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RE-EXAMINING ROCK ART STUDIES IN INDIA : A CASE STUDY FROM KURNOOL DISTRICT, ANDHRA PRADESH

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India has some of the world's richest concentrations of rock art. Rock art in the subcontinent is found in a wide range of ecological and landscape settings and chronologically covers a substantial time period, from the Pleistocene through to the Holocene (Chakravarty 2003). Indeed, rock art continues to be produced in the subcontinent today. This significant rock art corpus has been the focus of studies by many scholars over the last century, who have studied rock art from the micro-scale of individual shelters and sites through to the macroscale of the subcontinent as a whole (e. g., Allchin and Allchin 1994-95; Boivin 2004; Chakravarty 2003; Bednarik and Chakravarty 1997; Gordon and Allchin 1955; Hampson *et al.* forthcoming; Neumayer 1993). Nonetheless, Indian rock art studies, like rock art studies in numerous other regions globally, remain very much in their infancy.

I

Some outstanding problems in Indian rock art research may be outlined as follows:

Chronology and Dating

There have been very few systematic attempts to date rock art in the Indian subcontinent (though see Bednarik and Chakravarty 1997). Much of the dating of rock art in the subcontinent is based on content, such that, for example, art showing wild animals and people with bows and arrows and the like is frequently designated as 'Mesolithic' in age. Depictions of cattle and plows are frequently attributed to the Neolithic, while metal objects and weapons are taken to indicate Iron Age art (e. g., Neumayer 1993; Pandey 1993). The use of content to assist in dating rock art is of course common practice and not in itself problematic. However, given the chronologically extended period over which hunting and gathering and many other practices depicted in rock art have been undertaken in the subcontinent, it is problematic to use such features as exclusive indicators

of chronology. Many of them can do little more than provide a maximum possible date for the images.

Building up rock art chronologies is in practice, if done properly, a slow and time-consuming practice. Usually it is necessary to draw upon a variety of lines of evidence, rather than a single rock art feature. Chronologies and dates can thus be established, for example, by examining associated archaeological deposits, buried ochre and stylistic depictions from excavated pots, figurines, rock slabs and other items of material culture and also by investigating pigments, subject matter, styles, patination and taphonomic impacts and patterns of super-positioning in rock art (Chippindale and Taçon 1998; Dorn 1995, 1997, 1998, 2001; Francis *et al.* 1993; Keyser 1987; Keyser and Klassen 2001; Rowe 2001). The application of Harris matrices to rock art panels have yielded important results (e. g., Chaloupka 1993; Chippindale and Taçon 1993; Loendorf 1990; Loubser 1996; Magar and Davila 2004), but even when an image is clearly superimposed on another, researchers are unable to determine the time elapsed between the painting of the two images. Ideally, absolute dating methods should be employed when possible (see Whitley 2001). Given the long time period over which rock art has clearly been produced in the sub-continent, researchers should recognise the possibility that even apparently coherent panels may have been created, transformed and/or rejuvenated over a long time period.

Documentation

Documentation and recording of rock art also needs to be undertaken in a more systematic way in the subcontinent. In particular, recording needs to be as faithful as possible and not artistic or aesthetic in nature, filling in, clarifying or beautifying images. Standards of rock art documentation need to be followed, especially because inappropriate recording methods (such as chalking or wetting images in order to render them more

visible) actually damage the art. While it is difficult to prepare a single recording system applicable in all circumstances, a number of researchers have provided useful guides suitable for most situations (e. g. Loendorf 1998; Swartz 2006; Whitley 2001). The most effective rock art documentation usually includes sketching (often with a wooden, scaled reference frame), professional tracing (unless the pigment is poorly bonded to the rock surface), photography (under varying light conditions) and the use of GPS and GIS analysis.

Systematic and Quantitative Studies

Little rock art research in India has involved quantitative or systematic analyses. Yet, it is clear that patterns, quantities, proportions and distributions can tell researchers much about relative chronology, dating and reasons for rock art production. For example, patterns of rock art distribution in the landscape can provide clues as to who was creating rock art and why (Chippindale and Nash 2004; Chippindale and Taçon 1998). Rock art sites in distant and difficult to reach locales were clearly used for different purposes than rock art sites in the midst of settlements. David Lewis-Williams was able to argue, for example, based on this and various other lines of evidence, that rock art produced deep in cave systems in southwestern France in the Palaeolithic may have been the work of ritual shamans embarking on ritual journeys deep into the earth (Lewis-Williams 2002). Quantitative studies can also reveal important information, provided that objectives are defined and limited from the outset; systematic numerical analyses in themselves do not shed light on motives. Worldwide, researchers have successfully considered the numerical relationships between animals and anthropomorphic figures (e. g., Layton 1992; Maggs 1967; Pager 1971; Vinnicombe 1976; Whitley 2001), between rock art images and group size (e. g., Maggs 1971) and have used these analyses as a springboard for investigating different stylistic traditions (e. g., Keyser and Klassen 2001; Schaafsma 1980; Turpin 2001; Whitley 2001).

The relationship of rock art sites to habitation and other sites is also important. Raymond and Bridget Allchin (Allchin and Allchin 1994-95; Allchin 1963) were able to date rock art sites in the south Deccan plateau not only by their content – repeated and almost

obsessive depictions of bulls and cattle – but also by their repeated proximity to Neolithic pastoral and agricultural sites. K. Paddayya and Nicole Boivin have drawn upon the repeated association of Neolithic and Iron Age rock art sites in the same region with rock ‘gongs’ to argue that ringing rocks had a role to play in prehistoric rock art practices (Boivin 2004; Boivin *et al.* 2007; Paddayya 1976). Associations are potentially highly meaningful, but these are ideally recognised through systematic studies and pattern analysis.

