is a thick band of flowstone running down much of the wall and it clearly covers some paintings. When the sample was removed it could be seen that a significant amount of flowstone lies both under and over part of a thick dark red painting of a large deer head. Minimum and maximum ages are currently difficult to ascertain due to low uranium content but preliminary results suggest a mid-Holocene maximum age for one of the paintings.

Luodjihekou

Luodjihekou (Fig. 11) is another site with varied imagery, about 25 km north of Baiyunwan in a straight line, near Mushungtu village (about 120 km from Zhongdian). The site is about 50–60 m up from the Luodji River, near a major branching point. Facing northwest at 310°, it has two components, an upper and a lower, within the limestone shelter. Each component has one panel with paintings. Part of the upper panel has paintings that appear much more recent than elsewhere. The upper panel of paintings faces north at 8°, while the lower, about 5 m below, faces southwest at 232°. The upper panel measures 5.2 m wide × 1.8 m high. Ten images were identifiable (as well as fragments of other paintings):

- a solid purple-red goat, possibly a kid, of relatively recent date;
- a red-orange outline goat head;
- a partial orange outline goat;
- an orange outline goat head;
- an orange to red thick outline bear with up to five outlines in parts and thin lines representative of 'hair' along the edge of the ears and back;
- a curved red line above the bear;
- a red outline wild goat;
- a red outline cow head;
- an unusual red outline deer head in profile with upward pointing snout (Fig. 12);



Figure 13. *A rare outline tapir head, Luodjihekou lower panel.*

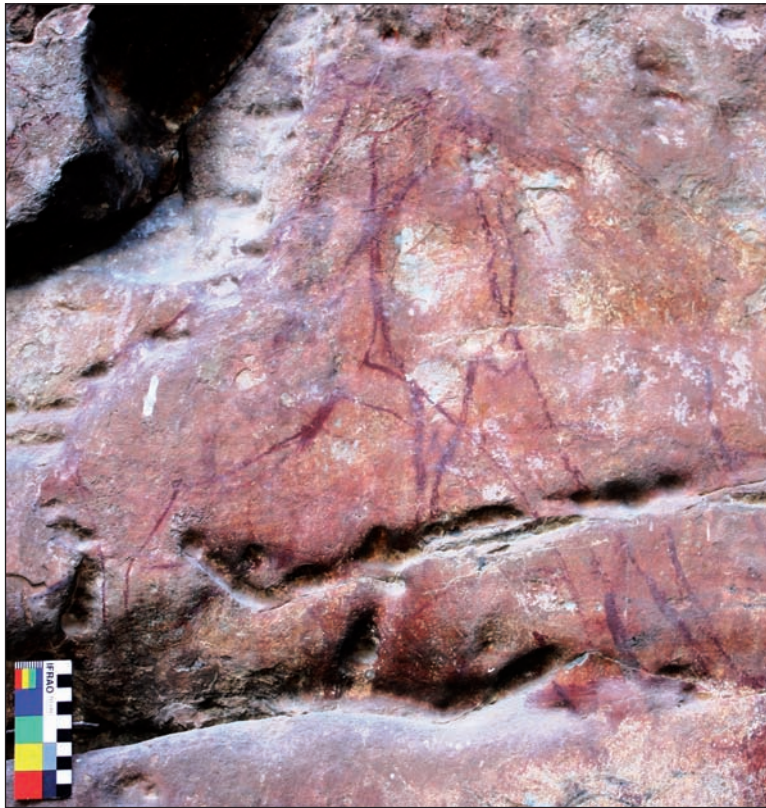


Figure 14. *An unusual composition of a male deer positioned as if it is about to mount a female deer which has been depicted as seen from behind, Luodjihekou lower panel.*

- a large red outline deer lacking a head.

Some dry red lines can be found at the left end of the panel.

The lower panel measures 3.4 m wide × 1.7 m high. Eight figures could be identified upon close inspection:

- a red outline male goat with hind quarters faded/washed away;
- a red outline male goat, partly under that goat;
- a purple linear design under both goats;
- a donkey head in light purple with a dark purple bit and rope lead, possibly a later addition;
- a red outline head and partial back of a tapir (Fig. 13);
- a large dark red outline deer;
- a red outline deer in profile; and
- a red outline hind quarters/rear view of a deer.

The latter has prominent female genitalia and is juxtaposed with a profile deer that appears as if about to mount it (Fig. 14).

