



KEYWORDS: *Petroglyph – Dating – Taphonomy – Painted petroglyph – Colour symbolism*

COLOURING STONE: EXAMINING CATEGORIES IN ROCK ART

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Abstract. ‘Technique’ has long been a basic component of classification systems in Australian rock art. However, the identification of particular ‘techniques’ is based on the modern appearance of rock art and an arbitrary selection of attributes. This paper argues that in studies of Laura rock art, conventional definitions of technique have led to the development of possibly flawed models of chronology and style. Although Trezise and Woolston identified a minor ‘transitional’ technique of ‘infilled engravings’, paintings and petroglyphs have in general been presented as discrete technical (and chronological) categories. However, colour symbolism was an intrinsic part of Aboriginal culture and recent research suggests that coloured petroglyphs have comprised a widespread and enduring art form in this region. Importantly, ‘technique’ appears to be an insignificant category in local Aboriginal knowledge systems. This study aims to demonstrate that, in developing typological systems and chronological models, researchers need (1) to understand how natural processes and cultural perspectives transform rock art data and (2) to conduct local studies of these processes.

Introduction

In studies of rock art of the Laura region of north-eastern Australia, there has been an emphasis on technique as an element of classification and analysis (see Woolston and Trezise 1969; Rosenfeld et al. 1981; Maynard 1979; Trezise 1971; Flood 1987; Morwood and Hobbs 1995; Cole 1998). This approach has usually involved a separation of the art into discrete categories of engravings, paintings and stencils, although Trezise and Woolston (1969) identified a combined technique of ‘infilled engravings’. Trezise (1971: 128) argued that ‘[t]he outlining and sometimes complete infilling of the engravings with varying shades of red is obviously a separate style which bridges the gap between the petroglyph and pictograph techniques’.

However, in general, researchers have presented a dichotomy between engraved and painted art, which has resulted in particular models of chronology and style. This research has developed largely in the absence of cross-cultural perspectives and of serious taphonomic studies, including investigations of rock surface weathering.

In archaeological research, petroglyphs with red or yellow painted infill or outlines were identified in sites across the region (Cole 1998). Some examples are additional to the infilled petroglyphs recorded some years ago by Percy Trezise and Frank Woolston (1969). Rock surface and direct dating research conducted jointly by the author and Alan Watchman (e.g. see Cole et al. 1995) appeared to reveal micro-evidence of masked painted petroglyphs of some antiquity, suggesting that the technique had temporal as

well as spatial continuity.

An examination of Laura painted petroglyphs in the context of a range of new data provides an opportunity to assess conceptual frameworks, including the classification system and its capacity to provide an appropriate basis for the study of regional rock art through time.

Problems with rock art data

Major problems of archaeological data outlined by Hodder and Orton (1979) are particularly applicable to rock art research at Laura, e.g.:

- Spatial variation in site survival;
- Difficulties in recovering data;
- Inability to date sites accurately;
- Problems with the analytical techniques themselves.

In Cape York Peninsula as elsewhere, rock surfaces are highly susceptible to transformation through natural processes (e.g. see Rosenfeld 1988; Watchman 1990a; Thorn 1991; Bolle 1995; Bednarik 1994a, 2000). Aboriginal cultural practices have also contributed to site transformation, as in the covering, overlapping or renewing of previous marks by later episodes of rock marking (Cole 1988). Data recovery by researchers has been constrained by difficult logistics, costs and other factors associated with doing fieldwork in a remote area of Australia. Inability to date rock art has long been problematic, but direct dating research in this region has assisted recent analysis. Unfortunately, researchers, including the author of this paper (NC), have

