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DREAMTIME SUPERHIGHWAY: MODELLING A REGIONAL STYLE

This research has explored the interrelatedness of prehistoric art and other archaeological evidence in the Sydney region. Sources of stylistic variability in open engraving sites and sheltered pigment sites have been investigated. Diachronic and synchronic variations have been scrutinized, as have the effects of art medium and site location. The contemporaneity of art and occupation deposits in shelter sites was examined as a means of testing assumptions about the age of the art. This work was also important for developing models about how pigment and engraved art may have functioned across this area. A model to explain changing social interactions across the region which is founded in information exchange theory has been developed. The model adopts the view that style is a means of non-verbal communication used to negotiate identity (Wiessner 1990). It is proposed that the rock art in the Sydney region functioned as a prehistoric information superhighway. Through stylistic behaviour, groups around the region, who were not in constant verbal contact with each other, were able to communicate important social messages and demonstrate both broad-scale group cohesion and within-group distinctiveness.

Art characteristics in two contexts

Engraving sites

The engraved site sample was 717 sites containing 7,804 motifs. The average engraving assemblage contains 11 motifs. The majority of sites have less than eight motifs. Most engraving sites are located on open horizontal expanses of sandstone. A small number of engraving sites are found on vertical boulders close to major waterways.

The topographic location of engraving sites is more diverse than previous work suggested. Roughly half of the engraving sites are on ridgelines with almost as many in the hillslopes zone.

The predominant motif in the region is the human foot/track (*mundoe*), followed by fish, macropods, men and bird tracks. The predictive power of the classificatory distinction between Panaramitee and Simple Figurative assemblages, based on track proportions (Maynard 1976), is diminished by this result – although human tracks are not common in Panaramitee sites.

Shelter art sites

The shelter art sample comprised 546 sites containing 14,424 motifs. The average shelter art assemblage contains 26 motifs. Most sites, however, contain less than ten motifs.

The topographic location for this art context is more focussed than the engraved component. The majority of shelter art sites are located on hillslopes. The remainder are equally distributed between ridgetop and valley bottom locations.

The predominant identifiable pigment motif in the region is the hand (stencil). Macropods, anthropomorphs and land animals dominate the depictive motifs. The pigment art is generally in a

fairly poor state of preservation. This, combined with its more *ad hoc* production, meant that only 60% of all pigment motifs in the region could be classified to motif type.

Most shelter art sites also have surface evidence for occupation, although this is difficult to quantify based on site records. Excavation programmes around the region directed at testing PADs (Potential Archaeological Deposits) have revealed that a large proportion of sites with no surface manifestations are indeed occupation sites (e.g. Attenbrow 2004, JMcD CHM 2005a).

General comparisons of the two contexts

A comparison of the two art components reveals the following points about the nature of these extensive regional art bodies:

- 1) The two art bodies represent different manifestations of the same art tradition – although they demonstrate inherently distinctive traits due to their different repertoires of technical options;
- 2) Shelter assemblages are generally larger than open engraving assemblages;
- 3) There are striking similarities in the motif preferences demonstrated by the two components with several major differences (e.g. marine depictions dominate the engraving assemblage, but these themes are relatively absent from the shelter art assemblage);
- 4) Stylistic clines and boundaries are demonstrated by both art components, and there is considerable congruence in the location of these;

A previously identified style boundary within the region (McMah 1965, McDonald 1985a) is confirmed at the Georges River. The location of this boundary is based on the presence/absence and proportions of different motifs and on overriding schematic differences on either side of this river;

- 5) Shelter art sites are present in great numbers across the entire Hawkesbury sandstone landscape, while the distribution of engraving sites is more restricted. There is a dense core of engraving sites in the central coastal area of the Basin. Engraving sites decline in frequency towards the north-west, although assemblage sizes in this area are very large. To the south of the Basin, particularly south of the Georges River, the number and size of engraving sites diminish.

Systematic survey in areas with otherwise low numbers of engravings has revealed a real absence of this site type in parts of the region (e.g. Attenbrow 1987, Attenbrow and Negerevich 1984, McDonald 1988a, 1990b).

The distribution of engraving sites, particularly the apparent focus in the *Guringai* area and relative paucity south of the identified style boundary may be indicative of different social mechanisms operating across the region.

