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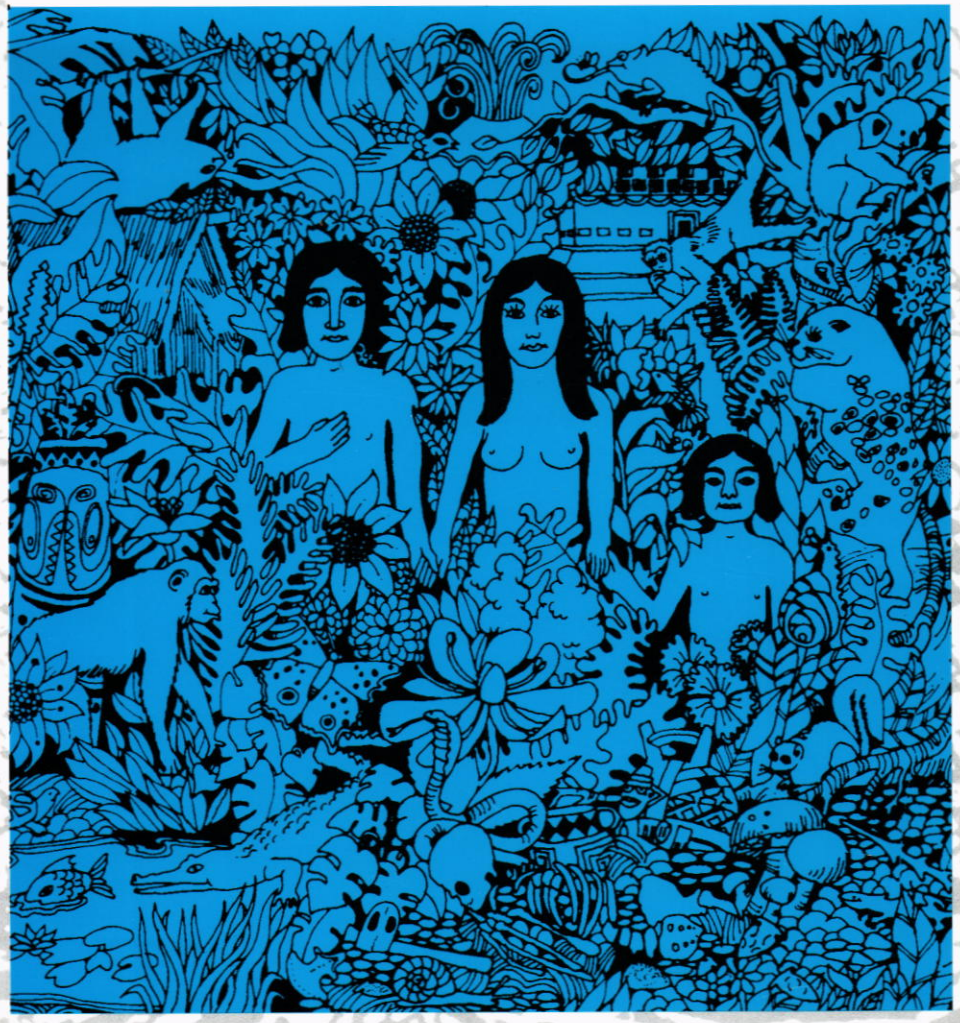
Stuart Bedford, Christophe Sand and David Burley (eds), *Fifty Years in the Field: Essays in Honour and Celebration of Richard Shutler Jr's Archaeological Career*



FIFTY YEARS IN THE FIELD. ESSAYS IN HONOUR AND CELEBRATION OF RICHARD SHUTLER JR'S ARCHAEOLOGICAL CAREER

Edited by Stuart Bedford, Christophe Sand and David Burley

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NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION MONOGRAPH

OF SHELL, STONE AND BONE. A REVIEW OF NON-CERAMIC ARTEFACTS RECOVERED FROM THE FIRST 1000 YEARS OF VANUATU'S ARCHAEOLOGICAL RECORD.

Stuart Bedford and Matthew Spriggs

The Shutlers, along with José Garanger, were the first professional archaeologists to tackle the archaeological *terra incognita* that was Vanuatu (at the time the New Hebrides or Nouvelles-Hébrides) in the 1960s (Garanger 1966, 1972; Shutler and Shutler 1965, 1968; Shutler *et al.* this volume). One of the primary research foci of the Shutlers was the establishment of a cultural sequence for Vanuatu. Their almost year-long investigations in the southern part of the group failed to find sites containing ceramics so they shifted their focus to other artefact forms of which they recovered a considerable collection (Shutler and Shutler 1965, 1968). The majority of the artefacts recovered by the Shutlers in the 1960s can now be more securely assigned to around the last 500 years of the Vanuatu sequence. This paper builds further on the Shutlers' early theme, although at the opposite end of the sequence, by reviewing the vastly increased number of non-ceramic artefacts that have been recovered from more recent excavations across the archipelago. We restrict ourselves here to the first 1000 years of that sequence (Lapita and post-Lapita [c.3000-2000 B.P.]). This is simply due to the fact that the vast majority of non-ceramic artefacts recovered from recent excavations relate to that period and that the substantial number and great range of significantly different later artefact forms (Garanger 1972; Shutler and Shutler 1965; Shutler *et al.* this volume; Speiser 1996[1923]; Ward 1979) merit more detailed research and discussion (although see Bedford 2000 for a preliminary summary).

Most of the artefacts (manufacturing debitage is not included) discussed (Figures 2-10) here have been recovered from excavations on the islands of Efate (Mangaasi and Arapus[1]) and Erromango (Ponamla and Ifo) with much smaller numbers being retrieved from Malakula (Malua Bay and Waal) (Figure 1) (see Bedford 2000 for excavation details). All of the excavations were carried out under the auspices of the Australian National University-Vanuatu National Museum Archaeological Research and Training Project (Bedford *et al.* 1998; Bedford and Spriggs 2000). For Efate, the period under consideration includes the Arapus (Lapita) (c.3000-2800 B.P.) and Erueti (c.2800-2000 B.P.)[2] Phases of the cultural sequence. For Erromango, the phases comprise Lapita (c.3000-2800 B.P.), Ponamla (c.2800-2600 B.P.) and Ifo (c.2600-2000 B.P.) Phases. The relevant phase from Malakula is the Malua (c.2700-2500 B.P.) Phase.

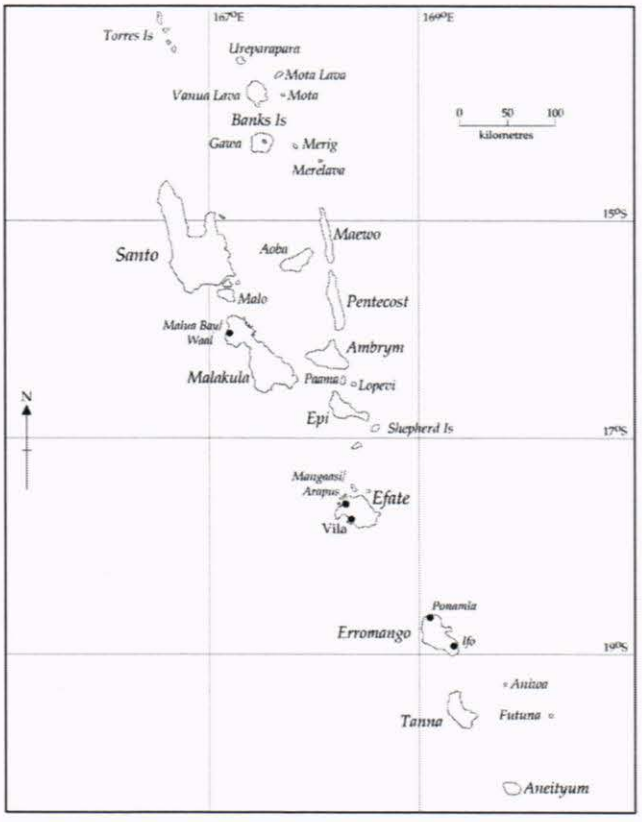

FIGURE 1. Vanuatu with sites mentioned in the text.

1. This article includes artefacts recovered both from the partly published 1999 season and the as yet unpublished 2001season at the Arapus site.
2. While this is the stated time period for the Erueti Phase at present, recently received unpublished dates from the Arapus site suggest that some adjustment may be required and that it may end around 2300 B.P..

FIGURE 2. Shell adzes excavated from Ponamla, Erromango.

