Picturing Pacific Prehistory
The rock-art of Vanuatu in a western Pacific context

Volume I
Text

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A comparative view of western Pacific rock-art

4.1 Introduction

In this chapter I use a variety of statistical techniques to generate patterns of similarity and difference from 160 rock-art sites in the western Pacific region, excluding Vanuatu (Figure 4.1). The results are used to re-examine previous models for western Pacific rock-art, particularly those proposed by Hugo (1974), Specht (1979), Rosenfeld (1988) and Ballard (1992a), and to develop a regional framework for examining the rock-art of Vanuatu (Chapters 6-8).

This chapter is divided into four sections. In the first section the data set which forms the basis for each analysis is described. In the second section the results of a series of frequency analyses on ‘non-motif’ data (e.g. geology, the height of motifs, topography and technique) are presented and compared with previous results obtained on similar data by Specht (1979) and Ballard (1992a). In the third section the results of various multivariate (MV) analyses on ‘motif’ data are presented and described, and the usefulness of MV statistics as a tool for studying rock-art in the western Pacific is evaluated. In the final section, the results for both non-motif and motif data are discussed in light of the issues and questions raised at the conclusions to Chapters 2 and 3.

4.2 Analytical methods

4.2.1 Data quality

I have noted previously that one of the limitations confronting Pacific rock-art research is the lack of standardisation in the recording and presentation of data. The analyses presented in this chapter compare rock-art from a variety of different sources, including published and unpublished images (the latter provided by individuals who have visited rock-art sites but not

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21 Figure 4.1 provides several categories of information for the first 160 sites, including:
1. Site numbers: a sequential site numbering system (from 1 to 160).
2. Site names: these are derived from the original site records. None of the Sialum (Morobe) sites are named so their site codes have been entered instead.
3. Site codes: most site codes for PNG can be found on the national site register (PNG Museum). Codes for other areas follow those employed by the original site recorder (e.g. David Roe for the Northwest Guadalcanal sites, Solomon Islands). If site codes have never been accorded to a site then no code has been entered.
4. Region: these are the geographic units I have defined for the statistical analyses conducted in this thesis.
published about them), unpublished manuscripts and fieldnotes, and published papers in journals and books. The information extracted from these sources include: (1) non-motif data, e.g. technical, geological and locational information examined and quantified in some detail previously (Specht 1979; Ballard 1992a); and (2) motif data, which have not been systematically analysed for the western Pacific region before.

All of the data collected for the statistical analyses presented in this chapter derive from site level information (except for New Caledonia; see below). I have generally included data only from sources which provide illustrations of the rock-art present at a site. Exceptions include sites for which there is considerable information available on non-motif variables. Where it is unclear whether a report or publication illustrates all of the rock-art present at a site, I have assumed that what has been made available constitutes a representative sample. Potential biases resulting from this assumption are explored in the discussion chapters later in the thesis.

Due to variation in the level of recording detail available for each rock-art site, the number of sites included in each analysis varies. For instance, those sites for which pigment colour has not been recorded are excluded from the analysis which calculates the distribution of pigment colours across the region.

### 4.2.2 Data registration

Information about each site has been entered into an Excel spreadsheet. Each row in the spreadsheet contains information relevant to a particular site. Each site has been investigated for the presence or absence of 641 different variables. The last row in the spreadsheet (site 160) contains information on the rock-art of a country (New Caledonia) rather than an individual site; the rock-art sites of New Caledonia have been combined and treated as a single site due to a lack of data available at the site level (see Frimigacci and Monnin, 1980).

Some sites in the sample (e.g. many of the sites in the Sogeri area, Central Province, PNG) consist of both paintings and engravings. For the purpose of statistical analysis, these sites have been accorded two rows of information, one for paintings and another for engravings. Even though there is a large number of sites which contain both paintings and engravings, there are only a few sites for which illustrations of pictures in both media have been made available by the site recorders.

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22Only after I had completed my analyses did I become aware of an unpublished paper by Frimigacci and Monnin (M. Spriggs pers. comm.), which contains information at the site level.
The first 27 column headings of the spreadsheet list the non-motif variables selected for analysis. The remaining column headings (n=614) list each motif type.

4.2.3 Motifs

A total of 67 motif categories, further subdivided into 614 individual motif types have been defined for the western Pacific. Motif information has been entered onto a spreadsheet as presence/absence (binary) data. The presence of a motif at a site has been registered as a ‘1’, and its absence as a ‘0’. As noted in Chapter 1, frequency data – not readily available in most site records – have been omitted from consideration. A lack of available data has also precluded an examination of motif composition (i.e. how pictures are configured in relation to each other on a panel).

A total of 1232 individual pictures have been assigned to motif categories and motif types. Each motif has been further classified as belonging to one of three groups on the Excel spreadsheet:

**Group 1: C - PT (590 columns):** These columns include presence/absence data for non-figurative rock-art motif types. The number of pictures which have been assigned to this group clearly outweighs figures for other groups (92%).\(^{23}\) Pictures were initially assigned to a non-figurative motif category based on their geometric properties. Each motif category is (usually) defined by a mathematically definable shape, such as a circle, trapezoid, or quadrilateral. Pictures which could not be accorded mathematical nomenclature have been assigned names which best describe their shape, such as ‘teardrop’ or ‘star’. These names are not intended to suggest what the picture represents, being used for classificatory and analytical purposes only. Each variant within a motif category is referred to as a motif type (or motif). An example of a circular motif type might be a ‘circle with outer rays’ or a ‘circle with inner spokes’. There are 43 motif categories and 590 motif types in this group.

**Group 2: CSC - SA (4 columns).** These four columns indicate presence/absence data for non-figurative motif categories (motif types have not been defined for this group). However, unlike Group 1, most non-figurative pictures assigned to this group cannot be

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\(^{23}\)Note however that this figure is based on the number of categories which I have subjectively defined for the data. Group 1 data has been divided into both ‘motif categories’ and ‘motif types’, whereas data from groups 2 and 3 have been divided into ‘motif categories’ only. However, based on an impression of the number of independent pictures, ‘non-figurative’ pictures clearly outweigh ‘figurative’ pictures. Although precise figures are not available, I would estimate the ratio of non-figurative to figurative pictures to be around 10:1.
defined on the basis of mathematical shape. The first three columns are a register of ‘complex forms’ which tend to combine (within the one motif) a number of the mathematically definable shapes listed in Group 1. Three different complex forms have been defined: ‘complex curvilinear’, ‘complex rectilinear’ and ‘complex rectilinear/curvilinear’. The fourth column is a register of ‘amorphous shapes’. These include non-figurative pictures which do not conform to any of the above categories. No two amorphous shapes are the same.

Group 3: Anthro - Zoo6 (20 columns). These columns contain presence/absence data for figurative motif categories. A picture which resembles an animate or inanimate object in the everyday world has been assigned to one of these motif categories (e.g. anthropomorphs). Motif types have not been defined for this group. That is, the motif category ‘anthropomorph’ has not been divided into sub-categories such as ‘stick figure anthropomorph’, or ‘anthropomorph with facial features’. Figurative pictures constitute approximately 10% of the total number of pictures in the sample.

Each motif has been assigned an analytical code. For Group 1 and Group 2, each motif category (e.g. circles) is identified by one or more uppercase letters (e.g. C = circles). For Group 3, codes for figurative motifs are generally identified by all or part of the name of the form that the motif most closely resembles (e.g. ‘turtle’). Figure 4.2 is a list of all motif category codes present in the spreadsheet.

Each column code in Group 1 contains information about both motif categories and motifs. Thus, C1 and C2 both belong to the motif category ‘circle’ but represent two distinct motif types. Also incorporated into some of the motif codes are lowercase alphabetical letters ranging from ‘a’ to ‘aa’ which are used to define aspects of the structure of a motif. These structural codes are repeated across different motif categories. For instance, Ca1 and Oa1 both share the structural code ‘a’. While they belong to different motif categories (one is a circle and the other is an oval) they both have a single line extending from them (‘a’ = single line extension). Definitions for these structural codes are listed in Figure 4.3.

At some sites (e.g. Vatuluma Posovi, in Guadalcanal, Solomon Islands), pictures have a tendency to merge into one another. That is, surfaces are so densely engraved or painted that it is difficult to separate out one picture from another. Analytical conventions have been devised to overcome this problem. If two lines are detached but appear to belong together as part of a continuous motif, then they have been treated as a single picture. If two or more detached pictures form part of a single (unified) geometric pattern, then they have also been
treated as one picture. If neither of these structural rules apply, then detached forms have been treated as separate pictures.

4.2.4 Description
Sites included in the sample to be analysed derive from regions most likely to have the closest cultural connections with Vanuatu, either through shared ancestry or via post-settlement interaction. Thus all known rock-art sites in Island Melanesia are included, as are a number of sites at the eastern end of New Guinea (see Chapter 3). While sites in the New Guinea Highlands, West Papua, Indonesia, East Timor and parts of Southeast Asia are omitted from the statistical analyses, they are considered in the interpretation of the statistical results.

4.3 Frequency results: regional distributions of non-motif variables
In this section I explore the frequency distributions of the non-motif variables located in the first 27 columns of the data matrix. While most of these variables have been considered in detail by previous researchers in relation to a much larger number of rock-art sites (e.g. Specht 1979, Ballard 1992a), some of the sites in my own data set have not been examined according to these criteria before. Thus, the results in this section serve both as an internal check of previous results on similar data, and as a cross-check of the results of the multivariate analyses on rock-art motifs presented later in this chapter.

The total number of sites available for analysis is 160, but because sites containing both paintings and engravings are treated separately, calculations are based on a total of 174 ‘sites’. Figure 4.4 indicates the total number of sites in the sample containing engravings, paintings, or both.

Figure 4.5 shows the total number of rock-art sites located in each geographical region. In later analyses I attempt to minimise the statistical effect of the smallest samples by amalgamating adjacent regions (e.g. by combining Sogeri with the rest of Central Province, and Sialum with the rest of Morobe).

4.3.1 Distribution of painted and engraved sites
Figure 4.6 indicates the total number of painted and engraved sites in each region. The largest numbers of painted sites are found in the western parts of the sample area, namely Manus, Milne Bay, Sialum (Morobe) and Sogeri, with significant representation also in East and West New Britain and New Ireland. South and east of these regions there is a decrease in painting relative to engraving sites.
This distribution—showing a clinal reduction in painting sites from west to east—corresponds with Specht’s (1979) preliminary findings (cf. Fig. 3.1; Chapter 3). However, new data available since Specht’s paper suggest that there are many more painted sites in Island Melanesia than originally supposed. In the Bismarcks, for example, my own figures indicate that the number of known painted sites has almost doubled. Matthew Spriggs (pers. comm. 2000) has also been informed of an unrecorded body of painted rock-art in northeast Bougainville (Teop language area), and Christophe Sand (pers. comm. 2000) has indicated the presence of several painting sites in New Caledonia which have not previously been published. In addition, as I will show in Chapter 6, my own data from Vanuatu raise Specht’s (1979) figure of three painted sites for the archipelago to over 30. This more recent evidence indicates that the west/east division of painting and engraving sites may not be sustained by further intensive work, except perhaps in parts of Polynesia (e.g. the Marquesas, Hawai‘i, and Easter Island) where detailed recording has revealed relatively few painted sites.

It is also worth noting that in areas of the western Pacific where intensive site recording has been undertaken the number of known painted sites has significantly increased (e.g. MacCluer Gulf, Sialum, Manus and Vanuatu). Perhaps it is because engraving sites tend to be situated in more open and therefore ‘accessible’ locations (as opposed to painted rock-art which is often concealed in dark caves and requires torch light to be seen) that they have received more attention in the literature (see 4.3.4 for further discussion on site locations).

### 4.3.2 Colour

Figure 4.7 indicates the distribution of pigment colours at painted sites. In accordance with Specht’s (1979) results, by far the most common pigment colour in the western Pacific is red, followed by black. Sogeri area displays the greatest colour range, and is the only region under consideration here in which polychrome and yellow pictures have been found.

Regions in the western half of the sample area (e.g. Sogeri, Milne Bay, Sialum (Morobe) and Manus) tend to display a relatively broad colour range and include bichrome and polychrome images. In regions to the east, and especially in Island Melanesia, monochrome images in

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24 Unlike Specht, I have not included figures for a category of site which is characterised by the presence of both paintings and engravings. The reason for this is that there are only seven sites in my sample (from only two of the 17 regions) which are represented by both media. Calculating the distributions for these sites would therefore not be a worthwhile exercise.

25 Outside the area considered in this chapter bichrome, polychrome and yellow rock-pictures occur extensively in the Highlands of Papua New Guinea, especially in the Eastern Highlands (e.g. Kafiavana)
either red or black are more common, with the frequency of black increasing towards the east. Whether this distribution reflects a lack of naturally occurring pigments in regions east of the Vitiaz Strait is a question for further research.

Overall, a clinal pattern for regional colour differences is detectable. The relative frequencies of polychromatic, bichromatic and red pigment pictures decrease in an easterly direction. Although the number of sites with black pigment rock-art is small, their relative frequency increases in an easterly direction.

4.3.3 Topographic context

Figure 4.8 presents the total number of engraved and painted sites occurring in different topographic contexts. My own figures correspond with Specht’s (1979: 68; see Table 3-8 and 3-9) in that boulders provide the predominant surface for engravings. Shelters, followed by caves and cliff-faces, are the primary locations for painted sites. There are some discrepancies between my results and those of Specht in relation to the overall percentage of engraved sites associated with cliff-faces. There are two main reasons for this:

1. Specht included New Caledonia in his calculations of the relationship between technique and topography. Eleven of the 17 cliff-face sites with engravings were found to derive from New Caledonia. Given that I have treated New Caledonia as a single site, I have been unable to provide distributions for topographic contexts represented in this region.

2. Specht and I appear to define ‘cliff-face’ differently. Whereas Specht described the Samoan sites as cliff-faces, I have categorised them as ‘platforms’, differentiating between surfaces which are vertical (cliff-faces) and horizontal (platforms).

Nonetheless, the results do imply the existence of specific region-wide conventions associated with the topographic placement of paintings and engravings, especially in New Guinea and western Island Melanesia.

4.3.4 Technique and location

Figure 4.9 presents the total number of engraved and painted sites occurring in different locational contexts. The majority of engravings are found on igneous boulders located either mid-river or on a river bank, a trait also noted by Specht (1979). Paintings, in contrast, are predominantly associated with ‘cliffed’ locations of limestone origin.
A further difference between the two media is that paintings tend to be associated with topographic contexts on or near the coast, while engravings are more commonly associated with boulders located further inland. A preference for painting on limestone and engraving on igneous surfaces may explain this distribution, given that boulders of igneous origin are more commonly found in inland regions. Differential erosion is likely to produce fewer cliffs or caves inland than along coastal margins, which may account for the preponderance of boulder sites in island interiors.

4.3.5 Distance from the coast

Figure 4.10 indicates the proximity of painting and engraving sites to the current coastline. The percentage figures are more informative than the total counts as there are almost twice as many engraved sites as painted sites in the sample. The percentages for engraved and painted sites located between 0 and 3km from the coast are relatively similar, although if this distance range is broken down further, painted sites are more commonly found on the coast (i.e. at '0 km') and engravings tend to be located some distance inland. Engraving sites are five times more common than painting sites between 3 and 12km from the coast. In contrast, painting sites are twice as common as engraving sites at between 15-18km from the coast. Three engraving sites and no painting sites were found between 18-30km from the coast.

While the high frequency of painting sites located between 15-18km would seem to contradict statements made earlier in relation to painting sites being primarily coastal and engraving sites being inland, it should be recognised that almost all of the inland (15-18km) painting sites derive from one region (Sogeri area). If Sogeri is omitted from the sample then almost all painted sites are coastally located.

It is also notable that most of the rock-art sites in my sample derive from coastal and coastal-hinterland areas. If the rock-art sites from the New Guinea Highlands were included then, as Specht has pointed out previously, painting sites would dominate over engravings in inland regions. The main point that can be made in relation to the distribution of sites considered here is that in coastal and coastal/hinterland regions, painting sites tend to be located closer to the coast than engraving sites.

4.3.6 Language

Figure 4.11 shows the total number of painted and engraved sites in areas currently inhabited by Austronesian (AN) and non-Austronesian (NAN) speakers. Painted sites are seen to be relatively evenly distributed across both language groups, while engraving sites are predominantly located in AN-speaking areas. Most of the NAN painted sites derive from
either the Sogeri or Sialum (Morobe) areas, both of which have complex linguistic histories. As I explore in later chapters, there is a distinct possibility that the rock-art in each of these regions was produced at a time when either Austronesian languages were spoken or there was extensive interaction with Austronesian speakers.

4.3.7 Height

The maximum height of rock-pictures at painted and engraved sites is recorded in Figure 4.12. In accordance with Ballard’s (1992a) findings, the majority of painted art is located high up on cliff-faces (more than 3.8m), either on sheer rock faces or nestled within shelters, alcoves or caves. Heights for engraved rock-art have only been recorded at three sites, and in each case it occurs at heights of less than 3.8m. As most engraved rock-art is associated with boulders, it rarely exceeds heights of 3.8m. Exceptions include some of the rock-art at the cave site of Vatuluma Posovi (Northwest Guadalcanal) mentioned in Chapter 3, and other cave sites in Vanuatu (see Chapter 6).

4.3.8 Topography and pigment colour

Figure 4.13 shows the total number of red pigment rock-pictures found in different topographic contexts. Most black rock-art (85%) is found in caves and shelters, whereas most red art is located in shelters and on cliff-faces. This finding is important because it confirms Ballard’s observation that the ATP (which is associated with visible cliff-faces or shelters) is predominantly associated with red pigment.

Figure 4.14 records the total number of red pigment and black pigment rock-pictures at different height ranges above the ground. The number of sites for which this information is available is very small (n=18), however red rock-art is generally found higher up on rock surfaces (and is thus more inaccessible) than black rock-art. Again, this result offers tentative support for the proposition that red rock-art at inaccessible heights is associated with the ATP.

4.3.9 Summary of results for non-motif variables

Nine main conclusions are derived from the analysis of non-motif variables across the western Pacific:

1. Recent reports indicate that there are now considerably more painted rock-art sites in Island Melanesia than originally thought; that is, wherever intensive rock-art surveys have been conducted (e.g. MacCluer Gulf, Sogeri, Sialum, Manus and Vanuatu). However, it is also the case that Vanuatu is the easternmost concentration of painted
sites. It is therefore likely that as more rock-art sites are found it will become less viable to conceive of painted rock-art as being a predominantly western trait (i.e. west of the Vitiaz Strait) and engraved rock-art as an essentially Island Melanesian trait. If a painting/engraving boundary can be defined for the Pacific region it will most likely lie between Vanuatu and Fiji.

2. The frequency of bichrome and polychrome rock-paintings decreases in an easterly direction. Although small samples limit interpretation, black rock-art appears to become relatively more common in the Island Melanesian region.

3. Boulders serve as the primary surface for rock-engravings. Shelters, caves and cliff-faces provide the predominant contexts for rock-paintings.

4. Most boulders are of volcanic origin and are situated within close proximity to a river course. Paintings tend to be found in limestone ‘cliffed’ locations, either on vertical cliff-faces or nestled within caves, shelters or alcoves.

5. Apart from the Sogeri sites, painted sites are more commonly located on the coast than engraved sites.

6. Painting sites straddle both AN and NAN-speaking areas, while engravings are predominantly associated with AN-speaking areas.

7. Painted rock-art is more often located at inaccessible (more than 3.8m) heights than engraved rock-art.

8. Red painted rock-art is most commonly found in shelters and on cliff-faces, whereas black painted rock-art is more commonly found in shelters and caves.

9. Red rock-art is possibly more inaccessible than black rock-art.

**4.4 Multivariate (MV) Analyses**

The following MV analyses are designed to explore similarities and differences between rock-art motifs across the western Pacific region. All statistical procedures are described in detail in Appendix 4.1.²⁶ Of the first 160 sites listed in Figure 4.1, illustrations of rock-art exist for only 102 sites. Each of the analyses described in this section is therefore conducted on the motifs present at the sites listed in Figure 4.15.²⁷

²⁶Each of the statistical analyses reported in this section were undertaken in collaboration with John Maindonald, Statistical Consulting Unit, Australian National University.