The unusual outline deer head in profile with its snout pointing upward as if sniffing the air and a depiction of a deer as seen from behind at Luodjihokou suggest artists were experimenting with different ways in which to depict this animal, perhaps simply to show the poses in which they had seen the deer or to convey different sorts of messages.

The tapir depiction is important when trying to determine the date of this region's rock art, as the most recent remains of a tapir discovered so far date to about 8000 years ago. These were found by Ji Xueping and Nina Jablonski in 2003 at the Tangzigou site in Boashan, east of the Gaoligongshan Mountain, Yunnan, about 260 km to the southwest. In nearby Sichuan, in other parts of China and in parts of Siberian Russia to the northeast, bison once roamed, in some locations surviving into the early Holocene (Huang & Zhang 2003; Kalke 1985; MacPhee *et al.* 2002), as did aurochs (Pushkina 2007). It is thought wild horse and large deer disappeared during the Pleistocene in China (Louys *et al.* 2007; Pushkina 2007) but their depictions at some Jinsha River sites suggests either they survived well into the Holocene in the Jinsha River region or that some Jinsha River paintings have a Pleistocene age. These issues raise questions as to the age of Jinsha River rock art and more dating work is required through the use of techniques such as uranium-series dating and AMS radiocarbon dating. In addition, further excavations should be undertaken at Jinsha River and other Yunnan sites where faunal remains have been observed. Preliminary results from Baiyunwan, however, suggest a mid to late Holocene age for at least one phase of the art.

Resemblance to other bodies of art

These naturalistic animal-outline paintings are unlike any other known body of rock art in China or larger East Asia. In various ways, they resemble in particular the Magdalenian art of France and Spain and some rock art of southern Africa. The use of profile and outlining is also similar to some of the early rock art of Arnhem Land, northern Australia (e.g. animals in 'Dynamic Figure' and other styles: Chaloupka 1993). A resemblance to the early rock art of Europe has been noted by many Naxi researchers as well as other Chinese art and archaeology experts (e.g. Yang Tianyou, in Li 1999, 159; and Peng Fei 1995; 1996), but until now Jinsha River rock art has not been compared in detail to any particular body of art. In light of this, and in order to better understand the nature, development and distinctive features of Jinsha River rock paintings, we will now compare this art to that of other well-known rock-art styles from Magdalenian Europe and southern Africa.

To start with, it is important to note that Magdalenian paintings have not survived outside deep caverns whereas Jinsha River and southern African paintings are known exclusively from exposed rock shelters. Many researchers have characterized the Magdalenian art of Europe, noting strong similarities between that in caves and images on portable objects and an apparent florescence in art production (e.g. Sacchi 2003). Much more portable art appears to have been produced (see Clottes 1990) and many techniques were used to produce stylistically similar designs. Alongside variation in techniques used by Magdalenian artists most researchers who have studied Magdalenian art argue that a stylistic homogeneity is evident within its classic area of southern France and northern Spain (e.g. Clottes 2008; Pigeaud 2007; Sacchi 2003); a key feature is an elegance and ease imparted to outlines, which distinguishes this art from the heavily outlined animals of earlier periods (Giedion 1969, 186).

Sauvet & Włodarczyk (2008) note 14 figurative motifs in European Palaeolithic cave art — horse, bison, ibex, mammoth, aurochs, hind, stag, anthropomorph, reindeer, bear, lion, fish, rhinoceros and 'various/rare' — and argue that a 'grammar' can be found in the way motif types were placed in caves in relation to each other. It is too early to test this or some other grammar for Jinsha River rock art, but the subject-matter of each area is similar, partly because of the nature of past faunal distributions across Eurasia. For the Magdalenian some researchers have noted an association between deer and ibex depictions (e.g. Montes *et al.* 2008), while at many sites in the Jinsha

River region (including those described above), there is an association between deer and wild goat paintings, often appearing as if purposely placed near or over each other. However, the 'grammar' or structure appears different to that of southern Africa where the eland is most frequent (Lewis-Williams 1981; Vinicombe 1976).

Jinsha River naturalistic paintings superficially resemble Magdalenian outline paintings (e.g. at Niaux), but in many ways they also look like engravings such as those carved on Magdalenian portable art objects. In reference to the rock art of southern Africa, Campbell *et al.* (1994) defined the 'paintings like engravings' concept. Indeed, Jinsha River rock paintings more closely resemble the engravings of southern Africa (e.g. see Dowson 1992) than the paintings of this region since most of the painted art of southern Africa has infill consisting of blocks of colour, sometimes composed to suggest the three-dimensional structure of animals. Besides naturalistic forms, the rock art of all three areas consists of creatures with balanced proportions (e.g. Sieveking 1993) placed non-randomly and often superimposed (Fig. 15).