The most frequent artefact of the wide assortment that were recovered were those fashioned from *Tridacna* sp. shell. They included adzes along with armband-sized and smaller rings. *Conus* sp. shell rings and beads were also relatively common. The vast majority of the excavated artefacts can be recognised as being ubiquitous artefact forms associated with Lapita and immediately post-Lapita sites across the Pacific. However there are a number of less common artefact forms and others which appear to be exclusive to the Vanuatu cultural sequence. Although this article concentrates on artefacts more recently excavated by the authors, comparison is also made with the limited number of other excavated artefacts that have been recovered from Lapita and early post-Lapita assemblages

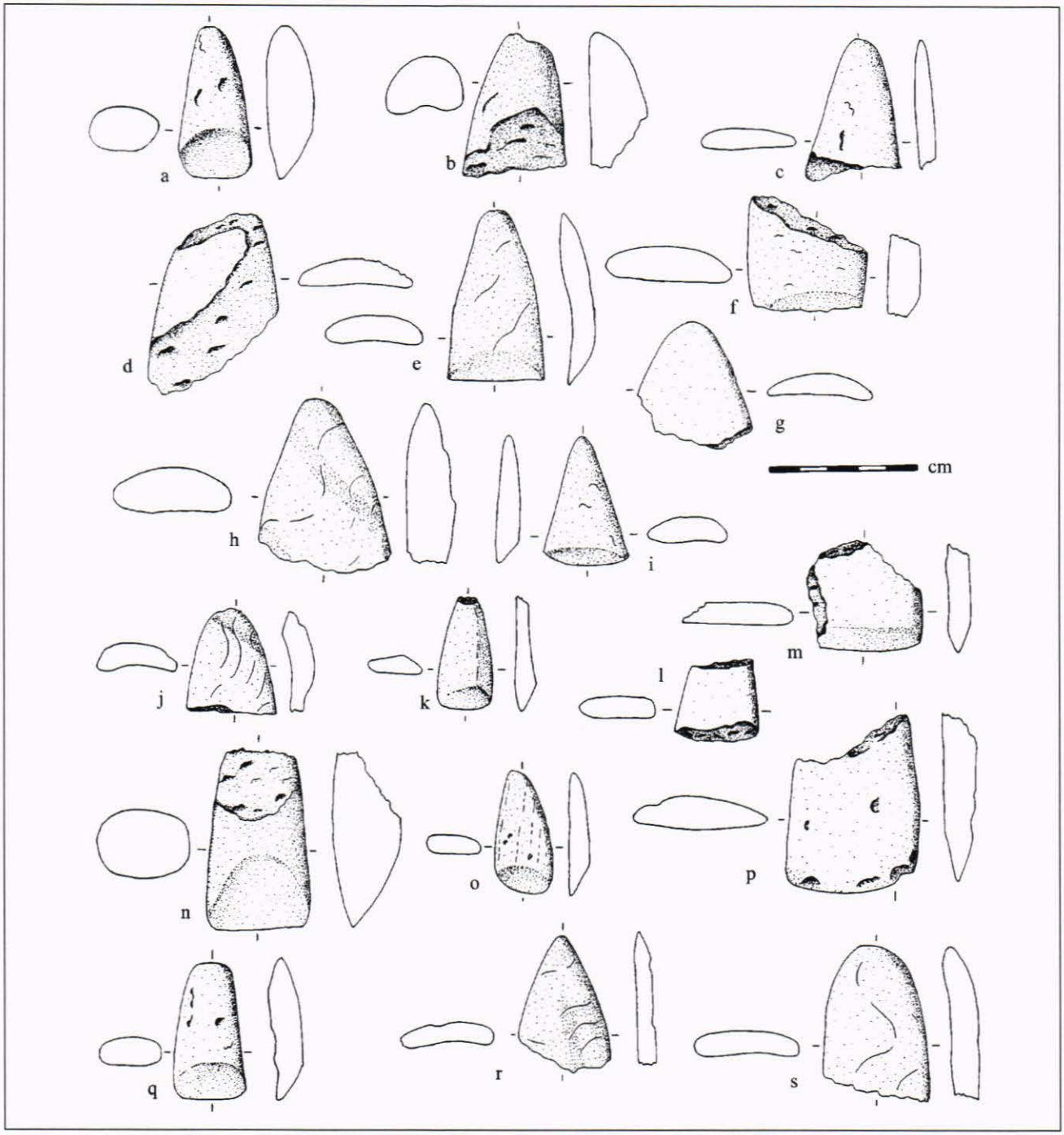

FIGURE 3. Shell adzes excavated from Ifo, Erromango.

throughout Vanuatu. These include sites located in Southern Vanuatu (Shutler and Shutler 1965, 1968; Shutler *et al.* this volume), the Central Islands (Garanger 1972; Hebért 1965), on Malo (Galipaud 1998; Hedrick n.d.) and the Banks Islands (Ward 1979). A concluding chronological synthesis is presented (see Table 6) which summarises the current state of knowledge regarding the various artefact types of non-ceramic material culture associated with the first 1000 years of Vanuatu's archaeological record.

ADZES

Tridacna sp. shell adzes completely dominated the collection of recovered adzes which included 19 from

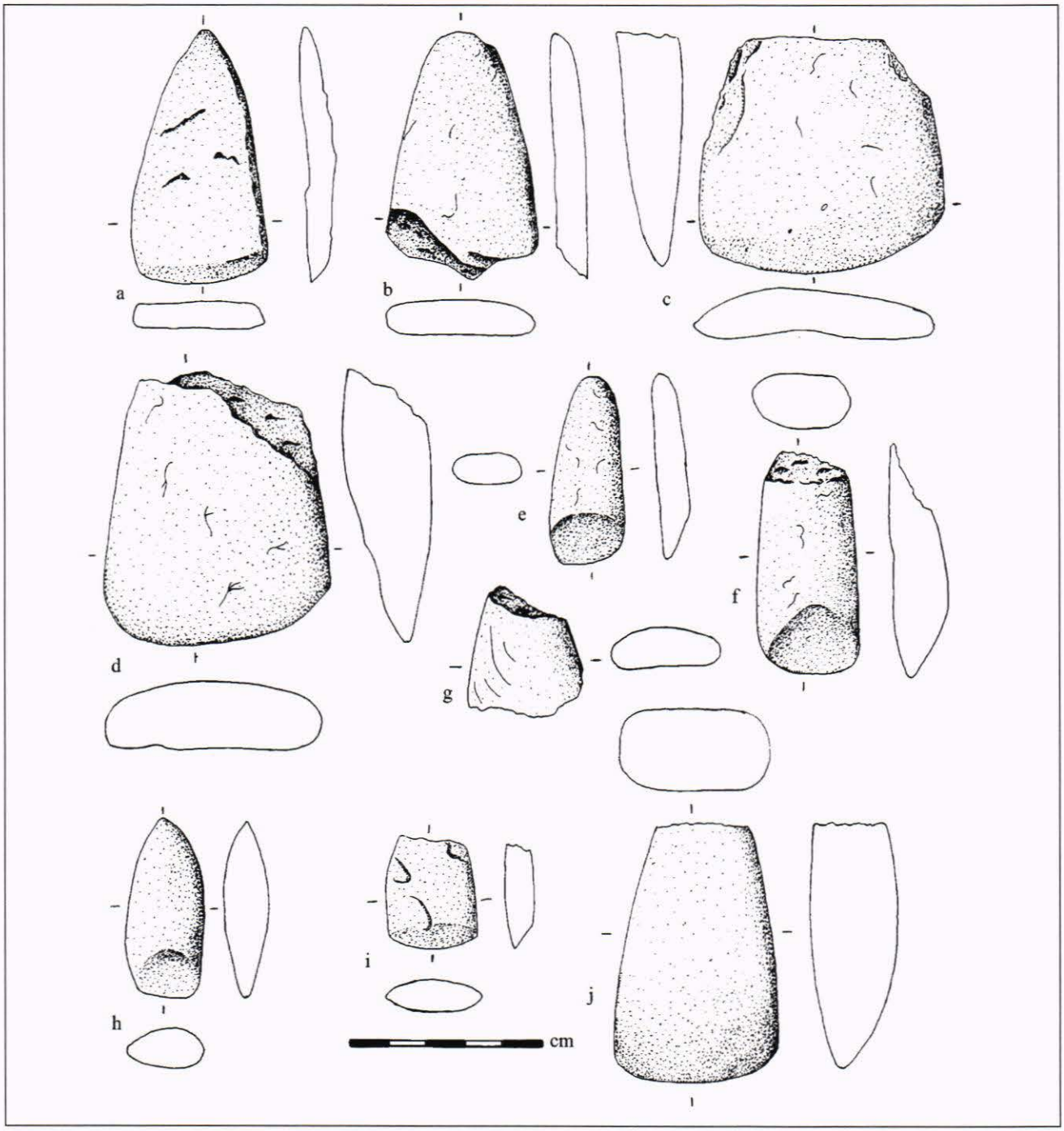

FIGURE 4. Shell and stone adzes. Shell adzes excavated from Arapus (a-d) and Mangaasi (e-g), Efate. Stone adzes from Malua Bay (h), Malakula; Ponamla (i) and Arapus (j).

Ponamla (Table 1), 20 from Ifo (Table 2), 6 from Mangaasi (Table 3), 4 from Arapus (Table 4), and 1 from Malakula (Table 5). A full inventory of the recovered adzes, whole, part or fragmentary is presented in Tables 1-5 and almost all, bar fragmentary remains, are illustrated (Figures 2-4). Classification and description of the shell adzes was guided by the methodology outlined in Kirch and Yen (1982), although the small number of whole adzes in our collections limited any detailed comparative statistical analysis. The fully ground nature of the majority of the adzes made positive identification of which part of the shell had been utilised (hinge or dorsal), in some cases, not always certain.

