AN OVERVIEW OF AUSTRALIAN INDIGENOUS ENGRAVED ROCK ART

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INTRODUCTION

Indigenous Australians have an extensive history in Australia having lived on the continent for some 40,000 years or so (Layton p1). Traces of the inhabitation and civilization of Australia are preserved in the thousands of rock engravings, or petroglyphs, spread throughout the country. The engravings are found on rock outcrops, overhangs, caves and large rocks protruding from the surface of the ground. The engravings most commonly appear on sandstone.

Individual sites may contain a 1,000 or more petroglyphs such as those at Ewaning, near Alice Springs, Northern Territory (Wikipedia Ewaning). Regions such as the Sydney Basin, are claimed to have had up to 10,000 such petroglyphs prior to European settlement (Stanbury 1996).

Despite the numerous engravings there is no evidence of a tradition of glyptic arts other than the petroglyphs on sandstone. Indeed, authors Elaine Godden and Jutta Malnick claim:

> *'No examples of art using permanent materials, no decorated objects or sculptures of stone, clay or bone, have yet been excavated in Australia.'* (Godden and Malnick 1997, p 9).

As far as modern Indigenous engraving and carving on hardstone is concerned there appears to be little, if any, documentation readily available (e.g. Caruana 2003) and engravings appear to be limited to shell (e.g. Berndt, p 143).

This overview will therefore discuss the sandstone engravings with reference to techniques, dating and design with limited observation of recent carvings.

DOCUMENTATION

1. The most comprehensive documentation of sandstone engraving, discovered in the course of this research, is by Peter Stanbury and John Clegg in the book '*A field guide to Aboriginal rock engraving'* (Stanbury and Clegg 1996). The book is limited to the Sydney Basin region but gives detail of locations and includes drawings with some reference to size of the main petroglyphic sites around Sydney.

2. A CSIRO sponsored website, ‘Sydney Aboriginal Rock Engravings’, provides a selection of photos of many of the popular engravings in the Sydney environs (Norris, n.d.).

3. Robert Layton’s *Australian rock art – a new synthesis* (Layton 1992) analyses the scientific data relating to rock paintings throughout Australia and includes some detail of rock engraving.

4. Robert and Catherine Berndt’s book, *Aboriginal Australian art – A visual perspective* (Berndt 1982) also provide some information on rock engraving.

5. Elaine Godden and Jutta Malnick’s 2008 publication *Rock Paintings of Aboriginal Australia* (Godden and Malnick 2008) provides excellent photography of paintings with discussion of styles and some references to engravings.

SANDSTONE IN AUSTRALIA

Sandstone is a sedimentary rock comprised of grains of quartz and other minerals compressed together. It is a soft rock easily worked but highly vulnerable to the elements. It is affected by wind and water, which abrade the stone, and temperature and microbial action, which can cause the stone to expand and fracture. These elementary actions are the main reason why many of the pre-historic engravings and paintings have disappeared, decayed or deteriorated. Vandalism is also a serious issue (Layton 1992).

Sandstone features prominently in Australia in geological terms and examples of its varied uses can be found in the construction field, the architectural arts, sculptural and monumental works. It has rarely, if at all, been used in jewellery work and does not qualify as a gem for use in gemstone works.

Due to its coarse grained, crumbly nature it cannot be worked to a fine edge for use as a cutting tool or weapon. Its ability to be used as weapon would be limited to a dull club-like instrument.

ENGRAVING SANDSTONE

The ease of workability of sandstone may explain why the early Indigenous people did in fact carve the stone.

Sandstone can be worked with any other commonly occurring hardstone and can even be carved, albeit slowly, with a hard pointed stick.

In general, it is claimed that the extant engravings were made by either *pecking*, using a tool to chip away the stone either directly or indirectly (e.g., like using a

chisel and hammer); *pounding* by impacting the surface with another object; *boring*, drilling into the stone; and *abrading* by dragging a tool across the stone (Stanbury 1996 p1, Layton 1992 p183, Mott, D 1998). Stanbury (at p1) also mentions a technique of *cutting* although this is not elaborated upon.

