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LAPITA: A VIEW FROM THE EAST

Simon Best

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CHAPTER 1. INTRODUCTION

The first colonisers of Vanuatu, New Caledonia, Fiji, Tonga and Samoa, the Lapita peoples, brought with them a ceramic technology notable for an extraordinary system of decoration. Within a few hundred years, perhaps between 300-400 in the easternmost areas, the pots themselves had undergone a marked simplification in form, while the decoration had vanished completely. In Tonga and Samoa pottery itself was to disappear by about the end of the first millennium B.C., while in Fiji at much the same time the ceramic sequence underwent the most drastic change in its 3000 year history.

The ancestors of these travellers came from far to the west, initially from the various small island groups lying off the northeast coast of Papua New Guinea, and before that from Island Southeast Asia. Their descendants went on the colonise Hawaii, Polynesia and New Zealand. Their early style of pottery however, save for one sherd on the north coast of New Guinea, has not been found west of those island groups or east of Samoa and Tonga.

The focus of this monograph is an attempt to enter the "thought world" of the people(s) who made the Lapita pots, through the role of the ceramics, especially those with unusual forms and complex and often anthropomorphic decorations. Any "meaning" these have, and any change in this, it is suggested, is inexorably intertwined with other aspects of the society's lifeways – with other artifacts, with the eastern expansion from the Bismarcks, with social ranking and site organisation, with settlement patterns and, in the furthermost reached islands at least, with the ultimate loss of the ceramics themselves.

In this work the Lapita decorative system is examined in increasingly wider contexts, from its distribution within a site to its place in world art. Although archaeology can only provide indirect evidence for any value or meaning which might be attributed to any artifact by its users, comparison with ethnographic parallels for which such values are known can provide relevant information. Ceramics from the late end of the Fijian sequence are similar in the presence of complex forms and decoration type to those of Lapita, and many of these were described, illustrated and even acquired by early missionaries and others, who also recorded, often in great detail, both the ideological and physical contexts in which they resided. The decorative motifs on the two sets of ceramics were however different, and it is the identification of the most elaborate designs in the earlier system, some 3000 to 2500 years ago, and of the transformations that these underwent, which have the most potential for seeking out some of the ideas that might have stood behind the facade of the archaeological record. Another decorative system, far removed in time and space, and on a different material (textiles), in which motif changes can be documented, is employed as a comparative example.

The "meaning of Lapita" is one thing – what is meant by "Lapita" is another. The term is used throughout this monograph to refer to a group of individuals who became archaeologically visible in the Bismarck Archipelago some time in the second millennium B.C., with a distinctive set of artifacts, a common language (and, probably, ethnic/genetic makeup), a preference for coastal settlement, and, importantly, a shared ideology, whose descendants started a movement east which eventually came to a halt several thousand kilometres and some hundred years later in Tonga and Samoa. Any aspect of the above is described as "Lapita", a catholic use of the word but for simplicity's sake acceptable in this context.

The monograph is structured as follows. An outline of the history of Lapita research is described, as an indication of the directions and momentum that this has taken. Archaeological data from the author's research in Fiji is then summarised, and the main points from the 3000 year sequence discussed. There are significant similarities between the ceramics from the two ends of the sequence, and these are examined. The presence of complex anthropomorphic designs and their stylised versions in Fijian sites is discussed and briefly compared to examples from the west, and the tool responsible for creating the early versions of these and related designs is identified and described.

The loss of both the decoration and later the pots themselves in Western Polynesia have been the subject of a number of explanatory models, and these are critiqued. The

function of decoration as communication is examined, and some of the comparative studies previously employed are briefly described. Such studies have been restricted to ceramics, are normally of short duration, and pay limited attention to the decoration itself and changes within this. A more comprehensive analysis of a design system on a textile, Turkish prayer rugs, is attempted, and the changes undergone by one motif within this are charted. The two systems are then compared.

Late Fijian artifacts, both in ceramic and wood, were keenly observed by Europeans from the 1830s, and their meaning in the symbolic world of the Fijians recorded. Their relevance for an understanding of Lapita art, as preserved mainly on the ceramics, is discussed.

Much debate has taken place concerning the appearance of Lapita in the Bismarcks. The ceramics from that region are compared with those from further west, in the light of some of the findings from the Fijian material. The Lapita expansion itself, from the Bismarcks to Samoa, is then re-examined, and some of the problems or anomalies in this process are re-addressed – the dating and speed of the movement, the relative ages of some of the sites, and the integrity of the "pause" in Western Polynesia.

Finally, it is proposed that the meaning underlying the ceramic designs was that of a religious ideology, and that this (together with a pinch of chaos theory) was also the prime motivation for the swift colonisation of the island groups between the Bismarcks and Samoa. It is suggested that this episode may have been unique in the colonisation of the Pacific.

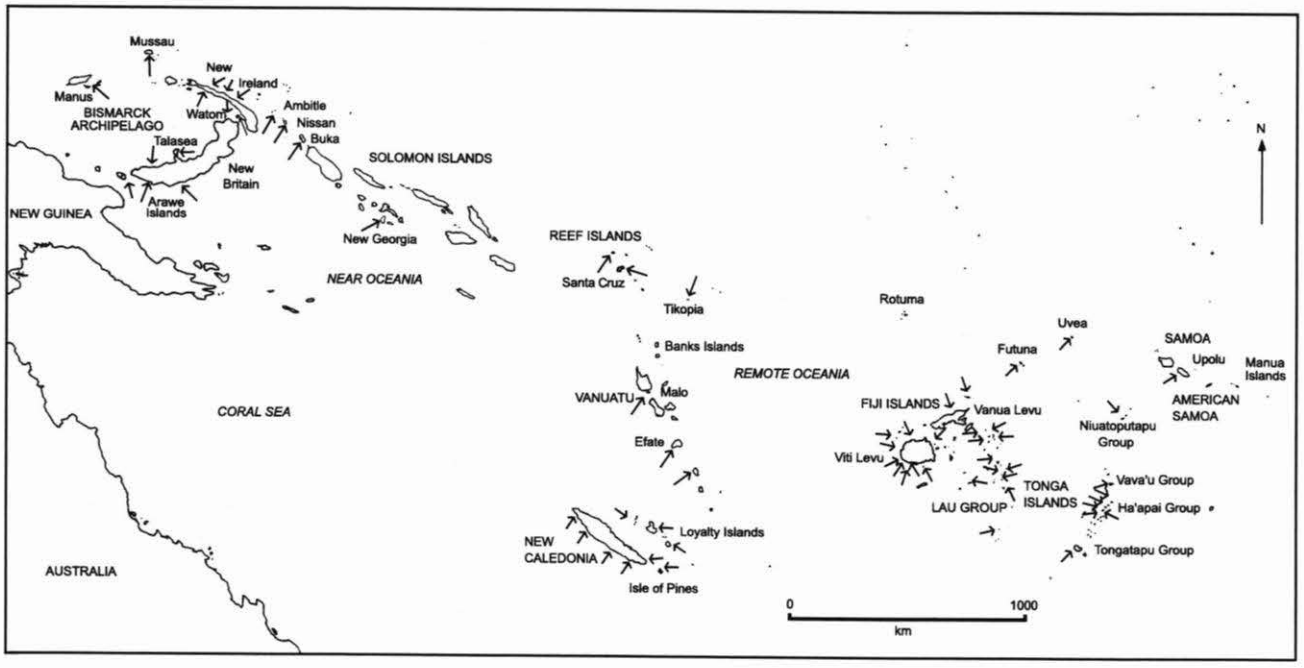

FIGURE 1. Distribution of Lapita sites (arrows). This is approximate only, especially in the Fiji area, where some sites have not been formally reported, and where some are represented by a few or even a single sherd.

CHAPTER 2. PREVIOUS APPROACHES TO LAPITA: AN OVERVIEW

FINDING THE SITES

Lapita pottery was first found some 90 years ago by a Jesuit priest on the island of Watom, in the Bismarck Archipelago. Father Otto Meyer not only conducted excavations, drew sections, and advanced the first theory on the origins of the people involved (Peru), but was also the first and so far the only person involved with Lapita disarmingly honest enough to admit that he didn't know what he was talking about ("But I, poor hermit, what do I know of these scientific questions which are still so perplexing, even for you, the scientists, by the Grace of God", translated by Anson 1983:283). The Peruvian connection was made on similarities in the decoration; 30 years later other origins for the decoration were considered: Bogota, Southern Asia, and spittoons in Cambodia (O'Reilly, translated by Anson 1983:287).

The next sites to be discovered were those at Foué in New Caledonia, some time prior to 1917, by a French geologist and a Swiss naturalist (Sand 1999a:13), and in Tonga in 1920 by the American archaeologist W.C. McKern (1929). These three sites, strangely enough, were situated approximately in the centre and both ends of today's known site distribution, stretching over more than 4000km of ocean and land. The New Caledonian site, after which Lapita was to be named, was revisited and excavated by Gifford in 1952 (Gifford and Shutler 1956).

The first archaeology in Fiji was carried out in 1947 by E.W. Gifford, who illustrated some dentate-stamped sherds from Sigatoka in his report (Gifford 1951: Pl. 19). By 1956 the connection between the ceramics from Watom, New Caledonia, Fiji and Tonga had been realised, and even a possible connection drawn between these and ceramics recently excavated at Kalumpang in Sulawesi (Gifford and Shutler 1956). In the same year that Gifford had dug in Fiji, Heyerdahl (1950) produced a small raft of evidence for another Peruvian origin theory, and thus by the mid 1950s the two methods, archaeological and experimental, had produced opposing theories of settlement.

In the late 1950s Jack Golson excavated in Tonga and Samoa, finding ceramic sites in both (Golson 1957 [cited in Kirch 1988a], 1969).

Although the archaeological data at this stage was far from extensive, in 1961 Golson proposed that the pottery from New Caledonia to Samoa represented some form of "community of culture", spanning the Melanesia/Polynesia boundary (Golson 1961:176), which also had as yet undetermined links with sites to the west, such as Watom. Again a similarity between these ceramics and those from Kalumpang was mentioned.

In Fiji in the 1960s three Lapita sites were excavated, all on Viti Levu. These consisted of two sites on the southwest coast: Sigatoka in 1965 and 1966 (Birks 1973), and Yanuca in 1966 (Birks 1978), the former an open site on a massive dune system, and the latter a rockshelter. On the north coast in 1967 Elizabeth Shaw excavated the open beach site of Natunuku (Davidson *et al.* 1990), Again, strangely enough, this initial and small sample of assemblages included those from the extreme ends of the Lapita ceramic sequence in Fiji. Natunuku is without doubt the earliest site yet found there, irrespective of any current C14 dating (see below), while Sigatoka can be placed at the end of the sequence.

The Sigatoka Level 1 excavations are unique in the archaeology of Lapita sites in that an enormous area of c.1000m^2 was opened up, and also for the fact that the deposit appears to be from a short time span with no intrusive later material (Birks 1973:12). Excavators at the other two sites ran into trouble with disturbed stratigraphy, an almost standard occurrence for Lapita sites everywhere, and this has affected subsequent interpretations which are still being quoted today (discussed below).

Other archaeological work in Fiji at this time included the inland survey of the Sigatoka Valley sites (Palmer 1968), a project on Kabara Island in Southern Lau (Smart 1965a, 1965b), surveys and excavations at fortified sites on Taveuni (Frost 1974, Shaw n.d.), the excavation of a ceremonial mound at Bau (Parke 1998), and surveys of 11 ceremonial sites on Vanua Levu (Parke 1971, 1972).

In 1967 Golson produced an illustration comparing Lapita motifs from Watom, New Caledonia and Tonga with those on the Kalanay ceramics from the Philippines and incised ware from Central Vanuatu (Golson 1972: Fig. 3), and again pointed out parallels between Lapita and Southeast Asian items, in ceramic motifs and decorative techniques, and in shell ornaments (Golson 1972:576-80).

At much the same time, Lapita sites (and those with the subsequent Plainware) were being located and examined in the islands to the east and west of Fiji: in Tonga by Poulsen (1967, 1987) and Groube (1971), in Samoa by Green and Davidson (1969, 1974), in New Caledonia by Smart (in (Golson 1968:9) and Frimagacci (1966-70), and in Vanuatu, where the first dentate-stamped sherds were located in the early 1960s by a French colonial official (Hébert 1965), also by J. Garanger (1971, 1972), and J. Hedrick (n.d.) in 1968 (Hedrick and Shutler 1969). Hedrick found a total of 19 Lapita sites on Malo, one of which is reported as stretching for 3km (Bedford 2000a:30).

By the end of the decade sufficient comparative data had been collected from Lapita sites that Golson, at the Wenner-Gren Symposium on Oceanic Culture History held in 1969 at Sigatoka, was able to suggest that archaeologists were dealing not just with ceramics that were similar in both time and space, a ceramic series, but with a "culture complex", involving at least a range of other artifacts, that extended from Father Meyer's Watom site to that of McKern's on Tonga (Golson 1971).

A gap at the east end of the distribution was closed in 1974, when a truly serendipitous event (harbour dredging and the use of hundreds of tons of explosives) exposed and sampled the submerged site of Mulifanua in what was then Western Samoa (Jennings 1974).

With the east end of the cultural complex known at least in outline, research attention shifted to the next group of islands northwest of Vanuatu. Up until now Lapita sites had been found mainly through being exposed by erosion and brought to the attention of archaeologists, and the subsequent excavations were in the main concerned with obtaining a sample of the spectacular pottery, and of using the new C14 dating method to obtain a chronology.

In 1970/71 an interdisciplinary project, the Southeast Solomon Islands Culture History Programme, headed by Roger Green, searched for Lapita sites in the Reef/Santa Cruz Island Groups, finding eight (the first two at least through local knowledge) and excavating three (Green and Cresswell 1976). For the first time open sites were approached as settlements; their limits determined, sampling strategies used to recover a representative assemblage, and, in 1972 and 1976/77, two large adjoining areas were opened in one of the sites (Green 1976, Sheppard and Green 1991). More Lapita sites were excavated during the later work (McCoy and Cleghorn 1988), with another being found on Tikopia (Kirch and Yen 1982). For the first time outside Western Polynesia the place of Lapita in the local ceramic sequences was starting to be established.

At the same time the west end of the Lapita distribution was being established, with the discovery of sites at Ambitle, and less securely at Lesu, in New Ireland, in 1969 (White and Downie 1980, White and Specht 1971), at Talasea on the Willaumez Peninsula in 1973 (Specht 1974), on the two offshore islands of Garua and Boduna (in Summerhayes 2000a:19) and at Eloaua in the Mussau Islands in 1974 (Egloff 1975). The latter was to lead, 10 years later, to extensive excavations at the large Talepakemalai site which contained, in addition to the standard repertoire of objects, a unique assemblage of preserved organic material (Kirch 1987, 1988b, 2001a).

While the focus of attention was starting to shift to the west, archaeological projects were still on-going in the east, with the author at Lakeba, in the Lau Group, Fiji, in 1975-1978 (Best 1984), and Pat Kirch (1988a) in 1976 at Niuatoputapu, one of the northern islands in the Tongan Group, at a site first located and tested by Garth Rogers (1973). The Lakeba work was an attempt to establish a cultural sequence for the island, and the Lapita period was given equal weighting with any other; in fact the early sites were not specifically looked for until the second season. Two were found, and four or possibly five more were recorded during a survey of Southern Lau (Best 1984:556), with another three reported for Ono-i-Lau (Rogers pers. comm.). The results from the Lakeba project form the data base on which this work is grounded.

Two of the early Fijian Lapita sites, Yanuca and Natunuku, were test excavated by Terry Hunt in 1978. The Natunuku unit missed the part of the settlement containing dentate-stamped ceramics, but recovered a sample of the later Plainware. The Yanuca ceramic assemblage excavated by Lawrence and Helen Birks was analysed by Hunt (1980) for his M.A. thesis. A Lapita site on the island of Naigani off the east coast of Viti Levu was excavated in 1981 (Best 1981, Kay 1984), producing a highly decorated assemblage and two flakes of Talasea obsidian (Best 1987).

The archaeological map of the known distribution of Lapita by now had a bias towards its east end. A sorted matrix of motifs from 14 sites, originally produced in 1976 but still current (save for Hedrick's Malo material), when it was published three years later, contained only one site (Watom) from the western 2000km of Lapita distribution (Green 1979a:43). The same article refuted any claims for the origins of the cultural complex in the central part of its distribution (e.g. Howells 1973 for Vanuatu), and, based on this and

previous ceramic analyses, suggested the New Britain-New Ireland region as the immediate homeland (Green 1979a:45).

In 1985 the Lapita Homeland Project was launched, with 13 projects undertaken in the eight or so islands or island groups selected for study in the Bismarcks. These included the re-excavation of the Lapita sites at Eloaua, Watom and Ambitle, the search for new Lapita and post-Lapita sites, and the excavation of cave deposits to determine the time depth of occupation in the area. The results doubled the number of known Lapita sites in the Bismarcks (Ambrose 2000), and set that period into a 33,000 year sequence (Allen *et al.* 1989). A vast amount of information continues to be produced from the project, with the latest focus on Lapita concerned with local sequences and regional comparisons (e.g. Summerhayes 2000a, 2001).

In Fiji Andrew Crosby conducted two seasons of fieldwork on Beqa and Ugaga Islands, in 1985 and 1987, recording 179 sites on Beqa and two on Ugaga, two of which contained dentate-stamped ceramics (Crosby 1988).

At the other end of the Lapita world, between 1985 and 1989, Dirk Spennemann was working on Tongatapu, locating and excavating Plainware sites and setting them into both changing landscapes and a local sequence (Spennemann 1989). In 1984 Tom Dye (1988) surveyed 11 islands in the Ha'apai Group and excavated Lapita sites on three, Nomuka, Tungua and Lifuka, finding possible evidence for regional variation in Lapita ceramics (also see Dye 1996).

In 1990 further work in Ha'apai was started by Dave Burley, who was joined by Richard Shutler in 1991. A number of field seasons were conducted up to 1997, and although the initial aim was to investigate the aceramic period, the siren call of the early ceramics proved too strong, and a considerable amount of material together with C14 dates has been recovered (Burley 1991, 1992, Burley *et al.* 1999). Settlement patterns and redating of the length of the Lapita period have been major results from these excavations. Poulsen's T0-2 site has also been re-excavated (Burley *et al.* 2001).

West of Fiji the numerous excavations and analyses of Christophe Sand (1992, 1996, 1997, 1999a, b, c, 2000), have rewritten the ceramic sequence of New Caledonia, demonstrating that the Lapita settlers were the first comers to the islands, describing the vessel shapes and decoration, separating the dentate and carved paddle ceramics, and shortening the length of the Lapita period. The discovery of a pit at Site 13 containing a number of almost complete vessels has contributed significantly to the understanding of the total design on a single pot. Galipaud (1996, 1997) has examined the sequence of Southern New Caledonia, and suggested it may differ from the northern part and the Loyalty Group.

Work in Vanuatu since 1994 has also redefined the ceramic sequence, again demonstrating that the earliest inhabitants were the Lapita peoples, that Lapita ceramics lasted for only a few hundred years, and that these developed into separate regional entities (e.g. Bedford 2000a).

The main Solomon Islands chain is the last gap in the distribution of Lapita sites; southeast of Buka only two are known, on New Georgia (Felgate 2001) and the neighbouring island of Kolombangara (Summerhayes pers. comm.).

Work has continued apace in Fiji, with some of the old sites revisited and others discovered. The Sigatoka site has been returned to on a number of occasions, with some 10 periods of excavation and several surveys taking place between 1987 and 2000, both on the dunes and at adjoining locations (Marshall *et al.* 2000: Table 2). Dentate-stamped sherds were found on the seaward dunes associated with an earlier occupation than that of Level 1 (Hudson 1994, Petchey 1995), and also on the back dunes (Marshall *et al.* 2000:116). Natunuku was re-excavated in 1996 (Anderson and Clark 1999:33), and Naigani in 2000. Two of Crosby's sites on Beqa and Ugaga were excavated in 1997 by Anderson and Clark (1999:33, Clark 1999). A Lapita site is also reported for Totoya (Clark and Cole 1997, cited in Anderson and Clark 1999), and another one or possibly two on Mago (Clark and Hope 1997, cited in Anderson and Clark 1999).

In 1999 the Northern Lau Islands in the Vanuabalavu Group were visited by the geographer Patrick Nunn and Sepeti Matararaba from the Fiji Museum, and Lapita sites (late, with only one or two sherds) were found on the islands of Susui and Cikobia-i-lau, with a possible sherd from the south end of Vanuabalavu itself (Nunn and Matararaba 2000). Another single sherd was found by Aubrey Parke (2000:118) on the island of Yacata, southeast of Taveuni. A single late dentate-stamped rim was found in a rockshelter 4km inland near Tau Village in Western Viti Levu (Anderson *et al.* 2000). In the Yasawa Group two dentate sherds were found on Waya Island (Pietrusewsky *et al.* 1997, cited in Anderson and Clark 1999).

One Lapita sherd, probably late, has been reported from 4km inland at Vaturekuka on the north coast of Vanua Levu (Parke 2000). This was retrieved from river dredging tailings in 1967/68.

The above list of sites is far from exhaustive, and the number now recorded is close to 200 (G. Clark pers. comm.). The potential for useful information from these is extremely variable, with a site like Talepakemalai at the top end of the scale, and the late disturbed sites represented by one sherd at the other. While the ceramics are still an integral part of the described material culture, excavation reports now cover in detail other aspects such as the environmental and ecological

contexts, site history, internal site layout and external connections etc. The ceramic decoration is usually studied in terms of the motif component, the distribution of which is used for intra- and inter-site comparisons, both temporal and spatial. The history of this approach goes back some 25 years.

ANALYSING THE LAPITA DECORATIVE SYSTEM

As mentioned above, the first systematic attempt to compare Lapita (and other) designs was made by Golson in 1967. Six motifs (with between two and nine variants) were illustrated, grouped mainly on geometric similarities: Y motif, shield motif, arcade motif etc. One of the categories (D) is referred to as "curvilinear composition". This is not based on motif similarity but rather similarity of overall design, and all its five variants are part of complex anthropomorphic designs, executed with bands of dentate that were later to be known as restricted zone markers (Golson 1972: Fig. 3). This was the preview of an approach that was not to reappear for another 23 years (Spriggs 1990a), and one which has heavily influenced the following work.

At the same time Jens Poulsen (1972) had analysed his Tongan material by a more detailed and typological method, ending up with 16 categories and a total of 234 motifs. His last category (Q) contained all the unique motifs, and at least five of these are associated with the same class of anthropomorphic designs.

Both these systems were replaced in 1975 by one developed by Hirini Mead, based on his previous work on Polynesian adze handle designs, and influenced by approaches to linguistics and a study of Nevada cattle brands (Mead 1972, 1975a:22, Green 1990:34). This looked for the compositional rules behind the elements and motifs which made up the decoration, moving the focus of analysis from "the concentration on simple identities in content and technique to a consideration of similarities and differences in their structural organisation as well" (Mead 1975a:20). This work distinguished three stages or parts in the decorative system "a set of techniques by which design elements can be given visual form; an inventory of design elements and units; and a set of design processes which may be couched in the form of rules. All three parts yield data which are susceptible to comparison for the purpose of inferring cultural relationships" (Mead 1975a:20).

Mead's analysis focused primarily on the last two of these stages, and was applied to Yanuca and Natunuku ceramic assemblages respectively by Mead and Elizabeth Shaw. External similarities in design elements and motifs common to these two sites and those of Tonga, Vanuatu, New Caledonia and Watom were listed by Mead (1975b:63). Regional and temporal relationships between Fijian and Tongan sites were advanced based on the analyses. The Mead system has been further developed by Sharp (1988) who extended the analysis to motif level, and Anson (1983, 1986), who preferred a finer grained analysis to that of Mead, scaling down to the alloforms rather than the motifs themselves, returning to a more typological approach.

Mead's system or variants of it have been the method adopted in all subsequent analyses (bar one) until the present; e.g. Donovan 1973a, 1973b, Green 1978, 1979a, Anson 1983, 1986, Best 1984, Kirch 1988a, Summerhayes 2000a, Wickler 2001), with the number of motifs and their alloforms over 500 by the mid 1980s (Anson 1986:160). Fifteen years after the inception of the Mead approach Green (1990), in a somewhat despairing article, charted the use and mis-use of the system during that time, and chided those who had strayed from the straight and narrow (for a reply see Anson 1990:53). Green (1990:43) ended his article by describing the Mead system as "an approach which may eventually capture the rich information undoubtedly embedded within the Lapita artistic style and lead to new insights".

In the same volume of papers a new approach to the study of Lapita decoration, one with its roots in Golson's earlier work, was proposed by Spriggs (1990a), in which the designs are not broken down into their basic components, and neither are the underlying structural rules considered. This approach goes for the big picture – the reconstructed designs themselves – and charts the changes apparent in these through time and/or space. A follow-up article by Spriggs (1993) took these stylistic changes even further. This type of approach was not possible until fairly large or conjoining sherds were available from which the original designs could be reconstructed, and the Fijian assemblages studied by Mead and Shaw did not contain any of these. Although this method has resulted in the recognition of a number of associations between stylised designs and their original form, the implications of this have not been followed up.

The third part of the Lapita decorative system described by Mead, the techniques which transfer the designs to the pot, have not been studied to any extent. A set of wooden tools was made by Green's students in the 1970s, and a flat-based vessel (a replica of the one shown in Green 1979a: Fig. 2.8) decorated by them. The tools have apparently since been misplaced, but were all apparently standard straight and curved stamps, one of them a block stamp for executing restricted zone markers.