Another similarity between the rock art of these three regions is the depiction of animal heads. In both Magdalenian art and Jinsha River rock art animal heads are frequent. Some closely resemble each other, for instance the Lamajugu deer head (top of Fig. 15), the Luodjihekou goat head (Fig. 16), and the Magdalenian engravings at Altamira (Mazonowicz 1974, 58) as well as portable heads illustrated by Conkey (1991, 70) and Bahn & Vertut (1997, 96–7). Heads or so-called 'incomplete' figures are also found at some sites in southern Africa (Garlake 1995; Taçon & Ouzman 2004). Secondly, deer with upturned noses are found in both Jinsha River and Magdalenian sites, highlighting the natural behaviour of deer sniffing the air (see Fig. 12 from Luodjihekou and the so-called swimming deer of Lascaux: Breuil & Berger-Kirchner 1961, 38). Similar depictions occur in southern Africa with various species such as the eland (e.g. Lewis-Williams 1983, fig. 99).

The depiction of anthropomorphs (thought to represent humans) is very similar in both the Jinsha River and Magdalenian regions. Compare, for example, the anthropomorphic figures at Huajizhu and Lamajugu (Figs. 5, 6 & 8) to the those at the Magdalenian sites of Altamira (Lorblanchet 1989, 129) and Saint-Cirq-du-Bugue (Clottes 2008, 216), the engraved bone from Isturitz (Bahn & Vertut 1988, 154) and images from Pech-Merle and elsewhere which are thought to be Solutrean (e.g. Clottes 1993, 23; 2008, 132–7). Anthropomorphs from southern



Figure 15. *The main Lamajugu panel has various superimposed depictions. Note the deer head in the upper left-hand corner.*

Africa, however, are very different, as they are more elongated and usually infilled or in silhouette rather than outlined.

It is important to note that the rock art of southern Africa is primarily silhouette in nature, Jinsha River paintings are primarily outline and Magdalenian art is a mix of the two. Some horses, bison, bears and other animals with hair on their backs are found in Jinsha River and Magdalenian rock art (e.g. at Baiyunwan (Fig. 10), Luodjihekou (Fig. 17), Niaux (Clottes 2008, 204–5) and Combarelles (Breuil & Berger-Kirchner 1961, 36)) but this is rare for animals depicted in the rock art of southern Africa. In southern Africa and Jinsha River rock paintings there are some figures depicted from unusual perspectives including a back view of animals, for instance at Luodjihekou (Fig.



Figure 16. Goat head oriented in relation to natural cracks, Luodjihekou upper panel.