Provenance Area A	Fig.	material	x-sect#	lgth (cm)	width (cm)	Thick (cm)	Degree of grinding*	H or D	wght (cm)	comments
Layer 1										
TP1 (342)	2e	*Tridacna*	1	-	1.9	.80	1	?	4.9	butt-frag.
TP1 (333)	2g	*Tridacna*	1	3.0	1.5	.80	1	H?	6.1	complete
TP2.2(997)	2n	*Tridacna*	1	4.2	1.8	.50	2	D	8.3	complete
TP1.3 (905)	2k	*Tridacna*	1	-	2.8	.80	1	?	11.6	bevel end
TP2.3 (599)	4i	basalt	2	-	2.5	.90	1	-	9.7	bevel end
Layer 2										
TP2 (146)	2a	*Tridacna*	1	-	2.5	1.0	1	H?	7.7	mid-section
TP1.4 (1057)	2c	*Tridacna*	1	4.6	2.4	.60	2	D	8.3	
TP1.4 (1097)	2f	*Tridacna*	1	-	2.0		1	H?	8.9	butt-frag.
TP1.2 (968)	2m	*Tridacna*	1	-	1.7	.70	1	?	7.5	chisel
TP1.3 (1095)	2l	*Tridacna*	3	-	-	.50	1	?	4.6	bevel frag.
TP2 (145)	2p	*Tridacna*	3	5.0	3.2	1.0	1	D	27.3	
TP2 (1039)	2o	*Tridacna*	2	-	3.2	1.5	1	H	41.7	butt end
Layer 3a										
TP1.7 (1140)	2i	*Tridacna*	1	3.7	2.0	.50	1	D	7.5	complete
TP1 (53)	2h	*Tridacna*	1	3.3	2.3	.80	1	H?	53	
TP1.7 (1139)	2d	*Tridacna*	2	-	1.6	.80	1	H?	3.7	bevel end
TP3 (244)	2s	*Tridacna*	3	-	5.8	1.1	1	?	52.3	bevel end
Layer 3b										
TP1 (453)	2j	*Tridacna*	1	-	2.0	.60	1	?	9.4	
TP3 (308)	2r	*Tridacna*	2?	-	-	1.1	1	H	21.1	mid-section
TP1.3 (1027) TP7.0	2q	*Tridacna*	3	-	3.6	.70	2	D	18.5	
L.3 (769)	2b	*Tridacna*	2	-	1.2	1.3	1	H?	10.5	butt end

1= plano-convex; 2= elliptical/oval; 3= convex; 4=rectilinear * 1=fully ground; 2=partly ground; H=hinge region adze, D= dorsal region adze

TABLE 1. Ponamla adzes: Descriptive data.

Many of the adzes from Ponamla and Ifo (c. 2800-2000 B.P.) can be assigned to Kirch and Yen's Type 1 or micro-adzes (1982:221). In fact many of the adzes from these two sites are even smaller than those from Tikopia (Kirch and Yen 1982:224). A greater number of the smaller adzes have survived intact. The lengths of the six small adzes from Ponamla were only 5cm or less (Table 1) and the five at Ifo, 5.8cm or less (Table 2). The widths of the same adzes from Ponamla and Ifo were no more than 3.2cm. As far as could be determined the majority of the adzes from both Ponamla and Ifo were made from the dorsal region of the *Tridacna* sp. shell. Only two hinge region adzes were positively identified from Ponamla (Figure 2o,r [Type 8]) and three (all Type 7) from Ifo (Figure 3a,b,n), although the numbers may be higher.

Of the three most intact *Tridacna* sp. adzes recovered from the Mangaasi site, one appears to be made from the hinge region of the shell (Figure 3f [Type 7]) and the other two from the dorsal region (Figure 3e,g [Type 1]). Two larger fragments also appear to be related to the hinge area of the shell (Table 8.3). Two shell adzes were recovered from the Arapus site from levels dated to c.3000 B.P.. Although varying substantially in size, both were fully ground, plano-convex in form (Type 7) and made from the hinge region of a *Tridacna* sp. shell (Figure 4b,c). From the Erueti levels of the same site a further two *Tridacna* sp. adzes were recovered (Figure 4 a,d). One is very similar in form (Figure 4d) to that from the Arapus levels of the site (i.e. Type 7) while the other is a much smaller adze fashioned from the dorsal region of the shell.

The *Tridacna* shell adzes from sites dating to the first 1000 years in Vanuatu appear to have been made from both the hinge and dorsal region of the shell (also noted by Ward at Pakea [1979:9-25]; see also Szabó and Summerhayes this volume). A distinguishing feature of the Vanuatu adzes is that all were predominantly fully ground. However it appears on current evidence that after some

Provenance Trench BCD	Fig.	material	x-sect#	lgth (cm)	width (cm)	Thick (cm)	Degree of grinding*	H or D	wght (cm)	comments
Layer 1										
B.5 (153)	3k	*Tridacna*	1	-	1.9	.50	1	?	7.0	
D.2 (259)	3h	*Tridacna*	1	-	4.2	1.5	1	H?	51.3	
D.2 (259)(2)	3j	*Tridacna*	3	-	2.8	.60	2	D	10.7	butt end
D.4 (287)	3s	*Tridacna*	1	-	3.6	.80	1	D	29	
D.6 (401)	3m	*Tridacna*	1	-	-	.80	1	H?	17.2	bevel frag.
Layer 2										
C.5 (253)	3e	*Tridacna*	3	5.8	3.2	.80	1	D	31.4	complete
D.2 (328)	3n	*Tridacna*	2	-	3.5	3.5	1	H	79.3	
D.6 (424)	3l	*Tridacna*	1	-	2.8	.80	1	H?	11.2	mid-section
Layer 3										
B.6 (354)	3f	*Tridacna*	1	-	4.0	1.2	1	H?	28.6	
Layer 4										
C.4 (293)	3p	*Tridacna*	1	-	4.5	1.1	1	H?	42.1	
Area A										
L.1 (144)	3q	*Tridacna*	2	4.2	2.2	1.0	1	H?	20.7	complete
L.1 (194)	3b	*Tridacna*	3	-	3.3	1.7	1	H	41.9	butt end
L.2 (89)	3a	*Tridacna*	2	5.2	2.4	1.5	1	H	30	complete
TP 3										
L.1 (17)	-	*Tridacna*	-	-	-	-	1	?	23.3	mid-section
L.3 (25)	3o	*Tridacna*	1	4.2	2.0	.60	1	D	9.9	complete
L.3 (25) (2)	3c	*Tridacna*	1	-	3.2	.60	1	?	15.4	
TP 5										
L.2 (59)	3r	*Tridacna*	1	-	3.1	.50	1	D	15.1	
TP 8										
L.2 (112)	3i	*Tridacna*	1	4.4	2.7	.80	1	D	14.1	complete
TP 13										
L.2 (480)	3d	*Tridacna*	1	-	4.0	.80	1	H?	27.2	mid section
L.2 (480)(2)	3g	*Tridacna*	1	-	17.8	.70	1	D	17.8	butt end

TABLE 2. Ifo adzes: Descriptive data.

relatively short period of time there is a trend away from the use of the hinge region of the shell and adze forms made from that part of the shell are dropped from the cultural repertoire (cf. Kirch and Yen [1982] in Tikopia).

There were strikingly few stone adzes in any of the excavated sites. Only three were recovered in total, one from Malua Bay (Figure 4h), one from Ponamla (Figure 4i) and one from the early Erueti cultural horizon (2800-2500 B.P.) at the Arapus site (Figure 4j). The adzes from Malua Bay and Ponamla were relatively small, fully ground basalt adzes with elliptical cross sections (see Tables 1 and 5). They were both associated with immediately post-Lapita deposits (c.2700 B.P.). The adze from the Arapus site was also relatively small with a rectilinear cross-section (Figure 4j). A stone adze recovered by Garanger from the Erueti site (Garanger 1972:Fig. 25:4) is very similar in form to the adze from Arapus suggesting that it may well date to a similar period.

Both shell and stone debitage associated with adze and other artefact manufacture was recovered from all excavations but as noted above is not included here (see Bedford 2000:Tables 8.5-8.12 for details).

ORNAMENTS

Recovered ornaments were dominated by a varied collection of shell armbands, rings, beads and bracelet or ornament units (Figures 5-9), made principally from *Tridacna*, *Conus*

Provenance Area A	Fig.	material	x-sect#	lgth (cm)	width (cm)	Thick (cm)	Degree of grinding*	H or D	wght (cm)	comments
TP 9										
L.9d (1671)	4f	*Tridacna*	2	-	2.7	1.5	1	H	34.8	
TP 12										
L.9c (1803)	4e	*Tridacna*	2	5.0	1.9	.80	1	D?	14.2	complete
TP 1/15										
L.4d (2132)	-	*Tridacna*	-	-	-	-	1	?	62.9	mid-section
TP2										
L3b (314)	-	*Tridacna*	-	-	-	-	1	?	4.8	mid-section
TP 3										
L.1 (161)	4e	*Tridacna*	1	-	3.2	1.0	1	D	16.3	mid-section
L.2ii (198)	-	*Tridacna*	-	-	-	-	1	?	50.8	mid-section

TABLE 3. Mangaasi adzes: Descriptive data.

Provenance Area A	Fig.	material	x-sect#	lgth (cm)	width (cm)	Thick (cm)	Degree of grinding*	H or D	wght (cm)	comments
ST 13										
L.9 (3278)	4j	basalt	4	-	4.15	2.28	1	-	126.37	butt missing
L9 (3283)	4d	*Tridacna*	1	-	5.84	2.32	1	H	139.2	bevel end
L.10 (3400)	4c	*Tridacna*	1	-	6.45	1.68	1	H	103.03	bevel end
ST 27										
L.9 (5200)	4a	*Tridacna*	4	6..63	3.56	.68	1	D	22.8	complete
Area A A.1										
L. 10 (5122)	4b	*Tridacna*	2	-	4.14	.91	1	H	35.04	bevel missing

TABLE 4. Arapus adzes: Descriptive data.

Provenance Area A	Fig.	material	x-sect#	lgth (cm)	width (cm)	Thick (cm)	Degree of grinding*	wght	comments (cm)
Malua Bay									
TP 9 L.3 (451)	4h	basalt	2	4.8	2.1	1.1	1	22.7	complete

TABLE 5. Malakula adzes: Descriptive data.

and much less frequently *Trochus* sp. shells. A number of these artefacts were able to be assigned to Kirch's 1988a ornament classes. Miscellaneous shell manufacturing debris associated with at least some of the production of these types of ornaments was also recovered from throughout the various excavations (see Bedford 2000:Tables 8.5-8.9).

