Ceramic analytical methodology

‘We consider that typologies are tools made for a purpose, and as long as they can be shown to work for that purpose they require no more abstract justification than a crowbar’ (Adams and Adams 1991:8).

This chapter outlines the methodology used for the analysis of the recovered ceramics from the excavations in Vanuatu. Firstly, a description of the series of attributes which were selected in order to characterise the ceramics is presented. Having established the analytical parameters for the recovered ceramics the results are then outlined in detail in subsequent chapters starting with ceramic remains from Erromango (Chapter 5), then Efate (Chapter 6) and finally Malekula (Chapter 7). Chapter 8 summarises the proposed ceramic chronologies for the different islands of Vanuatu and moves onto a discussion of intra and inter-archipelagic comparisons.

There is now a formidable list of sites from throughout the Pacific where large quantities of ceramics have been recovered. Some have been published in great detail, many others in much less detail and some in very little detail at all. Dating from Gifford’s initial work in Fiji (Gifford 1951) a lengthy tradition of ceramic analyses has developed along with established methodologies. A number of different approaches have been used and, not surprisingly, have been specifically designed and adapted for specific collections and research questions.

The methodology used in the analysis of the Vanuatu ceramics concurs with the aims of Irwin in his study of the Mailu ceramics, in that it ‘sets itself the task of being a practical exercise in classification rather than one of justification and semantics’ (Irwin 1985:100). The analytical methods were designed specifically to describe the excavated ceramic materials including vessel form, decorative technique, motif form and fabric composition, as a first step in addressing the research issues outlined in Chapter 1. The ceramic data was utilised in the establishment of ceramic chronologies and cultural sequences for a number of different islands in Vanuatu which were then subsequently used in a comparison with ceramics from other archipelagoes to test current theories regarding cultural change and interaction.

Rather than attempting to construct an all new analytical procedure, this study borrows heavily from the already established methodologies used and modified by previous researchers.
who have focused on the ceramics from the Southwest Pacific, namely Irwin (1985), Specht (1969), Summerhayes (1996) and Wahome (1999), who in turn, along with most other archaeologists dealing with ceramics in the Pacific, have been at some point influenced by Shepard (1963). More recent comprehensive texts which have also proved useful include Arnold (1985) and Rice (1987).

Archaeological sites in the Pacific where ceramics are recovered are often shallow, have been heavily disturbed or even totally lack stratigraphy as in the case of ceramic deposits on reefs. Sherds can be small and worn and provide limited information regarding vessel form or decoration. This is not so debilitating when dealing with dentate stamped Lapita ceramics. The decoration is so distinctive and it has been the focus of such detailed research that even very poorly preserved sherds can provide useful information. However with the much more varied and unknown corpus of decoration and form associated with post-Lapita ceramics the analysis can be severely curtailed. Several of the sites excavated as part of this research have been singularly spectacular for their depth of stratigraphy and preservation of ceramics of the immediate post-Lapita period and hence have led to an emphasis on form and decoration. Combined with the illustrations of Garanger (1972) of the ceramics he recovered from Efate and the Shepherds they now provide one of the most detailed chronological sequences of post-Lapita ceramics from the Southwest Pacific.

The application of a single set of variables to large collections of ceramics from a number of different sites and different islands, often with greatly varying chronologies, was initially found to be somewhat problematical and cumbersome. However if meaningful comparisons were to be made it was an essential requirement. Bearing this in mind, some effort was made to avoid the over-elaboration of certain shape attributes (Irwin 1985:105) and the potential minutiae of detail that can be recorded from single sherds. If it is accepted that some variance in particular attributes can be found on a single pot (see for example Ambrose 2002:64) or between potters producing the same pots then the inclusion of too much fine detail may unnecessarily complicate the ceramic picture. This (mild) ‘lumping’ approach has both its adherents and detractors and is one of the components in the extensive associated literature involving the ‘typological debate’ (see Adams and Adams 1991:265). The approach developed during the period of analysis has been subjected to numerous changes and refinement and has ultimately provided a suitable framework for the analysis of the Vanuatu ceramics.

Outlined below are the set of discrete and continuous variables which were selected that primarily relate to vessel form, decoration and fabric. The attributes were assigned a numeric code for entry into a database which facilitated further manipulation. All of the sherds recovered from the excavations were included in the analysis.