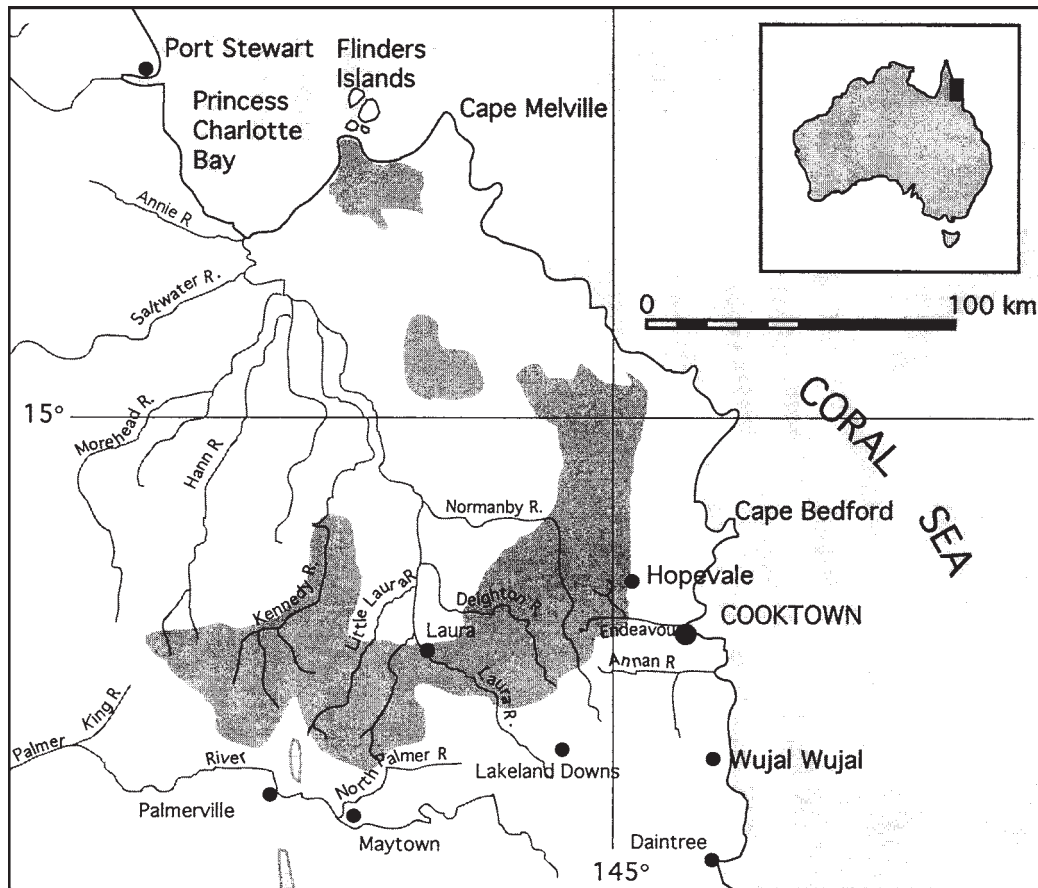


Figure 1. The Laura sandstone region, Cape York Peninsula, Australia.

drawn insufficiently on Indigenous knowledge systems which are essential to the epistemology of Australian rock art.

Differential preservation

Although the Laura sandstone region (Fig. 1) can be said to be somewhat geologically homogenous, it is environmentally diverse. Rock art places may be found on rugged cliff-lines and terraced escarpments, hilltops and plateaux, sandy alluvial plains and in densely vegetated gullies and ravines. Art occurs on walls and ceilings of rockshelters, on exposed (open air) boulders, pavements and river beds. In all contexts, rock surfaces have been affected to varying degrees by water wash, salt deposits, lichen growth, animal, insect, and human activity, and exposure to severe tropical elements (wind, sun, cyclonic rain). Not unexpectedly, the art which survives exhibits extremes of preservation and visibility, as a result of site and motif-specific factors.

Taphonomic theory is poorly developed in Australian rock art studies (see Bednarik 1994a, 1994b, 1994c, 2001: 156–8), although it is well known that differential preservation occurs according to the composition of paints, the rock matrix and macro and micro-environmental conditions (Rosenfeld 1988; Bednarik 1994d; see also Waters and Kuhn 1996 for effects of geological processes on the archaeological record). In the absence of detailed data on differential weathering, researchers need at least to emphasise the potential for natural transformation of rock art data

over time: colours change, motifs are masked, paints and rock surfaces erode, rocks fracture and collapse. What survives in the rock art record represents the cumulative effects of these processes and changes (Bednarik 1994a).