Fragments of ten fully ground *Tridacna* sp. shell armbands (Kirch Class C2) were recovered from Mangaasi (Figure 5a-d,f,g,i,l,m,p), twelve from Arapus (Figure 6a,b,f,g,k-r), seven from Ifo (Figure 7) and four from Ponamla (Figure 8a,d-f). The armbands comprise a varied assortment of diameters and widths and were recovered from stratigraphic contexts dating throughout the first millennium of settlement. There was no apparent change in the form of these artefacts throughout that period either chronologically or regionally.

Rings (Kirch Class C1) and beads (Kirch Class E1) made from *Conus* sp. shell were recovered from all three

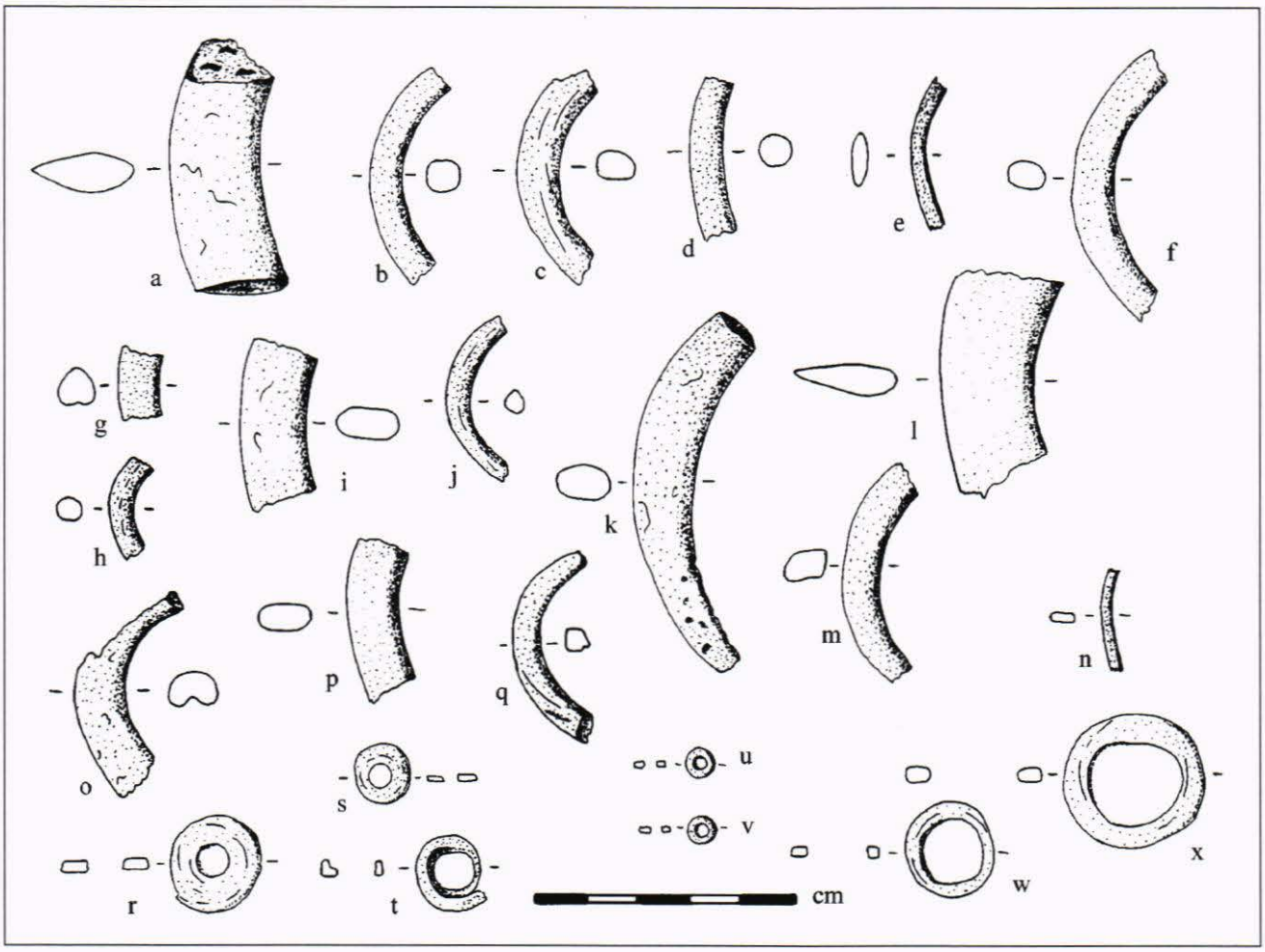

FIGURE 5. Shell armbands, rings and beads excavated from Mangaasi (Erueti Phase) Efate.

islands. From Mangaasi a total of eleven rings (Figure 5e,h,j,n,o,q,r-t,w,x) and two beads (Figure 5u,v) were retrieved from both the Erueti and into the Early Mangaasi cultural horizons (c.2800-2000 B.P.). At the Arapus site *Conus* sp. rings (6) were recovered (Figure 6c-e,h-j) from the earliest Arapus phase and into the early Erueti (2) cultural layers (c.3000-2500 B.P.) (Figure 6t,v). *Conus* sp. beads (2) were also recovered from similarly dated contexts at Arapus (Figure 6u). Two *Conus* sp. rings were recovered from the lower levels (c.2800-2500 B.P.) of Ifo (Figure 7b,d) and another two examples were recovered from similarly dated levels at Ponamla (Figure 8b,c). Single *Conus* sp. beads were recovered from Ponamla (Figure 8h), Ifo (Figure 8i) and Malua Bay (c.2700-2500 B.P.) (Figure 8g). A *Conus* sp. ring dating to the same period was also found at Malua Bay (Figure 8m).

Single examples of *Trochus* sp. shell armrings (Kirch Class C3) were recovered from Ifo (Figure 7g) and the Arapus site (Figure 6f) from deposits which dated to c.2500-2000 B.P.. The use of *Trochus* for the manufacture of larger rings is relatively rare in Lapita and early post-Lapita contexts but there is no doubt they were present during this period (cf. Kirch 1988a; Sand 2001; Szabo and Summerhayes this volume). This highly ground earlier form of *Trochus* armband is very different to the *Trochus* shell armbands which are found with some frequency in later prehistoric horizons (post-600 B.P.) (Garanger 1972:Fig 191) and in the ethnographic record of Vanuatu (Speiser 1996 [1923]:167).

Shell discs included two examples made from different shellfish. One was a flaked *Tridacna* sp. disc recovered from Ifo (Figure 8n) which was identical in size and form to a flaked basalt example also from Ifo (Figure 8o). Garanger recovered similar artefact forms from the Erueti site where they had been fashioned from both *Tridacna* and coral (1972:Fig. 27, 28). Hébert (1965:81) illustrated two ground coral discs recovered from the surface of the Erueti site but these are much larger and somewhat different in form to the

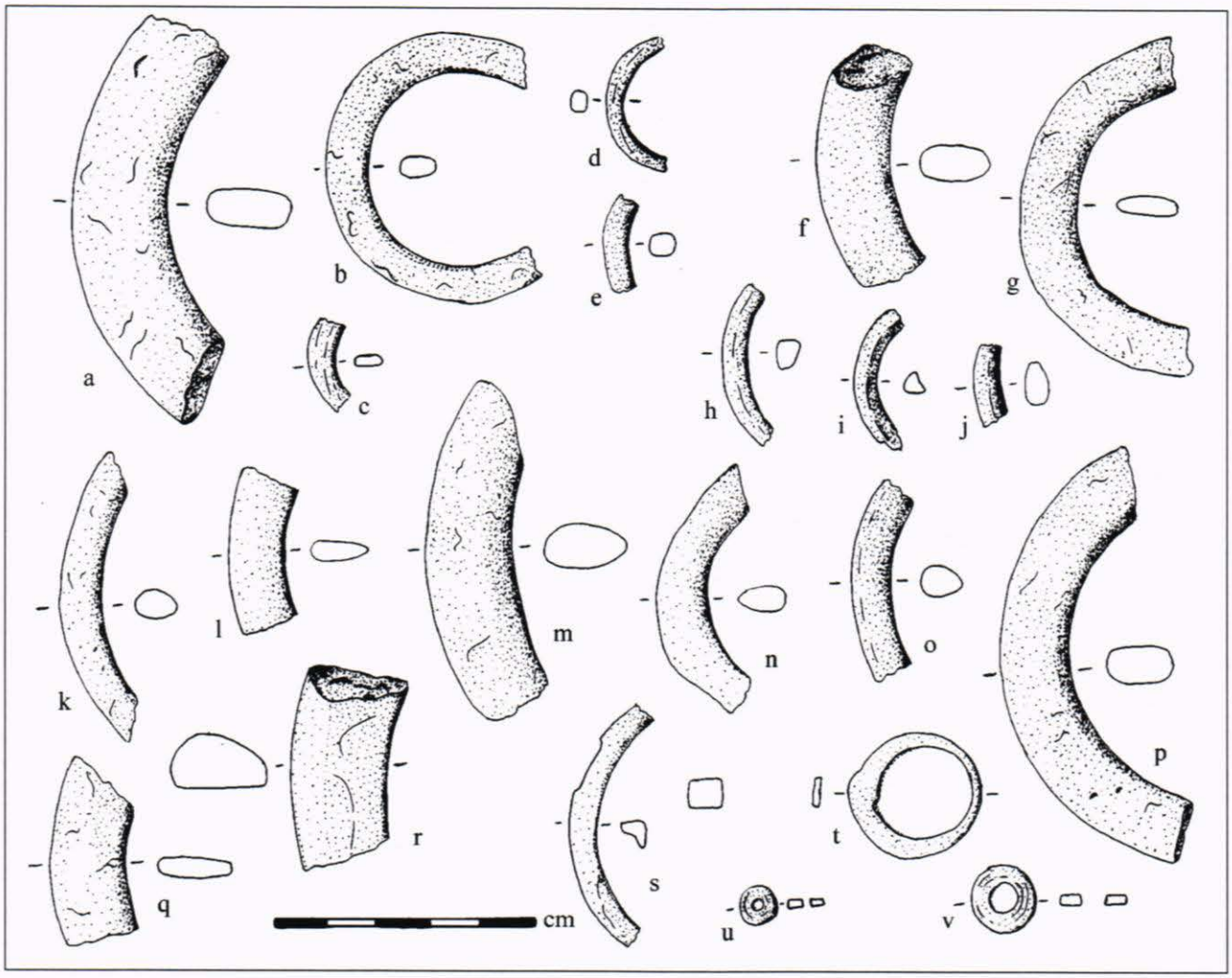

FIGURE 6. Shell armbands, rings and beads excavated from the Arapus site (Arapus Phase [a-j], Erueti Phase k-v]).