The only published analysis on Lapita ceramic technology is that of Siorat (1990), in which some experiments in the manufacture and use of tools were undertaken. The main body of work however, was on identifying the tool types used through study of the decorations on the pots themselves.

Siorat found that only three types of tool were used; straight, curved and round (a hollow tube), with two sizes in each. The motifs were classified into linear, curved or composite groups. Based on his research Siorat (1990:59) proposed that each set of tools was used only once and then discarded. This conclusion however seems somewhat implausible considering the sheer number of vessels involved and the relative complexity of the tools, and some other explanation is more likely.

Work on the ceramic designs of the late end of the Fijian sequence has also been carried out, by Palmer (1971) and Rossitto (1994, 1995).

The 50 years or so of research outlined above has produced sufficient data to answer at least two of the basic questions concerning the arrivals of the first colonists.

The first of these is the "when", and after some 45 years of radiocarbon dating, despite its imperfections and those of the archaeologists' sampling strategies, the approximate timespan of the movement is probably between about 3300 B.P. in the west to about 3000 B.P. in the east, although reasonable cases can be made for making this slightly earlier in the west and slightly later in the east (e.g. Anderson and Clark 1999, Burley *et al.* 1999, Kirch 2001a:205-13).

Although Lapita canoes have not yet been found their voyaging capabilities, and that of their crews, have been the subject of some study. Initially thought to have been hit-or-miss drifters (e.g. Sharp 1957), recent work (Irwin 1992, 1997, 1998) has demonstrated that a deliberate low-risk strategy is likely to have been employed in the search for new lands, and that even the largest water gap along the route taken could be successfully crossed by return voyages.

The "when" and the "how" of Lapita have thus already benefited from intensive research, and although there is still serious disagreement amongst researchers, for instance with regards to the finer details of chronology, and the population dynamics needed to fuel such a fast expansion, no significant departure outside the already defined parameters can be expected.

The "why" of Lapita is another matter. That this should have taken a back seat until sufficient data had been collected during research for the above is to be expected. There is now, however, an enormous body of information on Lapita sites from Samoa to the Bismarcks, and it is time for archaeologists to test the waters.

Although there have been numerous suggestions as to what the causal variables might be (most of which are mentioned in Irwin (1992), with most no more than throw-away lines), no formal data-based theory has yet been advanced, save for that of Rathje (2000). This proposes that Lapita was a horizon style equivalent to both Olmec art and modern American institutions such as Holiday Inns and McDonalds restaurants, with no evidence for a Homeland or of any time differential across the entire Lapita distribution. While this is a nifty idea it does not fit the generally accepted evidence – that there definitely is both a directional and chronological gradient, from west to east, and that the "symbol system" which is the pottery decoration starts to decline almost before the first comfort stop is reached. Nonethe-less the idea that familiarity breeds content in such a social situation would indeed be likely to apply, as Rathje suggests, to the Lapita expansion, but only as one of a number of secondary affects.

As a reaction to what they described as "culture-historical scenarios", Clark and Terrell (1978) produced a number of theoretical models to examine what archaeologists meant by Lapita – Strandlooper, Trader, Supertramp and Population growth. The model variables were either descriptive or causal, the latter being strategies for subsistence, reproduction, dispersal and colonisation. In reply Green (1982) pointed out that these lacked the empirical base which even then was available, and suggested another, the Coloniser model, a revised version of the Trader. Five causal variables were included in its characteristics. Almost a decade later, with data from the Lapita Homeland Project available, the Coloniser model was seen as inadequate in the western end of the Lapita range. In its stead Green (1991a) proposed the Triple I model; Intrusion/Innovation/Integration. This has since been updated by both Green (2000a) and Spriggs (1996a), and is the most realistic model yet advanced.

What is interesting however, in all but the latter, is the use of the term "causal variable" as one of the model characteristics. These are not causal at all, but merely strategies which enabled the Lapita peoples to do what they did when they got there. This was recognised by Green (1991a:296) who suggested a change in the terminology from "causal" to "cultural", and more recently by Irwin (1998:132), who commented that means were being confused with ends.

The "why" of Lapita thus remains largely unexplored. If it is possible to identify the motive or motives behind the actions of another culture 3000 years ago, then this can only be through an artifact that reflects the emotions and beliefs of the society. The ceramic decoration, in all its complexity and flux, is most likely to meet these requirements. The rest of the monograph sets out to attempt this, from the archaeology up.

CHAPTER 3. LAKEBA ARCHAEOLOGY

As stated above, the Lapita ceramic designs will only be understood through a contextual approach: from analyses of temper types within the sherds themselves, through ever-widening settings to eventually encompass a world canvas. The Lakeba archaeological data covers a span of 3000 years, 2500 of these from two well stratified rockshelters, and provides a firm base from which to attempt such a journey.

The Lau Group consist of a north-south chain of islands lying between the main islands of Fiji and Tonga. They are thus on the boundary between the ethnographic regions known as Polynesia and Melanesia, and their archaeological sequence, free from the influences of other contemporary cultures, might be expected to contain information relevant to the origins of this invisible division, and specifically to the loss of pottery to the east.

Fieldwork on the island of Lakeba, in the Lau Group, Fiji, was carried out by the author between 1975 and 1978, as part of PhD requirements (Best 1984). A culture-historical approach was adopted, with the main aim being the construction of a comprehensive ceramic sequence covering the entire prehistory of the island, together with the investigation of technological aspects of the ceramics. Settlement pattern and economic data were also collected. Two hundred and nine sites were recorded, with excavations being carried out on 10, of which five were test excavations only. In addition, a further 101 sites were recorded in the Southern Lau Islands, from which surface collections were also made.

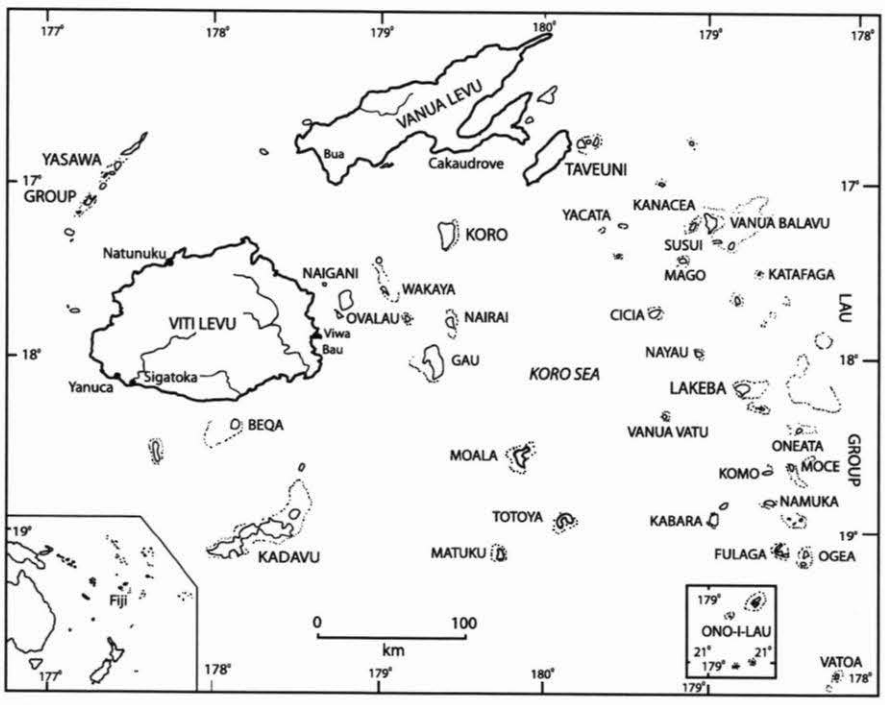

FIGURE 2. Map of the Fiji Islands and (inset) their Pacific context and the southernmost Lau Islands (After Scarr 1983: VIII-IX).

THE LAKEBA CERAMIC SEQUENCE

This has been covered in detail elsewhere (Best 1984), and is only briefly reviewed here. The sequence, covering a period of some 3000 years, is based mainly on assemblages from two well stratified rockshelters, with the early and late ends supplemented by excavated and surface collections from both open and fortified sites.

Seventeen sorted matrixes, based on both equal (Jaccard) and unequal (Robinson) weighting coefficients, together with average linkage cluster dendrograms, were calculated for a sample of sites and their assemblages (Coefran package). The result of the final run (Robinson), involving a sample of the archaeological units (sites and layers), illustrates the entire ceramic sequence, and is shown in Figure 3. This sequence is taken to be representative in all but minor detail of every ceramic assemblage so far retrieved from Viti Levu and islands in the Koro Sea (allowing for obvious disturbances or lack of stratigraphy in the sites). Both the shaded matrix and dendrogram of the 60 ceramic assemblages contain five clusters in chronological order.

Cluster I. This contains sites with ceramics of the Lapita style. There is change through time within the cluster; the number of vessel shapes reduce from 12 to six, carinated forms vanish, and decoration declines from initial fairly complex designs to simple arcs and zig-zags along the rims. Seven of the eight categories of fine-lipped red-slipped bowl sherds in the sequence occur at the late end of this group, and the only potstand example occurs with these.

Cluster II. What has been termed "Polynesian Plainware" features in this group: simple globular pots, and bowls, with handled narrow-neck jars. Expanded rims are common, changing through time from flat-lipped to rounded. Decoration is restricted to slipping (the other fine-lipped bowl category occurs here), and burnishing, sometimes over a slip. The upper body/neck of the vessels often bear horizontal striations or wipemarks, such as might result from a handful of fibrous material.

Cluster III. The break between Clusters II and III is the most abrupt of the entire sequence. A totally new vessel shape and rim form, and a new decoration, that of carved paddle impressing, enters at this stage. A minor but important set of ceramic traits occur for a period within the group; rim notching, asymmetric incising, finger pinching and cord-wrapped paddle impressing.

Cluster IV. This contains sites, mainly fortifications, associated with limestone outcrops. The ceramics consist of *kuro* or cooking pots with more sharply everted rims than before (some with rim notching), bowls, and two shouldered vessels with sharply inverted rims. The main decoration is elongated spot paddle impressing.

Cluster V. These are late inland and coastal fortified sites, both hilltop and ring-ditch. The main vessels are *kuro* (now with some carinated examples), the broad rimmed bowl or *dari* used for mixing *yaqona* or *kava*, the water jar or *saqa*, and a shallow dish. Decoration consists of symmetric incising, end tool impressing, appliqué, and rare carved paddle impressing and comb incising.

The matrix, and seriations of the same data (Figures 4 and 5) display some important points. The development of Polynesian Plainware from Lapita is clear; although some of the original traits disappear, and others arise, there is also continuity. This is not the case for the appearance of carved paddle impressing, where every aspect of the ceramics changes, including the temper (see below). It has been suggested (Best 1984:628) that contact with New Caledonia might have influenced Fijian ceramics at this point. Although the process is abrupt there is no question of any kind of absolute replacement; the occasional expanded rim lithic-tempered globular pot at the end of the early stage has been decorated with parallel-rib paddle impressing, and the two pot types co-exist for a short time at both this and the other rockshelter site (101/7/2b). The stratigraphy at both rockshelters consisted of banded multicoloured occupation or activity layers often not much thicker than the sherds themselves, in groups up to 30cm thick and separated from other such groups by storm-deposited sand (Best 1984: Figs 2.8, 2.14). Disturbance was thus able to be controlled for, and the presence of both types of pottery in Layers K1 and K2 at Site 197, and in Layers 0 and P at Site 2b, are clear indications that there was "no instantaneous and complete replacement of one pottery style by another [with] an (archaeologically) short period when both were in use" (Best 1984:190).

Within the group dominated by assemblages with carved paddle impressing is a sub-group, characterised by the traits mentioned above: notched rims, asymmetric incising, finger pinching and cord paddle impressing. While this is not discernible in the Q mode matrix displayed here, it is present in two of the R mode analyses (where the ceramic categories themselves are the units of comparison) which were carried out for the main work, and are discussed there (Best 1984:205, 288). At one of the rockshelter sites obsidian from Vanuatu occurs in the occupation layers at this time or slightly later (Best 1984:431-34, 643), and it was suggested that these new ceramic traits are a result of that contact (Best 1984:630).

The emergence of symmetric incision, end tool impressing and appliqué decoration, which characterise the late end of the sequence, from c.950 B.P., is accompanied by a number of new vessel forms. The impetus for the new traits remains to be identified; their similarity to Mangaasi decoration from Vanuatu has been suggested in the past, however with the end of Mangaasi now stated to be about 1200 B.P.

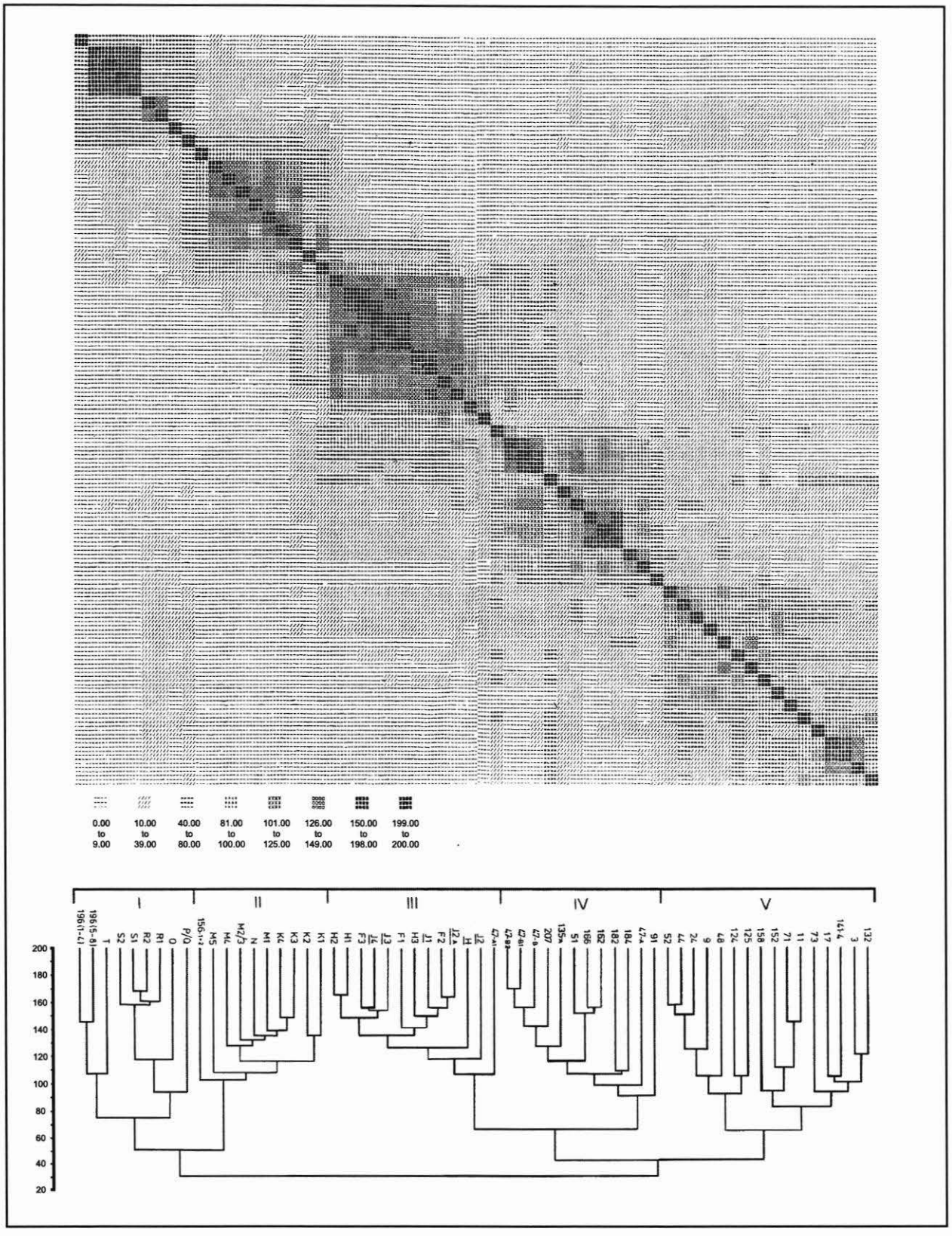

FIGURE 3. Robinson matrix and dendrogram of Lakeba ceramic sequence. Data units are site or layer assemblages, and are sorted in chronological order, with Lapita in Cluster I (matrix top left) through to late sites (up to European contact) in Cluster V (matrix bottom right). Shading represents degrees of similarity between assemblages, based on shared percentages of ceramic category frequencies. Darkest shading is maximum similarity.

(Bedford 2000a:240, Fig. 7.16) any direct connection with the Central Islands is less likely. However ceramic sequences from this period for Northern Vanuatu are as yet poorly understood, and a connection with this area remains a possibility, and is further explored below.

The original four-phase ceramic sequence proposed for Fiji (see Green 1963:235-53) is contained within these clusters as follows: Clusters I and II include the Sigatoka Phase; Clusters III and IV are equivalent to the Navatu Phase, while Cluster V contains the Vuda and Ra Phases. Differences between the Lakeba sequence and those of Eastern Viti Levu at least are restricted to the late end, and feature the technique of comb incising and the production of the early 19th century zoomorphic and representational drinking vessels, of which only one example, a comb incised sherd, was found on Lakeba. For approximately the first 2000 years, however, the sequences appear very similar, even to the apparent restriction of the so-called potstands to the late end of the Lapita period, as indicated at Naigani (Best 1981:10) and in Level 1 at Sigatoka (Birks 1973). Two researchers (Clark 1999, Hunt 1980) have however suggested, on the basis of their own ceramic analyses, that significant regional differences in the post-Lapita Plainware period do exist, and these are discussed below.

Further afield, the ceramic sequences for Tonga, Samoa and Uvea/Futuna parallel the first two periods on Lakeba, with a few carved paddle impressed sherds occurring at the end of these, in Tonga and Samoa at least.

TEMPER

Temper analysis was chosen as the most accessible aspect of ceramic technology to compare with the form and decoration studies, since at that time a body of comparative data was already available from the work of W.R. Dickinson (e.g. Dickinson and Shutler 1979). Over 1000 thin sections were made and examined, and point-counting carried out on 774 of these. A total of 229 temper categories were identified for the sequence (Best 1984:323-48).

Figure 6 shows the seriation of temper types, and their relationship to the five ceramic periods based on the matrix clusters. From this it can be seen that certain temper types are mainly restricted to certain ceramic periods, and that Periods I, IV and V contain not only the most diversity in tempers but also those that are exotic. All types other than feldspathic-lithic and calcareous originate from outside the island, and of these only iron oxide is likely to have come from Central

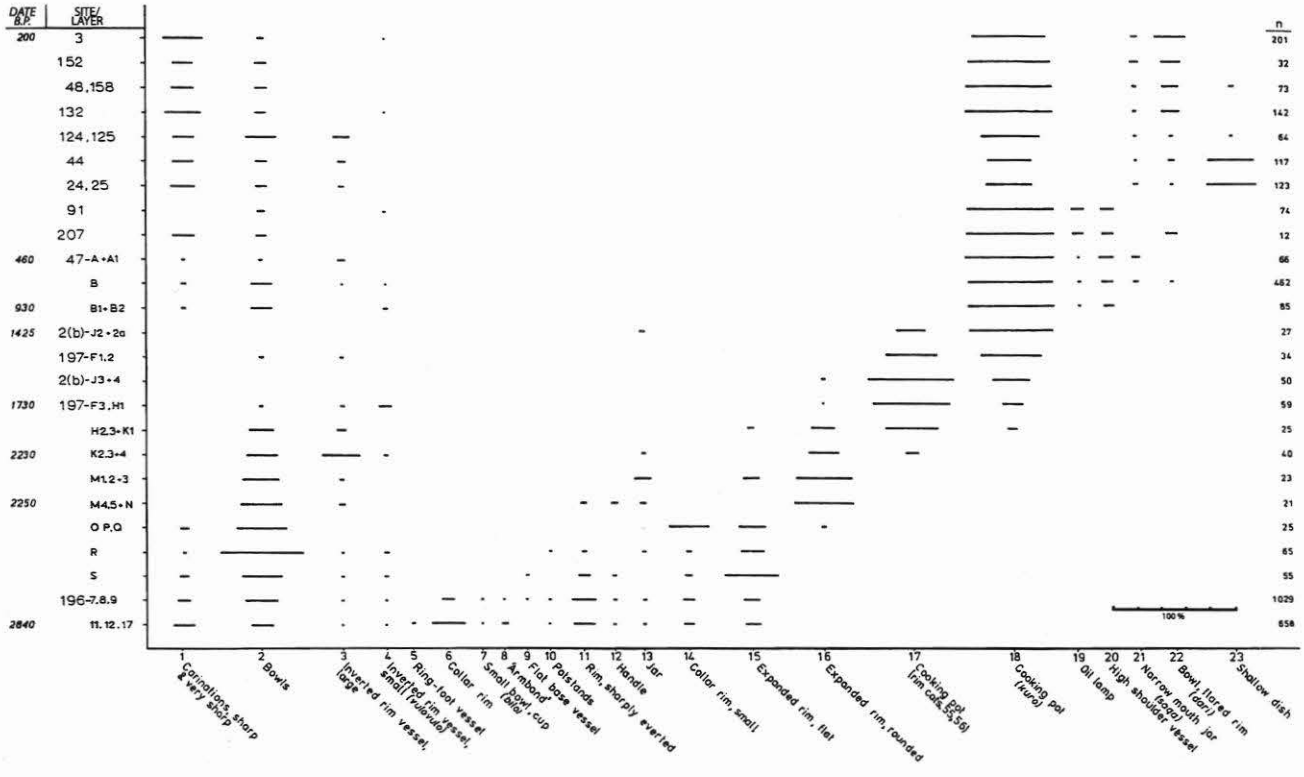

FIGURE 4. Lakeba ceramic sequence: vessel shape and rim form seriation.

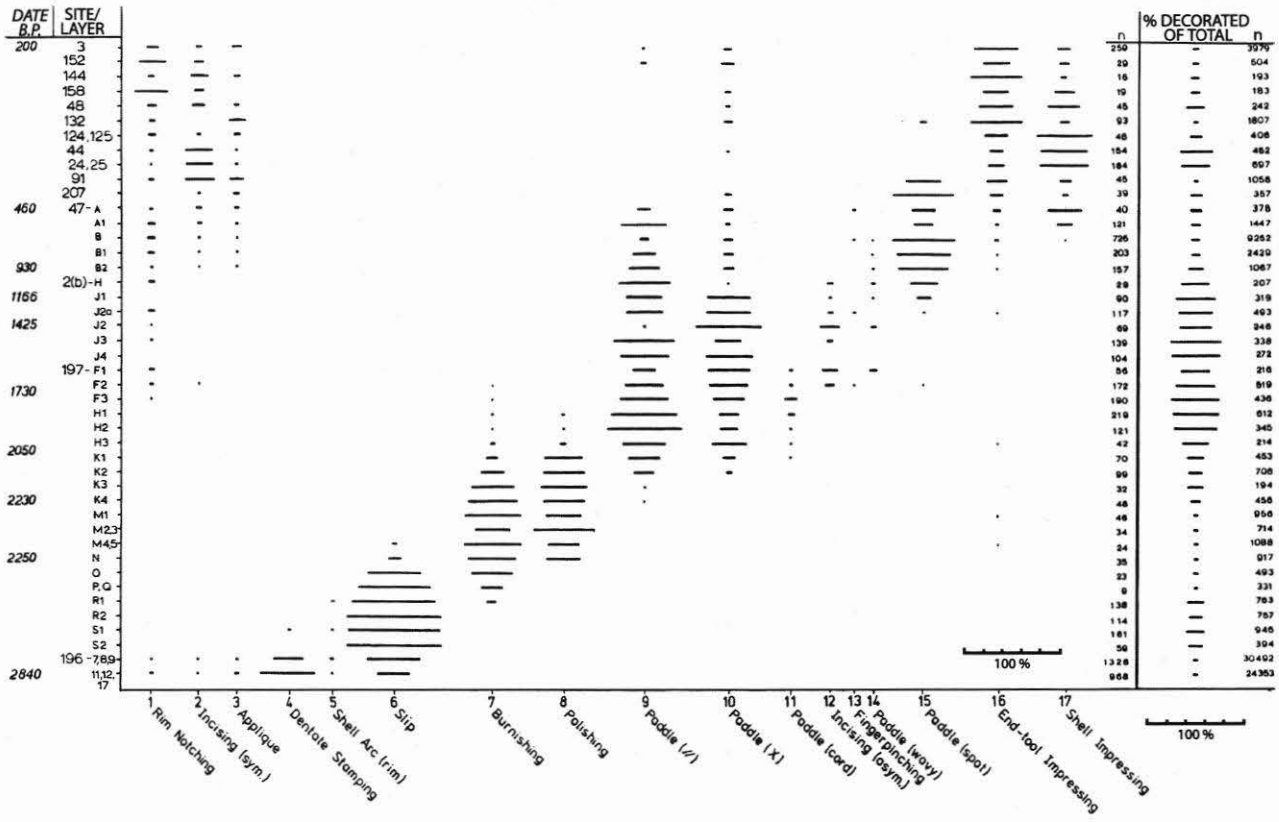

FIGURE 5. Lakeba ceramic sequence: seriation of ceramic decoration techniques.