Culture and cognition

As the origins and functions of rock art lie essentially in the cognitive domain, the invention of visual categories to analyse style is especially problematic. Rock art researchers have long recognised that selection of attributes for archaeological study is an inherently subjective process (Clegg 1971, 1993; Maynard 1977; Layton 1992; Officer 1993; Bednarik 1991, 1994d). Classification systems comprise artificial constructs invented for the transformation of esoteric knowledge into 'data'.

The selection of 'technique' as a major element of rock art classification follows standard methods in archaeological stone tool analysis which emphasises a technical approach (but see cognitive analysis of stone artefacts by Taçon 1991). The 'technical' approach has at least highlighted the apparently diverse technological repertoire of Laura rock art, a feature which has been confirmed by paint and rock surface analysis (see Cole and Watchman 1992; Watchman et al. 1993; Cole 1998). However, rigid use of the standard categories and failure to incorporate Aboriginal knowledge may limit the capacity of rock art research to shed light on deeper cultural and cognitive values of the art.

Painted petroglyphs in the archaeological record

In this study a painted petroglyph is defined as any engraved mark to which colour in the form of wet paint or dry pigment has been added, either as infill or outline. For taphonomic reasons, the known distribution of painted petroglyphs is no doubt a poor indicator of the extent of this practice in the past. For example, it is likely that paint added to petroglyphs in open situations would not have survived. Most known petroglyphs of this kind are severely eroded, for example the river bed complex at the Laura crossing (Woolston and Trezise 1969) and the sloping pavement petroglyphs at the Amphitheatre site (Cole and Trezise 1992). These complexes are periodically affected by direct water flow as well as other forms of severe natural erosion.

At least twelve rockshelter sites in the Laura region are known to contain examples of painted petroglyphs. The sites have wide distribution but the technique appears to be more common in the western parts of the region. Current records of painted petroglyphs are summarised below:

1. Some forty engraved 'boomerang' motifs have been recorded on the sloping/horizontal rock floor of a rockshelter in the Kennedy River group (also known as St George River shelters) in the north-west of the region. At least one of the boomerangs has traces of red paint infill visible (Fig. 2). Woolston and Trezise (1969) and Rosenfeld (1981) studied and analysed these motifs, but did not refer to the existence of the paint infill.
2. A group of 'emu tracks' (or tracks of another large bird) occurs on a semi-exposed wall of Death Adder rockshelter, Jowalbinna (Fig. 3). Weathered remains of red infill are clearly visible inside the petroglyphs.
3. Trezise and Oribin (unpublished drawings n.d.) recorded engraved 'boomerangs' outlined in red and with interior lines, and a linear petroglyph outlined in yellow and infilled with yellow lines at Little Kennedy River (Fig. 2).
4. A detailed recording of fourteen Hann River sites (Cole 1998) revealed the presence of at least forty-six petroglyphs with traces of red or white infill or red outline. These include engraved 'boomerangs' located high on the sloping ceiling of Hann 1 rockshelter (Figs 4 and 5)

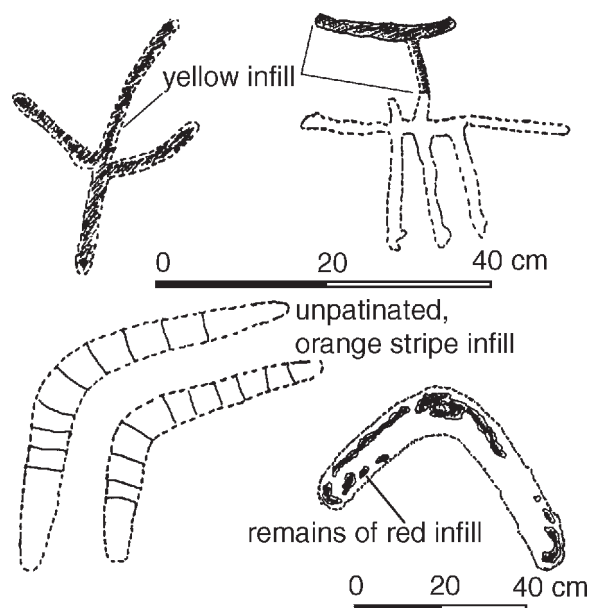


Figure 2. Engraved motifs with paint infill at Kennedy River (lower right) and Little Kennedy River (upper two figures and lower left) (after Trezise and Oribin n.d.).