discs discussed above. The function of these discs is not known but they do appear to be fashioned discs rather than manufacturing debris. Garanger linked them to similar artefact forms in Polynesia where they are said to have been used in games (Garanger 1972:30). Those from Vanuatu may also have been gaming pieces but they have been recovered from deposits of a much greater age (c.3000-2000 B.P.). The Shutlers recovered a small stone disc on Tanna but in that case it was associated with a burial dated to c.1000 B.P. (Shutler and Shutler 1965:Plate 2g). Pottery discs of a similar size and associated with a similar chronological period have been noted from, Fiji, Tonga and New Caledonia (cf. Birks 1973:41). These were often described as gaming pieces but in a number of cases had the added feature of a central hollow or depression (the single coral disc recovered by Garanger also had a central depression [1972:Fig.28]). The only other shell disc from the Vanuatu excavations was made from axial end of a *Conus* sp. shell recovered from early deposits (c.2700-2500 B.P.) at Malua Bay (Figure 9q). A similar disc from Lapita deposits has been noted at Niuatoputapu (Kirch 1988b:208).

Finally there were a number of rarer ornaments recovered which have in the past been classified under the general category of "long units" (Kirch 1988a:108 after Poulsen 1967). Kirch (1988a:108) differentiates between Class A1 "long units" made from *Tridacna* sp. and Class A2 which were fashioned from *Spondylus* sp.. Variants of both these classes were recovered from the excavations in Vanuatu. Four examples of Kirch's Class A2 "long unit" or more appropriately "miniature long unit", which had perforations at both ends, were recovered from the Erueti cultural horizons of both the Mangaasi and Arapus sites (Figure 9a-d). The source material for these artefacts had previously been misidentified as *Pectinidea* sp. (Bedford 2000:197) but has more recently been positively identified

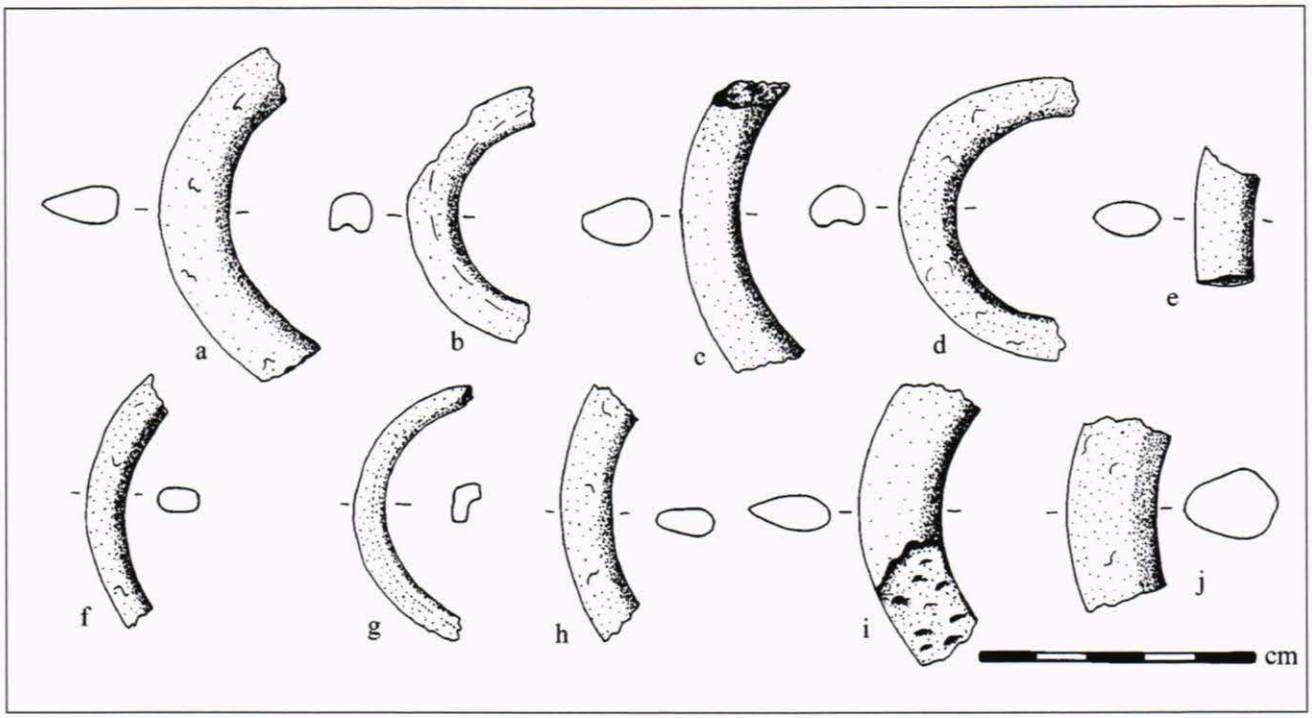

FIGURE 7. Shell armbands and rings excavated from Ifo, Erromango.

as *Spondylus* sp. (Katherine Szabó pers. comm.). These fully ground "miniature long units" appear to be very similar in form to single examples illustrated by Kirch from Mussau (1988a:108 and Fig. 3f) and possibly Sand (2001:84, Fig. 7u) from New Caledonia. The artefacts from Vanuatu have been fashioned in such a way as to highlight the striking contrast between the coloured and creamy white surfaces of the shell.

A single further variation on the "long unit" (Class A1) or in this case what could more aptly described as a "medium-length unit" was recovered from the early Erueti cultural horizon of the Arapus site. This artefact, made from *Tridacna* sp., appears to have close parallels with artefacts recovered from New Caledonia (Sand 2001:83, Fig. 7m) and Uvea (Sand 1998:111, Fig.14). It has been fully ground and has holes drilled in both ends (Figure 9f).

Another single example of a variant form of shell "long unit" was recovered from Erueti levels at the Arapus site in 2001 (Figure 9e). It is more oval in form as opposed to the more rectangular units as reported by Kirch and Yen (1982:248) which were said to be restricted to the Kiki phase (2900-2100 B.P.). Despite this variation, it shares a number of attributes and may have been used in similar ways. Certainly the size and form of these three different shell "units" recovered from Vanuatu have clear parallels amongst Lapita period sites further to the west and south.

As noted, an assortment of shell manufacturing debris was recovered from throughout the excavations (see Bedford 2000:Tables 8.5-8.9). *Tridacna* dominated but little more can be said at this stage of the analysis other than it appeared to have been flaked. *Conus* shell debris could be more easily identified as having been worked. Four categories of worked *Conus* were established;

1) the axial end of the shell cut and ground on both ends (Figure 9r);
2) the axial end of the shell cut but ground on the outside end surface only;
3) the axial end of the shell ground on the inside edge only (Figure 9s);
4) rectangular curved bands cut from the body of the shell often with ground edges (Figure 9t).

A single example of the above form (4) with the added feature of a hole drilled in one end was recovered from the Erueti horizon of the Arapus site.

Other recorded flaked shell species included *Cypraea*, *Lambis* and *Trochus* sp.. The flaked *Trochus* comprised only the base segment of the shell which has at some sites been associated with the first stages in the manufacture of shell fishhooks (Kirch 1997:200, Plate 7.2; Smith 1991), although this activity could not be identified with any certainty from any of the recovered Vanuatu material. The

