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NGAUT NGAUT (DEVON DOWNS) PETROGLYPHS RECONSIDERED

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Abstract. This paper outlines recent preliminary research conducted in relation to the Ngaut Ngaut (Devon Downs) petroglyphs. In particular, we reassess the original rock art sequence proposed for the site by Hale and Tindale and the manner in which their assertions and recordings have been used and interpreted by subsequent rock art researchers. We conclude that there are a number of potential issues with the rock art typology put forward by Hale and Tindale although we concur with some of their conclusions. We also outline where our interpretations of the rock art intersect or diverge from later syntheses. This research also identifies a number of errors that have been introduced into the literature — particularly in relation to the rock falls at the site and concomitant arguments about the excavated art and related art sequences. These issues have been outlined here to provide clarity for future researchers.

Introduction

Reinvestigation of the petroglyphs at Ngaut Ngaut began as a result of a broader interpretive project for this significant heritage complex which aimed to present the range of cultural values attached to it rather than simply recount the more familiar colonial archaeological story associated with this place (see Roberts and Campbell 2012; Roberts and MACAI 2012; Roberts et al. 2010). Whilst compiling a brief interpretive section about the petroglyphs it became apparent that there had been limited detailed reconsiderations about the typology/chronology of the rock art. As a result Roberts, Franklin and Campbell together with the Mannum Aboriginal Community Association Inc. (hereafter MACAI) began considering these issues in more detail. In particular, a review of the original evidence collected by early researchers was undertaken and additional observations were made by re-examining the current rock face. These observations were primarily made during rock art field schools conducted collaboratively with community members and staff from Flinders University (see Harris 2011).

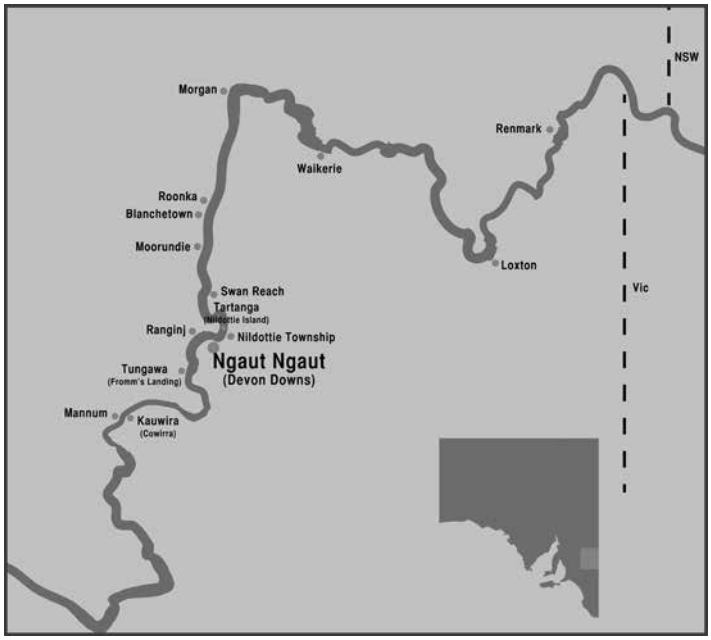

***Figure 1**. Location of Ngaut Ngaut. Map adapted from Roberts and MACAI (2012).*

Whilst many non-Aboriginal people know of Ngaut Ngaut by its English name, Devon Downs, the Aboriginal community have and always will refer to this place by its traditional name. Even though the Aboriginal community have continued to use traditional names for places on their country, they also wish to see these names reinstated in the broader literature. In this paper we privilege these traditional toponyms (after Roberts and MACAI 2012).

Background

Ngaut Ngaut is located between the towns Nildottie and Mannum on the Murray River in South Australia (Fig. 1). The rockshelter and

adjacent cliff faces that contain the petroglyphs, and which are the primary focus of this article, are part of a larger heritage complex that is protected by virtue of its conservation park status and co-management agreement (see Department for Environment and Heritage 2008). All petroglyphs at the site are engraved into limestone.

The co-management agreement is between MACAI and the State of South Australia (under the *National Parks and Wildlife Act 1972* — see Department for Environment and Heritage 2008). The late Richard Hunter, former chairperson of MACAI (Fig. 2), was instrumental in negotiating the co-management agreement (see Roberts et al. 2010). He started cultural tours at Ngaut Ngaut in the late 1980s. Under Richard's leadership MACAI constructed fences, boardwalks and other infrastructure to facilitate safe visitor access (and prevent further damage to the area) and the park has become a popular tourist destination (Department for Environment and Heritage 2008), with interpretive tours of the site conducted by the community. This tourism venture, like others operated by Indigenous groups around the world (see Mortensen and Nicholas 2010), has become an opportunity for economic development for the community. The aforementioned interpretive project was undertaken to support the community's work in this regard.

Ngaut Ngaut is primarily known in the archaeological literature as the first stratified rockshelter deposit to be scientifically excavated in Australia (see Hemming et al. 1989: 6; Holdaway and Stern 2004: 287; Horton 1991: 153; Mulvaney and Kamminga 1999: 11; Smith 1982: 109). Although, as noted above, the site has a much deeper level of significance for the Aboriginal community and a range of other cultural values are attached to this place (see Roberts and Campbell 2012; Roberts and MACAI 2012; Roberts et al. 2010).

