Ceramic assemblages from excavations on Viti Levu, Beqa-Ugaga and Mago Island

Geoffrey Clark

Department of Archaeology and Natural History, The Australian National University

Introduction

This chapter describes the ceramic collections from Navatu 17A, Karobo, Votua (1996), Natunuku, Malaqereqere, Volivoli II, Volivoli III, Ugaga Island and Kulu Bay. The EPF ceramics from the nine sites consisted of 54,522 sherds, weighing 295.8 kg. The ceramics were analysed at different intensities, with Navatu, Karobo and Ugaga reported in a PhD thesis (Clark 2000), and those from Votua, Natunuku and Qaranioso II published, although not always in detail, in several papers (Anderson and Clark 1999; Anderson et al. 2000; Clark and Anderson 2001; Clark et al. 2001). Details of the ceramics from the nine sites are discussed further below, with assemblage descriptions divided in two.

First, each assemblage is described in terms of sherd type (number of plain body, decorated body, rims, necks) and weight by excavation level, along with the occurrence and distribution of decoration and surface modification. Where assemblages could be identified by stratigraphy/age, the ceramic assemblages are considered separately, as at Navatu 17A, where three assemblages were defined. At sites such as Kulu Bay, Ugaga Island and Natunuku, where ceramics were mixed and contained older and more recent pottery, the entire ceramic assemblage is described. When the size of rim fragments allows, an attempt is made to identify sherds to a particular vessel form, with a description of reconstructed vessels from Navatu, Ugaga, Votua and Karobo in Clark (2000) and Clark et al. (2001). Selected sherds are figured in line drawings and photographs, but the large size of the collection precludes full depiction of all diagnostic sherds in the EPF collections.

Vessel forms

Rim sherds were classed into one of 10 generalised vessel forms (Figure 116, see Clark 2000:61–64).

Jars – Form 1

1A. Everted-direct rim – indirect body contour

1B. Abruptly thickened then thinning rim – indirect body contour

Jars were the main vessel form identified in the EPF collection's assemblages. They are characterised by a small to significant degree of rim eversion (0–85°) and have a restricted orifice (indirect rim-body contour). Form 1B jars are distinguished by abruptly thickened rims, and include the important collar-rim vessels associated with Lapita assemblages.

Figure 116. Generalised vessel forms. Form 1 Jars, Form 2 bowls, Form 3 dishes and platters, Form 4 narrow orifice.

Bowls – Form 2

- 2A. Everted rim – direct rim-body contour
- 2B. Inverted rim – direct rim-body contour
- 2C. Inverted rim – indirect rim-body contour

These bowls have a direct or indirect rim-body contour, but do not have necks (Rice 1987:216). Three vessel sub-forms varying in rim orientation and rim contour were identified. Bowls were the second most common vessel form, although they were substantially fewer in number than Form 1 vessels.

Flat-based vessels (dishes) – Form 3

- 3A. Flat-based – small diameter (<30 cm)
- 3B. Flat-based – large diameter (>45 cm)

Vessels with flat bases were divided into two sub-forms to distinguish between temporally and morphologically distinct forms. Few flat-based vessels were present in any assemblage.

Narrow orifice (10 cm diameter or less) – Form 4

- 4A. Single orifice and indirect rim-body contour (with and without a handle)
- 4B. Double orifice
- 4C. Double orifice and stirrup handle

The fourth vessel form includes vessels with narrow apertures/orifices. Three sub-forms were established to encompass the range of vessels present. Vessels with double apertures emerging from a stirrup handle dominate this group.

Navatu ceramics*Navatu Layer 1 ceramics (Table 43)*

Of the 5070 sherds recovered from Layer 1, 4.2% are decorated. Carved paddle-impressed sherds (cross-hatch, parallel rib, curvilinear) occurred throughout Layer 1 in low frequencies (n=39). These sherds almost certainly derived from Layers 2 or 4, as they are small and eroded in comparison to other Layer 1 sherds, and surface modification of this kind was otherwise restricted to Layer 4. Other decorated sherds likely to be intrusive include an applied fillet with end-tool impressing, and a body sherd with two rows of diagonal fingernail impressions; both sherds from basal Layer 1 contexts. The most frequent kind of vessel decoration consists of shell impressions (2.2%). The impressions appear to have been made with marine-shell valves, but other tools could produce similar results. Four kinds of shell impression are included in the 'shell-impressed' category. These are wavy comb, linear comb, vertical comb and angled comb (see Figure 117).

Wavy comb refers to the curvilinear pattern imparted from a toothed comb, possibly with the valve edge from a marine bivalve such as *Anadara* or *Gafrarium*. The sinusoidal patterns have a short amplitude of 1 cm or less and were placed on the interior/exterior rim and body of Form 1A jars. On the interior of the rim, wavy comb is bordered by horizontal bands of linear incising. On the exterior vessel, surface wavy comb occurs on the shoulder, where it was bordered by horizontal bands of linear-comb or angled-comb incising. The most frequent type of linear comb are bands of incised lines. The incising consists of three to seven lines that circle the neck, shoulder or inner rim. Linear-comb incising was also used to border a geometric area that was left undecorated or was filled with vertical or angled comb. Vertical comb was applied in two ways. In the first, the toothed shell edge penetrated the clay, leaving a set of small and irregular wedge-shaped impressions (Gifford 1951:Plate 22m). The impressions were stacked in linear

Table 43. Navatu, Trench B, Layer 1 ceramics: Sherd type and decoration by depth.

Depth (cm)	Plain body	Decorated body	Rim	Neck	Narrow orifice	Number	Weight (g)
0–20	182	31	17	7		237	2549
20–40	174	14	20	4		212	2311
40–50	220	22	6	4	1	253	2487
50–60	667	26	14	5		712	3893
60–70	341	11	5	1		358	1873
70–80	602	15	15	7		639	2986
80–90	621	5	22	6		654	3351
90–100	616	18	4	9	1	648	2361
100–110	599	20	12	6		637	2551
110–120	674	17	15	14		720	2294
Total	4696	179	130	63	2	5070	26656

Depth (cm)	CPI-X	CPI-//	CPI-wavy	Side tool	Shell impressed	Appliqué	Incised symm.	End-tool impressed
0–20				1	36	2	4	1
20–40				3	19	1	1	1
40–50	1				11		3	
50–60		1		2	21	3	1	1
60–70				2	10			
70–80	2		2	1	6	1	2	
80–90			2	2	3	2		
90–100	1	1	4		5	2	2	
100–110	2	7	2	3			1	1
110–120	7	6	1	1	2	1	1*	
Total	13	15	11	15	113	12	15	4

CPI=carved paddle impressed, // =parallel-rib, X=cross-hatch, wavy=curvilinear. *=sherd with asymmetric incision.

columns and bordered by linear-comb incision on the shoulder and neck. By pushing the shell deeper into the vessel surface, a short undulating line was formed and these impressions were applied in columns and diagonal rows (Figure 117). This was a common method for decorating the lip of Form 1A vessels. Angled comb was similar to vertical comb, except the valve edge was pressed into the clay at an angle, rather than vertically. This created a strongly textured surface, which was applied in block form as columns, rows and other geometric shapes.

Only 12 cases (0.2%) of appliqué were found in Layer 1. These consist of fillets, buttons, buttresses, small ovals and clay crescents (1.2 cm long). Buttresses consist of an applied clay band around the neck that were finger gouged or modelled. Buttons and fillets were placed on neck and shoulder regions, but the designs cannot be determined. Of the 15 cases of side-tool notching, three are likely to derive from Layer 4, as indicated by their distinctive oval form. The remaining side-tool notching is on rims from medium-to-large Form 1A vessels. The notching consists of deep serrations on outer and inner-lip circumferences. Outer-edge serrations are usually deeper and wider spaced (0.3–0.5 cm) than those on the inner lip. The

Figure 117. Navatu 17A, Layer 1 sherds decorated with shell impression, appliqué and incision.

serrations were made with the toothed edge of a shell valve. There are 14 sherds (0.3%) with symmetric incision. Thin 'V' shaped incisions were found on the lip of a Form 1A jar and Form 4A vessel. Cross-hatch incisions occur on a Form 1A vessel and on the rim of an unknown vessel form with a thick rim and round lip. Incised hatching in the form of large (2 cm) and small (0.4 cm) diamond patterns was found on two body sherds. The remaining sherds have incised chevrons or partial chevrons. These were placed on the inner-rim surface of Form 1A vessels and on an unknown vessel form with a thin wall, where the incisions were bordered by horizontal fillets and oval buttons.

Form 1A jars: Almost 93% of rims identifiable to a vessel form are assessed as coming from Form 1A vessels. Rim courses are concave (70%) or straight, and the rim profile is parallel (37%) or gradually thinning (44%). Remaining rims thicken towards the lip (n=9). Lip shape is limited, with most having flat/flat-rounded form (89%) and the balance

round/pointed. Decoration was identified on 26 rims. Shell impressing, either across the lip surface or vertically against the lip edge, is the most common decoration (n=19). Incision (chevron and hatching) and appliqué make up the remainder. Mean rim eversion is 30° (range 11–72°) and average rim course thickness is 7.3 mm. Rim height varies from 16 mm to 85 mm, with a mean of 37 mm. The neck inclination from 17 sherds has a mean of 103°. The average diameter of 44 rims is 24 cm (range 12–36 cm). There are two forms of Form 1A jar. The first has a rim profile that is parallel or thinned/thickened gradually. Two of the rims belong to large vessels and have interior and exterior rim decoration. The other rim form is a thickened and inwardly bevelled lip, marked by crescent notching or incising.

Form 2A bowls: Two Form 2A vessels were identified. The rims have parallel profiles and flat/flat-rounded lips, with rim eversion angles of 31° and 42°. Lip decoration consists of a raised modelled ridge and a faint central groove. Estimated bowl diameters are 24 cm and 30 cm, and it is likely that these vessels represent the ethnographically known *dari* used in the *kava* (*yagona*) ceremony. Both vessel sherds were in the 0–20 cm spit.

Form 4 narrow-orifice vessels: Sherds from two narrow-orifice vessels were found in Layer 1 at depths of 40–50 cm and 80–90 cm. These vessels have short everted rims, with external lip diameters of ca. 10 cm. Lips are flat-rounded and 1 cm wide. The vessels are decorated with incised chevrons on the lips and fingernail impressions on the buttressed necks. The body shapes were difficult to determine due to the small neck-body portion, and could be ovoid or globular.

Navatu Layer 2 ceramics (Table 44)

Only 281 sherds were found in Layer 2 and most of these (90%) are undecorated body sherds. Relief decoration identical to that found in Layer 4 was found on five relatively small and eroded sherds. Side-tool notching on two rims from Form 1A vessels and on a carinated sherd is also similar to decoration found in Layer 4 (see below). Buttressing below the neck of a Form 1A vessel and hatched incising on a rim have parallels with decorated sherds found in Layer 1.

Table 44. Navatu, Trench B, Layer 2 ceramics: Sherd type and decoration by depth.

Depth (cm)	Plain body	Decorated body	Rim	Neck	Carinated	Number	Weight (g)
120–140~	254	13	9	4	1	281	1363
Depth (cm)	CPI-X	CPI-//	CPI- wavy	Side tool	Appliqué	Incised symm.	End-tool impressed
120–140~	2	2	1	1	1	1	1

Navatu Layer 4 ceramics (Table 45)

The highest frequency of sherds with surface modification (24%) was found in the Layer 4 assemblage. Paddle relief of various kinds (cross-hatch, parallel rib and curvilinear) is dominant, and smaller numbers of sherds are decorated with other techniques (symmetric incising, end tool and side tool). The cross-hatch group includes relief of diamond, square and rectangular shapes. The combined grouping is necessary, as many Navatu sherds have overlapping or faint impressions that obscure the original form. Sherds with cross-hatch relief make up 7.2% of the Layer 4 assemblage. The width and height dimensions of the cross-hatch patterns are 3–11.4 mm, with most impressions 7–8 mm in size (Figure 118). The depth of the pattern varies from faint surface markings to raised ridges 3–4 mm high. Vessel forms marked with cross-hatch relief include Form 1A and Form 2B vessels (Gifford 1951:Plate 22x). Sherds with parallel relief total

5.0% of the Layer 4 assemblage. Like other kinds of relief applied with a carved paddle, parallel ribs varied in size, depth and location on a vessel. The spacing of parallel ridges ranges from 0.3 cm to 1.5 cm and ridge width from 1 mm to 4 mm (Figure 118).