Art production in shelter locations is ubiquitous across the region. Again this suggests that these two art contexts provided the opportunity for distinctly different symbolic behaviours. All local groups across the region used pigment art to negotiate identity. This type of behaviour occurred on both sides of the style boundary. While different stylistic behaviours are indicated by this boundary, it would appear that the behaviour - or social context - of this type of art production, transcends this boundary.

Contemporaneity of art and deposit

The contemporaneity of art and occupation deposit was demonstrated at three shelter art sites. At all three sites, it could be argued that the main phase of pigment art production coincided with the most intensive period of shelter occupation. In multi-phased art sites, earlier low-intensity occupation could be argued to have an artistic component, also of low intensity. Proving this earlier association was more difficult, however.

Prior to this study, more than 30 shelter sites with art had been excavated across the region. While only one of these had been excavated to provide a context for the art, an analysis of these shelters demonstrates broad contemporaneity of art and domestic activities across the region. Significantly this analysis showed that the patterns of occupation in shelter art sites mirrored the indices exhibited by occupation sites generally. This result suggests there are no intrinsic differences in the nature of occupation in shelters with or without art. Only the UDM shelter indicates that art production in sheltered locations may have continued once shelters were abandoned as places of occupation – and this evidence is inconclusive.

Pigment art produced in occupation shelters would have been accessible to and viewed by undifferentiated parts of the community engaged in general domestic activities. This art was fulfilling a function very different from art being produced in a context where there was a restricted viewing public. This argument is developed further below.

The analyses of contemporaneity also demonstrate evidence for diachronic change in art production in the region throughout its occupation. The clearest evidence for this is with pecked intaglio motifs in shelter sites, interpreted here as ‘residual Panaramitee’ (see Mt Yengo discussion). While most of these engravings are not in datable contexts, the Yengo 1 excavation supports the contention that this art style predates the majority of the art and occupation in the Sydney region. A similar pattern has been demonstrated in numerous other Australian art regions (e.g. central, south-eastern and northern Queensland, central Australia, and elsewhere.).

Only a small number of shelter sites contain residual Panaramitee engravings. The evidence for an earlier, low-density artistic tradition predating the main occupation and artistic period of the region matches the evidence for low-density early occupation of rockshelters and open locations (e.g. Attenbrow 2004; JMcD CHM 2005a, 2005b, 2005c). There would appear to be a continuing tradition over time for art to be produced in shelters that are also occupied.

In some parts of the region, there are more sites where earlier, residual Panaramitee art was produced. There are 55 shelter sites with engravings amongst their assemblages in the north of the region, but only two such sites to the south. Almost half of the northern shelters contain miniature-Sydney or incised engravings. Most of the sites with pecked circles and animal tracks are located in the Macdonald River and Mangrove Creek drainage basins. This suggests that early occupation of the region may have been focussed in these major tributaries of the Hawkesbury River (Bowdler 1977)⁴². The majority of the earliest occupation sites in the region are in similar contexts (e.g. Attenbrow 2004; Kohen *et al.* 1984; JMcD CHM 2005a, b and c).

Diachronic change in the shelter art

Diachronic variability was explored using 65 shelter art sites in the Mangrove Creek Valley. On the basis of superimpositioning, motif preference and multivariate analyses of motif and technical variables, three phases of art production were discerned. Based on broadly similar patterns identified in a number of sites in different locations, this sequence is extrapolated to the broader region:

⁴²The two southern sites with engraved macropod and bird tracks are located in the Georges and Wollondilly River catchments, the latter being in the upper reaches of the Hawkesbury-Nepean. There are also two sites with engraved bird tracks in the Blue Mountains, around the headwaters of the Grose Valley (another tributary of the Hawkesbury River).

Sydney Basin Art Phase 1	pecked engravings of mostly tracks and circles.
Sydney Basin Art Phase 2	red paintings, red hand stencils, and possibly white hand stencils (the latter two do not co-occur).
Sydney Basin Art Phase 3	a proliferation of techniques and colour usage, perhaps starting with plain dry black and dry red motifs and then developing into a range of paints, dry bichromes, stencils of varying colours, polychromes and incised motifs. Outline-only motifs end the sequence in many shelters, although contact motifs include white stencils and drawn red and white outlined and infilled forms.

Across the region, during Phase 3, there is often localised variation in technique proportions, motif preference and timing, as identified in the synchronic analyses.