While Layton claims that fully abraded figures are rare (p. 183) (although it appears this claim is made in reliance of others observations such as Mountford 1955), Stanbury and Clegg provide the most detailed observational notes on the Sydney engravings;

> *A typical groove is a shallow smooth line, with a U shaped cross-section. It may be 5mm deep and 20mm wide. At intervals the grooves deepen into holes up to 10mm deep and across. McCarthy (e.g. 1972, p. 58) thought that the holes or 'punctures' were made first and were later joined up by rubbing, and, he accordingly called the normal grooves 'conjoint punctures'. In some figures the punctures have not been joined; in others, the whole grooves are smooth, with no sign of punctures* (p119).

Stanbury further states that the grooves are now seldom more than 2 – 3mm deep but, interestingly, notes that the Aborigines used to re-groove the figures presumably during ceremonies (Stanbury 1996 p2). Stanbury also conducted some limited tests and found that a human size figure could be carved in about one day (Stanbury 1996 p119).

In the field of lapidary, *pecking* is not a generally used technique mainly due the characteristics of the fracture of gemstones. The closest technique is *knapping* whereby a stone with conchoidal fracture, such as obsidian or flint, is chipped toward the edge to remove small or large sections of the stone. *Pecking* though, would be suitable for sandstone as, once a small concave is commenced in the surface, the concave can be readily increased. It is difficult however to control the exact size of the material being removed in sandstone, due to the nature of its fracture lines, and is therefore a technique for coarse removal only. It is possible the grooves of the Indigenous engravings were commenced with the pecking technique then finished by abrading.

The reference to *boring* or drilling warrants some comment. Boring or drilling is a rotational force used with abrasive to produce a circular hole. The ancient technique of boring stone involved a drill made of wood rotated by a bow, hence the bow drill (Ming 2011). I am unaware of any reference to the Indigenous use of a bow drill. The only other obvious way of producing rotation is with the hands to twist the drill by rubbing; the same as making fire with a rubbed stick, which is apparently the most difficult way to make fire.

McCarthy's theory that the figures were made by joining a series of holes would, in my opinion, be quite laborious, and raises the question why would the Aborigines choose a more laborious method when, if they understood pecking and abrading, would know which methods are easier. It also seems a strange method for producing an engraving. One would simply assume that the figures were first outlined with a chalk type marking material or lightly scratched with a stick then abraded. Evidence of these holes is also not readily apparent from the photographs in Stanbury's book

though there are some depressions in the grooves that could suggest drilling. On the other hand It is possible that a group of carvers produced the engraving by joining up each groove and that not all of those grooves were of equal depth and hence over time, by erosion, have widened and taken on the appearance of a hole. The drilling theory could be further researched.

Considering Layton's opinion that abraded engravings are rare (Layton 1992, p183), suggests that the engravings were made by percussive methods such as pecking and pounding. The pounding method is extremely course and labour intensive and, in my opinion, unlikely to produce a satisfactory result. The pecking method as discussed above, could produce a reasonable result. However, as the finish is not smooth, it is not unreasonable to suggest that the original carver would not be entirely satisfied with the result and would smooth the carving with the abrasion method.

Layton's opinion on abrading also sits uncomfortably with Stanbury's empirical findings that the grooves can easily be made at the rate of 1.25 meters per hour. It is to be noted though that Stanbury was following McCarthy's theory of making pits first then joining them (Stanbury 1996 p120).

Other stone engravings found in Central Australia, referred to by Godden and Malnick, are claimed to be '*pecked engravings and that stone tools were also found near the engravings'* (Godden and Malnick 2008, p 10). Godden and Malnick's description of 'pecking' though contrasts with their later reports of modern Aboriginals stating they did not create the studied engravings and make their modern engravings by pounding not pecking.