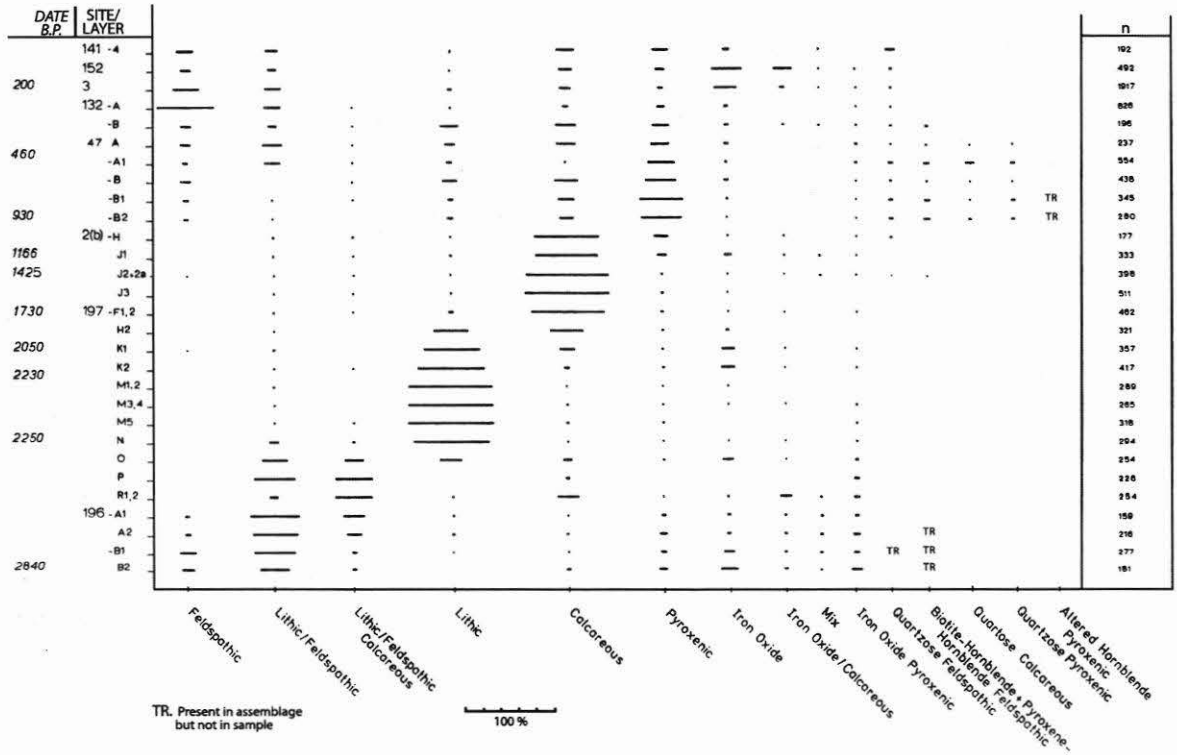

FIGURE 6. Lakeba ceramic sequence: seriation of temper types.

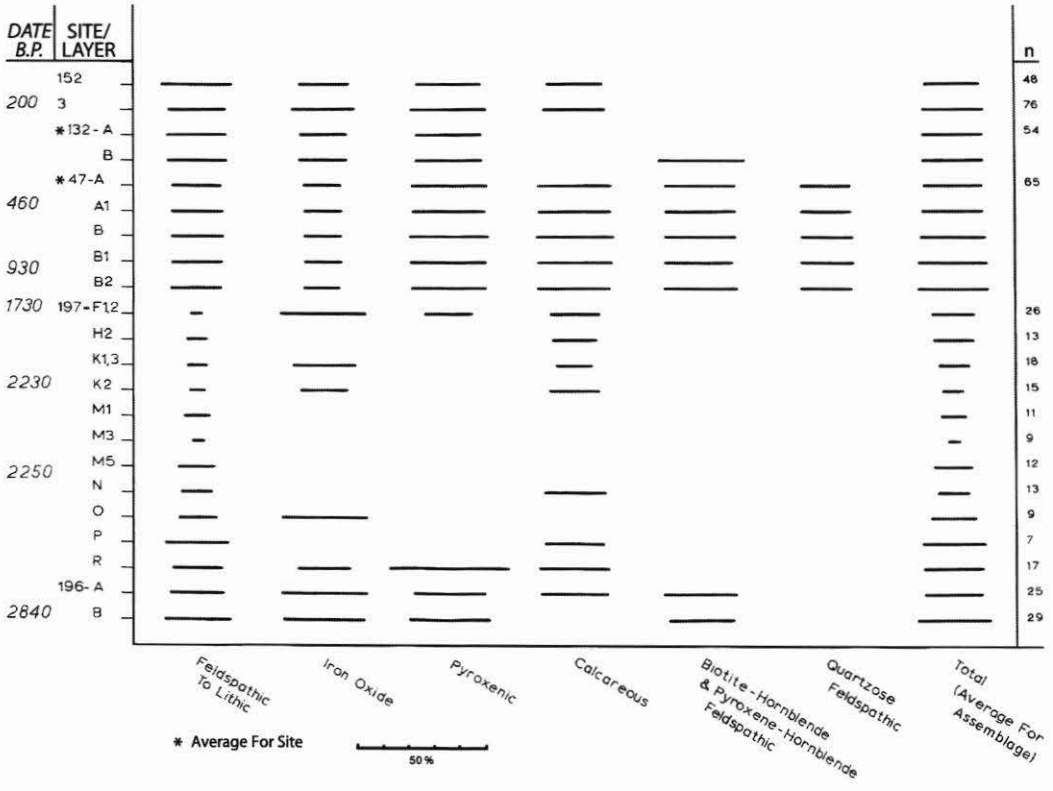

FIGURE 7. Lakeba ceramic sequence: temper types by volume.

Lau, with the rest from Northern Lau, Kadavu, Viti Levu, and possibly Vanua Levu (Best 1984:355).

The amount of temper in the clay was also quantified through point-counting (Figure 7). The significant aspect in this diagram is the shape of the feldspathic-lithic and total columns, which shows a gradual decrease in the volume of temper in the clay during the Plainware period, and the appearance of new tempers with a greater density at the start of the carved paddle impressed ware.

Other aspects of the cultural sequence were also examined: settlement patterns, shell and stone artifacts, and faunal material.

SETTLEMENT PATTERN

The data for this was obtained from site surveys of 10 islands in Central and Southern Lau, with the sites plotted in terms of height above sea level and distance inland (Figure 8). Lakeba itself was surveyed intensively, with all areas covered save for some of the valleys, and 270 sites were recorded. The other Central and Southern Lau islands had from one to three days survey each, with one individual surveying the interior and the other the coast, and these surveys, while not as thorough, recorded and sampled 101 sites, considered to be a representative sample.

Period I. This has been divided into two parts, the earliest (Ia) containing sites with typical Lapita assemblages where both the body and lip of the pots bear complex decoration, the later (Ib) with sites where the only decoration is impressed arcs on the rims; the last stage of the dentate-stamped style. Although the former and most of the latter are on the coastal beaches, there are two sites from the second period which are inland and up the hillslope, an indication of the start of inland occupation. The speculation that these last sherds from the tail end of the early sequence indicate an earlier inland Lapita occupation (i.e. Anderson *et al.* 2000) is not correct.

Period II. The Polynesian Plainware assemblages. These are spread over the landscape, as far inland as possible and on the highest hilltops. The time span of this period is if anything shorter than for the previous one, however there are almost 10 times as many sites.

Period III. Only two sites from the carved paddle impressed pottery period were securely identified; these were

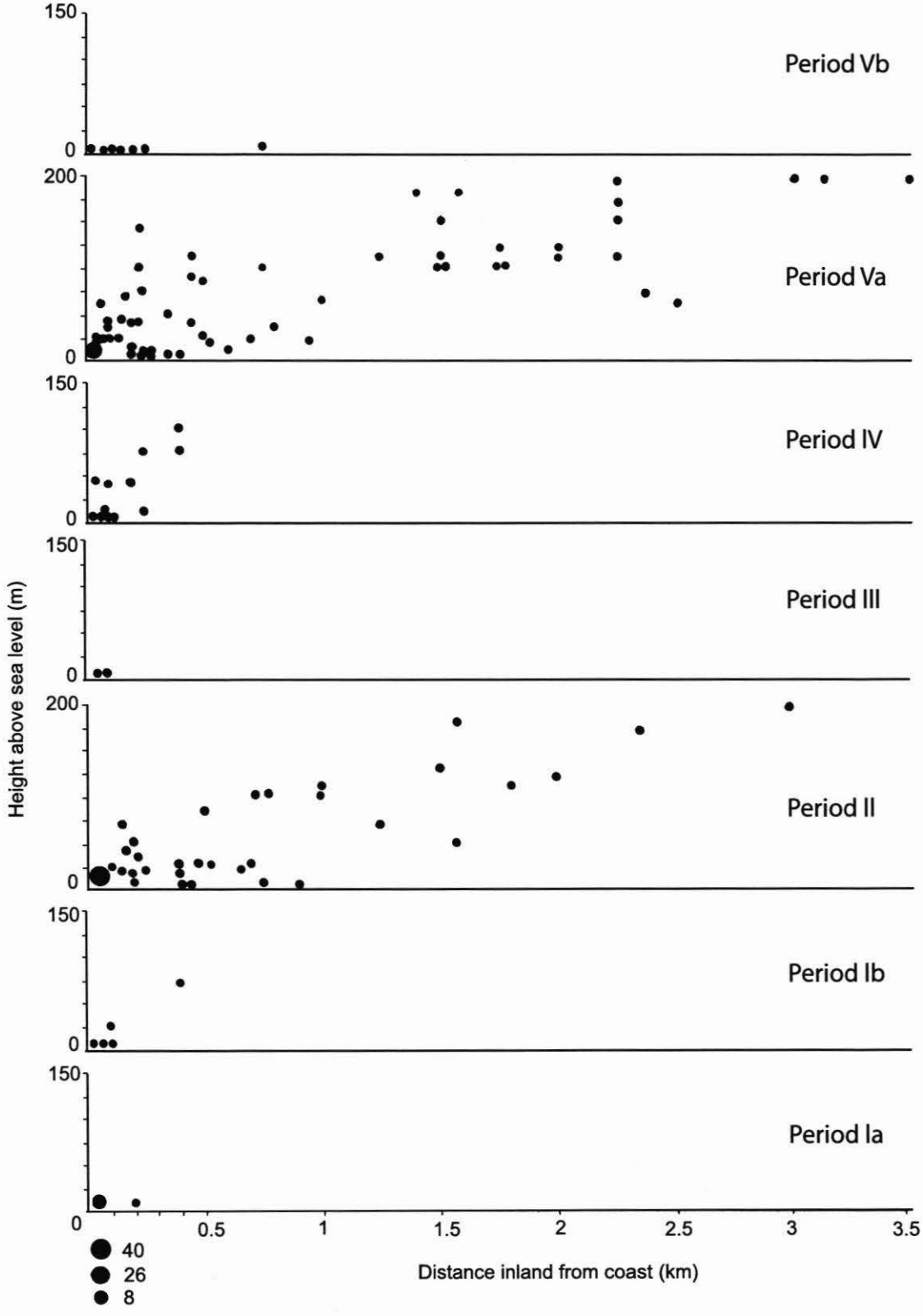

FIGURE 8. Settlement pattern data for 3000 years of occupation in Central and Southern Lau. Multiple sites are shown as larger dots (see key).

the two rockshelters. Similar pottery was found in the surface collections from the coastal flats, and in test holes, but these sites were not further examined.

Period IV. This contained the coastal limestone sites, the first fortifications on the island, with pottery characterised by pyroxene temper and elongated spot carved paddle impressing, but also with some rare symmetric incising, appliqué and end tool impressing.

Period V. As with Period I, this has also been divided into two parts. The first (Va) contains sites occupied between c.400 and 200 B.P., consisting of mainly inland hilltop fortifications, some of them built over the earlier inland occupations, with ceramic decoration consisting mainly of symmetric incising, appliqué and various forms of end tool impressing, with a minor component of cross-hatch paddle impressing. The last stage of settlement (Vb), where the inhabitants were living when the first Europeans arrived, are the coastal ring-ditches. The pottery in these is the most elaborate for this end of the sequence, with the same decorative techniques as for the previous period.

ARTIFACTS

A number of artifact classes were restricted either to the two early ceramic periods, or to them and one other.

Adzes. Three main types of stone adzes were identified, based on cross section. Associated mainly with the Lapita assemblages were those with oval and plano-convex section.

Flakes. Over 6500 microcrystalline siliceous flakes and cores were found on Lakeba, but were restricted to Periods I, IV and V (Figure 9). These were mainly silicified coral or jasper. Six formal tool types were identified, some with micropolish.

Twenty flakes of obsidian were also found, 18 of these in the stratified rockshelter deposits. Of these, two in the early layers, associated with dentate-stamped pottery, were sourced to Tonga, while 12, from the late end of Period III, and associated with the cord-wrapped paddle impressed, finger pinched, and asymmetrically incised sherds, were attributed to a Vanuatu source. The remainder were not identified, although none were from Talasea, as reported by Allen and Gosden (1996:192).

Shell tools. Thirty eight fishhooks and blanks were found, all bar one of pearlshell, concentrated mainly in Periods I and II, but also occurring in Period III. Three digging blades, all pearlshell, were found in the early open site, and of the 18 slate pencil sea urchin spine abraders recovered all bar one were from Period I.

Ornaments. The distribution of the six main ornament types (Table 1) shows that while shell armbands and small circular beads are present throughout the sequence, broad and long units, ceramic bands and pendants are restricted to the Lapita period.

FAUNAL MATERIAL

Bird and turtle were the main meat resources consumed by the first arrivals (Figure 10). Two species of the former, a megapode and a large pigeon, were part of a large assemblage of avifauna found in two concentrations of ash from an open fire in Layers U and W, the two lowest layers with artifactual remains other than midden, and did not occur again in the sequence (Table 2). Over 80% of the pigeons and doves exploited in the 2500 years represented in the rockshelter occurred in these two layers, with seabirds, rails and chicken making up 76% of the avifaunal calories after that. In terms of calorific value the birds provided c.60% of the total meat resources, again never to reach more than 5% in later layers.

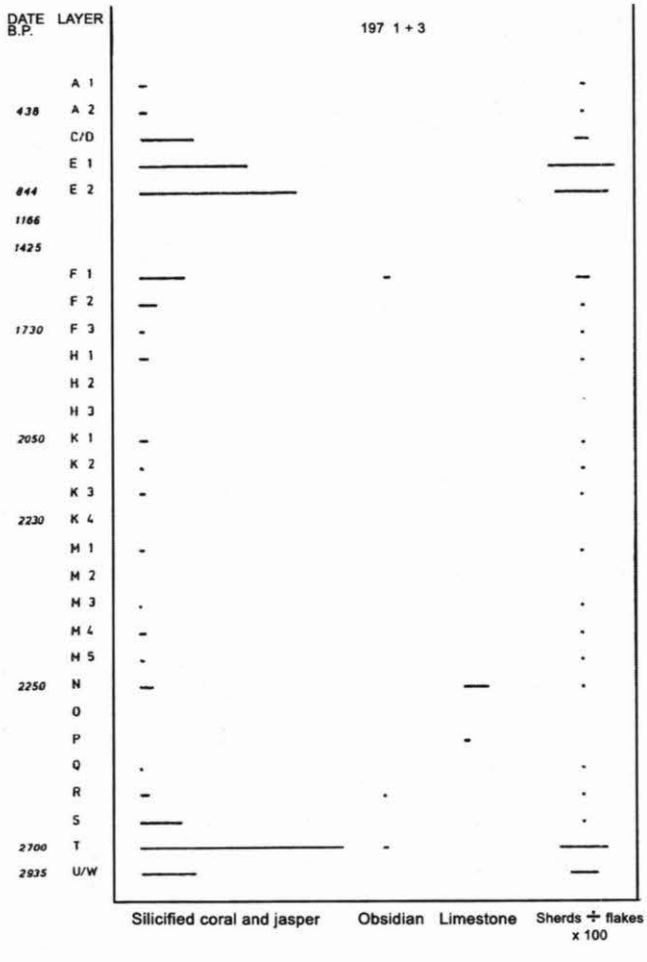

FIGURE 9. Distribution of siliceous flakes in Lakeba sequence.

	Ceramic		Shell				
Site / layer	Band	Disc	Broad unit	Long bead	Pendant	Bead	Armband
47						2	
197-F						11	6
....H						6	5
....K						51	6
....M						62	9
....N						32	4
....P						1	1
....Q						1	
....R					1	8	
....S				1		6	4
....T							1
....U				1			
196-B	14	1	7	11	2	4	34
....C	12		9	2	1	2	13
TOTALS	26	1	16	15	4	186	83

TABLE 1. Distribution of ornaments through time on Lakeba at Sites 196 (Lapita), 197 (S-U = Lapita), and 47 (late fortification).

Turtles provided the next highest calorific value; c.20% of the intake; this compared with the next highest figure of c.6% for any later layer. Human bone, in small fragments bearing cut marks or charring, appear in the rockshelter midden remains from c.2500 B.P., and if the calculated minimum numbers are even approximately correct, and if this is not the result of some cave-associated ritual, then it would seem that this was an important food source, which appears to have replaced turtle in the diet. The relationship between turtles and humans is returned to below.

One shellfish species, the gastropod *Nerita polita*, living in the high tide area of the intertidal zone, provided c.75% of the total mollusc crop in the three lowest layers, never again to contribute more than 15%, and never again to reach the large sizes present in the lower layers. This was replaced at the end of the early period by the mussel *Modiolus vaginus*, from mangrove swamps or brackish areas, indicating either over-exploitation or an environmental change, possibly natural.

SUMMARY OF ARCHAEOLOGICAL EVIDENCE

The archaeological data for the first half of the Lakeba sequence identifies several aspects of change. These are:

Technological

1. The number of pottery vessel shapes declines from c.12 to six, accompanied by the loss of the more complex and carinated shapes.
2. All decoration techniques that involve adding detail to the vessel surface decline, and are eventually lost.
3. The decoration designs themselves undergo a process of stylisation, from complex to simple, and a proportion of these are anthropomorphic in character.
4. Exotic black sand tempers gradually decline and disappear, accompanied by the loss of other rare foreign tempers.
5. The temper type changes are accompanied by a reduction in the actual amount of temper added to the clay body.
6. The manufacture and use of siliceous flake tools declines parallel with the above.
7. The manufacture and use of shell fishhooks also declines with the above.
8. Adze shapes and their materials change over this period.
9. Some categories of shell ornaments, long bead units and broad corner-perforated units, are restricted to the early stage.

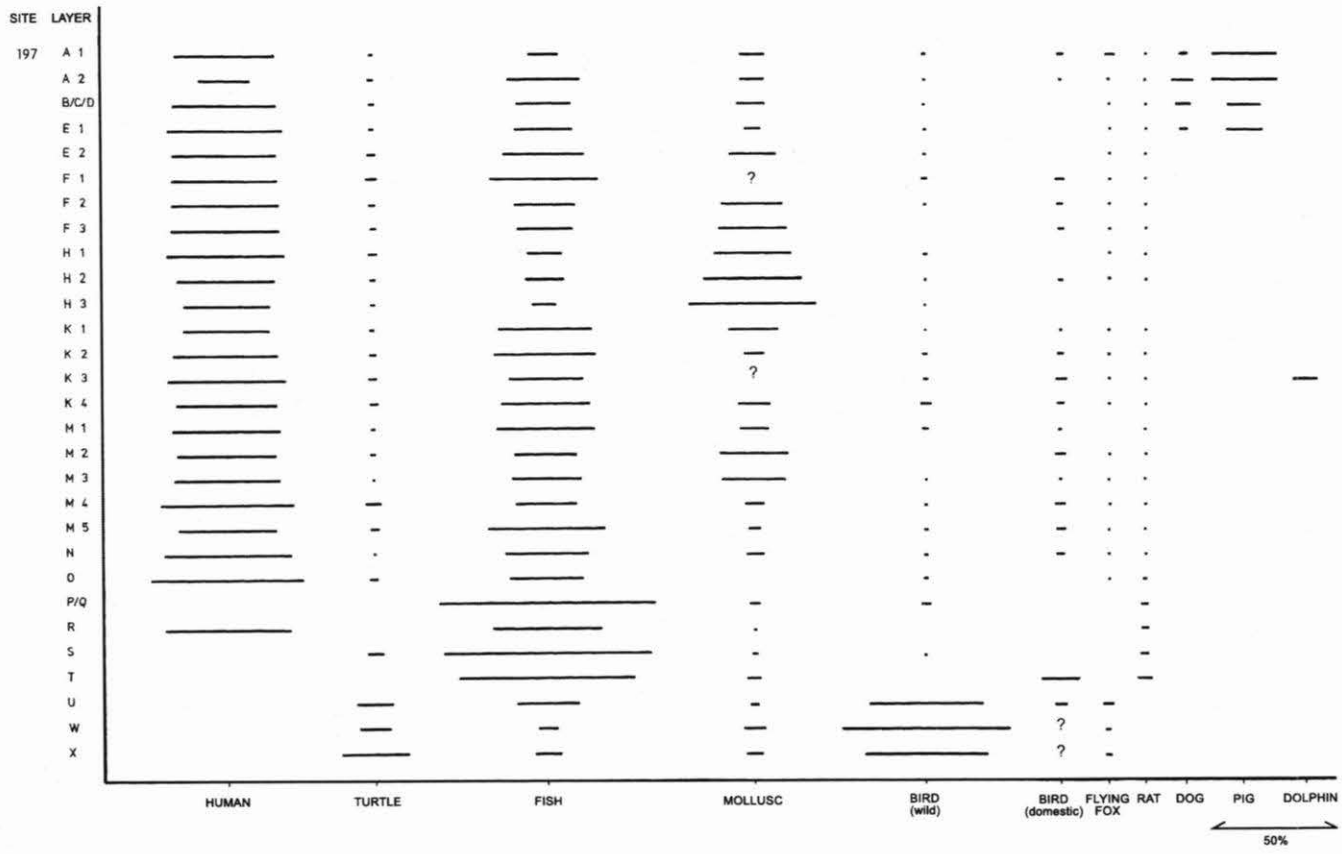

FIGURE 10. Calorific values of main meat items through time on Lakeba.

Site	Megapodiidae	Columbidae	Psittacidae	Anatidae	Rallidae	Phasianidae	Passeriforms	Tytonidae	Seabirds
197									
A		2			1	4	3		2
C/D								1	
E					4		1	1	
F					3	4			2
H					3	1			
K		2		1	6	5	1		1
M		4		1	8	9	1		3
N		1			2	2			2
O				1					
P/R									1
S		1							
T					1				
U-X	10	46	4		5	1	2		1
TOTALS	10	56	4	2	34	26	8	2	12

TABLE 2. Bird species exploited through time at Site 197, Lakeba. Early Lapita layers U-X.

Settlement patterns

1. Sites increase dramatically in number, from one in the first period to 23 in the next.
2. Initially on the coast, subsequent sites include those situated as far inland and as high up the hills as is possible.
3. The internal structure of the first site, initially with a central focus, undergoes change through time, splitting into at least two and probably three distinct divisions by the end of the first period.
4. In subsequent periods the central tendency is not evident, with scattered discrete groups of sherds that probably indicate individual households.

Economic

1. Food remains in the first part of the sequence (Lapita) are dominated by forest birds and turtle, the only time in the sequence that this is apparent (see Dye and Steadman 1990 for a similar finding for the Ha'apai Group, and Sand 1999b:319 for the St Maurice-Vatcha site in New Caledonia).
2. The first human remains in the midden occur at the end of the Lapita period, and these apparently remain a significant part of the diet until and beyond European contact.

These separate lines of evidence clearly show a picture of a society undergoing a process of change, in a direction which can be described as from one with a single socio-political focus to one with either several or even, eventually, none. The initial gradual fragmentation within the early site itself, a process carried on with the inland hill settlements, together with the presence of human bone in the middens, all points to a transformation in the original social system.

The simplification of the original complex ceramic decoration, and the loss of specialised and mainly carinated pots, is accompanied by the disappearance of two categories of shell ornaments and one ceramic ornament, all of which have in common oblique or corner perforations. These would have functioned as compound units, joined together and/or onto a backing, and it is suggested that they are also indicators of social stratification. The presence of a siliceous flake industry, in imported materials, also indicates some status-associated activity, such as wood carving. Some of these traits present in the early assemblage, and which are taken to indicate a hierarchical social system undergoing change, also occur at the other end of the sequence. These are examined below.

The Lakeba sequence then can be divided into a number of periods based on both artifacts and settlement data. Of these the ceramics are the most informative, with the sequence showing a number of periods characterised by changes in vessel form, rim and lip shape, decoration technique, and temper type. Although it is the early end that is the main subject of the paper, this can only be viewed in the context of the sequence as a whole. There are, for example, marked similarities between the first and last periods in the type of decoration (end tool impressing, appliqué, and incising), in the occurrence of vessels with carinations or unusual forms, in the number and types of temper used, and in their exotic character. Other artifacts, notably the small siliceous flake industries, are also common to both ends of the sequence. Again these points will be returned to.

The size of Lakeba is such that 45 minutes walk will take you to the centre of the island. The most fertile soil is in the valleys and valley heads, and is most easily utilised from the coast. All inland hilltop settlements are refuges, whether fortified or not: no debilitating or fatal insect-borne diseases of any significance, save for filariasis (elephantiasis), are known for the Lau Group which might have influenced settlement location. The first move away from the coast to the top of the inland hills coincided with the end of the early decorated ceramics, and is also marked by an apparent fragmentation of the larger initial settlements, an event that cannot be attributed to mere population expansion. The later modification of the same hilltops as large fortifications, which may have occurred as early as c.1000 B.P. at one site (Ulunikoro), but which seems to have gained momentum from about 500 B.P., also seems to coincide with a ceramic change; the reappearance or increased use of end tool impressing and complex vessel shapes.