Studies of Contemporary Rock Art Production

India’s ongoing rock art practices make it one of the few places left in the world where traditional rock art practices can still be studied and documented. Unfortunately, despite the ethnographic importance of rock art production in India, very little study of contemporary rock art production has been undertaken in the subcontinent (though see Jain 1984). This is disappointing and scholars and students should be encouraged to undertake anthropologically-informed studies of contemporary rock art production in India. This would involve trying to understand the methods of rock art production, as well as its role in social and ritual practices. Such studies offer the opportunity not just to understand more about rock art, but also to shed substantial light on the activities and beliefs of marginal groups in the subcontinent. Much rock art today appears to be produced by hunter-gatherers, nomads, agriculturalists and various ritual specialists, sometimes as a part of non-Sanskritic Hindu religious practices in the subcontinent. Many of the groups that continue to produce rock art today are at the margins of society and it is likely that rock art additionally has a role to play in negotiating and contesting identity in the modern sphere. Accordingly, rock art is not just about the past, but also in India very much about contemporary society and the relationships between groups diverse in their lifestyles, subsistence practices, settlement patterns and relationship to structures of power.

Ethnographic studies of rock art production in India will also assist scholars in understanding the prehistoric archaeological record, both in India and elsewhere. By providing information about the reasons why rock art is produced and its role within social and ritual practices,

studies of contemporary rock art will furnish researchers with a better basis of knowledge from which to begin to interpret rock art creation in the past (e. g., for South Africa see Lewis-Williams 1980; Solomon 1998; for Australia see Moorwood & Hobbs 1992). Naturally, rock art production, even in the same region, is unlikely to have been undertaken for the same reasons in the past as today. Nonetheless, an anthropologically informed rock art perspective and corpus of data has much to offer researchers of rock art worldwide

II

Rock Art and the Kurnool District Archaeological Project

In 2003, as part of a programme of archaeological survey in the Kurnool district of Andhra Pradesh, South India, a series of previously unreported rock art sites were discovered. The sites consisted predominantly of pictographs, painted onto the walls of quartzite rock

shelters and boulders. They appeared to cover a range of time periods from the present day extending back as far perhaps as the Pleistocene. Given the importance of the Kurnool region in terms of both regional and global prehistory (Cammiade 1927; Foote 1884; Murty and Reddy 1975; Petraglia *et al.* 2007; Petraglia *et al.* forthcoming a; Petraglia *et al.* forthcoming b), it was decided to undertake a programme of systematic rock art recording and analysis in the region (Hampson *et al.* forthcoming). While only three seasons of work have thus far been undertaken and analysis of collected data is still incomplete, the methods, preliminary findings and future plans of the Kurnool rock art project are nonetheless likely to be of interest to rock art scholars working in the Indian subcontinent. While the project does not claim to offer any sort of ideal model for rock art studies, it has attempted to address some of the issues in Indian rock art studies outlined above.

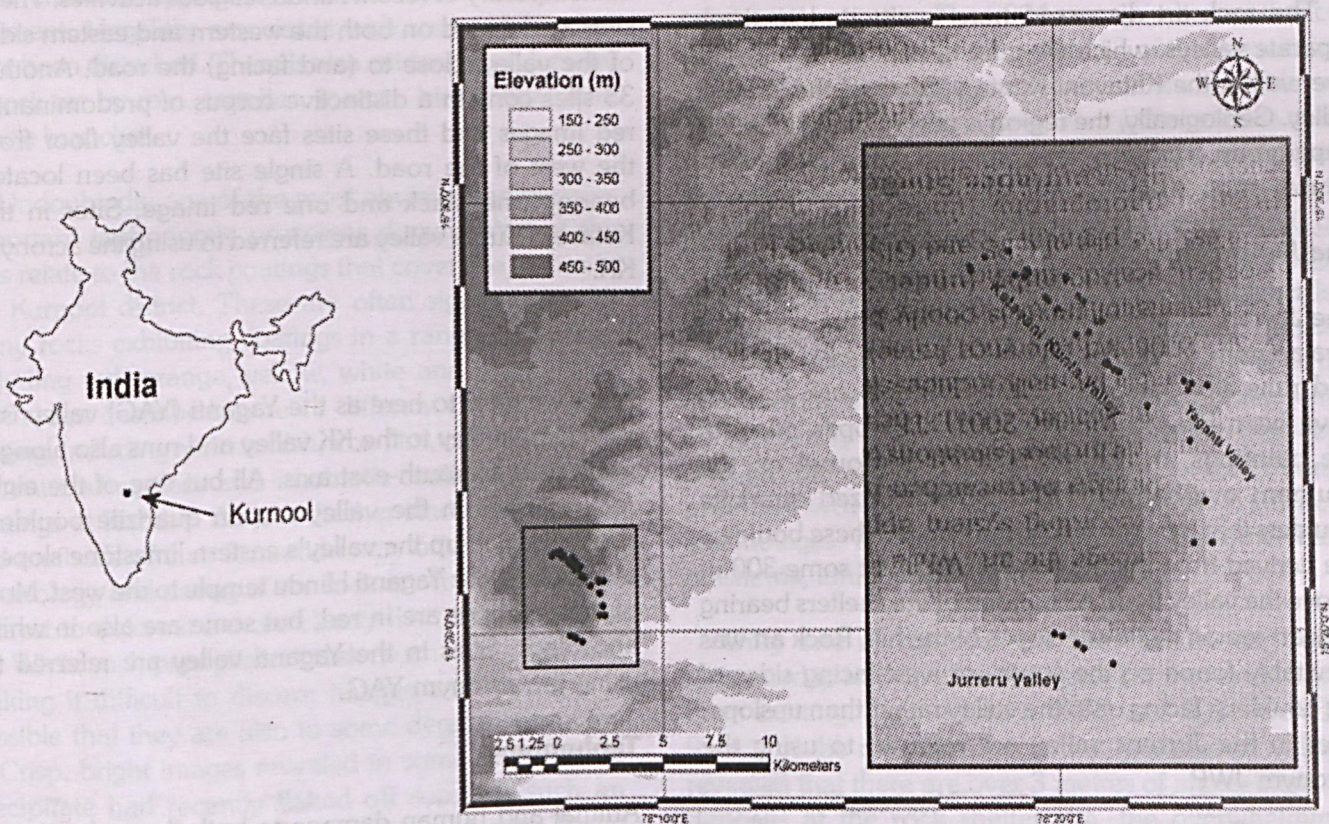


Fig. 1. Map showing the location of Kurnool district in India (left) and sites in the Jurreru and Katavani Kunta valleys (right)

Rock Art Setting

The rock art under discussion is found in the southern part of Kurnool district in Andhra Pradesh, south India (Fig. 1). While a variety of areas have been surveyed by the Kurnool District Archaeological Project and rock art has been found in many of them, the present discussion focuses in particular on a concentration of rock art discovered on the north side of the Jurreru river valley and in a few small subsidiary river valleys directly to the north. Rock art in these valleys has been systematically documented and analysed over three field seasons, in 2003, 2004 and 2007. The first season focused on the general locating and recording of sites, the second on more detailed and systematic recording of sites with some additional survey and the third on systematic survey to assess the patterning of rock art sites in relationship to archaeological remains. Further work is planned that will bring in additional specialists and approach the rock art sites using additional methods.