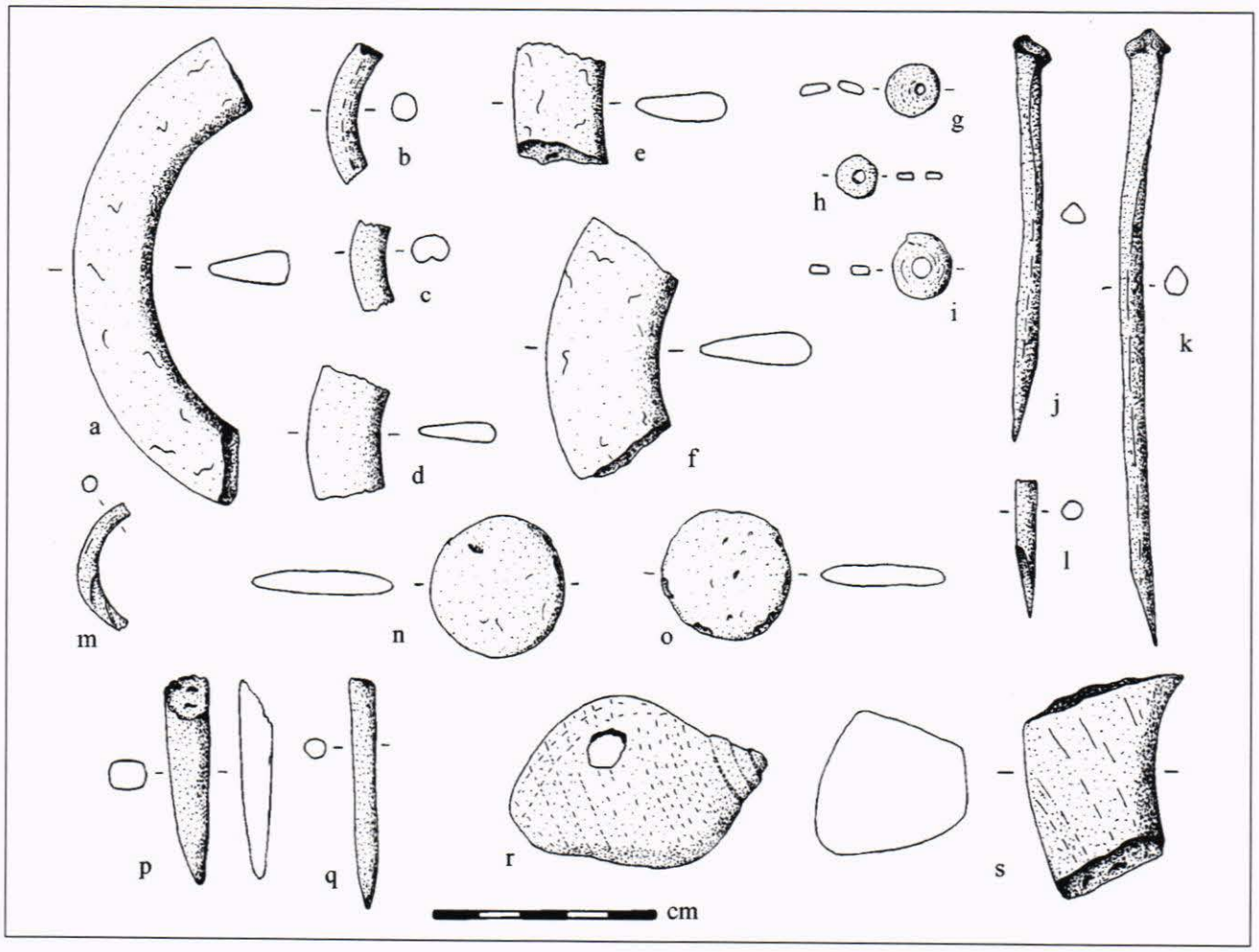

FIGURE 8. Miscellaneous artefacts: a-f, h shell armbands, rings and beads from Ponamla; g,i shell beads from Ifo and Malua Bay; j-l bone needles from Ponamla; m *Conus* ring Malua Bay; n,o shell and stone discs respectively from Ifo; p,q shell spikes from Ifo; r perforated gastropod Ifo; s *navela* fragment from Ifo.

volume and variety of flaked shell debitage or detritus (Kirch 1988a:108) recovered from the excavations is indicative of the on-site manufacture of these shell items.

PENDANTS

A variety of pendants made from shell were recovered from all islands, but principally from the Erueti horizons at the Mangaasi and Arapus sites. Pendants which displayed a single drilled hole at one end dominated these assemblages (Figure 9i-m). They were recovered from both Mangaasi and Arapus on Efate and Waal and Malua Bay on Malakula from the early cultural horizons (c.2800-2000 B.P.). Under Kirch's ornament classification, pendants are labelled Class F. They are only described as being made specifically from *Spondylus* and that they are perforated at one end (1988a:110). Amongst the Vanuatu material there was some variation in form and often the identification of the shell used for the manufacture of the pendants was difficult to determine due to the highly worked nature of the artefacts. One recovered from the Erueti cultural horizons of Mangaasi (Figure 9i) was clearly made from *Pectinidea* sp. shell.

A quite unique pendant form was recovered from the Late Erueti cultural horizon (c.2500-2000 B.P.) of the Mangaasi site. Possibly cut from a pearl shell it has been fashioned into the shape of a cross with a central perforation (Figure 9h). This delicate ornament form appears to be thus far unique in archaeological sites across the Pacific. A single drilled shark tooth was recovered from Ponamla (Figure 9g). Finally a fully ground piece of *Tridacna* sp. recovered from Ifo could also have been a possible pendant (Figure 9p), where any evidence of perforation has been lost due to breakage.

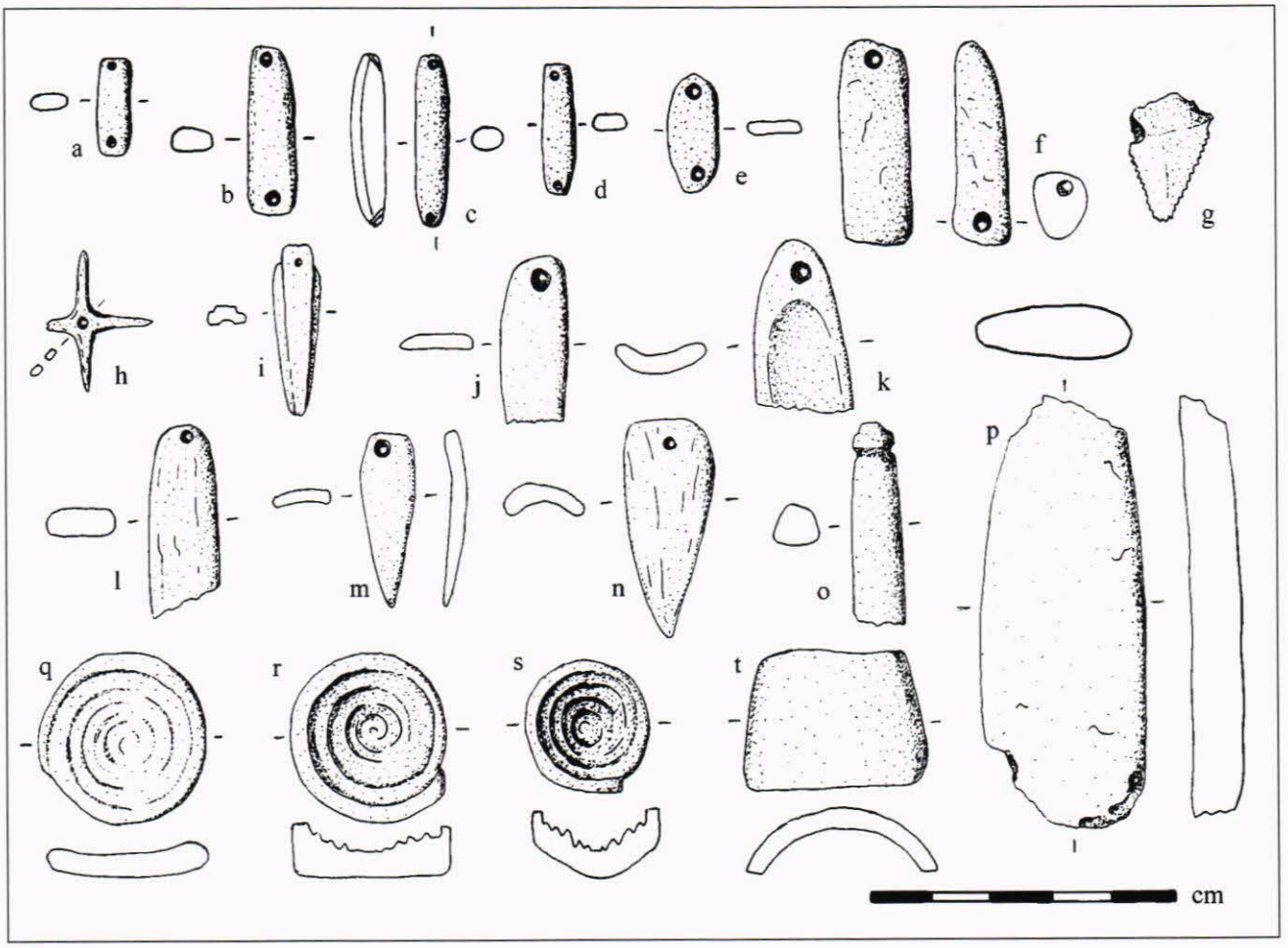

FIGURE 9. Miscellaneous pendants, "long units" and manufacturing debris: a, "long unit" from Mangaasi (Erueti Phase); b-f "long unit" from Arapus (Erueti Phase); g shark tooth pendant from Ponamla; h "star" ?pendant from Mangaasi; i pendant from Mangaasi; j-l shell pendants from Mangaasi; m shell pendant from Waal, Malakula; n shell pendant Malua Bay; o grooved sea urchin spine; p possible pendant; q *Conus* disc from Malua Bay; r-t shell (*Conus* sp.) manufacturing debris).

Also grouped with the pendants are the grooved sea-urchin spines (Figure 9o) which were recovered from the earliest cultural horizons (c.3000 B.P.) of the Arapus site and at the Ifo site dating to c.2300 B.P. (Spriggs 1984:217). These artefact forms are relatively rare but have been recovered from a number of Lapita or immediately post-Lapita sites (c.3000-2300 B.P.) including a single example from Samoa (Janetski 1976:72-73), two from different sites in Fiji (Best 1981:15, 1984:461) and a grand total of three from Tikopia (Kirch and Yen 1982:271).

STONE ARTEFACTS

As mentioned previously, a single flaked basalt stone disc was recovered from Ifo (Figure 8o), identical in size and form to the flaked *Tridacna* sp. shell version from Ifo. It also dates to a similar period, c.2500-2000 B.P. (Figure 8.4 m).

