



KEYWORDS: *Graphic structure – Style – Gariwerd (Grampians) – Australia*

## MOTIF STRUCTURE AND AUSTRALIAN ABORIGINAL ROCK ART ANALYSIS: AN EXAMPLE FROM GARIWERD, VICTORIA

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**Abstract.** A preliminary examination of the graphic structure of Gariwerd rock art suggested that the majority of the motifs from the earliest rock art phase ('Gariwerd A') were related through a common system of graphic structure, based on the ubiquitous bar motif. While some attention has touched upon the structural analysis of Aboriginal rock art, its potential remains to be examined in any depth. In this paper the structure of early Gariwerd rock art is demonstrated, and its uses in spatial patterning and style are explored.

### Introduction

A large part of the visual character of rock art is expressed by its structure, arrangement and composition. Structure is how the constituent parts of an entity fit together, or were put together. Rock art pictures are made of (or consist of) smaller parts. The forms of these parts and the ways they are connected are sometimes called the *structure* of the picture.

An on-going problem with structural analysis is that of determining to what extent the structures discovered are the artefacts of the analyser and the analytical process, and how much (if any) the structures were understood by the maker or were a necessary constituent of the making. Was what is clear to us necessarily important or even apparent to the makers? These considerations may not present a barrier to analysis if the overall attitude of the researcher(s) is to seek patterns and associations first and interpret them second.

Motif structure involves the manner in which motifs are constructed (linear, curvilinear, circular; tight or rambling etc.). Motif arrangement involves the manner in which different *marks* (usually geometric elements) are arranged together to present a simple or *more* complex motif (see Munn 1962, 1973). Composition, in contrast, refers to the layout and balance of a picture's components. It can involve a number of different scales:

- Clusters of like or different motifs (such as groups of human figures, animal trails, human figures associated with particular implements, etc).
- The manner in which motifs are arranged together on a panel or within a shelter.
- The contrasting contents of different shelters.

Conkey (1989, 1997, 2001) provides a good introduction to the various levels of structural analysis in rock art. In Australian rock art studies the analysis of motif structure has yet to be fully explored and struc-

tural approaches have only rarely been applied. Munn's pioneering work (1962, 1973) has been discussed above. From an anthropological perspective, Maddock (1970) illustrated how motif placement and orientation was important in the depiction of principal characters in a local ritual. In contrast, Clegg (1978) drew upon the work of taxonomists Sokal and Sneath (1963) to introduce a scientific approach and process to rock art studies. Indeed, his incorporation of OTUs (Objective Taxonomic Units; see also Clegg 1979a), forms a direct precedent for the selection of the 'bar' motif as the core of the Gariwerd corpus (see below). He has continued to pursue and advocate a range of other approaches (e.g. Clegg 2002), but while quantitative studies have become standard, the finer aspects of art studies have yet to be widely embraced.

Maynard (1976) provides examples of each; however, these aspects of her work have rarely been examined or followed up by subsequent researchers in Australia. In contrast, structural approaches on Palaeolithic rock art in Europe have been successfully employed in several major studies by Laming-Emperaire (1962) and Leroi-Gourhan (1965), who discovered repeated patterns in the locations and associations of motif types within panels and within deep caves overall. Marshack (1972) differentiated the work of different individuals or times by the manner in which marks were produced. In Australia, Bednarik (1998) applied similar techniques to determine whether markings on excavated plaques were of human or animal origin.

There are two different approaches to such structures, and means to analyse them. One is about how the artist made up the picture; the other is more about physical details of the making, with tool marks being the finest element. In both cases the largest element may be a whole composition, where several individual motifs combine into one picture, or even a landscape or set, where individual pictures form parts of a wider whole. These two

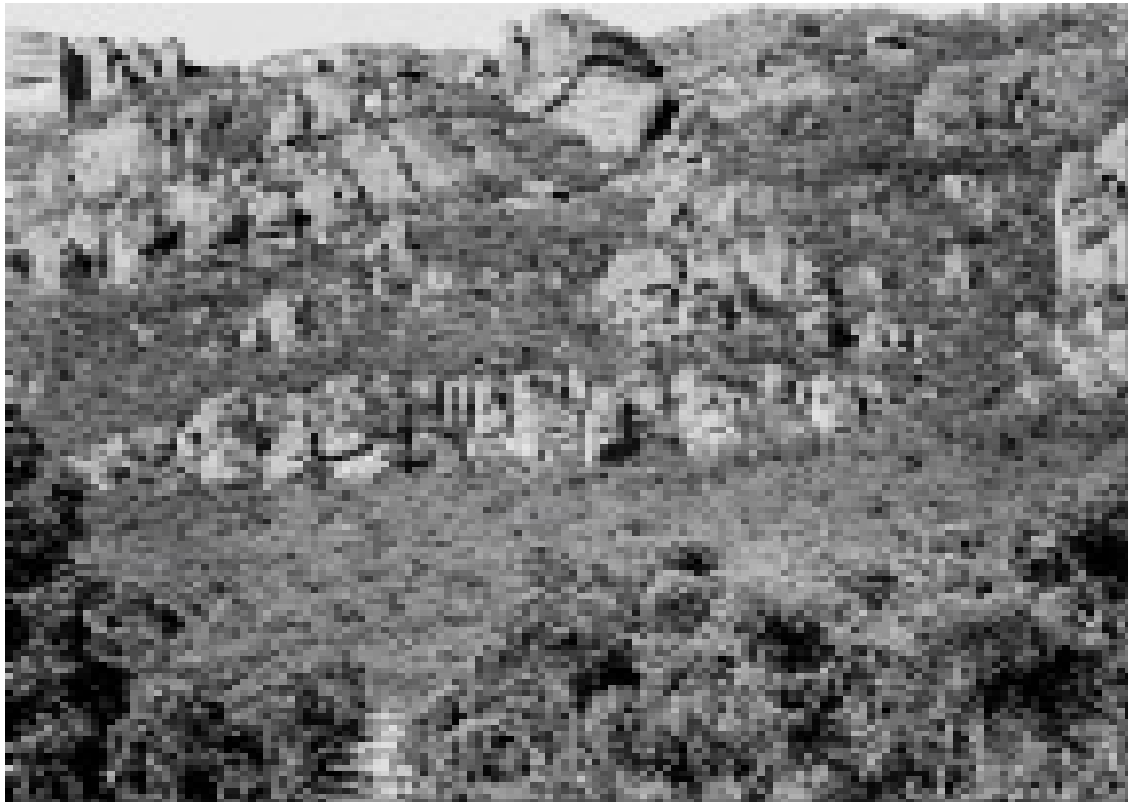


Figure 1. The rugged Victoria Range containing the Billawin rock art area.



attitudes may coincide where the individual gestures/tool-marks clearly indicate meaningful graphic entities, as where a single stroke depicts an arm, leg or body, as is clearly the case in the rock art of the Grampians and New England (north-eastern New South Wales).

Standard, regular, unvaried artefacts (including rock art) suggest that there is something about the society that is regimented and controlled. But justifying that impression is difficult, for such qualities could result from one of many possible causes.