Carinated sherds are decorated above or below the carination line at an angle of 40–65° to the vertical (Figure 119). Linear relief was applied in horizontal and diagonal lines to Form 2A and 2B vessels. The body of Form 1A vessels might have been marked by parallel ribs but, except for the presence of thick body sherds with parallel relief, there is little evidence, either in the 1996 assemblage or in Gifford's excavation report, to support this. Of 1852 sherds found in Layer 4, 5.3% are marked with a raised sinusoidal or curvilinear pattern, a pattern referred to as wavy or zig-zag by previous researchers (Gifford 1951; Shaw 1967; Frost 1970). The wavy impressions are most regular when applied to the shoulder of Form 1A jars (Gifford 1951:Plate 26) and Form 2 bowls. These display shallow to deep impressions 1 mm to 4 mm in height, with spacing between ridges of 0.8 cm to 1.5 cm (Figure 118). Reverse impressions from shoulder sherds indicate that flat-rounded grooves about 5.2 mm to 7.5 mm in width were carved into the paddle in a smooth curvilinear pattern.

Shaw (1967) suggested that the curvilinear impressions could have been made by pressing the subdermal plates from a large turtle into the vessel. This appears unlikely, as the depressions on subdermal bones are much smaller (see Harrison 1965) than most wavy designs and have

Table 45. Navatu, Trench B, Layer 4 ceramics: Sherd type and decoration by depth.

Depth (cm)	Plain body	Decorated body	Rim	Neck	Carinated	Narrow orifice	Total	Weight (g)
180–190	63	6	8				77	383
190–200		7	7				14	125
200–210	10	36	15	2	1		64	571
210–220	354	57	13	11	2	1	438	2001
220–230	255	111	24	4	1	4	399	3609
230–240	268	89	16	7	2	2	384	3022
240–250	207	83	28	3	4		325	2452
250–260	119	16	10	2			147	1330
260–280		4					4	9
Total	1276	409	121	29	10	7	1852	13493

Depth (cm)	CPI-X	CPI-//	CPI- wavy	Spot impressed	Side tool	Appliqué	Incised symm.	End-tool impressed	Finger pinching
180–190	2		2		1				
190–200	2	1	1		1			1	
200–210	11	4	14		2	1		8	
210–220	16	12	16	2	4	3	3	3	
220–230	35	20	24	1	5		1	14	
230–240	34	14	27	1	5		2	7	
240–250	30	28	14	1	5			9	1
250–260	3	8	6		1			1	
260–280	1		1						
Total	134	87	104	5	24	4	6	43	1

a dispersed and dimpled surface. Body sherds decorated by wavy impressions exhibit greater variability in pattern. They include chevrons (lines angled at 35–55°) and shallow ridges of uncertain form. Often the relief is faint or heavily superimposed and it is unclear whether a carved paddle was used to apply all of the surface modification classed as wavy relief. For example, the curvilinear shape on some sherds could have resulted from denting the pot with the edge of a carved paddle or other tool to create an uneven rippled surface. A wavy surface could also have been made with natural materials such as bark to impress wavy ridges or tool/finger gouging followed by smoothing.

Form 1A jars: The majority of Layer 4 rims (71%) are from ‘jars’. The rims have straight or slightly curving rim courses that are parallel (50%), slightly thickened (29%) or gradually thinning towards the lip (16%). Two kinds of lip form were identified – flat/flat-rounded (91%) and a few rounded/pointed. Side-tool lip treatment was found on 16% of Form 1A rims and 3.5% were marked with an end tool. Rim eversion varies from 2° to 32° with a mean of 16°. The thickness of the rim course is 4.3–11.0 mm (mean 7.4 mm), while the rim height is 17–56 mm, with an average of 30 mm. Inclination angles from 22 rim sherds have a mean of 129° (range 110–151°). Vessel diameters (41 sherds) are mostly in the 18–26 cm range (mean of 22 cm), with a maximum recorded vessel diameter of 38 cm and a minimum of 12 cm. Seven Form 1A jars were identified in the Layer 4 assemblage.

Figure 118. Navatu 17A, Layer 4 sherds decorated with curvilinear, parallel-rib, spot and cross-hatch relief.

Figure 119. Navatu 17A, Layer 4 sherds decorated with end and side-tool impression, finger-gouging, incision and modelling.

The diameter of these vessels is 17–29 cm. Two of the vessels have notched lips and one has rows of oval end-tool impressions on the neck. Lips are flat/flat-rounded and the mean rim eversion is 24°. No paddle-relief markings were found on the rim or neck and few of these sherds from the Layer 4 assemblage have attached body-sherd portions. It is likely that some of these vessels had paddle relief, given the presence of paddle-relief vessels in Gifford's (1951) much larger sample.

Form 2 bowls

Form 2A everted rim/direct rim-body contour: A single Form 2A vessel, with parallel relief, a flat-rounded lip and a diameter of 20 cm, was identified.

Form 2B inverted rim/direct rim-body contour: There are three vessels with rims inverted from 2° to 43°. The vessel with the high inversion angle has an inturned lip and otherwise would have a much smaller degree of rim inversion. The lip forms are flat-rounded and two are marked with paddle relief (curvilinear and parallel rib).

Form 2C inverted rim/indirect body contour: Three Form 2C vessels have an inversion angle range of 38° to 40° and gradually thinning rims, terminating in pointed lips. Decoration consists of deep finger gouges/pinching on the circumference, diagonal incision and circular punctate on the rim. Their diameters are between 22 cm and 30 cm. These vessels have finger impressions below the rim-body corner point and comprise a distinct vessel form at Navatu 17A.

Form 4 narrow-orifice vessels

Form 4A single orifice/indirect rim-body contour: The only single-orifice vessel has a neck height of 17 mm and internal orifice dimensions of 17 mm x 21 mm. It is decorated with oval end-tool impressions and appears to have had an ovoid or flask-shaped body.

Form 4C double orifice and stirrup handle: Two forms of double-spouted vessel were identified. The first has a stirrup handle, with an interior handle diameter of 17–31 mm. The orifices exit the dorsal surface of the handle (internal orifice diameter 10–15 mm). Spout openings are angled 0–10°. In the second form, the spouts are oriented horizontally, and it is possible that a small handle bridged the spouts. The internal spout diameter range is 7.6–13.0 mm. The body of the double-orifice vessel appears to have been oval-to-globular, with the housing containing the vessel openings protruding above the body. The handle-orifice component is probably centered over the body. Decoration is limited to the application of applied nubbins around the circumference of the handle base and modelling of the stirrup handle (Gifford 1951:Plate 23jk).

Carinated vessels: The vessel forms associated with the carinated sherds are unclear. Sherd curvature and thickness suggests that carinated sherds came from small to mid-sized vessels. Shaw (1967:82) identified two carinated forms at Navatu 17A. The first belonged to an inverted bowl. Lips were described as rounded and bevelled and vessel size was similar to the ethnographically known *vuluvulu* or finger bowl. Carinated sherds from Layer 4 are commonly decorated below the carination line with paddle markings (parallel rib and curvilinear) and punctuation, and on the carination line with end-tool impressions. Other carinated forms have everted indirect rims approximately 4 cm in length and flat-rounded lips.

Ugaga Island ceramics

The Ugaga Island ceramic collection, from an excavated area of 55 sq. m (Test Pit 1 and U6 ceramics were not analysed), consists of 20,793 sherds weighing a total of 115.4 kg (Table 46). More than 80% of sherds (by number and weight) occurred between 10 cm and 40 cm depth. Plain body sherds comprise the majority of the assemblage, at 91.2%, with smaller numbers of decorated body sherds (4.3%), rims (3.8%) and necks (0.6%). Spouts, carinations, 'lugs', 'stands' and handles are present in small numbers (0.1%) and the majority were found in the large excavation area. Eastern excavation squares had low-to-medium sherd numbers and weights, while squares in the main excavation area such as M6, O7–O8, O10 and P8, and T/U-1 in the west, had the largest sherd numbers.

The main types of surface modification found in the assemblage are shown in Table 47, along with the percentage of plain sherds. Plain sherds make up more than 90% of the ceramics in all but two squares. Squares I9 and I10 had large numbers of shell-impressed and incised sherds that derived from a single vessel (see below). Crosby (1988:125) recorded decorated sherd percentages at Ugaga of 40–55%, but his small sample was not representative of the site. Sherds with surface modification were more abundant in the central excavation area than the smaller eastern areas.

Sherds with dentate stamping were present in the main excavation area but not in the smaller areas to the east and west. The 91 sherds with dentate stamping (0.4% of the assemblage) were dispersed in rows K–M and there was no evidence for concentrations of dentate sherds by square or area within the main excavation zone. Stratigraphically, the majority of dentate sherds occurred in the 20–30 cm ($n=25$) and 30–40 cm ($n=46$) spits. Fifteen sherds initially recorded as dentate stamped were later identified under low-power magnification as having a crenate edge consistent with stamping the edge of a shell valve edge in the clay vessel.

The majority of sherds with dentate stamping have single or double lines of impressions. Recognisable design elements and motifs (e.g. Anson 1983; Best 1984) are shown in Figures 120 and 121. The limited number of motifs and the 'exploded' or open dentate-stamped patterns have a parallel in eastern Lapita assemblages (Sigatoka, Mulifanua and Niuatoputapu), as well as in what Summerhayes (1996) termed 'Late Lapita' assemblages from Near and Remote Oceania.

At Ugaga, dentate stamping is associated with appliqué fillet, symmetric incision, shell impression and a red slip. It is probable that many of the dentate-stamped sherds were red slipped, but the delicate layer of soluble iron oxide was subject to chemical and physical weathering and has not survived in the shallow and disturbed Ugaga deposits. The dentate tools are variable in width, number of teeth and amount of wear. For example, on some sherds the corners of the tooth surface were irregularly rounded, producing uneven oval or circular punctations. In contrast, the tool used to decorate several other vessels was sharp edged, with almost twice the number of teeth per centimetre.

Fifteen rims and four carinations are dentate stamped. The rims are from Form 1 vessels with flaring rims. Dentate stamping is commonly applied to the lip surface and 11 rims have transverse rows of stamping (2–3 teeth). Dentate stamping of interior and exterior rim surfaces is often associated with lip stamping.

Sherds with fine striations make up 0.3% of the assemblage. They occurred in the eastern, central and western excavation areas and 73% of them were found at 20–40 cm depth. Wiping as a form of surface modification is variable in the Ugaga assemblage with some sherds showing faint, and others deep, striations. However, the striations were always applied horizontally and they are almost exclusively on the rim and neck. It seems likely that wipe marks were produced

Table 46. Ugaga Island ceramics: Sherd type by excavation square and depth.