REGIONAL VARIATION WITHIN FIJI AND THE CASE FOR POSSIBLE EXTERNAL CONNECTIONS

It was stated above that the results of two other ceramic analyses had indicated that parts of the Lakeba sequence were not representative of the islands as a whole, or could indeed be relevant only to Lakeba. The first of these was Hunt's (1980) analysis of the Yanuca rockshelter ceramics excavated by the Birks' in 1966. Hunt found no evidence for a post-Lapita Polynesian Plainware period, and instead suggested a direct development from dentate-stamped Lapita to carved paddle impressing. The site however was disturbed, and this was not allowed for in the analysis. The presence of a post-Lapita Plainware period is however known from a number of sites on Viti Levu (including of course the Sigatoka site some 9km from Yanuca and 3km from Naqarai), and on all sites of the correct time depth in the Lau

Group that were visited by the author. The ramifications of the Yanuca analysis on the dentate-stamp - carved paddle impressed relationship are on going, and are considered in more detail below.

The second example is the analysis by Clark (1999) of the assemblage from Ugaga Island, off Beqa on the south coast of Viti Levu. This identified the first part of the post-Lapita Plainware, characterised in the main by collar and other angular expanded rims, often notched. The later part, which contains vessels with expanded rims and rounded lips, wipemarks around the neck area, and surface finishing which features scraping, polishing or burnishing, occasionally with a slip, was apparently not present.

This was used by Clark to suggest that after the relative homogeneity of the earlier ceramics, stylistic divergence was taking place between the two areas, and that this was representative of the situation throughout Fiji (Clark 1999:226). After about 1900 B.P. the sequences fall into line again.

This scenario – divergence (regional variation) followed by convergence (regional integration) – was used by Clark to underpin a number of models. Of the three processes of culture change identified by him – internal development, intermittent external contact, or continuous external contact –the first is considered most likely, based mainly on the stylistic differences between Ugaga and Lakeba, described as significant (Clark 1999:222) and substantial (Clark 1999:236), and thought unlikely to occur as a result of external contact. The proposed resumption of regional integration after c.1850 B.P. is used to suggest that the linguistic split between Eastern and Western dialect chains is unlikely to have occurred while this degree of contact was present (Clark 1999:238).

The stated differences between the Lakeba and Ugaga ceramic sequences, as listed above, may however be more apparent than real. The ceramic traits missing from the Ugaga assemblage are present not only on Lakeba, but on all equivalent-age sites visited in the rest of the Lau Group, at Naigani, Natunuku, and Sigatoka on Viti Levu, and on Beqa itself (Crosby 1988: Fig. 3.12, 3.13 and Table 3.2), the latter a mere 3km away. Crosby also found a number of expanded rims, approximately half of which were rounded, together with the heavy rib carved paddle, at Ugaga itself (Crosby 1988:215 and Figs 3.12, 3.13). So while Clark's Ugaga excavations produced post-Lapita ceramics equivalent to those up to c.2300 B.P. on Lakeba, but found that those from the later part of the period were absent, Crosby found that the early post-Lapita Lakeba period was missing, but that the late end was present. Unfortunately it is not possible to relate their two excavations on the ground, to find out how far apart are the areas involved, and whether there could have been some temporal differences between locations within the same overall site.

There are two possible indications that the Ugaga sequence has a hiatus in the late post-Lapita Plainware period. The assemblage found to most resemble that at Ugaga was from Level 1 at Sigatoka, and this was said to indicate high levels of interaction (Clark 1999:226). It is significant that Sigatoka Level 1 represents a chronological slice of the early Plainware period, with no rounded expanded rims, few wiped necks and no early carved paddle impressing. As such it belongs to the late and immediately post-dentate-stamp ceramic period.

However all these traits are present about 100m directly inland behind the dunes themselves, on beach ridges 2 and 3 (Marshall *et al.* 2000:71, 118, and Table 5). As these authors comment "Late Lapita occupation on the eastern ends of Beach Ridges 2 and 3 may therefore have spanned the period from 2350 B.P. to 1850 B.P." (Marshall *et al.* 2000:71). Clark (1999:222) sees the Ugaga-Lakeba sequences diverging at exactly this time, between 2300-1800 B.P., but the most reasonable explanation for this is that the Ugaga sequence has a hole in it.

Some possible evidence for this can be seen in Clark's list of C14 dates, although the usual problem of obtaining reliably provenanced samples in an open and disturbed site was made clear (Clark 1999:93, 94). Here 10 dates span from about 3000-1300 B.P., with the largest gap in the sequence between 2310-1950 B.P. and 1870-1530 B.P., obtained from two shell samples at the same depth and 5m apart (Clark 1999:94).

Given that the reinterpretation above is correct, then there is no evidence from Ugaga supporting the theory that significant stylistic divergence occurred between regions in Fiji before c.1000 B.P.

Clark (1999:223) also refers to the proposed difference between the settlement patterns of Beqa and Lau, put forward by Crosby (1988:233-37). This involved the first move inland, which on Lakeba occurred during the period 2500-2100 B.P., but which on Beqa did not happen until about 1500 years later (Crosby 1988:235, 236), coinciding with the second move inland on Lakeba.

However these early inland sites are difficult to identify if the hilltops have been subsequently remodelled for later fortifications. On the Lakeba fort of Kedekede the only evidence of this to remain was found during excavation, in the redeposited remains of old ground surface such as the fill of cut-and-fill terraces. On the island of Moce, 50km south of Lakeba, the large (110m long) inland fort of Delaimakotu sits

on the central and highest hill, equivalent to the Kedekede situation. All the surface pottery from the top fortifications is late in the sequence, however a few days before the survey (which took place 24/25 July 1978), a bulldozer had cut a track around the steep (37°) southwest side of the site, 30m downhill from the top, and exposed an assemblage of late Polynesian Plainware, some red-slipped and burnished, together with a few parallel-rib paddle impressed sherds. This had been buried under 90cm of soil, resulting from levelling of the top for the later defended settlement.

Crosby (1988:260) comments that on Beqa the large inland fortified sites dating from the last 500 years "were found all over the island, on every available peak". It is suggested here that without excavation of these sites, or of similar lucky chance events exposing any downslope deposits such as related above, it will be difficult to back up the claim that no inland hilltop sites existed on Beqa at the earlier date. Crosby (1988:233) himself acknowledged this by stating that the Beqa sequence diverged from that of Lakeba "as far as can be told from non-excavated evidence".

Suggestions that contact with the west had stimulated two of the ceramic changes in Fiji have been made by the author, as mentioned above, and need to be addressed again here consequent on new data obtained in the last decade, and on alternative views expressed by other researchers in the area. The nature of the two changes is also important, in that they contrast with other processes taking place at both ends of the Fijian ceramic sequence, and can aid in the interpretation of these.

THE CARVED PADDLE PROBLEM: LAPITA OR LATER?

The case for the technique of carved paddle impressing having originated from New Caledonia was made on the abrupt nature of the ceramic change as seen in the Lakeba rockshelters, and on the similarity between the earliest form of carved paddle in both places – that of sets of parallel-ribs or bars. In New Caledonia this is the Podtanéan tradition, which may be contemporary with Lapita but is certainly "one of the major ceramic traditions during most of the period 2000-3000 B.P." (Sand 1999c:146) and lasting, at least on the main island, until c.1600 B.P. (Sand 1999c:147), and thus both stylistically and chronologically is a possible source of the Fijian technique. Clark (1999:222) considers that the differences between the two sets of ceramics – in vessel rim heights, rim courses and lip shapes – are greater than the similarities in decorative technique. Any contact between the two areas however would presumably have involved ideas rather than strict rules on how to make pots, and some variation in vessel form might be expected as a result of the amalgam of two traditions. In addition, some kind of founder effect may have been involved, and unless the full range of vessel shapes in New Caledonia at the time of the proposed contact is known, it will be difficult to rule out the possibility that a form closer to the Fijian vessel shape was implicated.

Although the nature of the only major ceramic change in the Fijian sequence is quite clear (and see Clark 1999:222 for a similar finding) nevertheless it has been consistently reported (e.g Green 1981, Hunt 1980, Kirch 1997, Sand 2000, Spriggs 1997) that in fact carved paddle impressing was a part of the original Lapita colonists' ceramic technology. The social implications of change in the ceramic repertoire of a society is the central issue of this monograph, and the question as to whether carved paddle impressing co-existed early in the sequence with a very different type of decoration, or whether it appeared later and if so in what context, needs to be addressed in some detail.

The idea that Lapita potters employed carved paddle decoration in addition to dentate-stamping, incising and appliqué was floated by Groube (1971:309) as "a reasonable hypothesis", based mainly on linguistic suppositions that "the people making impressed ware were descended from the Lapita potters" (Groube 1971:310). It was suggested that "somewhere in Fiji sites documenting the emergence of impressed ware from Lapita plain-ware will be discovered" (Groube 1971:308). He went on to suggest that the Yanuca site might hold the key to this.

In 1980 Hunt analysed the Birks' assemblage from Yanuca, and interpreted the few paddle impressed sherds that occurred with the Lapita dentate-stamped ware as *in situ*. The post-Lapita Plainware period was not identified. Hunt (1980:126-36) did however identify a transitional phase from dentate-stamped to carved paddle impressed ware – the Yanuca Transitional Phase, with a duration tentatively dated as between 500 B.C and 300-200 B.C. (Hunt 1980:141), and illustrated this with "conjectural reconstructions" (Hunt 1980:131). These, and the Transitional Phase itself, are figments of Hunt's imaginative analysis.

The Yanuca site lacked stratigraphy and had to be dug in three inch spits, and the excavators themselves suggested that considerable disturbance may have taken place over time in the deposits (Birks 1978). Sherds from the Plainware period were present, but intermixed with them were earlier dentate and later carved paddle impressed. That both of these were intrusive was proved by Hunt himself, when thermoluminescence dates for a paddle impressed sherd in the lower layer and a dentate-stamped sherd in higher levels at the nearby Naqarai site (also disturbed) were each c.300 years out of kilter with their provenance (Prescott *et al.* 1982:146). In addition, the tempers of the two wares are very different; 96% of the dentate-stamped sherds are ferromagnesian, and 96% of the carved paddle impressed ware feldspathic.

In a brief comment on these results Hunt admits that "the possibility of some apparently consistent stratigraphic mixing (downward) must be considered ...[but that]... The question of dentate-stamped and carved paddle impressed contemporaneity at Yanuca remains unresolved" (Hunt 1986:26). Despite this statement he goes on to say that "an early presence of carved paddle-impressed wares associated with dentate-stamped Lapita could become clear in some or most parts of Fiji" (Hunt 1986:26).

Such an association is as likely to occur, I believe, as is that of dentate-stamped ceramics with European material (see Poulsen 1967:152, 363). Hunt himself excavated a 1m test square at Natunuku (unreported), and recovered an assemblage of 2930 sherds, all Polynesian Plainware, without any dentate-stamping or carved paddle impressing. The Sigatoka dune site 9km to the east of Yanuca has no evidence of the "transition", and the ceramic sequence from stratified sites on Lakeba (dismissed by Hunt [1980:207] and Green [1981:140] as localised variation) is in fact representative not only of Fiji itself, but in its overall framework for the first c.1500 years of all West Polynesian ceramic sites as well.

Hunt's findings were used by Green to emphasise three main points in the prehistory of the area. The first of these was the difference between the early ceramic assemblages of Fiji and those of Tonga and Samoa, as "paddle impressed pottery, which began early in Fiji and became the dominant mode there by the 2nd century B.C., appears only in small numbers in sites of the Plain Ware horizon in Polynesia" (Green 1981:144). Regional variation within Fiji itself was also expounded, the Lakeba sequence regarded as "rather different from that on Viti Levu ...[but]... one might expect localised variation in the trends of ceramic change in Fiji in view of its later cultural and linguistic diversity" (Green 1981:140). Finally, the timing of the so-called Fiji/-Polynesian boundary was placed at c.2200 years ago since "around that time paddle impressed pottery, which has appeared earlier in Viti Levu, suddenly entered the Lakeba sequence" (Green 1981:150).

All these claims are incorrect. Carved paddle impressing appeared throughout Fiji and West Polynesia at (archaeologically) the same time, and although there is regional variation within Fijian ceramics, it is neither in the direction nor on the scale suggested.

The myth has been further propagated in Kirch's *The Lapita Peoples*, in which he says that

> paddle-impressing ... is widely-attested as one aspect of other Lapita assemblages, in Fiji, Tonga, Futuna, Uvea, Niuatoputapu, and the eastern Solomon Islands. At the Yanuca rockshelter in Fiji, for example, Hunt (1986) demonstrates the persistence of paddle-impressing from the Early Eastern Lapita phase through to later periods, and in the Late Eastern Lapita site of Tavai, Futuna, parallel-ribbed paddle impressions were extremely common (Kirch 1997:149).

The Tavai site (FU 11), with no dentate-stamped ware and only one carination, produced a total of 7306 sherds, of which only 62 were carved paddle impressed (Kirch 1981:131, 136). The Niuatoputapu site of NT 90, designated Early Eastern Lapita (with 61 dentate-stamped sherds), had 34 carved paddle impressed sherds in a total of 31,405 (Kirch 1988a:147, 173). Neither site contained discrete stratigraphy, and the ceramics for each are reported as one assemblage.

The situation is the same at the other West Polynesian sites – a very small percentage of carved paddle impressed sherds in assemblages which are either mainly or totally composed of Polynesian Plainware. The excavators prefer to interpret this as evidence for contemporaneity of dentate-stamping and carved paddle impressing; for instance Sand (1992:211), who compares the situation at Site S1-01 on Futuna to that at Natunuku, as interpreted by Davidson *et al.* (1990). All these sites however are on open beaches and lack detailed stratigraphy, with some, such as NT 90, having been massively scrambled by later activities, so much so that the discoverer of the Niuatoputapu sites, Garth Rogers, calculated that they could have been completely overturned by gardening 10 times in the past 2000 years (Rogers 1973:7).

The Yanuca Transitional Phase, thinly disguised, has recently resurfaced in Kirch and Green's *Hawaiki* (2001:75), where "archaeological evidence defines a boundary between Fiji and Polynesia, discernible in material culture, beginning around 2500-2200 B.P., which continued to be maintained thereafter".

The archaeological evidence is clear; carved paddle impressing was not part of the Lapita ceramic repertoire in Fiji and West Polynesia, nor of the subsequent Plainware ceramics. It appeared at the end of the latter, either as a local development from somewhere in Fiji, or more likely as a result of contact with the west, probably New Caledonia. Evidence that post-Lapita contact did occur with the west is provided by the obsidian from Vanuatu found on Lakeba, at the same time that a new, Fiji-wide but short-lived cluster of ceramic traits was present, at c.1750 B.P.

Although there is no hard archaeological evidence to support any contact to the west at the time of the appearance of carved paddle impressing (such as there is at other times in prehistory for obsidian links between Lau - Tonga, Vanuatu - Fiji, and Reef-Santa Cruz/Vanuatu/New Caledonia - Fiji, the latter based on the presence of Talasea obsidian), the changes in all observable aspects of the ceramic technology, and the similarity of at least the main early type of carved paddle impressing – that of parallel bar or ribbed – to the examples

in New Caledonia, suggest an external origin. It should be emphasised here that the decorative technique, and possibly the overall vessel shape, are likely to have travelled as information and not real items, and that close typological similarities between Fijian and New Caledonian assemblages should not be expected (but see Clark 1999:222).

THE "VANUATU CONNECTION"

A Vanuatu connection at c.1750 B.P. was based both on apparent similarities in ceramic decoration techniques, and on obsidian from the Banks Islands, found with the ceramics in the two Lakeba rockshelters. Ceramics in both Central and Northern Vanuatu were cited as possible sources (Best 1984:493, 656).

Of these new techniques asymmetric incising, finger pinching and rim notching occur at Level 2 Sigatoka (VL16/1), at Yanuca (VL 16/81), on Taveuni (VL 16/10b), and at Navatu (17A: see Best 1984:655 for more detail). In addition, cord-wrapped paddle impressing is present at both Lakeba (Best 1984:493) and Navatu (Shaw 1967: Pl. 57b), with a coarser variant, also accompanied by finger pinching, occurring on Beqa (Crosby 1988:121, Fig. 3.13). These techniques are, on Lakeba at least, relatively short-lived within the sequence, and although not directly dated outside Lakeba and Sigatoka are either in the same approximate time range (as indicated by bracketing dates) or occur not long after the start of carved paddle impressing, as at Lakeba and Beqa. Plate 1 shows a sample of these Lakeba sherds, together with one from Yanuca.

The case for a Central Vanuatu connection has been considerably weakened if not demolished by the recent work of Bedford (2000a) on the assemblages from that area. Similar decorative techniques are either not present or are said to be separated in time from the Fijian examples.

Northern Vanuatu, on the obsidian evidence alone, is a strong candidate for some type of contact. Eleven of the 12 obsidian (or volcanic glass) flakes were sourced to the Banks Islands Vanua Lava or Gaua sources (with the other to an unidentified Vanuatu source), and according to both Smith *et al.* (1977) and Bedford (pers. comm.), this material has not yet been found in the central and southern islands. The ceramics from Site BN-PK-1 on the islet of Pakea, almost literally in the shadow (c.1.5km) of Vanua Lava, and c.40km from Gaua, bear some similarities to the Fijian material in both decorative technique and motifs. The former, while not apparently including finger pinching or fingernail incising, does have the equivalents in coarse linear incision or gouging, and deep end tool impressing or punctation (Ward 1979: Pls V11-5, V11-6). These occur between the upper shoulder and neck, with the lower border often outlined with

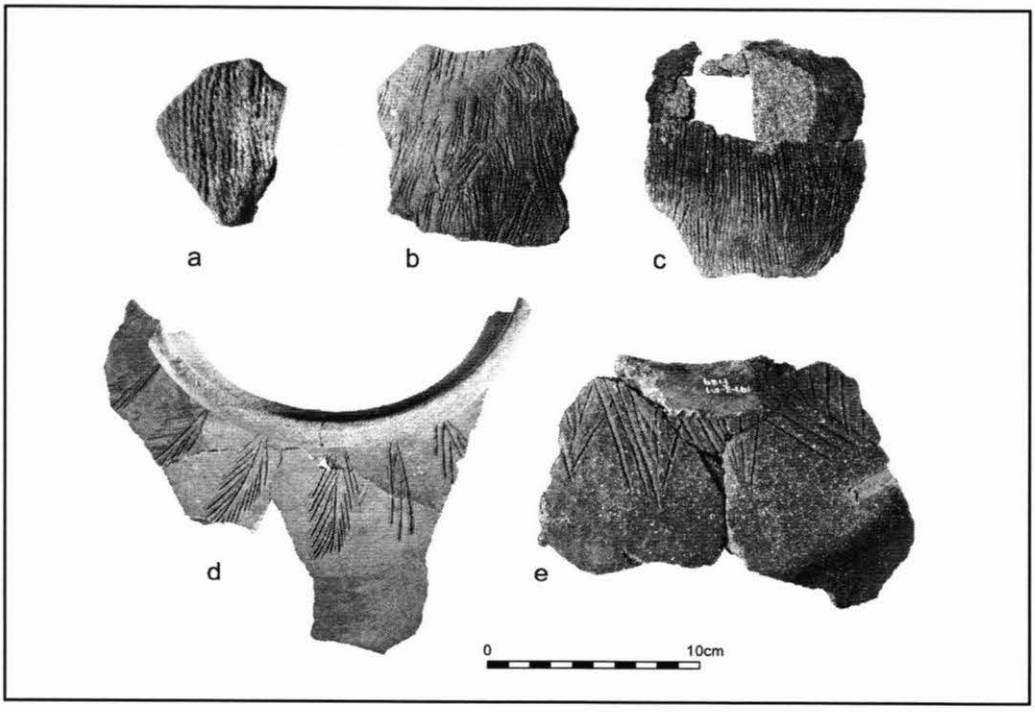

PLATE 1. Examples of ceramics appearing in Fiji c.1750 B.P. a-c: Cord marked (a=surface collection Site 101/7/196. b,c=Layer F, Sq.3, Site 101/7/197). d: asymmetric incision over carved paddle impressing (Layer F, Sq.3, Site 197). e: "leaf" design (Spit 5, Zone 2, Site VL/81 [Yanuca]).

a row of coarse punctations, and feature zig-zag, leaf, chevron and sets of intersecting oblique lines (Ward 1979: Pls V11-4, 5 and 6). All these have parallels in the Fiji sequence. Rim notching is present on 20 of the 52 rims (Ward 1979: Pls V11-8b, V11-9) and resembles the Lakeban material in depth and spacing.

The post-Lapita ceramic sequences of Northern Vanuatu are however as yet poorly understood (Bedford pers. comm.) and regional variations there in the order of those in islands to the south could have produced ceramics with even closer affinities to the Fijian examples.

Almost 850 pieces of obsidian were recovered from the Pakea site, all bar 21 from Vanua Lava, more than three-quarters from the upper layer and none from the lowest (Ward 1979:8.13). A single charcoal sample from the top of the highest layer with *in situ* ceramics gave a two standard deviation range of 1685-2060 B.P., and two other dates from the layer are similar (Ward 1979: Tables VI-3, VI-4), the author commenting that ceramics had probably ended on Pakea "by the early centuries of the first millennium A.D." (Ward 1979:7.41).

The association between the obsidian and ceramics in the rockshelters is important, and it seems clear that the arrival of the obsidian and ceramics did not occur on the same thin occupation floor, but was 100-200mm below this, separated by at least four such floors. The length of time between these events could have been years or tens of years. In the other rockshelter the same events are separated by up to 400mm of occupation floors, with the ceramics arriving perhaps as much as 200 years before the obsidian.

In summary, although the obsidian occurs with the ceramics at both sites, it does not arrive with them, and this could be taken to weaken the case for a direct connection between the two, and thus between the new decorative techniques and Vanuatu. In addition, the cord-wrapped paddle impressed sherds, found only at this site, appear to occur slightly earlier than the other new types, although they certainly occur together.

The cord-marked sherds from Efate, which, in the absence of any other similar examples from Oceania appeared to suggest a connection between the two areas, have since been shown, on both stylistic and petrographic grounds, to be genuine Jomon ware from Japan (Sinoto *et al.* 2000, Dickinson *et al.* 1999). The possibility of their arrival in Vanuatu in prehistoric times must be remote indeed. Closer examination of the Lakeba material show a minimum of three pots from the rockshelter and another from the surface of the adjacent open site (101/7/196), with tempers consisting of varying amounts of lithic, calcareous and iron oxide grains. The decoration was applied not by rolling a cord, but by an object with a width of c.20-30mm around which was wrapped a band of three or four cords. Experiments have shown that this was probably a flat or slightly convex piece of wood, although similar (although slower) results can also be achieved by wrapping the cord around the first joint of the first finger and applying this with a rolling motion.

In the light of the new data from Vanuatu and a reconsideration of these Lakeba and Fiji decorative traits, what can be said about any possible connection between the two areas? Firstly, unless the obsidian has been mis-identified (and this has not yet been questioned) then there was contact between the two island groups, and considering the present archaeological distribution of obsidian in Vanuatu a northern origin for any voyagers seems likely, this material possibly arriving slightly later than the new ceramic traits, and continuing with them for some time. Although these decorative traits are not particularly complex, and individually can almost certainly be found in the ceramic systems of many cultures, they appear in Fiji as a package, with no direct precursors or descendants. At much the same time indisputable contact was in place with an island group to the west, whose ceramic assemblages contained vessels with somewhat similar decorative techniques and simple motifs traits, and that these were a result of external influences rather than independent invention may be a more realistic explanation for their appearance.

Both linguistics (e.g. Geraghty 1983:389) and genetics (e.g. Visser 1994:249, 250) suggest physical contacts between Vanuatu and Fiji at some stage in prehistory, while the distribution of *kava* (and *Rattus praetor*) has recently been used to indicate connections between regions that include on the one hand Northern Vanuatu, and on the other Fiji (Sand 2001:68, 69 and see Kirch 1997:217, Kirch and Green 2001:256).

It is possible to suggest a motive, or a contributing one, for the proposed contact. One of the 10 largest volcanic eruptions in the last 10,000 years took place on Ambrym about 1850 B.P., during which 60-80 cubic kilometres of material was erupted, and which must have caused, as Spriggs points out, major tidal waves and ash falls in the central and northern islands. This might certainly qualify as a "push factor", and if one considers the proposed results listed by Spriggs (1997:178, 217) of the later and smaller Kuwae eruption: the fall of Constantinople and the end of the Eastern Roman Empire, crop failures in Sweden and China (the latter resulting in thousands of deaths), and severe climate change in the west of the United States, then a few extra squiggles on some clay pots in Fiji is surely not too outrageous a suggestion.

While the sources of the two ceramic changes described above are still well and truly open to debate, it is the changes themselves which are of greater interest to this work, in their potential for throwing some light on the other changes which took place at the early and late ends of the Fiji sequence.

The carved paddle impressed ceramics set the baseline against which the others can be compared. The former have a decoration that is applied as part of the finishing process, experiences little variation through time, is applied over the entire vessel (even sometimes to the lip), and all this on virtually one vessel shape over a period of 2000 years. These are surely the characteristics of the archetypal trade ware – decoration and vessel shape continue essentially unchanged for such a long time precisely because they have no deep social significance.

Contrasting most vividly with this are the changes at the two ends of the ceramic sequence. There distinct processes are under way: in the early one a complex system is winding down, and in the latter a similar system is gearing up, both taking place over a period of several hundred years, and both associated with dramatic changes in other aspects of the societies involved. These, in contrast to the former above, can only be a reflection of significant changes in core ideologies.