A chronology for the Mangrove Creek art sequence was based on associated dates in particular shelter sites. This was initially correlated with the UMCC lithic phases, and based on associations in certain sites. The art sequence was assigned to broader cultural phases which seemed to be the most judicious calibration of the art with the stone tool phases.

Art Phase 1	Pre- Bondaian	> 4,000 years BP (minimum)
Art Phase 2	Early Bondaian	> 4,000 years BP
Art Phase 3	Middle to Late Bondaian	4,000 BP - European contact

Difficulties in accurately contextualising this chronology arise because of the scarcity of sites with art in dateable contexts, and because of inconsistencies in dating the UMCC Stone Tool Phases in particular sites. A correlation of Art Phases with broader Lithic Phases appears to be the most judicious way of categorising this material. It is argued that the main art production period in most sites is contemporaneous with the most intensive period of stone tool production within shelters; i.e. the Middle Bondaian. Art production continued into the late Bondaian, however, and indeed up until contact.

The production of the art in shelter contexts continued without appreciable stylistic change from the Middle to late Bondaian. The significance of this finding is discussed, below, with reference to the model for stylistic behaviour developed for the region.

The diachronic analyses indicated that appreciable changes in style did not occur over the main period of art production. Thus, synchronic variability should not be unduly affected by diachronic ‘noise’. As indicated above, ‘older’ art sites, as with the earlier occupation evidence, appear to be focussed on tributaries of the Hawkesbury-Nepean. There seems to have been a rapid decline in art production in the post-contact period. The cultural upheaval which occurred with the European invasion does not appear to have been given voice in the art.

Synchronic variability: both art components

Engravings

Multivariate analyses indicate that the Sydney region’s engravings are relatively homogeneous and that there were no distinctive internal divisions. This result is as would be expected in a regional art body. The CA results do demonstrate, however, that stylistic variability can be discerned across the region. In only one area is this variability significant enough to suggest a style boundary. In other parts of the region, stylistic changes are clinal. The CA demonstrates that sites in the central

coastal area have the greatest stylistic homogeneity. As one travels out from this central coastal area, stylistic heterogeneity increases. The sites at the very north and south of the region are the most heterogeneous found in the region.

Broad geographic trends in style were identified, and the assemblage was investigated in terms of contact language areas and drainage basins. These analyses focussed on three areas:

- the north-western inland zone, in *Darkingung* country;
- the central coast and inland south of the Hawkesbury River, crossing the *Guringai* and *Darug* language boundary; and,
- the south of the Georges River, in *Tharawal* country.

The *Darkingung* and *Guringai* language areas have the most homogenous engraving assemblages, followed by the *Darug*. The *Tharawal* engravings are the least homogenous.

The analyses based on motif classes have demonstrated thematic differences across the region, reinforcing the idea that a significant degree of stylistic information can be provided by this approach. This broader level of analysis was complemented by an investigation of rare motifs and ‘compositional details’ (Sackett 1990). More specific levels of information were sought to determine the degree of *vernacular* variability.

The analysis of rare motifs confirmed the localised character of the engraving assemblages in different parts of the Basin. It also confirmed the separation between the *Tharawal* and all other language groups. Sites with culture heroes, profile anthropomorphs, axes and contact motifs occur in the west of *Guringai* territory and to a lesser extent in *Darkingung* territory. These motifs’ distributions suggest a design ‘link’ between these two language areas, confirming the CA results. These motifs demonstrate aggregational contact (Conkey 1980) between these language groups.

Compositional details also revealed design contact between *Guringai*, *Darkingung* and *Darug* language areas and confirmed the dissimilarity of the *Tharawal* engravings. Design variability on shield motifs was extraordinarily diverse in the *Guringai* area, with both fewer motifs and a marked decrease in design options being found outside this language area. Again, graphic vocabulary stems from the *Guringai* area, and design influence flows from this area into the other areas.

These findings have significance in light of ethnohistoric evidence for the inequality of groups around Port Jackson area. The *Guringai* speakers to the north of Sydney were noted to be socially influential:

(by the) influence of their numbers and muscular appearance ... there is no doubt of their decided superiority over all tribes with whom we are acquainted. (Collins 1798[1975]:453)

Shelter Art Sites

The analysis of this art context initially commenced with an overview of regional technical options and motif foci. Again broadly similar regional characteristics were identified as were varying stylistic preferences across the region. The variability demonstrated by technique variables is generally less than that demonstrated by motif variables.