Square/ depth (cm)	Plain body	Decorated body	Rims	Necks	Other	Total	Weight (g)
-A13							
0–10	35		2	1		38	195.6
10–20	37	2	1			40	269.7
20–30	34		2			36	229.9
30–40	11					11	38.8
Total						125	734
-A14							
0–10	79		1	1		81	306.3
10–20	43					43	223.7
20–30	37	1	2			40	164.7
30–40	44	4	3	1		52	322.2
Total						216	1016.7
-A15							
0–10	23		1			24	169.4
10–20	56	2	4	1		63	423.6
20–30	30		1			31	102.3
30–40	41		1			42	164.0
Total						160	859.3
C8							
0–10	58	2		1		61	335.3
10–20	123	2	2	2		129	740.7
20–30	94		2	3		99	584.9
30–40	134	5	12	6		157	787.0
40–50	1					1	22.0
50–60			1			1	3.6
Total						448	2473.5
C9							
0–10	34	1				25	175.4
10–20	120	4	5	1		130	710.6
20–30	224	18	6	2		224	1279.5
30–40	64	6	3	3		76	548.6
Total						455	2714.1
C12							
0–10	30					30	94.1
10–20	74	2	3	3		82	542.8
20–30	52	5	2	2		61	301.6
30–40	88	8	8		1 handle	105	584.5
40–50	63	3	4	3		73	320.3
Total						351	1843.3
C13							
0–10	57	2				61	298.7
10–20	117	2	2	1		129	545.0
20–30	131		2	2		99	846.9
30–40	81	5	12	3		157	323.9
40–50	21			6		1	146.8
50–60							
Total						447	2161.3

Continued on next page

Table 46 *continued*

Square/ depth (cm)	Plain body	Decorated body	Rims	Necks	Other	Total	Weight (g)
D12							
0–10	22					22	134.4
10–20	80		3			83	541.7
20–30	74	2	1	1	1 ?stand	79	447.0
30–40	70	6	9			85	528.7
40–50	82			2		84	323.7
Total						353	1975.5
D13							
0–10	54		1	1		56	235.2
10–20	102		5	3		110	737.4
20–30	123	4		1		128	553.1
30–40	74	1	5			80	426.7
40–50	52					52	201.1
50–60	23	2	2			27	96.7
Total						453	2250.2
F8							
0–10	14					14	37.2
10–20	78	3	6			87	494.5
20–30	72	6	4	3		85	554.5
30–40	62	9	10	1		82	639.6
40–50	81	2				83	257.5
50–60	49		2	3		54	189.9
60–70	28	3				31	131.4
Total						436	2304.6
G8							
0–10	20					20	47.8
10–20	100	3	4	1		108	379.2
20–30	112	15	2			129	820.6
30–40	94		9	1		104	646.4
40–50	64	7	1	1		73	319.3
Total						434	2213.3
H8							
0–10	8					8	25.6
10–20	53	3	1			57	263.4
20–30	87	4		2		93	657.6
30–40	69	3	3	1		76	421.9
40–50	65		4			69	192.2
Total						303	1560.7
I5							
0–10	26					26	104.9
10–20	55		1	2		58	312.9
20–30	60	1	3	1		65	403.4
30–40	177	7	6			190	1690.0
40–50	46		4	1		51	285.4
Total						390	2796.6

Continued on next page

Table 46 *continued*

Square/ depth (cm)	Plain body	Decorated body	Rims	Necks	Other	Total	Weight (g)
I6							
0–10	25	3	1			29	140.7
10–20	38	3	2			43	382.0
20–30	137		6		1 ?stand	144	966.7
30–40	74		4			79	565.2
40–50	60		5			65	255.1
Total						360	2309.7
I7							
0–10	3		2			5	343.9
10–20	94	3	8			105	616.0
20–30	104	2	5	2		113	400.0
30–40	37		2			39	78.0
40–50							
Total						262	1437.9
I8							
0–10	41	3				44	181.5
10–20	8					8	70.1
20–30	60	3	1	3		67	298.9
30–40	151	8	4	1		164	755.3
40–50	57	1	3			61	236.7
50–60	23	1	4			28	141.7
60–70	7					7	10.5
Total						379	1694.7
I9							
0–10	22	2	1			25	106.4
10–20	18	14				32	152.9
20–30	69	2				71	312.2
30–40	103	5	4		1 handle	113	679.3
40–50	36		2			38	213.9
Total						279	1464.7
I10							
0–10	40	1				41	172.7
10–20	107	18	3			128	632.4
20–30	118	5	5	1		129	777.9
30–40	64		3			67	294.7
40–50	51		2			53	178.4
Total						418	2056.1
J5							
0–10	29	2	1	1		33	234.7
10–20	42	10		2		54	401.1
20–30	56	5	7	1		69	550.7
30–40	125	4	3	1		133	1371.5
40–50	77	3	4	2		86	670.7
Total						365	3228.7

Continued on next page

Table 46 *continued*

Square/ depth (cm)	Plain body	Decorated body	Rims	Necks	Other	Total	Weight (g)
J6							
0–10	21	1				22	201.1
10–20	26					26	243.7
20–30	55	1	3	2		61	476.9
30–40	103	2	7	1		113	1107.5
40–50	72	1	4			77	430.1
Total						299	2459.3
J7							
0–10	21		1			22	106.8
10–20	51	3				54	325.6
20–30	72	6	3			81	392.9
30–40	142	3	8		1 handle	154	1037.7
40–50	43		3	1		47	221.3
Total						358	2084.3
J8							
0–10	16	1				17	174.9
10–20	30					30	163.2
20–30	39	6	6			51	479
30–40	86	4	13			103	780.6
40–50	38	2	7			47	256
Total						248	1853.7
J9							
0–10	40		1			41	48.4
10–20	77		1			78	291.6
20–30	99	8	2	1	2 ?lug	112	666.4
30–40	98	6	3			107	452
40–50	17		4			21	132.4
Total						359	1590.8
J10							
0–10	4					4	13.1
10–20	70	3				73	430.6
20–30	70	6	6	2		84	575.1
30–40	103	16	3			122	667.5
40–50	36	1	2			39	231.0
Total						322	1917.3
K5							
0–10	25		1			26	108.9
10–20	62	4	3			69	357
20–30	46	5	2			53	316
30–40	116	9	4		carination	129	1007.8
40–50	57		4		carination	63	264.4
Total						340	2054.1
K6							
0–10	34					34	113.7
10–20	56	1				57	222
20–30	132	5	2			139	648.4
30–40	108	6	4			118	550.3
40–50	73	8	6			87	462.3
Total						435	1996.7

Continued on next page

Table 46 *continued*

Square/ depth (cm)	Plain body	Decorated body	Rims	Necks	Other	Total	Weight (g)
K7							
0–10	25					25	102.7
10–20	31					31	190.6
20–30	39					39	222.6
30–40	141	2	7	1	1 ?lug	152	767.6
40–50	51	4				55	247.1
Total						302	1530.6
K8							
0–10	18	1				19	97.8
10–20	42	5				47	242
20–30	33	11	3			47	441.1
30–40	61		6			67	465.8
40–50	56					56	146.1
Total						236	1392.8
K9							
0–10	39					39	162.9
10–20	105	3	2			110	570.2
20–30	69	3	1	1		74	426.5
30–40	78	4	2		carination	85	541.7
40–50	58	1	1			60	296.3
Total						368	1997.6
K10							
0–10	27					27	82.8
10–20	84	2	7			93	445.9
20–30	85	2		2		90	391.9
30–40	110	9	7		1 handle	126	610.6
40–50	68	1	1			70	182.4
Total						406	1713.6
L5							
0–10	39	3	2			44	254.2
10–20	99	5	4	1		109	530.3
20–30	140	15	5	2		162	940.7
30–40	171	13	11	1	1 ?stand	197	1117.2
Total						512	2842.4
L6							
0–10	12					12	42.9
10–20	39		4	1		44	302.9
20–30	103	12	4			119	758.6
30–40	95		10	1	1 handle	107	503.7
40–50	26	4	3			33	160.9
Total						315	1769
L7							
0–10	22		1			23	83
10–20	47					47	180.9
20–30	25	1	4		1 handle	31	336.7
30–40	88	12	9			109	989.5
40–50	49		3			52	169.4
Total						262	1759.5

Continued on next page

Table 46 *continued*

Square/ depth (cm)	Plain body	Decorated body	Rims	Necks	Other	Total	Weight (g)
L8							
0–10	5	1				6	35.3
10–20	20					20	66.4
20–30	62		1			63	372
30–40	71	6	7		1?lug	86	671.8
40–50	48		8			56	465.4
50–60	9	1				10	19.7
Total						241	1630.6
L9							
0–10	17	1				18	60.3
10–20	96	4	3			103	299.6
20–30	149	8				157	658.6
30–40	7	6	6			19	153.9
40–50	21	1	1			23	178.6
Total						320	1351
L10							
0–10	100	3	1			104	508.5
10–20	74	2				76	357.6
20–30	83	4	3			90	538.4
30–40	73	4	2			79	417.1
40–50	25		2			27	96.6
Total						376	1918.2
M5							
0–10	40	2	1	1		44	150.5
10–20	92	7	6			105	316.9
20–30	151	17	7	2		177	876.7
30–40	138				carination	139	583.2
40–50	62	1			carination	64	206.3
Total						424	2133.6
M6							
0–10	26		1			27	86.5
10–20	110	8		1		119	366.3
20–30	153	19	7	2	carination	182	1495.6
30–40	137	5	6	1		149	875.6
40–50	40	3				43	222.2
Total						520	3046.2
M7							
0–10	27	4				31	157.9
10–20	89	5	1			95	290.3
20–30	110	4	2			116	638.5
30–40	52	1	7	1		61	472
40–50	32		2			34	192.9
Total						337	1751.6
M8							
0–10	16	2				18	100.3
10–20	37	1				38	277.4
20–30	72	8	1			81	378.1
30–40	124	2	2		1?stand	129	599.5
40–50	41	1		1		43	264.1
50–60							
Total						309	1619.4

Continued on next page

Table 46 *continued*

Square/ depth (cm)	Plain body	Decorated body	Rims	Necks	Other	Total	Weight (g)
M9							
0–10	20					20	92.7
10–20	121	6	4			131	665.3
20–30	128	7	2			137	599.4
30–40	134	1	9		carination	145	888.4
40–50	37	1	3			41	203.1
Total						474	2448.9
M10							
0–10	74	1				75	324.8
10–20	119	1	5			126	374.4
20–30	106	7	3		1 handle	117	499.8
30–40	232	7	10			249	936.2
40–50	24					24	56.1
Total						591	2191.3
N8							
0–10	11					11	60.2
10–20	75	4	3	1		83	479.8
20–30	92	9	3			104	677.9
30–40	90	3	11	1	carination	106	614.3
40–50	56	2	2			60	395.2
50–60	1					1	17.1
Total						365	2244.5
N9							
0–10	112		5			117	552.2
10–20	132	4	7			143	937.4
20–30	79	12	5	1	carination	98	621.1
30–40	129	4	6	1		140	755.3
40–50	18	5	2			25	76
Total						523	2942
N10							
0–10	68	1	1	1		71	590.3
10–20	155	3	2			160	727.2
20–30	92	12	9			113	820.9
30–40	147	1	6			154	670.4
40–50	10	1				11	61.6
Total						509	2870.4
O8							
0–10	49	2				51	233.2
10–20	118	4	3			125	722
20–30	220	14	13			247	1581.3
30–40	156	12	15			183	1276
40–50	30	2	2			34	337.5
50–60						5	50.6
Total						645	4200.6
O9							
0–10	46	1	1			48	241.9
10–20							
20–30	102	9	6			117	559.5
30–40	56	4	11			71	556.3
40–50	4		2			6	14.5
Total						242	1372.2

Continued on next page

Table 46 *continued*

Square/ depth (cm)	Plain body	Decorated body	Rims	Necks	Other	Total	Weight (g)
O10							
0–10	142	6	6			154	696.5
10–20	205	22	5			232	1236.3
20–30	109	4	3			116	569.7
30–40	58	1				59	280.1
40–50	3					3	15.3
Total						564	2797.9
P8							
0–10	24					24	177.4
10–20	47					57	332.3
20–30	138		10		1 ?lug	149	976.5
30–40	176		7		1 ?lug	184	967.9
40–50	28					28	122.4
Total						442	2576.5
P9							
0–10	110		2			112	466.8
10–20	213	2	3			218	900.8
20–30	145	8	5	1		159	1363.0
30–40	9	10	2			21	47.6
40–50	8					8	32.5
Total						518	2810.7
P10							
0–10	81	2	1			84	373.1
10–20	108	6	2			116	549.5
20–30	92	5	5			102	753.5
30–40	46	1	3			50	306.9
40–50	6		1			7	49.0
Total						359	2031.8
Q10							
0–10	102					102	413.3
10–20	82	5	8			95	514.9
20–30	87	2	2			91	492
30–40	40					40	185.9
Total						328	1606.1
Q13							
0–10	9	2				10	46.4
10–20	8					9	43
20–30							
30–40	90	3	5			98	443.9
Total						117	533.3
T/U-1							
0–10	40	6	1			47	325.5
10–20	47	8	9		2 handles	66	713.6
20–30	442	32	18	10		502	3214.6
30–40	357	3	10		carination	371	2217
40–50	74					74	480.1
50–60	83		1			84	320.9
Total						1144	7271.7

Table 47. Ugaga Island ceramics: Sherd decoration by excavation square and depth.