²⁷There were originally 104 sites available for multivariate analyses, including two sites from Samoa (157 and 158). Unfortunately these two sites had to be excluded from the MV analyses due to an error at the data entry stage. This error was discovered too late to be corrected, but the sample size from the two Samoan sites was so small that their exclusion would barely have impacted on the overall results.
4.4.1 Motif data

One of the sites listed in Figure 4.15 contains both paintings and engravings (site 7). All calculations are therefore based on a total of 103 'sites' rather than 102 sites. The total number of engraved sites is 67 (65%), and the total number of painted sites is 36 (34.9%). The total number of pictures available for analysis is 1232. Of these, 894 (72.6%) derive from engraved assemblages and 338 (27.4%) from painted assemblages. The total for engravings is heavily weighted by New Caledonia which consists of a sample of 248 pictures (20.1%). If New Caledonia is omitted from the overall sample, leaving a total of 984 pictures, then the representation of paintings relative to engravings is increased by around 7%. Unless otherwise stated, all calculations are based on a sample which includes New Caledonia. The motif types analysed in this section are illustrated in Appendix 4.2.

Before presenting the multivariate results, some comment on the way in which I interpret multivariate distributions is required. Archaeologists who use multivariate statistics often only feel comfortable interpreting results which show clear statistical groupings, e.g., artefact $x$ is always found in region $y$. The results which I am about to present rarely show such discrete patterns, largely because the rock-art of the western Pacific manifests a high degree of homogeneity. However within an essentially homogeneous pattern it is possible to pick up less perceptible variation by closely examining the relationships (statistical distances) between pairs of sites. The distance between two sites (or regions) on a multivariate graph provides a relative measure of the similarity between them. As I will show in this section and in later chapters, examining the graphs at this level of detail generates information which is useful for exploring some of the more critical issues raised in this thesis. The interpretation of each graph requires a continuous tacking between the observed patterns and my original data records. It is only by returning to the original data that it becomes possible to assess accurately which motifs have caused sites to appear statistically similar.

4.4.2 Multivariate techniques

Three multivariate techniques have been used to conduct the remaining analyses presented in this chapter: correspondence analysis (CA), principal components analysis (PCA), and multidimensional scaling (MDS). All analyses have been undertaken using the statistical programme 'S-Plus' (Venables and Ripley 1999).

The rock-art from the Samoan sites is discussed independently later in this chapter in light of the results obtained from the remainder of the sample.
Correspondence analysis measures the chi-squared distance between variables (which in this case are regions and motifs). Unless otherwise specified, each of the data matrices examined using the CA method consists of the total counts of presence/absence data. Principal components analysis (PCA) is a statistical procedure which measures the Euclidean distance between points (sites). Multi-dimensional scaling (MDS) issues similar scores to sites with the same 1’s in common and the same number of 1’s in common. The MDS binary measure elicits similarities between pairs of sites, as shown in Figure 4.16. The dissimilarity coefficient used for these analyses is often referred to as Jaccard’s Coefficient.

Each of these techniques is potentially suited to investigating the type of data available for analysis in this thesis. The main objective for using more than one dissimilarity coefficient (e.g. PCA, MDS) for examining variation within rock-art is to establish whether comparable patterns are produced by different methods, thus increasing the integrity of the result. Notably, coefficients of similarity differ in the weight that they accord to rare data (e.g. unique motifs). As demonstrated throughout this section, this has a significant bearing on the selection of particular multivariate methods for certain types of datasets. Further details on the nature of these methods as applied to archaeological data can be found in Shennan (1988).

Analysis 1

Hugo (1974) has suggested that engravings and paintings share circular motifs; a pattern that is particularly evident if New Guinea Highland sites are excluded from consideration. His findings contrast with those of Rosenfeld (1988) who has suggested that there is only very minimal overlap between the motif range representing each medium. The following analysis is designed to offer some resolution of this issue by examining variation among circle motifs located at rock-art sites across the western Pacific. A matrix of 110 circle motifs (columns) and 13 regions (rows) have been employed in this analysis.

The first CA (graph not included here) generated a dense cluster of points (regions), and a single outlier represented by Central Province. One conclusion that can be drawn from this pattern is that at least some of the circle motifs of Central Province are vastly different from those found elsewhere. In a follow-up analysis Central Province was omitted from the sample in an attempt to expose variation which may be resident within the main cluster. The result is expressed in the form of an XY scatterplot in Figure 4.17.

Six main observations should be made in relation to this distribution:
1. Tonga, located close to the lower right margin of the graph, is clearly distinct from other regions in the sample. New Caledonia and Micronesia, to the right of the centre of the distribution, are also set slightly apart from other regions. The rock-art of each of these Remote Oceanic regions consists almost entirely of engravings. Motifs range from simple circles with one or two linear extensions (e.g. Tonga), to more complex forms characterised by concentricity, spokes, and rays (e.g. New Caledonia).

2. A distinction between engraved and painted circular motifs is observed in the distribution. Manus and Sialum, both of which consist entirely of painted rock-art, form a discrete group in the lower left quadrat. Circular motifs common to these two regions are the simple ‘rayed’ forms often referred to as ‘sun motifs’. The only other region where comparable forms are found are Northwest Guadalcanal and New Caledonia.

3. A set of motifs at the top of the graph defines Sogeri, Morobe and West New Britain. Overall, the rock-art of these regions (which is mostly engraved) is distinct from the painted assemblages of Sialum and Manus and the engraved assemblages of Remote Oceania (New Caledonia, Tonga and Micronesia). Motifs common to these regions include circular forms with a minimum of elaboration, including plain circles, circles with central cupules and central lines, and contiguous and concentric circles (with between 1-3 rings).

4. East New Britain, New Ireland and Milne Bay are characterised by some of the ‘simple’ circular motifs found in Sogeri, Morobe and West New Britain, as well as several more elaborate forms. ‘Concentricity’ is a particularly common structural feature in these three regions.

5. Northwest Guadalcanal, known for its engraved art, is situated midway between the Sialum/Manus painting sites and the Sogeri/Morobe/West New Britain engraving sites. The engravings of Northwest Guadalcanal are more similar to the Manus/Sialum paintings than any other engraving region in the sample.

6. Fiji, which lies in the centre of the distribution, appears to be represented by motifs which are common to all other regions in the sample.

This result suggests a broad level distinction between painted and engraved sites in the western Pacific which in turn provides preliminary support for Rosenfeld’s (1988) notion of dual rock-art traditions. Analysis 2 examines this proposition further.
Analysis 2

The aim of this analysis is to determine whether there are discernible differences between (a) sites/regions, and (b) techniques. A CA has been conducted on the entire data matrix (Groups 1, 2 and 3) of 104 sites (rows) and 614 motifs (columns). The graph generated from the CA scores shows a dense cluster of points (sites) and three outliers (Fig. 4.18). Each of these outliers represents sites which contain one (usually rare or unique) motif. A common procedure for dealing with a CA result of this kind is to systematically peel away the outliers to expose any latent structure in the remaining data. Regardless of how many times the analysis was repeated, however, the same or a similar distribution was obtained. Sites in the sample with only one or two motifs were systematically assigned extremely high scores by the CA algorithm, placing them on the graph margins.

A complete list of the 20 outlying sites deleted over the course of this analysis is provided in Appendix 4.3. Interestingly, four sites in the Bismarck Archipelago (68, 78, 91, 104) each contain only one engraved ‘face’ motif. The occurrence of this motif at more than one site, unaccompanied by other motif types, raises all sorts of questions about the social significance of representations of the ‘face’.

Analysis 3

This analysis involved a Principal Components Analysis (PCA) on the entire data set (Groups 1, 2 and 3) to determine whether a better discrimination between sites could be achieved than for the CA. Figure 4.19 shows a very similar distribution to Figure 4.18, represented by a dense cluster of points around the axes centroid (0,0) and two outliers (New Caledonia [160] and Micronesia [159]). Both New Caledonia and Micronesia contain a large number of unique motifs which were accorded high scores by the dissimilarity coefficient. Outlier sites were omitted from the sample in an attempt to reveal variation in the main cluster but a similar result was obtained.

The PCA and CA results imply that many rock-art sites in the region possess a similar range of motifs, causing them to be statistically indistinguishable. On the other hand, the results also indicate that there is a large number of sites with unique motifs, suggesting a high degree of local variation. On the whole, however, CA and PCA are inadequate methods for dealing with the existing data set. The problem is twofold: (1) more than one-third of the motifs in the sample are unique; and (2) a large number of sites in the sample contain either one or a small number of motifs. The process of deleting outliers in response to these problems eventually undermined the integrity of the dataset to such an extent that the use of these two MV methods was no longer viable. In the following section a series of multi-
dimensional scaling analyses (MDS) are performed in an attempt to obtain a better discrimination between sites/regions without having to modify the dataset.

**Analysis 4**

Analysis 4 involved running an MDS binary metric on the entire data set (Groups 1, 2 and 3). Like the overall CA result for circles, the result of the MDS binary metric analysis attests to broad-scale similarity across the region, with no single region significantly differentiated from another (Figure 4.20). However, an examination of the motifs seen to be influencing the distribution suggests that a certain degree of inter-regional difference does exist. Most of the rock-art sites of New Ireland have plotted on the outskirts of the main cluster on the left hand side of the distribution. Several sites from East New Britain, West New Britain, Milne Bay, Sogeri, and Fiji have plotted close to the sites from New Ireland. This outcome is strikingly similar to the CA result for circles (Figure 4.17) which identified these regions as belonging to a loosely cohesive group (albeit with considerable internal variation).

Most of the painted sites from Sialum form a dense cluster on the right hand side of the distribution (opposite the main New Ireland distribution). Within the same general vicinity are painting sites from Manus and a number of engraved sites from Northwest Guadalcanal. The high degree of similarity between the rock-art of these three regions also reflects the CA result for circles (Figure 4.17).

The relative distances between points on the graph suggest that the rock-art assemblages of Manus, Sialum, Northwest Guadalcanal and a few sites in the Sogeri area are more similar to each other than to the (predominantly engraved) assemblages of New Ireland, New Britain, Milne Bay and other regions. Two painted sites from Bougainville have plotted close to a cluster of painted sites from New Ireland (Tabar and Boeng) at the top of the graph, with a site from Manus and a site from Sialum located nearby.

This overall pattern strongly suggests a distinction between painted and engraved assemblages across the western Pacific. Most sites on the left-hand side of the distribution consist of engraved assemblages from the Bismarck Archipelago, Milne Bay and mainland PNG. Sites located on the right hand side of the distribution, including the New Ireland and Bougainville sites at the top of the graph, account for most of the painted assemblages in the western Pacific.

Notably, however, this distinction between painted and engraved assemblages is less evident in the eastern regions of Island Melanesia. Sites from Northwest Guadalcanal and Fiji are
distributed relatively evenly across the graph, while sites from New Caledonia, Tonga and Micronesia can be found in the centre of the distribution. Each of these regions contains rock-art which appears to combine elements from both painted and engraved assemblages located at the western end of the sample area.

**Analysis 5**

As one test of the reliability of the result presented in Analysis 4 a Sammon method of the binary metric analysis was undertaken. In the statistical programme S-Plus, ‘Sammon’s non-linear mapping’ operates to separate out points which are densely clustered (Venables and Ripley 1999: 334). One of the requirements of the Sammon method is that sites with identical row configurations are deleted. As a consequence, five sites were omitted from the analysis (78, 91, 101, 104, 141).

The result (Figure 4.21) is a circular distribution which confirms several of the inter-regional similarities evident in Figure 4.20. The painting sites from Sialum form a general cluster in the lower half of the distribution accompanied by sites from Manus (at the base of the distribution), Northwest Guadalcanal, Sogeri and Bougainville. Most sites from New Ireland have aggregated at the top of the distribution and bear some correlation with sites from Milne Bay, Sogeri, East New Britain, Northwest Guadalcanal, and Fiji. Sites from New Caledonia, Micronesia, and Tonga are located in the central area of the graph.

When the same graph is represented on the basis of technical differences a reasonably clear distinction between certain painted and engraved assemblages is observed (Figure 4.22). This result confirms an earlier observation that differences between rock-art sites in the western Pacific are founded largely on variations between the motifs associated with the two principal techniques: painting and engraving. In the central area of the graph, defined as the ‘intermediate’ cluster, are both painted and engraved sites. A large number of the engraving sites in this part of the graph derive from Northwest Guadalcanal, reaffirming a previous observation (see Analysis 1) that many of the motifs represented in the Northwest Guadalcanal assemblages are similar to those found in a number of painted assemblages across the region.

**Analysis 6**

Up until this stage all three groups of rock-art data (figurative, non-figurative and complex/amorphous) have been included in each analysis. In this analysis I examine non-figurative data only (which accounts for some 90% of the total number of rock-pictures) to test whether variation observed in the dataset in previous analyses has been caused by
figurative or complex data. One of the main problems with the non-figurative data set, however, is that it includes a high number of unique motifs. It is these unique motifs which are most likely to be responsible for the 'outlier' responses observed in previous analyses. In an attempt to reduce the number of unique motifs in Group 1, I have aggregated them into several large motif classes (see Appendix 4.2). An MDS binary metric analysis has been run on a matrix of 93 sites and 106 non-figurative motif classes.\(^{28}\)

The result demonstrates that, by amalgamating non-figurative motifs, the pattern of similarities between rock-art sites concurs with earlier distributions which included Group 2 and Group 3 motifs. This concurrence is most evident in Figure 4.24 which shows a reasonably distinct separation of painted and engraved assemblages (with some notable exceptions, discussed below).

Consistent with previous analyses, the two regions which are most different to one another in this distribution are Morobe and New Ireland (Figure 4.23). There is no perceptible overlap of points representing sites in either of these regions. The rock-art of New Ireland is largely engraved, and the rock-art of Morobe (with the exception of one site on the Gao River) consists entirely of paintings. Manus is most similar to Morobe, and Milne Bay has clustered with New Ireland. West and East New Britain, Fiji and Tonga share some similarities with New Ireland, while Central Province, Bougainville and Northwest Guadalcanal are more closely aligned with Morobe and Manus. The Sogeri area, New Caledonia and Micronesia are generally located in the centre of the graph, suggesting that each possess motifs which are found throughout the western Pacific.

Based on an assessment of the motifs seen to be causing this regional patterning, and for ease of analysis, I have divided the plot into four clusters (Figure 4.23):

1. Cluster 1 includes three engraved boulder sites from West New Britain (Cao-go, Garua and Malapapua) located at the top of the distribution. The motifs which appear to be governing the close distances between these sites are the circular forms which distinguished West New Britain in Analysis 1, including circles with central cupules and contiguous circles. The only West New Britain engraving site which falls just outside this cluster of the graph is Akono Sogo, an assemblage associated with a limestone shelter. On the margins but still within this cluster are 3 Fijian sites – Nacula, Dakuniba and Na Savusaru. Their location here is not easily explained in

\(^{28}\)The omission of Groups 2 and 3 from the analysis required the deletion of several sites (24, 28, 42,
that the rock-art of two of these Fijian sites (Nacula and Dakuniba) is mainly rectilinear and quite unlike most engraved rock-art elsewhere in the western Pacific (which is mostly curvilinear). Na Savusaru possesses a few motifs which are more like those in the West New Britain assemblages (e.g. circles with central cupules) and has plotted closer to Cao-go than any other site. A couple of sites from the Sogeri area and Northwest Guadalcanal are also situated in this region of the graph. One of the sites from Northwest Guadalcanal (site 130) has several rectilinear motifs which are structurally similar to those seen at Nacula and Dakuniba in Fiji.

2. Most of the rock-art in cluster 2 derives from Tabar and New Hanover (New Ireland Province), and Milne Bay. Sites from East New Britain and Northwest Guadalcanal are also found in this part of the graph. The motif category which appears to be governing the similarities between these regions is the spiral; a feature notably absent from the West New Britain engraved assemblages and most of the painted assemblages in the region. One exception is a painting site from New Ireland which includes a spiral among its corpus (site 96).

3. The third cluster is dominated by the painted rock-art sites of Morobe, Manus and Bougainville, with the painted sites of New Ireland also found in this area of the graph. The motifs which appear to be influencing this component of the distribution are simple ‘sun motifs’, diamonds, triangles, motifs with central axes, chevrons, wavy lines, crosses and leaf-shaped forms – all broadly linked by their rectilinear structure. Most of these motif categories are found in Northwest Guadalcanal which is also represented in this part of the graph.

4. The fourth cluster consists of sites located in the centre of the distribution. Most of the Remote Oceanic sites are found here, including those from Fiji, New Caledonia and Micronesia. Motifs common to these regions include enveloped crosses, scrolls, zigzags and circles with central spokes. Each of these motifs is found in most regions in the sample, implying the former existence of a network of communication throughout the western Pacific which has resulted in a region-wide transfer of specific visual information.

When the same distribution is re-coded according to the statistical relationships between painted and engraved assemblages, major differences can be observed between the two techniques (Figure 4.24). Within a single regional group (e.g. New Ireland), painting sites 47, 54, 63, 65, 66, 67, 85).
share more in common with other painting sites in the western Pacific than they do with the engraving sites from the same region. There are two exceptions to this general pattern:

1. Several engraving sites from Northwest Guadalcanal are statistically similar to the main cluster of painting sites. This result mirrors the outcomes of previous analyses (e.g. Figures 4.17 & 4.20).

2. One engraving site from East New Britain (site 75) and another from New Hanover (site 85) are also located within the main cluster of painting sites. Site 75 contains only one motif; not a sufficient sample to allow it to be identified with the majority of engraved assemblages in the sample. Included among the motifs represented at Site 85 are enveloped crosses, a human figure, a simple scroll motif, and some parallel lines — each of which have been recorded at a number of painting sites across the region.

**Analysis 7**

This analysis uses CA to measure the chi-squared differences between regions (as opposed to sites). Calculations are based on ‘total counts’; that is, the total number of sites which possess a particular motif in a given region. The aim is to assess whether similar patterns to the MDS results described above are obtained when sites are combined into regional groups. A total of 12 regions and 614 motifs have been defined for the analysis.²⁹

An initial CA on the total counts produced a result which distinguished New Caledonia and Micronesia from other areas (graph not presented). As for the CA and PCA analyses conducted earlier (Figure 4.18 and 4.19), this outcome is probably due to the excessive number of unique motifs present in these two regions. Both regions were omitted from the following analysis in an attempt to reveal any variation in the remaining data set. Figure 4.25 shows Central Province and West New Britain located close to one another at the top of the distribution. Milne Bay, East New Britain and New Ireland form a second cluster at the base of the graph. Northwest Guadalcanal, Morobe, Fiji, and Bougainville form a third cluster in the centre of the graph. Manus is located independently on the right hand side of the distribution.

²⁹The regions included in this analysis are: New Ireland, Northwest Guadalcanal, East New Britain, West New Britain, Morobe, Central, Fiji, Milne Bay, Manus, Bougainville, New Caledonia, and Micronesia. These regions differ slightly from those used in the MDS analysis. The Sogeri sites have been subsumed within the Central region, and Sialum has been combined with the rest of Morobe. Tonga is excluded from the analysis due to its small sample size.
Manus was then excluded from the analysis to allow for even greater separation between the remaining regions. Figure 4.26 shows similarities between Milne Bay and East New Britain, with distant links to New Ireland and West New Britain. Central Province, which includes material from the Sogeri area, is different from Milne Bay, East New Britain and New Ireland, but appears to share some similarities with Fiji, Bougainville, Northwest Guadalcanal and Morobe. Fiji, located in the centre of the graph, would appear to manifest motifs common to all regions.

**Analysis 8**

A second CA was conducted on presence/absence data; that is, a matrix which indicates whether a particular motif is present or absent in any given region. After running several initial analyses, New Caledonia, Micronesia, Manus and New Ireland were all deleted because they appeared as outliers. The result for the remaining data set (Figure 4.27) resembles that obtained for total counts (Figure 4.26). Bougainville, Northwest Guadalcanal and Morobe are clustered together in the lower half of the graph. Milne Bay, East New Britain and West New Britain are grouped in the top left of the distribution. Central Province has distinguished itself from other regions on the right hand side of the graph. Fiji, once again, holds a relatively central position.

Together, the results of Analyses 7 and 8 suggest a broad similarity between the rock-art regions of the New Britain and New Ireland and Milne Bay, with distant relationships to Central Province and Fiji. The result derived from the presence/absence data indicates a much closer relationship between the rock-art of East and West New Britain than the result from total counts. There is a relatively high degree of similarity between the painted assemblages of Bougainville and Morobe and the engravings of Northwest Guadalcanal.