*Structural* attributes seem likely to be more basic, pervasive, deep and meaningful than those with functional, decorative or style connotations, and thus able to reveal more of the societies' true characteristics. But again that impression is not easy to justify. Nonetheless, such inferences may ring true and be convincing. For example, the compositions of pictures made by chimpanzees and untrained humans were found to be similar, and Clegg (1979b: 56ff) argued that this form of composition was universal enough to use it as a norm by which to measure composition in art and discover compositions that are more significant or interesting.

Figure 2. Distribution of rock art sites in Gariwerd (Grampians) and Burrunj (Black Range), showing art regions of Billawin, Brim Brim, Burrunj and Gunigalk.

### Gariwerd rock art

Gariwerd (The Grampians) and the nearby ranges in western Victoria house over 120 rock art sites, which is over 80% of all such painting sites in Victoria (Fig. 1; Gunn 1983, 1987a). The ranges form a visually prominent feature in an area otherwise comprising flat to undulating plains (Fig. 1). While the ranges house a wide variety of environments and respective food resources (plants and animals), for the past 5000 years it has been the surrounding plains with their associated wetlands (large rivers, permanent lakes and ephemeral swamps) that provided a much more resource-rich focus. Consequently the ranges, while clearly inhabited during this time, were unlikely to have been seen as a seasonal or emergency food reserve area (Coutts and Lorblanchet 1982; Gunn 2003). Today, and in the ethnographic past at least, the ranges were spiritually significant to the Aboriginal people living within a 200 kilometre radius, and the plethora of rock art they contain suggests that they were used as a focus for ceremony and ritual related to the associated 'bird-sky-fire' mythology (see discussion below). It is assumed on the basis of motif condition that the artwork discussed here relates primarily to this last 4000 years. Prior to this period, and particularly during the drier Pleistocene, occupation of the ranges was much lighter and the ranges would have been a refugia set within semi-arid, grassland plains.

Gariwerd rock art has been sub-divided into three, apparently temporally distinct, phases based on motif preservation and a consistent superimposition sequence:

- An early phase (Gariwerd A) dominated by red paintings with small numbers of red hand stencils and hand prints (3866 motifs from 88 sites).
- A mid-phase (Gariwerd B) of red and black drawings (430 motifs from 27 sites).
- A more recent phase (Gariwerd C) of white paintings and few white hand stencils (260 motifs from 21 sites).

The subsequent location of another 20 sites in the region, although not documented in the same detail as the earlier records, continues to reinforce the validity of these trends. At present, no dates are available for the three phases.

Gariwerd was occupied from at least the late Pleistocene (Bird et al. 1998), and up into the contact period. Its occupation however,

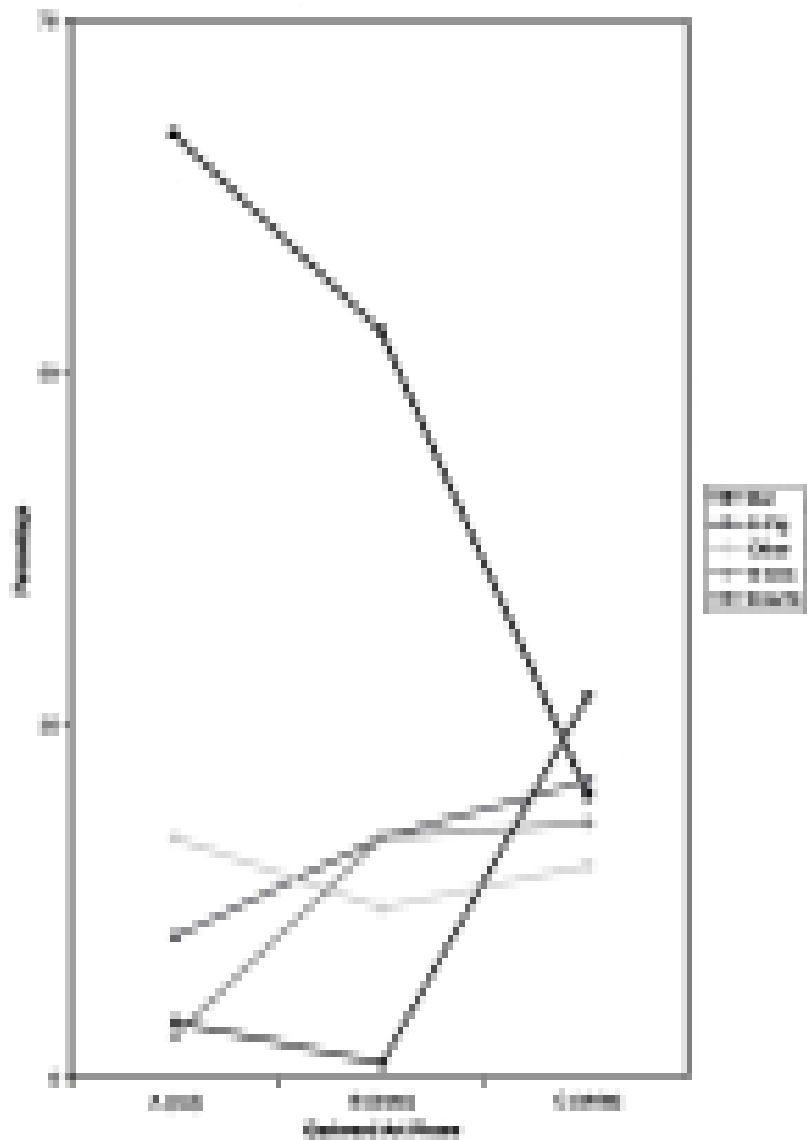


Figure 3. Select motif type percentages by art phase.

appears to have been more concentrated over the period from 4000 BP to 1000 BP (Bird et al. 1998).

Spatially, the rock art sites fall into three principal groups:

- Billawin (focused on the Victoria Range in the centre of the Grampians);
- Burrunj (focused on the Black Range to the west of the Grampians); and
- Gunigalk (focused on Mt Stapylton at the northern end of the Grampians).

A fourth, smaller group (Brim Brim) occurs in the vicinity of the Asses Ears Range (Fig. 2). All groups contain examples from each of the three rock art phases indicating a common use of the ranges throughout the period represented by the artwork.

### The structure of Gariwerd A art phase motifs

The structure of the earlier period Gariwerd A rock art became apparent when the greater proportion of the Gariwerd sites had been recorded (Gunn 1981, 1987b). It was also apparent that the structure of this art, along with its motif type proportions, did not continue into either of the two later phases. However, while the proportions varied from phase to phase (Fig. 3), the

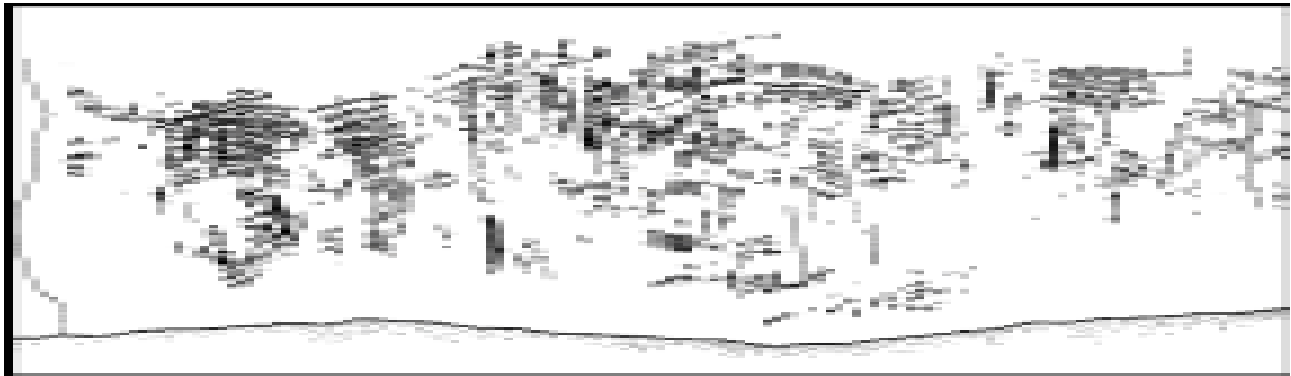


Figure 4. The Billimina panel (freehand sketch).