Herbert Hale and Norman Tindale began their archaeological investigations at Ngaut Ngaut in 1929 (Hemming et al. 1989) (Fig. 3). It was at this site that they demonstrated the potential of careful, layer-by-layer excavations using equipment still employed by archaeologists today such as trowels, brushes and sieves (Hale and Tindale 1930: 175). Prior to Hale and Tindale's work little systematic research had been conducted in the field of Australian archaeology. In fact the thinking of the day was that Indigenous Australians were recent arrivals to Australia and that their material culture had not changed over time (Mulvaney and Kamminga 1999: 12; Bednarik 2010: 95). Hence, the research at Ngaut Ngaut provided a turning point in the way the Indigenous Australian archaeological record and Indigenous history was viewed by non-Indigenous people (after Roberts and MACAI 2012).

Importantly, Hale and Tindale (1930) were undoubtedly also the first researchers in Australia to claim that they had uncovered rock art in their excavation trenches (see Layton 1992: 213; Mulvaney and Kamminga 1999: 367). Ngaut Ngaut (according to Bednarik 2001a) also provides one of the few instances where the approximate 'dating of rock art by excavation' has been possible worldwide. The excavated rock art, together with a consideration of rock falls within the deposits allowed Hale and Tindale to consider changes over time in relation to the petroglyphs at the site. In particular, Hale and Tindale (1930) argued the following in relation to the rock art at Ngaut Ngaut:

***Figure 2**. The late Richard Hunter, former chairperson of the Mannum Aboriginal Community Association Inc. and developer of Ngaut Ngaut as a cultural tourism site. Image courtesy of Adam Bruzzone Photography.*

1. That there are three 'types' of rock art at the site (A, B and C);
2. That these 'types' occur in a chronological order with 'type A' being the oldest;
3. The 'types' can be discerned because of their 'character and position' (Hale and

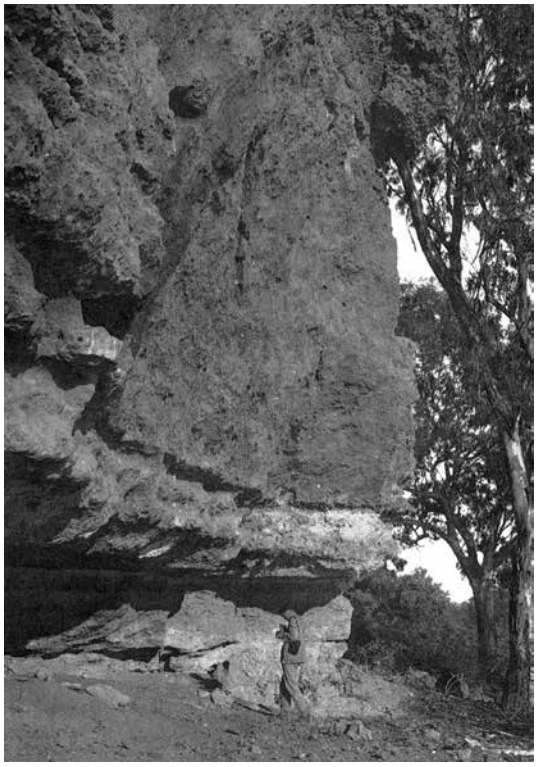

***Figure 3**. Ngaut Ngaut in 1929 before the main excavation began. Norman Tindale is photographing the site. Photograph by Harold Sheard. Image courtesy of the South Australian Museum Archives, AA290/3/1/24, Sheard Collection.*

***Figure 4**. A 'sun' motif at Ngaut Ngaut. Photograph by Alex van Wessem.*

Tindale 1930: 208); and

4. That the 'types' were related to the immigration of new groups of people over time which were given names such as Murundian, Mudukian, Pirrian and Tartangan (see Holdaway and Stern 2004: 289; Horton 1991: 153; Mulvaney and Kamminga 1999: 40; Roberts and MACAI 2012; e.g. Tindale's 1957 theory of culture succession — this theory was of course ultimately rejected by the research community and as such is not explored in any depth in this paper).

By way of background it should also be noted that there are a number of other known (and published) rock art sites (primarily petroglyphs, although some painted motifs have been recorded) in the Mid-Murray region (e.g. Tungawa [Fromm's Landing], north of Blanchetown, Wongulla [north of Tungawa] and Scrubby Flat [on the eastern bank of the river opposite Tungawa] — see Mulvaney 1960: 81–83; Roberts 1998; Sheard 1927a; Sheard 1928) which on the face of it show similarities to some of the Ngaut Ngaut motifs. However, in this regard we would argue that more in-depth and comparative research is required. Further, it should also be pointed out that Harold Sheard (1927b) made preliminary observations about the rock art at Ngaut Ngaut prior to Hale and Tindale's research. Other rock art sites have also been recorded for the region but due to the fact that their locations have not been published they are not reported here.