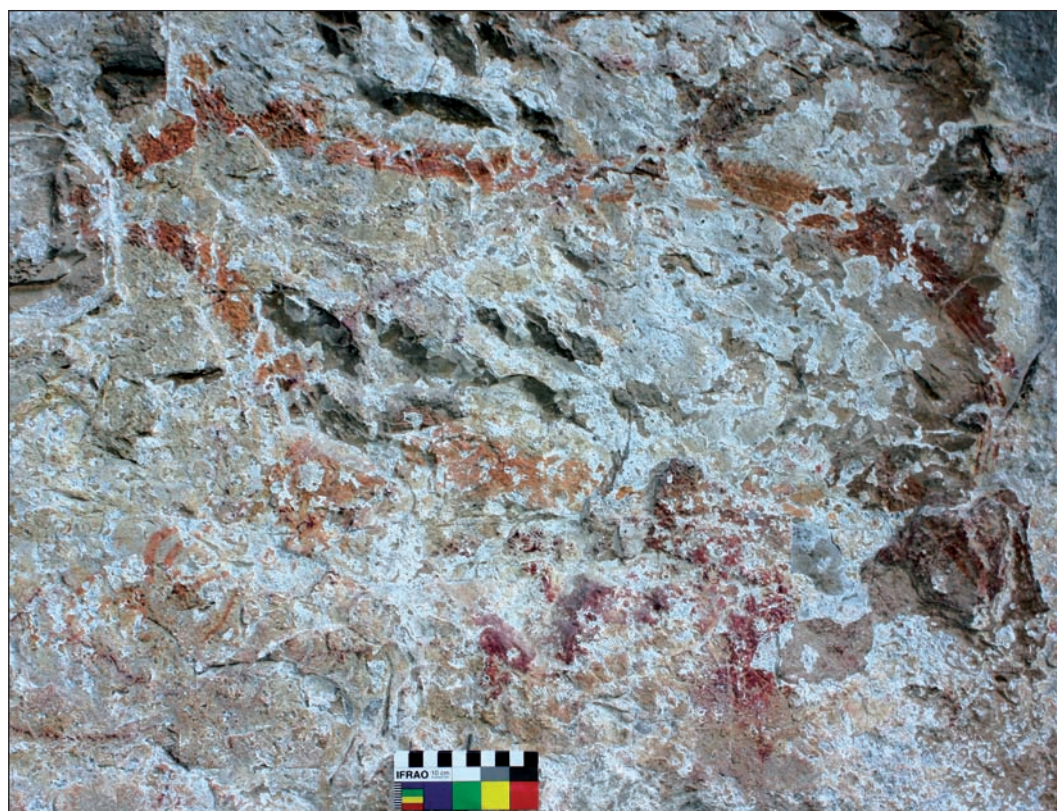


Figure 17. Multi-outline bear with thin lines on outer edges to indicate hair, especially on ears and back, Luodjihekou lower panel.

14; see also Deng 2004, 232). This perspective is not found in the Palaeolithic art of Europe but depictions of animals with turned heads are found in Jinsha River paintings and Magdalenian art (see Deng 2004, 240 for a speared wild ass with turned head; and various Magdalenian examples including the wild ass from Levanzo, Italy (Breuil & Berger-Kirchner 1961, 69)). In all three areas some figures are oriented in relation to natural crevices in the surface, as if they are moving in or out of the rock (e.g. at Huajizhu and Luodjiheikou; for elsewhere see Clottes & Lewis-Williams 1998; Taçon & Ouzman 2004).

In situ development

Jinsha River outline paintings are very naturalistic, show creatures in a wide range of poses/perspectives, and are highly accomplished works of art; for as Giedion (1969, 186) notes 'To capture the essential characteristics of an animal within a single expressive outline demanded great artistic concentration'. Part of their contemporary appeal includes their naturalism, reminiscent of accomplished early art in various parts of the world. As Clottes *et al.* (1994, 58) have remarked 'From the time Palaeolithic wall art was first recognised, the naturalism of the animal representations has been considered an obvious major characteristic of this art, one that explains its being both well known and highly valued'.

It is tempting to argue that a widespread naturalistic outline rock-art tradition associated with hunter-gatherers may once have extended from western Europe to India, and beyond to southeast China. Perhaps it also extended to southern Africa, with recent art there an expression of ancient shared links of common hunter concerns. But evidence of this tradition is rare and scattered, with many 'missing' bits in between. This could be in part because much rock art has not survived the ravages of time, environmental change and cultural development, such as the adoption of agriculture, especially in areas where it was made in exposed rock shelters. But if there once was a widespread naturalistic outline tradition then one would have to argue that it persisted longer in some areas than in others as it does not appear to be associated with a specific period of time. Complicating things further is that some European 'farmer' art is in the naturalistic outline style with a 'hunter' art appearance (e.g. see Sognnes 1998; Walderhaug 1998).

On the other hand, the idea that naturalistic Jinsha River rock paintings arose *in situ* is much better supported. It has been argued, for instance, that independent invention of naturalistic art could

well explain the similarity between some art bodies (Otte 1997, 20) and that 'formal vignettes ... can have emerged in several places at different times' (Pigeaud 2007, 411). In other words, naturalistic outline traditions can and have been independently invented in different areas and at various times by culturally distinct groups of people living similar, and sometimes different, lifestyles. Evidence from southern Africa and northern Australia reinforces the view that large naturalistic animals, often in outline form, were a key part of early hunter-gatherer rock art across much of the world, without direct connections between them, because these images efficiently conveyed key information of cultural and, presumably adaptive, value.

Recent research findings within the growing area of neuroscience in relation to art development can provide further insight into similarities we see between different forms of naturalistic art. Halverson (1992, 402), intrigued with Palaeolithic rock art, investigated how outline drawings might have arisen:

It is of some interest that the earliest two-dimensional depictions known should be outline drawings ... They exhibit first of all what appears to be the most fundamental connection between perception and graphic representation, namely line surrogacy, which works, it has been argued, because it engages the same perceptual faculties, and in the same way, as does three-dimensional viewing.