Square/depth (cm)	Plain sherds	Dentate stamped	Wiped	Side tool	Shell imp.	Dents	CPI-//	CPI-X	Incision	End-tool imp.
-A13										
0–10	38			1						
10–20	40									
20–30	36									
30–40	11									
%Plain	98.4									
-A14										
0–10	81									
10–20	43									
20–30	39							1		
30–40	49					1	1	1		
%Plain	97.6									
-A15										
0–10	24									
10–20	62			1			1			
20–30	31									
30–40	42									
%Plain	98.7									
C8										
0–10	59						1			
10–20	128							1		
20–30	99									
30–40	148		3	1			6			
40–50	1									
50–60	1									
%Plain	97.0									
C9										
0–10	24						1			
10–20	126						4			
20–30	208						12	3	1	1
30–40	70						5	1		
40–50										
50–60										
%Plain	93.2									
C12										
0–10	30									
10–20	80						2			
20–30	56		1			1	3			
30–40	97		2			2	4			
40–50	68						5			
%Plain	94.0									

Continued on next page

Table 47 *continued*

Square/depth (cm)	Plain sherds	Dentate stamped	Wiped	Side tool	Shell imp.	Dents	CPI-//	CPI-X	Incision	End-tool imp.
C13										
0–10	60									
10–20	120			1						
20–30	135				1	1	5			
30–40	87						1			
40–50	23									
%Plain	98.6									
D12										
0–10	22									
10–20	83									
20–30	76				1		1	1		
30–40	79					1	4	1		
40–50	84									
%Plain	97.4									
D13										
0–10	56									
10–20	110									
20–30	125					1	2			
30–40	79						1			
40–50	52									
50–60	26						1		1	
%Plain	98.7									
F8										
0–10	14									
10–20	85						1	1		
20–30	80						3	2		
30–40	77	2	1		1	2	2		1	
40–50	81						2			
50–60	54									
60–70	28						1	2		
%Plain	95.2									
G8										
0–10	20									
10–20	106						2		1	
20–30	115						12	2	1	
30–40	104			1						
40–50	68			1			4	1		
%Plain	94.7									
H8										
0–10	8									
10–20	55						2			
20–30	88						5			
30–40	75							1		
40–50	69									
%Plain	96.6									

Continued on next page

Table 47 *continued*

Square/depth (cm)	Plain sherds	Dentate stamped	Wiped	Side tool	Shell imp.	Dents	CPI-//	CPI-X	Incision	End-tool imp.
I5										
0–10	26									
10–20	58									
20–30	62						2	2		
30–40	183		2				3	2		
40–50	50				1					
%Plain	96.8									
I6										
0–10	28								1	
10–20	40						1	2		
20–30	141						3			
30–40	77		1	1				1		
40–50	65									
%Plain	97.4									
I7										
0–10	5			1						
10–20	103			2			1	1		
20–30	111			1				2		
30–40	39									
40–50										
%Plain	98.0									
I8										
0–10	40				1			2	1	
10–20	8									
20–30	64	1						3		
30–40	158	3	1	1			4	2		
40–50	60		1					1		
50–60	27			1				1		
160–70	7									
%Plain	95.8									
I9										
0–10	22				1				2	
10–20	7				12			1	13	
20–30	68				1			1	1	
130–40	108					1	2	2		
40–50	38									
%Plain	85.2									
I10										
0–10	39		1		1				1	
10–20	102				10		1	6	10	
20–30	124				1		2	1	1	
30–40	67			1						
40–50	51		1		1					
%Plain	89.6									

Continued on next page

Table 47 *continued*

Square/depth (cm)	Plain sherds	Dentate stamped	Wiped	Side tool	Shell imp.	Dents	CPI-//	CPI-X	Incision	End-tool imp.
J5										
0–10	20			1				2	1	
10–20	45		1				3	5	1	
20–30	62						5	1	1	
30–40	128		1				2		2	
40–50	83			1			1	2		
%Plain	92.0									
J6										
0–10	21							1		
10–20	26									
20–30	60			1			1			
30–40	110					1	2			
40–50	76			1			1			
%Plain	98.0									
J7										
0–10	21			1						1
10–20	51	3								
20–30	73		4		1		2		1	
30–40	151	1		1			2			
40–50	47			1						
%Plain	95.6									
J8										
0–10	16							1		
10–20	30									
20–30	44	1	1	1		3	2			
30–40	98	2		3	2	1				
40–50	46	1	1	2						
%Plain	93.2									
J9										
0–10	40									1
10–20	78									
20–30	104	2					2	3	1	
30–40	102						2	3		
40–50	20		1							
%Plain	95.3									
J10										
0–10	4									
10–20	70						2	1		
20–30	77		2	1		1	3	1		
30–40	107	1		1		1	7	6		
40–50	38							1		
%Plain	90.5									

Continued on next page

Table 47 *continued*

Square/depth (cm)	Plain sherds	Dentate stamped	Wiped	Side tool	Shell imp.	Dents	CPI-//	CPI-X	Incision	End-tool imp.
K5										
0-10	26									
10-20	65						1	2	1	
20-30	48						3	3		
30-40	120	1				2	2	4		
40-50	63			2						
%Plain	94.4									
K6										
0-10	34									
10-20	56						1			
20-30	133	1		1		1	3	1		
30-40	111			1		1	4	2		
40-50	80	2		2	1		4			
%Plain	94.9									
K7										
0-10	25									
10-20	31									
20-30	39									
30-40	150			3				2		
40-50	52		1				1	1		
%Plain	98.0									
K8										
0-10	18			1						
10-20	47									
20-30	44	1					1	1		
30-40	55	4	1	1			2	3	2	
40-50	56									
%Plain	90.5									
K9										
0-10	39									
10-20	106			1			2	1		
20-30	70				1			1	2	
30-40	79			2				4		
40-50	59							1		
%Plain	95.8									
K10										
0-10	27									
10-20	92						1			
20-30	87						1	1		
30-40	117			1	1		4	3	1	
40-50	69		1	1						
%Plain	96.2									
L5										
0-10	40	1		1			1	1		
10-20	104	1					1	3		
20-30	147	3	3		1		6	2		
30-40	183	1	4	2		1	3	4		
%Plain	91.1									

Continued on next page

Table 47 *continued*

Square/depth (cm)	Plain sherds	Dentate stamped	Wiped	Side tool	Shell imp.	Dents	CPI-//	CPI-X	Incision	End-tool imp.
L6										
0-10	12									
10-20	44									
20-30	107						5	7		
30-40	102	1			2					1
40-50	28	2		2			1			
%Plain	92.2									
L7										
0-10	23									
10-20	47									
20-30	29			1				1		
30-40	97	3	1	1		1	2	4		
40-50	52									
%Plain	94.4									
L8										
0-10	5							1		
10-20	20									
20-30	63									
30-40	80	3					3			
40-50	51	1	1	1	3					
50-60	9							1		
%Plain	93.9									
L9										
0-10	18								1	1
10-20	99	1		1			1	1		
20-30	151		1				5		1	
30-40	11	5		1		1	1			
40-50	22					1				
%Plain	93.0									
L10										
0-10	101							2	1	
10-20	67						1	1		
20-30	90		2				2	2		
30-40	73	1		1			3	1		
40-50	27									
%Plain	95.0									
M5										
0-10	42						2			
10-20	97	2	2	2			1	1		
20-30	159	2	2	1			8	5		
30-40	138				1					
40-50	62	1					1			
%Plain	93.2									

Continued on next page

Table 47 *continued*

Square/depth (cm)	Plain sherds	Dentate stamped	Wiped	Side tool	Shell imp.	Dents	CPI-//	CPI-X	Incision	End-tool imp.
M6										
0-10	27									
10-20	112						2	5		
20-30	164	2					9	7		
30-40	141	2	1	1	1		1	2		
40-50	40	2					1			
%Plain	91.7									
M7										
0-10	28						1	2		
10-20	95									
20-30	112						1	3		
30-40	54		1	1			3	2		
40-50	33			1						
%Plain	94.4									
M8										
0-10	16							2		
10-20	37							1		
20-30	73	1		1			3	2	1	
30-40	125	1		1	1		1			
40-50	42							1		
50-60										
%Plain	94.2									
M9										
0-10	20									
10-20	124		1	1	1	1	2	1		
20-30	127	2	1				4			
30-40	141	2			1		1			
40-50	41									
%Plain	94.9									
M10										
0-10	74							1		
10-20	122			1	1			1		
20-30	112	3					1	1		
30-40	239	1	2	1			4	2		
40-50	24									
%Plain	96.1									
N8										
0-10	11									
10-20	81			1				1		
20-30	96	1	1				1	5		
30-40	97	2		3	1		2	1		
40-50	56	1		1			2			
50-60	1									
%Plain	91.8									

Continued on next page

Table 47 *continued*

Square/depth (cm)	Plain sherds	Dentate stamped	Wiped	Side tool	Shell imp.	Dents	CPI-//	CPI-X	Incision	End-tool imp.
N9										
0-10	111	1		1			3	1		
10-20	128	4	1	1	1		5	3		
20-30	92	1			1		2	2		
30-40	133	3					3	1		
40-50	23			2						
%Plain	92.2									
N10										
0-10	68	1	1	1						
10-20	157						2	1		
20-30	100	2	1	2	1		6	1		3
30-40	151			2			1			
40-50	10							1		
%Plain	95.3									
O8										
0-10	49						1	1		
10-20	121						2	2		
20-30	229	1	1	1	2	1	5	7		
30-40	164	1	1	2	4		4	6		1
40-50	31			1			1	1		
50-60	5									
%Plain	92.1									
O9										
0-10	46						2			
10-20										
20-30	109		1			1	4	2		
30-40	65			1	1		2	1		1
40-50	6									
%Plain	92.5									
O10										
0-10	148		1				4	1		
10-20	211		2	1		2	13	2		1
20-30	112		1				1	1		1
30-40	58							1		
40-50	3									
%Plain	93.4									
P8										
0-10	24									
10-20	55							2		
20-30	142		1				4	2		
30-40	173	2	1		1		5	2		
40-50	28									
%Plain	94.8									

Continued on next page

Table 47 *continued*

Square/depth (cm)	Plain sherds	Dentate stamped	Wiped	Side tool	Shell imp.	Dents	CPI-//	CPI-X	Incision	End-tool imp.
P9										
0-10	112									
10-20	206		2				5	5		
20-30	143	1	2	1	1	2	8			1
30-40	20		1							
40-50	8									
%Plain	93.7									
P10										
0-10	82						2			
10-20	110						6			
20-30	102						2			
30-40	45				1	1		2		
40-50	5			1						
50-60										
%Plain	95.3									
Q10										
0-10	102									
10-20	90						1	4		
20-30	90		1							
30-40	40									
%Plain	97.8									
Q13										
0-10	10								2	
10-20	7									
20-30										
30-40	96							2		
%Plain	95.6									
T/U-1										
0-10	41						5	1		
10-20	57						3	4	1	1
20-30	464		1	1		1	21	14		
30-40	366					1	2	2		
40-50	74									
50-60	84									
%Plain	94.5									

by the potter using a fibrous material, such as the inner husk of the coconut, on the outer rim during the finishing stages of vessel manufacture. Wiping was identified on 22 rims, of which 76% belong to Form 1A vessels with straight profiles and flat/flat-rounded lips. No wiped bowls were identified, although a plain collar rim has deep striations below the collar. Associated with exterior-rim wiping is one case of interior-lip notching with a side tool. The rim of this vessel is unusual for the depth of the striae and the irregularity of its rim profile and rim-body join.