**Analysis 9**

This analysis is designed to examine the internal structure of motifs. As explained earlier in this chapter, many of the motif codes in Group 1 (Figure 4.2) incorporate a lowercase letter, ranging from ‘a’ to ‘aa’. Each lowercase letter is repeated across several motif categories (e.g. circles, semi-circles), indicating that certain structural properties remain consistent across different motif categories. This coding system was devised specifically to test a potential classification problem in rock-art studies. A common research approach is to develop only one typology for classifying rock-art motifs. For instance, for each of the analyses presented so far I have grouped motifs first and foremost according to motif categories (e.g. circles, diamonds). In this analysis my aim is to reclassify all motifs according to their structural characteristics, such as the appendage lines and infill within the
main form. Using the first typological approach, \( a \) (in Figure 4.28) would be grouped with \( c \), as both are circles. In this analysis, \( a \) is grouped with \( b \), as both share a central cross.

The objective is to test whether different typologies generate similar or different results. The data matrix includes all non-figurative motifs from Group 1 which incorporate a lowercase letter in their code; consequently, a large number of sites have been omitted. Category ‘\( d \)’ has been disregarded because it does not include information about the structure of a motif. The matrix has been analysed using CA, and includes 26 structural variables and 75 sites. Each structural variable occurs at between 1 and 33 different sites. The most common variable is ‘\( n \)’ (concentricity), and the least common variables are ‘\( y \)’ and ‘\( z \)’.

The first result showed a dense cluster of sites and 3 outliers (graph not presented). The outlier sites (and the corresponding variable ‘\( l \)’) were deleted, and a CA was re-run on a matrix of 72 sites and 25 variables. The subsequent result – which shows a good separation of points – is extremely useful for identifying the structural properties which differentiate engraved and painted assemblages in the western Pacific (Figure 4.29). Four main observations can be made in relation to this distribution:

1. Most of the painted sites of the western Pacific are distributed in the top half of the distribution and are characterised by mainly rectilinear structural qualities, such as ‘outer rays’, ‘inner spokes’, ‘internal crosses’ and ‘central axis lines’. Compound motifs, which incorporate multiple triangles, diamonds and other geometric shapes within a single form, are also common.

2. In the centre of the distribution are most of the structural categories which define engraving assemblages from West New Britain, Sogeri, New Caledonia and Micronesia. The variables in this part of the graph (0,0) have very low scores and are therefore likely to be less ‘diagnostic’ of regional groupings than those located among sites on the outskirts of the distribution. The structural variables found in this part of the graph include central cupules or lines, contiguity, concentricity, and main forms surrounded by circles, ovals, bean-shaped and heart-shaped elements.

3. Motifs incorporating spirals are located to the lower right of the distribution and are mostly associated with sites from New Ireland, East New Britain and Milne Bay. A few sites from Northwest Guadalcanal are located at the very base of this distribution and share the variable ‘\( o \)’; a concentric form with ‘inner spokes and/or a cupule/dot’.
4. A few rare structural properties are associated with sites located on the left margin of the graph. These include ‘parallel’ forms, ‘inner bars’ and ‘inner dots’. Most of these characteristics are associated with motifs from Northwest Guadalcanal.

This analysis has demonstrated that the differences between regions and between painted and engraved sites are replicated for both ‘motif types’ and ‘structural categories’. The structural categories which define the painted sites of the region include outer rays, inner spokes, internal crosses and other mostly rectilinear properties. Those which define the engraved sites of Milne Bay, East New Britain and New Ireland include spirals and several of the structural properties which have plotted in the centre of the distribution, such as concentricity. At the centre of the distribution are the more ‘simple’ structural properties which define a number of engravings from West New Britain, Sogeri, New Caledonia and Micronesia. Each of these regions appears to contain elements which are common to both painted and engraved assemblages elsewhere. West New Britain is particularly interesting because, while it contains many of the elements characterising sites elsewhere in the Bismarcks and in Milne Bay (spirals, scrolls, concentric circles), it is prominently characterised by a suite of motifs which incorporates cupules within their structure.

A metric analysis has also been performed on the ‘structural’ data set and a similar result was obtained.

**Analysis 10**

The aim of this analysis is to separate the data set into engraved and painted assemblages to enable an exploration of the similarities and differences within these two media. The dataset used for each analysis is the same as that used for Analysis 6, which includes all non-figurative data from Group 1 (Figure 4.2).

Figure 4.30 shows the similarities and differences between engraving sites in relation to ‘region’. The distribution pattern confirms the results from previous analyses. Overall, Northwest Guadalcanal, Bougainville, Fiji and Tonga (and site 65 – Akono Sogo – from West New Britain) are distinct from New Ireland, East New Britain, West New Britain, and Milne Bay. New Caledonia and Micronesia lie midway between these two broad regional clusters. The aggregation of sites dominated by Northwest Guadalcanal is represented by a number of motifs which are typically found at painted sites throughout the region.

Figure 4.31 shows the similarities and differences between painting sites in relation to ‘region’. Unlike Figure 4.30, intra-regional similarities are not evident, except perhaps for
some of the Sialum sites in the centre of the distribution and some of the Manus sites at the top of the distribution.

The lack of 'regionalism' evident in Figure 4.31 suggests that painted rock-art sites in the western Pacific are connected by a more or less unified graphic system. The engraved rock-art, in contrast, appears to show evidence of at least two graphic systems. The primary features of these graphic systems are outlined in the following discussion.

4.5 Discussion: centre or periphery?

Multivariate analyses have been employed in this chapter to examine similarities and differences between rock-art motifs found throughout the western Pacific, excluding Vanuatu. One of the primary outcomes has been the identification of distinct painted and engraved assemblages throughout the region, with some evidence of overlap between the two occurring in parts of Island Melanesia. In many respects this result confirms the APT/AES dichotomy. However, as I endeavour to demonstrate in this discussion, both of these entities require considerable revision. Based on the result of the non-motif and motif analyses conducted in this chapter, Figure 4.32 provides an impressionistic but composite picture of motif relationships between western Pacific regions. Notably, all variations of rock-art in the western Pacific can be found in mainland PNG.

One of the most important outcomes of the multivariate analyses on motifs is that despite the use of different MV techniques (CA, PCA and MDS), the same overall patterns have emerged in each of the analyses. Both 'motif-types' (figurative and non-figurative) and 'structural categories' have been used to examine the relationships along two principal analytical axes: variation in rock-art techniques and between sites or regions. The regional analyses, particularly those derived from the use of MDS, generally demonstrated inter-regional invariance. That is, there are sufficient numbers of rock-art motifs shared by most regions to create a pattern of overall homogeneity. Contra Hugo (1974), most of the more subtle inter-regional differences are a by-product of distinctive differences between painted and engraved assemblages across the region (as proposed by Specht 1979 and Rosenfeld 1988). Thus, for instance, a region such as Morobe, which contains more painted sites than engraved sites, is distinguished from regions where engraving is the predominant medium. This lack of regional variation disproves an earlier proposition that a western painting tradition transmogrifies into an eastern painting tradition through a single interrelated colonisation movement. Instead it suggests that the similarities and differences between painted and engraved assemblages throughout the region must be a factor of temporal, functional or other differences.
On the basis of motif differences (both figurative and non-figurative) between painted and engraved assemblages in the Pacific, the following inter-regional groups can be defined. Regions are linked together on the basis of specific combinations of motif and non-motif variables.

1. Manus, Morobe (Sialum), Bougainville. These regions (as well as other painted assemblages elsewhere in the western Pacific) are defined by a primarily rectilinear painted rock-art associated with many of the non-motif variables that define the APT. In Figure 4.32 I have indicated that the connections between this group and Eastern Indonesia appear to be based less on relationships between motifs, and more in terms of the propensity for them to be found on inaccessible coastal cliff-faces, with red being the main pigment colour represented. There are a few motif similarities between these painted assemblages and those in the MacCluer Gulf (West Papua), including the occurrence of scrolls (e.g. in Sialum) which are characteristic of the Manga style. Overall, however, the strongest relationships between these regions are based on the locational characteristics which define the APT. The short distances between points on the MV graphs, which show that painted assemblages in the western Pacific are relatively close together, suggest a high degree of graphic unity across the region.

2. Milne Bay, East New Britain and New Ireland. These regions are defined primarily by curvilinear engraved rock-art assemblages which bear motif similarities to the painted Manga rock-art of the MacCluer Gulf, e.g. scrolls, and the painted rock-art of the New Guinea mainland (scrolls, enveloped crosses). One of the more distinctive motifs of Milne Bay, East New Britain and New Ireland is the spiral, or motifs which incorporate spirals in their overall structure. Faces and feet are also common.

3. West New Britain (with some links to Central Province, especially the Sogeri area). Many of the motifs characterising West New Britain are also found in Milne Bay, East New Britain and New Ireland (e.g. the faces and scroll-like forms at Malapapua), but what differentiates this region from the former is the presence of motifs dominated by ‘cupules’. Circles with central cupules, including unusual ‘contiguous circles’ are particularly common. Two sites which are overwhelmingly dominated by these sorts of motifs are Akono Sogo (65) and Garua Island (71). These are distinctive sites because they are not characterised by any of the spiral, scroll or enveloped cross forms which feature in the Milne Bay, East New Britain and New Ireland assemblages. Cao-go is additionally characterised by a number of ‘cupule-based’ motifs but it also contains a spiral form, linking it with the ‘Milne Bay’ group. The similarities between West New
Britain and the Sogeri area are based on the mutual occurrence of circles or ovals with either central cupules or a short central line (which does not touch the side). Circles with central cupules (often referred to as ‘cup and ring’ in the literature) have also recently been found at a site in Mt Hagen in the New Guinea Highlands (Robin Torrence, pers. comm.) These motifs, and the ‘non-motif’ variables which define the contexts in which they are found, have a distribution which is limited to mainland Papua New Guinea and Island Melanesia. Based on the density of their distribution, I would nominate West New Britain as the ‘centre’ of this engraving group.

4. Northwest Guadalcanal, New Caledonia, Fiji, Tonga and Micronesia. On first impression it might seem difficult to assess the relationship between the rock-art of these regions and that found elsewhere because of the different ways they have been treated by the various MV algorithms. For example, the CA algorithm employed in Analysis 1 placed Tonga, New Caledonia and Micronesia on the periphery of the distribution, whereas the MDS (Jaccard’s coefficient) placed these regions in the centre of the distribution. The CA and PCA both issued particularly high scores to the large numbers of unique motifs present in each of these regions, whereas the MDS algorithm preference those motifs which are held in common with other regions. What can be concluded from these seemingly different results is that, while a large number of the motifs in Northwest Guadalcanal, New Caledonia, Fiji, Tonga and Micronesia are probably the result of local innovation, a significant number are also found in all other regions in the sample. The motifs present in these regions are similar to both the curvilinear engraved rock-art of New Britain, New Ireland and Milne Bay, and the rectilinear painted rock-art of Manus, Sialum and Bougainville (i.e. all regions to the west). In other words, it is within the more easterly regions of the sample that we see a convergence of motifs associated with either engraved or painted assemblages in the west. This convergence can also be seen in relation to non-motif variables. For instance, painted motifs which are usually associated with the non-motif attributes of the APT (inaccessibility and cliff-faces), can be found as boulder engravings in Northwest Guadalcanal and regions in Remote Oceania.

Before proceeding with this discussion, it is worth commenting on the limitations of the analyses conducted thus far. It is unknown whether the rock-art of the sites included in the sample has been produced within a single event or over many thousands of years. Thus, while the MV patterns indicate broad regional similarity among the rock-art of the western Pacific, it is impossible to tell whether many or only a few of the motifs at different sites are
causing the resulting patterns. The ‘atemporal’ nature of the data limits the extent to which many of following issues (which were raised in previous chapters) can be addressed:

1. The MV analyses have not differentiated sites which may contain Pleistocene rock-art. However, the broad similarity between motifs across the western Pacific implies that much of the rock-art was produced within a comparable timeframe and within an interactive sphere which included contact with Remote Oceania. Given that Remote Oceania was not colonised prior to around 3200 BP, most of the rock-art of the western Pacific was probably produced after this date.

2. Even without direct knowledge of the age of the rock-art of most regions in the sample, the overall homogeneity within the rock-art of the western Pacific suggests that most of it was being produced within a network of continuous inter-island interaction (and/or colonisation).

3. The MV patterns suggest that we may be able to identify rock-art motifs which were transmitted across the region via colonisation processes. Figure 4.33 is a version of the results of the correspondence analysis in Analysis 1.

The clinal distribution evident in this graph is compatible with a colonisation model which indicates that the rock-art of Remote Oceania derived from a source region in Near Oceania (e.g. Kirch and Green 1987). The rock-art of Tonga, at the farthest remove from the source region, is the most different. Figure 4.34 is a schematic version of the results of most of the MDS analyses.

Potential source regions for rock-art motifs lie on the outer circle. Regions at the eastern end of the colonisation process – which manifest most of the elements of rock-art found in the source regions – are located in the centre. This result, if it accurately represents historical processes, suggests various potential origins for the rock-art found in those regions of the sample which were colonised most recently; one origin associated with painted rock-art and two associated with engraved rock-art.

4. Some points can be made in relation to the intrusionist/indigenist debate outlined in Chapter 2. The only possible evidence for either intrusion (colonisation) from, or contact with, Island Southeast Asia are:

   a. the non-motif elements which Ballard (1992a) has identified as belonging to the APT (inaccessibility, coastal cliff-faces, red pigment). These are found
throughout the sample region in association with painted sites, most notably from Manus, Sialum and Bougainville. Similar non-motif elements are also associated with painted assemblages found on mainland PNG.

b. the curvilinear motif elements, such as spirals and scrolls, which are found in the Manga style rock-art in the MacCluer Gulf. These are mostly found in the engraved assemblages of Milne Bay, East New Britain and New Ireland, but are also found in the painted assemblages of mainland PNG, (e.g. in the Highlands and also, less frequently, at Sialum).

The cupule-based art discussed earlier is most prolific in West New Britain, but has also been found in mainland PNG (e.g. Sogeri area, Mt. Hagen). So far as I am aware (although future research may alter this perception), cupule-based rock-art is not found in Southeast Asia. Likewise, enveloped crosses, which are found in both painted and engraved rock-art in mainland PNG, have not yet been found in West Papua or Island Southeast Asia.

Most of these issues, however, cannot be critically assessed without a more acute understanding of how these various bodies of rock-art articulate with one another through time. Without a temporal framework it is impossible to begin to speculate on whether a motif exists in an assemblage as a result of being transmitted through an evolutionary process of Oceanic settlement or as a function of inter-regional interaction. In Chapters 6 and 7 I conduct a detailed set of analyses on the rock-art of Vanuatu. The aims are to (1) examine motif distributions through space, and (2) examine motif distributions through time. The results of these analyses are then tested against the rock-art of the rest of the western Pacific, the ultimate objective being to determine whether Vanuatu can inform about spatio-temporal relationships between rock-art assemblages in surrounding regions.
Vanuatu: the archaeology

5.1 Introduction

The antiquity and nature of colonisation, the intensity of inter-island contact through time, and the changing links between individual islands, have all left their mark on both the earliest and subsequent cultural practices in Vanuatu. These different historical processes have important implications for the rock-art of this archipelago in terms of its cultural links across the Pacific and amongst individual islands within Vanuatu. This chapter offers an overview of aspects of Vanuatu's physical landscape and prehistory so as to provide a basis for analysing and interpreting the distribution of rock-art. In reviewing the archaeological evidence from Vanuatu I focus principally on ceramic sequences. There are two reasons for this. First, pottery has been the primary source of evidence used by archaeologists to develop models of cultural change in Vanuatu. Second, unlike other material remains, pottery is often decorated, and thus provides a potential spatio-temporal framework for certain motifs which it shares with rock-art. I have also elected to focus primarily on archaeological questions which have emerged since the moratorium on research was lifted in Vanuatu in 1994 as these are of most relevance to this research. My brief account of work produced prior to 1994 owes much to Bedford (2000) who provides the most recent comprehensive overview of Vanuatu archaeology.

5.2 The physical environment

Vanuatu (Fig. 5.1) is a Y-shaped archipelago consisting of over 80 islands. Oriented north-northwest/south-southeast, this tropical island chain extends some 830 km (from latitude 13° to 21° S) and covers a surface area of some 12,280 km². To the north of the ‘Y’ are the Banks Islands, comprising Gaua (330 km²) and Vanua Lava (331 km²), four smaller islands (Ureparapara, Motalava, Mota and Merelava), and the four Torres Islands – each from 15 to 39 km² in size – at the very northern tip of the archipelago. The two largest islands in Vanuatu – Espiritu Santo (3900 km²) and Malakula (2000 km²) – are located along the left arm of the Y. Along the eastern arm are a series of medium-sized islands, including Ambrym (665 km²), Ambae (400 km²), Maewo (275 km²), Pentecost (450 km²) and Epi (445 km²), together with several small islands collectively known as the Shepherd Group. Near the top of the main stem lies Efate (900 km²), with the modern administrative district of Tafea lying further south and east again. The latter comprises the islands of Tanna (572 km²), Aneityum (150 km²), Futuna (6 km²), Aniwa (7 km²), and the third-largest island in Vanuatu – Erromango (1000 km²) (Mueller-Dombois and Fosberg 1998: 93-94).
5.2.1 Geology

Vanuatu consists of three broad geological belts. The western belt contains the oldest islands in the archipelago, dating to Upper Oligocene to Middle Miocene age (22-14 million years old) and consisting of submarine lavas and derived volcano-clastics commonly capped or fringed by raised coral reef limestone (Cheney 1988: 2). This belt is represented by Malakula, Espiritu Santo and the Torres Islands. The eastern belt includes Maewo, Pentecost and Efate, and consists of basic lavas underlain by predominantly volcanic sediments which range in age from the Middle Miocene to Early Pliocene (11-4 million years of age). These are capped by <3 million year-old Pliocene-Pleistocene calcareous muds and limestones (Cheney 1988: 2).

The islands of the western and eastern belts are the oldest in Vanuatu (Mallick 1975, cited in Mueller-Dombois and Fosberg 1998: 95). The central belt is defined by a long, thin arc of volcanic islands, including Vanua Lava and Gaua in the Banks; Ambrym, Paama, Lopevi and Epi (each with active volcanoes); and the Tafea island group (Mueller-Dombois and Fosberg 1998: 94). This belt contains all of Vanuatu's currently active volcanoes (including the submarine ones near Epi), and consists of predominantly pyroclastic deposits, subaerial volcanics and lavas dating from the late Pliocene (3 million years ago) to the present day.

Cheney (1988: 2) states that, in general, capping and fringing limestones are virtually absent on volcanically active or recently active islands except for Erromango, Efate and Malakula, where upraised reefs are common. It is within these upraised reef contexts that most of the rock-art of Vanuatu has been found (Chapter 6). Cheney (1988: 2) also describes a fourth group which he calls the 'Marginal Province'. Both Futuna and Meralava are of this type, consisting of Pliocene-Pleistocene (5-2 million years old) volcanic lavas. Futuna is capped by coral limestone.

Geological processes are continually modifying Vanuatu's landscape. Volcanic activity is ongoing (e.g. Tanna, Ambrym) and reef limestones are uplifting around island shores at various rates (Neef and Hendy 1988). Ever since the earliest known occupation of Vanuatu, substantial modifications to the environment have taken place, with implications for the archaeological visibility of sites, and thus the interpretation of their distribution. In Chapter 6 I examine the current distribution of Vanuatu’s rock-art sites in relation to geology, and predict where we might expect to find engraved and painted assemblages in future archaeological surveys.
5.2.2 Volcanism

Spriggs (1997: 179) has summarised the impact of volcanism in recent times. Two eruptions – at Kuwae and Ambrym – had such devastating affects on the region that they were classed among the world’s ten largest volcanic eruptions for the last 10,000 years. Yasur on Tanna – a continuously active volcano – has had two major eruptions in recent times, c.1400 BP and 800 BP (Spriggs 1997).