The short burst of end tool decoration at c.1750 B.P. is undoubtedly part of the same phenomenon as that which took place within the first and last few hundred years of Fijian prehistory. The decoration is relatively labour intensive, is able to produce varying motifs, is restricted to the most visible part of the vessel, and can actually obliterate the surface decoration (carved paddle impressing) which both precedes and survives its own brief passage (see Plate 1d). This is the only time in the Fijian sequence, I believe, when such a process takes place. It differs from the above however in that the vessel shape does not appear to alter. It is suggested here that the social equivalent of a stone was thrown into the Fijian ceramic pool, and that these traits are the ripples that resulted. It should be noted that on Sigatoka the burial ground associated with these ceramics has undoubted and multi-factored evidence for hierarchial ranking (Best 1989, Visser 1994).

It is, however, in the two ends of the Fijian sequence, and mainly although not exclusively in the ceramic section of these, that the rapidly metamorphosing artistic systems and their associated cultural changes can hold the most potential for insights into the social values of the societies involved. These complex and intertwined factors are examined below.

CHAPTER 4. THE TWO ENDS OF THE LAKEBA SEQUENCE

There are, as stated above, some remarkable similarities between the early and late artifact assemblages on Lakeba. The spatial distribution of various ceramic categories in an early and late site is now compared, together with aspects of the temper analysis.

The sites are the early open settlement on the beach and the coastal ring-ditch of the main settlement, occupied when the Europeans arrived in 1835. The surface collections were made for different reasons; the first as a guide to subsequent excavation strategies, the second to ascertain whether the social hierarchy within the site as suggested by oral traditions, early missionary observations and the physical characteristics of the site itself, was identifiable in the ceramic record.

THE EARLY END OF THE SEQUENCE

The distributions of surface sherds from three ceramic periods at the early site (196) are shown in Figure 11 (the coast is to the northwest). The first, Period Ia (Figure 11a), features all ceramic categories associated with dentate-stamped sherds, except for those at the late end of that technique, and would span a period of c.2900-2600 B.P. The distribution shows a strong central tendency, with one major outpost to the southwest (it should be pointed out that the front of the main cluster is probably truncated due to the increasing build-up of hurricane-deposited sand which protected the lower layers from surface disturbances).

The second distribution, Period Ib (Figure 11b) contains the arc-stamped rims and red-slipped bowls diagnostic of the very last stage of the early assemblage, at about 2500 B.P. The pattern is less concentrated, with some discrete clusters that suggest individual units.

The third map (Figure 11c) contains the middle and late end of the Polynesian Plainware ceramics, Period II – the expanded rim and burnished ware – representing a period of c.2-300 years, up to c.2200 B.P. Here the distribution is one which retains the discrete scatters over the area, but also has a large central concentration, although with no focus within this. As can be seen, the settlement is moving towards the coast, as it uses the more recent sand build-up.

Later distributions (Best 1984) show continued fragmentation – there is no evidence for any centralised deposition again in the sequence.

It is suggested that the process of fragmentation visible in Ib is also taking place in Ia. There is some independent evidence for this. The two areas of ceramic concentration identified in the early distribution were the main localities sampled by excavation. Three 2x2 metre units from each of these provided the assemblages used in the analyses, with totals of 25,000 and 21,000 sherds. Eight excavation layers or units were used, and the two assemblages were analysed both internally and as one unit (Best 1984:231-47).

The results showed that the ceramics from the squares in the centre of the site contained more variability than those from the smaller group to the southwest, indicating a greater time span of occupation. When the two areas were compared, the southwest assemblage behaved as if it were stratigraphically distinct from the other, with only one layer (in the Jaccard matrix only) out of place; this was the highest in the central assemblage and fitted with the lower part of the other. A further comparison of the two assemblages using only elements of the decoration itself (48 dentate-stamp motifs, design elements, and zone markers) produced an identical result (Best 1984:245, 247 and Fig. 3.41). Information from the form and decoration aspects of the ceramics then show unequivocally that the outlier concentration of sherds is later than at least most of the central group.

Distribution maps of the excavated assemblage again demonstrate the same situation (Figure 12). Figure 12a shows dentate-stamped sherds as percentages of the total assemblage, while 12b shows numbers of surface collected and excavated arc-stamped rims – the end of the decorated ceramics – and three separate clusters are visible. It should also be noted that the early beach surface slopes down from the centre of the site to the edge (Best 1984: Fig. 2.23), and

FIGURE 11. Surface distribution of sherds at Site 196, Lakeba, for the first c. 900 years of occupation. a: Lapita ceramics, b: arc-stamped and associated rims from the end of the Lapita period, c: Polynesian Plainware ceramics.
Key: Five shading intervals each represent 20% of the highest data value (dark shading = 80-100%). Data value ranges for archaeological units (4m² transect grid cells) in each distribution are; a: 0-19, b: 0-8, c: 0-22.

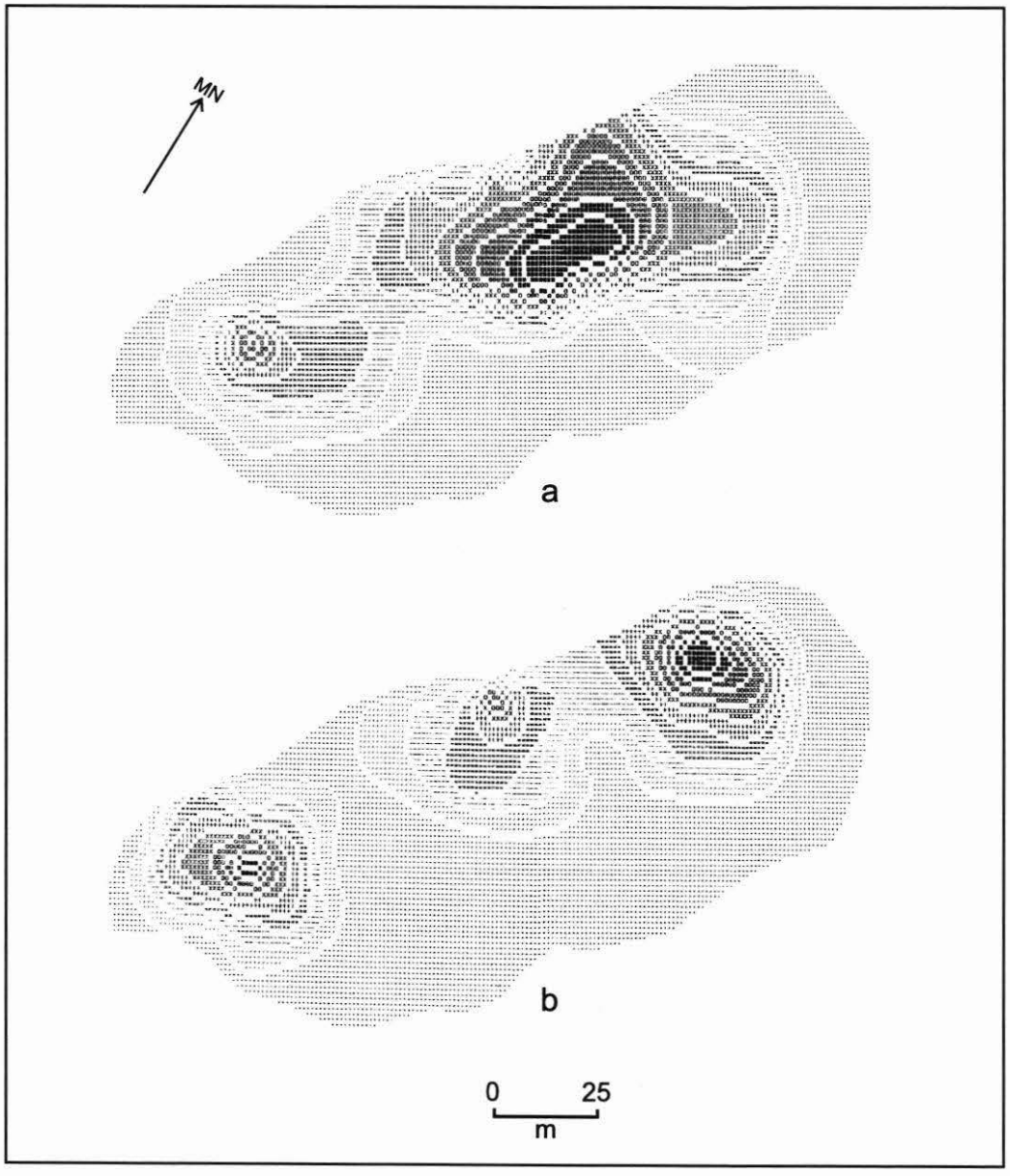

FIGURE 12. Distribution of dentate-stamped sherds at Site 196, Lakeba. a: excavated dentate-stamped sherds as percentages of the total assemblage; b: numbers of surface and excavated arc-stamped rims.
Key: Ten shading intervals each represent 10% of the highest data value (dark shading = 90-100%). Data value ranges for archaeological units in each distribution are; a: 0-2.26(%), b: 0-24.

although the difference between the two locations is only c.50 cm, the higher of these would have been preferred for the initial settlement.

The distribution of a specific temper type in the two internal areas also indicates that a temporal aspect is involved. The frequencies of exotic black sand tempers (pyroxene and iron oxide) have been shown to be temporally sensitive (see Figure 6). Four deposits of this imported temper have been found in Fijian sites; two in the lower levels of the site in question (one of which was lying on the base of a dentate-stamped ring foot vessel), one in the lowest Polynesian Plainware layer in the large rockshelter, and one in the early Lapita layers on Naigani.

A comparison of the frequencies of black sand tempers between the two sherd concentrations at Site 196 is shown in Table 3. From this it can be seen that the lowest layer in the central group contains the most sherds with this temper, the B layers are approximately equal, and the upper A layers in each group are virtually identical. This again suggests that the outlier settlement started later than the central occupation.

Levels	Southwest area	Central area
A	19.9	19.8
B	22.18	23.71
C	28.66	42.91

Percentages of black sand tempers in the two areas at Site 196

TABLE 3. Distribution of sherds with ferromagnesian sand temper at Site 196, Lakeba.

Information from the ceramics therefore has identified an internal site division, which might otherwise have been termed an "activity area", as having a temporal aspect. The significance of this will be discussed below.

THE LATE END OF THE SEQUENCE

The ceramics in the last 500 years or so of the sequence have certain similarities with those of the first 500 years, in form, decoration, temper types and number, and intra-site distribution.

Vessel form: Common to both periods are medium to large sharply carinated vessels and four categories of unusual vessels (Figure 4, with numbers 4, 5, 7, 9 and 19, 20, 22, 23 as examples of the latter). These are almost always decorated, usually above the carination or mid point, sometimes on the rim. The elaborately decorated vessels collected from the chiefly centres of the main islands (mainly those in eastern Viti Levu) between about the 1840s-1870s belong to this class, and are discussed below.

Decoration types: These are also similar (see Figure 5), with incising (symmetric), appliqué, end tool impressing (which includes shell impressing and the functionally similar dentate-stamp) and rim notching common to both ends.

Temper: The temper seriation diagram (Figure 6) shows that both temper types and the number of exotic categories are most numerous in the early and late periods. This distribution differs from that of the decoration in that Period IVa has the greatest number of exotic tempers, and the largest amount containing pyroxenes. This coincides with the construction of the first fortifications on the limestone outcrops, and the pottery associated with this is carved paddle impressed with an elongated spot pattern.

Distribution: A surface collection of pottery was made at the ring-ditch site behind the present settlement of Tubou, the most important site on the island at the time of European contact. Oral tradition identifies the house mounds of the chiefs and the temple mounds, and also the various districts

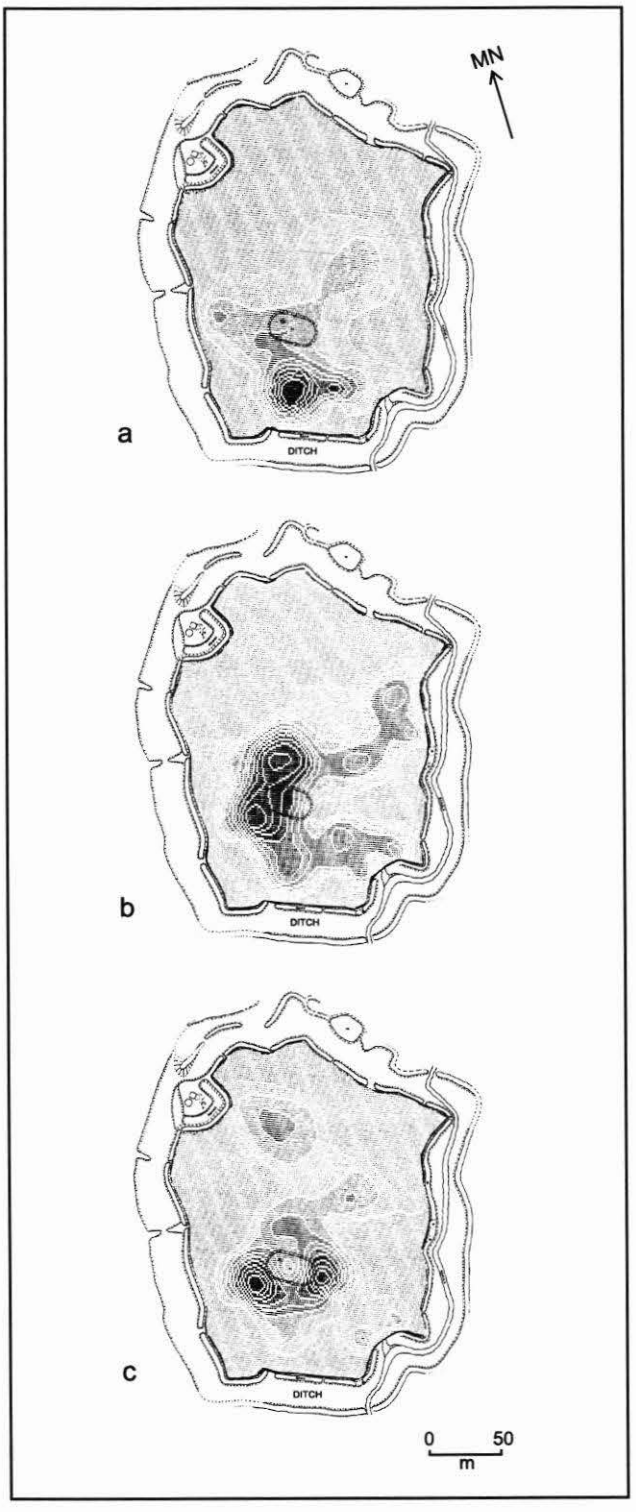

FIGURE 13. Distribution of surface-collected ceramics at the protohistoric Site 3, Lakeba. a: total assemblage, b: *saqa* and *dari* (associated with *yaqona* drinking) as percentages of all rim and neck sherds, c: sherds with quartzo-feldspathic (Rewa Delta) tempers as percentages of all body sherds.
Key: Ten shading intervals each represent 10% of the highest data value (dark shading = 90-100%). Data value ranges for archaeological units in each distribution are; a: 0-855, b: 0-54, c: 0-8.9(%).

within the defences. The site was mapped, and a surface collection of sherds made. Figure 13 shows three distribution maps; the total assemblage (13a), two vessels associated with the ceremony of *kava* drinking (13b), and all vessels with an exotic quartzo-feldspathic temper (13c).

All distributions are centred close to the house mound of the paramount chief. The total assemblage clusters around three low and small house mounds just south of the paramount chief's house, which may have been the kitchens, and this pattern is a result of that individual's compound being the focal point for social activities.

The water jars and bowls of the *kava* drinking ceremony are clustered around two large house mounds just off the west end of the chief's mound. Minor groups are also shown for the Tubou and Ceikena areas. From a similar site, at Muanasau in Rewa, five highly decorated and complete *saqa* were collected from a temple mound abandoned between c.1840-1850 (Palmer 1971:82), and these are strikingly similar to Rewa *saqa* seen by Wilkes in 1840 (Wilkes 1845:138).

Late 18th/early 19th century temple mounds in Fiji have not been the subject of recent archaeological research, and artifacts associated with them have rarely been recovered. A unique instance of an archaeological excavation at a major temple site took place in 1970, during the reconstruction of the Council House on Navatanitawake, once the main temple mound in Bau (Parke 1998). Amongst the items uncovered during the foundation works were 17 burials and three hearths. Around one of the latter were the remains of seven highly decorated vessels; bowls with sharply inverted upper bodies, with complex decoration, mainly appliqué but also end tool impressing and incising, arranged between the carination and the lip (Parke 1998: Fig. 7).

These vessels appear to be similar in shape and decoration type to one collected in 1840 during the United States Exploring Expedition and now in the Smithsonian Institution (Fiji Museum negative P/24.1/96), and to five painted by Gordon Cumming (in the Cambridge Museum of Archaeology and Ethnology), one of which appears in a published drawing entitled "A Chief's Kitchen" (Gordon Cumming 1882:208). All bar one of the above have a spout at the carination level. They are also similar to a class of vessels found in the late assemblages on Lakeba, although the latter are smaller (see Best 1984: Fig. 3.59, type 157). All undoubtedly had a specific ritual function.

In addition to the above, fragments from a number of *dari* or *yaqona* bowls were found throughout the body of the mound (Parke 1998:26).

A similar situation to that at Lakeba is reported for the ring-ditch site of Cautata in the Rewa Delta, excavated in 1998 (Marshall *et al.* 2000:92). Here, after about 500 B.P., the appearance of new vessels and decorative techniques coincide with a settlement shift from a small open site to the ring-ditch fortification. The new forms include the *dari*, *vuluvulu* or finger bowl, and *saqa*, and the new decorative techniques are appliqué and finger modelling. The distribution of these new items within the site is significant. The fortification has two concentric defensive ditches, the inner one enclosing three small temple or house mounds. Most of the cooking pots (usually plain) were found in the area between the two ditches, while the heavily decorated vessels associated with the *yaqona* drinking ceremony were found in the central area.

Additionally, and of great interest, Marshall *et al.* state that temper analysis indicates the plain cooking pots were imports, and the heavily decorated central area vessels were "manufactured almost exclusively of local tempers" (Marshall *et al.* 2000:92).

Yaqona, the *kava* of Western Polynesia is, in Fiji today at any rate, a mildly narcotic drink made from the roots and lower stem of a pepper (*Piper methysticum*). It is thought that the plant was first domesticated in Northern Vanuatu, and spread east and west from there (Aalbersberg 1997:15, Lebot *et al.* 1992:34-36). The cultigen is described as being perhaps about 2500-3000 years old (Lebot *et al.* 1992:53), and thus possibly associated with the first occupants of the archipelago. Apart from its various medicinal qualities (Lebot *et al.* 1992:116 and Table 4.1 for both Pacific and Fijian uses), *kava* was also, and more importantly, involved in ancestor worship. Aalbersberg, referring to Fiji, writes

> It is assumed that, as in most traditional societies, a local psychoactive plant, in this case *kava*, was adopted as part of a religious rite to help human beings to communicate with the supernatural world, both in the offering of the *kava* drink as an oblation to the gods and spirits and as an intoxicant to allow the supplicant to enter a state whereby he/she could communicate with such gods and spirits (Aalbersberg 1997:15).

In the early 19th century the ceremony was the domain of chiefs and priests, accompanied by prayers and libations to the gods (see Patterson 1967:90 for an 1808 account for Nairai – where its effect is compared to that of laudanum – and Williams 1858:144, 145 for Somosomo in the 1840s/50s). Although the religious and political emphasis of the ceremony have become less, due to changes in those aspects of Fijian society (see Sukuna 1925), they still exist (e.g. Sahlins 1981:125, and Phelps-Hooper 1982:182), and a description by A.C. Reid for the post-WW II era describes certain instances at least as still having "a sacred nature ... reminiscent of communion" (Reid pers. comm.).

The distribution of quartzo-feldspathic tempered sherds at the Tubou ring-ditch, which have been attributed by

Dickinson (1978) to the Rewa Delta area, is concentrated around the two house mounds off each end of that of the chief, with lesser clusters in the Tubou and Ceikena areas, and another in the Tadravula part of the settlement. Although some of these would represent the water jar associated with the *yaqona* ceremony, others were part of highly decorated vessels of unknown function, probably other types of water or oil jars. These are most likely to have arrived on Lakeba through the strong kinship ties between the chiefly lines of Lakeba and Bau, the most powerful centre in the Rewa Delta. These ties are well attested from about the middle of the 18th century, and Bauan wives were accorded special status and their own accommodation at Tubou (Young 1982:40).

That the latter were numerous is attested to by a reminiscence left by Swayne, the second Commissioner in Lau after Cession. Swayne visited the old settlement of Tubou in 1880, some 11 or 12 years after it had been abandoned, and in the vicinity of the west end of the chief's mound found

> a very old man hacking down a large banana to get at the fruit ... he had lived all his life in Tubou and did not care to shift now ... Ah yes, he knew where all the houses were. There where the masi is growing, was the Tui Nayau's [paramount chief] house. Among the bananas there was the house of the Cakaudrove ladies, where we are sitting, the Bau ladies lived, there were about 20 of them (pers. comm. A.C. Reid to author, in Best (1984:611; brackets added).

The sherd distributions thus demonstrate that the chief's house or compound in the time immediately prior to European contact acted as a central focus for activities involving the use of pottery vessels, and that containers with ceremonial and/or social significance were clustered in the vicinity of the house itself. It would be reasonable, given other evidence suggesting a stratified Lapita society as indicated above, to expect that similar patterns in the early site were a result of similar social factors.

TEMPERS: POTS OR SANDS?

One of the difficulties in temper analysis is to distinguish between the movement of pots and that of the tempers themselves, crucial if trade or exchange of the finished items is to be identified. This is especially important with regard to specialised and/or highly decorated vessels, whether in fact these are local products reflecting the values and beliefs of the society using them, or have been imported from afar, where the form and decoration may have had other meanings.

As mentioned above, three examples of imported black sand tempers have been found in Lakeba sites, all from the early end of the sequence. This, together with the changing percentages of these tempers over time in the one site, their presence in multiple vessel types, and the large number of pots involved, is clear evidence that in this case it was the temper that moved. The rare sherds with quartz, hornblende or biotite tempers, often identified to vessels with specific and status-related functions, are just as certainly from imported pots.

The other imported sand, found at the Lapita site of Naigani, indicates the same situation (Figure 14). The most elaborate dentate decoration at Naigani has the most black sand temper, at 80%, the less complex has 50%, and the incised ware 35%. Shell grains in the temper increase inversely. Of the 480 sherds analysed, 400 had black sand as the most common temper grain. A small number (not quantified) had quartzo-feldspathic tempers. Naigani has neither ferromagnesian or quartz sands, and this has been given as "clearcut evidence for importation of the full ceramic assemblage" (Dickinson 1997:3), and this has since been quoted (e.g. Clark and Anderson 2001:84). However the associated reduction of the number of vessels with black sand tempers and the decline in decoration, which in all other such sites is time related, suggests that the ferromagnesian sands are being brought to the island, in lesser amounts through time, with local shell temper being added in greater quantities. Dickinson (2001:308) has since allowed that raw materials instead of pots could have been moving. The quartzose temper however may indeed be evidence for the arrival of pots themselves.

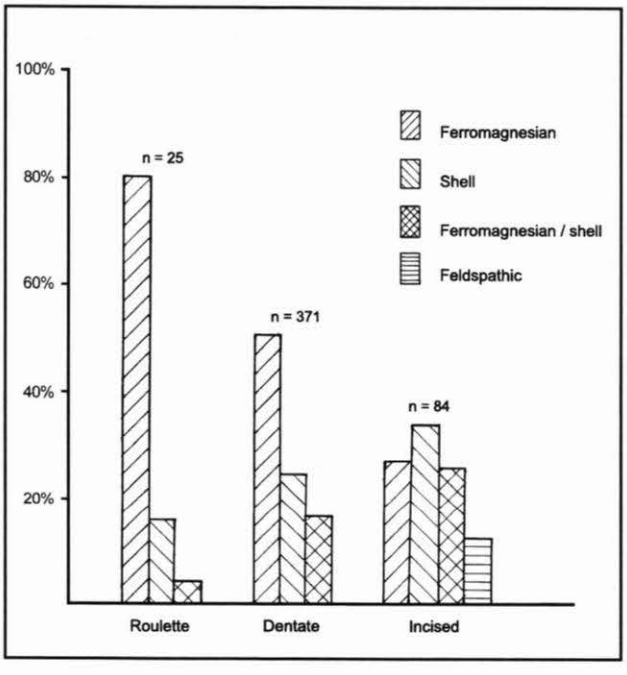

FIGURE 14. Distribution of Naigani tempers in three types of decorated sherds: roulette stamped, dentate-stamped, and incised.

A similar relationship between exotic tempers and decorated sherds has been found by Hunt for Mussau, where the frequencies for dentate and incised pots are two to three times higher than those for the plainware (Hunt 1989:137).

The low density of occupation in the new land, as indicated in most areas by the few and dispersed settlements, and the obvious maritime expertise of the settlers, means that temper sands (and even clay) could have been brought back to Lapita sites as part of the exploration and exploitation of the environment.

Just why pyroxenic sands were favoured is not clear. They could have resulted in a stronger vessel, however the few strength tests carried out on different temper types (Best 1984:384-86, Appendix J), did not indicate that this was a factor. A possible reason is that they appear green in transmitted light, being described as "green sands" by geologists. A number of such sands were investigated in Fiji in the 1960s for their economic potential, with deposits at Natewa Bay, Rakiraki, Viti Levu Bay, Batiki, Kanacea, Cikobia-i-Lau, Moala and Taveuni (e.g. Ibbotson 1960). Green adze rock was also actively sought by Lapita colonists from the Bismarcks to Tonga and Samoa (Best 1981:12, 13, Green 1979a:50, Green *et al.* 1988, Sand 1999d:48, 49, 2001:68). A cultural preference for the colour green, in Fiji at least, is therefore one possible explanation.