The rock art discussed here is situated in three separate valleys, which we refer to here as the Jurreru river valley, the Katavani Kunta valley and the Yaganti valley. Geologically, the region is part of the Cuddapah Supergroup, a crescent-shaped basin of Proterozoic age (Gupta *et al.* 2003).

The Jurreru River Valley

The Jurreru river valley, which contains the village of Jwalapuram (JWP), is steep sided but relatively wide and runs along an east-west axis. Five rock art sites have been identified on its northern slopes. Most of the paintings, in red and white, are found on the southern overhangs of the variously sized quartzite boulders that litter the limestone slopes. These boulders are derived from the quartzite escarpment some 300 m above the valley floor. All but one of the shelters bearing rock art are on the lower slopes of the hill. Rock art was inevitably found on the south- or west-facing sides of the boulders, facing onto the valley rather than upslope. Sites in the Jurreru valley are referred to using the acronym JWP.

Katavani Kunta Valley

We refer to the second valley with documented rock art as the Katavani Kunta (KK) valley because it contains a village of that name. KK is an upland valley that cuts into the quartzite plateau; it runs along a north-west to south-east axis and lies above the Jurreru river valley. Katavani Kunta is significantly smaller in size than Jurreru, but contains proportionally more quartzite boulders and painted sites. Many of these were first identified on the lower slopes of the valley, often immediately by the dirt road that winds along the valley floor, but through systematic surveying rock art sites have been revealed further up the escarpment. Rock art in many cases faces out onto the valley rather than upslope. Rock shelters here generally provide more substantial overhangs (at least today) than those in the Jurreru river valley.

A total of 47 sites are found in the KK valley. The valley sits on a pilgrimage route between two Hindu temples, one of which sits at the south-east entrance to the valley and some 14 sites appear to relate to contemporary or recent Hindu religious activities. These sites are located on both the western and eastern sides of the valley, close to (and facing) the road. Another 33 sites contain a distinctive corpus of predominantly red images and these sites face the valley floor from the west of the road. A single site has been located bearing one black and one red image. Sites in the Katavani Kunta valley are referred to using the acronym KK.

Yaganti Valley

What we refer to here as the Yaganti (YAG) valley is a subsidiary valley to the KK valley and runs also along a north-west to south-east axis. All but one of the eight rock art sites in the valley are on quartzite boulders relatively high up the valley's eastern limestone slopes, overlooking the Yaganti Hindu temple to the west. Most of the paintings are in red, but some are also in white and black. Sites in the Yaganti valley are referred to using the acronym YAG.

Taphonomy

Animal and human damage to both the rock art and associated sites in the Kurnool district is minimal and certainly far less severe than in many other rock art

regions worldwide, partly because the sites are remote and often protected by vegetative growth. Nonetheless, taphonomic impacts on the rock art and associated sites are not insignificant and thus merit detailed examination and assessment, especially as they hold the potential to shed light on rock art chronologies and dates.

Many of the shelters where rock art is found, particularly in the Katavani Kunta valley, are currently used by local farmers and herders, as well as traveling pilgrims and *sadhus*, amongst others. Shelter floors at such sites have often been partially or wholly cleared of stones and/or vegetation and in some cases simple structures and shrines have been built. Rock art at such sites is more exposed to damage by contemporary activities. One rock shelter in the Jurreru valley has been used for target practice (spent shells were discovered on the floor of the shelter and during excavations), which has damaged rock art. The floors at some rock shelters also seem to have been excavated out (most notably at JWP-11, where the entire adjacent area had been removed), apparently to obtain some sort of useful sediment. Megaliths associated with some of the sites have been disturbed. There is also evidence for damage of rock art by rain, termites, insects, birds, algae and *Acacia* branches.

Undoubtedly one of the most obvious and perhaps important taphonomic processes documented at the sites relate to the rock coatings that cover the stones in the Kurnool district. These are often significant, with many rocks exhibiting coatings in a range of colours, including red, orange, yellow, white and black. Dorn (2001) has described some 14 different classes of rock coating, including rock varnish, iron film, carbonate skin, salt crust, silica glaze and lithobiotic coatings. The rock coatings at Kurnool deserve further study, for the rate and methods of their formation may offer insights into chronology and dating of the rock art. It will also be of interest to determine more clearly their impact on the art. While such precipitates mask much of the rock art, making it difficult to discern images and motifs, it is possible that they are also to some degree preserving it. Crisp, bright images revealed in some areas where precipitate had recently flaked off supports such an assertion, though more research is needed to clarify the issue.

The other key taphonomic process that has likely impacted the rock art sites is mechanical weathering of the rock substrates themselves. Evidence for spalling and exfoliation, leading to the gradual removal of the surface layers of rock, is evident at many shelters. It is likely that rock art and particularly older rock art, has been destroyed by such processes. The rate at which exfoliation occurs in the valleys and varies from shelter to shelter, is thus of substantial interest and the focus of continued archaeological and geological study by the Kurnool District Project.

Dating the Kurnool Rock Art

As is generally the case in rock art studies, dating the Kurnool rock art will present a substantial challenge. It does, however, seem clear that rock art has been produced at the sites over a substantial time period. The degree of fading of some of the red ochre images and the thick mineral washes that cover many of them suggest substantial age. As well, many of these sites are associated with archaeological remains, often of substantial antiquity. The 2004 survey indicated that of 27 sites with images in red ochre, 13 of the associated shelters have archaeological remains that are visible on the surface. Four shelters have microlithic artifacts, two shelters potsherds, five shelters have both microlithic artifacts and potsherds and one has a megalithic cist. The 2007 survey revealed 21 new rock art sites, 10 of which were associated with surface archaeology, including three shelters with lithics, two with potsherds, one with a stone structure, two with potsherds and lithics, one with lithics and a stone structure and one with potsherds, a stone structure and a human interment. By specifically focusing upon the associations between rock art and archaeology, two sites discovered during previous work were also shown to have surface assemblages: one included lithics and the other had potsherds, lithics and a stone structure.