Archaeological research has shed light on the magnitude of these eruptions. In the 1960s, José Garanger (1972) suggested that the uppermost marine deposit at the site of Mangaasi (on Efate) may have been associated with the Kuwae eruption. Further work at Mangaasi, however, has revealed two tephras probably associated with the Kuwae eruption of 498 BP (Spriggs 1997) and a c. 2300 BP eruption of a volcano on Nguna Island north of Efate (Spriggs pers. comm. 2002).

Periodically, volcanism in Vanuatu has caused mass abandonment and/or otherwise disrupted existing settlement systems both within and between islands. The consequences of these disruptions would have varied from island to island, but in some cases their effects were significant enough to be incorporated into long-standing oral histories.

5.2.3 Seismic activity

The Vanuatu archipelago forms part of an island arc which extends from north to south through the Bismarck Archipelago, the Solomon Islands, and eastward through Fiji, Tonga and the Kermadecs. Vanuatu itself may be described as a submerged ridge underlain to the east by a dipping subduction zone and flanked to the west by a 6 km-deep trench. At the subduction zone, the edge of the Australasian tectonic plate intermittently slips beneath the edge of the Pacific plate, causing considerable earthquake activity across the archipelago. Earthquakes in Vanuatu are frequent. In an ORSTOM study (Prevot and Chatelain 1984; see also Fowler 1984), 4000 earthquakes were recorded between 1961 to 1980. The greatest number of large magnitude earthquakes occur in the Torres Islands, Santo, Malo, the northern tip of Malakula, Maewo, Pentecost and between Erromango and Aneityum. In January 2002 a major earthquake which many people described as ‘the worst in living memory’ caused extensive damage on Efate and resulted in major structural collapse within one of Vanuatu’s largest rock-art sites (Feles cave on Lelepa; see Chapter 6). Seismic activity (as well as a range of other natural phenomena such as salt deposition and the growth of micro-organisms on rock-art surfaces) have obvious implications for the long-term survival of rock-art sites.
5.3 The social landscape: archaeology

Understanding the timing and nature of Vanuatu's colonisation, identifying the homelands of its colonisers and subsequent visitors, and appreciating the nature of cultural, social and political change within and between the individual islands are essential if the history of Vanuatu's rock-art and its relationships to that of other Pacific islands are to be adequately traced. In this section, existing archaeological evidence and theoretical propositions concerning the colonisation and subsequent development of Vanuatu societies are discussed.

5.3.1 Early archaeological research in Vanuatu.

Felix Speiser ([1923]1996: 83-86) is the first person recognised as having conducted archaeological investigations in Vanuatu (in conjunction with his well-documented ethnological research). It was not until the 1960s, however, that archaeological research in Vanuatu started to gain momentum. Following an amateur interest, the French Overseas Territories Administrator Bernard Hébert (1965) conducted several preliminary investigations in the central islands, and is credited with identifying the first evidence of Lapita in Vanuatu at the site of Erueti on Efate. Formal archaeological research in Vanuatu was not initiated until after the 10th Pacific Science Congress held in Hawai’i (1961) at which Vanuatu was targeted as one of five essential research areas. As a component of the Pacific Area Archaeological Program (PAAP), a joint French and American expedition to Vanuatu was launched. The American focus was to be on the southern islands, and the French focus in the north, with shared interests on the central islands (Bedford 2000: 18).

5.3.2 The American component

Mary and Richard Shutler led the American expedition to the Tafea islands and Efate in 1963 and 1964 (R. and M.E. Shutler 1968, 1975; M.E. and R. Shutler 1965, 1967, 1968; R. Shutler 1969). Most of their attention was paid to rockshelters in coastal regions which related to present sea levels (Spriggs 1982a: 83). Sedimentation at these sites was recent (dated to within the last 1000 years), and no pottery emerged from their investigations. The Shutlers thus proposed that the Tafea Islands were occupied by aceramic communities. These researchers did encounter pottery in the northern islands, however, during a reconnaissance excursion to Santo and adjacent small islands (Aore and Araki) (R. Shutler 1970).

At the behest of the Shutlers (see below), Caroline Leaney (1965) was the first to provide a preliminary documentation of cultural sites on the island of Malakula. John Hedrick (1968), a student of Richard Shutler, initiated archaeological research on Malo in the late 1960s and early 1970s. Hedrick’s work added substantially to knowledge on Lapita settlements and the
engagement of Vanuatu in long range contacts between Malo, the Banks Islands, Talasea (West New Britain) and Lou Island (Manus Province). The collection of Lapita that emerged from his work also remains the largest and most diverse in Vanuatu (Bedford pers. comm. 2001).

5.3.3 The French component

José Garanger commenced the French component of the PAAP in 1964 when he began research in the central islands. Garanger’s (1972) renown derives largely from his use of ethnography to unearth the famous burial of the legendary Chief Roy Mata and his many courtiers and clan representatives on the island of Retoka (dated by Garanger to the later 13th century). In some ways akin to Schliemann’s investigations of Homer’s Histories late last century, Garanger’s archaeology in the central islands involved the investigation of historical narratives, hitherto dismissed as mere myths, through the archaeological record. Garanger’s research direction was strongly influenced by the ethnographer Jean Guiart (1956, 1963, 1973).

One of Garanger’s (1972) most important contributions to archaeological research in Vanuatu and the broader Pacific region was his identification of ‘incised and applied relief ware’ – named ‘Mangaasi’ after the site where it was recovered in most abundance. Garanger believed Mangaasi to be the first ceramic ware to appear in the central islands, continuing unabated for around 2000 years (from c. 2600 BP to around 750 BP, or 150 BP at the Mangaasi site). While Mangaasi was found to be locally produced (Dickinson and Shutler 1979), this style of pottery was believed by some to extend across the western Pacific (Specht 1969; Kennedy 1982; Spriggs 1997; Wahome 1997; 1999).

Garanger (1972) also identified a range of wares which were more regionally restricted and had shorter temporal-spans than Mangaasi, including 'Mele impressed', 'Aknau internally incised', and 'Erueti Lapita' wares. Aknau ware did not appear to have any Melanesian counterparts, and appeared in the archaeological record just prior to the final disappearance of pottery in the central islands. Mele paddle-impressed ware was vaguely similar to Fiji’s cord-impressed wares, although Garanger was unconvinced of any causal link. Erueti pottery, which was found in association with plain sherds and a unique repertoire of lithic and shell artefacts, was interpreted by Golson (1971) as typically Lapita and most like the Sigatoka pottery of Fiji.

Garanger attributed the cessation of pottery in the central islands to possible natural disasters (such as tidal waves and volcanic eruptions), but also suggested that from around 850-750
BP major material and social transformations registering in the archaeological record (e.g. the cessation of pottery, and the emergence of a new repertoire of shell artefacts) most likely signalled the arrival of Polynesians from overpopulated islands to the east of Vanuatu.

5.3.4 Les Groube and his successors on Aneityum and in the Banks

Following the Shutlers’ initial forays into the southern islands, Les Groube took up archaeological research on Erromango and Aneityum in 1972. His work on Aneityum led to the discovery of hundreds of stone walls thought to be remnants of advanced agricultural systems (Groube 1975: 27). Both the Shutlers’ and Groube’s early research contributed significantly to the formulation of Matthew Spriggs’s PhD research, for which he employed archaeological surveys, ethnographic observations, oral histories and textual sources to examine past irrigation techniques for the growth of taro (*Colocasia esculenta*) on Aneityum. Spriggs’s 1978-79 archaeological excavations led him to argue that prior to 2000 BP, human modification of Aneityum’s hill slopes caused large-scale erosion that resulted in extensive valley infilling and the progradation of shorelines. In turn it was suggested that evidence of early Lapita sites may be concealed under many metres of alluvial deposit some distance from the coastline (Spriggs 1980, 1981b, 1982a, 1982b, 1982c, 1997). Thereafter, dry-land gardening was said to have commenced on Aneityum around 1000 BP, and large-scale irrigation – in the form of canals traversing major watersheds on alluvial plains – around 500 BP. The transition to irrigation, and hence towards intensified agricultural production, was thought to have occurred in tandem with various political and social transformations (Spriggs 1981a; 1982a).

Other significant research on Aneityum included an analysis of pollen from Anawau Swamp. A major vegetation change from swampy forest to open grassland was registered at the site from around 2900 BP and said to show clear evidence of human presence in the form of burning (Hope and Spriggs 1982; Spriggs 1990a: 20). This finding added important weight to mounting evidence that islands located to the southeast of the Bismarck Archipelago were not occupied prior to 3200 BP, the age usually ascribed to the beginning of the Lapita expansion (Spriggs 1990a: 20).

In 1983 Spriggs continued his archaeological investigations in southern Vanuatu by initiating *The Southern Vanuatu Culture History Project* (the “Tafea Project”). As part of this project Spriggs was interested in investigating whether Tafea – which, as a result of the Shutler’s earlier work, could have been settled by an aceramic group of people – manifested evidence of pre-Lapita settlement (Spriggs 1984a). Four questions guided this project: (a) how many people were there on the islands at European contact; (b) when did initial human settlement
take place; (c) what environmental changes have occurred over time; and (d) what economic and social changes have taken place over time. Spriggs was also interested in the effects of contact between the Tafea island group and Polynesia. Polynesian kastom stories had apparently been incorporated into local world views in Tafea, and political organisation also appeared to have been influenced by Polynesian impacts.

Spriggs's 1983 fieldwork on Aneityum revealed evidence of Polynesian contact during an excavation of a chiefly burial in the Anelcauhat chiefdom on the south side of the island. It was suggested that the Aneityum burial was probably that of a former chief and his wife (who was buried at the time of the chief's death). The items buried with these individuals and some of the burial rites (e.g. the strangulation of the chief's widow) were seen as reminiscent of Roy Mata's grave on Retoka which has been linked to chiefly burials on east Uvea (Wallis) in Western Polynesia (Spriggs 1997: 212).

Investigations began on Erromango in 1983. Erromango was specifically targeted for fieldwork because of the presence of the Imponkor Limestone, an uplifted unit which backs onto older reef terraces. Sedimentation on the Imponkor Formation had been relatively slow compared to that on other high volcanic islands, and thus it was predicted that early ceramic sites would be found there. Pottery sherds were found, both as surface occurrences and in archaeological excavations, placing 'Tafea firmly in the mainstream of Melanesian prehistory instead of it being an aceramic oddity' (Spriggs and Wickler 1989: 86). Interpretation focused on the site of Ifo which, unlike the cave sites investigated, possessed a relatively intact cultural deposit (Layer IV). Ifo was said to contain three decorated pottery types: dentate-stamped (a single sherd found in a secondary context); incised (including a single 'Lapita curvilinear incised' sherd, three typical Mangaasi sherds, and a single relief decorated sherd); and impressed (mostly fingernail impressed), rarely found in the central islands. Vessel forms included pots and jars of spherical shapes with small apertures. The presence of Mangaasi and Lapita wares at the same site suggested to the authors that this was a 'transitional site', from Lapita to Mangaasi, dated to between 2500-2000 BP (see Spriggs 1984b for a discussion of 'transitional sites' elsewhere in the Pacific). It was argued that this 500-year timeframe marked a gradual transition from Lapita to post-Lapita ceramics in Vanuatu, 'within the context of continuing widescale regional interaction' (Spriggs and Wickler 1989: 83).

In addition to his forays in the south, Les Groube conducted preliminary research in the Banks Islands in October/November 1972 (Ward 1979). The main outcome of this trip was the identification of pottery similar to the 'incised and applied relief' ceramics already
discovered by Garanger in the central islands. Groube also excavated a low mound feature on Pakea Islet (off Vanua Lava), recovering limited amounts of pottery and some faunal material.

The Pakea Islet site later became the main focus of Graeme Ward’s (1979) PhD research in the mid-1970’s. Ward identified three cultural layers, but only the lowest was regarded as in situ deposit (1979: 5-19). The earliest radiocarbon determination from the site was 2600±130 BP, but the majority of the material was associated with dates of around 2000 BP. The upper layers at the site, which were dated to between 1300 BP and 650 BP consisted primarily of shell midden, and were interpreted as possible evidence for more permanent settlement. Incised and applied relief sherds reminiscent of those previously documented by Garanger (1972) for the central islands were seen to be present from the earliest settlement date until around 2000 BP. Ward (1979) situated the Pakea Islet ceramics within Garanger’s Mangaasi ceramic tradition, although Bedford (2000: 34) has more recently suggested that the ceramics from the Banks show greater affinities with Late Erueti wares than Mangaasi wares. Kirch and Yen (1982) also challenged Ward’s 2000 BP termination date for the Banks pottery on the basis that they considered it to be (too) similar to the Sinapupu (Mangaasi-like) wares, thought at the time to have been imported from northern Vanuatu to Tikopia between c. 2050 BP - 750 BP.

5.3.5 A moratorium on research

A moratorium imposed on social science research in 1985 forced the suspension of most archaeological work (e.g. the Tafea Project) for the next decade. The only research to take place during this period was a limited amount of consultancy work (e.g Spriggs and Roe 1989) and around 40 projects associated with the Vanuatu Cultural and Historic Sites Survey (VCHSS). The VCHSS was managed by Jean-Christophe Galipaud and David Roe who collaborated with Vanuatu Cultural Centre fieldworkers in registering cultural sites between 1990 and 1995. The aim of the VCHSS was to:

1. Build a database of archaeological and other cultural sites;
2. Undertake field surveys to locate and record sites;
3. Train ni-Vanuatu staff in survey and excavation techniques;
4. Communicate survey results to the broader community;
5. Protect important sites across the country; and
6. Perform site impact assessments ahead of development projects.
Meanwhile, at a 1992 conference in Nouméa, Paul Gorecki suggested that Vanuatu may have been colonised earlier than the current evidence suggests. Gorecki (1996) made two points. Firstly, he argued that archaeologists in the Solomons, Vanuatu and New Caledonia had been looking for evidence of early colonists in the wrong places – that is, on the coasts rather than inland where older landscapes are found. Secondly, he suggested that cultural items he claimed to be present in northern New Guinea around 5500 years ago (bows and arrows, pigs, and pottery) could have feasibly reached Vanuatu during pre-Lapita times. He proposed that because Buka in the northern Solomons was colonised at least 28,000 BP, when sea levels were much lower and island-hopping much easier, people probably progressed to San Cristobal (at the south of the Solomon Island chain) at this time. He proposed that, if this was the case, then a much earlier colonisation of Vanuatu was also likely. His links between New Guinea and Vanuatu are largely derived from Garanger’s (1972) earlier view that Mangaasi pottery pre-dates Lapita (see below for recent refutations of this view), and that Mangaasi-like pottery occurs in the Sepik.

5.3.6 The Australian National University-Vanuatu National Museum (ANU-VNM) Archaeology Project.

By the time the moratorium was lifted in 1994, archaeology in Vanuatu was still in its infancy. The timing of Vanuatu’s initial colonisation was still in doubt, and aside from Garanger’s work in the central islands, cultural sequences for other parts of the archipelago were little understood. To address these deficiencies, the Vanuatu National Museum and researchers of the Australian National University initiated a collaborative archaeology project. Research was initially focused on Erromango and later spread to include Efate and Malakula. Both Erromango and Malakula were perceived as being ideal for answering questions about early settlement due to the presence of tectonically uplifted limestone terraces containing caves which would have been suitable for early habitation.

Spriggs returned to Erromango in 1994 and turned his attention to four caves located on the west coast of the island (Velemendi, Velilo, Raowalai and Ilpin). None contained pottery, and all were found to date within the last 1500 years. A cultural sequence for one of these sites (Raowalai) indicated a lower horizon of human burials dating to 810±80 BP and 910±70 BP (marine shell), and an upper layer, consisting of a large stone oven, dated to 200±60 BP (Spriggs 1994b).

Pottery sites on Erromango were restricted to open areas such as Ifo and Ponamla. Ponamla, located near a large river and adjacent to a sheltered bay on the north coast of the island, was tested by Spriggs in 1994 and then re-excavated by Spriggs and ANU PhD student Stuart...
Bedford in 1995. A sequence of 15 radiocarbon determinations dated the main cultural deposit from around 2800-2700 BP to ~2400 BP. The earliest ceramics consisted of plain wares that graduated into more decorated pots (fingernail and incised). A single Lapita sherd was found in a secondary context. The site appeared to have been abandoned around 2400 BP, and then intermittently re-used again after around 1600 BP. No pottery was seen to be associated with this latter occupation.

Based on archaeological work at both cave and open sites on Erromango, Bedford et al. (1998) proposed that Lapita colonists and their immediate successors moved into a pristine landscape and settled prime locations (for habitation and canoe access) such as Ponamla and Ifo. As populations increased, and local resources were likely depleted, people are thought to have dispersed to other parts of the landscape, such as caves. Bedford et al. (1998) argue that the early ceramic sequences at Ponamla and Ifo display continuity from Lapita (or Lapitoid) to incised wares.

5.3.7 Further ‘Pieces of the Vanuatu puzzle’

Stuart Bedford’s (2000) doctoral thesis is the most recent and rigorous re-evaluation of the archaeological picture in Vanuatu. His study involved establishing cultural sequences for Erromango, Efate and Malakula and situating them in a region-wide context. The following summary of Bedford’s research focuses mainly on his detailed analysis of the ceramic record.

Erromango

Bedford’s work on Erromango was limited to the excavation of the open site of Ponamla and re-excavation of the site of Ifo, with Ifo providing the richest and most extended sequence. The initial settlement of Ifo around 3000 years ago was associated with the occurrence of Lapita dentate stamped and incised ceramics with outcurving rims, locally produced with a calcareously tempered clay. This ceramic was shortlived, in the order of 200-300 years, and rapidly replaced by a thicker fingernail-impressed ware characterised by a restricted range of vessel forms with predominantly incurving rims. Decorative elements became more frequent in the upper layers which are completely dominated by fingernail decoration. Ceramic production ceased at the site around 2000 BP (Figure 5.2).

Bedford (2000: 119) claims that there is sufficient continuity from one ceramic form to the next at Ifo to suggest that the post-Lapita forms developed out of the earlier Lapita ceramic repertoire, but that once the plainware ceramics disappeared around 2600 BP there was quite a dramatic development of a distinctly Erromangan ceramic style which continued for a
further 600 years. Such a claim directly challenges earlier notions that Erromango’s later ceramics are a regional variant of Mangaasi (Spriggs and Wickler 1989) or at least have clear parallels with Mangaasi (Bedford 1999), and forces a reassessment of the previously widely accepted notion that an Incised and Applied Relief Tradition can be identified across the Southwest Pacific, reflecting a temporal extension of the interaction networks originally denoting the Lapita era (see for example Spriggs 1984b, 1997; Wahome 1997, 1999).

**Efate**

The site with which Bedford was most concerned on Efate was Mangaasi, where Garanger conducted his original excavations. The extent of stratigraphic disturbance at the site, as discussed by Ward (1989), required a reassessment of the site. The site was re-excavated over several seasons by Spriggs and Bedford inland of Garanger’s original excavation, and revealed a relatively intact cultural sequence evidently less affected by marine disturbance than that originally encountered in the 1960s. The excavation extended some two metres beneath the levels reached by Garanger and revealed much earlier cultural material.

The fabric and texture of the sherds from Mangaasi are consistent throughout the site and are considered to be locally manufactured. Earliest occupation is associated with Erueti-style ceramics around 2800BP, denoted by outcurving rims, incised decoration, and lip notching. By 2500 BP there is a change to incurving rims, and decoration (which is predominantly still incision) becomes more frequent. From 2000 BP (now revised to 2300 BP, Spriggs pers. comm. 2002) there is a perceptible change in decorative technique heralding the beginning of the Mangaasi Phase, including the disappearance of lip notching and the appearance of discontinuous applied relief and plain bands. Pot forms are dominated by globular shapes with incurving rims. The Late Mangaasi period, from about 1800 BP, is characterised by notched applied bands and an increased range of decorative motifs. In conjunction with these changes a return to outcurving rims can be seen. The Mangaasi Phase at the site ceases around 1200BP when ceramic production in the area appears to come to an end. As for Erromango, Bedford (2000: 127) claims that ‘[a]n evolutionary transformation from Erueti to Mangaasi-style ceramics (much modified from Garanger’s original sequence) can be identified both in terms of vessel form, fabric and decoration.’ (Figure 5.3). Direct parallels between the Mangaasi and Shepherd Island ceramic sequences have also been identified.