The use of a side tool to make notches, ovals and cuts is evident on 0.4% of sherds. Almost 63% of such sherds were found below 30 cm depth, and the sherds were in most excavation areas. Two types of side tool were employed. The first had a thin sharp edge that was used to make cuts or apex-down triangular incisions. An impressed diamond shape resulted from moving the edge of the side tool from side-to-side on the lip edge or rim collar. The second tool was oval in cross-section and was used to make small oval impressions 3–8 mm wide on the lip.

Of the 91 sherds with side-tool impression, all but four are rims. The majority of these (n=64) belong to Form 1B vessels. In all cases, the side tool was applied along the thickest point of the rim and spaced from 0.6 cm to 1.2 cm. Collar rims were restricted to the main excavation area and like dentate-stamped sherds were not found in the smaller eastern and western excavations. Side-tool marking on Form 1A vessels consists of incised lines across the lip and on the interior or exterior lip edge. Form 2A and 2C vessels also have notching and incision on the lip, including one with a crenate-incised lip. Bivalve-edge impressing was found on 0.3%

Figure 120. Ugaga Island dentate-stamped sherds (square and depth).

Figure 121. Ugaga Island dentate-stamped, carinated and incised sherds (square and depth).

of the assemblage. The length of the impression was usually less than 0.6 mm, although a length of 2.2 cm was recorded from a carinated sherd. Shell impressions were found on 24 Form 1B rims, where they are aligned vertically or diagonally along the widest point of the collar.

Other vessel forms with bivalve-edge impressions are a Form 1A jar and a Form 2C bowl with vertical shell crescents on the rim and small shell impressions on the lip. Most shell-impressed sherds ($n=28$) were located in the 10–20 cm spit of squares I9–I10 and are derived from one vessel. Very few sherds with dents were found ($n=35$) and the category is difficult to reliably separate from sherds with ‘heavy ribs’, especially when the sherds are small. Dented sherds were found in all of the excavated areas, mostly at 10–30 cm depth. In general, dents have straight parallel edges that gradually terminate at one end. The best explanation for this shape is that a flat-rounded or round-edged paddle was used against the vessel surface. Dents were identified on a Form 1A and a Form 2B vessel. Parallel-relief sherds have the highest frequency of any type of surface modification. However, their proportion in the Ugaga assemblage is still small, at 1.9% of the total assemblage. Sherd numbers were greatest in squares C9 and O10, and the sherds were found in all excavation areas, with 70% of them between 20 cm and 40 cm.

Nine Form 1A vessels have parallel relief on their rim or body. On four of these, the ribs were placed horizontally and are 1.8–2.3 cm in length. Diagonal parallel impressions of different lengths were found on several vessels. Heavy ribs more than 2 cm long occur on a Form 1A vessel. Diagonal and horizontal parallel impressions of different sizes were also found on Form 2A and 2B bowls. Sherds with cross-hatch relief make up 1.2% of the Ugaga assemblage. They were found in most squares and 78% were recovered from 20 cm to 40 cm depth. The majority of cross-hatch sherds are from the body and only one rim provides any indication of vessel form. Impressions from large shoulder sherds and body sherds indicate that diamond-shaped impressions are vertically orientated. Three size classes (height 3–5 mm, 5–8 mm, 8–12 mm) of square and diamond impressions were recorded from the Ugaga assemblage.

The interior surface of 12 body sherds with cross-hatching (5–8 mm size class) is rough and pitted. The texture is unlike that produced using a coral anvil (Birks 1973:Plate 36A and 44A). Similar impressions were identified on Level 2 vessels from Sigatoka, where unsmoothed stone anvils were thought to have been used (Birks 1973:42). Impressions from the Ugaga basalt breccia in modelling compound gave a comparable surface texture to that found on the sherds, supporting Birks’ identification.

Of the 55 sherds (0.3%) with symmetric or asymmetric incision, 28 belong to one vessel. The remainder have single or multiple parallel lines (up to five), although no comb-incised sherds were identified. Crosby (1988:125) records that comb-incising was common in late-prehistoric sites on nearby Beqa. The incision depth ranges from light surface markings to 2 mm deep cuts. Incision is associated with dentate arcs on one sherd and with triangular end-tool impressions on another. A single sherd with asymmetric incision in an ‘exploded’ chevron pattern was recorded from I9: 10–20 cm.

There are 14 sherds marked by end tools and seven of these came from one vessel marked with circular impressions 2–3 mm in diameter. Other end-tool impressions include an example of finger-nail impressing and oval, square and triangular shapes. Oval to circular impressions, possibly made with a finger tip, were found on Form 1B vessels. A rim from a Form 1A vessel is unusual for its extremely thickened lip that was marked using a straight-sided tool with a chisel-shaped tip.

Form 1 jars: The majority of Ugaga rims for which the orientation and rim-body contour can be determined (63% of the assemblage) belong to Form 1 vessels. Rim course is straight

(47%) or concave (52%), with a single convave (highly everted) rim. Rim profile is divided relatively evenly between parallel (31%), gradually thickening (23%) and gradually thinning (20%) forms. Abruptly thickened rims from Form 1B vessels make up the remaining 26%. Flat/flat-rounded lips account for 72% and round/pointed lips 28% of the 462 undamaged lips. For rim sherds with surface modification, the decoration was most often applied to the rim (79%) and less frequently to the lip (14%), body (6%), or interior rim. Side tool (notching and cuts) is the most common type of surface modification (46%), followed by shell impressing (18%) and wiping (13%). Present at frequencies below 10% are paddle relief (8%), dentate stamping (7%), incision (6%), end tool (2%) and dents (1%).

The mean rim eversion of 282 Form 1 rims is 20°, with a large range, of 2–81°. A histogram plot shows that the data is positively skewed between 2° and 36°, with a single outlier at 81°. Rim-course measurements (n=474) are normally distributed, with a mean of 7 mm and a range of 3–14 mm. The height of the rim to the corner point varies from 7 mm to 63 mm, with a mean of 26 mm. Neck-body inclination angles (n=107) are 58–150° (mean 121°). The average external rim diameter is 22 cm. Clearly, there is considerable size and shape variation within the Form 1 group.

Form 1B jars with abruptly thickened rims and thinning lips: Eighteen vessels have collar rims (a clay band was applied to the exterior rim surface) or abruptly thickened rims (sharp edged and asymmetric to the exterior). All rim courses are concave. Collar rims vary from thin applied and rounded additions, to large and small applied bands that are triangular or sub-triangular in cross-section. The interior of some Ugaga Form 1B vessels has a rim-body join below the collar rim, suggesting separate manufacture of the thickened rim and body. Lips are mostly round-pointed (58%), with roughly equal numbers of flat/flat-rounded and flat/sharp edged. All vessels, except one, are decorated with side-tool notching, shell impressing, or round/oval end-tool impressing at the point of maximum rim thickness. Dentate stamping was found on one vessel with a thickened rim. Form 1B vessels are not strongly everted (mean 16°), have a mean rim height of 26 mm, and have an average diameter of 21 cm.

Form 1A jars with aperture diameter 10–20 cm: The majority of the 25 vessels with aperture diameters 10–20 cm have concave rim profiles (68%). The most common rim profile is gradual thinning (44%), with the remainder almost evenly divided between parallel and gradual thickening shapes. Lips are flat/flat-rounded (72%). Five vessels are decorated on the lip, rim or body. Lip decoration is varied, with side-tool cuts, shell impression, dentate stamping and end tool applied to the lip surface. Two vessels have horizontal parallel relief on the rim and body. Lips are flat/flat-rounded (72%) or round/pointed. The mean rim eversion is 25° and the maximum eversion angle for any vessel in the Ugaga assemblage, of 81°, was found in this group. The average rim height is 24 mm.

Form 1A jars with aperture diameter 21–29 cm: The largest group of Form 1A vessels has aperture diameters of 21–29 cm (n=37). In contrast to previous vessel groups, the majority of rim courses are straight (70%), with convex (24%) and convave (6%) courses in the minority. The distribution of rim profiles is spread fairly evenly between parallel, and gradually thickening or thinning forms. Most lips are flat/flat-rounded (72%). Sixteen vessels have surface modification, divided between those with modification on the rim or body (n=8) and vessels where the lip and/or rim is marked. The former group has paddle relief (cross hatch and parallel rib), and the latter group wiping, dentate stamping and side-

tool notching. Two sorts of side-tool notching were recorded. The first was applied across or diagonally to the lip surface, while the second involves notches on the interior lip-rim surface. Rim eversion is 3–40° (mean 20°). Rim height (mean 37 mm) is greater than that of Form 1A vessels, with diameters of 10–20 cm, and of Form 1B vessels.

Form 1A jars with aperture diameters ≥ 30 cm: Only eight vessels have rim diameters equal to, or greater than, 30 cm. These vessels have straight and concave rim courses and parallel or gradually changing profiles. Most lips are flat or flat-rounded and only one is round/pointed. The body and rim of two vessels are modified by paddle relief and denting. The average rim eversion is 19°. Mean values for rim-course thickness (7.5 mm) and rim height (39 mm) are the largest of any sub-group.

Form 2 bowls: There are 72 rims from Form 2 vessels. The number almost certainly under-represents their real abundance, as larger sherd sizes are required to differentiate Form 2A and 2B rims from Form 1A rims. The majority of rims are Form 2A (70%), with Forms 2B and 2C contributing the balance. The main rim profile is parallel (44%), with gradually expanding or contracting profiles present in roughly equal amounts. Lips are flat/flat-rounded (81%), with a few round/pointed specimens. Surface modification was found on 15 sherds, either on the lip (interior, upper surface, exterior) or body. The limited surface-modification inventory consists of side-tool cuts ($n=8$), parallel rib ($n=5$), shell impressions and dents. The mean eversion angle is 14° and for inverted rims 21°. The mean diameter is 24 cm, which is similar to that of the total Form 1 sample.

Form 2A everted rim/direct rim-body contour: There are 13 Form 2A vessels. These have straight rim courses and gradually changing or parallel rim ($n=5$) profiles. Most lips are flat/flat-rounded (77%). Five vessels have surface modification that was placed on the lip (interior and exterior) and body. The surface modification consists of parallel-rib relief and side-tool cuts ($n=3$). Eversion angles range from 5° to 31°, with a mean of 20°, and the average rim diameter is 25 cm.

Form 2B inverted rim/direct rim-body contour: Five of six Form 2B vessels have evenly inverted rim courses and one is straight. Rim profiles are parallel ($n=5$) or gradually thickened. Surface modification of parallel relief and dents occurs on the bodies of five vessels. Four of these vessels are similar to one another in shape, diameter (19–20 cm) and rim inversion angle (31–37°).

Form 2C inverted rim/indirect rim-body contour: Three Form 2C bowls with pointed/rounded lips are decorated on the exterior or interior lip. Decoration consists of shell impressions and side-tool cuts. The diameter range is 18–34 cm.