Abraders either of scoria (11), pumice (12) or sandstone (4) were found from the excavations on Efate and Erromango (see Bedford 2000:Tables 8.10-8.12). Scoria abraders were only found in the Erromango sites (Ponamla 5, Ifo 6), perhaps a reflection of material availability on that island. Two forms were identified, one which displayed a series of seemingly random grooves (Bedford 2000: Fig. 8.14 a), and the other which had flat ground surfaces. The grooves tended to be 4.5mm or less in width. These two forms of scoria abrader were present both in the Lapita and the post-Lapita deposits at Ifo and Ponamla (i.e. c.3000-2000 B.P.). All recovered pumice abraders displaying flat ground surfaces came from the Ifo site (10) while two examples displaying grooves came from the Erueti levels of the Arapus site. Sandstone abraders displaying only flat ground surfaces were recovered from Ponamla (1), Mangaasi (2) and Arapus (1). All of the various abraders seem most likely to

have been used in the manufacture of the various shell artefacts. Similar abraders have been recovered from other sites in Vanuatu (Garanger 1972:Fig. 207) and throughout the Pacific. They are a ubiquitous artefact form through time and space, where any variation appears to be largely restricted to the choice or availability of raw materials.

A single triangular sectioned stone (Bedford 2000:Fig. 8.14h) which had been formed by grinding was also seen as a possible abrader but the symmetric form of the artefact casts some doubt. It was recovered from the lower layers of the Malua Bay site dating to c.2700 B.P.. A circular piece of coral with a perforated centre (Bedford 2000:Fig. 8.6 l) was recovered from a similar stratigraphic context at Malua Bay. Its function is also unclear, but it was possibly a net sinker.

Thirteen pieces of red ochre, displaying either ground or striated surfaces, were found from Ponamla (7), Ifo (5) and Mangaasi (1) (see Bedford 2000:Tables 8.10-8.12). Speiser noted the widespread nature of the use of pigments throughout Vanuatu at the time of contact including for the painting of the body (1996 [1923]:169-170). Ochre was one of the sources of pigment and it seems quite likely that the excavated ochre served a similar purpose. The recovered specimens were from deposits that dated from c.2800-2000 B.P..

Neither obsidian or basaltic glass, which could have been sourced from the Banks Islands, were recovered from the recent excavations. To date, these glasses whether sourced to the Banks Islands or further afield have only been recovered in Vanuatu from excavations as far south as Malo Island (Galipaud 1998; Hedrick n.d.), although Talasea obsidian is known from Lapita contexts in New Caledonia (Sand 2000:29). Banks Islands basaltic glass has also been recorded in some quantity in both early (Lapita) and late contexts (post 800 B.P.) on Tikopia (Kirch and Yen 1982:260-261) and later contexts (probably from around 1000 B.P.) in Fiji (Best 1984:494; Clark 1999:41). A low grade glassy basalt is commonly found in the river beds of Efate and a total of nine pieces (see Table 8.12) were recovered from the excavations at Mangaasi but none appeared to be flaked or could be argued as being artefactual. In fact the worn nature of the surfaces of most of recovered pieces of basaltic glass suggested that their presence was the result of natural deposition. The material does not appear to be sufficiently vitreous for it to be particularly suitable for flaking. The results of a SEM-EDAX analysis carried out by Wallace Ambrose on several samples indicated a likely Efate origin (Ambrose pers. comm.).

A number of basalt (254), chert (69) and chalcedony (6) "flakes" were recorded throughout the c.3000-2000 B.P. levels of the excavations reported on here but few of these were positively identified as tools or even necessarily manufacturing debitage. There are abundant

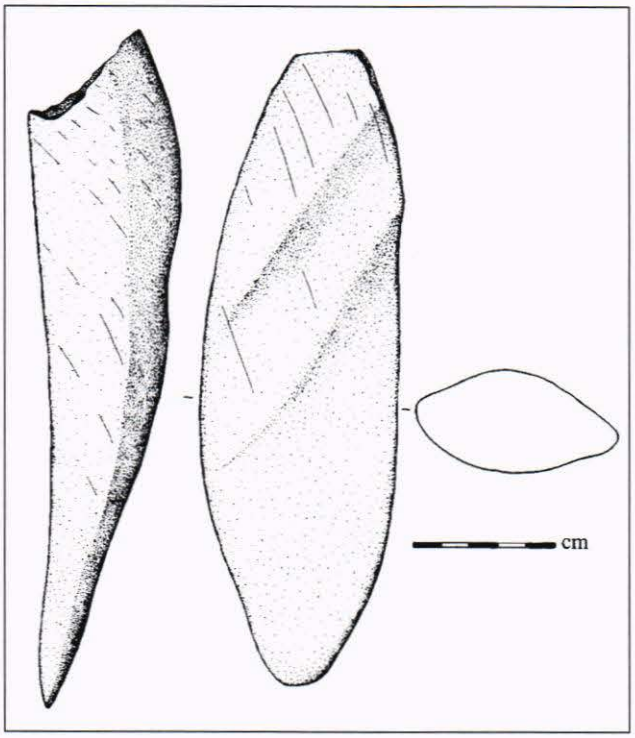

FIGURE 10. *Navela* excavated from Ifo.

quantities of these materials from local sources. The vast majority of the stone "flakes" came from Ponamla, some 315 [96%]; 240 basalt [94%], 69 chert [100%], 6 chalcedony [100%]. Most of those can best be described as micro-flakes or "shatter" (cf. Kirch and Yen 1982:262).

The "flakes" seem likely to have resulted from the placement of stone during the construction of terracing at the Ponamla site, an activity that could be expected to inadvertently produce chips or flakes. This explanation was further supported by the almost complete lack of micro-flakes from the other sites. Only larger flakes (all basalt) were recovered from Ifo (10), and Mangaasi (2) and these seemed more likely to be related to adze or other manufacturing activities. They are strikingly few in number which, although correlating well with the rarity of stone adzes in the record, may also reflect the existence of discrete activity areas which have not been sampled during the excavations.

The only other stone artefacts recovered from the excavations were the stone adzes from Ponamla, Malua Bay, and Arapus respectively which have already been discussed.

MISCELLANEOUS ARTEFACTS

Two fragments of a very distinctive shell artefact, specific to Erromango, were recovered from the Ifo site. These were namely two fragments of the two forms of *navela* or

shell money comprising fossil *Tridacna*. *Navela* functioned in the recent past as prestige items on Erromango and were exchanged between chiefs on important occasions and often during marriages (Aubert de la Rüe 1945:192a; Humphreys 1926:171-172). One fragment associated with the circular type (Figure 8s) was excavated near the surface of a test pit and seems likely to date to the recent past. A large portion of the other straight form (Shutler and Shutler 1965: Plate 7G; Shutler *et al.* this volume: Plate 7G) was recovered from Layer 2 of Trench D (Figure 10) which dates to just before c.2000 B.P., suggesting that this form of artefact and its associated ceremonial function has some antiquity on Erromango.

A single *Turbo* sp. shell (Figure 8 r) which appeared to have been perforated was recovered from Layer 1 of Area A at Ifo, which dates to c.2000 B.P.. These perforated shells have been identified at other sites in the Pacific as net sinkers (Kirch 1988b:205) but the frequency of perforated shells associated with burials in later sites in Vanuatu makes that identification somewhat uncertain.

Two spike-like artefacts (Figure 8p,q) made from fully ground *Tridacna* sp. shell were recovered from Ifo, from deposits dating to between c.2500 and 2000 B.P.. These are the only examples thus far to have been recovered from excavated contexts in Vanuatu and may have conceivably been utilised as nasal ornaments. The practice of piercing the septum and inserting an ornament of some form was widespread throughout Vanuatu at the time of European contact (Speiser 1996 [1923]:158-160). Three nasal ornaments made of *Tridacna* (2) and wood (1) illustrated by Speiser (1996 [1923]: Plate 38, 28-30), collected from the islands of Santo and Malakula, are almost identical in form to the excavated examples.

Several bone needles were recovered from Ponamla from deposits dating to c.2700-2500 B.P.. They were all similar in form and made from *Pteropus* sp. ulna bones (Figure 8j-l). Identical forms were recovered by Best on Lakeba in Fiji, from immediately post-Lapita deposits (Best 1984:465).

DISCUSSION AND SYNTHESIS

The non-ceramic items of material culture recovered from the excavations in Vanuatu have provided a glimpse of the rich variety of artefact forms that existed, notwithstanding the potentially much greater assortment of perishable items which do not survive in the archaeological record (Kirch 1997:239). Many of the artefact types and forms are paralleled in numerous archaeological sites across the Pacific associated with Lapita and immediately post-Lapita cultural deposits to c.2500 B.P.. An initial broad homogeneity of ceramics and, for a longer period, other artefact forms are a feature of sites dating to this period, although there are always a number of anomalies (e.g. in New Caledonia there is a virtual absence of shell adzes [Sand 2000]). In the case of Vanuatu the lack of obsidian in the archaeological record further south than Malo is one such anomaly. Another is the complete absence of fishhooks amongst the recovered materials to date. They have been recorded, although not in abundance, in other Lapita sites (Davidson *et al* this volume; Kirch 1997:200; Sand 2000:28). Fishing with hooks may however never have been particularly prevalent and certainly by the ethnographic period there are indications that fishhooks were rarely used and spearing and netting were much more common techniques (Speiser 1996 [1923]:141-142). It seems highly likely however that with further research these "anomalies" – and undoubtedly in the case of fishhooks – may turn out to simply reflect the current state of knowledge (see discussion below).