More recently a few researchers have commented on the rock art of Ngaut Ngaut — e.g. Hemming et al. (1989) see discussion below; Norris and Hamacher (2011: 100–101) in relation to astronomical symbolism; and Coles and Hunter (2010: 210 and 212) in relation to probable motif similarities between Ngaut Ngaut and the rock art of the Mount Lofty Ranges (in particular the 'sun' motif, see Fig. 4). Others (e.g. McCarthy 1979; Maynard 1979; Layton 1992) have attempted to place the rock art at Ngaut Ngaut into broader Australian sequences — these historical analyses are considered further below. However, to our knowledge no specific in-depth reconsiderations of the rock art of Ngaut Ngaut or nearby sites in the region have been published in recent times.

A reconsideration of Hale and Tindale's typology

As noted above, Hale and Tindale (1930) argued for three 'types' of rock art at Ngaut Ngaut. According to their scheme petroglyphs of 'type A' are 'characteristic of Layers V–VI, or earlier' as uncovered in their excavations in Trench C at Ngaut Ngaut.

***Figure 5**. Hale and Tindale's (1930) 'type A' Ngaut Ngaut petroglyphs. Image courtesy of the South Australian Museum.*

Hale and Tindale (1930: 210) describe 'type A' as consisting of 'sharpening' marks which are 'similar to those produced by rubbing a piece of bone against the rock'. To date we have not located any drawings of 'type A' in Hale and Tindale's publications or records, and the only identified photograph of this 'type' is reproduced here (Fig. 5).

Excluding Hale and Tindale's records and analysis, at least one published account has attempted to interpret the marks (see sketch in Hemming et al. 1989: 7). This interpretation appears to be based primarily on Hale and Tindale's (1930: 210) written description, which

states: 'The markings in places occur in groups, radiating upwards from a common centre, suggesting a sequence of sharpening marks made by a single person'. However, the marks that seem to be discernible in the photograph (although difficult to see, given its quality) do not appear to neatly conform with the written description nor the Hemming et al. (1989) sketch. Indeed, to our eyes the image shows a much more diverse/complex set of grooves incised not only in an upwards direction (nor always 'radiating') but in numerous directions and often overlapping.

Without re-excavating the trench it is not possible to re-visit this issue or to provide any further interpretations. At present MACAI are not willing to allow more excavations at Ngaut Ngaut.

It should also be noted that abraded grooves appear on the current exposed surfaces containing rock art. Given this fact it is interesting to consider why Hale and Tindale (1930) felt that the 'type A' grooves represented a disjuncture requiring separation in a typology.

The issue of abraded grooves representing a specific 'stylistic unit' more broadly in Australian archaeology has also been critiqued elsewhere (e.g. in Maynard's 1979: 90 assessment of McCarthy's 1979 rock art sequence — see also Layton 1992: 213–214). For example, Maynard (1979: 90) wrote: 'And besides, the technique of abrading a groove is so simple, and produces such invariable results, that this form seems inappropriate as a whole phase in a sequence of art styles'. Rosenfeld (1999: 32) went even further, and argued that abraded grooves, along with finger flutings, stencils, prints, battered rock ridges, flaked rock edges, abraded patches and pitted rocks throughout Australia should be classified as 'rock markings', which are 'gestural marks' that hold meaning at the individual level, representing the participation of individuals 'who are presumably mobile within the landscape'. She contrasted these marks with 'rock art', or the well-known figurative graphic traditions of Aboriginal Australia, which represented the supra-individual level and the marking of territory by corporate groups (i.e. 'symbolic activity ... regularly focussed on places fixed in the landscape') (Rosenfeld 1999: 32; but see Bednarik 2002). These arguments help to explain the previous inability of researchers such as Maynard to incorporate abraded grooves and the other categories that Rosenfeld has classified as 'rock markings' into Australia-wide sequences.

As is evident below, Hale and Tindale (1930) placed the 'type A' 'markings' in the temporal period of c. 3000 years ago or earlier and considered that they may have been created by individuals standing on an older (and lower) floor of the rockshelter (see Fig. 6). Hale and Tindale (1930: 210) concluded: 'Some of them [the markings] may have been made by the inhabitants of layer V, but others must have been produced before VI was deposited. They therefore seem to belong to the phase herein termed Mudukian'. It should be noted that over time various dates have been ascribed to these 'markings' by subsequent authors — e.g. 'during the Pirrian phase of occupation between 3000 and 4000 years ago' (McCarthy 1979: 18), 4000 BP (Flood 1997: 207) and after 3500 BP (Layton 1992: 213–214, based on