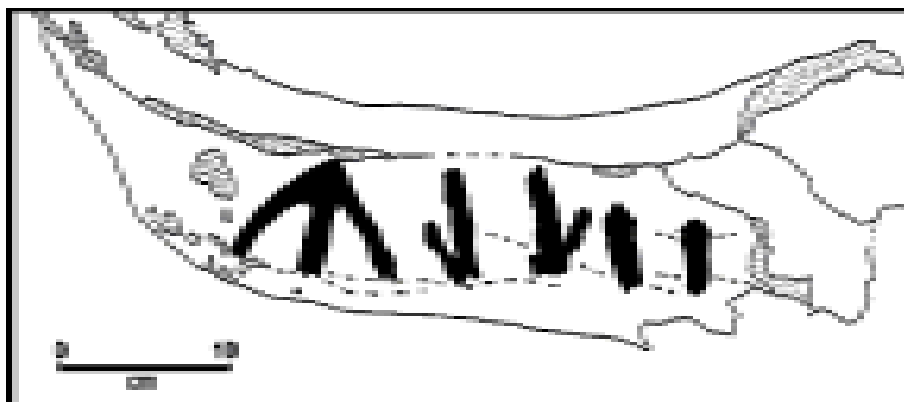


Figure 5. Row of 'emu track', 'roo track and bars (Manya).

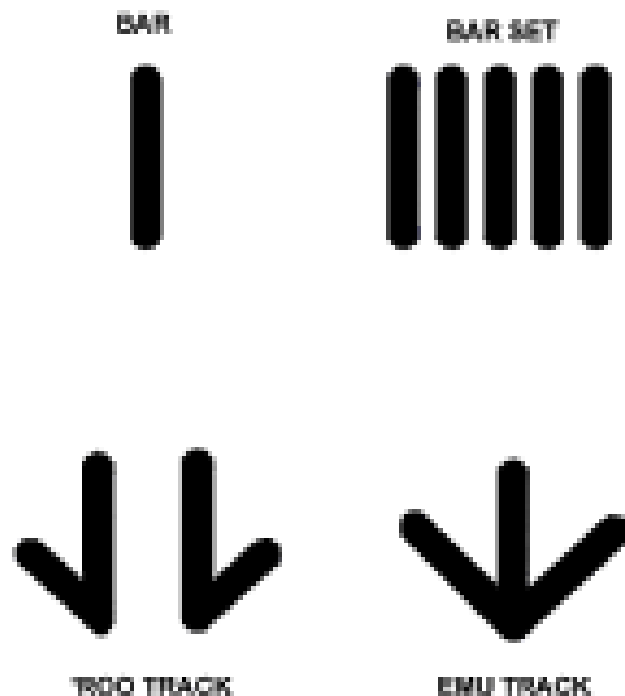


Figure 6. The core motif types of the structural.

same range of motif types continued to be produced, indicating a degree of continuity over time. However, not only did the proportions vary, but so also did the motif schema (motif sub-types), with those of the Gariwerd A phase being distinctly different to those of the later phases.

The unusually high proportion of bar motifs in all phases and areas, and especially their extreme concentration in the Billimina shelter with around 2000 examples (Fig. 4), has long been problematic in the analysis and interpretation of Gariwerd rock art (cf. Kenyon 1912; Massola 1973; Coutts and Lorblanchet 1982; Gunn 1987a). Should they be seen as single motifs (Gunn 1987a) or should each set be seen as a motif? Should they be extracted and examined as a distinct sub-set? If they are not separated from the overall corpus, what weighting should be given to their exceptionally high numbers? Should they be considered as a form of 'gestural mark' and disregarded in the analysis of the real rock art (cf. Rosenfeld 1999; Ross 2003; but note Bednarik 2002)?

A small panel at the Manya shelter consisting of a pair of bars, an emu track and a pair of 'roo tracks' (Fig. 5), however, suggested a graphic connection between the three types in which the bar motif was pivotal (Fig. 6). This then suggested that the majority of the 'Gariwerd A' motifs are related through a common system of graphic structure (Figs 7 and 8). The basic unit of this system was the ubiquitous bar motif. All of the major and most of the minor motif types can be constructed by either modifying or combining sets of this element (dot, line, emu track, crow track, 'roo track, lizard, stick figure motifs; a range of simple design motifs; and a distinctive elongated stick figure motif that is characteristic of the phase). The importance of the simplified 'emu track' motif as a cohesive design must also be stressed, as it is fundamental to the form taken by most of the other motif type schema (Figs 6-8). The 'emu track' is also the fourth most common motif type of the phase after

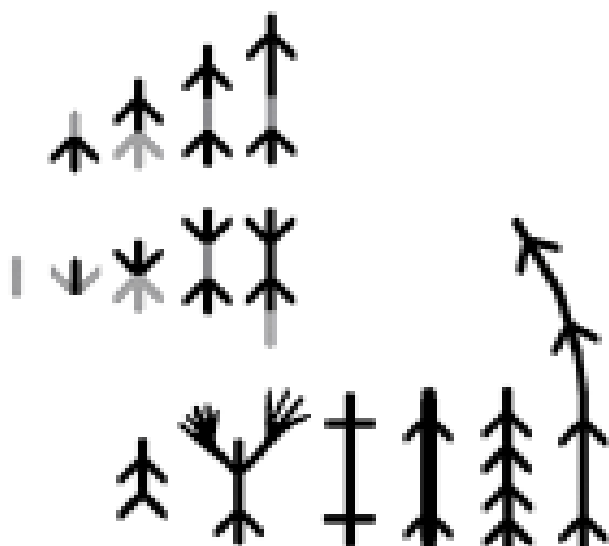


Figure 7. Development of 'human figures' from bars and 'emu tracks'. (Grey = element added to previous structure).