A chronological synthesis of non-ceramic artefact forms is presented below along with a summary table (Table 6). It must be emphasised that this synthesis is only preliminary in nature and is skewed by a number of factors. Recorded Lapita period sites in Vanuatu are few and poorly known. Immediately post-Lapita deposits to 2000 B.P. are well represented from both Efate and Erromango in open habitation sites. Changing settlement patterns also seem likely to have had some influence on what is recovered

	Dates		
artefact	**3000-2800 B.P.**	**2800-2500**	**2500-2000**
Tridacna armring	+	+	+
Conus armring	+	+	+
Conus ring	+	+	+
Conus bead	†	†	†
Shell bracelet unit	?	†‡	?
Perforated shell "star"	-	†‡	-
Trochus armring	†	†?	†
Trid. adze Type 1	+	+	+
Trid. adze Type 4	-?	+	+
Trid. adze T 7-8	+	+	+
stone adze (rectilinear)	†	†	†?
worked shell pendants[2]	+?	+	+
stone abrader	+	+	+
grooved sea urchin spine	†	†	-?
navela	-	-	‡
Trid/stone disc	-?	†	†
nasal ornaments	-	-	†‡?
bone needles[3]	†?	†	†?

+archipelago wide; † rare; ‡ island specific; - absent; ? lacking sufficient data; -? lacking sufficient data but seems likely to be absent. 1. miscellaneous perforated shells used as necklaces or pendants; 2. finer chronological delineation is difficult due to sample size 3. finer differentiation of needles is again seen as premature due to the small sample size.

TABLE 6. Summary of non-ceramic artefact forms 3000-2000 B.P.

archaeologically. Lapita and immediately post-Lapita settlements appeared to have been nucleated villages which would have generated a corresponding concentration of midden dumping. Later settlement was often more dispersed and would have generated more diffuse midden remains. It is these factors, along with the often small quantities of specific artefact types, which must be taken into consideration when any conclusions are made regarding chronological definition or variation in the non-ceramic artefact assemblages. Despite these limitations a number of significant patterns can be highlighted for the first 1000 years of the Vanuatu cultural sequence.

3000-2800 B.P.

Non-ceramic artefacts associated with the Lapita period of settlement in Vanuatu are not well represented primarily due to the mixed nature of the deposits or the limited identification and excavation of these site types. The most securely provenanced non-ceramic artefacts (Figure 4b,c, Figure 6a-j) are from the recently excavated Arapus site (Bedford and Spriggs 2000). They include *Tridacna* sp. shell armbands and smaller rings, fully ground *Tridacna* sp. adzes, *Conus* sp. shell rings and a grooved sea urchin spine. Added to these artefact forms are abraders of both scoria and pumice. Although the Lapita sites on Malo were often somewhat mixed, Hedrick (n.d.) reported recovering flaked tools of both chert and obsidian (the latter sourced to the Banks Islands, Talasea in New Britain and Lou in the Admiralty Islands), stone adzes (of plano-lateral and plano-convex cross-section) and *Tridacna* sp. adzes cut from the hinge region of the shell. Other artefacts included shell scrapers, coral files, peelers, anvils and stone burnishing tools, shell rings and discs, and a variety of shell beads. Galipaud (1998) has reported recovering both *Tridacna* (one with notching on the outer edge) and *Trochus* sp. rings and/or small armbands from his recent excavations on Malo. There is a range of artefacts found at other Lapita sites that have not so far been identified in Vanuatu (e.g. fishhooks, "broad units", decorated bracelets etc. [Kirch 1997; Sand 2000]) but the identification of any disjunct distributions would be premature, considering the sampling problems mentioned above. This parallels the earlier situation in New Caledonia up to the 1980s, when Green and Mitchell reported that "remarkably few non-pottery portable artefacts have been recovered archaeologically" (1983:64). Since that time, further excavation has revealed abundant and varied shell artefact assemblages (Sand 2000:27-29, 2001).

2800-2500 B.P.

Artefacts from this period of the archaeological record are probably some of the best represented and they hint at the wider range of artefacts that might well be expected to be recovered from Lapita sites in Vanuatu in the future. Continuity with the Lapita deposits is clearly demonstrated by the presence of *Tridacna* sp. shell armbands and smaller rings, and the *Conus* sp. armbands, smaller rings and beads. *Trochus* sp. armbands are present but rare. Fully ground *Tridacna* sp. shell adzes were also frequently recovered. They generally fell into two categories, very small "microblades" or larger hinge region adzes (cf. Hébert 1965:80 and Garanger 1972:Fig.26, 27 at the Erueti site). Stone adzes are rare and thus far only two forms have been excavated that are associated with this period, although a wider number of forms are hinted at from material recovered by Garanger at Erueti (Garanger 1972:Fig. 25). One is a fully ground rectilinear cross-section form (Figure 4j) and the other a stone version of the shell "microblade" (Figure 4h,i). A wide range of pendants were also present during this period, made from either shell or in one case a shark tooth (Figure 9g). The unique form of some of these pendants or "long units" suggests that island-specific styles were beginning to develop, although the similarity of some of the artefact forms with those recovered from other Lapita sites outside Vanuatu suggests that a derivation from earlier Lapita-period types will one day be established.

Somewhat less frequently associated with this time period were the bone needles made from *Pteropus* sp. ulnae recorded on Erromango and a non-perforated *Conus* sp. disc and a possible net sinker, both recovered from Malua Bay on Malakula. Abraders continued through this period and into the next. Exotic stone (cf. Lapita sites on Malo) has not been found in these later contexts, a sign that long-distance connections may have begun to break down soon after Lapita settlement.

2500-2000 B.P.

A number of artefact forms found in the earlier stratigraphic layers continued through into this later phase of the cultural sequence. They included *Tridacna* sp. armbands, *Conus* sp. armbands, and smaller rings, beads and shell pendants. A *Trochus* sp. shell armband was recorded from layers dating to this period on Erromango but it would appear to have been at this stage of the sequence a rare ornament type. Shell adzes, again all largely fully ground and more often in the "micro-adze" form, were also still present. Stone abraders continue to be recorded. Items recorded which had not been seen in earlier layers included stone and shell discs (Figure 8n,o, Figure 9 q), possible nasal ornaments (Figure 8p,q), *navela* (Figure 10) and a perforated *Turbo* sp. shell (Figure 8r).

CONCLUSIONS

It would appear that non-ceramic artefacts in Vanuatu were generally not as susceptible to change as were ceramics, as they continue to show continuity in form over

much longer time periods (cf. Sand 2001:86 for New Caledonia; Szabó and Summerhayes this volume). Many of the artefact forms identified in the earliest cultural contexts, such as the shell armbands and other smaller rings along with *Tridacna* adzes, do not demonstrate any dramatic change in form for the first 1000 years after initial human settlement. The most perceptible change in the archaeological record amongst the non-ceramic artefacts during the first 1000 years is a tendency over time to a restriction of variety and quantity, a feature also noted by Sand (2000:30) in the case of New Caledonia. However this may simply be due to a change to a more dispersed settlement pattern which would have consequently drastically reduced the accumulation and concentration of midden. Certainly the rich nature of the non-ceramic record from both the earliest and latest periods of the cultural sequence supports this scenario (cf. Garanger 1972; Shutler and Shutler 1965; Shutler *et al.* this volume; Speiser 1996[1923]).

Although non-ceramic artefact forms associated with the later part of the Vanuatu sequence are not discussed here, the radical change that is indicated in the archaeological and ethnographic record associated with the period within the last 1000 years must be noted. Early evidence of the appearance of unique island-specific artefact forms includes the *navela* on Erromango (c.2000 B.P.), although much earlier dated artefacts (c.2800-2500 B.P.) such as the shell "star", thus far only found on Efate, may mark the beginning of some divergence in material culture across the archipelago. Certainly by at least 500 B.P. a whole range of new artefact forms appear in the archaeological record including perforated shellfish necklaces (Garanger 1972: Fig. 197), pendants of stone and other non-shell forms, and beads made from whale teeth and pig tusks (Garanger 1972: Figs. 184-192; Spriggs 1997:218). Pig tusk and *Trochus* sp. bracelets (although the latter were less worked than earlier versions) were also common artefact forms dating to the later periods of Vanuatu's history. Less common but equally associated with only the late phase of the sequence are conch shell trumpets, and also serpentine pendants imported from New Caledonia (Aubert de la Rüe:1938, 1945).

Tridacna shell adzes within the last 1000 years are always made from the dorsal region of the shell and are no longer fully ground. Other shell species also began to be used in the manufacture of adzes, such as *Lambis, Mitra, Terebra* and very occasional *Conus* sp. (Garanger 1972:Figs. 292, 293; Shutler and Shutler 1965:Plate 6; 1975:74). Sparse evidence of these adze forms was also recorded by Ward at Pakea in the Banks (Ward 1979:9-6). Stone adzes dating to this period are fully polished and lenticular in cross-section (Shutler and Shutler 1975; Spriggs *et al.* 1986). Interestingly, many of these later artefact forms show particular affinity with materials widely recorded from different areas of the Western Pacific (Kirch 2000:129), which almost certainly indicates increased frequency of widespread contact over this later period.

While both the earlier and later parts of the Vanuatu cultural sequence are beginning to be more fully understood, further elucidation of the mid-sequence from 2000-1000 B.P., which will shed light on the relationship of the two ends of the sequence and the possible causes which influenced change, awaits more detailed archaeological investigations in Vanuatu and beyond. While recent archaeological research in Vanuatu (Bedford 2000; Bedford *et al.* 1998; Galipaud 1988) has helped to clarify the earliest part of the archaeological record across the archipelago it is still in major part due to the pioneering efforts of the Shutlers and José Garanger over thirty years ago, that we have any indication of the cultural transformations which were to herald the emergence of the traditional ni-Vanuatu societal forms observed at European contact (Bonnemaison *et al.* 1996; Speiser 1996 [1923]).

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