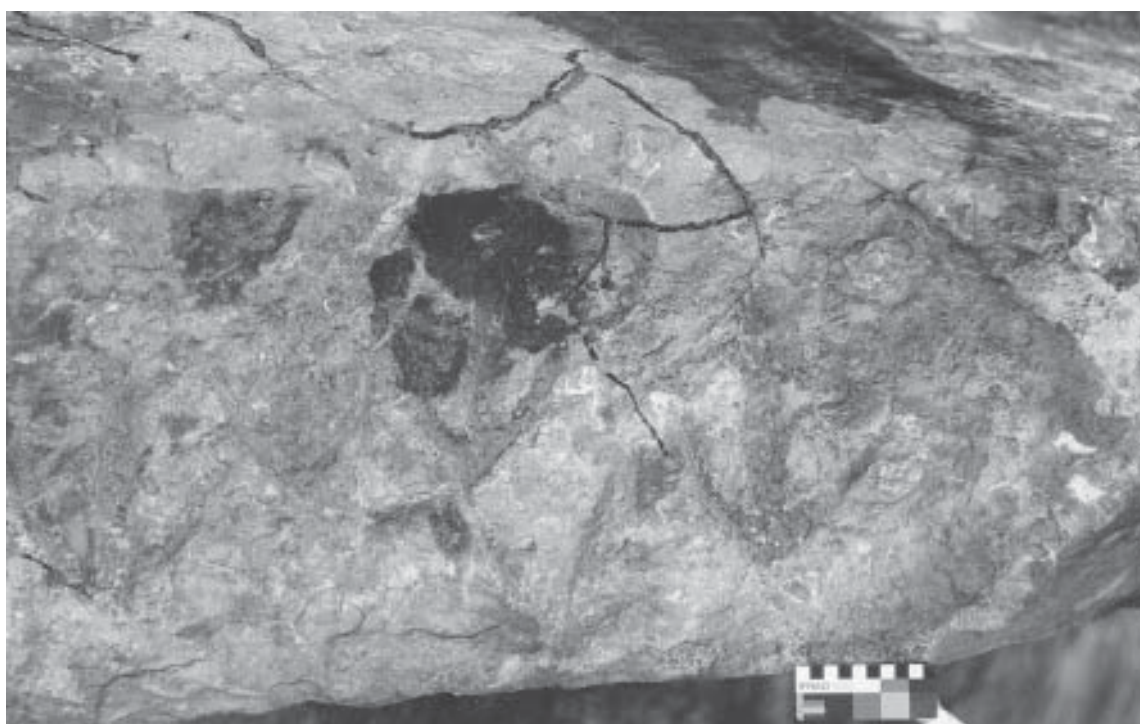


Figure 3. Engraved 'bird track' motifs with red paint infill, Death Adder rockshelter.

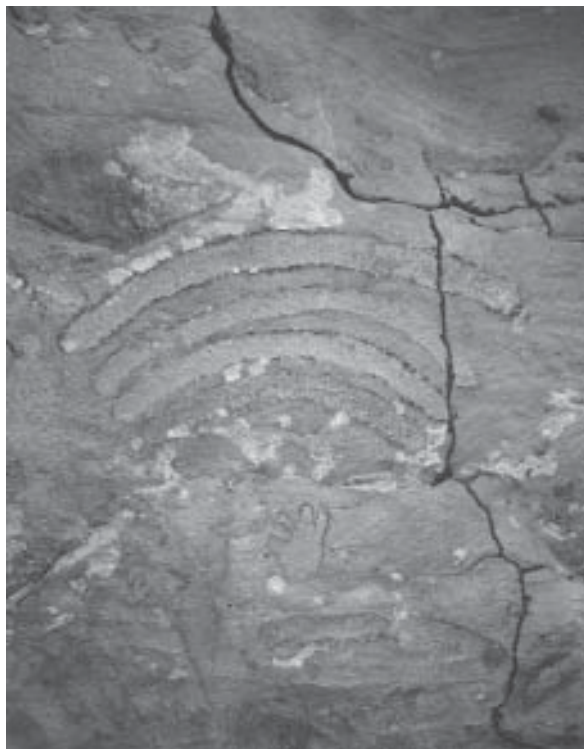


Figure 4. Painted engraved motifs including 'boomerangs', Hann River 1 rockshelter.