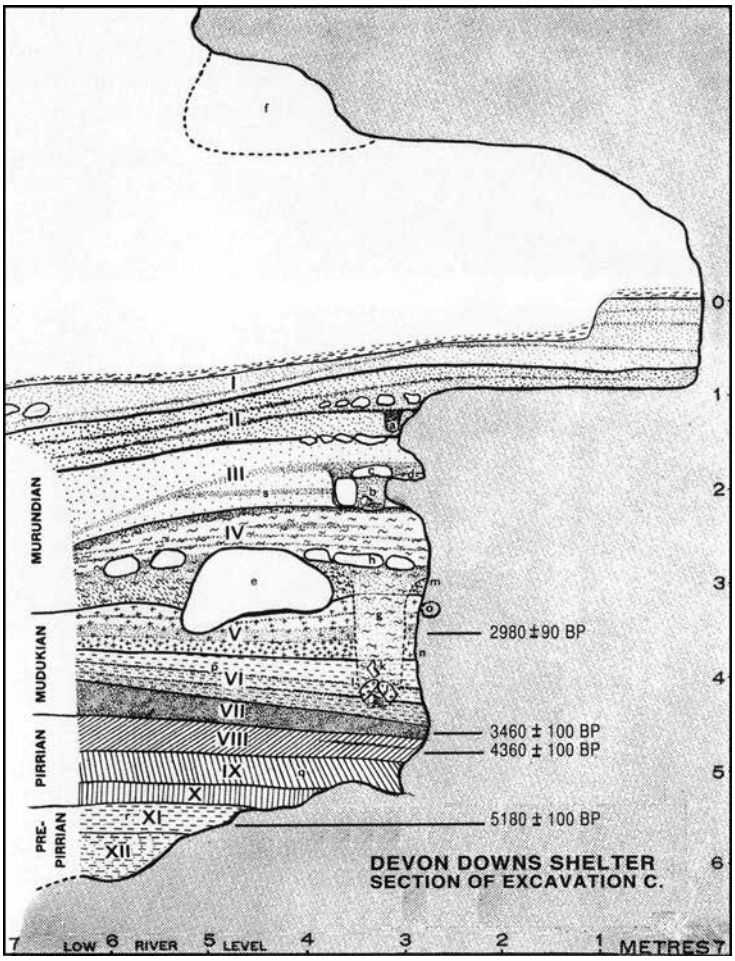

***Figure 6**. Section of the Trench C, Ngaut Ngaut deposits. Adapted from Hale and Tindale's (1930) publication with later radiocarbon dates included (see Roberts and MACAI 2012). Dates based on shell and a carbon-14 half-life of 5568 years. Original image courtesy of the South Australian Museum. (KEY: a = remains of an infant, b = remains of a child, about 15–18 months old, c = possible grave capping stone, d = pocket of debris, e = large rock fall, f = former position of large rock fall on the roof of the rockshelter, g = burial pit, h = possible grave capping stone, i = remains of a child, j = possible grave lining stones, k = remains of a child, about 5 years old, l = teeth of a child, about 5 years old, m = upper limit of 'grooves and scratch marks' on wall, n = lower limit of 'grooves and scratch marks' on wall, o = position of a bone implement found in a cavity in the rockshelter wall, p = Tasmanian devil teeth, q = Tasmanian devil jaw, r = deciduous human tooth, s = deciduous human tooth.)*

***Figure 7**. Item A 4016 in the South Australian Museum collection. Photograph by Amy Roberts and courtesy of the South Australian Museum.*

***Figure 8**. Box containing the item A 4016 in the South Australian Museum collection with the inscription 'Mudukian Scratches'. Photograph by Amy Roberts and courtesy of the South Australian Museum.*

***Figure 9**. An example of a 'tortoise' motif at Ngaut Ngaut engraved into the brown/black rock coating. Photograph by Alex van Wessem.*

Smith's 1982 interpretation of the depositional history at the site).

A final point of interest in relation to Hale and Tindale's (1930) 'type A' concerns the accessioning of a so-called 'rock art fragment' from Ngaut Ngaut in the South Australian Museum (SAM) collection (Registry No. A Lot 4016, Fig. 7). SAM records indicate that the object was purchased from B. Roberts on 1/7/1972. The box holding the item is labelled 'Mudukian scratches' (Fig. 8). Why this limestone piece was acquired and the precise location at Ngaut Ngaut from which it was taken remains a mystery. However, given the issues noted above relating to understanding Hale and Tindale's 'type A' engravings (i.e. of Mudukian age according to Tindale's culture succession hypothesis) it is interesting to speculate on its inclusion in the collection. Was it purchased because it was believed to be representative of 'type A' engravings? If so who made this assessment and on what basis? Without more information coming to light we may never know. However, as Figure 7 reveals, whether or not the markings on this piece were made by humans can only be considered debatable at this stage, as from a visual examination they are indistinct. A more thorough investigation using microscope analysis may be required to more adequately determine the nature of these marks.

'Type B' petroglyphs, according to Hale and Tindale (1930: 210), 'consist of meandering lines of great length, tortoises (Fig. 9), bird tracks, and "sun" designs, together with rows of small and larger holes such as could be made by rotating a firestick or javelin with the butt against the rock'. In relation to production methods for the petroglyphs at Ngaut Ngaut (as well as in the general region) it is worth noting that they have not been adequately examined. At nearby Tungawa (Fromm's Landing) participants at the 2011 rock art field school observed that some petroglyphs at the Shelter 2 site appeared to have been made by rotating a bone or other hollow-centred implement on the soft limestone surface. (Bednarik and Montelle 2012 have reported that recent studies have been able to confirm the use of broken macropod long bones in rock art production at a Mt Gambier limestone cave — so a replicative study here may be worthwhile). Early observations by Sheard (1927b: 19) also noted the use of natural features in the rock surface at Ngaut Ngaut to accentuate designs — further specific investigation into these observations would also be beneficial.