CHAPTER 5. LAPITA CERAMICS: ANTHROPOMORPHIC DESIGNS

It has been shown above that certain highly decorated pots have a social significance to their users, as indicated by the complexity of the decoration, their distribution within a site, and, in some instances, by deliberate selection of material for their construction. The actual decoration itself however has only recently been examined with this in mind.

The first attempt at analysing the Lapita decorative system, as described above, broke the decoration down into its smallest units, which were then used to compare assemblages (Mead *et al.* 1975). Since most of the units of analysis, the sherds, were already of small size, and unable to be reconstructed to any extent, this had the advantage of obtaining information from even the most fragmented assemblage. An unfortunate side effect of this was a mind set, not unusual in archaeology, that broke down the whole into its constituent parts, thus ignoring any information from the larger picture, which led to the somewhat anomalous situation where on the one hand attempts were made to reconstruct the vessel itself, by piecing the sherds together, while on the other the decoration on the sherds was broken down into yet smaller units.

While this is in line with most such analyses, where the etic domain is the first studied, it has taken almost a quarter of a century for the focus to start shifting to an examination of the possible meaning behind the decoration, and, as late as 1990 the original approach of Mead *et al.* (1975) was still being described by Green as the one that held the most potential for gaining insights into Lapita art (Green 1990:43).

The Lakeba material itself was compared in this way with the other three known main Lapita assemblages from Fiji at that time – Natunuku, Yanuca, and Naigani – and with those from Tonga, the Southeast Solomons, and New Caledonia, giving some indication of the relationships between the sites and the island groups themselves (Best 1984:617-27).

It was Spriggs' (1990a) article on Lapita decoration which proposed a new approach to the problem, by sidelining the motifs, design elements etc. in favour of reconstructions of the complete decoration itself. Concentrating on two types of anthropomorphic face images present in western assemblages, he was able to show that these became stylised and simplified through time. In a subsequent article Spriggs (1993) demonstrated that at least one of these images could be followed even further, as it transformed into previously recorded individual motifs, and suggested that the process could be developed further still. The importance of anthropomorphic designs on Lapita vessels had also been recognised at about the same time by Kirch, and expounded in a seminar at the University of Papua New Guinea at the time of the 1988 field season (Kirch 1997:134, 2001c:27, end note 31).

The significance of Spriggs' new approach is that the main units of study are completed designs, and not the underlying process of production. An analogy with languages (and Lapita decoration is often considered as such) is that instead of studying the way a sentence is structured, it focuses on what is being said – the message itself.

In his work Spriggs made reference to only two complex anthropomorphic sherds in the assemblages east of New Caledonia. These are the examples illustrated by Poulsen (1967: Fig. 50, 1987 (II): Pl. 50.1), and Mead (1975:35); the first from TO-2 in Tonga and the other in the Yanuca material in Fiji (Spriggs 1990a:110). The former features a complete earplug form, the latter a section of Motif M.33, a motif which is almost certainly part of either the earplug in its complete state, or of its later interaction with the curves of the face as the design shrinks.

There are however numerous examples of sherds with elaborate anthropomorphic and similar designs in Eastern Lapita assemblages, and there is also evidence for designs that undergo simplification and stylisation. These are described in the following section. The data is from the author's own research unless otherwise stated.

FIJIAN SITE EXAMPLES

Lakeba (Site 101/7/196)

This is a large (c.15,000 m²) open beach site on the northwest coast of Lakeba, excavated in 1978 (Best 1984). The original settlement had been on a narrow beach backed by a limestone plateau, with the process of beach progradation occurring during the Lapita occupation itself; the high water mark is now c.250m from the back of the site.

Although more than 2000 dentate-stamped sherds were recovered from the site, only two came from these complex designs employing the restricted zone marker (Figure 15). Both are from carinated vessels, with 15b a flattish sherd from between the carination and the start of the neck curve. This sherd is redder in colour than is standard for the site (strong orange brown 7.5YR 7/6), although there is no physical evidence for a slip, while the other is unique for the site in its yellowish colour (grey reddish brown 10R 5/4). The red sherd has a pyroxene-dominated temper, the other feldspathic-lithic (Best 1984: Appendix C. Petrographic Report WRD-82, Table 1: Slide numbers 103, 104). Both are described by Dickinson in the Petrographic Report as possibly local, or from another island in the Lau Group. The pyroxenic sand at least however would have to be an import. Both sherds were found in the same square and layer in the centre of the open site, and close to the base of the cultural material.

The Lakeba open site assemblage consisted mainly of small sherds, and no overall decoration designs were able to be reconstructed. One of the most common motifs present at the site is M12.2, also frequent in Tongan assemblages, and it is possible to trace this through a sequence of decreasing complexity, with its most elaborate form a design similar to that illustrated by Siorat and termed linear oblique composite decoration (Siorat 1990: Plate 30), and also in the Reef/Santa Cruz material (Motifs M72 and 73, Donovan 1973b:117, 118), and the New Caledonian assemblages (e.g. the "labyrinthine" design in Sand 1999d:16 number 4). Figure 16 shows the proposed sequence; there is an approximate stratigraphic correlation with the stages. If, as suggested below, the most elaborate stage of these complex designs features bands of multiple-toothed dentate tool, the so-called "restricted zone marker", then there may be more steps to go. Alternatively, since it appears as a filler between two Type 1 designs at Site RF-2 (Spriggs 1990a:92 Fig. 8), then it may be either a design in its own right or, since there are elements of a Type 1 face there – a triangular unit between two circular ones, the stylisation of such a design.

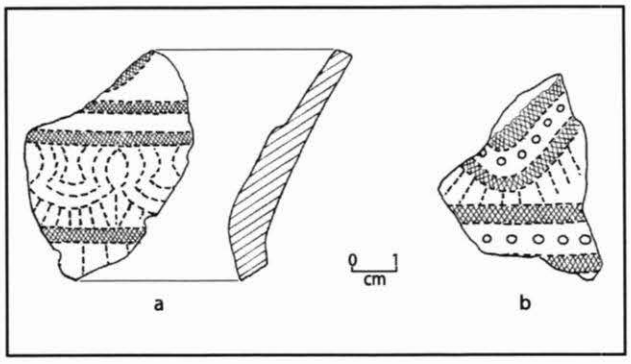

FIGURE 15. The two roulette stamped sherds from carinated vessels at Site 196, Lakeba, both from Square 16, Layer B2. a: yellow-slipped body sherd (number 34), b: red-slipped body sherd (number 35).

Natunuku (Site VL 1/1)

This site is another open beach settlement, on the northwest coast of Viti Levu. Although its size is not known, it is likely to have been of short duration (see below) and may have

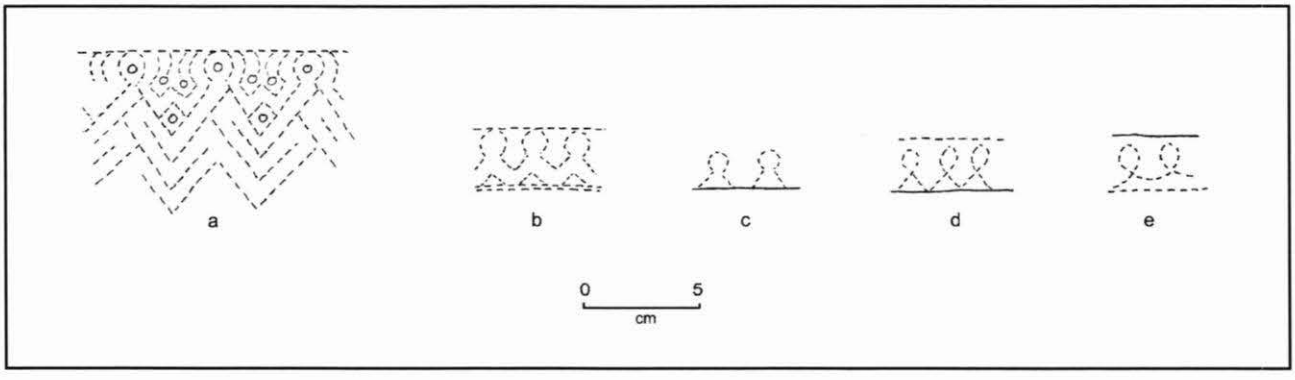

FIGURE 16. Proposed devolution sequence for one motif at Site 196, Lakeba. a: Reef Islands. Site RF-2 (Parker 1981: Plate 4), b: Square 16 Layer B2 (numbers 20, 23), c: Square 12 Layer A1 (number 10), d: Square 23 Layer B12 (number 1), e: Square 16 Layer B1 (number 14).

covered about the same area as Naigani, some 2000-2500 m². Unlike the Lakeba site this has been actively eroding for some time, and much of it has gone. That which remains is heavily disturbed, probably through historic grave-digging activities.

There are 92 sherds from this site which come from early complex designs, anthropomorphic or related. Four of these are part of Motif M.33, and another could well have come from the lower part of a Spriggs Type 2D design. Two came from the lowest level in Trench C, two from the second lowest level in Trenches A and G (a modern burial was encountered in the latter), and the last from 20-30cm depth in Trench D Area B, a location disturbed by modern burials.

Yanuca (Site VL 16/81)

A rockshelter site, on the southwest coast of Viti Levu, with cultural material extending for c.125m². Stratigraphy was general only, with one layer (B) being 2m thick with lenses but no internal layering, and with some evidence for storm surge disturbance at the base of the site (Birks 1978:6)

Two M.33 motifs are known for the site, both from Level 4 Layer 3 in Trench 4a, the lowest excavation unit in that square. Both sherds had pyroxene temper. There are another four examples of early complex designs in this assemblage, together with numerous stylised anthropomorphic motifs.

Naigani (Site VL 21/5)

This site, on the island of Naigani off the east coast of Viti Levu, was excavated in 1981 after being discovered during the digging of drainage trenches for a resort (Best 1981). The site was re-excavated in April 2000, and the ceramic analysis is currently underway. The settlement was on the edge of a channel separating two small islands, and had been located on a small sand bank or beach with a tongue of swamp behind, the channel at one end and the sea along the front.

Since there are numerous references to this site and its ceramic assemblage in this work, and because there has been no published site report, some relevant detail is included here. The initial site was small, about 100m long and 25m wide, and the early Lapita occupation was contained in a layer which followed the slope of the original dune west to the sea, increasing from c.20cm thick on the ridge top to c.70cm thick some 8-10m away at the base of the dune, at which point it was c.1m below ground level. On the dune top the deposits had been disturbed by later occupation: mainly the expanded rim and globular pots, together with plain red-slipped or burnished bowls, of the Polynesian Plainware period (almost 15 times the sherd density of the Lapita material), but with occasional sherds from the last 2000 years as well: carved paddle impressed (including elongated spot), shell impressed, comb incised, and appliqué. By the time these later sherds had been deposited however the dune had advanced some 30m seawards, and once off the very top of the dune a layer of sterile sand, up to 50cm thick, separated the Lapita settlement from the Plainware and later occupations. A recent claim of horizontal and vertical mixing of deposits at the site (Clark and Anderson 2001:83) is incorrect.

The early layer was dated by four shell samples, taken as far away from the dune top as possible: two from the top and two from the bottom of the Lapita cultural layer (Best 1981: Fig. 5), which indicated that occupation was probably of short duration, between about 2900-2700 B.P.

In the upper disturbed layer above this was evidence for the last stage of Lapita decoration, with at least one expanded rim decorated with dentate-stamped arcs – the last stage of the early decoration. More of these were recovered in the recent excavation.

Evidence for shell armband manufacture, and the production and reworking of adzes in a green tuffaceous sandstone, was also found throughout all the excavation units. This unusual rock type, together with two flakes of Talasea obsidian (Best 1987:31-32), with another flake probably from the same source found in the 2000 excavations, pointed to a possible connection with the Reef/Santa Cruz sites excavated by Green. The pottery recovered also strongly suggested this; not only were the motifs similar, and executed in a free flowing style similar to that of SZ-8 in particular, but the frequency of incising, at 28% of all decorated sherds, matched the average of 27% for the Reef/Santa Cruz sites. The highest figure for other Fijian sites is 6% for the lower levels of both Yanuca and Natunuku, while in the earliest of Poulsen's Tongan sites, TO-2, 9% were incised.

The frequency of dentate-stamping at this site has recently been quoted as 5% or less (Clark and Anderson 2001:83, and see Clark 1999:15), and their reference for this (Best 1981:9) states that "the pottery is remarkable for its very high percentage of decorated sherds, 33.5%, and for the high percentage of the decorated sherds that are incised, 28.46%". The incised figure refers to the decorated assemblage, and thus the frequency of dentate-stamping is 24% and of incising 9.5%. The raw data is provided in a later section below.

The Naigani site contains 26 sherds with elaborate designs (another 22 were found in the 2000 season), and others that are more stylised. Figure 17a and b shows two examples of the Spriggs Type 2 face design found at Naigani. Both appear to be stylised versions of Western Lapita

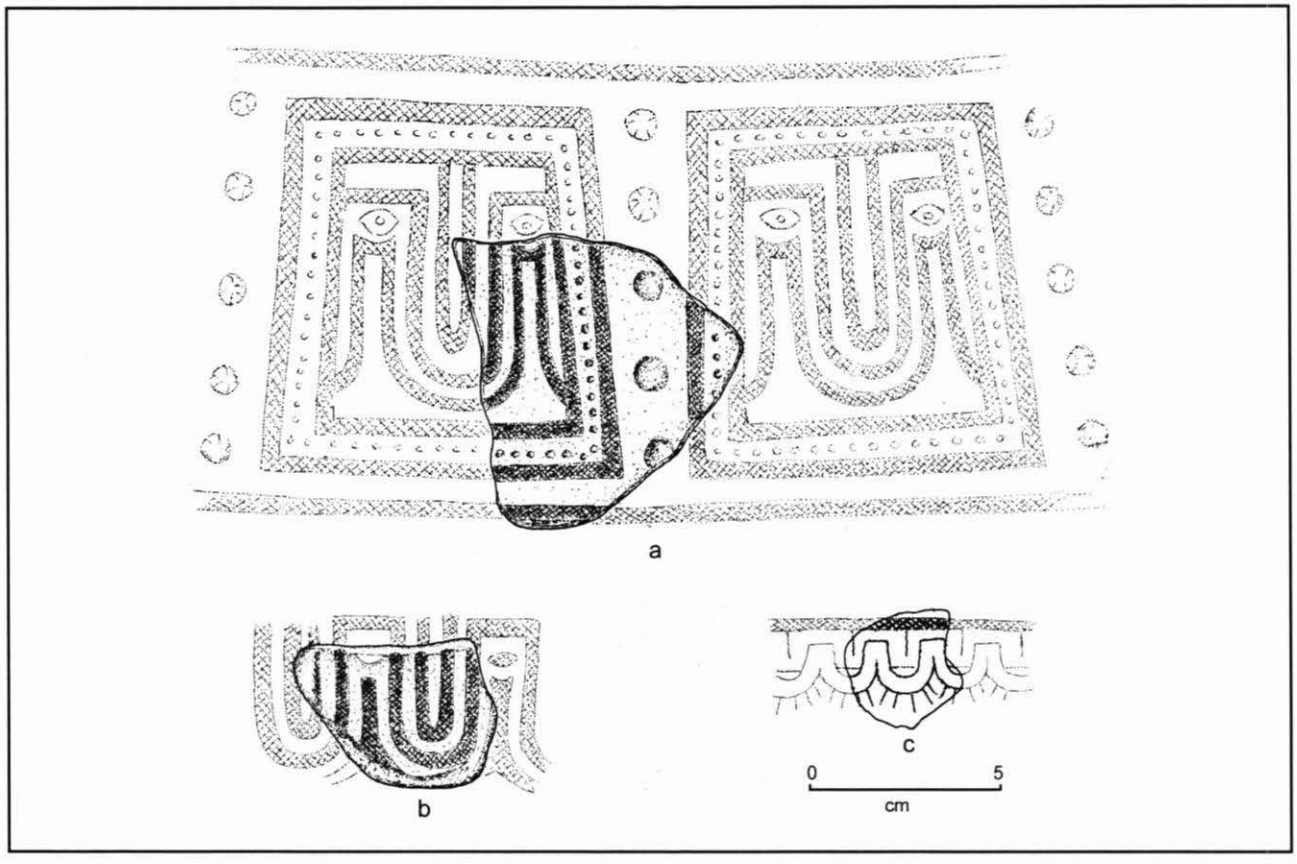

FIGURE 17. Anthropomorphic sherds from Naigani. a: Square 13, Layer C5, feature 1 (number 2), b: Drainage trench 16/18, c: Square 4a ext. (number 18).

examples, since it seems that they lack the "earplug" design. The sherd in 17a was found near the base of the site, the other in the spoil from a drainage ditch. Both have pyroxene temper.

There are also incised examples of stylised versions or parts of Spriggs Type 1 face design. Figure 18 demonstrates this; 18a is the famous sherd from RF-2, while 18b and 18c are from Naigani, with their derivation from the western design indicated. This shows that the stylisation process may not involve the whole design merely shrinking in on itself, but that aspects of this may be extracted and used as motifs themselves.

Figure 19 shows another design fragmentation process observable in the incised material from the Reef/Santa Cruz assemblage (and present to a lesser extent at Naigani). Here the stylisation of a Type 2 face design (19a and 19b) has been continued in an incised version (19c). This has been divided horizontally; producing fields above and below the midline (19d, 19e and 19f), and also possibly vertically, and the "eyes" merged (19g). Example 19h is from Naigani, and is what might be achieved by merging the two "eyes" to past their centre point.

DISCUSSION

Spriggs' two articles identified two main types of anthropomorphic face designs present in the Western Lapita assemblages, and provided persuasive evidence for their stylisation through time. The data presented above supports his findings. Examples of quite complex anthropomorphic designs are not uncommon in Eastern Lapita also. These occur in the lowest levels of the sites, and the process of stylisation can be shown to have taken place (although the chronological aspect of the latter is hard to demonstrate given the type of sites excavated, open beach settlements with the upper layers at least often disturbed.

The dated part of the Naigani site, as stated above, is of short duration (supported by at least one aspect of the ceramic decoration – see below), and yet contains examples of both quite elaborate and also highly stylised anthropomorphic designs. While this may indicate a rapid transformation from complex to simple, other factors are more likely. The Type 2D design vessel from Paoancarai Lagoon, Malo, illustrated in both Green (1979a:41) and Spriggs (1990a:115) has the main band of "face" designs enclosed between upper

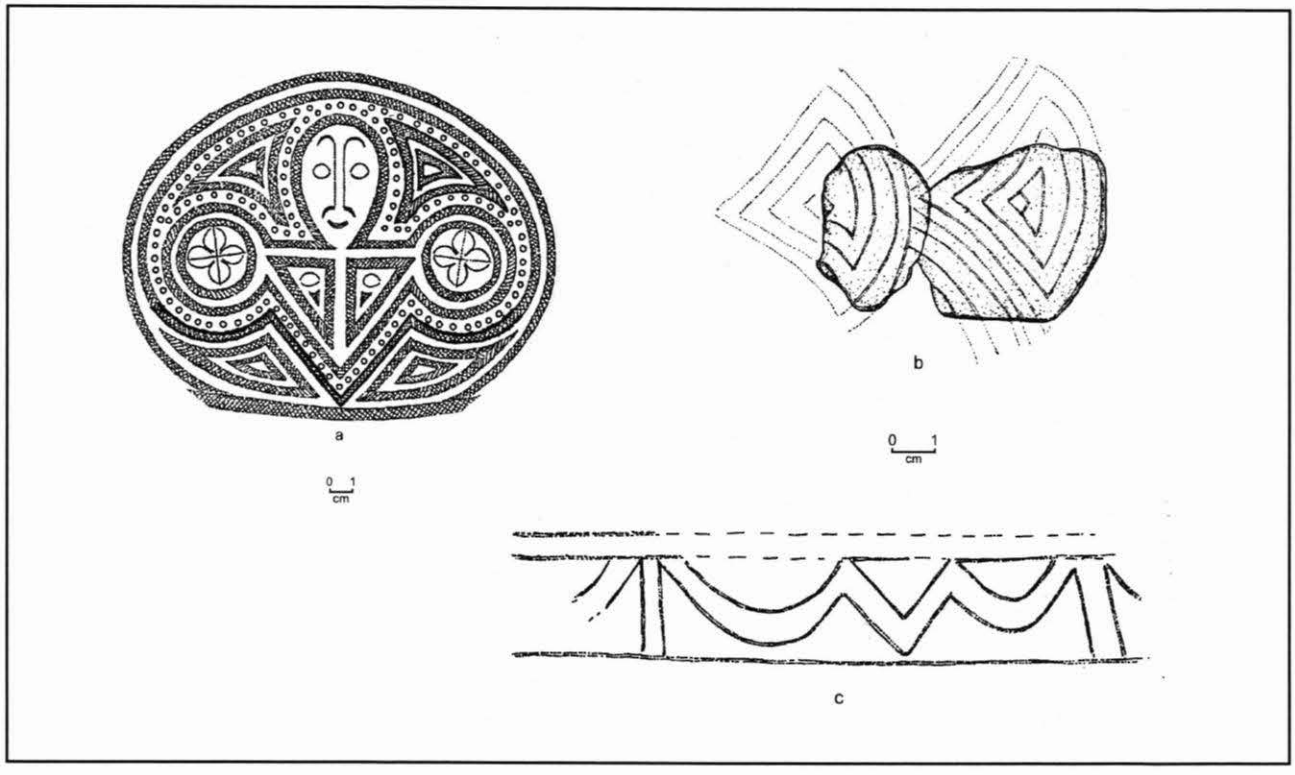

FIGURE 18. Examples of stylised incised anthropomorphic sherds at Naigani. a: Reef Islands anthropomorphic design, Site RF-2 (from Spriggs 1990a:87 Fig. 2), b: Square 2 Layer B3 and Trench 16/18, c: Square 3 Layer B2 (number 21).

and lower borders, and below this, between the lower border and the carination, is a band of motifs based on the same 2D design that are even more stylised.

The Naigani motif illustrated in Figure 17c is similar to the lower version on the Malo vessel, and is also situated immediately above a carination. This and the more complex design (17b) could conceivably, as with the Malo example, have come from the same type of vessel. In addition, any incised version of these designs, due to the difficulty of executing a complex decoration with this technique as opposed to impressing, cannot be compared chronologically with examples of the latter in the same assemblage.

The coexistence of complex and simple decoration in one apparently short-lived Lapita site (in this case that of Makekur (FOH) in the Arawe Islands) has been remarked on by Phelan (1997:139). However his conclusion from this, that there can be no chronological significance to Lapita decoration, fails to take the process described above into account.

That there is a process of design simplification over time is unquestioned. Spriggs (1993:13) suggests that some of the very simple motifs of the standard analyses, such as Mead Motifs 8-10, are representations of the complex Type 2 face design. A reduction sequence of similar magnitude was proposed above for a non-anthropomorphic design on Lakeba (although it may well be that the most complex form of this design has not been recognised).

Logically this extended process of design simplification should be acceptable. Once started, why should it stop? In Eastern Lapita at least the gradual and complete disappearance of the decorative system can be demonstrated, with no evidence for any sudden demise. Thus it makes sense that many if not all of the simple motifs are relicts of previous designs. It is just more difficult to produce convincing evidence for this at our present state of knowledge.

When regarded in general terms, the complex designs can be broken down into three main elements – the central decoration (anthropomorphic or otherwise), the borders, and the intervening fillers. As the simplification process develops a certain amount of overlapping and merging occurs, with, for instance, fillers becoming part of the main decoration band. The suite of motifs present towards the end of the decorative sequence would be a mix of the original border elements and fillers (both of which would probably have undergone some simplification) and the stylised main design, which by then would have been reduced to the equivalent of simple motifs or design elements.