### Ceramic Attributes

1) **Class of sherd** (see Fig. 4.1 for vessels with named parts). These included 1) rim 2) base 3) body 4) carination 5) handle 6) rim and body 7) spout.

2) **Weight**. Each sherd was individually weighed and recorded in grams. Although often regarded as a somewhat unnecessary practice it can in some cases provide a further useful quantification of ceramic collections.

3) **Sherd thickness**. The procedure for measuring rim thickness followed that used by Summerhayes (1996:79) who in turn had followed Irwin (1985:107) and Specht (1969:78). Two measurements, A and B were recorded. Measurement A was taken on the rim itself and B on the body immediately below it. Some variation to the rule was required with measurement A when dealing with very different rim forms. The outline originally devised by Specht (1969:79) was followed here, namely A was taken at the point of maximum thickness on divergent or thickened rims or close to the lip on parallel or convergent rims.
Figure 4.1 Sherd type and attributes of the rim and lip.
The measurement of body sherds was somewhat more straightforward. With sherds which
displayed no discernible difference in thickness, only one measurement has been recorded.
This is the case for the majority of body sherds as they are generally not large (no more than
4–8cm\(^2\)) and do not display great variability over such an area. Two measurements were taken
on sherds which showed marked variation in thickness, namely the thickest and thinnest
points. The further grouping of these measurements followed Wahome (1999), who indicated
that thickness measurements could be helpful in terms of chronological differentiation and
were more useful if grouped as such, 1–4mm, 4–8, 8–12, 12–16, 16–20 and so on.

4) **Fabric Analysis.** Basic analyses regarding fabric composition and structure were carried out
on the excavated sherds. The main objectives with this aspect of the analysis were as follows:
1) to establish whether the ceramics were produced at or near the sites from which they were
excavated or as is often the case pinpointed more generally to a particular island; 2) To
identify any evidence for trade and exchange across single islands and or between islands
and 3) whether any change of fabric composition could be identified through time. This
information combined with details of vessel form and decoration provides a more
comprehensive characterisation of the ceramic collections than any of these attributes alone

The analysis of ceramic fabrics encompasses a number of analytical and interpretive
procedures which have been increasingly refined over the last 40 years (Wilson 1978;
Summerhayes 1987, 1997). Healthy debate over the appropriateness and merits of various
techniques and methodologies continues amongst those involved in this specific area of
research (Ambrose 1992; Hunt 1988, 1993; Summerhayes 1996). The emphasis that is placed
on fabric analysis can vary greatly from one research project to another depending on the
state of the collections and the research questions. The analyses carried out on the excavated
ceramics from Vanuatu were designed simply to address the above objectives.

The primary focus of the fabric analysis concentrated upon the identification of non-
plastic inclusions through petrographic examination. A more subjective description of the
texture of a sherds’ cross section was also included. This enabled the possible differentiation
of sherds which, although they may have contained very similar non-plastic inclusions,
utilised a different clay source or involved differing manufacturing techniques and so on.
These various combinations of non-plastic inclusions and texture were assigned numeric
codes which enabled further characterisation of a particular ceramic collection. The
combined experience and expertise of both William Dickinson and Glenn Summerhayes
provided vital guidance during this phase of the analysis.

Dickinson, while visiting Canberra in 1996, was able to peruse the excavated ceramic
collections from Erromango and Malekula macroscopically and selected a number of sherds
which he identified as representing the range of non-plastic inclusions. These selected sherds
were then looked at microscopically to define further the identifications of the non-plastic
inclusions (termed tempers by Dickinson). The various reports completed by Dickinson (see
Dickinson 1998 for an outline of methodology), along with his detailed discussions of the
geology of relevant islands, are included in Appendix 3. Further macroscopic analysis was
carried out by Summerhayes on the ceramics from the 1997 excavations at the Mangaasi site
on Efate and again a limited number were thin-sectioned and sent to Dickinson for
petrographic analysis.