Form 3 flat-based vessels

Form 3A flat-based vessel diameter < 30 cm: Eight sherds from a dentate-stamped dish with outcurving sides and a flat base were found in Squares J10, K6, K8, L6, L8 and L9 at depths between 30 cm and 50 cm. The base diameter is calculated at 20 cm and the estimated diameter of the exterior rim is 22 cm. Anson motifs 314 and 366, both previously found in Reef/Santa Cruz assemblages (Anson 1983), are evident between single and double horizontal rows of dentate stamping. The tools used were thin (approximately 1 mm wide) and had up to six toothed projections per centimetre.

Form 4 narrow-orifice vessels

Form 4B double orifice: A single double-spouted vessel has a central orifice 23 mm in diameter and a small spout with an estimated opening of 5 mm above or on the vessel shoulder. This thin-walled vessel is decorated with a horizontal applied band and shell impressing within radiating incised lines. This vessel is similar to the historically known *gusui rua* (Palmer 1971:Fig. 1; Rossitto 1990).

Form 4C double orifice and stirrup handle: Two of the three vessels with spouts belong to double-spouted and stirrup-handled forms also identified at Navatu. Internal spout diameters are 7–10 mm.

Carinations, handles, ?lugs and ?stands: A mean angle of 132° was found for 10 carinated sherds (range 108–155°). Five are decorated with dentate stamping or shell impressing. Three kinds of handles are tentatively identified. The first is a vertical handle with a height of 30 mm, a flat top and a diameter of 15–30 mm. Side-tool markings are visible on two specimens. It is possible that what have been identified as ‘handles’ are, in fact, legs or other kinds of vessel projection. However, in one case the sherd thickness below the handle is only 4.5 mm, suggesting a lid function. Two handles with narrow oval cross-sections are likely to derive from the apex of stirrup handles from double-spouted vessels. Two ?handle fragments might be from narrow-orifice Form 4A vessels with strap handles similar to those found at Sigatoka Level 1 (Birks 1973:119). Sherds identified as ‘lugs’ are most frequently ‘tongue’ or oval shaped in plan view and vary significantly in thickness. Irregularly shaped sherds provisionally classified as ?stands could also be fragments from vessels with thick and uneven rims, or from vessels with currently unrecognised morphology.

Karobo ceramics

More than 82% of sherds from the Karobo assemblage have some form of surface modification (Tables 48–49). Just over 70% of sherds identifiable to Form 1A jars or Form 2 bowls have relief surface modification, indicating that most of the non-platter ceramics were marked with cross hatch or parallel relief. Side tool, end tool and incision are extremely rare in the collection. Sherds with cross-hatch relief comprise the largest group, at 42% of the decorated sherds (Figure 122). Three size classes of diamond-shaped impression are recorded. The largest of these has a length of 1.2 cm and width of 0.6 cm, the next size class has a length of 1.0 cm and width of 0.4–0.5 cm, and the smallest diamond impressions from the assemblage have a length of 0.7 cm and width of 0.3–0.4 cm. Dimensions of square impressions are ca. 0.8 cm, 0.5 cm and 0.2 cm. Sherds with linear relief (Figure 123) comprise 18.9% of the Karobo assemblage. Parallel impressions are divided into three forms on the basis of their width and interval spacing. Thin ribs – 0.5–1 mm wide separated by 0.5–3 mm gaps – are lightly impressed on a vessel, and on one sherd the impressions are vertically positioned. Medium ribs – with a spacing of 2–4 mm and a variable width of 1.5–3.7 mm – are unevenly aligned and inspection under low-power magnification suggests the tool used to groove the paddle had a straight or slightly curved edge. Long and irregular parallel impressions are rare, occurring on fewer than 15 sherds. These impressions have low and irregular borders that are 4–7 mm wide and spaced 4–6 mm apart. Rather than incisions on a paddle’s surface, these impressions might have been created using the edge of a paddle or baton against the vessel.

Only 11 sherds, or 1.1% of the Karobo assemblage, are decorated by incision, or end or side tool. Incision is symmetric, and except in one case consists of single or parallel lines. Although

Table 48. Karobo ceramics: Sherd type by excavation square and depth.

Excavation/ layer	Plain body	Decorated body	Rim	Neck	Platter rims	Platter body	Total	Weight (g)
A2: Layer 1	2					12	14	168
A2: Layer 2	9	7					16	161
A2: Layer 3		6				8	14	175
A2: Layer 4								
A2: Layer 5	136	415	24	45	62	372	1054	27979
Total	147	428	24	45	62	392	1098	28483
Aa: Layer 1								
Aa: Layer 2								
Aa: Layer 3	7	1				17	25	277
Aa: Layer 4	5	4		1		5	15	72
Aa: Layer 5						8	8	315
Aa: Layer 6					1	7	8	255
Aa: Layer 7	34	75	4	5		54	172	3536
Total	46	80	4	6	1	91	228	4455
Ab: Layer 1								
Ab: Layer 2								
Ab: Layer 3		18	1	1		28	48	542
Ab: Layer 4	1		2	1			4	25
Ab: Layer 5						22	22	178
Ab: Layer 6	5	1				5	11	104
Ab: Layer 7	10	28	8	8	17	157	228	6974
Total	16	47	11	10	17	212	313	7823
Y: Layer 3		19					19	102
Y: Layer 4	18	122	1	3			144	1135
Total	18	141	1	3			163	1237
Site Total	227	696	40	64	80	695	1802	41998

Table 49. Karobo ceramics: Sherd decoration by excavation square and depth.

Excavation/ layer	CPI-X	CPI-//	CPI-?	Leaf imp.	Mat imp.	?Leaf/ Mat	Incised symm.	End tool	Side tool
A2: Layer 1				12					
A2: Layer 2	6	1							
A2: Layer 3			3	7	1				
A2: Layer 4									
A2: Layer 5	277	103	45	393	7	35	3	2	1
Aa: Layer 1									
Aa: Layer 2									
Aa: Layer 3	1			17					
Aa: Layer 4	4			5					
Aa: Layer 5				8					
Aa: Layer 6				8					
Aa: Layer 7	46	21	9	54			1	2	
Ab: Layer 1									
Ab: Layer 2									
Ab: Layer 3	8	6	4	28					
Ab: Layer 4									
Ab: Layer 5				22					
Ab: Layer 6	1								
Ab: Layer 7	26	2	4	168	6				
Y: Layer 3	6	5	8						
Y: Layer 4	52	56	14						
Site Total	427	194	87	722	14	35	4	4	1

superficially similar to comb incising, three of the four sherds have a smooth-rounded cross-section unlike the irregular and flat-bottomed channels made with a comb. A single case each of side-tool notching and finger impression was found on sherds of unknown vessel form. A rim sherd with a mat-impressed surface was also found, with the impressions similar to those made using a *Pandanus* sp. mat (see below). Almost all sherds (99.5%) from flat-based platters have leaf or mat impressions on their base. Leaf impressions are prominent (93%), with a smaller number of mat impressions (1.8%). Palmer (1965a:28) recorded two kinds of leaf impression from the Karobo platters, one from a banana leaf (*Musa* sp.), while the other was not identified. In a detailed study of the leaf impressions found on similar vessels from Level 2 of Sigatoka, Lambert (1971) identified *Hibiscus*, *Macaranga* and *Aleurites moluccana* impressions, using leaf shape and venation patterns from modern reference material. In that study, Lambert records that the Karobo leaf impressions were identified as *Macaranga magna*. Leaf impressions at Karobo occur on the base and rim but are often indistinct. The few sherds with clear leaf markings are compatible with Lambert's species attribution. The impressions have parallel, evenly spaced primary veins attached to a midrib, vein termination in a shallow deltoid shape at the laminal edge, and secondary veins that are rectangular and evenly spaced between the major veins. According to Parham (1964), *Macaranga magna* is a common forest tree in wet zones like the south Viti Levu coast.

Mat impressions on platter sherds are of two sizes and restricted to the exterior of platter bases. The stem width is 2.5–3.5 mm on the smaller and 4–6 mm on the larger. Lambert (1971:133) records that in some cases impressions from *Pandanus* mats can be identified. The

Figure 122. Karobo VL 18/1 sherds decorated with cross-hatch relief.

Figure 123. Karobo VL 18/1 sherds decorated with parallel-rib relief.

lower surface of the *Pandanus* leaf is marked by evenly spaced longitudinal ridges, while the upper surface is smooth. Other sedges used to make mats such as *Eleocharus* sp. have a different surface structure (Lambert 1971:Plate X). When mat impressions display alternating smooth and fine-ridged sections it is likely the mat was made from *Pandanus* sp. Impressions taken from mat-impressed sherds displayed alternating smooth and ridged surfaces, indicative of *Pandanus* mats.

Form 1A jars: Almost all rims from non-platter vessels (93%) belong to Form 1A vessels. The rim course is straight (57%) or slightly concave (43%), and the rim profile is parallel (55%) or gradual thinning (37%) or displays a small amount of proximal thickening (8%). There are two lip shapes: flat/flat-rounded forms, oriented normal to the rim axis, account for 88%, and round/pointed 12%. Rim decoration is limited to a single case of circular punctate on the dorsal lip and 18 sherds with cross-hatch and parallel relief on the rim. The mean eversion angle from 45 Form 1A rims is 21°, with a range of 14–33°. The rim-course thickness (n=49) varies from 4.4 mm to 13.8 mm, with a mean of 7.8 mm, and the rim height average is 33 mm (range 12–52 mm). The average neck inclination angle of 34 rims is 133° (range 100–156°). The vessel diameter (34 rims) is 18–32 cm, with a mean of 25 cm.

Form 2 bowls: Rims from three Form 2 vessel forms are identified. The first is from a Form 2B vessel with a flat lip normal to the rim axis and rounded edges. The vessel has cross-hatch relief and an estimated diameter of 29 cm. Another Form 2B represents a bowl with a flat lip and diameter of 32–35 cm. The final vessel form is an unusual Form 2C with a slightly inverted rim. Lip shape is flat and the diameter is 29 cm.

Form 3 flat-based vessels: As noted by Birks (1973:44), the rim height of flat-based vessels can vary by 50% on the same vessel. Lip form varies from gradual to sharply tapering points. An additional source of rim-form variation is found in corner sections that are shallow and rounded in cross-section. At Karobo, the base of these vessels appears to have been formed by rolling out slabs of clay on top of a leaf or mat covering (base thickness 6.7–23.4 mm). A slab or cylinder of clay was then shaped into a triangular-sectioned piece that was fixed and smoothed to the basal slab. In contrast to the irregular surface of the exterior base, the interior surface was smoothed. The rim to base height ranges from 2.7 mm to 6.6 mm, with a mean height of 40 mm. While platter form is difficult to determine, it is likely that in plan view they have straight or slightly curving sides and rounded corners. The diameter of four Karobo platters is estimated from large rim and base sections at approximately 50–53 cm. The estimate is consistent with plan dimensions from three platters from Level 2 at Sigatoka (ca. 52 cm, 67 cm, 76–78 cm). A minimum of three or probably four platters are present in the Karobo deposits.

Form 4 narrow-orifice vessels: A single example of a double-spouted vessel (Form 4A) was found at Karobo. The sherd has a flat handle and orifice diameters of 9 mm and 12 mm. The sherd does not have a provenance and was probably collected from the surface of the site. It has an internal spout diameter of 15 mm and a narrow handle diameter of 24 mm. Two spouts from Karobo are also unlocalised, but probably derive from surface collections. One of these might have been from a double-spouted vessel.

Perforated clay object: An unusual find at Karobo was a perforated clay fragment that would have been roughly circular when complete. Maximum dimensions of the piece are 8.5 cm x 8.2 cm (thickness 4.2 cm). The tapered perforation has a diameter of 20 mm at the top and 15 mm at the bottom. The function of this object is not known.