which was recorded by Trezise (1971) and later excavated by Morwood and L'Oste-Browne (1995). Paint added to the 'boomerang' petroglyphs has been in the form of red outline and/or red interior lines or bands and in some cases white infill. Other Hann sites contain examples of engraved 'eel/catfish' and anthropomorph motifs with paint infill and/or outline in red or white.

5. Flood (1987) recorded engraved pits with painted outlines in rockshelters of the Koolburra Plateau in the north-west of the region.
6. In the course of direct dating of petroglyphs analysis was conducted in association with archaeological research in the course of the Quinkan Prehistory Project (Morwood and Hobbs 1995; Morwood et al. 1995; Cole et al. 1995). In this research micro-samples of paint were identified in rock surface accretions associated with a radiating form petroglyph at Sandy Creek 1 and the Quinkans (see below).

Direct dating research

AMS direct dating research has been conducted in a number of sites of the Laura region since the early 1990s, under permit from the Queensland Environment Protection Agency and Ang-Gnarra Aboriginal Corporation (see Campbell et al. 1996; Cole et al. 1995). Research into rock crust formation (Watchman 1990a, 1990b, 1992, 1993a, 1993b) has complemented dating results obtained in joint research by the author and Alan Watchman (e.g. see Cole 2000; Cole and Watchman 2005).

It has been concluded that much of the rock art visible on the rock surface today dates from within the last one to

three thousand years (Cole et al. 1995). Rock art more than 3000 years old is likely to be masked by surface accretions or crusts formed from deposition of dust and salts. Most of the directly dated paintings provide AMS 'numbers' ranging from around 600 to 1200 years BP, suggesting that much surviving pigment art probably dates from the last millennium. Results from dating research conducted in the early 1990s (see Cole et al. 1995) are of relevance to studies of painted petroglyphs, as in the two examples that follow.

In an early stage of direct dating research at Laura, a minute sample of crust was removed from an area immediately adjacent to, and possibly part of, an encrusted radiating form petroglyph on a rock-fall situated in the central part of Sandy Creek 1. The crust was found to contain traces of red and yellow pigment (haematite and goethite) at the base of the oxalates.

A date of 2810 ± 150 BP (NZA-1206; calib. 2904 BP) for the oxalates provides a minimum age for the pigments and the petroglyph (Cole et al. 1995). As oxalate has been forming in the area for at least 25 000 years (Watchman 1993a) it is reasonable to assume that oxalate began to be deposited in the petroglyph soon after it was made. This means that the petroglyph or even its reworking may be about 3000 years old. It is possible that the pigment particles were deposited inadvertently on the rock surface at some stage during painting episodes at the site. However, it is more likely that pigment was applied deliberately as infill or outline. Such painted remains have also been identified in crust samples removed from petroglyphs at Chillagoe (Watchman and Hatté 1996).

In the same phase of fieldwork, a sample of oxalate crust was removed by micro-excavation from a small petroglyph on a ledge which protrudes from the rear wall of Quinkans site QB5. This petroglyph can be described as a 'radiating form', for another example see Rosenfeld et al. (1981b: Fig. 30). The sample was dated at approximately 2850 ± 115 BP (AA-9222; calib. 2957 BP; see Cole et al. 1995). A layer of yellow pigment was found at the base of the crust, indicating that this petroglyph may once have been infilled with paint, as in the case of the radiating form at Sandy Creek 1. 'Asymmetrical radiating forms' similar to the Quinkans design were allocated by Rosenfeld (1981b: 86) to the Early Man complex of earlier Laura rock art.