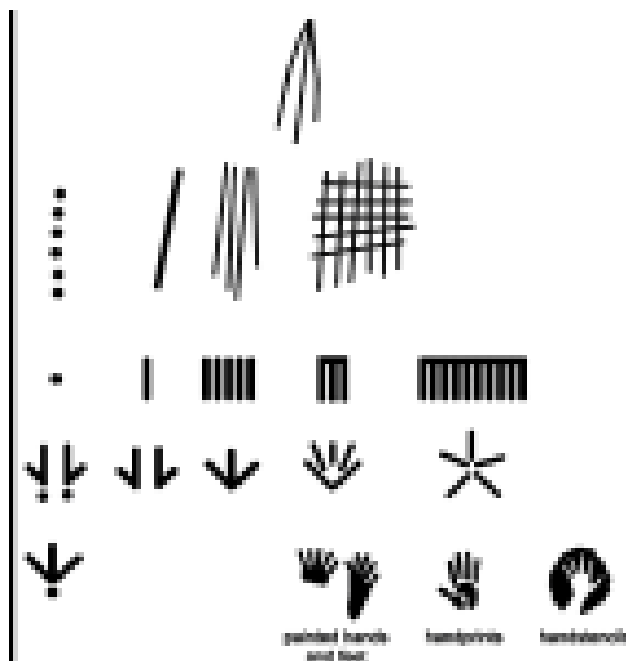


Figure 8. Association of principal motif types.

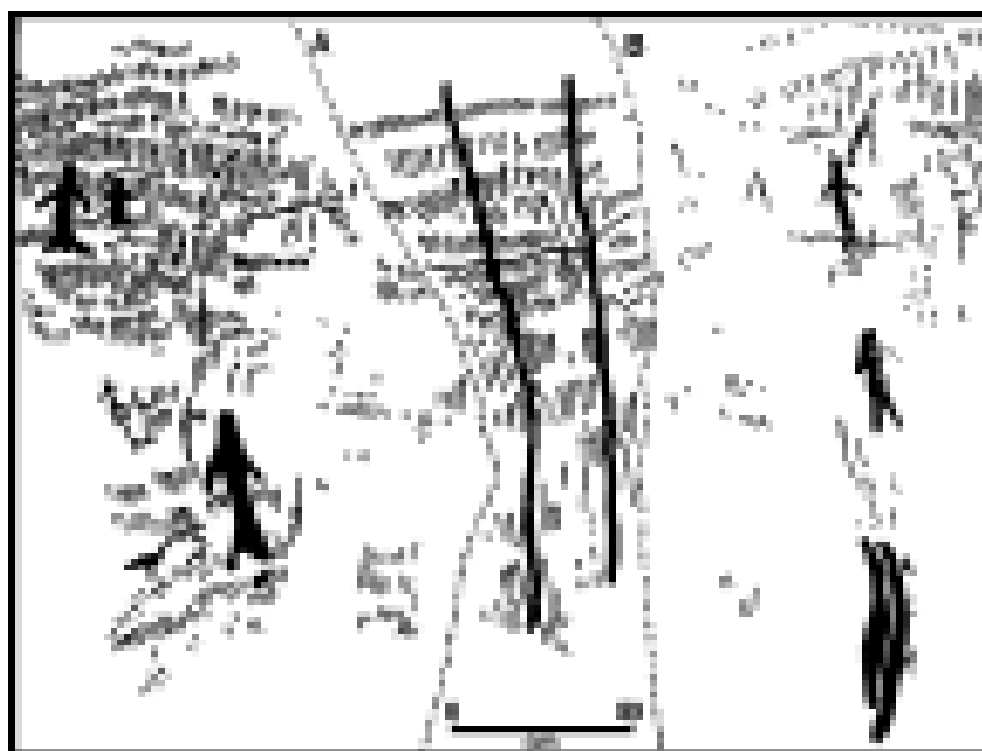


Figure 9. Section of the bar panel at Billimina. Note the general horizontal arrangement of rows. The bars tend to underlie all other motifs.

bars, 'human figures' and lines.

Along with simplicity of presentation and an essentially linear form, symmetry of both individual motifs and discrete compositions is a further component of this structure. This is clearly seen in the presentation of the bar, 'emu track' and elongated 'human figure' motif types. Groups of bars, in almost all instances, occur in formal arrangement of vertical units in horizontal rows (Figs 9, 10), while aggregates of 'emu tracks' occur as either vertical columns or horizontal rows (Fig. 11). The elongated

'human figure' motifs are generally vertical, frontal and static, and occur either as single motifs or as composed groups of a larger individual flanked by smaller figures (Figs 12, 13). Similarly, shorter-bodied stick figures occur either singly or in complex sets (Fig. 14). These patterns are so common that the few exceptions are noteworthy. The clearest of these exceptions occur at Gulgurn Many, the principal site in the Gunigalk area. One is a row of vertical bars bisected by a column of horizontal bars and the other consists of an arrangement of disorientated bars



Figure 10. Horizontal arrangement of painted bars superimposed by an array of drawn bars (Brim Springs 3).

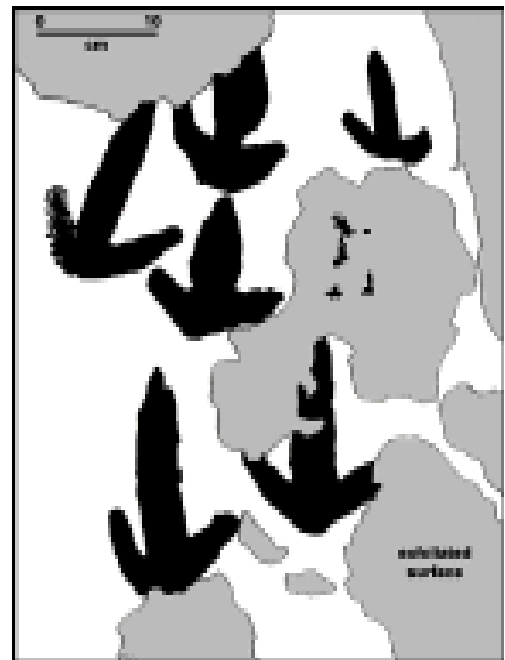


Figure 11. Vertical columns of 'emu track' motifs (Gulgurn Many).

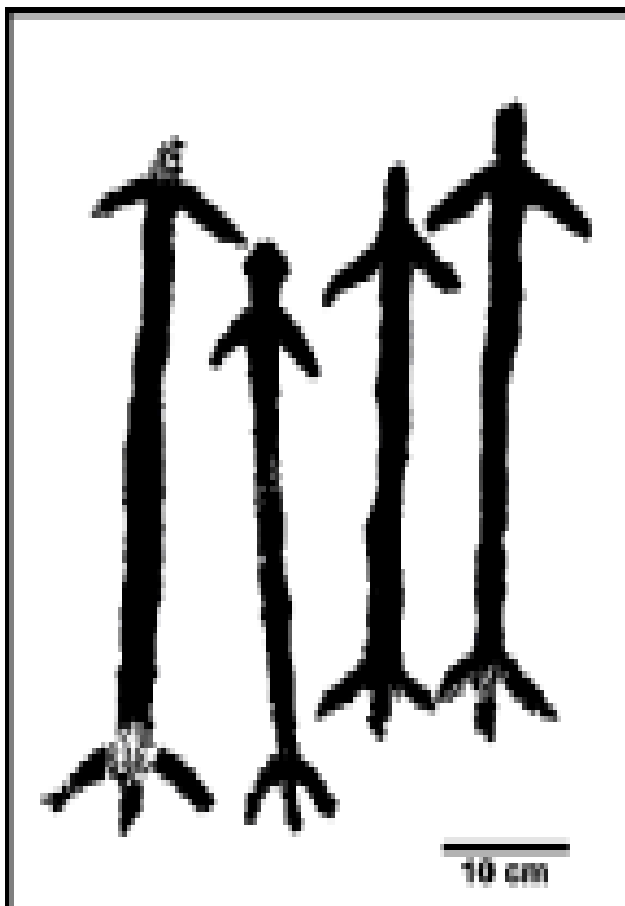


Figure 13. Arm/body length ratio 1 : 6.