Votua ceramics

A total of 1400 sherds weighing 5.8 kg was recovered from the Area 1 shell midden excavation with more than 80% of the sherds, by weight and number, coming from the surface to 20 cm depth (Table 50). Plain body sherds make up 82% of the assemblage, and the mean sherd thickness of a sherd sub-sample is 6.8 mm. The incidence of surface modification is low, with 38, or 2.7%, of sherds marked, but the majority have traces of a red slip/wash. Seventeen sherds have coarse wipe marks made using coconut husk fibre or similar material. Dentate stamping on eight sherds consists of simple horizontal, diagonal and intersecting straight lines and arcs. The single motif (Figure 124) is a repeated loop, bordered above and below by a single horizontal line of dentate stamping, a motif similar to M46 of Mead et al. (1973). Remaining decorated sherds consist of single or double-impressed lines made using the edge of a shell bivalve, and a single notched and applied band. Several lug/handle sherds are also recorded (Figure 125). There are 157 rim sherds, most (54%) of which come from vessels with an everted rim and indirect body contour characteristic of 'jar' vessel forms. Vessels with inverted or direct rims and direct body contours ('bowls') make up 26% of all rims. The Area 1 vessel forms reconstructed from the largest rim sherds are shown in Figure 126, which shows a diverse but not uncommon Lapita assemblage composed of large and small diameter bowls, jars with strongly everted rims, rounded or flat lips and sub-globular bodies, jars with collar rims and shallow carinated dishes.

Table 50. *Votua* (1996) ceramics: Sherd type by excavation square and depth.

Excavation/ depth (cm)	Plain body	Decorated body	Rims	Necks	Carination	Handle/lug	Number	Weight (g)
A1:0–10	315	1	43	8	2	2	371	1510
A1:10–20	29	5	13	3			50	230
A1:20–30	1	10			1		82	340
Total	414	7	66	11	3	2	503	2080
A2:0–10	480	5	52	51	1	2	545	2290
A2:10–20	241	1	33		1	1	277	1110
A2:20–30	48	1	6				55	290
A2:30–40	20						20	50
Total	789	7	91	5	2	3	897	3740
TP1:0–10	122		10				132	510
TP1:10–20	140		6	2			148	530
TP1:20–30	152		11	1			164	740
TP1:30–40	190		18	2		1	211	980
TP1:40–50	447		57	3		4	511	2610
TP1:50–60	69		11	1	2		83	390
TP1:60–70	68	7					75	470
Total	1188		120	9	2	5	1324	6230

Malaqereqere ceramics

The small pottery assemblage from Malaqereqere was recovered from excavation units A1 and A2. The two units were excavated to a depth of 60–70 cm. The total collection consists of 1057 sherds weighing 3.2 kg (Table 51). Almost the entire ceramic assemblage shows signs of burning on the interior and exterior of sherds. This black discolouration makes the identification of burnishing or slip application difficult, and sherds are small, indicating substantial fragmentation. The distribution of plain body sherds shows a peak at 50–60 cm depth in both test pits. Ceramic

Figure 124. (Above left) Votua rim sherd from a carinated dish/bowl with coarse dentate stamping.

Figure 125. (Above right) Votua handle/lug sherds.

Figure 126. (Left) Votua reconstructed vessels.

decoration is rare, with examples of incision, end-tool impression and fingernail impression, which are all indicative of late prehistoric ceramics. However, a single dentate-stamped sherd was found at 50–60 cm depth in Square A1. Identifiable rim sherds are from Form 1A jars with parallel or thinning profiles and pointed and flat lips. One Form 1A is from a typical late-prehistoric *kuro* style cooking pot with a sharply everted rim and an aperture diameter of 28 cm.

Table 51. Malaqereqere ceramics: Sherd type by excavation square and depth.

Excavation/ depth (cm)	Plain body	Decorated body	Rim	Neck	Number	Weight (g)
A1:0–10	49		2		51	246.3
A1:10–20	36		1		37	179.7
A1:20–30	26				26	125.2
A1:30–40	17				17	55.6
A1:40–50	73	5		1	79	252.1
A1:50–60	228	6	1		235	603
A1:60–70	82		1		83	221.8
Total	511	11	5	1	528	1683.7
A2:0–10	34		3		37	167.5
A2:10–20	21				21	104.9
A2:20–30	23	1			24	84.8
A2:30–40	25				25	71.4
A2:40–50	59	1			60	176.1
A2:50–60	332	1	3		336	880.3
A2:60–70	26				26	41.8
Total	520	3	6		529	1526.8

Volivoli II ceramics

The pottery assemblage from Volivoli II is small, consisting of 1326 sherds, weighing 6.89 kg (Table 52). Most are plain body sherds (93.5%). The density of pottery was highest in the top 60 cm and declined below, with only a few possibly intrusive sherds found below 100 cm depth. Decoration consists of comb incised and tool incised (10–30 cm), with paddle impression (cross hatch, parallel rib and diamond) from 20–50 cm depth. Rims are from Form 1A jars (15 sherds from six vessels), Form 2A bowls (three sherds from three vessels) and a Form 2B bowl (one sherd from one vessel). Rims from all vessel forms have a profile that is parallel or thinning, and lip forms that are flat-sharp edged or flat-rounded.

Volivoli III ceramics

The small pottery assemblage from Volivoli III consists of 371 sherds, weighing 3.33 kg (Table 53). The vast majority of these (94.5%) are plain body sherds. Only two body sherds from Spit 3 are decorated, marked with end-tool impressions. The 13 rim sherds derive from a Form 1A jar, and from vertical and everted bowls (Form 2B). A possible collar rim from a small vessel was found in Spit 3. Rim profiles are parallel and thinning, and lips forms are flat, rounded and tapering. A single carination was present in Spit 6.

Table 52. Volivoli II ceramics: Sherd type by excavation square and depth.

Depth (cm)	Plain body	Decorated body	Rims	Necks	Number	Weight (g)
0–10	283		5		288	2023.2
10–20	310	1	4		315	1695.5
20–30	292	4	7	2	305	1371.1
30–40	38	1	1	1	41	249.5
40–50	158	25	11	8	202	923.7
50–60	81	7	5	2	95	376.4
60–70	42		1	1	44	135.2
70–80	24				24	75.6
80–90	5				5	21
90–100						
100–110						
110–120	2				2	3.5
120–130	2				2	8.6
Posthole fill	3				3	9.9
Total	1240	38	34	14	1326	6893.2

Table 53. Volivoli III ceramics: Sherd type by excavation square and depth.

Depth (cm)	Plain body	Decorated body	Rims	Carination	Number	Weight (g)
Surface	28		1		29	283.5
TP.1:Spit 1						
TP.1:Spit 2	50		2		52	480.2
TP.1:Spit 3	33	2	5		40	258.9
TP.1:Spit 4	141				141	1153.3
TP.1:Spit 5	15		1		16	161.4
TP.1:Spit 6	41		3	1	45	274.1
TP.1:Spit 7	14				14	66.7
TP.1:Spit 8	30		1		31	641.9
TP.1:Spit 9	3				3	14.2
Total	355	2	13		371	3334.2

Kulu Bay ceramics

A total of 11,398 sherds was recovered from the Kulu Bay excavations. Of these 10,353 (90.8%) are plain body sherds, with about half of the total assemblage coming from the C11 excavation (Table 54). Lapita-age sherds marked with dentate stamping were found in all deposits, along with post-Lapita pottery marked with parallel and cross-hatch paddle impression (Table 55). Late-prehistoric ceramics, such as *dari* and comb-incised vessels, are represented by a few sherds. Lapita-era rim forms are from Form 1B jars with abruptly thickened ‘collar’ rims, and Form 1A jars with everted rims, including highly everted ‘rolled’ rims. As at Sigatoka, collar-rim jars are decorated with side-tool impressions and shell impressing along the collar, and carinations carry

linear incision and dentate stamping. Many sherds have traces of red slip and wiping on internal and external surfaces. As well as Form 1B jars with a sub-globular body, and everted jars with short necks and everted jars with thickened rims, additional vessels include a probable flat-based dish, everted direct bowls, inverted direct bowls and indirect inverted bowls (Forms 2A, 2B, 2C). High sherd fragmentation prohibited vessel reconstruction and examples of rim forms and decoration are shown in Figures 127–131.

Table 54. Kulu Bay ceramics: Sherd type by excavation square and depth.

Excavation/depth (cm)	Plain body	Decorated body	Rims	Carinations	Handles/ lugs	Number	Weight (g)
TP2:0–20	9	10	11			30	768.4
TP2:10–20	97	13	10			120	698.1
TP2:30–40	117	3	6			126	870.11
C9:0–10	128	10	9			147	530.2
C9:10–20	105	1	4			110	297.2
C9:20–30	220	7	18			245	1265.6
C9:30–40	395	12	27			434	1672.6
C9:40–50	703	15	38			756	2255.6
C9:50–60	418	11	24	2		455	1653.9
C10:0–30	151	7	12			170	1082
C10:30–50	552	11	52		1	616	3519.2
C10:50–70	89	5	5			99	987.3
C10:60–80	291	15	13			319	994.5
C10:70–80	314	10	15			339	1243.6
C10:80–90	443	12	11			466	1621.6
C10:90–100	645	30	43		1	719	2309.4
C11:0–10	166	8	9	3	1	187	922.1
C11:10–20	234	10	10			254	1003.8
C11:20–30	453	17	41	3		514	2823.4
C11:30–40	135	6	14	1		156	873.5
C11:40–50	151	12	16			179	1278.5
C11:40–60	139	3	14			156	1006.6
C11:50–60	51	1	6		1	59	428.6
C11:60–70	258	8	14	1	2	283	1463.8
C11:70–80	863	17	44	1	1	926	3668.4
C11:80–90	906	19	57		3	985	2878.4
C11:90–100	622	16	45		1	684	2613.8
C11:100–110	462	5	46	2		515	1964.8
C11:110–120	383	27	25			435	1477.6
C11:120–130	359	10	14			383	1236.3
C11:130–140	350	5	19			374	1194.9
C11:140–150	98	2	2			102	297.9
C11:150–160	46	5	4			55	230.6
Total	10353	343	678	13	11	11398	47132.3

Table 55. Kulu Bay ceramics: Sherd decoration by excavation square and depth.

Excavation/depth (cm)	Plain body	Dentate	Wiped	Side tool	Dents	CPI-//	CPI-X	Incision	End tool
T2:0–20	9	1	0	0	0	1	8	0	0
T2:10–20	97	0	0	0	0	0	13	0	0
T2:30–40	117	0	1	0	0	1	1	0	0
T2 Total	223	1	1	0	0	2	22	0	0
C9:0–10	128	2	3	0	0	0	5	0	0
C9:10–20	105	0	1	0	0	0	0	0	0
C9:20–30	220	1	1	0	0	2	3	0	0
C9:30–40	395	1	2	0	1	0	8	0	0
C9:40–50	703	4	4	1	0	1	5	0	0
C9:50–60	418	1	3	1	0	4	1	1	0
C9 Total	1841	7	11	2	1	7	17	1	0
C10: 0–30	151	0	1	0	1	2	3	0	1
C10:30–50	552	0	0	2	1	4	3	1	0
C10:50–70	89	1	1	1	0	0	2	0	0
C10:60–80	291	2	6	0	0	0	2	1	4
C10:70–80	314	2	3	2	1	1	1	0	0
C10:80–90	443	3	2	1	0	1	3	2	0
C10:90–100	645	2	6	1	0	3	14	2	2
C10 Total	2485	10	19	7	3	11	28	6	7
C11:0–10	166	0	0	1	0	0	4	3	0
C11:10–20	234	0	2	2	0	2	3	1	0
C11:20–30	453	0	5	1	0	2	8	0	1
C11:30–40	135	0	4	0	0	0	2	0	0
C11:40–50	151	0	4	2	0	0	4	1	1
C11:40–60	139	0	0	0	0	0	3	0	0
C11:50–60	51	0	1	0	0	0	0	0	0
C11: 60–70	258	2	2	0	0	1	3	0	0
C11:70–80	863	1	6	2	1	2	2	3	0
C11:80–90	906	1	13	1	0	0	3	0	0
C11:90–100	622	4	5	0	0	0	5	2	0
C11:100–110	462	0	2	0	0	0	3	0	0
C11:110–120	383	6	12	4	0	0	2	3	0
C11:120–130	359	0	3	3	0	1	3	0	0
C11:130–140	350	0	2	1	0	1	1	0	0
C11:140–150	98	0	0	1	0	0	0	1	0
C11:150–160	46	0	2	1	0	1	1	0	0
C11 Total	5676	14	63	19	1	10	47	14	2
Total	10353	34	97	28	5	30	119	21	9

Figure 127. (Left) Kulu Bay decorated rim sherds.