Only one of the rock art sites has so far been excavated to any significant degree, but the results have been exciting. Excavations in 2003 and 2004 at JWP-9, one of the rock art sites in the Jurreru river valley, revealed that there are over 3 metres of archaeological deposits at the rock shelter site, the overwhelming majority of which are aceramic and dominated by microlithic assemblages (Petraglia *et al.* forthcoming a).

Only in the latest level were ceramics recovered. Radiocarbon dating of finds from the site indicate that occupation deposits go back to at least 30,000 B. P. (and further, planned excavations will undoubtedly extend this occupation). Finds of ochre throughout the occupation deposits at JWP-9 also add another interesting line of evidence. Overall, the JWP-9 findings suggest long-term hunter-gatherer occupation of the region and it is likely that such groups had a role to play in the production of rock art. The question of whether art produced by Pleistocene hunter-gatherers remains visible to us today is still an open one however, but findings at sites like JWP-9 certainly suggest that it is not beyond the realm of possibility that some of the older art in the region is of significant antiquity.

At the other end of the spectrum, some of the rock art at the rock shelters is clearly of later date and ethnographic enquiries indicate that rock art is still being produced today. The vast majority of this later and contemporary rock art relates to Hindu religious practices and includes marks made during *puja* (worship) and, in the Katavani Kunta valley, marks made by passing pilgrims. It is also likely that some or even much of the art is the work of Neolithic and Iron Age groups. Excavations at another rock art site, the rock shelter JWP-11, revealed a Megalithic burial site of early date, perhaps from ca. 1,200 B. C. (Petraglia *et al.* forthcoming a). JWP-9 may also have been an early Megalithic burial site in its later phase, as the pottery is of a similar style and possible burial pits and broken cairn structures were identified in the late levels of the site (Petraglia *et al.* forthcoming a). Both preliminary and subsequent systematic survey (see below) indicate a significant quantity of Megalithic cists and cairns in the Jurreru and KK valleys, many in direct or nearby association with rock shelters.

While it is clear that images have been produced over a lengthy if indeterminable time period in the Kurnool district, only a limited relative internal chronology is possible for the images (see next section). One key problem is that many of the images at the rock art sites are solitary or in non-overlapping groups, such that superimpositioning studies are possible with only a minority. It is hoped that absolute dating of the rock art may clarify dates and relative chronologies. Accelerator mass spectrometry (AMS) radiocarbon

dating requires only small quantities of organic material, such as charcoal (from, perhaps, the black paintings in the Yaganti valley), plant fibres trapped by or within pigment and binding agents (perhaps animal fat or fluids) that help adhere the pigment to the rock surface (Keyser and Klassen 2001). Although the accuracy of AMS dating is sometimes questioned, especially when obvious contaminants are present (Keyser and Klassen 2001; Rowe 2001), it can be used effectively alongside other chronometric alternatives, including cation ratio (CR) dating, which measures the leaching of potassium and calcium out of rock varnish on engravings (Dorn 1995, 2001) and biofilm dating (Dorn 2001).

As indicated, certain taphonomic processes, while destructive, can also be used to shed light on relative chronology and dating and this is particularly true in the case of Kurnool of rock coatings and exfoliation processes. Patterns of superimpositioning of paintings and the coatings that under and overlap them can be studied to help define relative chronologies (Chippindale and Taçon 1993, 1998; Dorn 2001; Keyser and Klassen 2001; Loendorf 1990; Loubser 1996; Rowe 2001). In addition, coatings may also provide *terminus post quem* and *terminus ante quem* dates if they can be absolutely dated, though it is increasingly clear that the microstratigraphy of coatings themselves makes this a complex enterprise (Rowe 2001). The possibility that excavated rock spall might include painted surfaces, thus providing a means of absolute dating of rock art in Kurnool district, is an enticing one, but so far no such surfaces have been identified during excavation work.

Creating Categories: Towards an Internal Chronology

For the sake of simplicity and with the aim of beginning to establish relative chronologies, the rock art was divided in the 2004 season into two categories: newer and red ochre sites (giving a total of 40 sites). The two categories can also be delineated and supported by taphonomy, content and associated archaeological deposits. There is some overlap, however, since some red ochre sites also include recent rock art.

Newer Sites

A total of 13 of the 40 rock art sites documented systematically in 2004 are clearly relatively recent and do not appear to contain images or symbols that might be of any significant antiquity, so these have been classed as 'newer sites' (see Fig. 2). Most are painted in white paint. The few red depictions found also appear to be relatively recent, based on their content, shade and lack of fading. These newer sites focus heavily on

Hindu symbolism and imagery and appear to relate predominantly to Hindu pilgrim (*sadhu*) or other religious activity in the Katavani Kunta valley. Ethnographic enquiries indicate that the white depictions, made from kaolin and/or lime, are still being produced today. It is clear that the Hindu symbols are less than ca. 2,000 years old (the beginning of the 'modern' Hindu religion) and they are in addition almost certainly less than 500 years old (the apparent age of the Yaganti temple). Indeed, this rock art is generally distinguishable not only by its content but also the pigments used to create it; these pigments are generally thick, white and well-preserved kaolins and limes. Their degree of preservation and white colour (since white pigments do not preserve as well as red) suggest a relatively recent date. White depictions have also been reported inside dolmens in south India, however, meaning that some may be as old as the Iron Age (Rajan: personal communication 2005), although the possibility of more recent activities having produced such rock art cannot be discounted.