If the method of pounding is the traditional method handed down through generations, it suggests that the Aboriginals had little if any knowledge of slightly more advanced methods of engraving, such as pecking, or, that those techniques have been lost throughout the ages. Either way, this is not a comfortable proposition.

From these accounts there is clearly a great deal more research required for a reasonable theoretical model for the engraving techniques.

DATING STONE ENGRAVINGS

There appears to be no direct method currently available for dating stone engraving. According to Layton (Layton 1992, p 212) in 1992 the methods available were:

1. Radio carbon dating of surrounding or overlaying of organic debris.
2. Dating of calcrete deposits (Dragovich 1984 and 1986 referred to by Layton)
3. 'Desert Varnish' ratio cation dating. Though Layton was uncertain of the reliability at time of his writing.

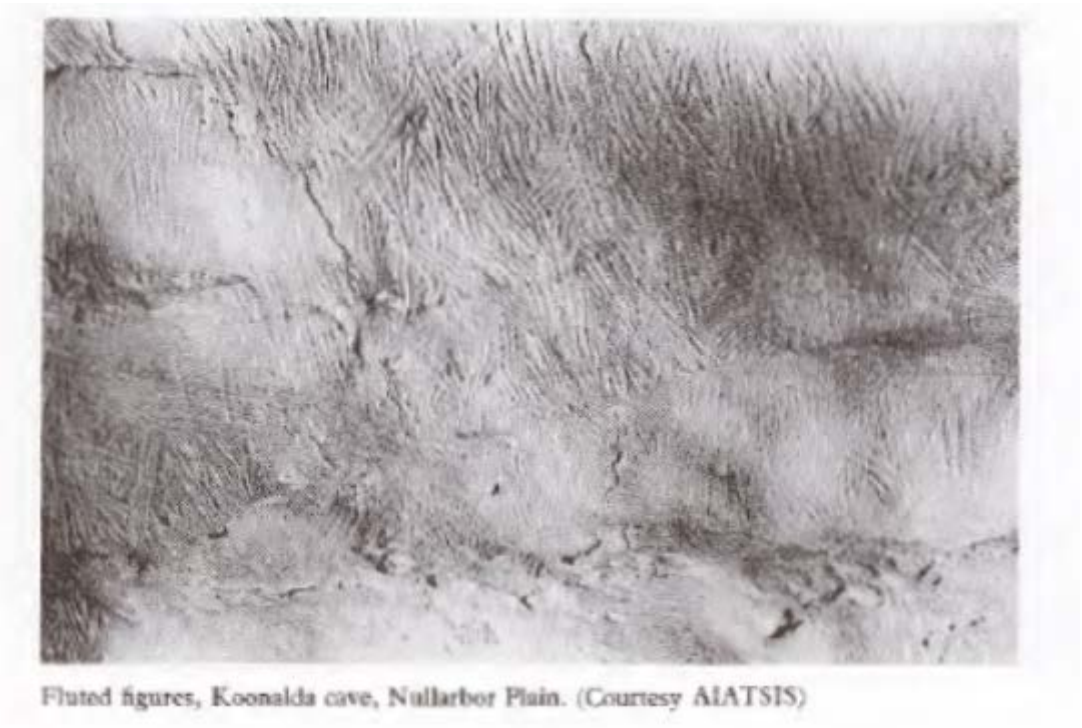
4. Indirect dating of inhabitancy, such as shelters etc. in the area
5. Indirect dating of flora and fauna
6. Indirect dating by reference to artistic styles

According to Layton none of the methods are entirely reliable and indeed the cation method has produced results spanning up to 30,000 years (Layton, p212).

Given these difficulties Layton reports the earliest known engravings, the *Early Man Engravings* at Laura, North Queensland, were radio carbon dated at 13,000BP and this date was obtained by dating the habitation debris that had fallen on top of the engraving (p 213).