The Mangaasi-style ceramics, with incised and applied relief decoration, do not appear in the revised sequence until the upper layer, after a deposit of tephra which may have derived from volcanic eruptions on Nguna some 2300 BP. One date of 1660±90 (1775-1333) was
obtained for the layer with incised and relief pottery, sealed above by a second layer of tephra believed to be deposited by the Kuwae eruption of 498 BP (Bedford et al. 1998).

The stratigraphic integrity of the recent excavations at Mangaasi has led Bedford et al. (1998: 187) to conclude that Garanger's ceramic sequence 'was largely a product of post-depositional sorting of occupational deposits that we can now determine are late in the sequence at the site'. Mangaasi appears to have been re-occupied after the Kuwae eruption, as suggested by radiocarbon dates of 490±60 BP and 220±60 BP (623-339 BP and 427-0 BP). This coincides with a revised date for the Retoka burial of Roy Mata, who was originally thought to have lived prior to the Kuwae eruption. Shell ornaments from the graves on Retoka produced radiocarbon determinations of 990±125 BP and 690±80 BP (762-386 BP and 479-136 BP), suggesting that Roy Mata may have lived and ruled during the 17th rather than the 13th century as was originally proposed by Garanger. However, accurately dating the period of Roy Mata is a difficult task, as oral traditions vary and there appears to have been more than one Roy Mata (Garanger 1996).

In 1999, the ANU-VNM research team commenced excavations at Arapus, an area located across the Pwanmwou Creek, immediately southwest of Mangaasi. The major outcome of these excavations was the identification of an early occupation phase not seen at Mangaasi, which dates to around 3000 BP. Ceramics from this early phase have been characterised as 'plain globular cooking pots' and interpreted as belonging to the 'domestic cooking component' of a Lapita assemblage (Bedford and Spriggs 2000: 120). This pottery has been named 'Arapus style' after one of the ancestral household areas in which it was first found.

Excavations at Arapus provided a much clearer chronological perspective on ceramic sequences than any other site in central islands of Vanuatu, attributable for the most part to the well-stratified volcanic tephra which delimited different occupation levels. Arapus and Erueti style pottery were found only beneath the tephra which has now been dated to 2300 years ago (Spriggs pers. comm. 2002). Mangaasi-style pottery was found between the lower tephra and the Kuwae tephra which has been dated to around 500 years ago.

**Malakula**

Bedford’s work in Northwest Malakula, which focused on cave and open sites both on the coast and inland, sheds light on the initial and late phases of a 3000-year occupation sequence from around 2700 BP - 2500 BP and from ~1000BP to the present day (Figure 5.4). A dearth of archaeological material has rendered the intervening 1500 years difficult to characterise, possibly because the region was abandoned or less intensively settled during
this time (Bedford 2000: 129). The earliest ceramics on Malakula appear ~2700BP and are characterised by locally made, calcareously tempered plainware forms which have been assigned the label ‘Malua Ware’. A single dentate-stamped Lapita sherd was found among these.

Bedford drew on an extensive range of surface-collected sherds to augment his interpretation of the insecurely dated middle portion of the Malakulan pottery sequence. Some of these sherds bear a resemblance to Late Mangaasi ceramics on Efate, possibly signalling some form of interaction between these two regions up until c. 1200 BP. From this time onwards it is postulated that such interaction faltered, with Malakula developing a new ceramic repertoire more similar to examples located elsewhere in the central/northern islands, namely Santo, Malo, Pentecost, Ambae and Maewo. These new and innovative ceramics (Chachara Ware), occurring from around 1000 BP onwards, are bullet shaped and coil made, some with a ribbed finish, others with a smooth finish and added decoration. Such ceramics tend to be found in association with nasara (dancing grounds), which are integral to ceremonial life in the northern islands.

From this evidence it has been tentatively suggested that between c. 1000 BP and c. 500 BP there was a transformation in regional connections, including a separation between the central islands (Efate and the Shepherds) and islands to the north. Indeed, ethnohistorical accounts suggest that the northern islands were clearly engaged in sophisticated networks of trade and exchange by the time of European contact (Huffman 1996a).

To explain the appearance of this new pottery in Malakula and other parts of northern Vanuatu, Bedford (2000: 143-44) explored Green’s (1997, 1999) notion that over the last 1000 years non-Austronesian-speaking people, or people who have had sustained contact with indigenous non-Austronesian groups, may have migrated to Vanuatu from Near Oceania. Such an explanation would account for the changes in socio-cultural life in northern Vanuatu which are reflected by ceramic and other material innovations.

The onset of European contact in Malakula is accompanied by a change in the ceramic types on Malakula and an apparent breakdown of inter-regional contacts in the northern islands. This period saw the appearance of Naamboi pottery which is mostly probably an offshoot of the previous Chachara Ware. Naamboi are characteristically ‘bullet’ shaped pots, said to have been used for ceremonial purposes (Bedford 2000: 144-45).
A diagrammatic version of the ceramic sequences of Vanuatu proposed by Bedford is reproduced in Figure 5.5. Coinciding with the emergence of a new pottery style in Malakula and other northern islands was a transformation in certain non-ceramic items around 600 BP, particularly in the centre and south of the archipelago. As originally pointed out by Garanger (1972), and later confirmed by Bedford (2000: 242), there is a change in the variety of shells used in the production of adzes (*Lambis* and *Terebra* species) and an appearance of a variety of ornaments (e.g. pig tusk and *Trochus* sp. bracelets). Bedford (2000: 242-243) suggests that some of these changes may have been a result of Polynesian influences, but that contact with New Caledonia and islands to the north may also have played a role in the transformations that took place.

Perhaps the most compelling conclusion of Bedford’s thesis is the challenge he poses to the notion of a Pan-Melanesian Incised and Applied Relief Tradition. Bedford (2000: 246) argues that ‘... the ceramic remains [of Vanuatu] tend to demonstrate the ‘evolutionary primacy of local processes’ (Bedford 2000, citing Hunt 1987: 330) rather than inter-archipelago connections.’ Bedford (2000: 246) supports this point by suggesting that as elsewhere in Remote Oceania (e.g. Fiji, cf. Clark 1999), ‘...ceramic sequences... began to follow increasingly independent trajectories soon after initial Lapita settlement and up until at least 1000 BP.’ After 1000 BP Bedford (2000: 247) suggests there is increasing evidence of more frequent long-distance contact both within Vanuatu and between Vanuatu and neighbouring islands, attested by, for instance, the presence of basaltic glass from the Banks Islands in Fiji and Tikopia, New Caledonian serpentine on Tanna, and Polynesian-style ornaments and burial traits in the central and southern parts of Vanuatu.

In developing a picture of interaction and exchange in Vanuatu, the different lines of evidence and interpretations provided by Bedford suggest that an initial regional network of Lapita colonists infiltrated the islands of Vanuatu and continued for a short while to engage in certain practices which could be traced back to a homeland in the Bismarck Archipelago. This network was fairly rapidly replaced by the development of more regionalised (e.g. a network in the north) or island-specific social behaviour, denoted by pottery styles which followed relatively independent trajectories. Over the last 1000 years a re-opening of interaction networks is witnessed, albeit totally transformed from the early Lapita period. These networks form the basis of the connections (linguistic and material) observed ethnographically.
5.3.8 Recent archaeology in northern Vanuatu

In 1996 and 1997, the Vanuatu Cultural Centre and Jean-Christophe Galipaud of l’Institute Français de Recherche Pour le Développement en Coopération (formerly ORSTOM) collaborated on a project aimed at furthering understanding of the settlement histories of the northern islands of Vanuatu. Until then, Les Groube and Graeme Ward’s research in the Banks Islands and Hedrick’s discoveries of Lapita pottery on Aore and Malo constituted our only archaeological knowledge of this wide region. Galipaud’s research has unveiled further Lapita sites on Malo, and a number of rock-art sites in the Torres region (e.g. Woga, see site TR7, Figure 6.2). He has also been able to better define the pottery sequences of the region and situate them in a regional context.

In the Torres Islands Galipaud excavated a garden site on Toga, and an open site (Litetona) and cave site (Woga) on Tegua. The former garden/plantation site of Kurvot on the island of Toga was found to be first occupied more than 2200 years ago. Galipaud argues that the earliest pottery at this site – a plain ware of thin fabric with a decorated rim of parallel lines – is similar to that found on Malo where it immediately post-dates Lapita. He also compared this pottery to the plain wares of Erromango, Malakula and Fiji, and suggests affiliations with pottery found in the earliest occupation levels in Tikopia (the Kiki Phase). Links to Tikopia have also been found in northern Espiritu Santo (near the Naturtur River) where Sinapupu-like pottery has been found. Litetona, on Tegua, yielded little in the way of artefactual material, but a decorated sherd among the recovered ceramics was thought to be similar to Mangaasi wares (Galipaud 1998b: 163). Woga also yielded few artefacts, with only a small amount of shellfish and lithic material recovered. A date of 2100±60 BP was obtained for the site.

On Malo, occupation sequences were found to extend back to the Lapita period, with evidence of dentate-stamped pottery at the sites of Avunatari and Atanoasao dating to around 3000 years ago (Galipaud 1998a).

Galipaud’s investigations on the northwest coast of Espiritu Santo have provided the first detailed archaeological results from this area (Galipaud 1996a). His immediate interests included dating the timing of first settlement in this region, and establishing when water taro irrigation was adopted in the region. More than 60 sites were recorded during a survey between Wusi and Pelo, and two caves, Malsosoba 1 and Malsosoba 2, were excavated. The initial results of both survey and excavation indicated that people have occupied Hokua
northern Espiritu Santo) for over 1000 years; however the presence of undated Sinapupu-like pottery suggests that further excavation may push this date back another 1000 years.

5.4 Discussion: an overview of archaeological and linguistic evidence

Scientific archaeology in Vanuatu began in the 1960s with the works of Hébert, the Shutlers, Garanger, Leaney and Hedrick, followed closely by that of Groube, Ward and Spriggs in the 1970s. Since then, much survey work but little excavation was undertaken by Roe and Galipaud and carried on by locally trained staff as part of the Vanuatu Cultural and Historical Site Survey (VCHSS). Galipaud continues to work in the northern islands; the ANU-VNM team are furthering their research in the Central islands and, more recently, Stuart Bedford and archaeologist Glenn Summerhayes have begun to investigate the Small Islands of the northeast coast of Malakula (Summerhayes pers. comm. 2001).

The history of archaeological research in Vanuatu has been dominated by questions of origins. Unlike many of its western neighbours in Near Oceania, Vanuatu appears to have been first colonised by incoming Lapita settlers. Vanuatu and New Caledonia, both located at the southern reaches of the Island Melanesian chain and on the other side of a major ocean crossing, were probably not colonised until after c.3200 BP. Since then, Vanuatu has been engaged in contact with other island communities – and since at least 750-350 BP with Polynesian peoples from the east impacting significantly on social structures already in place (Spriggs 1997).

Due largely to Bedford’s research, there is now overwhelming evidence that Vanuatu was first colonised by the makers of Lapita pottery (Bedford 2000: 240). It is interesting, however, that so little Lapita pottery has been recovered from Vanuatu. One possible explanation is that Vanuatu was colonised some three centuries into the Lapita period, after the settlement of Nissan and other regions to the north and northwest. The early Western Lapita pottery is confined to the Bismarcks and does not occur in Vanuatu. By the time settlement was well and truly established in Vanuatu, Lapita pottery continued only for a few hundred years and then became replaced by other ceramic types at c. 2700 BP.

Spriggs (1997) suggests that incised and applied relief wares, which are said to increase in Vanuatu and elsewhere in Island Melanesia as Lapita dentate-stamped pottery declines, are a natural progression from Lapita and are not therefore indicative of intrusive communities. According to Spriggs (1997: 118), the demise of dentate-stamped pottery and the emergence of incised wares 'is no sudden occurrence ... but simply the unfolding of a pottery sequence where less and less effort has been invested in making and decorating pots'. Spriggs claims
that this trend is apparent in all islands of the Pacific where a transition from dentate-stamped to incised and other techniques (e.g. fingernail impression, applied relief) takes place, such as the Arawe Islands, Talasea Peninsula, New Ireland and Buka.

Spriggs based his conclusions largely on the work of Ephraim Wahome (1997, 1999) who sought to examine whether ceramic sequences across Melanesia developed in synchrony from Lapita until around 1500 BP in those areas where pottery was still being manufactured. The implication is that Incised and Applied Relief styles in the western Pacific were probably being produced within a reasonably broad network of regional exchange from the Lapita period until about 1500 BP, and that stylistic changes were therefore occurring in step over wide areas. There is some evidence that a contraction of exchange networks was taking place before this time, but the strongest evidence for gaps in pottery distribution and the onset of more regionalised behaviour is believed not to occur until 1500 BP-1000 BP (see also Bedford et al. 1998; Spriggs, in press).

However, this theory of ceramic continuity has recently been challenged by Bedford (2000) and other researchers working in Remote Oceania (e.g. Clark 1999; see also Bedford and Clark 2001), who propose that the so-called ‘Pan Melanesian Incised and Applied Relief Tradition’ is an unsupported theoretical construct. Rather than incised and relief wares delineating a network of continued interaction, they argue that any similarities between these wares across island groups is more likely a result of independent evolutionary processes from a common source, namely Lapita. Their conclusions are significant in terms of the way in which archaeologists have constructed the prehistories of Island Melanesia, and urge much closer scrutiny of local innovation and difference rather than a persistent focus on broad-scale similarity.

In general, evidence from linguistics provides several lines of support for the archaeological picture emerging from Vanuatu, particularly in terms of the direction of colonisation and settlement. Linguistically, Vanuatu constitutes part of the 'Southern Oceanic linkage' of the Central-Eastern subgroup of Oceanic languages (Lynch 1999: 441). Within this higher level grouping lies the 'Southern Melanesian' family (encompassing the languages of southern Vanuatu and New Caledonia), to which the South Efate language shows the closest relationship (Lynch 1999: 423). There is also thought to be a split among the languages of the north. Languages spoken from the Torres Islands to North Pentecost have been assigned to a Northern Vanuatu subgroup, while languages from the rest of Pentecost and as far south as Efate have been assigned to a Central Vanuatu subgroup (Lynch and Crowley 2001: 20). Three languages in Vanuatu are Polynesian 'outlier' languages (Emae, Ifira-Mele and Futuna-
Aniwa) and are said to belong to the Polynesian branch of the Central Pacific linkage (Lynch and Crowley 2001: 20).

From a linguistic perspective Lynch (1999: 447) agrees with the current archaeological evidence for an expansion of settlement from northern to southern Vanuatu. He also claims, however, that there was a significant gap between the settlement of Efate and that of Southern Vanuatu, attested by the divergence of the language of South Efate and its closest relative to the north (1999: 439). This latter notion cannot yet be tested against archaeological evidence, as the limited regional distribution of archaeological sites is insufficient to allow for finer discrimination of the sort being proposed by Lynch.

5.5 The last 1000 years in Vanuatu

Aside from the initial settlement of Vanuatu by Lapita potters, another archaeologically and ethnographically obvious wave of colonisation involved a ‘backwash’ of Polynesians from the east within the last 1000 years, impacting significantly on social structures already in place in the islands of Vanuatu. Spriggs (1996b: 78) notes that,

[the existence of Polynesian speaking peoples on Outliers, Polynesian words in New Caledonia and Vanuatu languages, local myths involving Polynesian culture heroes such as Mauitikitiki and Tangaroa (possibly the same figure as Tagaro in northern Vanuatu), and oral traditions of ‘Tongan’ contact, all point to a period of important Polynesian influence in the last 700 years.

One further element of Vanuatu’s past is the European contact period, which commences with the arrival of Quiros in 1606. This event marks the beginning of a new phase in Vanuatu. Colonial contact led to many dramatic transformations through the processes of dispossession, dislocation, relocation, depopulation, increased and more devastating levels of warfare, political upheaval, shifting social boundaries, and a general revision of existing beliefs throughout Vanuatu.

After a relatively drawn-out period of European exploration by Quiros (1606), de Bougainville (1768) and Cook (1774), ending in the early 1800s, whalers, sandalwooders and missionaries became regular visitors to the islands from about the 1840s on (Howe 1978: 22). The beginning of the sandalwood trade was heralded by the arrival of the Irishman Peter Dillon on Tanna and Erromango in 1825 (Shineberg 1967). Dillon set in train a new era of contact between traders and ni-Vanuatu which often ended in bloodshed (MacClancy 1981). By the 1860s the sandalwood trade had become a less lucrative business, largely due to the drop in the price of wood, although on Erromango today sandalwood continues to provide an important supplementary income for local people.
By the 1860s Christianity had gained a secure foothold throughout the islands of Vanuatu (Tonkinson 1982; Philibert 1992). Only in the interiors of a few of the larger islands (Tanna, Santo, Malakula and Ambrym) was resistance entirely successful. Initially, the Presbyterians concentrated their efforts in the southern and central islands and the Anglicans focused on the north. The Roman Catholics arrived in 1887, and the Church of Christ, Seventh Day Adventist and Apostolic faithfuls followed later. The impact of Christianity was far-reaching in its ability to instrument major demographic shifts (Guiart 1951: 82). Missionaries encouraged people to move away from their inland villages to the coast, where communal villages were established with the church at the centre.

Between 1866 and 1906 scores of ni-Vanuatu became the (mostly) unwilling victims of indentured labour (although see Gundert-Hock 1991 and Jolly 1987 for the possible reasons behind cases of voluntary participation). Their destinations included Australia (to join the sugar industry in Queensland), Fiji, New Caledonia and Samoa. The social and cultural effects of such large scale dispersals of ni-Vanuatu to other parts of the world were far-reaching. The trade temporarily removed a large sector of the community, in particular young and middle-aged men, triggering major social realignments and dismantling important social institutions that relied on the participation of this absent population (e.g. the grade-taking systems in the northern islands). Language shifts also occurred at this time, labourers returning to Vanuatu with pidgin english.

One of the most devastating effects of the sandalwood trade, the arrival of missionaries, and the labour recruitment industry, was the introduction of new diseases to which local people had no immunity. These included pneumonia, dysentery, influenza, diphtheria and whooping cough. The effect was depopulation on a massive scale (e.g. McArthur 1978).

Each of these historical events and those that followed them have forced ni-Vanuatu to reconcile both incoming people and ideas. The social landscape was significantly destabilised. Mobility increased and people's worlds broadened; new material items were introduced, social boundaries were reconfigured, belief systems were questioned and warfare intensified. As demonstrated in forthcoming chapters, there is evidence that rock-art was being produced during the post-European contact period. The rock-art might be expected, therefore, to register local responses to colonial processes.
5.6 Conclusion

Several critical points emerge from the above discussion, each crucial to my own investigation of Vanuatu's rock-art which might be expected to graphically reflect at least some of the colonisation processes and internal socio-political developments which punctuate Vanuatu's history. Nine key issues raised in this chapter are particularly important. Methodologies for testing these issues through the analysis of the rock-art of Vanuatu is outlined.

1. People arrived in Vanuatu around or shortly after 3000 BP. Initial settlement was by Lapita colonists who targeted coastal locations. They probably came from the west or northwest, and had close affinities with other groups or individuals who colonised or already occupied other eastern Melanesian islands at the time of Vanuatu's settlement (e.g. note the occurrence of Lou Island obsidian in the Malo sites). If the earliest settlers in Vanuatu practised rock-art, then motif and non-motif variables should approximate those of the homeland(s).

2. Lapita ceramics in Vanuatu lasted only a few hundred years after initial colonisation. In some areas, such as at Ponamla on Erromango and Malua Bay in Malakula, Lapita settlement was focused at locations near perennial water sources and in sheltered bays facilitating easy canoe access. After a rapid period of resource depletion in these areas, people appear to have moved on. Evidence for early human modification of the environment causing large-scale erosion is best seen around 2900 BP on Aneityum. Links with other parts of Island Melanesia, as informed mainly by pottery styles, may have either continued until ~1500 BP (Spriggs 1997; Wahome 1997, 1999) or have begun to break down by 2500 BP (Bedford 2000; Bedford and Clark 2001). Rock-art provides one means of testing the extent of the continuity of interaction within Vanuatu and between Vanuatu and other Island Melanesian regions. If the concept of a Pan-Melanesian Incised and Applied Relief Tradition is valid, then rock-art should begin to diverge from original (Lapita-related) forms around 2700 BP, but continuities in motifs and/or motif structure may be detectable until ~1500 BP. If Bedford (2000) and Bedford and Clark’s (2001) notion that ceramic remains tend to demonstrate the ‘evolutionary primacy of local processes’ after c. 2500 BP, then rock-art should begin to manifest more island-specific conventions after this time.