Some of the petroglyphs noted above would be termed 'figurative' by many rock art researchers (e.g. see Maynard 1977: 396–397 and 1979: 90, 99, given that an 'observer can "identify" the subject' and because they conform to a pattern of naturalism). However, it should be noted that Maynard (1979: 97–98) placed 'Devon Downs' in the category of 'miscellaneous styles', arguing that it stood 'outside' her sequence — presumably because the ordering of styles did not conform to her proposed scheme (see Maynard 1979: 92). On the basis of recent observations we would argue that elements of two of Maynard's phases do exist at Ngaut Ngaut (although potentially in reverse of her proposed order as demonstrated in relation to the western rock fall issue further explored below) — e.g. Maynard's phase 1, which includes motifs at Ngaut Ngaut such

as bird tracks, groups of dots and radiating lines as well as Maynard's phase 2, which includes motifs at Ngaut Ngaut such as 'silhouetted' animals. Thus, it is interesting that the site was placed in a separate category in Maynard's (1979) publication rather than being viewed as a counter to the proposed sequence.

Hale and Tindale (1930: 210) also concluded that 'type B' (see Fig. 9) petroglyphs 'have been largely protected from atmospheric weathering by a thick carbonaceous deposit resulting from fires lit in the shelter'. A closer examination of this 'deposit' has caused the authors to question the assumption that it is in fact a product (or sole product) of campfires and it is postulated that there may be a range of factors contributing to this brown/black rock coating. A separate project has been initiated to solicit specialist opinions on this matter from a range of disciplines. The possibility of radiocarbon dating these deposits is also being explored. In addition, given that the brown/black rock coating is, in at least some areas, demonstrably detaching from the rock surface, Hale and Tindale's (1930: 210) conclusion that the deposit protects the art must also be reconsidered.

Hale and Tindale (1930: 210) deduced that an early limit for the age of 'type B' petroglyphs can be made because these 'types' are found in the concave depression left by the large rock slab which fell onto layer 5 — see Fig. 6 — i.e. they are less than c. 3000 years old as determined by subsequent dating of the archaeological deposits (see Roberts and MACAI 2012). They further argue that 'from land surfaces below layer II artificial aid to enable the artists to reach the roof would have been necessary for the execution of these carvings' (Hale and Tindale 1930: 211). If it was the case that the petroglyphs were created by people without the aid of scaffolding this would mean that they are then considerably younger than 3000 years.

The issue of scaffolding has received some comment by rock art researchers. In the Australian scene some researchers have been loath to accept it as a means to create rock art. Rosenfeld et al. (1981: 29), for example, argued that an engraved sandstone slab found in the archaeological deposits at Early Man in the Laura region, north Queensland, was unlikely to have fallen from the shelter wall or roof, as the latter 'is so high that it would have required a tall scaffold (or tree) for its execution'. Furthermore, in relation to the origins of the painting tradition at Early Man, they stated that it was unlikely to be earlier than 4000 to 5000 years because 'the level of the painted freeze on the rock wall is such that if it had been executed from an earlier ground level, some form of scaffolding or other aid would have been necessary in order to accomplish it' (Rosenfeld et al. 1981: 34). Other Australian archaeologists such as Flood (1996: 272), however, have referred to the use of 'pole scaffolding' (to extract ochre [which was probably used to make rock art] at different heights from the remarkable Aboriginal quarry at Wilgie Mia, Western Australia, where the vast open cut had been excavated to a depth of some 20 m). There are also of course numerous international examples. For example, at Huashan in China, Bahn (1998: 3) noted that 'ladders, scaffolds or poles' must have been used to create the rock paintings as they occur to a height of some 40 m above the Ming River (see Qian 2013 for more information on the rock art of this area). It should also be noted that contemporary community members at Ngaut Ngaut refer to the use of ladders for the purposes of extracting honey from the native bee hives high in the cliffs. Community members also interpret one of the petroglyphs at Ngaut Ngaut as an example of such a ladder. Numerous other petroglyphs are also interpreted by community members during their cultural tours for members of the public. A few limited interpretations were also recorded by Tindale from his primary Aboriginal 'informant' for the region, Tarby Mason (see Roberts and MACAI 2012 for more information and links to primary references). Given these examples, the use of scaffolding at Ngaut Ngaut should not be ruled out as a possibility.

It is on the basis of another rock fall, at the western end of the shelter, that Hale and Tindale (1930: 211) concluded that 'type B' was older than 'type C'. They stated:

> The big rock which fell on to the uppermost level of layer II, in the western corner of the shelter … bears on its now lower face markings associated with meandering lines and tortoise figures of the same type as those on the roof and back wall immediately to the east of the place occupied by it … On the space cleared by this fall, however … are numerous markings of type C, newer in appearance, and consisting of straight-line markings and other designs … (Hale and Tindale 1930: 211).

In relation to the rock fall issue it should be noted that, subsequent to Hale and Tindale's (1930) publication, some errors have been introduced into the literature regarding the rock art at the site, and given the time it has taken the authors to disentangle these issues we feel it is worth reporting on them here. Hemming et al. (1989: 7), for example, appear to have mixed up two of the main rock falls at the Ngaut Ngaut site — i.e. the rock fall excavated in Trench C and a rock fall at the western end of the shelter, undercut by Trench D (see Fig. 10). As can be noted in their publication they state that engraved motifs of 'type B' 'appear on the underside of a large rock which fell from the roof onto one of the middle layers between 2000 and 3000 years ago' (Hemming et al. 1989: 7). Given that Hale and Tindale (1930: 2110) (and Tindale's 1922–1930: 368 journal notes) record that the rock fall at the western end of the shelter fell onto the uppermost level of Layer II this cannot be the same rock fall referred to in Hemming et al. (1989: 7) as it is more recent. Further, Tindale's (1922–1930: 367) journal entry clearly states in relation to the Trench C excavations (at Layers IV and V): 'The undersurfaced [sic] of the rock was too soft to have preserved, if they were even present, any signs