However, according to Godden and Malnick, the earliest known rock carvings date back more than 20,000 years. These were discovered in the Koonalda Cave, a limestone cave on the Nullarbor Plain (see Plate 1). The carvings are apparently ‘closely massed patterns of parallel grooves’ and ‘cross hatched lines’ in soft limestone, possibly made by fingertips and may relate to ‘diffusions routes’ into the continent or geographical or cultural regions (Godden, E, Malnick J 2008, p 9). This is somewhat clarified by Layton who states that the date of the carving is ‘implied’ from the occupation dates of the cave which range from 22,000BP to 15,000BP (Layton, p214).

Plate 1. Koonalda Caves, limestone engravings



Fluted figures, Koonalda cave, Nullarbor Plain. (Courtesy AIATSIS)

Source: Layton p4

On the east, the Sydney rock engravings are estimated to between 200 to 5,000 years old (Stanbury p 5). The lower range is established by the discovery of engraved ships of European style at Devils Rocks, Maroota (Stanbury p 96). Older dates rely on dating methods discussed above.

There has been some recent research by scientists on the effect of weathering on sandstone. Thomas Paradise studied weathering on the sandstone tombs of Petra, Jordan and found decay rates in the range of 15 - 70 mm per thousand years on horizontal surfaces, to 10 - 20 mm/k.y on vertical surfaces (Paradise 2005).

In 2008, scientists at the University of Newcastle studied rate of sandstone weathering upon gravestones in the semi-arid climate of the Hunter Valley New South Wales Australia. The scientists published a rate of 0.5 mm per hundred years in the first hundred years followed by a second stage increasing to approximately 2.5 mm per hundred years. They found the rate of decay to be non-linear (Wells et al 2008).

Based on these findings it could be argued that the rate of decay of sandstone in the Sydney region with a climate not too dissimilar to that of Newcastle (being only 160 kilometres away), is approximately 30 to 50 mm per thousand.

If the Sydney engravings are now only approximately 5 mm deep then, based on the above decay rate of 30 mm per 1,000 years, a carving made 5,000 years ago would have been initially 150 mm deep. I would argue that that is not correct and that the carvings were never intended, nor made, that depth. From an artistic perspective, a

reasonable depth for the engravings might be around 50mm which would be deep enough to attract shadow and give shape and form to the figure (depending also on the width of the groove). If they were carved initially at about 50mm depth then the age would be less than 2,000 years.

It is also possible that Aboriginal artists re-grooved, or even regularly re-grooved during ceremonies, which necessarily confuses the results of dating methods. As a side issue though, the concept of re-grooving is arguably a form of preservation which could perhaps be revived by modern day custodians.

It is however, impossible with current technology to accurately know the true history and dates of the carvings.

INDIGENOUS ARTISTIC STYLES

There seems little debate that the Indigenous designs in general represent an extension of their makers' beliefs, customs, lore, mythology and land and, were not, at least traditionally, made for the sake of their artistic value alone. Because of the nature of Indigenous civilisation (i.e. organised into groups, clans, communities etc.) spread across the country with many different languages and dialects, it is difficult to conclude a meaning for any particular image. What appears as a kangaroo to some, for example, may represent a clan to one group, something different to another, and something altogether different to a tourist (Stanbury p 6-7). Because of this each set of designs must be interpreted according to the ritual, social and political context of the particular region in which it appears (Caruana p 14).

According to Berndt, much of the intricate detail of the design, such as lines and circles, represented an abstract record of a particular place and is a common theme found in many regions. Apparently it was a collective choice of landscape that had a bearing on style and this choice was of landscape and mythology rather than portraiture (Berndt p36). The exceptions to this are images such as the *Wandjina*.