3. Evidently by 1500 BP – 1000 BP pottery traditions across Vanuatu start to become more geographically distinct, as evidenced by the emergence of regional ceramic styles on
various islands (e.g. Chachara in Malakula; Aknau wares in the Shepherd Islands). The appearance of these ceramics implies the contemporaneous emergence of several more or less bounded social, cultural and political networks. This being the case, it could be expected that rock-art traditions will also reveal evidence of ‘regionalisation’ at this time.

4. Many areas which appear to have been abandoned after initial colonisation, such as Malua Bay in northwest Malakula, were again reoccupied from c. 1000 BP. In Northwest Malakula there is evidence of the use of more diversified landscapes as people move away from permanent water sources and occupy areas further inland. A number of cave sites on Erromango and in Malakula (e.g. Raowalai, Navapule A) became incorporated into the settlement system at this time. An increase in rock-art production might therefore be anticipated from c. 1000 BP onwards as an increasing number of sites become occupied.

5. A re-organisation of economic networks took place in the southern island of Aneityum with the advent of intensified, irrigation-based agricultural systems and the emergence of powerful political elites around 550-450 BP. That these developments differed from those on the nearby islands of Erromango and Tanna implies that by then, social, economic and political systems had become island-specific and relatively autonomous (see Spriggs and Wielder 1989). If this was so, at some stage during the settlement history of Tafea the design systems between islands may have become more island-specific, as groups were no longer exposed to the design ideas of their neighbours, focusing instead on crafting their own local identities.

6. Major cultural transformations took place in the central islands around 498 BP as a result of the Kuwae volcanic disaster, including major intra- as well as inter-island movements. It might therefore be expected that shifts in the scale of regional interaction and integration took place at this time, perhaps reflected in the rock-art by a change in the geographical distribution of rock-art conventions.

7. Overlapping somewhat with the Kuwae eruption, between 750-350 BP Polynesian-associated artefact forms (shell tools) and traditions emerge in Vanuatu. The impact of this late backwash of Polynesians was probably registered in the local art systems, particularly given its impact on other material items. Elements found in rock-art and other design media from the Polynesia may then start to appear in the rock-art of Vanuatu during this period.
8. Bedford (2000) proposes that during the 500 years prior to European contact there was an opening up of interaction networks in the northern islands and elsewhere, evidenced by the inter-island appearance of ceramics resembling Malakula’s Chachara Ware, and the common occurrence of particular items in Vanuatu, Fiji, Tikopia and New Caledonia, which are indicative of long-distance contacts. If a former process of regionalisation or contraction of social networks was registered in the rock-art of Vanuatu from around 1500 BP (or perhaps earlier, as suggested by Bedford 2000), then from around 500 years ago this proposed redefinition and expansion of inter-island contacts may also be encoded in rock-art.

9. By the time Europeans made their impact in Vanuatu there was again a marked change in the production of material items and the exchange networks in which they operated. The Naamboi pottery is one example of such a transformation, exclusively manufactured and used in Malakula rather than being part of a broader network of contacts. Rock-art dated to the European contact period may in some way reflect the social upheaval that constitutes this time. For example, a keen resistance to social transformation may have prompted a resurgence in the production of traditional symbols, as a way of maintaining a former social order. Acceptance of incoming ideas, in contrast, may have seen the incorporation of entirely new motifs into the rock-art record.

This chapter has been the first of four chapters focusing specifically on Vanuatu. So far the aim has been to establish an archaeological and historical framework within which to examine the rock-art of the archipelago. In Chapter 6 I provide a brief summary of the history of rock-art research in Vanuatu (more detailed descriptions and a cursory comparison between motifs and other features associated with rock-art sites both within and outside the region can be found in Appendix 6.1). Chapter 6 continues with a detailed analysis and appraisal of the spatial distribution of motifs, and Chapter 7 teases out the various temporal patterns in the rock-art of the region. The results of these analyses are drawn together in Chapter 8 in the explication of a model of rock-art transformation for the Vanuatu.
6
The rock-art of Vanuatu: an analysis of non-motif and motif variables through space

Although widespread in distribution and probably a more common site type than is apparent from the literature, the Vanuatu region’s rock art has been paid little more than cursory attention by many archaeologists working in Melanesia. (Roe 1996: 83)

6.1 Introduction

Over the course of the following two chapters both the spatial and temporal dimensions of the rock-art of Vanuatu is explored as a means of generating a model of rock-art transformation for the archipelago as a whole. In the first part of this chapter the distributions of rock-art sites in Vanuatu are described and each site is assigned an analytical code. This is followed by a brief description of the history of rock-art research in Vanuatu and a general overview of the types of the rock-art found in each region. A more detailed province-by-province description of the history and study of the rock-art sites of Vanuatu is provided in Appendix 6.1.

The remainder of this chapter is dedicated to an examination of the spatial distributions of non-motif and motif rock-art variables, with the aim of establishing the statistical relationship between rock-art sites throughout Vanuatu. In Chapter 7, I examine the temporal distribution of motifs so as to map these spatial distances in time. Finally, in Chapter 8 the results of both the spatial and temporal analyses are combined and assessed in relation to models of cultural change for Vanuatu which have been derived from archaeological and other forms of data.

6.2 Distribution of rock-art sites in Vanuatu

The locations of the 87 rock-art sites currently known in Vanuatu are shown on the map in Figure 6.1. Most of the archipelago’s engraved and painted rock-art is associated with limestone caves, with a few exclusively engraved sites found on volcanic boulders and platforms. In the absence of field reports and speleological records for islands such as Santo, Pentecost, Ambae, Ambrym, Epi and Efate, it is unclear whether the lack of rock-art on these islands reflects a scarcity of suitable caves and volcanic surfaces (and thus a real absence of rock-art) or simply a dearth of archaeological survey. On Aneityum, where 90% of the island consists of volcanics, engraving is the only medium found. On Erromango, painted rock-art predominates in cave sites present among the uplifted Pleistocene limestone terraces in the south and west of the island. Most of the engraved rock-art on the island is found on
volcanic beach-rock platforms on the east coast. On Malakula, dense concentrations of both painted and engraved rock-art can be found in limestone caves in the uplifted northwest of the island. Based on these distribution patterns, future rock-art surveys in Vanuatu will most likely locate engraved rock-art on islands where volcanics predominate (e.g. Ambae and Ambrym), and both painted and engraved rock-art in areas of raised limestone where caves are found (e.g. Pentecost and Efate).

Figure 6.1 is a general distribution map showing the island locations of all of the known rock-art sites in Vanuatu. Not all sites in Figure 6.1 can be located precisely; their accuracy is dependent upon the level of locational detail provided by the original site recorder and the availability of site location information. Precise locations are provided for most sites in Figures 6.2-6.6. Figures 6.1-6.6 can be cross-referenced with the site list in Figure 6.7 which provides ancillary information such as the names of the main researchers who have visited and recorded each site, the different codes that have been accorded to sites over time, and a range of non-motif information. Some of the rock-art sites listed in Figure 6.7 have a VCHSS code (usually decimalised, e.g. 13.14) beside them indicating that they have been registered with the Vanuatu Cultural Centre. In addition, I have assigned a ‘V’ (Vanuatu) code to all sites; an alpha-numeric series ranging from V1 to V87, and an alpha-numeric code which specifies island provenance (e.g. MK16 refers to site V16 on Malakula). Hereafter the latter coding system is used when referring to sites.

During two field seasons in 1996 and 1997 I visited 53 sites in four separate island regions where rock-art sites were already known to exist: the west coast of Maewo, Northwest Malakula, Lelepa and Erromango. These regions were selected for the specific purpose of acquiring a north-south sample of the rock-art of Vanuatu. The sites which I have visited and recorded are identified with an asterisk in column 1 of Figure 6.7.

### 6.3 The rock-art of Vanuatu: a brief history of research

Much of the earliest documentation and recording of rock-art in Vanuatu was undertaken by Presbyterian missionaries on the islands of Aneityum and Lelepa (e.g. Copeland 1860; Patterson 1882; Inglis 1887; MacDonald 1889; Lawrie 1892; and Gunn 1906a, 1906b, 1909, 1914). A summary of this early work can be found in Spriggs and Mumford (1992). Most of these accounts include basic descriptions of the sites, the rock-art, and any associated oral histories, as well as the occasional (albeit coarse-grained) comparisons between rock-art within Vanuatu and further afield (e.g. MacDonald 1913; Gunn 1906b).
The only known historical reference to the physical act of rock-art production in Vanuatu is provided by Gunn (1909) in relation to Ehili (AN2) in southern Aneityum:

The ‘artists’ in those past years belonged to one tribe, and devoted themselves solely to their art. They received their food from the people, for they did not make plantations for themselves. ... Each day the artists prepared their materials - hard stones - and went to their ‘studio’ on the hillside. The volcanic rocks and boulders were very hard, but the artists had no harder material than stones, or perhaps coral, for wearing down, day by day, the outlines which composed their pictures (Gunn 1909: 10-11).

Missionary accounts were followed by early ethnographic and anthropological observations of rock-art on the islands of Ambrym (Speiser [1923]1996: 393), Malakula (Deacon 1934: 584), Maewo (Speiser [1923]1996: 86), Erromango (Skinner 1923: 97; Humphreys 1926, and Woodburn 1944: 187) and Emau (Somerville 1894; Hébert 1963-65). These were followed by a spate of very general references by archaeologists to the rock-art of Aneityum (Elizabeth and Richard Shutler in 1966, Les Groube in 1972, Norma McArthur and Winifred Mumford in 1973 and Matthew Spriggs in 1978 and 1979). Caroline Leaney (1965) was the first archaeologist to describe the Yalo (MK3) and Apialo (MK15) sites in Northwest Malakula. Richard Shutler (1967) provided the first record of rock-art in the Torres Islands (see also Langdon 1967), and Bernard Hébert (1965), followed by José Garanger (1972), were the first to visit and provide a relatively detailed record of the rock-art at Feles cave (LP1) on Lelepa. In 1979 Jim Specht visited the only known rock-art site on Tanna (TN1), and Spriggs (in 1983; cf. Spriggs and Roe 1989) documented several previously unrecorded sites on Erromango (e.g. ER19-ER24). A number of rock-art sites have been listed in the reports of the Vanuatu Cultural and Historic Sites Surveys (VCHSS) for Aneityum, Erromango, Efate, Malakula, Maewo and Pentecost. Most recently Jean-Christophe Galipaud (1996b, 1998b) has reported several sites in the Torres Islands (TR1-TR9).

Most reports on the rock-art of Vanuatu could be described as incidental, appearing sporadically in a range of publications usually as adjuncts to larger historical, ethnographic or archaeological studies. Only two serious attempts have been made at cataloguing and comparing the rock-art of Vanuatu and elsewhere; one by Spriggs and Mumford (1992) for the rock-art of Aneityum and other southern islands, and another by David Roe (1996) who collated information on 50 rock-art sites throughout the archipelago (Figure 6.8). Detailed descriptions of these studies can be found in Appendix 6.1.
6.4 Non-motif variables

In this section I conduct a series of frequency analyses on non-motif variables defining Vanuatu rock-art. Most of the non-motif variables examined here are the same as those analysed in Chapter 4 for western Pacific data. The aim of analysing a similar set of non-motif variables in Vanuatu is to facilitate a comparison with the western Pacific data in Chapter 9. Most of the rock-art variables analysed are listed in Figure 6.7, which includes data on technique, geology, pigment colours, topography and location.

6.4.1 Technique

Roe (1996: 85) identified three broad techniques of rock-art in Vanuatu:

- Engravings (usually executed by percussive techniques but with some instances of abrading), paintings (applications of pigment to form positive images, including line figures) and stencils (pigment applied to form negative images).

Based on observations made during my own fieldwork (Appendix 6.1), and in order to account for the variation within and between the painted and engraved rock-art of Vanuatu, I have slightly revised Roe’s ‘technical’ categories. Generally, the weathered nature of the engravings and surrounding surfaces in Vanuatu preclude an accurate identification of the techniques employed to create them. Attempts to reconstruct the original technique used to produce an engraving were made only when I encountered examples of superimposition that were critical for developing a relative chronology for the rock-art at a site. Three classes of engraving have been identified: pecked (which is equivalent to Roe’s ‘percussive’ class); pecked and/or abraded, and incised. Each of these techniques has been used mainly to produce linear engravings, where the grooves form the outline of an image (e.g. a circle). Less frequently they are used to produce intaglio or bas-relief forms; the former involving the removal of a section of the rock surface to produce a solid image without outline, and the latter entailing the removal of the rock surface around the form of the image such that the figure stands out in relief. On occasion the contours of the natural rock are used to create an impression of relief or a third dimension.

I have divided the painted rock-art of Vanuatu into five ‘technical classes’:

1. Stencils
2. Solid (no outline)
3. Linear (outline) with solid or partially solid infill
4. Linear
5. Combined stencils and linear outline
These technical classes apply to all pigment colours. Thus, for example, a Black1 motif is a black stencil; a Red1 motif is a red stencil, and so on. There are also numerous painted pictures which are too faded to enable a technical class to be determined. These have been designated as ‘indeterminate’ (too faded to allow for accurate assessment).

Roe (1996) stated that engraving is the most common rock-art technique in Vanuatu. According to my own data this statement certainly holds in terms of the total number of sites represented by each medium (Figure 6.7), however it is not the case in terms of the total number of pictures represented by each medium (see section 6.7 below). Of the 87 rock-art sites in Vanuatu, 25 sites contain paintings, 36 contain engravings, and 16 contain a combination of both media.

6.4.2 Geology

Of the 87 known rock-art sites in Vanuatu, 45 are located within a limestone context, 23 are associated with an igneous matrix, and one site consists of a combination of limestone and igneous surfaces (Figure 6.9). The geological contexts of a further 18 are unknown.

The majority of engraving (E) sites are associated with an igneous geology (61%), but a reasonable number are also associated with limestone (22%). Paintings (P) are almost always associated with limestone (96%), and are commonly found together with engravings (E/P) (81.25%). One site on Maewo (MW6), containing paintings and engravings, is associated with both a limestone and igneous matrix. Critically, however, all of the painted rock-art at MW6 is located on the limestone surfaces and most of the engraved rock-art is found on the volcanic surfaces. These results therefore indicate a firm correlation between paintings and limestone and engravings and volcanic geology.

6.4.3 Colour

Roe (1996: 86) noted that the most common pigment colour at rock-art sites in Vanuatu is black (or blue-black), with less frequent occurrences of red and white, and even fewer occurrences of polychrome (two sites). Consistent with Roe (1996), my own results reveal that of the 40 sites in Vanuatu where one or more pigment colours are found, 39 contain black rock-art, 16 contain both black and red rock-art, one site contains red rock-art only, one site contains bichrome ‘red and black’ and ‘red and white’ pictures, one site contains black and white pictures, and one site contains white pictures. The dominance of black at rock-art sites in Vanuatu contrasts with Specht’s (1979) finding that red is the most common pigment colour in the western Pacific.
To date, no attempt has been made to establish the source of pigments used to produce painted rock-art in Vanuatu, although a study is underway to remedy this. My own research on the black rock-art of Erromango indicates that most pigments probably have a charcoal base (yielding a high carbon signature in SEM analyses), although pigments at two sites on Erromango (Raowali and Potvelia 1) contain high levels of manganese, particularly at Potvelia 1 (16.15% Mn).

Sources of red pigment rock-art have probably varied across Vanuatu given the diversity in the red hues observed. The local community in Northwest Malakula claim that most of the red colouring agents used derive from plant sources, including the crushed root of a vine (known as _Leptwei_ in Big Nambas language), and the liquid around the seeds of a fruit deriving from a tree called _Nawal_ (pronounced “Naul” in Big Nambas language). Speiser ([1923]1996: 169), who stated that red pigment ‘originated mainly in Santo and Malakula’ and from there went to Ambrym, Ambae and Epi, claimed that the fruit plant _Bica orellata_ was used as a source of red pigment. Roe (1996) reported the use of _Canarium_ sap as a rock-art pigment on Wala Island, Malakula. In the Roviliau District on Erromango, Robertson (1902: 9) reported the locality of a source of red pigment which was mined for use in body paint and traded to Tanna and Aniwa.

The peak of Nilpon-u-moap rises near Cook’s Bay, in the east of Erromango; the name of the place means “red clay” (Nilpon, ‘place’, moap ‘red clay’). From the mountain great quantities of the clay were dug, the people using it largely at their heathen feasts, when they smeared their faces and bodies in all available colours of the rainbow. The Tannese and Aniwans bought large supplies of “moap” taking it away in their canoes and giving the Erromangans pigs, white shells (which were greatly valued), and other articles in exchange.

This may also have served as a source for the red pigments used in rock-art and should be targeted for future analysis.

A lack of oral information concerning rock-art production precludes an investigation of what motivated the use of particular pigment colours. However, there is an abundance of ethnographic detail about the social contexts in which different colours were (and still are) used for other design purposes. This information varies considerably for different islands. For instance, in west Santo, Speiser ([1923]1996: 169) reports that people painted their bodies black during times of mourning, and red during times of warfare. In contrast, in Northwest Malakula people blackened their faces and superimposed a pattern of red and white stripes for both war and mourning. On Epi, the colour of mourning is white and is

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30 The ‘Vanuatu Rock Art Dating Project’ is being conducted as part of a project funded by a Large
smeared all over the body (Speiser [1923]1996: 170). Little information is available concerning the nature of binding agents used in the creation of pigments. Speiser ([1923]1996: 241), however, noted the use of both saliva and the juice of fig trees.

The issue of pigment colour is particularly relevant to the subject of rock-art chronology. Researchers who have visited rock-art sites in Vanuatu have commented that red rock-art tends to precede black. Matthew Spriggs (1994c) has taken this observation one step further by suggesting that at Raowalai (ER16), a cave site in southern Erromango, red rock-art was associated with an early funerary function and later replaced by a black rock-art which was probably linked to a period of domestic activity (see Wilson 1999: 90 for further discussion).

A preliminary spatial analysis of painted rock-art on Erromango has revealed an association between red stencils and red linear drawings and cave space (Wilson 1999, provided in Appendix 6.2). In addition to being commonly located in inaccessible locations, red pigment pictures are also frequently restricted to specific parts of caves, such as the entrances to burial chambers. If, as Spriggs (1994c) has proposed, rock-art colour reflects change over time, then shifts in the organisation and function of cave space may also be implicated.

**6.4.4 Topography**

Roe (1996: 85) has noted that painted and engraved art techniques tend to be associated with different landscape formations. My results indicate that engravings occur in a diverse range contexts: on exposed cliffs, on beach-rock platforms, in caves and shelters, and on boulders (Figure 6.10). Painted rock-art has a more limited distribution, occurring primarily in limestone caves and shelters. The fact that engravings are probably more durable than paintings may explain the absence of paintings in more exposed landscape contexts although, as Roe (1996: 85) mentions, pigment-art appears to have survived for long periods on coastal cliff-faces in other parts of the Pacific. Of the 87 known rock-art sites in Vanuatu, 55 are caves and shelters, five are cliffs or cliffs/outcrops, 31 are boulders, stones, pillars and slabs, 32 five are volcanic beach-rock platforms, and one is unknown.

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**ARC Grant (A10017050) to date the rock-art of Vanuatu (see Chapter 1).**

31 Cliffs/outcrops is a category used by Roe (1996). I was unable to obtain more fine-grained information than this and therefore amalgamated his category with my own category ‘cliffs’. 32 I am not sure whether the ‘pillar’ (TR9) described by Galipaud (1996b) is a carved monolith or a naturally occurring stone. If it is a carved monolith then it does not fall within the definition of rock-art used in this thesis. Likewise, I am not sure whether the carved ‘slab’ (SHD1) from Emae is a naturally occurring stone or derives from some kind of human-made structure. I decided to include both of these sites but they could equally have been omitted.
6.4.5 Location

Each of the topographic features noted above (i.e. caves/shelters, boulders, platforms) is associated with particular landforms. Of the 87 known rock-art sites in Vanuatu, 51 are located on or within vertical cliffs of (usually limestone) upraised terraces. All caves and rock-shelters fall into this category and are listed as 'cliffed' in Figure 6.7. A total of 12 sites are located on the coast, including boulders and beach-rock platforms but excluding coastal ‘cliffed’ sites. The remaining three categories: slope (12 sites), ridge top (four sites), and river course (two sites), apply mainly to boulders. The landforms associated with six sites are unknown.