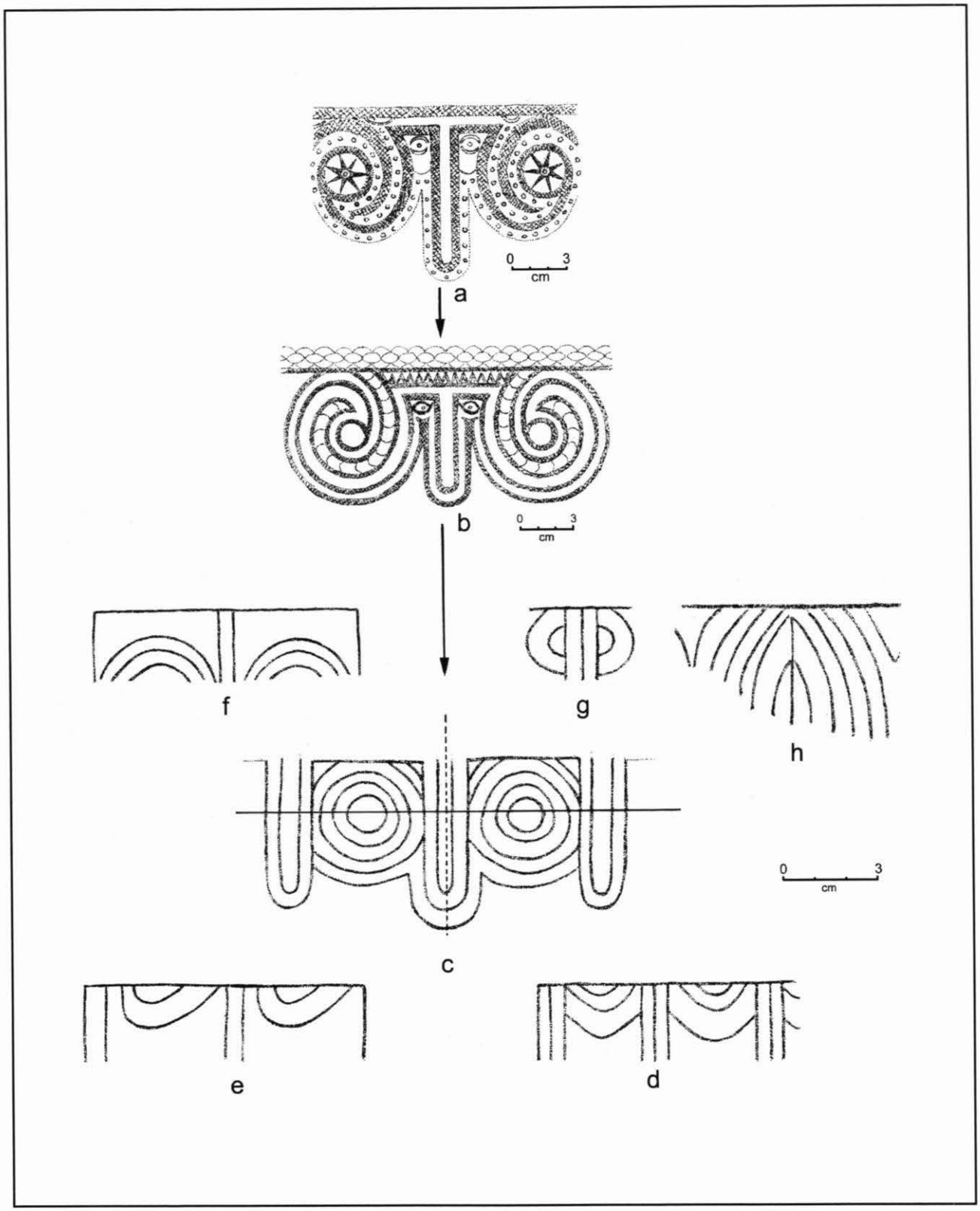

FIGURE 19. Examples of stylised anthropomorphic sherds from the Reef/Santa Cruz sites, and one from Naigani. a: Santa Cruz Site SZ-8, from Spriggs 1990a:104, b: Reef Is. Site RF-2, from Spriggs 1990a:105, c: Santa Cruz Site SZ-8, from Donovan 1973b:83, d: Reef Is. Site RF-2, from Donovan 1973b:118, e: Reef Is. Site RF-2, from Donovan 1973b:119, f: Reef Is. Site RF-2, from Donovan 1973b:118, g: Reef Is. Site RF-2, from Donovan 1973b:119, h: Naigani VL 21/5, Square 3 Layer B2 (number 18).

In early vessels the decoration layout can be seen as consisting of a main zone on the upper side of the pot containing the complex decoration, bordered top and bottom with one or more narrow bands of repetitive motifs. A variety of tools were used to produce the dentate-stamped designs, and it is argued here that these are of both social and chronological significance, and that their identification and description is regarded as an important aspect of Lapita pottery analysis.

THE ROULETTE STAMP

Basically the Lapita decorative technique is a variety of end tool impressing, and as such occurs at both ends of the Fijian sequence (Figure 5), even to the extent of employing a common tool – the edge of a shell, although in the early period this only occurs in the very last stage of decoration. It is indeed possible to confuse sherds from the late end of Lapita with those from the late end of the Fiji ceramic sequence. Where the decoration differs from all others in the Pacific is in the use of manufactured toothed stamps. These have been referred to variously as dentate stamps, rocker stamps and roulettes.

The standard dentate tool types are usually described as straight or curved single line stamps, and Siorat, studying a sample of more than 100 sherds from six sites in New Britain, New Caledonia and Uvea, has identified only two main types, one straight and one curved, with a large and small size in each (Siorat 1990). Although bands of restricted zone marker are present on at least some of the sherds studied, it is not mentioned.

Both the other two tools have been described as roulettes – rocker roulettes and continuous roulettes (Shepard 1976:195, 195). The former is a tool that is "walked" across the surface of the pot, leaving a band of straight or curved impressions in a zig-zag pattern. The end of the tool is presumably slightly rounded for a more even performance, and thus is termed a roulette. The continuous roulette is a toothed or incised wheel or disc, which when rolled across the vessel surface produces a continuous band of impressed decoration.

It has been suggested by a number of authors that Lapita decoration, or some aspects of it, was achieved by rouletting. The first of these seems to have been Father O'Reilly, in 1940, when describing the Watom sherds (Green 2000b:25), followed by Gifford (1951:232) for the Sigatoka site in Fiji, Gifford and Shutler (1956:94) and Solheim (1964a:208) for Site 13 in New Caledonia, and in Vanuatu by Hébert (1965:80) for Eruiti and Hedrick (n.d.:120) for the Malo site. Solheim is specifically referring to a rocker stamp, and so too is Hedrick (n.d.:191) when he describes a crescentic design, and these appear to be standard straight-edged stamps used with a rocking motion, leaving the zig-zag pattern (e.g. Gifford and Shutler 1956: Pls 22t-v and 23w, aj and am).

The possibility of rouletting was also considered by Poulsen (1987:137) for Tonga and Green (1979b:18) for the Reef/Santa Cruz assemblages, but was thought by them to be unlikely. It was suggested by Palmer (1972:715) that the dentate decoration might have been applied by "a finely serrated pearl-shell disc".

All the above save Hedrick (n.d.:120) and Green appear to be referring to the mainly single line type of decoration, now accepted as most likely to have been produced by the standard stamps mentioned above, save possibly for the general zone markers.

In none of these descriptions has the case for continuous rouletting been made. This is sufficiently different in technique from true dentate-stamping to be classed as a new tool type, and, as is suggested below, does not appear to have been reported previously from the Pacific. It is proposed here that the main candidate for this in the repertoire of Lapita ceramic decoration are what are known as restricted zone markers (although some at least of the general zone markers could also have been produced by this technique).

The term "restricted zone marker" was first used by Mead (1975a:24) in his classification of Fijian Lapita motifs. He described three types; two with bands of three or more lines of dentate-stamping, and a third with a multiple diamond pattern (Mead *et al.* 1975: Appendix II:72). These are usually between 3-5mm in width, and are often bordered with single lines of dentate, although it is not clear whether the latter are part of the same tool or have been added later. Donovan's research on the Reef/Santa Cruz assemblages, carried out at the same time as Mead's, identified another two such markers (Donovan 1973a:19).

These zone markers were described by Mead as (strictly) horizontal bands of dentate-stamping that divide the vessel shape into areas for decoration. The multiple diamond pattern band appears to be the earliest of the types, and this is Mead's (1975a:26) and Donovan's (1973a:19) restricted zone marker RZ3, and Shaw's general zone marker GZ5 (Shaw 1975:54). This decoration was referred to as the only one of the zone markers that can be used in a circular direction (Mead *et al.* 1975: Appendix II:72), although it is not clear just what this refers to.

The description of the bands as zone markers of any kind is misleading, since it commonly appears in or makes up the main decoration in early designs, especially west of Fiji. Even in the east it is not restricted to zoning, Shaw (1975:54) for instance noting that at Natunuku it was also used for the motifs.

Although Mead based his classification scheme on the Yanuca and Sigatoka assemblages, the Natunuku results appeared in the same volume, and at the same time a number of western site assemblages had been recovered, and were used by him in a more general comparison. The distribution of design elements and motifs in seven geographical areas is listed, these are Yanuca, Natunuku, Tonga, Site 13 and Île des Pins, Malo and Watom (Mead 1975b:63). The restricted zone marker RZ3 is shown as occurring only at Yanuca and Île des Pins, however it is present at all these sites. Mead (1975b:62, footnote 8) also sighted some of the Reef/Santa Cruz material, in which the use of the tool is common. The recognition that this decorative technique was not restricted to zone markers is made clear in Donovan's (1973a:18) comment that it was not necessarily "an integral part" of the design field.

Since the publication of the Mead *et al.* (1975) volume a large number of Lapita assemblages from New Caledonia and the Bismarcks have been recovered, and it is clear that not only do the "restricted zone markers" form an integral part of the main designs, but that in the earliest examples they indeed comprise all or most of it. It would thus be more correct to call them by another name, probably by the subtype of dentate-stamped tool by which they were made, and it is suggested here that this was a roulette.

Of those researchers mentioned above who refer to the roulette as a possible Lapita tool, only two have considered the specific connection between this and zone markers. Green (1979b:18), writing well after the Reef/Santa Cruz material had been analysed, stated that "lines of dentate-stamping used as zone markers on the pottery are formed by lineally repeated applications of the [straight-edged] stamp rather than by rouletting". Although the type of zone marker is not identified, 11 out of the 12 vessel sherds illustrated in the article feature the restricted marker. Such a technique could be used, as Shepard (1976:194, 195) describes "in some instances, similar effects [to those of the continuous roulette] were produced by end-to-end repetitions of straight, dentate stamps", however this was not the case here, as explained below.

Hedrick saw one of the six basic tools used on the Malo pottery as a "roulette used in forming zone markers" (Hedrick n.d.:120), although again the type of zone marker is not specified. Neither Green nor Hedrick explain how they have come to their separate conclusions. Although Green is stressing similarity between the technologies of tattooing and pottery decorations, there is no evidence for rouletting in the former (but see below).

Since the use of a wheel tool has never been explicitly proposed for Lapita ceramic decoration, and would be a significant addition to the technology of the potters, experiments on restricted zone marker technology were carried out. This involved examining sherds from the Reef/Santa Cruz and Naigani assemblages, and conducting some basic experiments. In addition any clear large-scale photographs of other sherds were studied, such as those for the New Caledonian sites (Sand 1999a, 1999d). Sherds of sufficient size to rule out single rocker or block stamp imprints were chosen, with a minimum band length of c.40mm, although most were considerably longer, in the case of the Reef/Santa Cruz material up to 200mm. The main aspect of the decoration studied were indications of overlap, especially along curves, where it would have been more difficult to match the end of one motion with the start of another.

No evidence was found on the pottery examined for the use of a discontinuous tool. The early anthropomorphic designs were large and curvilinear, and the bands employed vary from straight – the true zone marker type – to hairpin bends at the ends of the Type 2 noses. To achieve this with standard stamps would have required a huge tool kit and would certainly have left obvious traces. A true rocker stamp could have accomplished the designs, but would also have left its mark, and had this type of tool been used it is only a short developmental step from using a segment of a disc to using a disc itself.

Small discs of wood and shell (*Tridacna* sp.), 25mm in diameter, were made and the edges incised with intersecting lines, using flakes of sinter or jasper for the shell, and obsidian for the wooden examples. Both hardwood and softwood were used, and the discs held between thumb and forefinger. Modifications included central depressions for the fingers, and central perforations with short axles or spindles. The

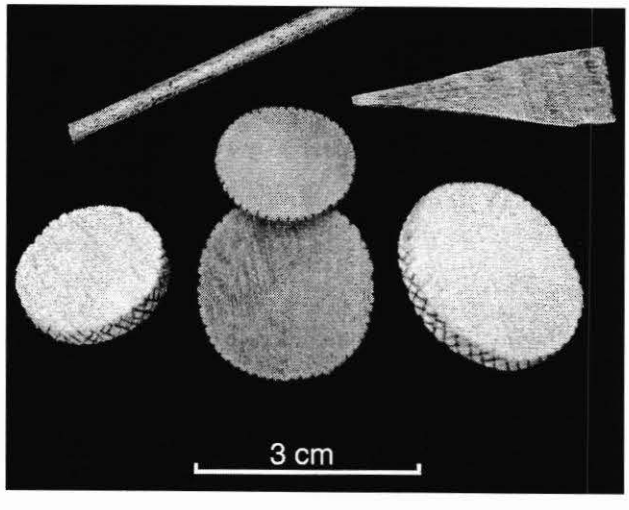

PLATE 2. Tools manufactured for anthropomorphic replica. Roulette tabs cut out by handsaw, ground with sandpaper, and incised with obsidian flakes. The single-tooth tool used for eyes and "earplugs", the thin bamboo for small circles. Photograph by Hamish Macdonald.

wooden tools are shown in Plate 2, the two centre discs are one tooth wide, top right is a single-tooth stamp, and top left is part of a 150mm length of hollow bamboo.

From the experiments it was found that all three materials produced workable tools, with the roulettes functioning satisfactorily. The easiest to use was one with a short fixed axle with pointed ends, where the axle and wheel turned together, although a plain disc also worked, and would have achieved better results if used by someone with nimble fingers. The finest teeth or cross hatching were achieved on softwood, in this case kauri, and the coarsest on shell (*Tridacna* sp.), the latter being difficult to work although probably capable of producing finer cross hatching than achieved given a skilled worker with a supply of appropriate stone material.

A full-scale duplicate of the famous RF-2 anthropomorphic design was executed with the tools illustrated, and Plate 3 shows the result. This indicates that the designs can be achieved with these simple and easily made implements, each one of which could have been produced from scratch in about an hour on a Pacific beach 3000 years ago. It would, I suggest, have been impossible to achieve the same result with standard stamps. It should be noted that the actual pot was decorated with a coarser cross-hatched roulette; the experimental tools were carved as finely as possible, however all were first attempts and could be improved on. A single-tooth width roulette (hardwood) was also used to run the borders along the bands, and a better material for this would have been turtleshell (e.g. Ambrose 1997:527).

Perhaps the most striking indication that a roulette was employed were the multiple bands that make up the nose of a Spriggs Type 2 design. Sand (1999a:41) illustrates an anthropomorphic design with three bands making up the nose; the outside curve at the end of the nose has been executed with no deformation, the middle one may be a bit smudged, while the inner and tighter turn – a hairpin bend – has not been achieved at all.

PLATE 3. Replica of RF-2 anthropomorphic sherd, achieved by roulettes. Material is unfired Waitakere (Auckland) clay, with 20% building sand temper added.

While considerably more research needs to be done, both experimental and in the field of micro-photography and enhancement of the various types of band decoration, there is no doubt that at least the early examples of this type of decoration were achieved with a roulette tool, probably simply held between the fingers.

Although there are potential precedents for true dentate-stamping in Island Southeast Asia, as described in a later section below, no firm identification of the roulette tool appears to have been reported for Austronesian speakers. Solheim (1964b:9) however, in a description of the various types of ceramic decoration in the Central Philippines, mentions this in the class of compound impressing tools – which are dentate-stamp, roulette stamp, and crenellate. However it does not appear to be mentioned in the text. Possible use of the tool is reported by Solheim (1959:177) for the Sa-huynh complex ceramics, where he writes "roulette impressions may have been obtained with some form of a dentate tool". In this case Solheim may be referring to a single vessel, taken from a pagoda in Annam, and mentioned by him as being possibly rouletted (Solheim 1964a:208). However the original description of this "goblet", and the accompanying photograph, show that this is unlikely (Malleret 1957:50-54). The use of a roulette stamp may be among the ceramic decorative techniques of Southeast Asia, but at present there do not appear to be any proven examples.

The above brief cull of the literature for mention of the roulette stamp is not an attempt to construct a "*Rollstabverzierungkultur*" (roulette stamp culture), wheeling down through Island Southeast Asia to West Oceania, but to see how frequently the tool was thrown up by the people ancestral to Lapita. Its appearance in the Bismarcks may have been a unique event in the Austronesian-speaking world.

The inspiration for this tool in Lapita ceramic technology may have come from artifacts similar to the pottery rollers, discs and earplugs present in Neolithic assemblages in Mainland Southeast Asia (e.g. Bellwood 1979:177, 178, 204). The rollers, which may have been for printing designs on cloth (Bellwood 1979:177) are similar to but much smaller than the grooved bamboo barkcloth roller used in Western Viti Levu, although in the latter instance the cloth was apparently pulled over the roller while being rubbed (Clunie 1986:127). Pottery discs occur in the Yuan-shan culture, directly ancestral to the Austronesian speakers (Bellwood 1979:204), and incised ceramic earplugs from Somrong Sen in Cambodia (Bellwood 1979:178) are similar to those tentatively identified as such in the anthropomorphic Lapita designs (Spriggs 1990a:118).

While the use of the roulette tool itself is a chronological marker, being used less through time, variations in the type of design incised into its edge has potential to provide finer temporal detail. Some stages in this sequence, and the subsequent devolution (from restricted to general), and ultimate disappearance of the zone markers is shown in Figure 20. This is based on the data of Donovan (1973b:87) and Mead *et al.* (1975:72), together with personal observations.

The first modification probably occurred when the straight fine cross-hatching was replaced by coarser variants, some of which involve intersecting crescentic or slightly S-shaped lines (Figure 20b: Donovan's RZ4). The second line of hatching in these can be faint (Figure 20c), only affecting the top part of the ridges left between the first, and is an intermediate stage between cross-hatching and true oblique hatching. It seems that at about this stage the lines of dentate borders disappear. The zone markers consisting of oblique lines of dentate-stamping (Figure 20e, f) have not been sighted, and it is not clear whether they are similar to that in Figure 20d – in other words made by a roulette – or by some other method. There are undoubtedly other variations that resulted from the initial simplification of the tool which await discovery or description, and intermediate stages between those already identified.

These continuous band markers were replaced by general zone markers (Figure 20g, h, i) which also underwent simplification from bands of multiple lines to a single one. It is possible that a one tooth wide roulette was used to produce these. Eventually natural features on the vessel itself provided the limits of the decorated zone – the top and bottom of the rim, or the carination (Figure 20j).

It seems that the solid bands of decoration characteristic of this tool developed into bands of decoration in their own right (Figure 20k, l, m). Donovan (1973a:30) comments for Site SZ-8 that "there is a body of sherds which suggests that restricted zone markers RZ 3/4 have almost reached the dimension of bands, because of their comparative increase in width", and some of the illustrated sherds from this site show bands 15mm wide (e.g. Donovan 1973a:56 numbers 77/1, 35/2). The same banding effect was also achieved using repetitive-patterned motifs from standard tools, the most common of which appear to be pairs of vertical arcs (DE 1.2) and horizontal zig-zags (M28), examples of which were found both in the Reef/Santa Cruz sites (e.g. Donovan 1973b:102) and at Site WK0013A in New Caledonia. At the latter three of the 15 vessels found in the pottery pit had bands or zone markers 10-15mm wide, consisting of Motif M28, all associated with what Sand describes as the labyrinthine design (Motif 73), and one had bands of both M28 and DE 1.2 (Sand 1999a:44). This last was decorated by both incision and dentate-stamping, with an anthropomorphic design, and was found under the former vessels.

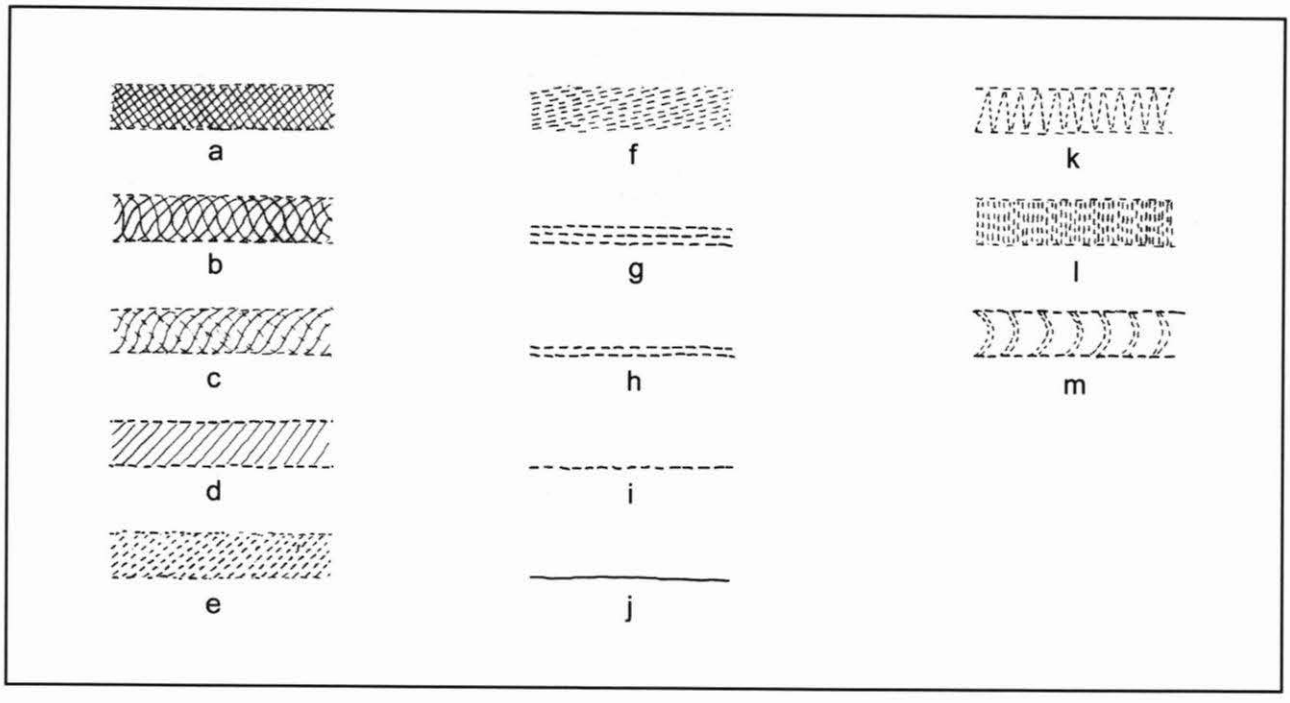

FIGURE 20. Devolution of broad dentate marker, from roulette to single line, and three with motif infill. a-i: from Donovan 1973b:87 and Mead *et al.* 1975:72, j: carination, k: from Sand 1999d:46, l: from Donovan 1973b:134, m: from Sand 1999d:46.

The simplification process seen in these tools appears to be a sensitive relative dating tool, separate from the stylisation of the motifs themselves, and the early stage of this process is used as such below. However it should be noted that different types or sizes of the tools are found on the same pot (e.g. Kirch 1988b:335, Fig. 4 right, and Sand 1999d:45 number 4), and at any one time on a site a variety of types would be in use. The complexity of the tool and its potential for variation also affords opportunities to recognise individual potters or at least the artists who decorated the vessels.

The invention or use of the roulette stamp is likely to have had significant and far-reaching effects on Lapita society. Without the tool, the complex anthropomorphic designs would most probably not have been executed, and certainly not with the flamboyant and vibrant style, detail and visibility common to the early examples. While the decoration itself is seen as part of a wider system, itself a response to some other social force, the (apparently) sudden appearance of these striking designs can only have had a reinforcing and intensifying effect on the society. The curvilinear style of the Western Lapita regions as opposed to those of the east has its origin in the use of this tool, which is relatively rare in the latter region.

It is clear then that the designs created by the roulette tool were the heart of the ceramic decoration, and that when these had been abandoned the system entered a new phase. By chance the first motif analysis, on which those that followed were based, was developed on three assemblages from the east. Two of these, Yanuca and Sigatoka, were too late to contain more than a handful of rouletted sherds, while the other, Natunuku, was somehow overshadowed by the main analysis of Mead on the former. Although large highly decorated sherds from the Reef/Santa Cruz sites were available at the time of the analysis, it appears that the rouletted designs were considered to be a separate decorative element from the main body of motifs.

It is only since the two articles by Spriggs (1990a, 1993) that the true nature of the decoration has been understood – that most of the motifs are stylised reductions of the main design, along with borders and fillers. Motif analyses have been and are concerned with understanding a system in decline, where the rationale behind the decoration has changed, and the original meaning or meanings have been lost. It is scarcely surprising that the initial enthusiasm for this type of analysis has waned, although 11 years after Spriggs' work it has not been replaced by anything with more promise.

Following on from the above, it is suggested here that the answer to Spriggs' mainly rhetorical question of how much of the Lapita design system represents the human face, is "a significant amount". The next step is to ask what part did this decorative system play in the culture, and what was the connection between its demise and the subsequent loss of pottery, in Western Polynesia at least.

CHAPTER 6. THE LOSS OF LAPITA POTTERY

One of the so-called enigmas of the Pacific is the disappearance of pottery in the Tongan and Samoan islands. The factors behind the stylisation of the decoration also apply to the subsequent loss of the ceramics themselves. A number of models have been proposed over the last 25 years, and these are discussed below.

PREVIOUS MODELS

Many of these models, which have attempted to account for the disappearance of the pottery, have tended to concentrate on the physical loss of the pots themselves, with little or no weight given to the prior demise of the decoration. These fall into three main categories – economic or utilitarian, technological, and social – although few of these do not acknowledge some influence from the other two.

The earliest explanations for the loss of pottery in Polynesia were environmental or technological, where the lack of clay and/or suitable temper was held to be the prime reason (e.g. Surridge 1944:17). This was soon criticised as being insufficient in light of the demise of pottery in island groups which did have the raw materials (e.g. Green 1974a:253). The theory surfaced again in 1984, when Claridge, following soil surveys of Tonga and the Cooks (Claridge and Percival 1980:335-42) described both the tempers and clays available in Polynesia as unsuitable for ceramics, putting emphasis on the suitability of quartz sands as tempers (Claridge 1984). These findings however did not take into account the flexibility of prehistoric Polynesian ceramic technology, which produced pots with a number of temper types, including the much maligned shell variety (see Rye 1976, 1981 and Spennemann 1989:214), and could utilise otherwise intractable clays by blending these with substances such as mangrove mud (see Best 1984:351).