Red Ochre Sites

Twenty-seven of the 40 sites documented in 2004 have images in red ochre (ferric oxide) pigment (see Fig. 3) and many may initially have been painted using a finer brush in the prehistoric era. Of these 27 sites, nine also have images in white pigment, some of which include the same Hindu symbols found at newer sites (thus blurring the division between newer and red ochre sites). Studies worldwide have



Fig. 2. White Hindu symbols in the Katavani Kunta valley



Fig. 3. The exceptional main panel at KK 3 featuring fine-lined profiled anthropomorphs with bent and raised arms. The largest anthropomorph (centre) is 75 cm tall. Note also the superimposition, which is rare at Kurnool district sites.

shown that most pre-ceramic paintings are red, because the iron oxide seeps *into* the rock through capillary action (Chippindale and Taçon 1998; Whitley 2001). A working rule of thumb in rock art studies may therefore be that all old paintings are likely to be red, but not all red paintings are old. Thus, some of the red paintings at the red ochre sites may be of significant antiquity, but the rule of thumb just outlined, as well as the variation in the degree of fading that the paintings exhibit, suggest that some may be more recent. The presence of white paintings clearly indicates that painting took place at some of the sites at least in relatively recent times, since white pigment sits *on* the rock and therefore does not survive as well (Chippindale and Taçon 1998).

Distribution Studies

As indicated, one way of approaching the chronology problem is to try to more systematically examine the relationship between rock art and archaeology. Since

many of the Kurnool sites are associated with surface finds, it was decided that it might be interesting to examine the degree to which such surface finds correlated with the distribution of rock art. In 2007, work was therefore undertaken to systematically examine and compare distributions of rock art and surface archaeology finds in the Katavani Kunta valley. An additional benefit of this approach was that it enabled investigation of the relationship between rock art and archaeology without the need for excavation, itself inevitably a destructive technique.

The 2007 survey was designed to systematically sample the Katavani Kunta valley by walking along transects on the valley slopes, spaced 50 m apart, recording any form of archaeological material encountered. A total of 164 transects were recorded and a further 35 new sites were revealed beyond the rock art sites mentioned above. The archaeological remains at these sites are comprised of a mix of potsherd scatters, lithic scatters and stone structures. The survey revealed significant spatial clustering of the various archaeological phenomena, suggesting distinct focal areas for activity in different time periods. The discovery of additional rock art sites bearing surface lithic deposits supports evidence from previous seasons and this association may be useful in dating the rock art. The limited number of sites containing both rock art and stone structures and their different spatial patterning is also of interest and does not suggest that the two are related (though it certainly doesn't exclude the possibility). Overall, the 2007 survey, while it certainly does not prove that any of the rock art is of early Holocene or Pleistocene antiquity, does not provide

evidence to dispute this hypothesis and has provided an interesting new line of evidence concerning the dating of the art.

Anthropological Perspectives

Contemporary rock art in the Yaganti Kata and Katavani Kunta valleys provides an excellent opportunity to examine modern rock art practices in India. Much of this rock art, which predominantly consists of symbols drawn in white paint, undoubtedly relates to Hindu pilgrimage activity in the two valleys in recent and contemporary times (though perhaps stretching back centuries).

The temple at Yaganti is a Saivite temple known as the Sri Yaganteshwara Swamy Temple or Temple of Uma Maheshwar. It was built in the 15th century and is associated with a natural spring and number of notable natural limestone caves, all of which have been incorporated into the temple complex. The presence

of the spring and caves suggests that the locality likely had some sort of sacred significance previous to the building of the current temple. The temple at Yaganti is a destination of pilgrimage and pilgrims apparently pass through the Yaganti and Katavani Kunta valleys (traditionally on foot) when travelling from the Sri Maddileti Narasimha Swamy Temple in Rangapuram village, in Bethamcherla Mandal. The latter is apparently a Vaisnavite temple. Both Vaishnavite and Saivite imagery is found within the Yaganti temple complex.

Nine of the rock art sites in the Katavani Kunta valley, classed as 'newer sites', have dozens and sometimes hundreds of superimposed white, broad-brush or daubed V-shaped and trident symbols, likely relating to Vaisnavite and Saivite worship and/or pilgrimage. These in particular mark several large boulders next to the side of the road just before it descends from the upland valley to the Yaganti temple (see Fig. 3). Some also contain numbers and graffiti that may document the names and dates of pilgrims moving through the

valley. Four of the newer sites have engravings: these consist of two *lingas*¹, one *Nandi* (the sacred bull) and one pair of engraved feet positioned in front of a shrine.

At two of the Katavani Kunta sites there are anthropomorphic figures executed in modern white paint and recent broad charcoal outlining of older red paintings. Another site in the Katavani Kunta valley has a contemporary and well-used local Hindu shrine that enquiries indicate is dedicated to the goddess Gangamma.



Fig. 4. Fish-like indeterminate figure (35 x 20 cm) with fin-like protrusions at JWP 13; note the mineral wash on the right of the image



Fig. 5. Lizard-like therianthrope (20 cm tall) obscured by mineral wash at JWP 9

The various recent and contemporary rock art features of the Kurnool district are fascinating and likely relate to the shared use of the valleys for a variety of purposes by different groups. It is likely that in recent times, rock art and associated features have been produced in the valleys by hunter-gatherers, settled cultivators, pastoralists and various pilgrims, itinerant wanderers and ritual specialists. The differential but shared use of the valley by these individuals and the spatial layers and temporal cycles that rendered the same spaces both sacred and profane to different groups at different times in recent history and up to the present day deserve further investigation through detailed ethnographic and historical study. One of the aims of the Kurnool Project is to ensure that such study is

undertaken so that the rock art landscapes in the region can be examined in long term perspective.

Images

It is important to emphasise that due to the rock coatings discussed above, as well as fading of older images, much of the rock art in the three valleys is difficult to see. Motifs frequently peek out here and there from beneath the colourful coatings, but are often unidentifiable (see Figs. 4-6). In some cases fading of red images has made it possible only to identify that rock art is there, but not to identify patterns or motifs (see Fig. 7). On the other hand, these factors also suggest that much of the rock art is of substantial antiquity, which renders it highly significant from an archaeological perspective. In addition, while taphonomic processes have impacted many images, there are also many that are recognizable and traceable (see Figs. 8-9), especially when

digital enhancement technology is drawn upon.