Colour usage in the different language areas reinforces differences in stylistic preference across the region. In the south of the region there is a definite preference for black drawings. In the centre of the region there is a co-dominance of red, black and white pigments. In the north of the region there is a definite focus on white stencils, white drawings and white paintings. This dominance of white supports a model of contact between the Hunter Valley and this part of the Sydney region.

In most parts of the region, stylistic changes are clinal. The degree of stylistic homogeneity is generally less in this component than in the engraving component. The *Tharawal* language area is clearly differentiated from all other language areas by its relative absence of hand stencils.

Variation can be explained in terms of the defined language areas, and there are varying degrees of stylistic variability in each. The analysis of sites according to defined drainage basins and language areas confirmed a mosaic of stylistic variability.

The stylistic core of shelter sites based on motif and technique occurs in the *Darkingung* and northern *Darug* areas. The *Guringai* and southern *Darug* sites are the least homogenous, while the *Tharawal* sites similarly demonstrate high levels of stylistic heterogeneity. The location of the *Darug/Guringai* language boundary was supported by shelter motifs, and by outlier focus based on technique.

In the *Darkingung* area, the motifs from three drainage basins were revealed as having very similar levels of homogeneity, with clinal variation in motif preference. This same sample revealed quite marked variability in terms of technique.

The southern *Darug* and *Tharawal* sites are highly heterogeneous in terms of motif themes while the techniques used in these adjoining language areas are very similar. The sites in these areas do not support a boundary between these language groups, and there are strong associations demonstrated by shelter art sites between the southern *Darug* and *Tharawal*. These include the schematic differences described above, and the fact that neither is associated with an extensive engraved component.

The analysis of rare pigment motifs demonstrated significant differences between this and the engraved components. Design contact and influence identified in the engraved shields were not matched by similar design detail in the sheltered component and nor were the ornate and impressive engraved culture heroes (found mainly in the *Guringai* area) matched either in extent or in the range of variation in the shelter art component. These results support a model for the expression of very different social behaviours in the two art contexts.

Social context and stylistic information

Shelters versus engravings

In order to investigate the stylistic variability in these two art contexts, it was necessary to consider the potential for heterogeneity in each. If the basic potential for variability exists in either medium, then variability demonstrated needs to be greater than the intrinsic potential for variability for significance to be claimed.

The motif classes used for the two assemblages were almost identical, with two extra motifs being counted in the shelter art assemblage. It was possible that the very similar motif classifications would make it difficult to differentiate the potential of either medium for greater heterogeneity (e.g. Gamble 1982 cf. Soffer 1987).

One potential source of greater heterogeneity in the shelter art assemblage is assemblage size. Shelter art assemblages are considerably larger than their open engraved components. The general statistics for site size (Table 13.1) indicate that the potential for heterogeneity of motif assemblages is far greater for shelter art sites than it is for engraving sites. The variability inherent in shelter art sites is three times as great as that demonstrated by the engraving sites. When looking at the numbers of motifs used in the different media, however, this variability is substantially decreased (Table 13.2). While the maximum number of motifs present at any one shelter site is greater than found with engraving sites, the standard deviations for the two are very similar.

Motif occurrence (maximum number of times a motif is present) and the motif emphasis (percentage of sites at which motifs have been depicted) both indicate that while there are different foci in the two media, both show a general consistency of motif use. No particular emphasis is shown for particular motifs in either context. *Mundoos*, fish and macropods are the

most commonly depicted motifs in the engraved assemblage. These occur in 22% (157), 35% (250) and 34.5% (247) of engraving sites (Table 11.5). The most commonly depicted motifs in the shelter art assemblage are hands and macropods. These occur in 37% (206) and 40% (219) of pigment art sites (Table 12.6).

Table 13.1: Statistics for regional assemblage sizes, both art components.

	Shelter Art sites	Engraving sites
Minimum	1	1
Maximum	857	174
Mean	26.4	10.9
Stand Dev.	55.4	18.0

The potential for heterogeneity can be calculated based on the motif classifications used and the maximum number of times that motifs occurred in the two assemblages (C. Smith 1989: 126). The formula for potential combinations is:

$$F(n) = \frac{n!}{r!(n-r)!}$$

Table 13.2: Statistics for total number of motif categories recorded in both art components across the region.