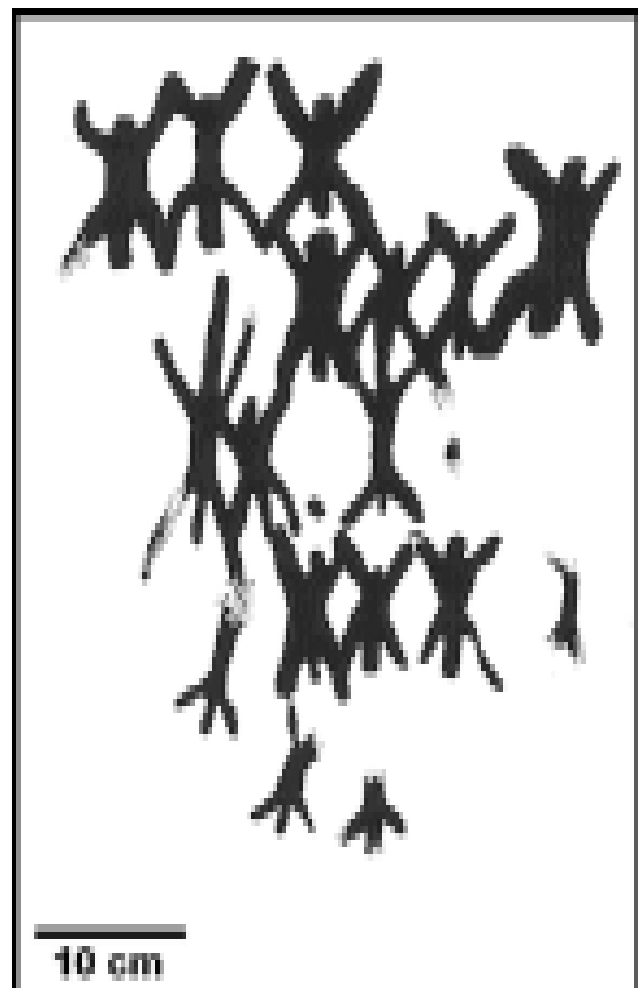


Figure 14. Arm/body length ratio 1 : 1.

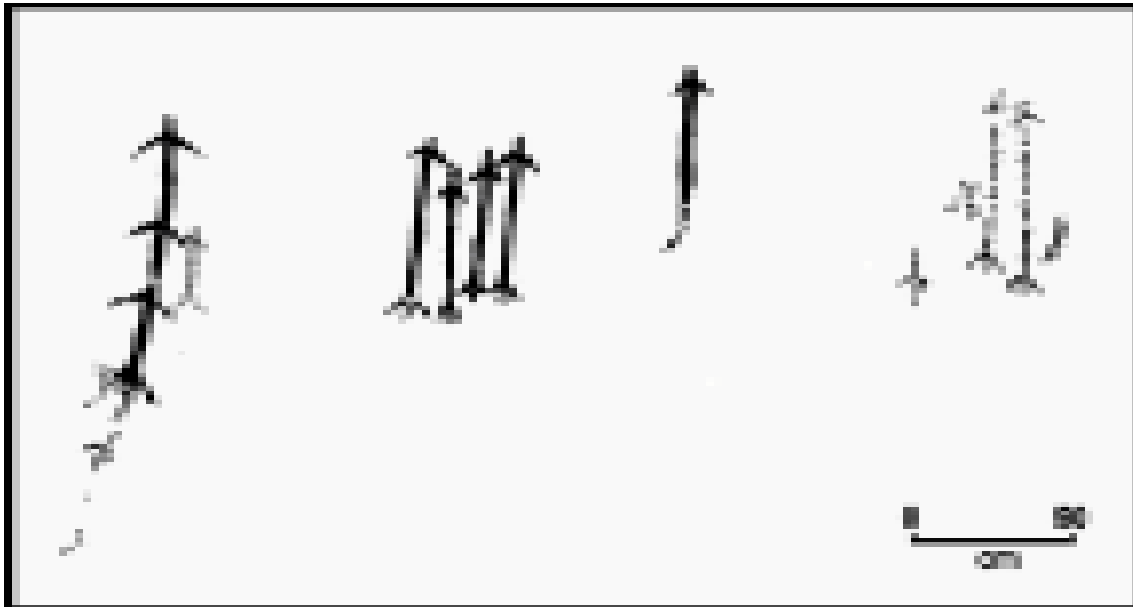


Figure 12. Array of similar motif types (Jananginj Njai).

Figure 15.  
Row of bars bisected by a  
column of bars (Gulgurn  
Manya).

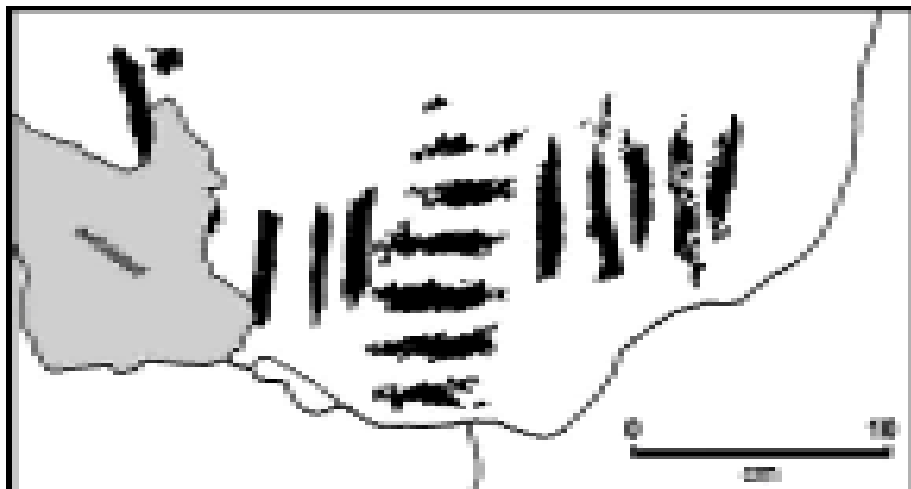


Figure 16.  
Random bars in association  
with hand prints (Gulgurn  
Manya).



(Figs 15, 16). Arrays of different human figure schema within the one panel, such as on a small panel at Jananginj Njai (Fig. 17), are also uncommon.

The non-complying motif types during this phase show a limited range of variation not very different to the motifs of this 'bar schema'. These latter tend to be of a spindlier nature, but also incorporate small numbers of simple closed motifs (such as ovals, 'P' shapes, spirals etc.), more naturalistic animal tracks (depicting pads and claws), and solid-bodied 'human figures' (Figs 18-20), along with painted, stencilled and printed hands. No examination of these motifs has been attempted at this stage.