5) **Rim direction.** A total of five rim directions were defined (see Fig. 4.1). These categories can
be seen as somewhat all-encompassing but proved effective for the analysis of the Vanuatu
materials. Two long established and interconnected methods were employed for defining
the direction of the rims. The orientation of the rim is established from an imaginary
perpendicular central axis running down the centre of the original pot (Poulsen 1987:29)
combined with the placing of a horizontal surface on the lip which enables finer calibration of the rim angle in relation to the central axis (Shepard 1963:253).

1) Direct: rims of this orientation do not curve towards the interior or the exterior of the vessel. As outlined by Summerhayes (1996:78) it can often be difficult to be completely certain about the identification of these rims if only smaller sherds are available and that the assigning of vessel forms is often not possible. This warning can be extended to any rim sherd with insufficient preserved detail.

2) Incurving: In this case the rim inclines towards the interior of the vessel, with a convex profile.

3) Inverted: Again the rim is inclined to the interior of the vessel but has a sharp angle on the exterior surface which forms a corner point.

4) Outcurving: This category of rim is inclined to the exterior of the vessel, again with a relatively convex profile.

5) Everted: Related to the above category in that the rim is inclined to the exterior of the vessel but includes a sharp angle on the interior of the vessel at the point of inflection.

6) **Rim profile** (see Fig. 4.1). The rim profile relates to the relationship between the inner and outer walls of the rim as they proceed to the lip. Again well established conventions regarding the definition of rim profile were employed (Kirch and Rosendahl 1973; Irwin 1985; Poulsen 1987; Summerhayes 1996). Six profiles were identified.
   1) parallel: little perceptible change in rim profile towards the lip
   2) convergent gradual: rim profile thins towards the lip
   3) convergent abrupt: rim profile dramatically thins towards the lip
   4) divergent gradual: rim profile thickens towards the lip
   5) divergent abrupt: rim profile dramatically thickens towards the lip
   6) asymmetrically thickened exterior: related to the above divergent categories but distinct in that the form of thickening relates to either the folding over of the rim, the addition of extra clay or the rim being squeezed (Summerhayes 1996:79).

7) **Lip profile** (see Fig. 4.1). The lip is defined as the top edge of a vessel i.e.; the meeting point of the inner and outer walls of the rim (Specht 1969; Summerhayes 1996:70)
   1) plain or rounded lip: a smooth semi-circular (convex) profile
   2) pointed: the apex of the lip is defined by a sharp point
   3) flat: lip surface that is relatively straight between the inner and outer walls of the rim
   4) flat horizontal: same as above but lip surface lies on a horizontal plain

8) **Rim radius.** This attribute was only measured on rim/lip sherds that retained some degree of curvature which further enabled the diameter of the pot to be calculated. The lip sherds generally needed to have at least 4-5cms of the radius to be regarded as being able to provide a reliable measurement. The method of measurement simply involved matching the rim/lip sherd to a series of graduated concentric circles.

9) **Vessel form** (see Figs 4.2–4.6). Three broad (designed as such to avoid over-classification) vessel form categories are outlined along with a number of sub-categories which when combined with other attributes such as rim and lip form give a very detailed picture of a particular vessel. The basic terminology and definition of vessel form have been adapted from Summerhayes (1996) and Wahome (1999). Note that the vessel form classification is restricted to excavated ceramics only and is not designed to be an all-encompassing Vanuatu catalogue. This is particularly relevant when focusing on the later ceramic material from Malekula. An attempt has been made to record as comprehensively as possible the full range of Malekula ceramics including previously surface collected and illustrated materials, but they have not been incorporated into this classification. That awaits further fieldwork, research and much refinement.
Figure 4.2 Vessel form, unrestricted vessels 1i to 1iii.