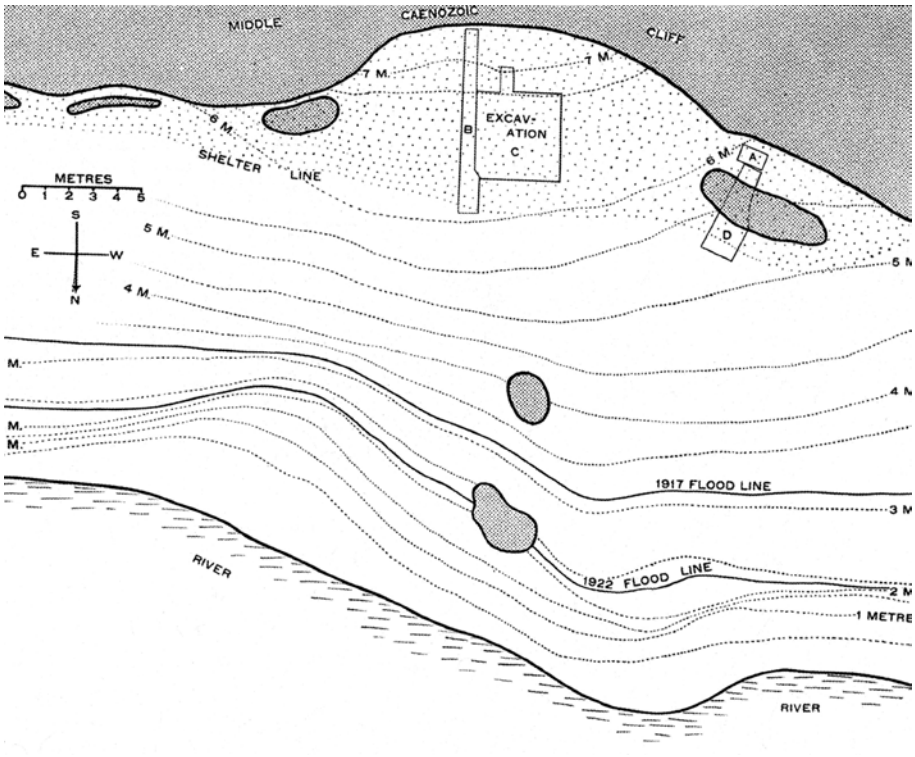

***Figure 10**. Plan of Ngaut Ngaut from Hale and Tindale's (1930) publication. A = location of Sheard's trench, B-D = location of Hale and Tindale's trenches. Image courtesy of the South Australian Museum.*

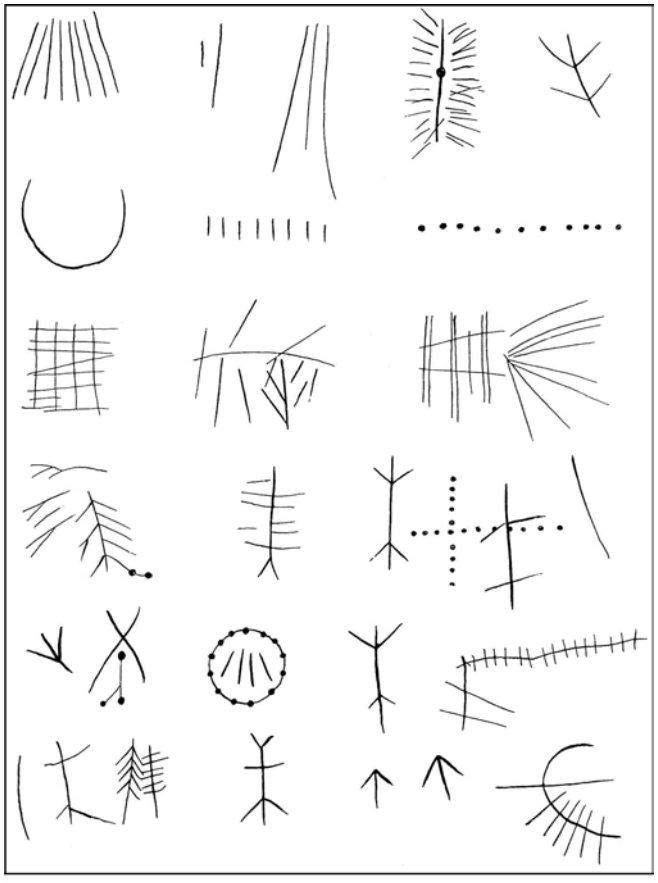

***Figure 11**. 'Type C' according to Hale and Tindale (1930). Image courtesy of the South Australian Museum.*

of carvings'.

Similarly, Flood (1996: 150) makes the same error in various editions of her text, *Archaeology of the Dreamtime: the story of prehistoric Australia and its people*, when she writes: 'The first firm evidence of the antiquity of rock art came in 1929, when an engraved slab was found 3 to 4 metres below ground level in the Devon Downs rock-shelter.'