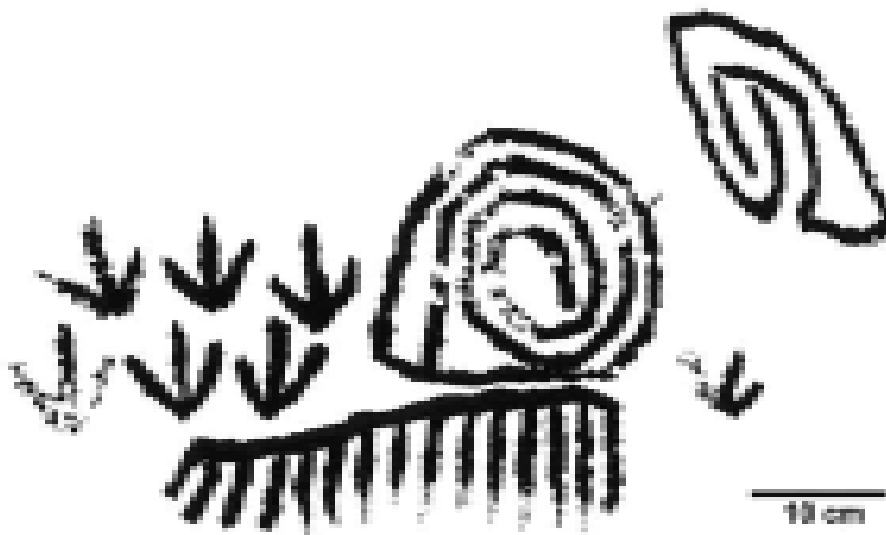
There are, however, a number of other structural groups within the phase that do not comply with this pattern, although their relationship is not far distant. These are:

- Long, loose, (spindly) linear forms (Figs 19 and 21).
- Enclosed forms (Figs 18 and 19).
- Naturalistic 'emu track' motifs (Figs 19 and 21).
- Freeform hands (painted) (Fig. 8).
- Preform hands (stencils and prints) (Figs 8 and 16).

All five of these groups can occur at the same site and within groups of apparently contemporaneous motifs. They are, however, fewer in number and less



**Figure 17.** Array of different 'human figure' schema (Jananginj Njai).



**Figure 18.** 'Emu track' and bar design with the region's only two spiral motifs (Black Range 3).



**Figure 19.** Spindly designs and naturalistic 'emu track' (Muline Ck 1).



widely distributed. For example, hand stencils are limited to the Billa-win and Burrunj areas, while hand prints are confined to the Gunigalk and Burrunj areas.

A problem not yet adequately resolved relates to the limit of the definition of related motif types. For example, when is a line an extended bar, and when is it a meander from a different group? For this exercise, motifs within the 'bar system' must have a stocky rather than a spindly or curvilinear structure, although there are clearly examples that bridge the different schemas.

A connection between the painted 'emu tracks' and hand motifs (painted, stencilled or printed) is postulated on a conceptual as well as a structural dimension. Both are or represent impressions of the real object (regardless of their 'meaning') and hence both are a direct reference to the existence of the signified emu or person. Structurally, the 'digits' of both types can be represented by bar forms (in the case of stencils by a negative form) radiating from an apex. A similar connection is proposed for the other bird (four-toed 'crow') and other animal tracks.

The distribution of the motifs of this 'bar system' was widespread throughout the Billawin area and it overlapped with sites containing non-complying motifs (Fig. 22). This is taken to reflect either chronological changes or that the two systems were operating in parallel. Until the question of chronology can be established, however, this question is unlikely to be resolved.

### Schematisation

To what degree the Gariwerd motifs diverge from a crude naturalism can be gauged by comparing the depiction of emu and macropod tracks with the motifs considered to represent these fauna in the art repertoire. While the etic interpretation of rock art is well known to be fraught with problems and is

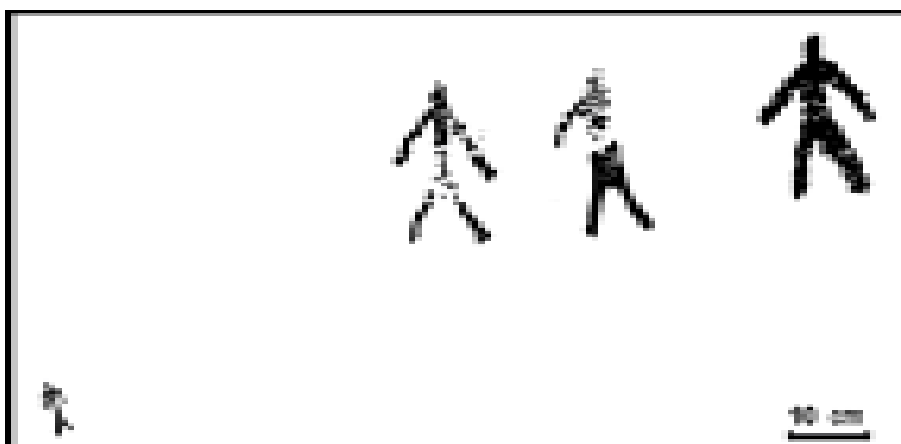


Figure 20. Non-complying 'human figure' schema (Druai shelter).

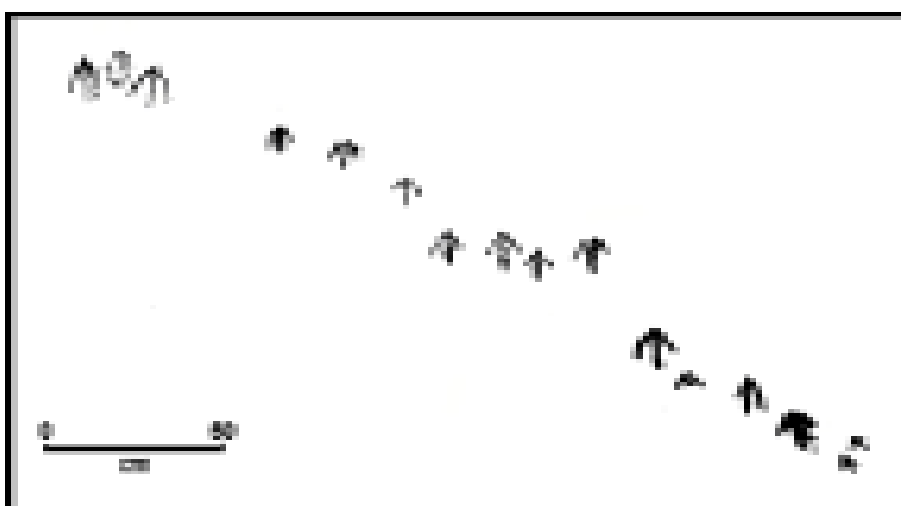


Figure 21. Non-complying 'emu track' schema (Glenisla 3).

often erroneous (cf. Macintosh 1977), the depiction of macropod and emu tracks has been well recorded in the ethnography from widespread areas throughout Australia (e.g. Mountford 1976; Bardon 1979; and see Layton 1992: 155), to such an extent that it is very unlikely that similar depictions in the Gariwerd art would not similarly represent these fauna.