Figure 4.3 Vessel form, restricted vessels 2i to 2iv.
a) unrestricted vessels (Fig. 4.2)
1) open pot, tubular body, vertical walls and pointed base. Appears to be the immediate predecessor of the ceremonial *naamboi* (see below) which are often referred to as ‘bullet shaped’ pots. These pot forms are restricted to Malekula and other islands of northern Vanuatu only.
   i) ribbed only. Coil made pots with a rim diameter of between 24–26cm. Height approximately 14–15cm. Although the interior of the pot is generally smoothed the upper exterior part of the pot is not which gives it a ribbed appearance.
   ii) ribbed with ‘scale’ effect. Similar to above but exposed coils (ribs) have been pressed with a finger or thumb to create a ‘scaled’ effect.
   iii) non-ribbed, always decorated. Again coil made but the exterior of the pots has also been smoothed to facilitate decoration. Slightly smaller rim diameter of 20–22cm and height of again c. 14–15cm. Decorated with a wide variety of motifs utilising largely incision or punctation.

b) restricted vessels
2) globular pot with restricted neck (Fig. 4.3)

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Figure 4.4  Vessel form, restricted vessels 3i to 3iv.
Figure 4.5 Vessel form, restricted vessels 4i to 4iii.

Figure 4.6 Vessel form, carinated vessels, 5i to 5iii.
i) globular pot with restricted neck and outcurving rim. Somewhat of an ubiquitous form but generally associated with earliest ceramic production on all three of the studied islands, although a variant appears during the last phase of ceramic production on Efate.

ii) globular pot with restricted neck and outcurving rim with flat expanded (often horizontal) lip. Although very similar to the above the distinctive rim/lip form sets it apart and it characterises a distinct phase of the ceramic chronology of Efate and the other central islands.

iii) globular pot with restricted neck and outcurving, sharply everted rim. This pot form is associated with the earliest ceramic production on Malekula but was also recovered from Erromango and a variant appears during the latter part of the Efate sequence.

iv) very large plain globular pot with externally thickened outcurving rim. A rim diameter of 24–26cm and height of c. 28cm. Features such as highly smoothed interior and exterior surfaces and the wide body curvature enable this pot form to be identified from body sherds only. This pot form is restricted to Malekula.

3) globular pot with incurving rim orientated towards the interior of the vessel (Fig. 4.4)
   i) symmetrically globular pot with rim orientated towards the interior of the vessel. Rim tends to be convergent gradual. This pot form dominates in the later part of the ceramic sequence of Efate and to a lesser extent on Erromango.

   ii) globular pot with an externally thickened rim which is orientated towards the interior of the vessel. Similar to 3i but merits a separate category as it represents a significant phase of the Efate and Erromango sequences. It appears to represent a transitional phase of vessel form, sandwiched between outcurving (2i) and incurving rim vessels (3i).

   iii) very large globular pot with externally thickened rim and distinctive incised and excised decoration. Both a rim diameter and height of c. 22cm. This pot form is restricted to Malekula.

   iv) globular cup. Similar to 3i but meriting a separate category due to the substantial size variance. To date only found on Efate.

4) globular pots with direct rims (Fig. 4.5)
   i) globular pot with direct rim. A relatively rare pot form with variants found on both Efate and Erromango.

   ii) globular pot with collared rim. Similar to above but distinctive thickened rim. To date only found on Malekula and associated with early period ceramics.

   iii) globular cup with direct rim. Again similar to 4i but due to substantial size variance merits a separate category. To date only found on Efate.

C) Other

5) carinated vessels (Fig. 4.6)
   i) sharply carinated vessels. The exterior carination is sharp and angular.

   ii) soft carination. The exterior carination is markedly less angular than 5i. To date only found on Efate.

   iii) carinated cup. Similar to 5i but due to substantial size variance given separate category. To date only found on Efate.

Decoration. This attribute is one of the most useful and often utilised in the study of ceramics in determining levels of communal interaction and transformation over time and therefore necessarily requires a more detailed analysis. Three distinct variables are utilised here to characterise the decorated ceramics, namely 10) location of decoration,
11) Technique and 12) type of decoration or motif.

10) **Location of decoration.** This is the more easily identified and defined category of the three related to decoration. The six areas of decoration are outlined below.