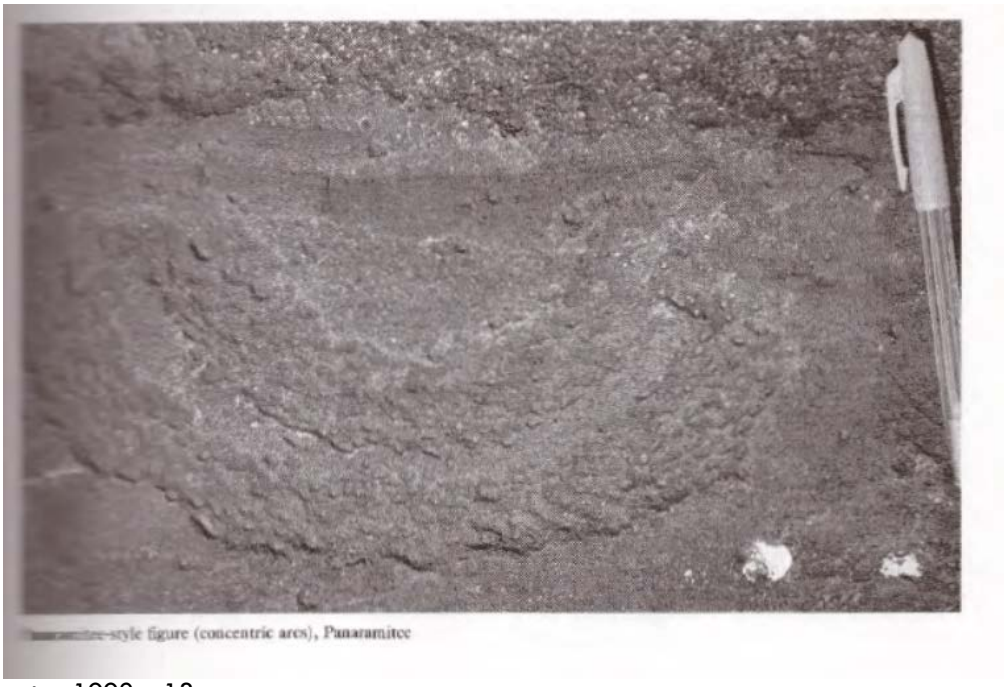
These designs and images are therefore created to represent elements of the *Dreaming.* The Dreaming being the term used to describe the natural, spiritual and moral order of the universe, the laws of social and religious behaviour, record the activities and deeds of ancestral and supernatural beings and moreover provide a framework by which society may be conducted. The '…events of the Dreamtime provide the great themes of Aboriginal art' (Caruana p10).

In general, Indigenous artworks, whether engraved or painted, have been categorised into 3 main styles, based on technique, form, motif, size and character (Godden & Malnick 1997, p11):

Panaramitee Style

Stone engravings found in Central Australia are known as the Panaramitee style. This style, being the earliest, is defined by engraving as it is unlikely any rock paintings remain. The engravings appear as bands and solid forms that look like birds, animal tracks, lizards and a few other figures. The non-figurative motifs include circles, often perfectly concentric and very common, crescents, groups of dots, radiating lines and line mazes known as tectiforms. The emu and kangaroo tracks at Ingerladdi, NT, dating around 4,000 – 7,000 years are an example of the Panaramitee style (Godden, E, Malnick J 2008, p 10).

Plate 2. Example of Panaramitee style engraving. Concentric rings



Source: Layton 1992, p13

Plate 3. Pecked Panaramitee style engravings

Figure 21 - An example of a unique geometric design featured at Panaramitee North site.

Source: Mott 1998 p 48

Plate 4. Graffiti

Clearly visible in this image is the peace sign and an arrow. The peace sign is highly suggestive of the peace movement of the 1960s and 1970s. The engraving is pecked and each image appears to contain the same degree of weathering. Possibly an example of misleading labelling Panaramitee by the web authors. Likely to be graffiti from the 1970s by unknown authors.