6.4.6 Human remains

Only five rock-art sites in Vanuatu are known to contain human skeletal material – one on Malakula and four on Erromango (Figure 6.7). Four sites contain skeletal material situated above-ground and are therefore classified as ossuaries. One site on Erromango (ER16) contains sub-surface human skeletal material and is classed as a burial. There are a number of other rock-art sites on Erromango which bear material signs of former ossuaries though no skeletal material has yet been identified. For instance at Nalavinaramai (ER1) on Erromango there is a low stone wall at the rear of a sheltered area. Stone walls of this kind commonly demarcate repositories for skeletal material.

There appears to be a close spatial relationship between human skeletal material and red rock-art at some sites, particularly on Erromango (e.g. Velemendi [ER2] and Raoviu [ER18]). Red motifs, for instance, tend to be found just outside the chambers/apses that contain the remains. However, due to the small number of sites containing skeletal material, the observed correlation between red rock-art and ossuaries/burials is a preliminary link which requires further investigation. Notably, there are 13 sites in Vanuatu which contain red rock-art but no visible remains of human bones.

6.4.7 Inaccessibility

Roe (1996) has noted that there are a number of instances in Vanuatu where rock-pictures are located at considerable heights above the ground. As outlined in previous chapters, ‘inaccessibility’ is a common feature of (mainly red) painted rock-art assemblages throughout the western Pacific (Ballard 1992a). One of the major differences in Vanuatu, however, is that inaccessible rock-art can be engraved or painted, and the inaccessible painted rock-art is not necessarily always red.
Hand stencils are the most common of the inaccessible black rock-art in Vanuatu, and red hand stencils and red solid amorphous shapes are the most inaccessible of the red motifs. At Apialo (MK15) on Malakula there are several black and white anthropomorphic figures with headdresses c.6 metres above the present floor level of the cave, and at Yalo (MK3) there are a number of engraved figures, including non-figurative motifs as well as an anthropomorph with a headdress, located a few metres above head-height. There are only two regions in the western Pacific where inaccessible engraved rock-art has been encountered: at Yalo (MK3) in Vanuatu, and at Vatuluma Posovi in the Northwest Guadalcanal (Roe 1992a).

Is this element of inaccessibility in the rock-art of Vanuatu derivative of a convention which originated elsewhere, or did it develop in response to a local visual mapping of social concepts (or a ‘cultural syntax’) pertaining to height? There is certainly some reference in early anthropological accounts to ‘height’ in Malakula and elsewhere in Vanuatu being ‘symbolic of both spiritual and social aspiration.’ (Layard 1942: 732). Notably, in north Malakula for instance, hawks’ feathers are worn in the hair as a symbol of rank in the public grade system. On Vao, one of the Small Islands off northeast Malakula, the word Na-mbal (meaning ‘hawk’) was said to only have been used as a name by someone of high rank (Layard 1942: 734). Perhaps, then, it is no coincidence that ‘anthropomorphic figures with feather headdresses’ are among the highest images in the two largest rock-art caves in Northwest Malakula. Height, as a symbol of rank and power, was possibly integral to the social ontology of the people responsible for producing the rock-art of Northwest Malakula.

A relationship between rock-art and social rank has been noted elsewhere in the western Pacific and Southeast Asia. Both Vial (1936) and McWilliam (1936) have written about the spatial relationship between ossuaries and rock-art in the Buang Valley in Morobe Province (PNG). The Mapos people, who lay claim to these relics, state that the height of the limestone ledge on which a person’s physical remains were placed was directly related to the individual’s status in life. Thus women and children were positioned at the base of cliffs; low-ranking men were located on ledges higher than the women and children, and men of high status within the community were placed higher still.

Whether or not the social meanings linking ‘height’ and rock-art were transmitted from some ancestral homeland to Vanuatu is difficult to ascertain. What can be established through direct and relative dating, however, is whether the earliest forms of rock-art in Vanuatu were more likely to manifest this characteristic of height than later ones. This would lend some credence to the idea that the cultural concepts associated with height have been mapped onto visual images across a very broad region. I explore this notion again in Chapter 10 by
gauging the strength of the relationship between motif type, colour, height, and chronology throughout the western Pacific. While I have not recorded the exact heights of the various motifs in Vanuatu I have estimated maximum heights at most sites (Appendix 6.1).

6.5 Discussion: the distribution of non-motif variables

Five broad conclusions can be drawn from the analyses of non-motif variables conducted so far in this chapter:

1. While the number of sites with engravings exceeds the number of sites with paintings, the overall number of painted pictures exceeds the numbers of engraved pictures (see below). This result offers further support for the mounting evidence that paintings are far more common in Island Melanesia than formerly realised (see Chapter 4).

2. The majority of engraving sites are associated with an igneous geology while the majority of painted rock-art is associated with limestone. Vanuatu differs from other western Pacific regions in terms of its relatively high percentage of limestone caves and shelters containing engraved rock-art (although see figures for Sogeri area; Chapter 4).

3. Vanuatu also differs from most other western Pacific regions in terms of the colours represented among painted assemblages. Thirty-nine of the 40 sites with painted rock-art in Vanuatu contain black pigment (in contrast with the dominance of red pigment elsewhere in the western Pacific). This result accords with the patterns observed for colour distribution across the western Pacific which indicate a relative increase of black pigment rock-art towards the east (see Chapter 4).

4. Painted rock-art in Vanuatu is most often found in either shelters or caves, while engraved rock-art is found in a diverse range of topographic contexts (e.g. on exposed cliffs, on beachrock platforms, in caves and shelters and on boulders). The relationship between distributions of engraving sites and topographic categories in Vanuatu does not correspond with the results obtained elsewhere in the western Pacific where engravings are overwhelmingly associated with boulders. Most rock-art in Vanuatu is found in the uplifted coralline limestone terraces, either on cliff-faces (e.g Subeng on Maewo) or within shelters and caves at the base of cliffs (e.g Yalo on Malakula).

5. Inaccessibility, one of the fundamental components of the APT, is a ubiquitous feature among the rock-art of Vanuatu. Where Vanuatu differs from other western Pacific regions, however, is in terms of the techniques and colours defined by inaccessibility. Whereas inaccessible art in most other regions is mostly only associated with red pigment, in Vanuatu both red and black pigment and engraved rock-art are used.
The overall conclusion that can be drawn from this section is that, while Vanuatu is characterised by many of the non-motif variables expressed at other western Pacific sites (e.g. inaccessibility), the archipelago also demonstrates several quantifiable differences, such as the relatively high density of black pigment relative to red pigment, and the number of inaccessible black paintings. What do these results imply in terms of Vanuatu’s relationship to other western Pacific regions through space and time? Before attempting to answer this question, in the following section I conduct detailed analyses of the motifs exhibited in Vanuatu’s rock-art; examining their distribution through space.

6.6 Motif categories and motifs

Not all of the sites listed in Figure 6.7 are included in the motif analyses presented in this section. The suitability of a site for inclusion was assessed on the basis of the fulfillment of the following site recording procedures.33

1. Each site was described on a site recording form.
2. A scaled plan of the site was produced noting the locations of rock-art and other relevant natural and cultural features.
3. The rock-art was sketched on ‘feature’ forms and divided into arbitrary panels.
4. The rock-art was photographed in an overlapping sequence. Long-distance panel shots were obtained first, followed by photographs of certain sections of a panel, before a series of photographs were taken of individual pictures. The rock-art captured in each frame was noted on photographic recording forms which correlated with the feature forms. Panels were alphabetically coded; photographed sections of panels were numerically coded, and photographed pictures were accorded a roman numeral.

Sites listed in Figure 6.11 were included in an intersite comparison of motifs. Upon completing my fieldwork I re-drew the rock-art at each site from both sketches and photographs (to scale where possible). Eight sites on Aneityum which had already been extensively recorded and illustrated (see Spriggs and Mumford 1992) were also considered. Two sites which were incompletely recorded were also deemed appropriate for analysis: Velemendi (ER3) on Erromango and Malangauliuli (MW5) on Maewo. All of the painted rock-art at Velemendi (which constitutes over 90% of the pictures at the site) was recorded. A small panel of engravings just inside the left entrance of the cave was not recorded due to time constraints. Likewise, a small panel of engravings on an outcrop adjacent to the main shelter at Malangauliuli on Maewo was not recorded due to persistent wet weather; however all of the rock-art on the main panel (which constitutes over 90% of the rock-art of the site) was adequately recorded.

33 Limited time or access at some sites precluded comprehensive recording.
Five engraving sites on the east coast of Erromango (ER19-ER24) (collectively referred to as the Potnarvin sites) were excluded from the intersite analysis but are discussed in light of the results.³⁴

The total numbers of rock-pictures deriving from each of the five island regions included in the analysis are given in Figure 6.12. The variation between the sample sizes from each island are taken into consideration in the interpretation of results. A grand total of 5565 rock-pictures from rock-art sites in these five regions are available for analysis.

### 6.7 The classification of motif categories

As for the western Pacific data described in Chapter 4, each picture was classified as either a painting or an engraving and then assigned to a figurative and/or non-figurative motif category (Appendix 6.4). The total numbers of engraved and painted pictures present at each site are listed in Figures 6.13 and 6.14.

A total of 749 figurative pictures have also been assigned a non-figurative code. Thus, for example, several Anthrol motifs have been assigned a leaf-shaped (L) motif code due to their leaf-shaped torso. The aim here is to reduce the level of subjectivity imposed on the data through the perception of certain motifs as resembling objects in the real world. In this way, the categories 'figurative' and 'non-figurative' become redundant in some analyses as all motifs are equally weighted according to their geometric properties. For each result presented in this chapter I state whether duplicates (i.e. motifs split into a figurative and non-figurative category) are included in the total number of motifs analysed.

The following discussion is divided into four sections. In the first section I discuss the major quantitative differences within and between figurative and non-figurative motif categories. In the sections that follow I examine motifs found at three geographical scales: Vanuatu-wide, inter-island (including two or more adjacent islands), and island-specific. Each geographic region is further examined according to whether motifs are engraved, painted, or both, and according to whether they are figurative or non-figurative. In each section I describe the most common motifs found at each regional scale.

³⁴These sites (ER19-ER24) were visited in 1996 but their recording was interrupted by the death of a Chief, requiring me to return to Dillon’s Bay (on the west coast) for the funeral. The level of recording at these sites was insufficient to include them in the statistical analyses. However, a summary table of the motifs recorded at these sites has been devised and is referred to in the discussion of the statistical results presented below (see Appendix 6.3).
6.7.1 Figurative versus non-figurative motifs

**Figurative motifs (Figures 6.15-6.18)**

A total of 2438 figurative pictures were recorded and analysed, constituting 43.8% of the total number of pictures in the entire sample. Of these, 647 (26.5%) are engraved and 1791 (73.5%) are painted (Figure 6.15 and Figure 6.16). There are a few major differences amongst the numbers of pictures assigned to each figurative category in the two different media (Figure 6.17 and Figure 6.18a/b). For example, hands (primarily hand stencils) constitute the most commonly depicted motif with 1467 paintings (81.9%) and only six engravings (0.9%). Faces constitute the second largest motif category with 449 engravings (69.3%) and just 12 paintings (0.7%). The total number of pictures in the remaining nine figurative categories are relatively proportional across the two mediums. For example, anthropomorphs, the third largest category, is represented by 211 paintings (11.8%) and 83 engravings (12.8%). Differences between figurative engravings and paintings are more apparent at the level of the motif rather than the motif category.

**Non-figurative motifs (Figures 6.19-6.26)**

The total number of non-figurative engravings and paintings is 3876 (including duplicates). Of these, 1792 (46%) are engravings and 2084 (54%) are paintings (Figure 6.19 and Figure 6.20). There are perceptible differences between the total numbers of non-figurative categories represented by each medium (Figure 6.21 and Figure 6.22). Among engravings, the cupule is the most frequently encountered motif category (n=432). Among paintings, central line motifs are the most common (n=306). Circles, straight lines and leaf-shaped motifs have a high and relatively equal representation in both media. Painted assemblages throughout Vanuatu have a much higher representation of zig-zags, triangles and diamonds than engraved assemblages. Engraved assemblages are represented by considerably greater numbers of ovals, teardrops and ovoids.

As noted above, 749 figurative pictures have been accorded a non-figurative code. Figurative pictures which have not been accorded a non-figurative code include hand stencils (which, even if they have an unknowable social meaning, are undoubtedly portrayals of ‘hands’) and faded figurative motifs (eg. AnthroF, FaceF). The total number of engraved non-figuratives without duplicate figurative codes is 1331, and the total number of painted non-figuratives without duplicate figurative codes is 1796 (Figure 6.23 and Figure 6.24).

Each of the following frequency analyses are based on the total number of figurative and non-figurative motifs including duplicate codes (n=6314). The total number of figurative motifs with duplicate non-figurative codes at each site can be determined by subtracting the
site totals in Figure 6.26 from the site totals in Figure 6.25. The following results are based on the tabulated totals for engraved and painted figurative and non-figurative motifs. These tables are available for reference in Appendix 6.5.  

6.8 Vanuatu-wide motifs

6.8.1 Figurative engravings
The most common category of figurative engravings with a Vanuatu-wide distribution is the Face, with Face1 (n=13), Face9 (n=40) and Face13 (n=54) each heavily represented (Figure 6.27). Both Face1 and Face13 could be described as 'standardised schemas' (similar depictions are found outside the study region). Face1 is a circular or oval face with two cupules (circular depressions) for eyes. Face13 is identical to Face1 but with three cupules (perhaps) denoting facial features. Face9, the third most common engraved face in Vanuatu, is more unusual in that it is denoted by features which are replicated throughout the western Pacific and only in the engraved medium.

The Face motif category occurs most frequently in the north of the archipelago (on Maewo and Malakula) and less frequently on Erromango. On Erromango, one example of Face13 occurs at ER13, and both Face1 and Face9 occur at Potnarvin (where exact counts are unavailable). The engraved Face motif category is the most common and widely represented across Vanuatu. While it has a predominantly northern distribution, it does occur sporadically on Erromango. Though Face13 is the most commonly depicted motif, interpretive weight is given here to Face9 which is well represented across the archipelago and bears features which appear to be diagnostic throughout the western Pacific.

Two engraved fish motifs (Fish2 and Fish11) have Vanuatu-wide distributions. Fish2 (n=8), the second most common engraved fish motif after Fish1 (n=9), has a diamond-shaped body and belongs to a class of non-figurative diamond motifs which occur throughout the archipelago in both the painted and engraved media (including Dm6, D7, D14 and D21). Fish11 (n=2) is rarely represented, but single examples occur in both the north and south on Maewo and at Potnarvin (Erromango).

BoatF (a faded motif which resembles a boat [n=6] and Boat16 [n=1]) have both been recorded at MW5 and at Potnarvin on Erromango. Boat16 is an unembellished simple

35 To avoid confusion when examining the results presented in this chapter, I note here that readers will observe illustrations of 'figurative' motifs in the results for 'non-figurative' motifs. This is because certain figurative motifs have been analysed as both figurative and non-figurative forms. For
depiction of a sea-raft consisting of a ‘hull’ and a single line (mast?) with an attached rectilinear form (flag?).

6.8.2 Non-figurative engravings
Most of the non-figurative engravings with a Vanuatu-wide distribution are curvilinear in nature and relatively homogeneous in form (Figure 6.28). The most commonly represented motifs are Cf30 (a circle with a central cupule; n=47) and Cf32, a circle with an off-centred cupule (n=22). Several of the more simple face motifs described in the figurative engraving section are also represented here, including Face1 and Face9. The most salient attribute among engraved non-figurative motifs with a Vanuatu-wide distribution is the central (or off-centred) cupule, which is associated with circles, semi-circles (SSf9), ovals (Of6), triangles (Tf6), leaf-shapes (Lf2) and ovoids (vEGf3).

6.8.3 Figurative paintings
By comparison with engravings there are very few figurative paintings with a Vanuatu-wide distribution (Figure 6.29). Only two motif categories are represented: Anthropomorphs and Zoomorphs. Anthro45 (n=8) is found on Malakula (n=2), Lelepa (n=3) and Erromango (n=3). This motif is defined by an outlined torso (usually infilled with solid pigment), flexed arms with digits, and an outlined head (with ears often depicted). The legs are represented in a variety of postures and genitalia can be seen on some of the figures.

The Zoomorph motif found on both Malakula and Erromango is Butterfly1 (n=2). While the two pictures at MK12 and ER6 are structurally similar, only single examples are found at each site.

6.8.4 Non-figurative paintings
The non-figurative painted rock-art found across the archipelago is fundamentally different to the non-figurative engraved rock-art (Figure 6.30). It is predominantly rectilinear, with diamonds, triangles, leaf-shapes, crosses, zigzags, stars and central lines all well represented. While a large proportion of non-figurative engravings found across Vanuatu are denoted by the inclusion of a central cupule, the non-figurative paintings are distinguished by features such as a central axis line or linear infill. Motif Ck46 (n=46), for instance, consists of a line of circles connected by a central axis line. The central line motif category is the most commonly represented non-figurative painting category with a Vanuatu-wide distribution. Motif CLd21 (n=16), the most frequently represented motif, is characterised by several example, in Figure 6.27 Face9 is classified as a face (and is therefore figurative). However, in Figure 6.28 it has been treated as an oval (v040), and is therefore non-figurative.

Boat16 has only been counted once but also occurs at Malap on Erromango, one of the regions excluded from the frequency analysis.
parallel lines extending from one side of a straight line, having the appearance of a 'hair comb'.

6.8.5 Figurative motifs common to both paintings and engravings

A large number of motifs occur across Vanuatu in both painted and engraved media (Figure 6.31). The most common and widely distributed motif category is the Hand ($n=1471$), with 1465 painted and six engraved examples. The only island where hand motifs are not present is Maewo.

Anthropomorphs constitute the next largest category. Anthro1 ($n=17$), characterised by flexed arms and legs and an outlined (usually leaf-shaped) torso, is more common among engravings ($n=11$) than paintings ($n=6$) and more prevalent in the north of the archipelago (Maewo and Malakula). Anthro25, which falls into the group of diamond-shaped motifs described above (Dm6, D7, D14, D21), is usually painted ($n=6$), with only one engraved example recorded.

The next most common category is Fish, examples of which are more frequently engraved than painted. Fish1 ($n=10$) has a predominantly southern distribution and is characterised by the features described above as constituting a 'standardised schema' (see Chapter 1). Fish8 ($n=9$) is most commonly found among the engravings of Maewo and is characterised by an outlined leaf-shaped body and a two-pronged tail.

Bird1 motifs are also found throughout the archipelago and, like Anthro25, are slightly more often painted ($n=7$) than engraved ($n=3$). These forms are almost identical to Anthro25 except for the addition of a beak-like appendage. Engraved versions are found exclusively in the south of the archipelago while painted versions predominate in the north.

Boat motifs ($n=6$) occur relatively infrequently throughout the islands. Boat6, which resembles a European ship, is found in both painted and engraved media on Maewo (MW5 and MW6) and among the engravings at Malap in the Potnarvin region of Erromango. Boat7, which could be described as a generic depiction of a sea-craft with sails, is found in engraved assemblages in the south of Vanuatu and in painted assemblages in the north.

One of the most important factors emerging from this analysis is that certain motifs with a Vanuatu-wide distribution tend to occur more frequently as engravings in some regions and as paintings in others. For instance, Anthro25, Bird1 and Boat7, all occur more commonly as paintings in the north and as engravings in the south.
6.8.6 Non-figurative motifs common to both paintings and engravings

I noted above (6.8.4) that engraved non-figurative motifs are structurally different to painted non-figurative motifs, the former having a predominantly curvilinear structure and the latter a rectilinear structure (Figure 6.32). Non-figurative motifs in both media, however, are represented by both rectilinear and curvilinear features. Overall, motifs in this dual media category are more commonly painted than engraved. This can be demonstrated by examining the number of paintings and engravings representing each motif. Of the 93 motifs with a Vanuatu-wide distribution, only 26 are more frequently found in the engraved medium. If we examine the motifs with a higher percentage of engraved representatives, a critical pattern emerges. Most motifs with a higher representation of engravings are curvilinear (e.g. Cd21, Cn59, Od3), or otherwise characterised by a relatively simple form (e.g. vD14, Td5, vL15), and produced using a technique of abrasion. The small number of complex and rectilinear motifs which have a higher representation of engravings derive mostly from Maewo (e.g. Q30) or Aneityum (e.g. Cq91), and were produced using a technique of incision.