1) lip
2) inside lip: this refers to inner edge of horizontal lip
3) outside lip: this refers to outer edge of horizontal lip
4) flat area of horizontal lip
5) rim: only noted if decoration is restricted to the rim rather than a decoration which includes rim and body. If the latter is the case rim and body are noted.
6) body

11) **Technique.** A total of five general techniques were identified with a larger number of sub-techniques. All are fairly self explanatory. These categories are again relatively broad but are specifically designed to describe technique and have avoided shifting into the terrain of decorative motifs which are discussed further below.

a) Incision
   1) linear
   2) geometric
   3) gash
   4) curvilinear
   5) comb incised
   6) miscellaneous (sherds too small to define any of above)

b) Impression
   1) punctation: stick or similar tool impression
   2) dentate stamping
   3) fingernail: further divided into three techniques
      i) fingernail impression: fingernail pressed into clay, perpendicular to the surface creating fine crescent-like designs.
      ii) fingernail pinch: use of thumb and finger to create pinched clay effect.
      iii) fingernail gouge: fingernail pressed into clay at an angle to the surface which creates a gouge effect.

c) applied relief
   1) plain bands
   2) notched bands
   3) nubbins

d) notching (mostly on the lip)

  e) excision
     1) carving
     2) perforation

12) **Motif type.** For over 30 years the decorative elements found on Lapita dentate-stamped and incised ceramics have been intensively studied (Anson 1983; Donovan 1973; Mead *et al.* 1975; Sharp 1988; Siorat 1990). The Lapita material lends itself to detailed systematic motif analysis with its complex geometric nature and frequent occurrence of identical or near identical decorative elements (Anson 1983:16). Despite this fact, however, agreement as to the ideal methodology for the analysis of the Lapita design system remains somewhat disputed and unresolved territory (Anson 1990; Green 1990; Specht 1977).
Post-Lapita ceramics have received nothing like the focus and interest that have been directed towards Lapita ceramics. This is due to a number of factors not least that post-Lapita material is far less morphologically sophisticated and less decoratively structured (Golson 1992:165) than its predecessor, simply adding to the difficulty of the task of defining motifs. Often ceramics recovered from sites throughout the Pacific are very fragmentary, degraded and display very limited areas of much larger motifs. Hence the decoration is necessarily described in terms of technique rather than motif. Partly then, the nature of the collections are to blame for the lack of differentiation of decoration. These aspects are also directly related to the simple fact that few sites containing representative collections of post-Lapita material have been excavated and studied. Comprehensive studies of ceramics of this period are largely restricted to those carried out by Specht (1969) and Garanger (1972). Until much greater effort is focused on sites that are directly post-Lapita and a much larger corpus of representative decorated sherds are recovered and published, efforts to extricate ourselves from the all-encompassing ‘incised and applied relief’ label will be further impeded.

Some attempt to define a number of motifs from the Vanuatu ceramics was seen as vital, an attempt to move beyond the ‘rather limited range of technological traditions for producing decoration on pottery’ and ‘simple technological categorisation’ (Green 1990:33), to further differentiate the excavated material. The motif classification established here aspires to something much less than ‘paradise’, rather it is an initial attempt at an unsystematic basic level, similar to that carried out by Specht (1969) on the Buka material, to define ‘distinctive’ motifs. Similar difficulties as experienced by those working on Lapita ceramics were encountered. This included the difficulty of distinguishing and defining the significance of variation and similarity between various motifs and whether they should be assigned separate motif numbers. The universality of a number of decorative techniques and sub-motifs tends to limit their usefulness in terms of delineation and can unnecessarily crowd the classification. There were a number of sherds where the decoration was either too fragmentary and/or ubiquitous to be assigned a separate motif number. These sherds are however illustrated. The methods of categorisation and definition of motifs are many and varied (Rice 1987:244–272) and can often prove to be somewhat contentious (e.g. Lapita above). Validation of method can be less of a concern, if it is accepted that motif definition is often subjective, as is the case with this research, and influenced by the ceramic material under study.

Due to the large quantity of sherds studied and the fact that they originated from a number of archaeological sites from different islands identified motifs were separated by island (E-Erromango, Ef-Efate, M-Malekula) and arbitrarily assigned serial numeric codes. Following Specht (1969:83) the motif code numbers have no significance in terms of techniques, content or chronology. All the motifs feature amongst the illustrations of the ceramics from the various sites (Erromango Figs 5.1–5.16; Efate Figs 6.1–6.23; Malekula Figs 7.1–7.23) and are described and listed individually in Appendix 4. The Lapita dentate stamped sherds recovered from the excavations were assigned, where possible, motif numbers from Anson’s inventory (1983). No vessel forms could be established from the Lapita dentate-stamped sherds.