Although the absolute age of other painted petroglyphs is not known, the emerging pattern of direct dating results suggests that the addition of paint to petroglyphs dates from within the last 3000 years. Results of direct dating associated with the radiating forms (above) suggest that the practice of painting petroglyphs goes back at least 3000 years. The motif range of painted petroglyphs covers a range of Laura (Quinkan) style, for example 'tracks', anthropomorphs, 'boomerangs' and non-figurative motifs.

Cultural traditions and processes

British colonisation had limited impact on Aboriginal populations of south-east Cape York Peninsula until the 1870s. From then, the Palmer River gold rush and expansion of the pastoral frontier had devastating effects on Aboriginal people of this region (Cole 2004). As a result of

Sample/motif	Dated material	RC No.	Date BP
SC1/radiating form	Red and yellow pigments at base of oxalate crust which lies over radiating form petroglyph	NZQ-1206	2810 ± 150
QB5/radiating form	Layer of yellow pigment at base of oxalate crust which lies over radiating form petroglyph	AA-9222	2850 ± 115

Table 1. Direct dating of Laura radiating forms with paint infill (after Cole et al. 1995)

violent conflict which lasted several decades, many patterns of traditional land use were shattered, but it is known that 'old people' continued to create and maintain rock art throughout the post-colonial period, at least until around the 1920s (e.g. see Trezise 1971).

The continuity of regional cultural traditions has been maintained by Aboriginal people since that time. In the 1960s and 1970s, Old People such as Jerry Musgrave and Joe Musgrave of the Kuku Thaypan language group, Willy Long (Olkolo), George Pegus (Kuku Yalanji), Harry Mole (Koko Warra) and Caesar Lee Cheu (Ogh-Ikarranggal) recorded cultural knowledge with the assistance of Dick Roughsey, Percy Trezise and the (then) Australian Institute of Aboriginal Studies (see Trezise 1969, 1993). Willy Long and Jerry Musgrave, for example, guided Dick Roughsey and Percy Trezise to the Hann River rockshelter sites referred to above (Roughsey 1977; Trezise 1971). In the 1990s, oral history recording and site recording sponsored by Ang-Gnarra Aboriginal Corporation has continued the process of documenting knowledge held by contemporary Aboriginal people.

George Musgrave is a member of Ang-Gnarra Aboriginal Corporation. He is also a member of the Awu Laia people (one of the last surviving speakers of Kuku Thaypan language, or, to use its speakers' own name, *Agu Alaya*, 'Taipan Snake Language'), and an Elder of the Kuku Thaypan and Laura communities. George Musgrave grew up on Musgrave Station north of Laura and learned traditional ways from his parents, grandparents and other Elders. In recording the course of a community archaeology and oral history recording project information on ways of caring for rock art (1999–2001; see Cole et al. 2000), George Musgrave has explained that Kuku Thaypan language speakers do not use different words to describe different ways of creating marks on the rock, that is for making paintings, engraved marks and so on. Instead, they use a Kuku Thaypan language word which translates roughly as 'a mark on the rock'. Different words are used for marks on the body, marks on wood and so on. Kuku Thaypan language does not identify 'technique', as perceived by rock art researchers, to be of particular cultural significance. Words signify ideas, and in this case, language sheds important light on cultural ideas and values.

Colour symbolism

In a handbook for an exhibition of contemporary Australian Aboriginal art, Gage (2000: 5) noted how the use of traditional pigments 'is closely bound up with their origins in the land'. In the Laura region the availability of high-quality pigments made these earth colours an essential com-