	Shelter Art sites	Engraving sites
Minimum	1	1
Maximum	24	19
Mean	4.5	3.4
Stand Dev.	3.8	4.0

where 'n' equals the number of elements available in the system, and 'r' equals the number of elements combined.

For the engraving sites, 27 variables were used with no site having more than 19 different motifs. With the shelter art sites, 29 variables were used with no sites having more than 24 variables.

Engraving sites:

$$\begin{aligned} n &= 27 \\ r &= 19 \\ F(n) &= \frac{27!}{19!(8)!} \\ &= 2,220,075 \end{aligned}$$

Shelter art sites:

$$\begin{aligned} n &= 29 \\ r &= 24 \\ F(n) &= \frac{29!}{24!(5)!} \\ &= 118,755 \end{aligned}$$

The potential for heterogeneity (in terms of motif combinations) is significantly greater for engraving sites than for shelter art sites.

The multivariate analyses undertaken for this research shows that both Sydney art components exhibit synchronic stylistic variability in each of the language areas and drainage basins. The degree of stylistic heterogeneity was found to be greater in the shelter art component than is found in the engraving component - which is not the result which would be expected, given the calculated baseline potential to be heterogeneous.

The engraving component is more homogenous than the shelter art (a statistically significant difference) and this has equally significant implications for a cultural interpretation.

These varying levels of stylistic heterogeneity are seen to reveal different levels of transmission of social information. The greater stylistic homogeneity in the engraved medium demonstrates larger scale group cohesion. The more stylistically heterogeneous pigment sites demonstrate localised group identifying behaviour. This argument is supported by the archaeological data based on the principles of information exchange theory (Wobst 1977;

Wiessner 1989, 1990). The nature of participants (producers and viewers) in art production and social context is important in developing this argument.

The uneven distribution of engraving sites around the region suggests that the social cohesion provided by this medium was unequal – especially compared to the messaging potential provided by the ubiquitous shelter art medium. The *Guringai* territory with its highly homogenous engraving sites and design influence would appear to be the core area of social cohesion. The *Guringai* influence diminishes to the north-west of the region and is non-existent to the south of the region. The relative absence of engravings south of the Georges River style boundary indicates either truncation of broad-scale group cohesion (i.e. a different culture area) with alternative social mechanisms perhaps operating in this southern area.

Public vs Private engravings

Social context based on levels of visibility was investigated using engraving sites in the *Guringai* language area. The art sites in the foreshore resource zone at the bottom of steep cliffs and the intermediate hillslopes provide a different social context to the open engraving sites on the less economically-productive plateaux above.

Bowdler demonstrated the potential of shell middens to inform upon ‘dynamic relationships in the economic sphere of cultural systems’ (Bowdler 1976: 248). Since then, the contribution of women to the formation of middens has been widely recognised, although with few exceptions (e.g. McDonald 1992b; Meehan 1982, 1988) Australian analyses have continued to focus on a range of unengendered topics such as dietary estimates, changing resource structures and the exploitation of these (e.g. Bailey 1975; Beaton 1985; Mackay and White 1987; Przywolnik 2005; Sullivan 1987), or on dietary reconstructions and the question of intensification (e.g. Hughes and Lampert 1982, Woods 1989).

The sites around the foreshore are close to estuarine resources and most would have been accessed either by canoe or on foot. The estuarine foreshores in the *Guringai* area are characterised by extensive and often continuous open middens as well as middens in shelters. Many of these are associated with rock art, both the pigment form and the unusual vertical engraving type described earlier. The foreshore zone was the focus for women’s shellfish collecting and men fishing. Ethnohistoric reports indicate that women beached their canoes and ate their catch on shore (Collins 1798[1975]; Tench 1793[1961]).

The art around the foreshore informs us of very different artistic behaviours from art sites which are viewed by fewer people or by people operating in a less casual context. The art produced in this highly visible context should reflect group identifying (bounding) behaviour while that occurring in socially less visible locations should demonstrate bonding (Wobst 1977, Wiessner 1990). The art produced around the foreshore should function much as in shelter art sites, since the audience to this art’s production includes the entire group in their daily economic round.