Outline drawings convey an impression of three-dimensional objects in humans because of the way our brain works. In other words, they are ideal two-dimensional shorthand statements for the three-dimensional things they are meant to represent. And they could easily be independently discovered by many groups of people at various times.

Watson has studied this in great detail, concluding that

universal aspects of human visual perception and neurology help to account for (a) the derivation and persistence of faunal themes in palaeoart, and (b) common characteristics or similar traits and the depiction of animals in certain ways (Watson 2009, 143).

As Watson (2009, 178) also notes

Animals in paleoart of the world are exemplified by their depiction in outline form (otherwise known as contour drawings), and are typically portrayed in profile (lateral) view and as single units (see also Halverson 1992, 390).

Thus aspects of human physiology, perception and shared forms of life style (i.e. hunting) may account for the similarity we see between Jinsha River rock paintings and those of other ancient artists. Consequently, we should be cautious when using 'style' in

studies of identity and as a chronological or cultural indicator. Just because art of area 'x' resembles art of area 'y' does not always mean they are related, as has been suggested when diffusion models are used to explain similarity.

Conclusions

The Jinsha River area has been a natural corridor for the movement of animals and people for many millennia. Today, the broader Yunnan region, containing this river, is one of the most bio-diverse and ethnically varied parts of China, if not Southeast Asia: it is not surprising to find a rock-art style different from that found in the rest of Southeast and East Asia. An extensive literature review has revealed naturalistic Jinsha River rock paintings to be unlike rock art from other parts of China, including Yunnan and Tibet, or neighbouring/nearby countries such as Myanmar, India, Thailand, Vietnam or Siberian Russia. A detailed comparison of Jinsha River art suggests the main bodies of rock art they do resemble are the Magdalenian of France and Spain and the rock art of southern Africa. But, as noted above, there are both subtle and general differences, with direct cultural connections between these remotely separated regions highly unlikely.

Recently it has been contended that Magdalenian-like rock engravings occur at Creswell Crags in the UK (Bahn *et al.* 2003; Pettitt *et al.* 2007) and outside Europe, at Qurta, Egypt (Huyge *et al.* 2007; Huyge 2008). Since 1959, Kapova Cave, in the Ural Mountains of Russia has also been argued to be Magdalenian (e.g. see Scelinskij & Sirokov 1999 and a recent summary in Clottes 2008, 206). The Magdalenian-like rock art of the UK is suggested to date to about 13,000–15,000 years BP, while that of Egypt is argued to be 15,000–16,000 BP. But it is a long way from western Europe, Egypt or the Ural Mountains to Yunnan, China and there also is the question of whether pigment art would survive this long in open limestone shelters, even though it is argued that Pleistocene pigment-based rock art survives in some parts of tropical northern Australia (e.g. see Chaloupka 1993; Chippindale & Taçon 1998; Roberts *et al.* 1997; Taçon & Brockwell 1995 among others) and elsewhere.

Preliminary direct and associative dating investigations suggest Jinsha River art is much more recent than Magdalenian art, probably Holocene, also supporting an argument against direct influences from outside. What can reasonably be concluded at present is that the outline animal paintings of the Jinsha River region are a hunter-focused form of art, but possibly

made when people of the area were also adopting agriculture. Jinsha naturalistic outline paintings are younger than the late European Magdalenian but the earliest are older than other bodies of surviving Chinese rock art (e.g. see Tang 1993).

Jinsha River rock art necessitates the rethinking of the nature of style in relation to specific cultural development and the use of style to track the movement of prehistoric peoples across landscapes both large and small. Exactly when the paintings were made and when people concerned with hunting wild animals stopped producing such art are key questions to be addressed in the future. It is clear that most of the rock paintings examined during 2008 are at risk from natural and/or human activities. This, in turn, makes the recording of Jinsha River sites a high scientific and heritage priority.

Current research suggests that the Jinsha River rock art arose *in situ*, without direct influence or connection to other places, and with neuroscience and common hunter concerns providing an explanation as to why. Given its graphic similarity to hunter art of other parts of the world, this is just as fascinating from a cultural development and an art history point of view as the possibility of cultural connections between geographically and culturally widely separated places. Indeed, if Jinsha River rock art arose independently, might that not also be true of the art of Creswell Crags, Kapova and Qurta, Egypt?