Gariwerd has four common macropods; the eastern and western grey kangaroo (*Macropus giganteus* and *fuliginosus*), red-necked wallaby (*Macropus rufogriseus*), and swamp wallaby (*Wallabia bicolor*) (Day et al. 1984). The brush-tailed rock wallaby (*Petrogale ?penicillata*) was restricted to the rockier ranges but now appears to be extinct. The tracks of the eastern and western greys are very similar but these are very different from both the red-necked and swamp wallabies (Figs 23 and 24). The clearest distinctions are between the grey kangaroo and swamp wallaby. The former is elongated in shape, longer in overall length and with small side toes, while the latter is stubbier and has a distinctly protruding side toe (Table 1). The side toe of the swamp wallaby also juts out from the pad at a visually greater angle (Table 1, Fig. 24).

Species	Pad length	Long/side (in mm)	Small toe toe ratio
<b>orientation</b>			
Eastern Grey kangaroo	149	2.0 : 1	26°
Red-necked wallaby	109	1.7 : 1	22°
Swamp wallaby	117	1.6 : 1	35°

Table 1. Macropod toe statistics (measured from tracks of observed species in Gariwerd).

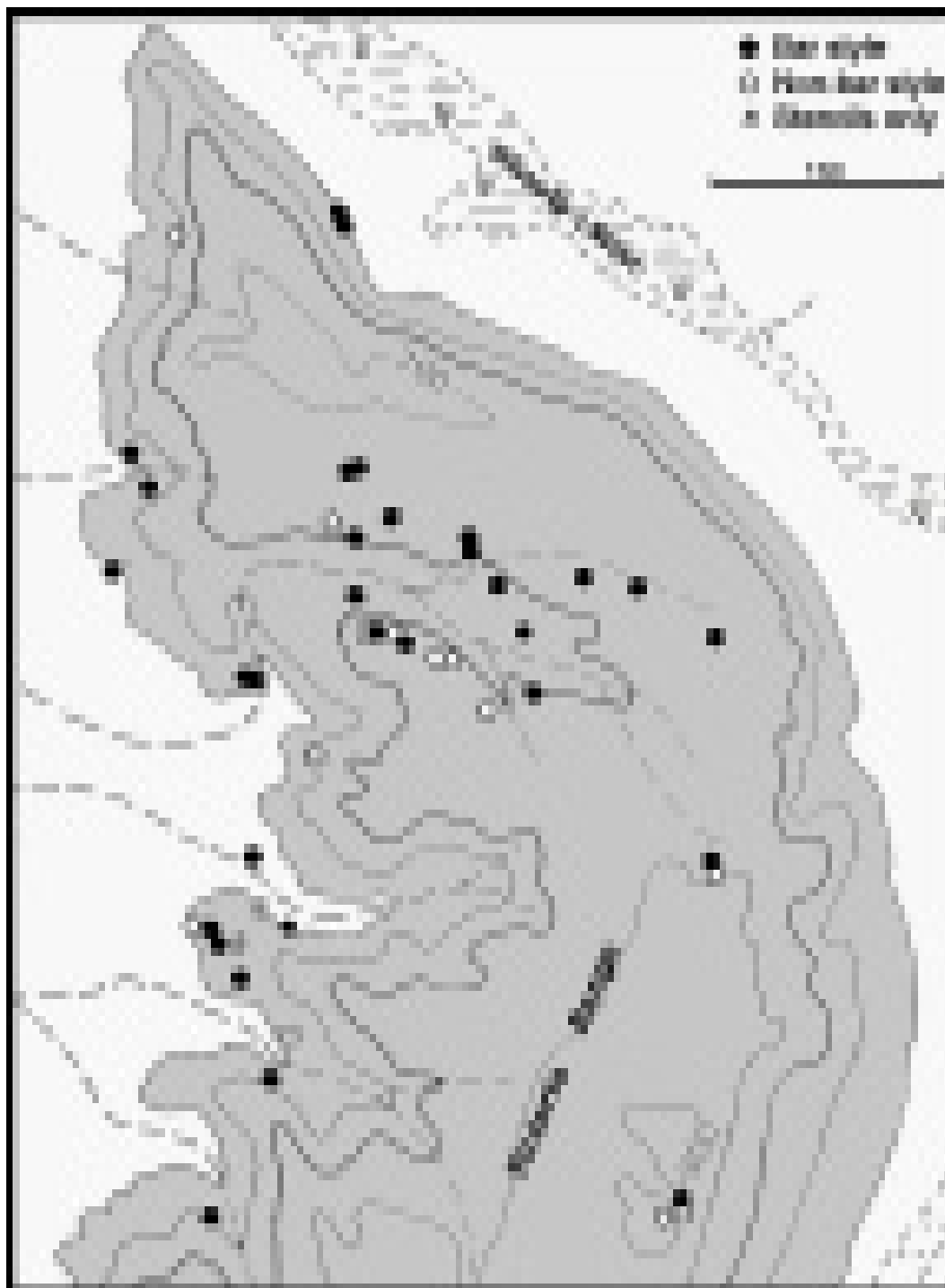


Figure 22. Distribution of phase A sites within the Bullawin area highlighting those with 'bar style' motifs.

On the basis of these measurements, the expected schematised forms (Fig. 24) would clearly differentiate between the *macropus* and *wallabia* species. This accords well with the rock art presentations in which all types are present but which are dominated by swamp wallaby track types. Unlike the 'emu tracks', which vary greatly in form from very naturalistic solid and linear forms to schematised linear forms, all 'roo track' representations are stylised in this linear form. The derived types are notably at odds with the types suggested by McDonald (1983, 1993), whose analysis was undertaken on the basis of pes morphology, while that here was derived from

the morphology of the imprinted track. As tracking was a principal skill of Aboriginal hunter-gatherers, track morphology is more likely to have been the inspiration for the rock art motifs throughout Australia.

Similarly, by far the greater number of 'human figure' motifs are stylised in a linear or solid+linear, frontal, static manner. None are naturalistic and very few have distinct heads. In contrast, the later white and drawing phases incorporate human figures with heads and bent limbs, as well as naturalistic silhouette representations of both kangaroos and emus.