Source: Google Images, viewed 20 March 2013, https://www.google.com.au/search?q=panaramitee+style+aboriginal+engravings&hl=en&client=firefox-a&hs=mnK&rls=org.mozilla:en-US:official&source=lnms&tbm=isch&sa=X&ei=TwRRUbidNIiUiQf-3YFw&ved=0CAoQ_AUoAQ&biw=995&bih=506

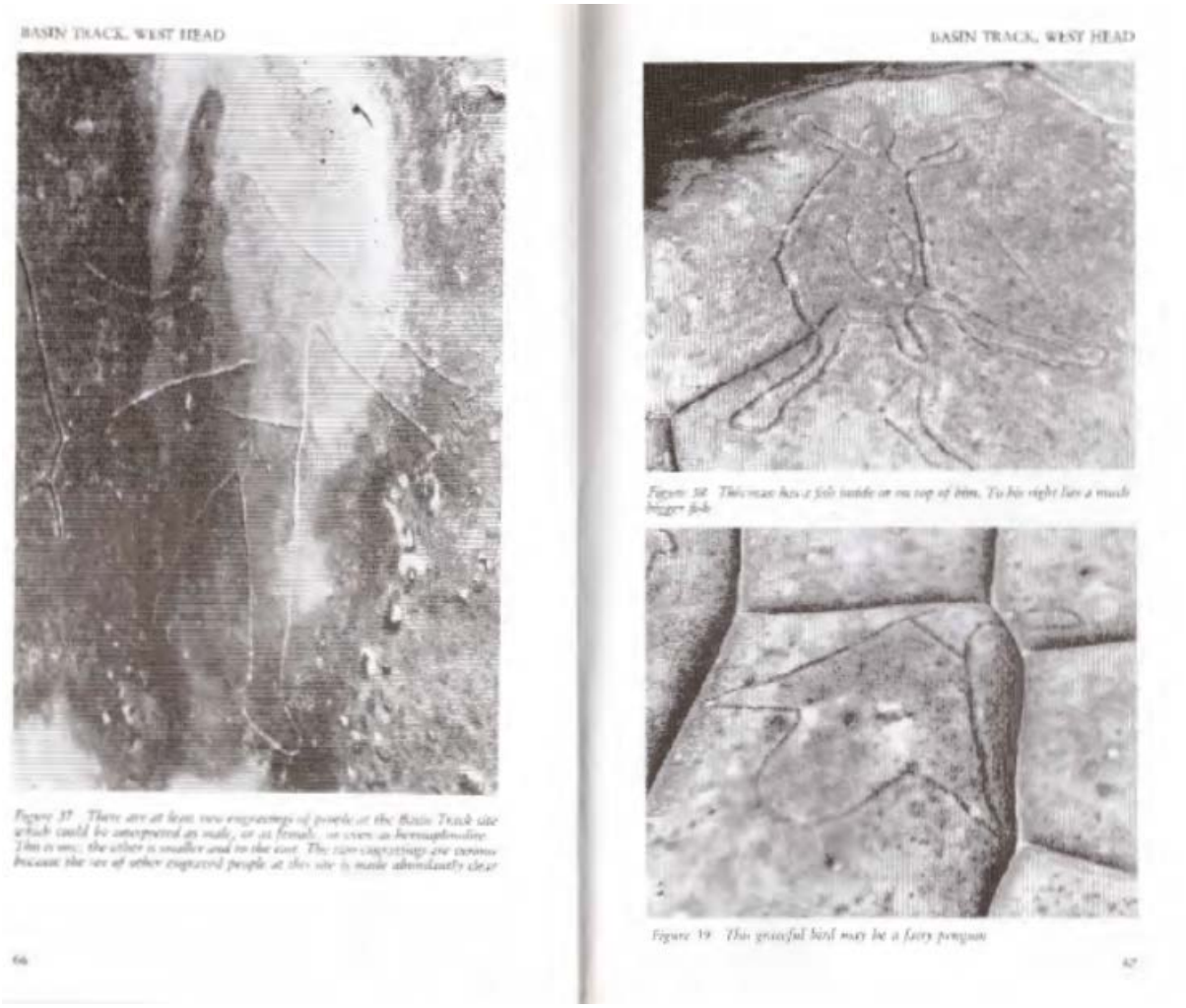
Simple Figurative

The next major artistic style is the ‘simple figurative’ which also included engravings, and appears as simple silhouetted or solid forms of human and animal figures with decoration of second colour outlines or in-fills of stripes or dots. Sydney Harbour engravings are an example of this style and which are speculated to date back some 5,000 years (Norris n.d; Gooden and Malnick p 12).

Plate 5. Figurative engraving of young girl

Source: Norris,
http://www.atnf.csiro.au/people/rnorris/SydneyRockArt/sites/Basin/sm_P4110034.JPG

Plate 6. Simple Figurative style - Basin Track, West Head, NSW engravings



Source: Stanbury 1996, p 66 & 67

Complex Figurative

The more recent style of 'complex figurative' includes the pounded engravings of Pilbara, Mimi and X-ray style painting and extends to more modern times with representations of horses, Dutch smoking pipes, English ships etc. This style features delicate line work to portray features such as internal anatomy, depictions of action, decorative and ornamentative, with explicit sexual themes being common (Godden and Malnick p12). Sydney rock engravings contain examples of this style (see photo's on Norris website) and the *Wandjina* of the Kimberley region is also classified under this category.

Plate 7. The Wandjina Warmaj, Muli Muli, Lejmarro, Kimberley, Western Australia

Source: Godden & Malnick plate 1.

Interestingly, although the Wandjina is a common theme for rock painting there appears no examples of engraved images.

RESEARCH FOR MODERN CARVINGS

None of the books referred to in this paper contain any indication of modern carvings with hard stone as the medium.

Extensive Internet searches found only 3 pictures of carvings on the Trove database. These are simple line type engravings on an unidentified red stone, created at some stage in the 1970's. No author is attributed to the carvings.