Figure 128. (Below left) Kulu Bay rims and an incised carination.

Figure 129. (Below right) Kulu Bay decorated sherds.

Figure 130. Kulu Bay decorated sherds.

Figure 131. Kulu Bay decorated sherds.

Natunuku ceramics

The Natunuku investigations recovered 6318 sherds, weighing 17.13 kg, with the majority of sherds deriving from the Trench 3 excavation. Sherd density is highest in the upper levels of TP1, TP2 and TR3, and all units contain decorated sherds from Lapita, post-Lapita and late-prehistoric assemblages (Table 56). This is demonstrated by comb-incised sherds in the upper deposits of TP1 and TP2, and by carved-paddle-impressed sherds in all levels of the TR3 excavations (Table 57). The highest frequency of dentate-stamped sherds was in the top 20 cm of units, except in TR3 where there were more decorated sherds than plain sherds at 40–50 cm depth. However, carved-paddle-impressed sherds were found in the lower levels of TR3, indicating deposit mixing of Lapita with post-Lapita ceramics has taken place. Dentate-stamped decoration is similar to that reported by Davidson et al. (1990:Figures 12, 14, 15, 16) and examples are shown in Figure 132. Decorated sherds from the Natunuku assemblage were photographed and drawn, but after the 2003 Canberra bushfires, the Natunuku ceramics and a number of documentary records about the site could not be relocated, limiting the detail in which the collection can be described.

Nonetheless, it is possible from rim information to describe the main vessel forms and two complementary systems have been used. The first uses the lip shape and rim profile codes of Best (1984:161) for rims, while vessel-form categories follow those of previous work on Natunuku ceramics developed by Davidson et al. (1990). The latter study identified five vessel categories containing 15 vessel forms: Category i – flat-bottomed dish; Category ii – globular or ovoid-bodied pot or jar; Category iii – water jar (narrow aperture); Category iv – shouldered pot/jar;

Category v – direct bowl. Early vessels in the current study include Category i; Category ii – Form IV (collar rim), Form VI and Form VII (outward flaring rim), Form VII (thickened rim); Category iv – Form XI, Form XIV (carinated), Form XIII (double flange rim). Late vessel forms are category ii – Form III, characterised by straight everted rims like those of late prehistoric *kuro* pots. Selected rim sherds are identified to a vessel category in Table 58, with category i (flat-bottomed dish) and category ii (Form VI and Form VII) collar-rim vessels and flaring-rim vessels from the Lapita assemblage, and category ii (Form III) vessels with straight everted rims of post-Lapita age.

Table 56. Natunuku ceramics: Sherd type by excavation square and depth.

Excavation/depth (cm)	Plain body	Decorated body	Plain rims	Decorated rims	Handles/lugs	Weight (g)
TP1:Surface	11	0	2	0	1	140.9
TP1:0–10	416	27	14	7	0	1375.7
TP1:10–20	49	2	0	0	0	240.5
TP1/2:0–10	107	6	4	0	1	333.3
TP1/2:10–20	97	5	8	0	0	221.8
TP1/2:20–30	132	1	0	0	0	232.2
Total	812	41	28	7	2	2544.4
TP2:0–10	590	35	16	5	1	1943.6
TP2:10–20	628	13	11	2	2	1531.2
TP2-1:20–30	69	1	0	3	0	213.2
TP2-1:30–40	5	0	0	0	0	5.3
Total	1292	49	27	10	3	3693.3
TR3:0–10	1016	23	36	4	3	2482.9
TR3:10–20	879	14	32	7	0	2686.9
TR3:20–30	660	16	27	1	1	1965.5
TR3:30–40	604	9	35	1	1	1883.3
TR3:40–50	418	13	25	4	0	1274.9
TR3:50–60	141	2	7	0	0	422
TR3:Feature A	46	3	2	0	0	134.7
No depth	17	0	0	0	0	45
Total	3781	80	164	17	5	10895.2
Site Total	5885	170	219	34	10	17132.9

Table 57. Natunuku ceramics: Sherd decoration by excavation square and depth.

Excavation/depth (cm)	Plain	Dentate	Wiped	End tool	Appliqué	CPI-//	CPI-X	Incised	Comb Incised
TP1:Surface	11	0	0	0	0	0	0	0	1
TP1:0–10	416	12	2	2	1	3	2	4	8
TP1:10–20	49	0	0	0	0	0	1	0	1
TP1/2:0–10	107	3	0	0	1	0	1	0	1
TP1/2:10–20	97	2	0	1	0	0	1	0	1
TP1/2:20–30	132	0	0	0	0	0	0	0	1
TP2:0–10	590	31	2	3	0	1	0	2	1
TP2:10–20	628	10	0	1	1	1	1	0	1
TP2:20–30	69	2	0	2	0	0	0	0	0
TP2:30–40	5	0	0	0	0	0	0	0	0
TR3:0–10	1016	16	2	4	1	0	2	1	1
TR3:10–20	879	12	0	5	0	0	4	0	0
TR3:20–30	660	6	1	2	0	1	7	0	0
TR3:30–40	604	4	2	2	0	1	1	0	0
TR3:40–50	418	12	2	0	1	2	0	0	0
TR3:50–60	141	1	0	0	0	0	1	0	0
TR3:Feature A	46	1	0	0	0	2	0	0	0
TR3:No Depth	17	0	0	0	0	0	0	0	0
Site Total	5885	112	11	22	5	11	21	7	16

Figure 132. Natunuku decorated sherds.

Table 58. Natunuku ceramics: Selected vessel forms and rims by excavation square and depth.

Excavation/depth (cm)	Lip	Profile	Decoration	Vessel type	Weight (g)
TP1:0–10	39	30	CPI-X	?	4.2
TP1:0–10	40	42	Side tool	?	4.6
TP1:0–10	47	35	Dentate	Category iv	9.7
TP1:0–10	40	30	Dentate	Category i	6.1
TP1:0–10	39	30	Dentate	Category i	10.2
TP1:0–10	49	34	Side tool	Category iv	6.2
TP2:0–10	45	30	Side tool	?	7.2
TP2:0–10	39	30	Dentate	?Category i	2.8
TP2:0–10	40	30	Dentate	?Category i	3.3
TP2:0–10	39	30	Dentate	?Category i	4.8
TP2:10–20	40	33	End tool	?	4.7
TP2:10–20	39	30	Dentate	Category i	31.0
TP2/1:20–30	40	30	Dentate+Side tool	?Category i	5.5
TP2/1:20–30	40	30	Side tool	Category ii	6.7
TP2/2:0–10	42	34	Side tool	Category iv	72.9
TP2/2:20–30	39	30	Dentate+Side tool	?Category i	3.3
TR3/A3/2A	39	?	Side tool	?	1.7
TR3/A4:0–10	40	30	Side tool	?	3.9
TR3/A4:10–20	39	30	Dentate	?Category i	7.2
TR3/A4:20–30	40	30	Perforation	?	2.0
TR3/A5:0–10	39	31	Side tool	?	2.4
TR3/A5:0–10	44	30	Dentate	Category i	2.9
TR3/A6:10–20	44	30	Side tool	?	3.5
TR3/A6:10–20	39	31	Side tool	?	6.1
TR3/A6:10–20	39	30	Side tool	?	5.4
TR3/A6:20–30	39	30	Side tool	?	8.1
TR3/A6:30–40	39	30	Dentate+Side tool	Category i	2.5
TR3/A6:40–50	39	30	Side tool	?	9.9
TR3/A6:40–50	39	30	CPI-//	?	1.1
TR3/A6:40–50	44	30	Dentate	?Category i	2.6
TR3/A6:40–50	44	30	Side tool	?	2.7
TR3/B6:10–20	39	30	Side tool	?	2.4
TR3/B6:10–20	39	30	Side tool	?	3.3
TP1:0–10	39	30	Plain	Category v	2.4
TP1:0–10	49	30	Plain	Category v	2.7
TP1:0–10	40	30	Plain	Category v	5.5
TP1:0–10	49	30	Plain	Category v	7.1
TP1:0–10	39	30	Plain	Category v	11.0

Continued on next page

Table 58 *continued*

Excavation/depth (cm)	Lip	Profile	Decoration	Vessel type	Weight (g)
TP1:0–10	39	30	Plain	Category v	23.7
TP2:10–20	39	30	Plain	Category v	7.9
TR3/A5:0–10	40	30	Plain	Category v	2.6
TR3/A5:10–20	39	30	Plain	Category v	15.4
TR3/B5:10–20	39	30	Plain	Category v	11.2
TR3/B5:30–40	45	30	Plain	Category v	14.5
TR3/B5:40–50	39	30	Plain	Category v	3.9
TR3/B5:40–50	40	30	Plain	Category v	4.7
TR3/B6:50–60	40	30	Plain	Category v	6.4
TP1:Surface	39	30	Plain	Category ii–III	9.6
TP1:0–10	44	31	Plain	Category ii–III	4.9
TP2:10–20	39	32	Plain	Category ii–VII	14.7
TR3/A4:0–10	45	30	Plain	Category ii–III	2.5
TR3/A5:30–40	39	35	Plain	Category ii–III	14.4
TR3/A5:30–40	39	33	Plain	Category ii–VII	10.3
TR3/A5:30–40	39	30	Plain	Category ii–III	9.4
TR3/A6:20–30	45	30	Plain	Category ii–VI	5.7
TR3/A6:40–50	40	31	Plain	Category ii–III	3.5
TR3/A6:40–50	39	30	Plain	Category ii–III	6.5
TR3/B6:40–50	39	30	Plain	Category i	19.9

'Lip' and 'Profile' descriptions after Best (1984:170, Fig. 3.3). Vessel categories and forms after Davidson et al. (1990).

Qaranioso II ceramics

The small Qaranioso II pottery assemblage consists of 206 sherds, weighing 0.93 kg (Table 59). Most are plain-body sherds, with carved-paddle-impressed sherds present in the middle levels, along with one sherd marked with fingernail impressions. At the base of the site was a rim sherd from a small vessel (estimated aperture diameter 16–18 cm), marked on the lip from a section of bivalve shell arc containing seven teeth (Figure 133). The rim is thickened at the lip and is similar to rims found at Ugaga and at Sigatoka Level 1 (cf. Birks 1973:Vessels No. 37 and 38).

Table 59. Qaranioso II ceramics: Sherd type and decoration by excavation square and depth.

Depth	Plain body	Decorated body	Rims	Weight (g)	CPI-X	End tool – fingernail	Shell impressed
TP1:0–10	6			105.0			
TP1:10–20	30	2	1	130.7	1	1	
TP1:20–30	53	7		231.2	7		
TP1:30–40	40		4	234.7			
TP1:40–50	41		2	152.8			
TP1:50–60	18	1	1	73.9			1
Total	188	10	8	928.3	8	1	1

Figure 133. Qaranioso II rim sherd marked with a coarse dentate tool.

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