However, it is now difficult to re-examine the petroglyphs referred to in relation to the underside of the western rock fall (in Trench D). Despite searching through Tindale's archives (housed at the South Australian Museum) the authors have not been able to locate any sketches or photographs of these particular petroglyphs. In addition, it would appear that Tindale's notes about them may be inconsistent. For example, in his journal Tindale (1922–1930: 368) states that on the under-surface of the western rock fall 'are boring holes (? made by firesticks) of the type common of the whole of the shelter' — although in Hale and Tindale (1930: 211), as noted above, they state that it bears on its 'lower face markings associated with meandering lines and tortoise figures of the same type as those on the roof and back wall immediately to the east of the place occupied by it … [o]n the space cleared by this fall, however, are numerous markings of type C, newer in appearance, and consisting of straight-line markings and other designs …' (Fig. 11). Are Hale and Tindale (1930) therefore indicating that it is because of the boring holes that they associate these petroglyphs with 'type B'? If so this would be an unsuitable justification, given that such holes or pits appear all along the limestone faces at Ngaut Ngaut (and from their own account in more than one 'type'). Or do the journal entries simply not record the detail they later include in their published account?

On the basis of the western rock fall argument, however, it would seem that aspects of their observations may have some basis — i.e. on the rockshelter roof above the western rock fall the petroglyph 'types' are arguably different to those in the adjacent and presumably older rock surface (see Figs 12 and 13). Thus, we would also argue that there could be temporal differences between figurative and non-figurative motifs at Ngaut Ngaut — at least in the area of the western rock fall. Given these observations we concur with Hale and Tindale (1930) that the

figurative motifs, at least in some areas of the rockshelter, may be older than some of the non-figurative sections. As an historical aside, it should be noted in relation to 'type C' that Layton (1992: 225), on the basis of his analysis of geometric motifs across Australian sites, also concluded that there is an increase over time in 'Class C' motifs (such as tridents, arcs and parallel lines) — with 'tridents' appearing in Hale and Tindale's (1930) 'type C'.

From an historical perspective the rock art at Ngaut Ngaut, therefore, does not conform to earlier suggestions by researchers of Australian rock art (e.g. Maynard 1979 and McCarthy 1967 — see also discussion in Flood 1997: Chapter 7) that there was an overall long-term trend towards a more 'sophisticated naturalism' (Layton 1992: 12). Indeed, as Layton (1992: 15) has commented: 'There is, however, no simple, functional reason why artists should seek naturalism … Different goals in visual representation promote different solutions: motifs and compositions are elaborated in one, stripped bare in another (Layton 1977; Officer 1984: 16)'.

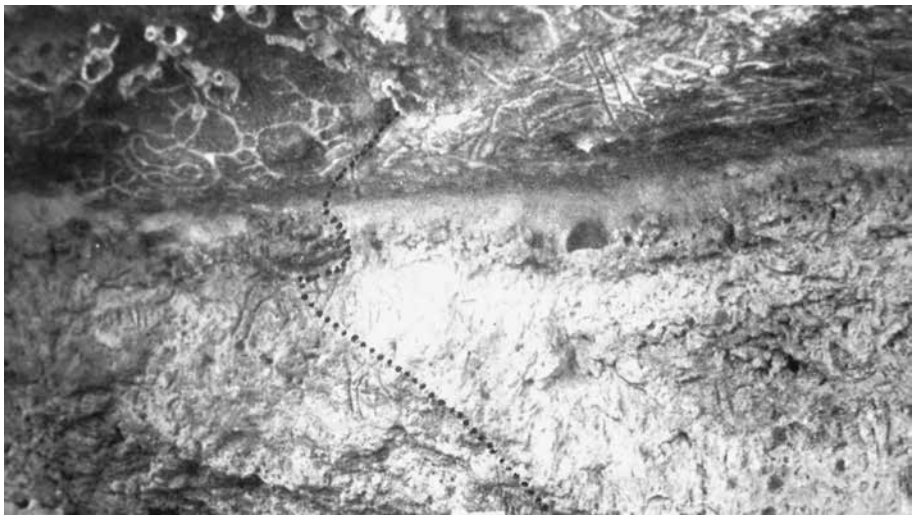

***Figure 12**. Image of art panel at the western end of Ngaut Ngaut rockshelter in 1929. The dotted line indicates the rock fall line according to Hale and Tindale (1930). Image courtesy of the South Australian Museum Archives, AA338/50/26, Tindale Collection.*

***Figure 13**. Image of art panel at the western end of Ngaut Ngaut rockshelter in 2012. Note the missing petroglyphs in the top left of the image in comparison to the 1929 photograph. Photograph by Isabell Wheeler.*

Other researchers have also noted that there are clear functional differences between figurative and non-figurative motifs. Schaafsma (1985: 255), for example, observed that the ambiguity or abstraction of a symbol (i.e. its non-figurative nature) 'functions to increase the power of an element by contributing to its esoteric nature'. This seems to be an almost universal cross-cultural principle of artistic expression: greater abstraction occurs for the most enigmatic motifs. This observation would certainly fit with evidence that, at early contact in particular, paintings produced in northeast and western Arnhem Land in public contexts tended to be predominantly figurative, while those produced in closed contexts were elaborately in-filled and included a large non-figurative component (Morphy 1981, 1983). Similarly, in central Australia, the full meanings of geometric designs were only known to the fully initiated, although the designs in their simpler forms were also used in sand drawings for public story-telling purposes by men, women and children (Dubinskas and Traweek 1984; Munn 1973; Strehlow 1964; Tindale 1959). Non-figurative motifs can be seen to have a discontinuous meaning range, in that a single geometric motif can have a range of different meanings across different phenomena (e.g. a circle can mean a waterhole, a circular path, fire, fruit etc.), while figurative motifs have a continuous meaning range, in that a single motif may have only one meaning (e.g., a snake motif means a snake, of whatever species), with new motifs needing to be added to the repertoire in order to add new meanings (Munn 1966).