In discussing the images here, we have concentrated on the paintings at the red ochre category of sites. The 400 paintings documented in 2004 – mostly solid or outlined red – at the 27 red ochre sites, comprise:

- 106 red anthropomorphic figures (19 of which are shown in profile with a bent leg and bent, raised arm)
- 22 red lizard-like therianthropes (comprising both animal and human features; see below)
- 83 animals (54 of which are indeterminable); most of the diagnosable animal species are quadrupeds, including 9 deer, 6 goats, 4 boars, 2 monitor lizards, 2



Fig. 6. Crab-like figure (15 x 8 cm) at JWP 13

carnivores, an elephant and a cow, but there is also a snake and 3 fish

- 83 red geometric figures (including 7 sets of nested V-shapes, 2 sets of concentric circles, 5 zigzags and 3 sets of dots; six of these geometric figures follow rock step contours; see below)

- 70 white geometric figures (including 31 V-shaped or trident symbols) and 2 black charcoal geometric figures

- 7 handprints

- 8 depictions of what appear to be (ceramic?) pots

- 2 hands and 5 pairs of feet

- remnants

Ten of the 27 red ochre sites have superimpositioning, but usually only one or two figures are over previously painted images, partly because there are few painted 'scenes' – nearly all of the figures are isolated (KK 3, shown in Figure 3, is exceptional). This lack of composite imagery seems deliberate, although the rock coatings that cover many areas of extensive rock art production make it difficult to establish a pattern with certainty. As in the Bellary district of Karnataka, 120 km west of Kurnool, there are several examples of a solid anthropomorph superimposed over an outlined figure, usually an animal. Dating rock art by style (however defined) is problematic, but it is possible that outlined elements, in

general, precede solid figures. There is widespread superimpositioning at most of the heavily painted Hindu pilgrim sites, where people are still adding symbols and images today.

Digital Enhancement of Images

Investigations by other researchers have suggested that recording and analysis of rock art can in some cases benefit from digital enhancement techniques (Clogg et al. 2000; David et al. 2001). Preliminary experiments in Photoshop suggest that study of at least some of the



Fig. 7. Mineral wash obscuring images at JWP 13

Kurnool rock art can be assisted through digital enhancement of photographic images. In particular, alteration of saturation levels seemed to significantly improve visibility of some fainter images. It does not, however, appear that digital enhancement significantly enables improved visibility of images masked by precipitates, though this should be confirmed. Digital enhancement does nonetheless enable easier

differentiation of red pictographs from iron-impregnated precipitates and underlying iron-rich rock.

Pigment Source

One potential source of pigment was located near JWP-9, where soft, iron-rich stones were found in red, orange and yellow. Adjacent to this was a source of siliceous stone that was likely employed for the production of microliths. Further studies are planned to investigate more fully the likely origins and make-up of the ochre identified during excavations and in the rock art itself. The process of making rock art is often overlooked, despite the possibility that the *production* of the images may have been more important than the images themselves to the original artists and viewers. Evidence from the 2007 season suggests red ochre was used in the form of a 'crayon' (see Fig. 10) as well as paint in the creation of the images. Some interesting questions for further analysis include: Which ochre sources were chosen and why? How was the ochre prepared? Which binders were used to adhere the pigment to the rock surface? Chemical analyses may yield significant results.

Rock Art Contexts

As many studies have shown, rock art context is potentially informative about past rock art practices and the importance of contextual studies in Kurnool, where much of the actual imagery is masked by precipitates, would seem to be particularly heightened. Several scales of contextual analysis are suggested to offer potentially informative approaches.

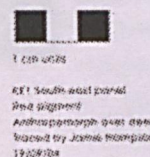


Fig. 8. Redrawing of an anthropomorph superimposed on a 16 x 25 cm outlined deer at KK 1

At the scale of the rock surface itself, examination of the relationship between images and surface topography suggested interesting correlations in some cases. For example, natural features in the rock surface were sometimes used to accentuate motifs. Also interesting is the relationship between rock art and rock coatings (see Figs. 4, 5 and 7). While the coatings covering the rock art have been discussed above as a taphonomic issue, it is entirely possible that rock art was deliberately located in areas where it was predicted that it would be covered up by rock varnish. Analysis of the 2004 data suggested that a minimum of 16 of at least 40 rock coatings cover pigment at the sites. This kind of pattern seems particularly interesting where images appear to depict water-dwelling creatures (such as the fish and possible crab depicted at JWP-13, which are partially covered by precipitates that appear to flow down the rock surface; see Fig. 4). Water symbolism may have

been relevant here (as also discussed in Blinkhorn 2004), though it is also possible that the spectacular, multi-coloured flows were seen as dividing the everyday world from the supernatural or divine world beneath the rock, which gradually 'reclaimed' the images as they disappeared under progressive layers of rock varnish (for related arguments with respect to patination, see Lewis-Williams and Dowson 1990 and Ouzman 2001; Arsenault 2004 also features an interesting discussion of the potentially sacred dimensions of similar coatings at Canadian rock art sites).

The height of the rock art above the ground surface is another potentially interesting area of study. While much of the Kurnool rock art is at or just above eye level, some of it is very high up on the rock surface, raising the question of how it was produced in the first place. At JWP-9, 12 and 13, much of the rock art is located between 2 and 6 metres above the present ground surface and the indication is that if anything the ground surface is higher today than it was in the past. Interestingly, paintings high up on the rock face are more rare at Yaganti and Katavani Kunta valley sites, suggesting that at least some of the art in the different valleys was made for different purposes and/or audiences.

Planned Rock Art Studies

There are several areas of study that we believe would potentially yield significant results in terms of our



Fig. 9. Redrawing of two lizard-like therianthropes from JWP 13 with 3 fingers on each hand; the larger (30 x 15 cm) has clear legs

understanding of the nature and chronology of the Kurnool rock art and which we hope to pursue further in future seasons.

- It is hoped to analyse in more detail the animal depictions, in collaboration with the team zooarchaeologist, in order to try to more clearly identify what species may be depicted and to understand the relationship of depictions to zooarchaeological assemblages. This might permit linkage of animal motifs with particular periods.

- Panels usually comprise anthropomorphic, animal and geometric figures. Of the 27 red ochre sites, all but 9 have anthropomorphs or therianthropes. Of the 18 sites that do, all but 4 have animals and all but one have geometrics. If a site contains depictions of anthropomorphs, therefore, it is highly likely to contain both animals and – even more likely – geometrics. Such preliminary chronological frameworks would no doubt be improved by the application of Harris matrices and such work is planned.