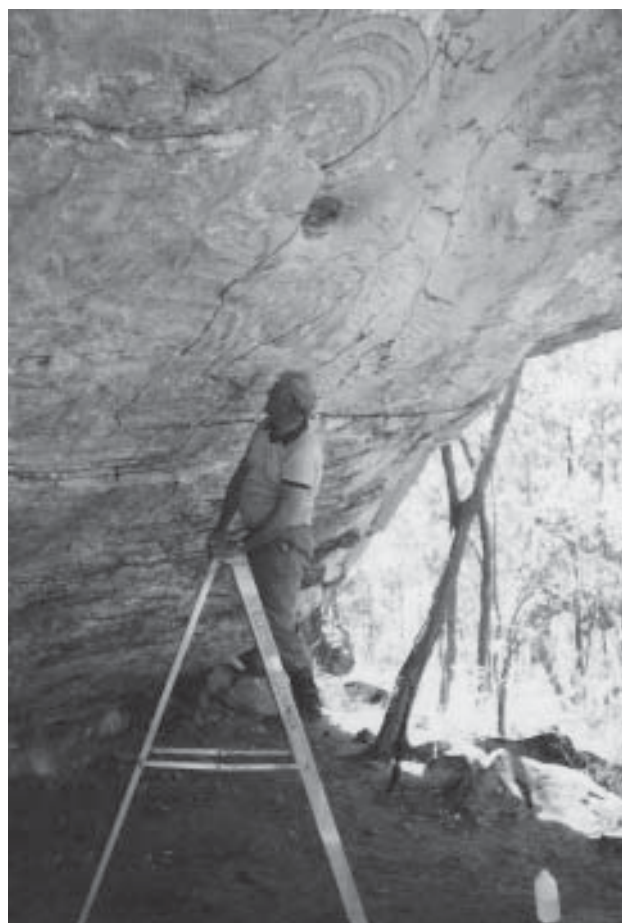


Figure 5. Hann River 1 rockshelter with high walls covered in petroglyphs and painted petroglyphs. Alan Watchman examines rock surface for direct dating prospects.

ponent of rock marking. Laura rock paintings are based on the colours of ochres and clays, although other natural materials were also used in paint (Cole and Watchman 1992). Analysis of paints has provided much evidence for the selectivity of colour ingredients and subtle distinctions between different paint ingredients (Watchman et al. 1993; Cole and Watchman 1992).

George Musgrave (pers. comm. 2000) has described how Kuku Thaypan people would put red colour in a big mark of a particular figure nicked out of the rock. Sometimes the paint was obtained from a block of red rock, which was brought in from the west. This was a ceremonial practice accompanied by dancing and the use of special language. Colour was also important in Aboriginal body painting and in making artefacts. The yellow colouring from orchids was traditionally used to decorate dilly bags. To

this day Kuku Thaypan Elders such as George Musgrave and Tommy George continue to decorate spears and woomeras with designs in red and yellow.

This type of colour symbolism is a widely documented feature of Aboriginal art and life on Cape York Peninsula. Roth (1904: 7) cited examples of the opposing cultural values of red and white in various districts of North Queensland. Thomson (1933) documented colour systems in body and artefact painting of the Koko Yao people of Cape York Peninsula. In western Queensland Alice Duncan-Kemp (1933: 109) wrote that 'every flat rock or stone was a ... colour canvas'. She described 'Naiari' ceremonies peculiar to women and the creation of colourful sand maps by Aboriginal people:

Taking coloured sands, ground clays or kaolins (ochres) between thumb and finger, and working with practised deftness and accuracy, they drew huge sand tapestries, radiant with rainbow colour. Animals, plants, insects, and reptiles were represented according to their place in aboriginal history or stellar mythology' (Duncan-Kemp 1933: 108-9).

Red ochre was used to 'polish' petroglyphs at Lawn Hill and in the Kimberley region (Walsh 2000). It is evident that coloured petroglyphs are widely distributed elsewhere in the world as seen in the coloured Buddhist images carved into the sandstone rocks of Dazu, China, and Sweden's Bronze Age petroglyphs which were said to be traditionally coloured with ochres (U. Bertilsson pers. comm. 2000).

Revising stylistic models in the light of new data

Woolston and Trezise (1969) were the first researchers to propose a chronological model for Laura rock art. They argued for a stylistic progression from petroglyphs and stencils to pigment art, with an intermediate or transitional style of paint-infilled petroglyphs. Probably because of the apparently limited extent of this latter type, it was not referred to in later research of Rosenfeld et al. (1981); Flood (1987), Maynard (1977) or Morwood and Hobbs (1995).