Unfortunately, a more thorough and detailed

physical re-examination of the area of the western rock fall is no longer possible due to the fact that a significant section of this rock art panel has been lost. This issue was discovered by a field work exercise with Flinders University students (in the 2012 field work season) to compare the archived Tindale images with the current rock face. As can be noted in the before (Fig. 12) and after (Fig. 13) images it appears that the brown/black area that contained Tindale's 'type B' motifs in the top left of the image has sheared off the limestone surface (a close-up photograph of the motifs in this area was also taken by Sheard [1927b: Plate IV, Fig. 1]). However, the petroglyphs at the right of the image appear comparatively similar in preservation to the 1929 recordings. Thus, due to this loss any superimposition that may once have been observable in this area is now gone. On the issue of superimposition we also note the more general need for a detailed investigation to be carried out across Ngaut Ngaut to investigate further whether there are any other observable superimpositions of different 'types' of petroglyphs in order to further address some of the issues noted above. However, we acknowledge, as many researchers have observed (e.g. see Layton 1992: 219 and Maynard 1979), it is often very difficult to disentangle the sequence of petroglyphs involved in superimpositions (particularly without the use of field microscopy — see Bednarik 2001b).

Future directions

As already alluded to above there are several avenues for future research which may shed more light on the rock art sequence at Ngaut Ngaut. These avenues, along with a number of additional points raised in connection with the discussions above, are summarised below.

1. A detailed comparison between the motifs at Ngaut Ngaut with those of nearby sites in the Mid-Murray region is warranted to determine if any significant distribution patterns exist — if so subsequent considerations could then be made as to the issue of temporal change in relation to the issues outlined in this paper. This would involve not only compiling information from all of the sites currently known, but also undertaking additional fieldwork to identify any unrecorded sites. Other questions could also then be addressed (i.e. relating to Dreaming tracks, trade routes, river systems and 'bounding behaviour'; see Habgood and Franklin 2010, in press; Franklin 2004, 2007; Kerwin 2010; McDonald 2008).
2. Further investigation of the methods of production for the petroglyphs at Ngaut Ngaut (and in the region more generally) is also needed, including a more detailed consideration of how natural features at the site have been incorporated into the rock art, as first observed by Sheard (1927b: 19).
3. Scientific examination is required of the so-called 'thick carbonaceous deposit' mentioned by Hale and Tindale (1930: 210) due to its bearing on the chronology of the rock art and potential management issues. As noted above, we are in the process of obtaining specialist opinions on this issue in a separate research project.
4. A more detailed investigation should be carried out at Ngaut Ngaut to determine whether or not there are any observable superimpositions of the different 'types' of petroglyphs in Hale and Tindale's typology in order to resolve some of the issues noted above.
5. A more thorough investigation, using microscope analysis, of the accessioned South Australian Museum item Registry No. A Lot 4016 is required to more adequately determine the nature of the marks on the limestone piece said to originate from the Ngaut Ngaut site.

Conclusions

As has been revealed Ngaut Ngaut has a long, important and complex history in relation to Australian rock art research. Given its early 'discovery' it has been referred to and variously incorporated (or excluded) in discussions of Australian sequences. As such it is timely that this site, as well as the other rock art of the region, be reconsidered.

In this paper we argue that there are a number of potential issues with the rock art typology put forward by Hale and Tindale (1930). First is the issue of replicability. Many of the issues raised in this paper can no longer be tested due to a lack of access to the original physical remains. Second is the problem of providing overly neat definitions — arguably an issue with many typologies. This latter point has been demonstrated in relation to Hale and Tindale's (1930) 'type A' petroglyphs. Indeed, we observe that Hale and Tindale's (1930: 210) written description does not appear to conform with the photographic image (nor does a later sketched interpretation by Hemming et al. 1989), and further the assignation of 'type A' to these petroglyphs is not in keeping with later critiques of using abraded grooves in this manner. We do, however, concur with Hale and Tindale (1930) that figurative motifs may predate non-figurative motifs (at least in some sections of the rockshelter). On this latter point we also reconsider schemes put forward by Maynard and others and consider them in an historical light given the contribution of Ngaut Ngaut rock art to discussions about Australian sequences.

In relation to the chronology of the rock art at Ngaut Ngaut we have also identified a number of errors that have been introduced into the literature — particularly in relation to the rock falls at the site and concomitant arguments about the excavated art. These issues have been outlined here to provide clarity for future researchers.

Given the issues outlined in this paper it is clear that more research is required into the rock art of the Mid-Murray region in South Australia and in this regard we

have outlined a number of specific areas warranting additional research.

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