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References

- Bahn, P. & J. Vertut, 1988. *Images of the Ice Age*. Leicester: Winward.
- Bahn, P. & J. Vertut, 1997. *Journey through the Ice Age*. London: Weidenfeld and Nicolson.
- Bahn, P., P. Pettitt & S. Ripoll, 2003. Discovery of Palaeolithic cave art in Britain. *Antiquity* 77(296), 227–31.
- Bao, J. & P. He, 1999. Luoji rock art in Jinsha River Basin. *Journal of Lijiang Education College* 1, 54–8.
- Bednarik, R. & F. Li, 1991. Rock art dating in China: past and future. *The Artefact* 14, 25–33.
- Breuil, H. & L. Berger-Kirchner, 1961. Franco-Cantabrian rock art, in *The Art of the Stone Age: Forty Thousand Years of Rock Art*, eds. H.-G. Bandi, H. Breuil, L. Berger-Kirchner, H. Lhote, E. Holm & A. Lommel. New York (NY): Crown Publishers, 15–72.
- Campbell, A., J. Denbow & E. Wilmsen, 1994. Paintings like engravings: rock art at Tsodilo, in *Contested Images: Diversity in Southern African Rock Art Research*, eds. T.A. Dowson & D. Lewis-Williams. Johannesburg: Witwatersrand University Press, 131–58.
- Cavalli-Sforza, L.L., 1998. The Chinese human genome diversity project. *Proceedings of the National Academy of Sciences of the USA* 95, 11,501–3.
- Chaloupka, G., 1993. *Journey in Time: the World's Longest Continuing Art Tradition*. Chatswood (NSW): Reed.
- Chen, B., H. Huang & H. Zhu, 2003. *Indigenous Knowledge of Forest Management in Northwest Yunnan*. (Sylff Working Papers Number 20.) Tokyo: The Tokyo Foundation.
- Chen, D., 2001. Rock art from Taiziguan, Lijiang. *China Cultural Relics Newspaper* 24 June.