- Anthropomorphic figures are sometimes depicted in groups or flanked by other figures. When depicted in groups they are usually identifiably male, although some figures have both male and female genitalia. More work is needed on the significance of both groups and ‘processions’ and also on gender relationships.

- The relationships between animals (including aquatic figures), anthropomorphic figures (both profiled and face-on with arms bent and raised) and therianthropes are key and deserve further study.

- Further research is also needed on identifying the protrusions emanating from the torsos of certain anthropomorphic figures and on the relationship between the white Hindu symbols and the older red paintings.

- We hope to sample the pigment from some sites, in order to learn more about pigment composition, sources and binders and to obtain absolute dates.

Conservation of Heritage

Many of the apparently older rock art sites in all three valleys are currently under some degree of threat from contemporary activities, including the production of rock art by present-day inhabitants and visitors. The new road that is currently being built in the Yaganti valley will likely lead to significantly increased traffic through the valley, especially by visitors to the temple at Yaganti. This will likely result in greater exposure of both archaeological and rock art remains to destructive



Fig. 10. 'Crayon' drawn pictures in the KK valley

processes. Discussion of how best to deal with this and other threats to these sites should be prioritised.

Conclusion

The rock art in the Kurnool district of Andhra Pradesh is an excellent example of the spectacular rock art sites with which the Indian subcontinent is blessed. By embarking on a long-term, systematic study of the Kurnool rock art, the Kurnool District Archaeological Project aims to generate better understanding of and appreciation for India's superb rock art record. Much work remains to be done. The threat to many rock art sites makes systematic research at Kurnool and other Indian rock art sites an urgent priority.

Notes

1. A Hindu trinity. Brahma abides in the lower part of the motif that is metaphorically hidden inside the

earth, Vishnu occupies the middle portion of the linga and Shiva the top portion (Zaehner 1962).

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References

- Allchin, F. R. 1962. *Neolithic Cattle-Keepers of South India: A Study of the Deccan Ashmounds*. Cambridge: Cambridge University Press
- Allchin, F. R. and B. Allchin 1994-95. Rock Art of North Karnataka. *Bulletin of the Deccan College Post-Graduate and Research Institute* 54-55: 313-39.
- Arsenault, D. 2004. From Natural Settings to Spiritual Places in the Algonkian Sacred Landscape: An Archaeological, Ethnohistorical and Ethnographic Analysis of the Canadian Shield Rock Art Sites. In *The Figured Landscape of Rock-Art: Looking at Pictures in Place* (Chippindale, C. and G. Nash Eds.), pp. 289-317. Cambridge: Cambridge University Press
- Bednarik, R. G. and K. K. Chakravarty 1997. *Indian Rock Art and its Global Context*. New Delhi: Shri Jainendra Press.
- Blinkhorn, J. 2004. *Journeying Through Landscape and Rock Art Contexts: A Study of Recent Findings in Kurnool District, Andhra Pradesh, India*, Unpublished BA dissertation, University of Cambridge.
- Boivin, N. 2004. Rock Art and Rock Music: Petroglyphs of the South Indian Neolithic. *Antiquity* 78: 38 – 53.
- Boivin, N., A. Brumm, H. Lewis, D. Robinson and R. Korisettar 2007. Sensual, Material and Technological Understanding: Exploring Prehistoric Soundscapes in South India. *Journal of the Royal Anthropological Institute (N. S.)* 13 : 267- 294
- Cammiade, L. A. 1927. Prehistoric Man in India and the Kurnool Bone Caves: A Neglected Field of Inquiry. *Man in India* 7(1): 1-12
- Chakravarty, S. 2003. *Rock Art Studies in India: A Historical Perspective*. Kolkata: The Asiatic Society.
- Chaloupka, G. 1993. *Journey in Time*. Sydney: Reed
- Chippindale, C. and G. Nash (Eds.) 2004. *The Figured Landscapes of Rock-Art: Looking at Pictures in Place*. Cambridge: Cambridge University Press.
- Chippindale, C. and P. S. C. Taçon 1998. The Many Ways of Dating Arnhem Land Rock-art, North Australia. In *The Archaeology of Rock-Art* (Chippindale, C. and P. S. C. Taçon Eds.), pp. 90-111. Cambridge: Cambridge University Press.
- Chippindale, C. and P. S. C. Taçon (Eds.) 1998. *The Archaeology of Rock-Art*. Cambridge: Cambridge University Press
- Chippindale, C. and P. S. C. Taçon 1993. Two Old Painted Panels from Kakadu: Variation and Sequence in Arnhem Land Rock Art. In *Time and Space: Dating and Spatial Considerations in Rock Art Research* (J. Steinbring, A. Watchman, P. Faulstich and P. S. C. Taçon Eds.), pp. 32-56. Melbourne: Occasional AURA Publication 8.
- Clogg, P., M. Díaz-Andreu and B. Larkman 2000. Digital Image Processing and the Recording of Rock Art. *Journal of Archaeological Science* 27: 837-843
- David, B., J. Brayer, I. J. McNiven and A. Watchman 2001. Why Digital Enhancement of Rock Paintings Works: Rescaling and Saturating Colours. *Antiquity* 75: 781-791.
- Dorn, R. I. 1995. *Cation Ratio and Radiocarbon Ages for Wyoming Petroglyphs*. Report submitted to the Bureau of Land Management District Office, Worland WY.
- Dorn, R. I. 1997. Constraining the Age of the Coa Valley (Portugal) Engravings with Radiocarbon Dating. *Antiquity* 71(271):105-115.
- Dorn, R. I. 1998. *Rock Coatings*. Amsterdam: Elsevier.
- Dorn, R. I. 2001. Chronometric Techniques: Engravings. In *Handbook of Rock Art Research* (Whitley, D. Ed.), pp. 167-189. Walnut Creek, CA: Altamira Press.