The analysis of open ridgetop engravings on horizontal platforms and foreshore engravings on vertical boulders was done within a single language area. The overall motif emphases (i.e. graphic vocabulary) in these locations were similar but stylistic expression was not. CA results of the engraving sites in the two contexts confirm that the engraving sites located around the foreshores are stylistically more heterogeneous than those occurring on the plateaux.

The presence and use of the vertical engraving sites around the foreshore zones, in a different local social context, provides supplementary evidence for bounding behaviour in the region. The analysis of selected stylistic variability contextualised by social visibility confirms a number of predictions about style being used as non-verbal communication.

A model for social and territorial interaction across the region

The Sydney region is a fertile coastal zone with varying localised biomass (coastal, estuarine, hinterland). In terms of foraging and social interaction, the environmental and seasonal conditions

were fairly predictable. Owing to these relatively predictable resources and the likely social pressure induced by large population sizes especially post-sea level rise, well-developed group identity and formalised group membership would be expected as a mechanism to control access to resources and a prescribed territory.

In a relatively non-stratified society, such as in the Sydney region at contact, significant within-group differentiation on grounds other than age or gender would not be expected. The Sydney region may have presented a closed and cohesive cultural system to the groups outside its boundaries, but within this system interactive networks were relatively open. The fact that there were overriding cultural similarities among the groups across the region suggests that while bounding behaviour was practised, the lack of inter language-group cultural distinctiveness resulted in low levels of inter-group differentiation. Different local groups did exist across the region, notably as expressed in language, but the societal differences between them were less than the overriding similarities of the larger cultural bloc.

While the population density was generally high, there was not fierce competition over resources as these were distributed across the entire region. Social interaction within and across linguistic boundaries was observed at European contact. Organised social events, e.g. initiation ceremonies and dances, as well as the exploitation of windfall resources such as feasts on beached whales, resulted in aggregations of large numbers of people of mixed language groups. There is no ethnographic evidence for a rigid demarcation of territorial boundaries – particularly on the resource-rich coastal strip. This territorial organisation, and the overriding regional cultural similarities, initially suggested that the spatial organisation of art traits would not demonstrate smaller-scale boundary maintenance (Wobst 1977).

Previous social reconstructions tend to suggest that a number of dialect groups existed in each of the four identified language groups (Kohen and Lampert 1988). The foraging areas of local groups probably varied according to local biomass, but were relatively small. The analysis of drainage basins undertaken in this work attempted to achieve meaningful subdivisions within the larger language areas, and indeed, successfully demonstrated patterning in the art within language areas. This patterning may well represent the distribution of smaller dialect groups, and suggests that conscious group territoriality operated on a scale smaller than the language area.

Archaeological reconstruction suggests considerable change in settlement patterns over the period of the region's occupation. By 5,000 years ago, after sea-level stabilisation, occupation was well established within all habitats, but widely ramified social change is likely to have taken place owing to increased population pressure. Habitation indices and the interrelationship of art suggest that these patterns can now be expanded beyond technological description of the Eastern Regional Sequence (Hiscock and Attenbrow 2003).

Detailed work in the Mangrove Creek valley built on Attenbrow's (1987, 2004) model. The analyses undertaken here reinforced the variability inherent at the local level. Extrapolation of these patterns to the regional level is possible based on extensive work which has been completed over the last decade, particularly in open sites on the Cumberland Plain.

This research and subsequent analyses suggests that the timing for the transition between the Middle and Late Bondaian requires modification. The introduction of fishhooks c.1,000 BP and a number of more recent Middle Bondaian dates (e.g. Yengo 1 >540 BP: UDM c.1,200 BP and Loggers at c.780 BP) suggest that the changeover between these phases may have been later than the 1,600 BP as initially posited (Attenbrow 1987; 2004). A transition which coincides with the introduction of fish-hooks on the coastal strip and with the declining shelter occupation rates in the most recent millennium would be a more parsimonious treatment of the various strands of archaeological data, and thus a date of c.1,000 years is proposed for this changeover. The following dated phases are recognised across the Sydney Region during which time settlement patterns and signalling behaviours are expected to have fluctuated.