- Chen, Z., 2001. Asia, in *Handbook of Rock Art Research*, ed. D. Whitley. Walnut Creek (CA): Altamira Press. 760–85.
- Chen, Z., 2002. *The Rock Arts of China*. Beijing: Cultural Relics Press.
- Chippindale, C. & P.S.C. Taçon, 1998. The many ways of dating Arnhem Land rock-art, in *The Archaeology of Rock-Art*, eds. C. Chippindale & P.S.C. Taçon. Cambridge: Cambridge University Press, 90–111.
- Clottes, J., 1990. The parietal art of the late Magdalenian. *Antiquity* 64(244), 527–48.
- Clottes, J., 1993. Post stylistic? in *Rock Art Studies: the Post-stylistic Era or Where Do We Go from Here*, eds. M. Lorblanchet & P. Bahn. (Oxbow Monograph 35.) Oxford: Oxbow Books, 19–25.
- Clottes, J., 2008. *Cave Art*. London: Phaidon Press.
- Clottes, J. & J.D. Lewis-Williams, 1998. *The Shamans of Prehistory: Trance and Magic in the Painted Caves*. New York (NY): Harry N. Abrams, Inc.
- Clottes, J., M. Garner & G. Maury, 1994. Magdalenian bison in the caves of the Ariège. *Rock Art Research* 11(1), 58–71.
- Conkey, M., 1991. Contexts of action, contexts of power: material culture and gender in the Magdalenian, in *Engendering Archaeology*, eds. J.M. Gero & M.W. Conkey. Oxford: Blackwell Publishing, 57–92.
- Deng, Q., 2004. *Rock Murals in Yunnan*. (The Complete Works of Yunnan National Fine Arts.) Kunming: Yunnan Publishing Group.
- Dowson, T., 1992. *Rock Engravings of Southern Africa*. Johannesburg: Witwatersrand University Press.
- Duan, Z., 1989. Cultural heritage spots. *Journal of Zhongdian Local Topography* 1989, 844–53.
- Duan, Z., 1991. Search and records for rock art in Mu Sheng Tu. *Journal of Zhongdian Local Topography* 1990, 74.
- Garlake, P., 1995. *The Hunter's Vision: the Prehistoric Art of Zimbabwe*. Seattle (WA): University of Washington Press.
- Giedion, S., 1969. The outline in the early beginnings of art. *Leonardo* 2(2), 181–92.
- Halverson, J., 1992. The first pictures: perceptual foundations of Paleolithic art. *Perception* 21, 389–404.
- He, L., 1993. Discovery and preliminary investigation of Jinsha River rock art. *Rock Art Research* (China) 1993(5), 73–80.
- He, L., 1996. Investigation and research on rock art of Hang Sangke, Jinsha River. *Journal of Yunnan Nationalities Institute* 4, 26–32.
- He, L., 2005. Investigation and research on Dunziangbu rock art in Jinsha River environment. *Rock Art Research* (China) 2005(3), 50–56.
- Huang, Z. & W. Zhang, 2003. The Quaternary faunas and climatic fluctuation in the tropical zone of China. *Journal of Geographical Sciences* 13(4), 488–97.
- Huyge, D., 2008. Côa in Africa: late Pleistocene rock art along the Egyptian Nile. *International Newsletter on Rock Art* 51, 1–7.
- Huyge, D., M. Aubert, H. Barnard *et al.*, 2007. 'Lascaux along the Nile': Late Pleistocene rock art in Egypt. *Antiquity* 81(313), 1–3 (www.antiquity.ac.uk/ProjGall/huyge/index.html).
- Jackson, A., 1979. *Na-khi Religion: an Analytical Appraisal of the Na-khi Ritual Texts*. The Hague: Mouton.
- Ji, X. & J. Xiao, 2006. A new rock art site from Jinsha River. *China Cultural Relics Newspaper* 10 February.
- Jianchu, X. & A. Wilkes, 2004. Biodiversity impact analysis in northwest Yunnan, southwest China. *Biodiversity and Conservation* 13(5), 959–83.
- Jiang, Z., 1991. *Timeless History: the Rock Art of China*. Beijing: New World Press.
- Kalke, H.D., 1985. Southern limits of the Late Pleistocene Euro-Siberian faunal complex in East Asia, in *Beringia in the Cenozoic Era*. (Russian Translations Series 28.) Lisse: Balkema, 346–58.
- Lewis-Williams, J.D., 1981. *Believing and Seeing: Symbolic Meanings in Southern San Rock Paintings*. London: Academic Press.
- Lewis-Williams, J.D., 1983. *The Rock Art of Southern Africa*. Cambridge: Cambridge University Press.
- Li, F., 1991. Rock art at Huashan, Guangxi Province, China. *Rock Art Research* 8(1), 29–32.
- Li, G. & X. Yang, 2008. Remaining Primitive People's Historical Mark on Rock in Northwestern Yunnan, Investigation and Protection of Jinsha River Petrogram. Unpublished report for the Cultural Relics Administrative Institute, Diqing Zang Autonomous Prefecture, Zhongdian.
- Li, K., 2005. *Wenshan Rock Paintings*. Kunming: Yunnan People Press.
- Li, Q., 1999. *Customs of Lijang*. Kunming: Yunnan People Press.
- Li, Y. & W. Huo, 1994. *Art of Tibetan Rock Paintings*. Chengdu: Sichuan People's Publishing House.
- Lorblanchet, M., 1989. From man to animal and sign in Palaeolithic art, in *Animals into Art*, ed. H. Morphy. London: Unwin Hyman, 109–43.
- Lorblanchet, M. & P. Bahn (eds.), 1993. *Rock Art Studies: the Post-stylistic Era or Where Do We Go from Here?* (Oxbow Monograph 35.) Oxford: Oxbow Books.
- Louys, J., D. Curnoe & H. Tong, 2007. Characteristics of Pleistocene megafauna extinctions in Southeast Asia. *Palaeogeography, Palaeoclimatology, Palaeoecology* 243, 252–73.
- MacPhee, R.D.E., A.N. Tikhonov, D. Mol *et al.*, 2002. Radiocarbon chronologies and extinction dynamics of the Late Quaternary mammalian megafauna of the Taimyr Peninsula, Russian Federation. *Journal of Archaeological Science* 29, 1017–42.
- Mazonowicz, D., 1974. *Voices from the Stone Age: a Search for Cave and Canyon Art*. New York (NY): Gallery of Prehistoric Paintings.
- Milnor, S.J., 2005. A comparison between the development of the Chinese writing system and Dongba pictographs. *University of Washington Working Papers in Linguistics* 24, 30–45.
- Montes, R., E. Muñoz, J.A. Lasheras, C. De las Heras, P. Raisines & P. Fatás, 2008. The Associations between Deer and Ibex in Early/Middle Magdalenian Cave