This then suggests that the art of phase A was highly

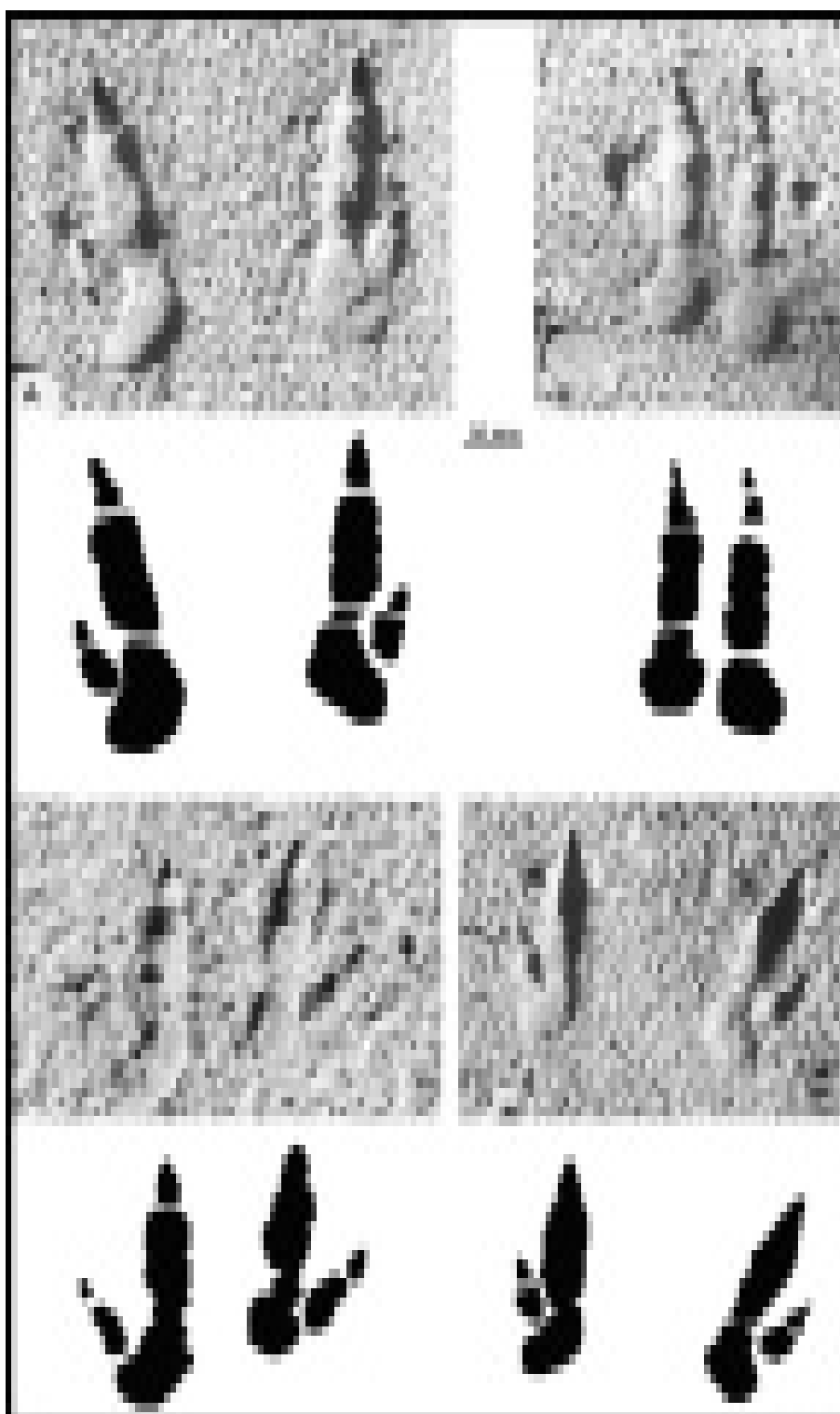
schematised although even with-in this stylisation, the distinction of different species was possible, if not required. (Examination of the larger and more variable suite of bird tracks in phase A rock art should further elaborate the extent of this stylisation).

### Discussion

Using a 'structural approach' (cf. Conkey 2001), the early rock art of Gariwerd has been shown to consist of a largely coherent body of motifs unified by a common graphic structure. That the Aboriginal artists were aware of this structural relationship is demonstrated by compositions at a number of sites, particularly in the Billawin area, but also elsewhere in Gariwerd region. As art reflects the society in which it is appreciated (whether as a produced or an acquired commodity) the formal and cohesive structure of this system suggests that it came from a society that valued formal and cohesive organisation. This in turn suggests that, at this initial period of rock art, this society itself was advancing toward a more formal structure (cf. Gunn 1983: 41).

During the following Phase B this structure is much less cohesive for, while a similarly restricted range of motif types continues to be used, the schemata changed to be more in keeping with the qualities of the preferred drawing medium that was used (Gunn 1984: 81). This then suggests that the initial formal period was followed by a less structured period that continued up to and overlapped with the early contact period.

Gariwerd appears to have been used continuously over the late Holocene and up into the contact period (as is demonstrated by a number of bark trays cut with steel axes cached in shelters on top of the rugged Victoria Range). The similar proportion of motif types from the three phases suggests that similar themes were behind the art production.



**Figure 23.** Gariwerd macropod tracks:

A = Grey kangaroo ambling B = Grey kangaroo hopping (fast)  
C = Swamp wallaby D = Red-necked wallaby

The two myths recorded referring to Gariwerd relate to the presence and activities of birds (Dawson 1881; Massola 1968). At nearby Larnijeering a similar association was recorded and the intervening Black Range contains a painting of Bunjil, who was the wedge-tailed eagle. The latest Gariwerd art phase also has a considerably higher proportion of 'bird track' motifs than the previous phases, suggesting a link between art and mythology. However, as the time-depth represented by the phase A motifs is unknown and may be in the thousands of years rather than the hundreds, no association can be made at this stage between the recorded mythology and the earlier phase motifs.

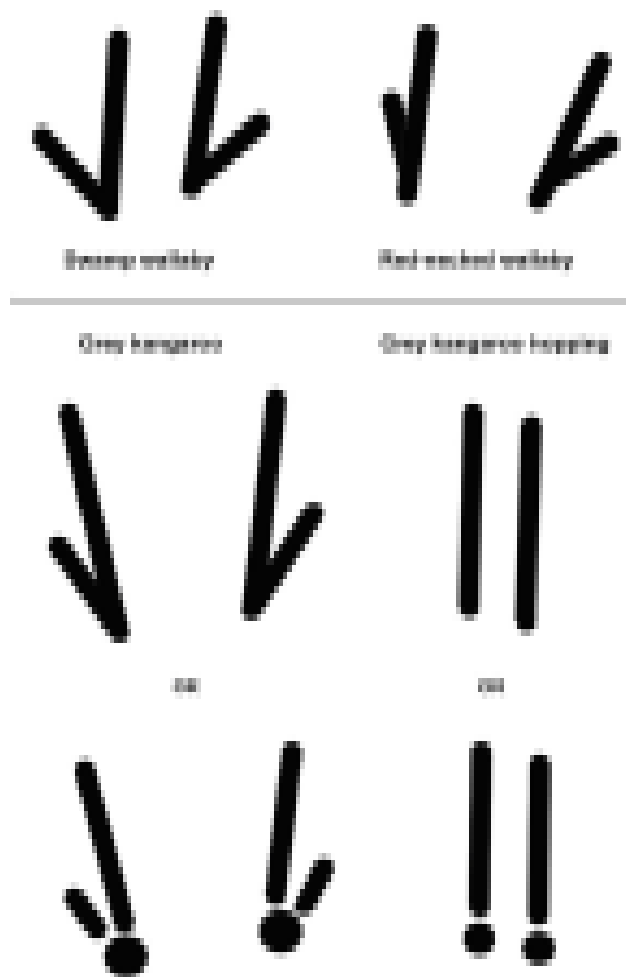


Figure 24. Schematised drawings of Gariwerd macropod tracks.

### Conclusion

Examination of the structure of motifs from the earliest surviving phase of Gariwerd rock art revealed a widespread and distinctive graphic system that integrated a common motif structure. Having identified its basic structure, further detailed examination of the individual motifs throughout Gariwerd should elaborate the range of variation around this 'norm' and towards individual presentations ('style 1' of Clegg 2002). Also, the identification of motifs with common variations may then be seen as reflecting the work of a single artist and hence possibly arrive at a formal method of tracing the movements and repertoire of a single individual (cf. Haskovec and Sullivan 1989; Mulvaney 1996). The results of such findings, however, must await the work of the next group of diligent researchers.

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