Pre Bondaian 30,000 years ago to 8,000BP

During the Pleistocene, groups appear to have been highly mobile, travelling considerable distances between sites. At this time, the focus of stone acquisition was on the Hawkesbury-Nepean River gravels. The cores and tools which people carried were quite large, but they used the stone sparingly, leaving few artefacts behind, and rarely discarding their cores (which acted as portable quarries). Rock art production focused on iconic designs found broadly across the continent and art reinforced broad-scale social networks.

Early Bondaian 8,000 years to c.4,000 years BP

Rising sea levels, stabilising after 6,000 BP, forced groups previously occupying the drowning coastal plain inland. Population densities across the region were still relatively low. Use of rock shelters was increasing or at the very least artefact discard increased so as to be archaeologically visible. Backed artefacts were introduced into the stone tool repertoire and in some areas were produced intensively. The focus of lithic sourcing shifted from the known gravel beds on the Hawkesbury-Nepean to more localised resources. While iconic engravings continued to be produced, along with transitional forms, the increased population pressures in the later part of this phase saw the early development of Sydney style figurative pigment art and open engraved art (Art Phase 2). The additional components of this art form appear when social networks become more powerful, partly necessitated by increasing social stresses resulting from sea level rise and decreasing (or shifting) territorial ranges.

Middle Bondaian c.4,000 years to c.1,000 years BP

A dramatic increase in population densities occurred during this time period. The use of rock shelters for habitation increased and there was a conspicuous increase in the use of these locations for artefact manufacture and discard. An increased population necessitated social mechanisms to mediate uncontrolled and possible conflict-marked interactions. Evidence for increasing cultural control is the death by ritual spearing of the Narrabeen man around 3,700 cal BP. Other evidence for increasing social prescription included a proliferation of symbolic behaviour, particularly that which demonstrated local group social affiliation. Symbolic behaviour probably took many forms including body decoration and scarification, as well as the use of decorated portable material culture. The pigment and engraved art of the region developed and flourished in this milieu of escalating sociality.

Late Bondaian c.1,000 years to European contact

There is no firm evidence for a population decline during this period, but there are indications of changing social organisation and lithic strategies. Settlement indices show that rockshelters continued to be used but that occupation and artefact deposition rates dropped in these locations. It is argued that as a result of changes to the social system (Walters 1988) the focus shifted at this time to open camp site locations. This focus on open sites is supported by the establishment dates for open middens along the south-east coast generally and by myriad open sites on the Cumberland Plain (chapter 4).

The ethnohistoric evidence supports this recent habitation focus in open ‘villages ... on the sea coast’ (Beaglehole 1955, Collins 1802[1975]: 460, Phillip 1789[1970], Tench 1793[1961]). The archaeological and ethnohistoric evidence suggest that over the last millennium, occupation patterns involved a move away from shelters as a primary focus for habitation. The ethnohistoric

literature also supports a model which encompasses larger territorial groupings, i.e. larger than single residence groups. Camping behaviour and spatial relations indicate that most rockshelters do not have a large enough floor area to accommodate a group larger than a single residence group.

The move out of shelters did not occur because the symbolic importance of these sites increased but was a pragmatic reaction to increased spatial requirements of larger social grouping. The increasing size of residence groups over time can be explained in terms of the shift to the dual social system (Hamilton 1980, Walters 1988).

Technological changes - particularly the introduction of fish hooks - suggest that there may have been an increase and a change in the nature of socially-shared food procurement activities (male hunting parties and women fishing). Such changes may have increased the reliability of food supplies, and supported increasing group sizes (Bowdler 1981). The change from family groups to gender-based foraging groups would not have been permanent social arrangements – but probably reflected daily and seasonal pursuits. The use of shelters on an *ad hoc* basis would have continued and increased mobility (compared to the preceding phase) is not suggested by the habitation indices (cf. Attenbrow 2004). The continued, but lower intensity use of shelters throughout the last millennium can be explained in terms of the patterns of aggregation and dispersal observed at contact. During times of seasonal abundance, groups lived in large, semi-permanent open ‘villages’. In times of resource stress these larger groups dispersed and continued to exploit their range of already-established rockshelters, in their smaller family or gender-based hunting and fishing groups.

Social interaction throughout this period would have necessitated use of mechanisms to control social interaction and enforce larger-scale group cohesion. Symbolic behaviour, throughout the last millennium, would have continued to be an important facilitator of interaction. It is possible that many engraving sites were produced during this late period – particularly in the resource rich coastal strip. Increasing social complexity would also have produced the required conditions (Wiessner 1984, 1989) for demonstrations of group cohesion: fear, real or potential inter-group competition and aggression, and a need for co-operation to achieve certain goals.