- Art in the Central Sector of Cantabrian Spain: New Discoveries and Some Interpretations. <http://museo-dealtamira.mcu.es/pdf/asociacion.pdf>
- Otte, M., 1997. Constitution d'une grammaire plastique préhistorique. *L'Anthropologie* 101, 5–23.
- Peng, F. (ed.), 1995. *Chuugoku, unman, Iwae no Nazo* [Mystery of Cave Paintings in Yunnan, China]. Tokyo: Shodensha.
- Peng, F., 1996. Cave paintings in Yunnan, China. *Rock Art Research* 13(2), 134–7.
- Pettitt, P., P. Bahn & S. Ripoll (eds.), 2007. *Palaeolithic Cave Art at Creswell Crags in European Context*. Oxford: Oxford University Press.
- Pigeaud, R., 2007. Determining style in Palaeolithic cave art: a new method derived from horse images. *Antiquity* 81(312), 409–22.
- Pu, Y., Z. Zhang, L. Pu & C. Hui, 2007. Biodiversity and its fragility in Yunnan, China. *Journal of Forestry Research* 18(1), 39–47.
- Pushkina, D., 2007. The Pleistocene easternmost distribution in Eurasia of the species associated with the Eemian *Palaeoloxodon antiquus* assemblage. *Mammal Review* 37(3), 224–45.
- Roberts, R., G.L. Walsh, A. Murray *et al.*, 1997. Luminescence dating of rock art and past environments using mud wasp nests in northern Australia. *Nature* 387, 696–9.
- Sacchi, D., 2003. *Le Magdalénien*. Paris: Maison des Roches.
- Saidin, M., P.S.C. Taçon, D. Yang, G. Nash, S.K. May & B. Lewis, 2008. Illustrating the past: the rock art of Southeast Asia. *Current World Archaeology* 29, 40–48.
- Sauvet, G. & A. Włodarczyk, 2008. Towards a formal grammar of the European Palaeolithic cave art. *Rock Art Research* 25(2), 165–72.
- Scelinskij, V.E. & V.N. Sirokov, 1999. *Höhlenmalerei im Ural. Kapova und Ignatievka. Die altsteinzeitlichen Bilderhöhlen im südlichen Ural*. Thorbecke Verlag: Sigmaringen.
- Sieveking, A., 1993. The use of stylistic analysis within the context of west European Upper Palaeolithic art, in *Rock Art Studies: the Post-stylistic Era or Where Do We Go from Here?* eds. M. Lorblanchet & P. Bahn. (Oxbow Monograph 35.) Oxford: Oxbow Books, 27–36.
- Sognnes, K., 1998. Symbols in a changing world: rock-art and the transition from hunting to farming in mid Norway, in *The Archaeology of Rock-Art*, eds. C. Chippindale & P.S.C. Taçon. Cambridge: Cambridge University Press, 146–62.
- Taçon, P.S.C. & S. Brockwell, 1995. Arnhem Land prehistory in landscape, stone and paint. *Antiquity* 69 (Special Number 265), 676–95.
- Taçon, P.S.C. & S. May, 2008. Jinsha River Rock Art. Unpublished fieldwork report 12–28 October 2008. Kunming.
- Taçon, P.S.C. & S. Ouzman, 2004. Worlds within stone: the inner and outer rock-art landscapes of northern Australia and southern Africa, in *The Figured Landscapes of Rock-Art: Looking at Pictures in Place*, eds. C. Chippindale & G. Nash. Cambridge: Cambridge University Press, 39–68.
- Tang, H., 1993. Theory and methods in Chinese rock art studies. *Rock Art Research* 10(2), 83–90.
- Vinnicombe, P., 1976. *People of the Eland: Rock Paintings of the Drakensburg Bushmen as a Reflection of their Life and Thought*. Pietermaritzburg: University of Natal Press.
- Walderhaug, E.M., 1998. Changing art in a changing society: the hunter's rock-art of western Norway, in *The Archaeology of Rock-Art*, eds. C. Chippindale & P.S.C. Taçon. Cambridge: Cambridge University Press, 146–62.
- Wang, N., 1984. An introduction to rock paintings in Yunnan Province (People's Republic of China). *Rock Art Research* 1(2), 75–90.
- Watson, B., 2009. Universal Visions: Neuroscience and Recurrent Characteristics of World Palaeoart. Unpublished PhD thesis, The University of Melbourne.
- Xiao, L., 2004. *Chenzou. New Ethnography of a Remote Village*. Nan Ning: Guangxi People Press.
- Zhang, Z., 2001. Rock art from Zhari; rock art from Luodji River. *China Cultural Relics Map (Yunnan Branch) March*, 287.

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