The remaining 67 motifs in this dual media category are more frequently painted than engraved. Among the more common motifs are circles with rectilinear infill (vC123, n=13); a group of diamond motifs: Dm6 (n=12), Dm7 (n=19) and vD21 (n=27); a contiguous triangle (Tc3, n=28) found in large numbers in the painted assemblages of both Malakula and Erromango; a plain zigzag (Zd1); a central axis with symmetrical and asymmetrical cross-lines (CLd5 and CLd24 respectively); a plain cross (Xd1), and several varieties of straight-line motifs.

6.9 Regional motifs (inter-island)

Four regional areas are delineated in this section to assess similarities and differences between rock-art motifs in proximal and distant locales. The basis for this delineation is to ascertain regional distances in terms of rock-art similarities. The patterns of similarity and difference derived from these regional analyses can then be compared to regional distributions obtained from other types of data (e.g. archaeological and linguistic).

North: Maewo and Malakula
North-central: Maewo, Malakula and Lelepa
South-central: Lelepa, Erromango and Aneityum
South: Erromango and Aneityum
6.9.1 Figurative engravings
The total number of figurative engravings with a regional distribution is 107 (Figure 6.33). Of these, an overwhelmingly large number belong to the Face motif category \((n=103)\). Four face motifs – Face2 \((n=13)\), Face8 \((n=86)\), Face11 \((n=2)\) and Face29 \((n=2)\) – are present only in the north of the archipelago. Face8, the most frequently depicted of these motifs, is characterised by an ovoid-shaped outline and two or three cupules marking facial features. Despite the presence of a small number of face motifs on Erromango (see 6.8.1), faces are generally limited to engraved rock-art assemblages in the north. Only two other categories of engraved figurative motifs have regional distributions: Anthropomorphs and Fish. Anthro3 \((n=2)\), defined by an oval-shaped body with curvilinear legs and arms, is present in the north. Fish6 \((n=2)\), characterised by an outlined leaf-shaped body and triangular tail, is present in the south.

6.9.2 Non-figurative engravings
There are several differences between northern and southern non-figurative engravings (Figure 6.34). On Maewo and Malakula, the ovoid represents the basic shape of a common figurative face motif \((vEGf4; n=85)\) and an infilled non-figurative motif \((vEG5)\). On Erromango and Aneityum a ‘U’-shaped motif and two leaf-shapes (resembling fish) are frequently represented. Most regionally distributed non-figurative motifs are also figurative. That is, non-figurative shapes resembling anthropomorphs are common in the north and non-figurative shapes resembling marine creatures are common in the south.

6.9.3 Figurative paintings
Only two figurative motif categories – Anthropomorphs and Birds – have regional distributions among painted assemblages, and both are found exclusively in the north-central region (Malakula and Lelepa) (Figure 6.35). Anthro20 \((n=4)\) is similar in form to the more widely distributed Anthro45. Bird5 \((n=6)\), which resembles a ‘rooster’, has no other motif analogues.

6.9.4 Non-figurative paintings
Regionally distributed non-figurative motifs include diamond \((vD26, vD27)\) and leaf-shaped \((vL34)\) motifs in the north-central region (Malakula and Lelepa), and a contiguous circle motif \((Cc18)\) which is restricted to the north (Figure 6.36).

6.9.5 Figurative motifs common to both paintings and engravings
There are 55 regionally distributed engraved and painted pictures, of which 41 (75%) are anthropomorphs (Figure 6.37). Anthro4 \((n=7)\), present in the north, has a leaf-shaped body with the arms and legs depicted in a variety of different postures. The head is usually ovoid and facial features are generally portrayed. Anthro5 \((n=2)\), also with a northern distribution,
is a stick figure motif with a line through the torso and, where depicted, flexed arms and legs. Anthro7 \((n=17)\), a common stick figure with flexed arms and legs, occurs on both Maewo and Malakula among engravings \((n=4)\) and on Malakula and Lelepa among paintings \((n=13)\). Anthro17 \((n=15)\), found in the north, is similar to Anthro7 except that the legs are usually straight (at right angles to the torso) or configured in such a way as to imply movement (e.g. one leg flexed upwards and the other downwards). There are two examples of Anthro43 which occurs as an engraving on Maewo and as a painting on Lelepa (north-central). This motif has a rectangular shaped torso and stick limbs.

Face15 \((n=7)\) also has a central-north distribution, occurring as an engraving on Maewo and Malakula and a painting on Malakula and Lelepa. It is characterised by a round face and variously placed facial markings. Eyes2 \((n=3)\) has an exclusively northern distribution. An engraved version occurs on Maewo and a painted version on Malakula. This motif consists of two contiguous and concentric circles. Fish3 \((n=4)\), which has an exclusively southern distribution, is similar in form to Fish1 (described above) except that internal markings (such as eyes or patterned rectilinear infill) are also present.

6.9.6 Non-figurative motifs common to paintings and engravings
The majority of regionally distributed motifs which feature in both media are rectilinear and painted (Figure 6.38). Only seven of the 26 different motifs in this group have a higher proportion of engraved representatives. Of these, most are curvilinear rather than rectilinear (e.g. vCc18, Aaa6). The most frequently represented non-figurative engravings and paintings are vCL74 and vCL78, both central-line motifs with a north-central distribution (Maewo, Malakula and Lelepa). All other engraved and painted regionals have a low representation in both media. Only three of the 26 motifs have an exclusively southern or central/southern distribution, including vL14 (a bird motif), vL39 (a fish motif) and an elongated geometric form (vEF7).

6.10 Island-specific motifs

6.10.1 Figurative engravings
Five figurative motif categories have island-specific distributions (Figure 6.39). Faces and eyes constitute the most common categories and are restricted to the north, and turtles, birds and material items have an exclusively southern distribution. While the motif categories have a trans-island distribution, the motifs themselves are found on one island only. Each of the eight engraved face motifs derive from Malakula \((n=72)\). The two eye motifs from Maewo (Eyes1 and Eyes4) are characterised by contiguity, concentricity and asymmetry. Those from Malakula (Eyes5 and Eyes10) are defined by either two unattached circles with
central cupules (pupils?) or contiguous circles with rays. Turtle1 (n=3) and Bird4 (n=2) are found exclusively on Aneityum. Adze3 motifs, locally referred to as *nerom*, are present only at the Potnarvin sites on Erromango.

6.10.2 Non-figurative engravings
Most of the non-figurative engraved motifs with an island-specific distribution have figurative equivalents (Figure 6.40). The majority derive from Malakula – especially the faces which are commonly portrayed with rayed headdresses (or ‘hair’) and cupules (for facial features). Some faces are represented by cupules only (i.e. facial features without the outline of the face), including vCP26 – an abbreviated version of Face9 which is found throughout Vanuatu.

6.10.3 Figurative paintings
Anthropomorphs constitute the most common figurative motif category and are found exclusively on Malakula (n=20) (Figure 6.41). Other figurative paintings which have an island-specific distribution are zoomorphs and material items, such as Zool (resembling a dog, n=3) and Hookl (resembling a fishhook, n=2) found on Malakula, and Butterfly2 (n=2) found on Erromango.

6.10.4 Non-figurative paintings
A total of 18 non-figurative painted motifs have an island-specific distribution on either Malakula and Erromango (Figure 6.42). Malakula is the only island featuring Cc13 (resembling eyes), a circle with outer rays (Cq90), a circle with symmetrical rectilinear infill and appendages (vC128), vSS51 (resembling a dog), star-shaped motifs, a sea-craft (vL28), a zig-zag (vZ14), a cross (vX51) and several anthropomorphs (central-line motifs). Erromango features Cc10 (resembling eyes), vOm17 (a crab), a contiguous diamond (D8), a contiguous and relatively unembellished triangle (vT29 and vT33) and an elongated form (EFm3).

6.10.5 Figurative motifs common to both paintings and engravings
Anthropomorphs, boats and a face make up the range of figurative motifs with an island-specific distribution common to both media (Figure 6.43). Anthro22 (n=10), Anthro24 (n=10) and Face27 (n=4) are found exclusively on Malakula. Boat5 (n=5) occurs on Maewo, and Boat 10 (n=2) on Erromango.

6.10.6 Non-figurative motifs common to paintings and engravings
Non-figurative motifs with an island-specific distribution common to both media and found on Malakula include a circle (vC138), a leaf with central cross (vL31), an anthropomorph with a leaf-shaped torso (vL32), a face (vCP18), and an anthropomorph with antennae
On Lelepa there is an engraved ovoid with pigment infill (vEgf9); on Erromango a line with extensions (LWE1); and on Maewo a configuration of cupules/dots (CP5).

6.11 Discussion: the distribution of motifs in Vanuatu

The aim of this section has been to measure similarities and differences in the rock-art of Vanuatu. While most motif categories are common to both paintings and engravings there are several geographical differences at the motif level. Nine principal conclusions can be derived from the above results:

1. There is a homogeneous set of engravings which occurs throughout Vanuatu that is not replicated in the painting medium (Figures 6.27 and 6.28). The most common engraved motif category is the circle, and the two most common motifs are Cf30 (a circle with a central cupule), followed by Cf32 (a circle with an off-centred cupule). Various non-figurative motif categories are represented – including circles, semi-circles, ovals, stars, teardrops, triangles, leaf-shapes, ovoids, crosses and cupules. Most of the motifs represented in this group are defined by a central cupule and a curvilinear structure. Three figurative motif categories are also present: the face, the fish and sea-craft. The face is the most common figurative category, which, among engravings, is defined by curvilinearity and the inclusion of cupules.

2. There is a set of mainly non-figurative paintings which occurs throughout Vanuatu and which is not replicated in the engraved medium (Figures 6.29 and 6.30). The two most common motif categories represented are central lines followed by leaf-shapes. The two most common motifs are CLd21, and L11. The criteria which distinguish this painting set from the homogeneous set of engravings described above include rectilinearity, compound forms, and the frequent presence of a central axis or linear infill. Two main figurative motif categories are represented: anthropomorphs and zoomorphs.

3. Certain motifs occur throughout Vanuatu which are represented by both paintings and engravings (Figures 6.31 and 6.32). There are some major differences between the numbers of engravings and paintings representing motifs characterised by both media. Motifs which are more commonly engraved tend to be characterised by curvilinearity and simplicity. Motifs more commonly painted are mostly characterised by rectilinearity and relative complexity (including compound forms). The majority of motifs in this set are rectilinear in structure and therefore more similar (overall) to the set of Vanuatu-wide non-figurative paintings (see conclusion 2 above).
4. Regionally distributed engraved motifs suggest a north-south divide (Figures 6.33 and 6.34). Regionally distributed engravings are generally figurative (with non-figurative codes). Certain face motifs are exclusive to the north (Face8/vEgf4), while other motifs (often with a marine theme) are exclusive to the south (Fish6/vL20, vL40, Cd24, and vU7).

5. Most regionally distributed painted motifs are found in the north-central region (Malakula and Lelepa) (Figures 6.35 and 6.36). Among the figurative motifs are a painted anthropomorph (Anthro20) and a bird (Bird5). Among the non-figuratives are two diamond motifs (vD26 and vD27). Malakula and Maewo share only one painted motif (Cc18) – a compound circular motif.

6. Regionally distributed motifs common to paintings and engravings suggest a north-south divide (Figures 6.37 and 6.38). All motifs pertaining to the human form (anthropomorphs, faces, and eyes) are found on Maewo, Malakula and Lelepa (north-central). One fish motif (Fish3) is found exclusively in the south. Motifs tend to be engraved on Maewo (with one exception), painted and engraved on Malakula (3 engraved, 6 painted) and painted on Lelepa (with no exceptions). Most regionally distributed non-figurative motifs have figurative equivalents. In the north (Maewo, Malakula and Lelepa) there are several circular motifs (forming the basis of eye motifs), leaf-shapes (forming the basis of anthropomorphs and fish) and numerous central lines (forming the basis of several stick-figure anthropomorphs). In the south, (Erromango and Aneityum) is a leaf-shaped motif resembling a bird, and an elongated form. The majority of regionally distributed painted/engraved motifs are painted and rectilinear.

7. Engraved figurative and non-figurative motifs with island-specific distributions match trends identified at the Vanuatu-wide and regional levels (Figure 6.39 and 6.40). Engraved Face and Eye motifs have a northern distribution. Maewo’s eye motifs are distinctive in that they are generally represented by contiguous and/or mismatched circles. Malakula’s face motifs are distinguished by the presence of rayed headwear. Zoomorphic motifs are more common to the rock-art of Aneityum where the same Turtle1 and Bird1 motifs are repeated at different sites.

8. All painted figurative and non-figurative motifs with island-specific distributions derive from either Malakula or Erromango (Figures 6.41 and 6.42). A large number of Malakula’s painted motifs are figurative, including anthropomorphs, dogs and hooks. Malakula’s non-figurative range includes circles, semi-circles, stars, leaf-shapes, zigzags, central-lines and crosses. Erromango’s figurative painted range includes anthropomorphs and zoomorphs (butterfly), and its non-figurative range includes circles,
ovals, diamonds, triangles and elongated forms. Thus, these two island regions have
developed distinctive local forms and styles.

9. **Motifs common to both engravings and paintings which have an island-specific
distribution are predominantly figurative (Figures 6.43 and 6.44).** Figurative motifs are
more commonly painted and include anthropomorphs, faces and boats. Non-figurative
motifs include cupules/dots and some very rare motifs (e.g. v138; vEGf9). The most
common non-figurative motif resembles the ‘face’, frequently encountered in the
assemblages of Northwest Malakula (n=18). These consist of three cupules (for the eyes
and nose) and a line (for the mouth) but no facial outline.

### 6.12 A multivariate impression of the similarities and differences
between rock-art sites in Vanuatu

So far the quantitative methods used to determine similarity relations amongst the rock-art of
Vanuatu have involved frequency analyses. These have been extremely useful in assessing
the distribution and frequency of individual motifs but it has been difficult to gain an
understanding of how rock-art sites are statistically related to one another. In order to obtain
a composite impression of inter-site similarities, a multivariate analysis was conducted. A
binary metric MDS analysis was performed on a data set of 51 sites and 431 motifs.\(^{37}\) The
result, presented in Figure 6.45, indicates that there are few inter-regional differences within
the archipelago. Apart from the rock-art of Aneityum, which forms a more-or-less discrete
group in the top right corner of the graph, there is an evident expression of overall
homogeneity across the entire region.

It has been noted in this chapter that a large number of sites in Vanuatu contain engravings
and paintings at the same site. However, in most other western Pacific regions, particularly
in the western half of the sample area, engravings are generally associated with volcanic
substrates and paintings with limestone. Does the presence of both engravings and paintings
at a large number of sites in Vanuatu imply a more general pattern of convergence of
engraved and painted assemblages in Remote Oceania?

In order to test this proposal the results presented in Figure 6.45 have been re-coded on the
basis of the presence at each site of paintings only, engravings only, or a combination of both
media (‘dual-media’). The outcome, illustrated in Figure 6.46, indicates that despite there
being a large proportion of sites represented by both media, the rock-art of Vanuatu separates

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\(^{37}\)Two sites from Aneityum (AN4 and AN7) were included in an original CA analysis but were
removed due to their ‘outlier’ response.
into two discrete technical spheres (painted and engraved). Sites with paintings *only* are distributed in the top half of the graph, above the dashed line. Sites with engravings *only* are confined to the area below the dashed line. Sites with both paintings and engravings are relatively evenly distributed across the graph.

### 6.13 Conclusion: a tale of two media

The focus of this chapter has been an examination of the distribution of non-motif and motif rock-art variables in Vanuatu. The non-motif study demonstrated that overall, the rock-art of Vanuatu is characterised by many of the features which define the rock-art of other regions in the western Pacific, but that it also departs from these other regions in various quantifiable ways. While I explore some of these differences in more detail in Chapter 9, one of the most important patterns emerging from Vanuatu is that certain ‘rule-bound’ features associated with the distribution of painted and engraved rock-art further west are considerably modified in Vanuatu. For instance, instead of only finding red pigment in inaccessible locations, Vanuatu is characterised by a substantial amount of black rock-art (particularly hand stencils) in hard to reach places.

One of the main results presented in the second half of this chapter, which focused on the distribution of motif variables, is that the painted rock-art of Vanuatu is predominantly rectilinear, while rock-art dominated by curvilinearity is usually engraved. Overall, the frequency analyses suggest a distinction between painted and engraved motifs across the archipelago. In Chapter 8 I test this distinction further by conducting a series of multivariate analyses on rock-art motifs.

Overall, the engraved rock-art illustrated in Figures 6.27 and 6.28 is homogeneous throughout Vanuatu, suggesting that it was produced within a relatively short timeframe. However, it also manifests a number of regional variants. For instance, the ‘face’ motif (with internal cupules) are overwhelmingly dominant in the engraved assemblages of northern Vanuatu (Maewo and Malakula), implying that the repertoire of engraved rock-art represented in Figures 6.27 and 6.28 has a strong northern focus. The relative frequency of this engraving repertoire in the north and its clinal reduction toward the south of Vanuatu suggests that the source of this engraving type is in the north.

The painted rock-art illustrated in Figures 6.29 and 6.30 also represents an homogeneous group. The relatively even distribution of this painted rock-art implies that it was produced within a framework of interaction, with no single regional stronghold.
A substantial number of motifs represented by both engravings and paintings are found throughout Vanuatu (Figures 6.31 and 6.32). On first impressions, and particularly given the large number of non-figurative motifs represented by both media (Figure 6.32), it would seem that the distinction between engraved and painted rock-art in Vanuatu is only marginal. However, once this 'dual media' category is considered in more detail it becomes evident that the curvilinear/rectilinear division between engravings and paintings is consistent throughout the archipelago. For instance, in Figure 6.32, rectilinear motifs such as CLd16 are common among paintings (n=28) and exceptionally rare among engravings (n=1). As noted in Chapter 1, such a result demonstrates the benefits of a dual consideration of both presence/absence and frequency data.

There is a general increase in the occurrence of figurative forms from a Vanuatu-wide to an island-specific scale in both media. Non-figurative motifs, which are more constant across Vanuatu, appear to have been the main forms transmitted between regions via processes of colonisation or interaction. Figurative motifs, which are more commonly found at an island level, most likely developed in situ and were less frequently moved or adopted into motif repertoires across islands.

Thematically there is a strong distinction between northern and southern rock-art repertoires, with Lelepa, which is centrally located, manifesting elements common to both the north and south. Anthropomorphic features are common in the northern repertoires but relatively rare in the south. In contrast, marine creatures are common in southern repertoires and relatively rare in the north.

The common thread running through each of the major patterns presented in this chapter is the distinction between painted and engraved repertoires, and the differences between them are most clearly seen in terms of motif structure. Even where there are overlaps between the two media (e.g. in the dual media categories presented above), the curvilinear/rectilinear dichotomy is retained. Curvilinear rock-art will almost always have a higher representation amongst engravings, and rectilinear rock-art a higher proportion of paintings.

One of the more crucial outcomes of the multivariate analyses conducted at the end of this chapter is that the principal axis of variability amongst rock-art sites in Vanuatu is based upon technical rather than regional variation; a pattern observed across the western Pacific. An analysis which would be worth pursuing at a later date would involve dividing the dual-media sites in Vanuatu into their respective painted and engraved components to ascertain
whether the painting components cluster with the *painting only* sites, and the engravings with the *engraving only* sites.

The overall distinction between painted and engraved media is consistent with the strong patterns observed at a western Pacific level in Chapter 4. Are the differences within the rock-art of Vanuatu caused by the same sets of cultural processes underpinning the variation within the rock-art of other western Pacific regions? In Chapter 7 I examine temporal changes within the rock-art of Vanuatu with the ultimate aim of developing a model of rock-art transformation for the region (Chapter 8). If the similarities and differences within the rock-art of Vanuatu are a product of broader western Pacific influences, then a sense of the temporal transitions in the rock-art of Vanuatu will provide a much better position from which to comment on the processes governing the distribution of painted and engraved rock-art at different regional scales.