Plate 8. A Modern stone carving

Description
An irregular-shaped carved stone board with incised Wandjinas in a bush setting with vegetation, a snake, an emu, and a kangaroo. The setting is on a red-ochred background. The location is Mowanjum, near Derby, Kimberley Region of Western Australia.

Materials
Stone - non-specific, Pigment

Dimensions
Width: 282mm
Height: 229mm
Depth: 9mm

Source: http://www.nma.gov.au/collections-search/display?irn=46316 Viewed 15 March 2013.

A likely candidate for the stone is one of the mudstones or zebra stones of the region, a soft stone that can be carved without machine tools. Zebra stone is a mixture of coloured stone comprised of layers. It is possible that the red colour was carved through to the white colour but the reference to ‘pigment’ makes that unlikely. It was probably carved to a shallow depth with a rotary tool and pigment placed in the grooves to hi-light them. The quality of the photo makes it impossible to closely analyse or make out any distinguishable detail. Though the overall impression is that it was crudely carved with a large ball burr with little attention to detail and finishing. The style is perhaps reflective of what is known as the simple figurative.

There are also references to perishable engraved shell carvings from northern regions of Australia which may have been used as ceremonial ornamentation but nowadays seem to be produced for the tourist trade (Godden and Malnick 1998 p 21).

CONCLUSION

There is little doubt that rock engravings now form an important part of the corpus of Indigenous artwork. For reasons unknown though, there does not appear to be a continuation of the tradition of stone carving that can contribute to that corpus.
It is also clear that the skills acquired in learning to carve stone have not been built upon and indeed appear to be all but lost.

This is unfortunate and it is hoped that in the future Indigenous artists will rediscover stone carving and at some stage in the future apply those skills to the more advanced forms of hard-stone carving to achieve uniquely indigenous gemstone designs and carvings.

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