- Foote, R. B. 1884. Rough Notes on Billa Surgum and other Caves in the Kurnool District. *Records of the Geological Society of India* 27:27-34
- Francis, J. E., L. L. Loendorf and R. I. Dorn 1993. AMS Radiocarbon and Cation-Ratio Dating of Rock Art in the Bighorn Basin of Wyoming and Montana. *American Antiquity* 58(4):711-737.
- Gordon, D. H. and F. R. Allchin 1955. Rock Paintings and Engravings in Raichur, Hyderabad. *Man* 55: 97-99.
- Gupta, S., S. S. Rai, K. S. Prakasam, S. Srinagesh, B. K. Bansal, R. K. Chadha, K. Priestley and V. K. Gaur 2003. The Nature of the Crust in Southern India: Implications for Precambrian Crustal Evolution. *Geophysical Research Letters* 30:141-149.
- Hampson, J., N. Boivin, R. Korisettar and M. Petraglia. New Rock Art Discoveries in the Kurnool District, Andhra Pradesh, India. Forthcoming.
- Jain, J. 1984. *Painted Myths of Creation: Art and Ritual of an Indian Tribe*. New Delhi: Lalit Kala Akademi.
- Keyser, J. D. 1987. A Graphic Example of Petroglyph Superimpositioning in the North Cave Hills. *Archaeology in Montana* 28(2): 44-56.
- Keyser, J. D. and M. A. Klassen 2001. *Plains Indian Rock Art*. Seattle: University of Washington Press
- Layton, R. 1992. *Australian Rock Art: A New Synthesis*. Cambridge: Cambridge University Press.
- Lewis-Williams, J. D. 2002. *The Mind in the Cave: Consciousness and the Origins of Art*. London: Thames and Hudson.
- Lewis-Williams, J. D. 1980. Ethnography and Iconography: Aspects of Southern San Thought and Art. *Man (N. S.)* 15: 467-482
- Lewis-Williams, J. D. and T. A. Dowson 1990. Through the Veil: San Rock Paintings and the Rock Face. *South African Archaeological Bulletin* 45:5-16
- Loendorf, L. L. 1990. A Dated Rock Art Panel of Shield-bearing Warriors in South Central Montana. *Plains Anthropologist* 35(127):45-54.
- Loendorf, L., L. Olsen, S. Conner and J. C. Dean 1998. *A Manual for Rock Art Documentation* 2nd ed. N. P.
- Loubser, J. H. N. 1996. The Use of Harris Diagrams in Recording, Conserving and Interpreting Rock Paintings. *International Newsletter on Rock Art* 18:14-21.
- Magar, V. and V. Davila 2004. Considerations on the Dating of Rock Art from the Sierra de San Francisco, Baja California, Mexico. *Rock Art Research* 21:129-136
- Maggs, T. M. O'C. 1971. Some Observations on the Size of Human Groups. In *Rock Paintings of Southern Africa* (M. Schoonraad Ed.), pp. 49-53. Johannesburg: South African Journal of Science, Special Publication 2.
- Maggs, T. M. O'C. 1967. A Quantitative Analysis of the Rock Art from a Sample Area in the Western Cape. *South African Journal of Science* 63:100-104.
- Moorwood, M. J. and D. R. Hobbs (eds.) 1992. *Rock Art and Ethnography*. Occasional AURA publication No. 5 Australian Rock Art Research Association, Melbourne
- Murty, M. L. K. and K. T. Reddy 1975. The Significance of Lithic Finds in the Cave Areas of Kurnool, India. *Asian perspectives* 18:214-26
- Neumayer, E. 1993. *Lines on Stone: The Prehistoric Rock Art of India*. Delhi: Manohar
- Ouzman, S 2001. Seeing is Deceiving: Rock Art and the Non-visual. *World Archaeology* 33 (2): 237-56
- Paddayya, K. 1976. Cup-Marks in the Shorapur Doab (South India). *Man (N. S.)* 11:35-8
- Pager, H. 1971. *Ndedema*. Graz: Akademische Druck.
- Pandey, S. K. 1993. *Indian Rock Art*. Delhi: Aryan Books International

- Petraglia, M., R. Korisettar, N. Boivin, C. Clarkson, K. Cunningham, P. Ditchfield, S. Jones, J. Koshy, M. Mirazon Lahr, C. Oppenheimer, D. Pyle, R. Roberts, J-L. Schwenninger, L. Arnold and K. White 2007. Middle Paleolithic Assemblages from the Indian Subcontinent before and after the Toba Super-eruption. *Science* 317:114-116.
- Petraglia, M., R. Korisettar, M. Kasturi Bai, N. Boivin, C. Clarkson, K. Cunningham, P. Ditchfield, D. Fuller, J. Hampson, S. Jones, J. Koshy, P. Miracle, C. Oppenheimer and K. White (forthcoming a). Cave and Rockshelter Records, the Toba Super-eruption and Forager-Farmer Interactions in the Kurnool District, India. Submitted to the *Journal of Eurasian Prehistory*.
- Petraglia, M., R. Korisettar, C. Clarkson, H. James, N. Boivin, P. Ditchfield, M. Haslam, J. Koshy, P. Miracle, M. Mirazon Lahr, R. Roberts and L. Arnold (forthcoming b). Earliest Microlithic Assemblages and Ornaments in the Indian Subcontinent. Submitted to *Proceedings of the National Academy of Sciences*
- Rowe, M. W. 2001. Physical and Chemical Analysis. In *Handbook of Rock Art Research* (Whitley, D. Ed.), pp. 190-220. Walnut Creek, CA: Altamira Press
- Schaafsma, P. 1980. *Rock Art of the Southwest*. Albuquerque, NM: University of New Mexico Press.
- Solomon, A. 1998. Ethnography and Method in Southern African Rock-Art Research. In *The Archaeology of Rock-Art* (Chippindale, C. and P. S. C. Taçon Eds.), pp. 268-284. Cambridge: Cambridge University Press.
- Swartz, B. K. 2006. Minimum Standards for Recording Rock Art, Revised. *Rock Art Research* 23: 264-265
- Turpin, S. A. 2001. Archaic North America. In *Handbook of Rock Art Research* (Whitley, D. Ed.), pp. 361-413. Walnut Creek, CA: Altamira Press.
- Vinnicombe, P. V. 1976. *People of the Eland: Rock Paintings of the Drakensberg Bushmen as a Reflection of their Life and Thought*. Pietermaritzburg: University of Natal Press.
- Whitley, D. S. (Ed.) 2001. *Handbook of Rock Art Research*. Walnut Creek, CA: Altamira Press
- Zaehner, R. C. 1962. *Hinduism*. Oxford: Oxford University Press.