Based on indirect dating of the buried Early Man frieze of petroglyphs at around 14 000 BP, Rosenfeld et al. (1981) argued that these petroglyphs typified earlier art of the region. However, we now know that Aboriginal use of pigment in rockshelters appears very early in the regional cultural sequence. This is revealed in a series of dates for traces of pigments in wall nano-excavations (Watchman 1993a) and utilised pigments in floor excavations by Morwood, Hobbs and Price (1995) and Morwood, L'Oste-Browne and Price (1995). These dates point to the use of pigments (and probably the creation of rock art) in rockshelters as early as c. 30 000 BP. This evidence does not support the theory that painting was a later cultural development or that painted petroglyphs represent an intermediate stage between successive techniques of petroglyph and painting.

Ethnographic evidence relating to the importance of earth and colour symbolism, the differential survival of painted petroglyphs and direct dating research suggest that many petroglyphs were once infilled and/or outlined in colour. The colouring of engraved art may have been a standard feature of cultural practice for thousands of years. It

is possible that petroglyphs were regularly renewed not only by repeated pecking or bruising of the rock, but by addition of paint in the usual colours of red, yellow and white.

It is significant that the known examples of painted petroglyphs lie in sheltered or semi-sheltered situations. Although the tradition of making large engraved figures of animals, people and tracks on rock platforms and other open sites has not been dated using AMS radiocarbon dating techniques, it is likely that these particular petroglyphs are relatively recent in age (Cole et al. 1995). However, paint added to such open-air petroglyphs would be unlikely to survive.

Implications: new models needed

A range of data has contributed important insights into cultural and taphonomic processes, providing a means of assessing analytical methods that have shaped past research. It is clear that chronological and stylistic models developed in the absence of taphonomic considerations, absolute dates and cultural knowledge are likely to be flawed (see Bednarik 1994a, 2001). New models are required which apply direct dating research and recognise the taphonomic sensitivity of rock art, its essentially cognitive nature and, in this region, the continuity of the rock art tradition.

Models for the Laura region need to recognise that from the beginning, Indigenous societies had colour symbolism firmly embedded in their cultures. A culturally sensitive, taphonomic model of Laura rock art would reveal a landscape of colourful rock markings which express the diversity of Indigenous societies of this region, their culturally unifying ideas and their intrinsic connections with the land.

In the long history of rock art there was no simple linear progression of technique and style across the millennia following outdated notions of art history (see Preziosi 1989). There was more likely a dynamic natural and cultural continuum in which societies and individuals constantly interacted with each other and their environments in creative ways. The surviving rock art of the Laura region points to an extremely complex cultural (and environmental) scenario, at least in the last few thousand years.

Traditionally, analysis of Australian rock art requires 'scientific' categories to support research models that are designed to lead us in predictable directions. However, it is essential that scholarly perceptions should be developed in the context of the natural and cultural processes which have created the rock art that we see today. Although most of our understanding of early Australian rock art style comes from petroglyphs, it appears that Aboriginal people have long used a range of methods, processes and earth colours to create rock art. The assumption that surviving assemblages are representative of tens of thousands of years of Aboriginal culture and history is untenable. A reliance on rigid classification systems, which pay little attention to Aboriginal knowledge systems, is equally flawed methodology. Local taphonomic studies, which address both natural and cultural features and processes of rock art, should be prerequisites to the development of regional models of chronology and style.

Acknowledgments

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RAR 23-754

It is with great sadness that we advise readers of the sudden death of Dr George Musgrave on 9 February 2006, aged 86 years. George was an elder of the Kuku Thaypan or Awu Laya people of Cape York Peninsula and a strong and active community leader in Laura. He was one of the last fluent speakers of Kuku Thaypan language and an authority on traditional land management practices. After retirement from the pastoral industry and employment as a tracker for the Queensland Police Department, George contributed to many research projects documenting the cultural and natural heritage of the Laura region, as in the Awu-Laya Traditional Knowledge Recording Project, initiated by George Musgrave, his brother Tommy George and their close family friend Victor Steffensen. In recognition of this and other achievements in education and cultural and environmental studies, George Musgrave and Tommy George were each awarded the Degree of Honorary Doctor of Letters by James Cook University in 2005. An obituary for George Musgrave will appear in a later edition of *Rock Art Research*.

Noelene Cole and Robert G. Bednarik