On the periphery of the region there is evidence that this type of social cohesion is reduced. The engraved assemblages show both a marked decline in numbers and increased levels of heterogeneity. The relative paucity of engraving sites, and high levels of heterogeneity south of the Georges River style boundary, suggest that enforcing group cohesion in this part of the Sydney culture bloc was not as important.

The ubiquitous shelter art sites consistently demonstrate higher levels of heterogeneity across the region and particularly at its periphery - supporting this model. Higher levels of stylistic homogeneity in this medium at the margins of the region indicate that territorial bounding behaviour at the culture area's periphery was of increased importance. A model for this territorial interaction is suggested by these art analyses (Figure 13.1).

The concept of social context has been extremely important in developing this argument. So has the notion that style is a means of non-verbal communication used to negotiate identity (Wiessner 1990). Shelter art sites, with their demonstrable public context, and vertical engraving sites in similarly public economical resource zones both demonstrate higher levels of stylistic heterogeneity. Stylistic heterogeneity is argued here to be a marker of localised group identifying behaviour. Higher levels of stylistic homogeneity in the engraving medium demonstrate a mechanism for increased broad-scale group cohesion. Discerning the social contexts of these different locations has been crucial to understanding the social messaging potential of these different art contexts. Complex patterns of variability across the region in both contexts demonstrate the nature of ongoing contacts between language groups, as well as areas where the tensions resulting from these contacts were greatest (i.e. between language groups and at the periphery of the culture bloc).

The rock art in the Sydney region functioned as a prehistoric information superhighway. Through stylistic behaviour, groups around the region, who were not in constant verbal contact

with each other, were able to communicate important social messages and demonstrate both broad-scale group cohesion and within-group distinctiveness. Throughout the Sydney region people signalled information about themselves using symbolic and iconographic signatures. This socially mediated their interactions, creating buffers against inter-group conflict during several phases of substantial change in their society, settlement patterns and territoriality.

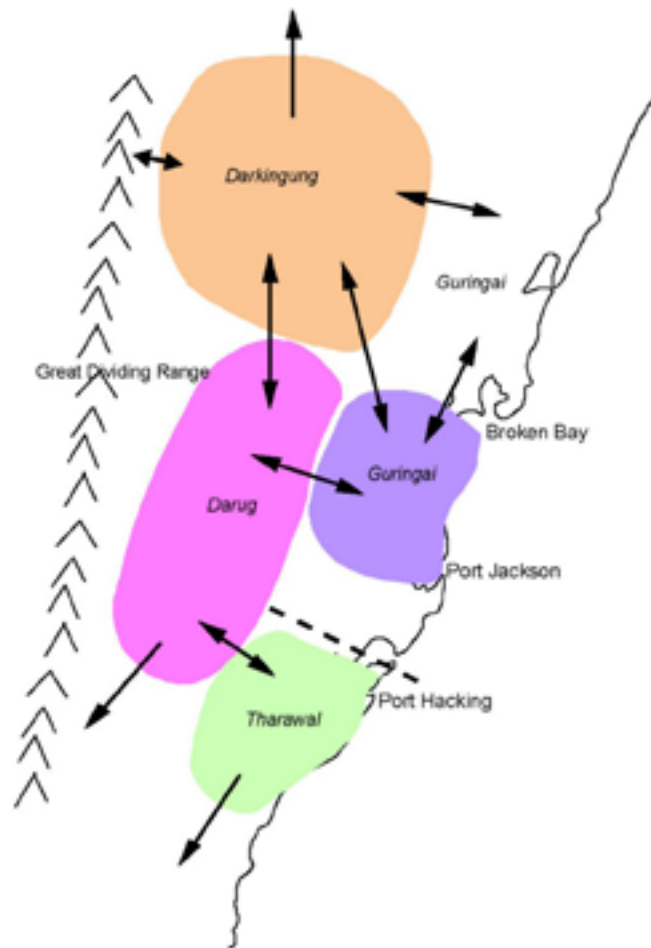


Figure 13.1: Model for territorial organisation and interaction across the Sydney region.