Leach (1982) proposed that the impetus behind the use of pottery was a simple gastronomic or culinary one; that the Proto-Austronesian ancestors of the Polynesians grew rice and needed pots to cook this in. As the eastwards push from New Guinea commenced, the cereal dropped off the menu, and with the main need for pots gone, the craft of potmaking became redundant. There are several problems with this model: rice had apparently already been abandoned before the Lapita ancestors reached the Bismarcks (e.g. Spriggs 1989:608), the cooking pot is the critical vessel for preparing the cereal, yet the first stage in the loss of vessel forms involves vessels other than this category, and it also seems unlikely that a relatively sudden causal event should have such a gradual long term effect.

Irwin was the first to propose a multi-causal model, in which founder effect and ecology were advanced as the prime movers for the loss, together with archaeological sampling error. Of these, the first is probably doubtful, as Irwin himself has demonstrated the relative ease with which inter-island voyaging could be achieved and maintained (Irwin 1992), and although this process apparently becomes more difficult as one moves east, there is no particular point where one has to jump off the edge of the world. Thus if potters were required, and for some reason had not reached the destination, replacements could have been ordered by the next boat. In Irwin's scenario too there is room for only one potter on board; however, as he later suggests, discovery probably preceded settlement (Irwin 1992:210), and it would be a rash settlement strategy indeed that put all its pottery eggs in one basket.

The question of available materials is valid, although Irwin probably overstates the inability of the early potters to adapt to new resources, as they must have been doing with great success up to this point.

Central to Irwin's model too is the removal of the time gap, of c.1000-1500 years, which exists at present between the earliest settlement on Samoa and that to the east. Irwin (1981:491) suggests that since those early travellers "did not know they had any duty ... to stop and metamorphose into Polynesians" then they may well have kept on going. However without any idea of why the voyaging started, there are risks in suggesting there was no reason why it should stop.

The first model to employ a social parameter is that of Kaeppler (1973), who in a brief article reporting on the finding of sherds from Tungua, Ha'apai in Tonga, proposed that the loss of both the pottery and its decoration may have been inversely related to the rise of the hierarchical system. Since ethnographic data on Tongan society shows that certain artifacts (valuables) were made for chiefs, and as (she says) pottery vessels would have increased in value as they became rarer, so they would have moved into the domain of the chief (Kaeppler 1973:220). She proposed a sequence where at first all households used ceramics, with the next stage being where only high chiefs used decorated pots and lesser chiefs plain vessels, and ending with the situation where the only pots being produced, all plain, were the sole property of the high chief's household.

This requires two processes to have been working – the production of pots and decoration independent of the society's demands, and the maintenance of a chiefly system throughout the period of ceramic decline. Most archaeologists would agree that Lapita ceramics, or at least the decorated component of these, did indeed have social importance, and that the production of these was not from discrete centres of specialisation but more localised village-based industries (e.g. Dickinson *et al.* 1996:94, Dickinson 2001:312, 313, Green and Anson 2000a:86, Summerhayes 1996:261, 2001:58, Thomson and White 2000). The single exception to this seems to be the finding by Hunt (1989:206), that for the Mussau Island sites (four Lapita and one post-Lapita), between 88% and 100% of the sherds were exotic to Mussau, with 100% at Talepakemalai. This interpretation seems extremely unlikely, and has been criticised, with the suggestion that in fact only a small amount is not from local sources (Thomson and White 2000:309, 310).

The archaeological evidence, from Lau at least (and see also Marshall *et al.* 2000:81, 82 for Sigatoka), would also suggest that whatever chiefly system existed in the initial period it appears to have undergone some devolutionary change through time. For Tonga itself Spennemann (1989:219) also suggests a similar situation, with immediately post-Lapita settlement in the form of scattered hamlets, suggesting a less stratified and more egalitarian society.

For pottery to become more valuable as it decreases in quantity requires a demand that is difficult to supply. An example from Viti Levu illustrates this, where in the early 1940s, at Korosuli on the Wainimala, a few pots were in use in the village. These were precious and carefully guarded, and were never moved, being cleaned in place. The rack above the fireplace, which contained the drying firewood, was always kept secure. These vessels were manufactured in the Sauvakarua area in the upper Sigatoka, and were carried by women over trails across the divide to Waibasaga, from where they travelled down kinship lines by the process of *kerekere*. The value of the vessels increased with distance from the place of manufacture (Asesela Ravuvu pers. comm.).

As yet however there is no archaeological evidence to suggest that the production of pottery, in Fiji at least, was ever divorced from demand. If pots become plain and then disappear it is probably the result of a decrease in demand or value. The situation in Tonga, and in all the other island groups settled by the Lapita colonists, is likely to follow a similar path to this.

Spennemann (1989) suggested that the ceramic decoration acted as a group identifier, declining through time as overseas contacts diminished and local populations built up. The loss of pottery itself he puts down to technological and economic causes. Spennemann (1989:214) takes the view of Claridge (1984) that volcanic sands are required to produce hard non-porous pottery, and he regards pots with shell temper as unable to be used over an open fire. A change in vessel use to a purely functional role, and specifically to cooking shellfish, is put forward as the reason for the greater quantity of pottery at the coastal late Lapita sites as opposed to the inland horticultural sites of the same period (Spennemann 1989:213).

The role of decoration as a group identifier, on the early pottery at least, is considered doubtful, and is discussed below. Temper types are also unlikely to have contributed in any functional way to the demise of ceramics, and shell temper was common in cooking pots in Fiji at least (and see Clough 1992). For the shellfish explanation to be considered, some chronological control on the length of time each of the two categories of site, inland and coastal, were occupied is needed, to quantify the amounts of pottery at each. And as Spennemann (1989:509) admits, shellfish consumption continued in the coastal sites after pottery had disappeared.

Marshall (1985) in an article on gender archaeology, placed emphasis on a posited trade aspect in the decline of both decoration and pots. She argues that women were the potters, and that men ran a maritime trade and communication network. When the latter broke down, as shown by the fragmentation of the Proto Polynesian language, pottery production lost its main impetus. The unbroken ceramic sequence in Fiji is put down to the continuation of trade in those islands and the use of the large double canoe (Marshall 1985:224).

Although some pottery materials have been shown to be exotic in early Fijian sites, and to fall off later (Best 1984:629), there is no archaeological evidence that trade or exchange were ever factors driving the production of the early pottery (see Ambrose 1978 and Summerhayes 2000a). Neither is there any evidence for large double canoes at that

time, or indeed at any other, in Fijian prehistory, and as the archaeological evidence mentioned above shows, ceramic production in Fiji was apparently following the same path to extinction as that in the islands to the east.

Le Moine (1987) considers that technological factors were the most important in the loss of pottery, with the demand for vessels decreasing as the economy changed to include more agriculture. At the same time, she acknowledges most of the other points raised in the earlier articles covered above (Le Moine 1987:28, 29). Although the possible social and ideological aspects of pottery are acknowledged, and that these, in the form of vessel shape and especially decoration, could contain important messages for the society, Le Moine (1987:28, 29) states "Clearly this did not happen with Polynesian ceramics, especially in terms of decoration, since at the end of the sequence it was undecorated". She goes on to point out Green's work had shown that in fact the decorative system continued on other mediums, such as barkcloth and body tattoos (Green 1979b), and the pottery vessel forms that disappeared also had their equivalent in later wooden ones, two of which had ritual significance (Green 1974b:129). Green's work in this field is questioned below, and Le Moine (1987:29) admits a problem with explaining why the decoration should disappear from the ceramics while apparently continuing in barkcloth and tattoo designs. This is indeed a problem, the more so when the nature of the gradual disappearance of the decoration is understood.

An early attempt to explain the demise of the decoration and the loss of the complex vessel shapes invoked the role of raw material used in the manufacture of the dentate-stamp tools. Hedrick (n.d.:234) suggested that only obsidian could achieve the necessary fineness of the teeth, and that a shortage of the material could have started a decline in both decoration and vessel form.

The latest to look at the issue is Kirch, who is the first to relate a change in the religious aspect – "house rituals involving ancestors" – to the loss of the decoration itself, although external exchange is given more weight (Kirch 1997:160). He also presents feasible explanations for the ultimate loss of the vessels themselves, describing situations in which they might have become functionally redundant.

Summary

The models briefly summarised above cover just about any and every factor that might have affected or effected the decline of ceramics, and some that certainly didn't. The process itself took up to some 500 years, and as Leach (1982:155) so aptly describes, once started "like the spring of a clock, the practice [of pottery manufacture] began to run down".

Most of the models do not take into account available archaeological evidence, and indeed reflect mainly the interests or leanings of the various writers – gender, gastronomic, materialistic, and voyaging factors – to name a few. Rarely is there an understanding that more than one process was involved, and that the various stages need to be defined, evaluated and ordered.

DECORATION AS A MESSAGE

It is suggested here that the initial step down the road to the loss of pottery was the devolution of the decorative system itself. There are two main categories of decoration in the 3000 years of Lakeban and indeed Fijian prehistory. These are:

1. Overall and undifferentiated decoration, sometimes (if a bowl) on both the inside and outside of the vessel.
2. Designs applied to the vessel with individual end tool or appliqué elements, restricted in the main to areas above the mid-point of the vessel.

The first of these, represented by carved paddle impressing, and to a lesser extent slipping and burnishing, contains little social or cultural information, but enhances the form of the pot and makes the vessel more attractive, and possibly more functional. There is little extra social cost involved; the use of a carved paddle involves no more labour than that of a plain one, save for marking the face of the paddle itself, which would be minimal, and which, once made, could be used for some time. There is unlikely to be a functional aspect to any carved paddle impressing or slipping, although it has been suggested that the former might be an aid to drying the unfired pot (Birks 1973:43), and various experiments have indicated that a deep texture on the external surface of the pot may shorten the drying time and result in increased protection from thermal shock (Schiffer *et al.* 1994). Whether the somewhat shallow carved paddle impressions would have a similar result remains to be examined. The technique of burnishing however would tend to make a vessel less porous, and in the Polynesian Plainware period both the large handled jars and bowls seem to be the ones that have this treatment.

The second requires artistic skill, carries a social message, is open to innovation and change, and is labour-intensive. It is the mechanics of change in this type of decoration with which we are concerned.

Previous approaches to the study of Lapita decoration, concerned with the rules underlying the construction of the designs, could not achieve this. As Anson (1990:54) puts it, these approaches "might be viewed as a means of reproducing the 'script' of an unknown language in which even the form and identity of 'words' and 'letters' are unknown", let alone any meaning. And Sharp (1991), in pointing out the role of

Lapita as text, suggested that "seeking an understanding of the social significance of decorated pottery necessarily shifts the emphasis of research and interpretation to situated rather than normative meaning, usage rather than structure, and potential manipulation (conscious or unconscious) of metaphor and ambiguity inherent in speech as opposed to language".

Spriggs' innovative work in unmasking the "face" has demonstrated however that an approach based on the designs themselves promises much more, and that it may be possible eventually to gain some understanding of the idealogy of Lapita societies. As yet only "scattergun" suggestions for what the decoration might represent have been made, such as a "social glue"' (Spriggs 1997:151), and more specifically that the anthropomorphic designs might represent deities, chiefs or clan ancestors, with details such as the "earplug" emblems indicators of sex, status, or group affiliations (Spriggs 1993:14). Terrell and Welsch (1997:568) suggest that the pots themselves may have been "cultural elements in the material paraphernalia ... of some kind of cult, dance complex or social ritual", a radical departure from Terrell's previous insistence that "Lapita, to repeat, was a trade ware in Melanesia" (Terrell 1989:625).

Spriggs (1997:155), in commenting on the socio-political model (based on exchange of prestige goods) advanced by Friedman (1981) to explain the demise of Lapita, suggests a deeper connection between the ceramic designs and the religious and social ideology of the makers. This suggestion is returned to below.

The need for more contextual information, larger areal excavations, more detailed recording and reporting, and the study of design continuities between Lapita and more recent art in the various regions have been exhorted by Spriggs (1993:14) as some of the next steps to take. These are all ambitious and meritorious aims, and presumably refer mainly to Western Lapita sites, since this is where archaeologists have mostly been focusing their attention and resources, and where any continuity in artistic designs might be most likely to occur (see below). It is however possible, in the Eastern Lapita assemblages, which were devoid of the complicating presence of other societies, to provide enough contextual information to suggest an explanation for both the meaning of the decoration, and the associated disappearance of the ceramics themselves.

There are several pointers from the archaeological data of Lakeba and Fiji to indicate the possible significance of the decoration.

In the Lakeba case, the most elaborate decoration occurs early and in the centre of the site. A similar pattern is indicated for Naigani, where in the 1981 excavation 20 out of the 26 sherds with the roulette stamp were found along the line of excavation units in the central area. Sherds with this technique made up 9.3% of the total dentate-stamped sherds in the central area, as opposed to 4.25% in the end areas. In the 2000 excavation the main unit was laid out in the central area, and another 22 examples of this stamp found, 12.3% of the dentate total.

Another indication of the importance of the roulette at this site comes from the distribution of temper types within the three main categories of decoration – those with the roulette stamp, those with the standard dentate-stamp, and incised. These (identified in hand specimen) show a lineal distribution of four temper types (Figure 14). The importance of ferromagnesian sands, mainly those containing pyroxenes, in the early period at Lakeba has already been demonstrated and a temporal aspect suggested for the different distributions (Figure 6 and Table 3), and a similar situation may also be operating here.

The case for Natunuku is also clear: despite severe disturbance at the site, it is certain that all the elaborately decorated sherds with roulette markings originate from Layer 6 (see below).

All Fijian sites show evidence for stylisation of the decoration, and the main trend of this is undoubtedly time-related, although only at Lakeba has this been quantified. At the latter site too, secondary focii of distribution are apparent.

What can the decoration mean? In its most elaborate and anthropomorphic form it occurs from the Bismarcks to Tonga at least, an east-west distance of some 5000km, and over a north-south band of up to c.1000km. The dates directly associated with this aspect of the ceramics are similar, and could all fall within the two standard deviations range of 3000±100 B.P., although there are a number of dates from the Far Western region which could be up to c.200 years earlier than this (Kirch 1997: Table 3.1, 2001a:205-20).

It is not at present clear how much simplification of these anthropomorphic designs occurred during the initial eastward move. For Fiji, the sherds studied are seldom large enough to show sufficient detail, but the well executed M33 motifs present at Natunuku, Yanuca and Tonga must have come from earplug emblems, which Spriggs' chronology has shown are from the early and more elaborate versions of both Types 1 and 2. One of the Naigani sherds (not illustrated) may have come from a Type I design, while one of the most elaborate Naigani Type 2 designs, although finely executed, with tooth widths of 0.7mm, appears to be a Type 2D, on Spriggs' (1993:12) first criterion of the later types.

Certainly these designs, which feature the main decoration, often anthropomorphic, in a fine-toothed zone marker (compound tool) and which occur over the 4500km

range, form a discrete class. They must carry, in fact, the same recognisable message, whatever that may be. Later, these designs undergo a process of simplification and stylisation, and may show evidence of local groupings (e.g. Anson 1983:57-63, 1986:160). Eventually a simple arc motif along the rim is all that is left of a once complex design. Not long after even this disappears, and similar decoration, made with the end of a small pointed tool, does not reappear again in Fiji for nearly 2000 years.

To demonstrate the devolutionary process from start to finish convincingly is not going to be easy, and there is the very real danger of seeing stylised faces in the cracks of the ceramic pavement – of sliding into the "fantasy" which Newton (1988:22) warns against. I have offered some examples of intermediate stages, mainly from the Reef/Santa Cruz and Naigani material, together with the final stages of one design from Lakeba, and Spriggs (1990a, 1993) has illustrated many others. Spriggs (1993:13) has also suggested using computer techniques to find relationships between motifs that would not otherwise be apparent. While this is an interesting suggestion, it might be difficult in this case for the machine to improve on the human brain.

As stated above however, logically this sequence is correct – why should the process of design simplification, once begun, stop at some point in the context of a total decoration decline that ultimately reaches extinction?

COMPARATIVE STUDIES

Comparisons have been drawn between motifs in Lapita pottery decoration and those in modern or post-European barkcloth and tattooing (Green 1979b). Green identified 11 motifs common to both periods (M16, 19, 24, 29, 30, 76, 77, 93 & 122, and cross and star-like motifs) and adds that another 41 (unidentified) were found, making a total of 52 out of a body of c.130 looked for (Green 1979b:29, 30). The motifs that are identified however are basic simple geometric ones, and could be expected to occur in many decorative systems; at least eight of the 11 for instance are illustrated by Shepard for Pueblo pottery design (Shepard 1976: Figs 41 and 56).

Although Green's article has had wide acceptance, Kaeppler for example stating that Green's work "and others have shown beyond any doubt that the Polynesian design vocabulary descends directly from designs used on Lapita pottery" (Kaeppler *et al.* 1993:91), this is by no means the case, and the question of unbroken and *in situ* continuity in Polynesian art is still unanswered. Claims that more complex designs in modern Polynesian art also bear resemblances to Lapita decoration should be treated with some caution, unless these examples can be shown to post-date any illustrations of archaeological materials from these sites.

Studies such as the above, however, cannot realistically be used as analogies with the evidence for change present in the archaeological record for the Lapita culture. The time span is too short, the area too small, and control over the various parameters simply not sufficient. In addition, any supposed advantage there might be in comparing systems within the one culture area must be reduced when the periods involved are so far apart in time, and with no data from the c.2500 years separating them.

A number of ethnographic studies outside the Pacific have also featured ceramic decoration and its meaning to the cultures involved. The content and context of pottery decoration in these vary enormously. In an article titled "Who is signalling whom", in which Steiner (1989) describes the decorative system of the Sirak Bulahay of North Cameroons, it seems that the least visible pots carry the most decoration, and that these are the most sacred. Cooking and domestic pots are decorated in a simple manner, and this is mainly to protect their contents.

In contrast to this are the Azande, in Southern Sudan, where pots that are visible and risk causing a compromising situation, such as breaching the spatial separation of sexes, or involve the processing of male and female food in the one pot, from raw to cooked state, are the ones that need to be decorated (Braithwaite 1982). It is the context of the decoration, not the content, which is important here. The chief himself in this society has few decorated material items, since his place in the society is known. Others, especially in ceremonial occasions, may need the aid of a ritual signal.

On another continent, De Boer (1991) compares two rainforest tribes in South America, the Shipibo and the Chachi. The former have an elaborate flamboyant decoration which appears on every available artifact type, has profound meaning, and is resistant to change. Chachi decoration on the other hand is "obdurately simple", differs from medium to medium, and their attitudes towards it are described as "pragmatic, even indifferent" (De Boer 1991:151, 158). While these appear diametrically opposed to one another, no comparative time depth for either is available, and it may be that they are end points on a similar trajectory (see below). Possible similarities between Shipibo and Lapita in the use of decoration have been pointed out (Kirch and Green 2001:185).

There are however obvious limitations in either attempting to use such restricted data from the geographical area under analysis, or of making fairly simplistic inter-cultural comparisons using selected ethnographic studies which feature a brief look at local pots and their makers.

If the Lapita ceramic decoration system is regarded not as a pottery decoration *per se*, but as decoration on pots, then more rewards might be gained from examining in some detail another folk art, comparable in its areal extent and time depth, which spans cultures, languages and beliefs, is executed in a culturally manufactured medium, and in which a certain amount of control is available over both external and internally derived influences that can be shown to effect the system itself.

This part of the monograph takes a brief look at such a system, the complex field of Oriental woven textile design, which possesses a time depth of at least 2500 years, is spread over an east-west distance of more than 5000km, and a north-south one of c.2000km. The geographical area involved is from the Mediterranean and Black Seas to China, and from the southern states of what used to be the Soviet Union to India, Pakistan and North Africa.

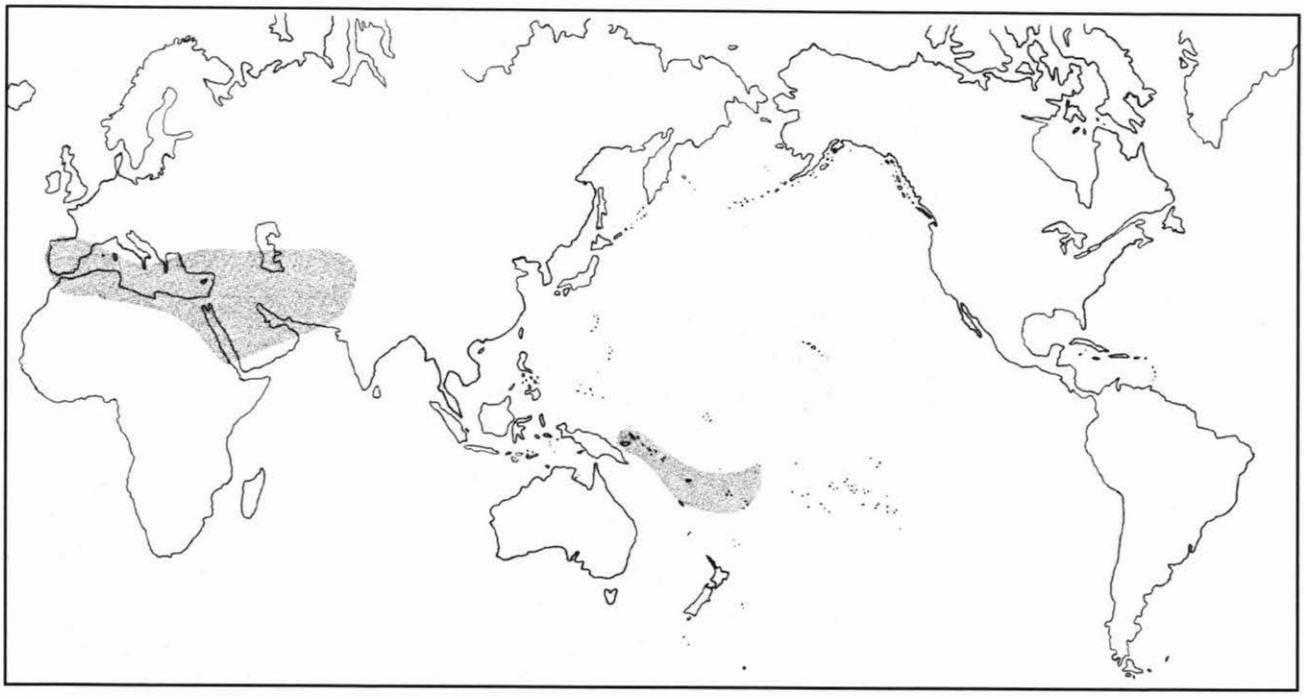

FIGURE 21. World map showing areas of Islamic and Lapita decoration, at c.1000 A.D. and 1000 B.C. respectively.

CHAPTER 7. CARPET DECORATION

Oriental carpet decoration has already featured in Pacific studies, as an indication of possible down-the-line interaction between Eastern Europe and the Solomon Islands. This was Schuster's (1972) attempt to demonstrate similarities between the *herat* motif on rugs of the Qashqai nomads of Fars, South Persia/Iraq with, to the west, decoration on metal brooches in the Polish-Slovakia border region, and to the east with motifs on embroidery in West China, on Dong-son bronzes, and on shell ornaments in the Solomons.

Given the increasing evidence for possible movement of items over long distances in this region, e.g. cloves from (presumably) the Moluccas to China 2300 years ago and to Rome some 2000 years ago (Burkill 1935:961), glass beads "likely to be of Indian origin" at Uattamdi in the Halmaheras, representing up to 2000 years of trade (Irwin *et al.* 1999:372), obsidian from Talasea to Borneo (Bellwood and Koon 1989:619-21), bronze from Island Southeast Asia to Lou Island in the Manus Group c.100 B.C. (Ambrose 1988) and bird of paradise plumes from New Guinea to Persia and Turkey in 1500 A.D. (Swadling 1996a:62), this proposed connection, although seemingly far-fetched, should perhaps not be dismissed out of hand.

This work however is not concerned with any similarities in motifs or any possible connections between the two decorative systems in question, but simply in how one particular woven motif changes over space and through time, the influences that it was exposed to, and its meaning to the societies in which it occurs. These are ambitious aims rarely attempted, it should be pointed out, even by experts in the vast field of Oriental carpet decoration.

HISTORY

The technique of weaving is thought to have been invented prior to 9000 years ago (Barber 1991:79), and the carpet is assumed to have arisen as a replacement for animal hides, in a community with access to the basic raw materials – wool, dyes etc. (e.g. Bandsma and Brandt 1995:7), although this has recently been questioned by Gantzhorn (1998:21).

Some of the earliest known evidence for weaving comes from the site of Çatal Hüyük in Anatolia, in the form of both high quality cloth (Barber 1991:3) and shrine paintings of textiles which appear to represent *kilims* (Mellart 1967:152), both dated to the 7th millennium B.C. The oldest knotted pile textiles are those found in burial mounds in southern Siberia. These have been dated, mainly on artistic grounds and by imported artifacts, and also "supported by Radiocarbon dating", to 400-500 B.C. (Rudenko 1970:295-307), and include the famous Pazyrak carpet, bearing a design featuring men and animals, and a saddle cover; also found were pieces of a flatweave or *kilim*. The sophistication of the weavings, and their presence in the tombs of individuals of high status (as shown by the other grave goods), indicates both a much greater time depth for such textiles, and for a least a partial removal from a merely utilitarian role to one with a strong symbolic aspect.

It has been suggested that from as early as 3000 B.C. "there was a great commercial interchange of textile products, including carpets ... embracing, in the course of time, the whole of the eastern Mediterranean and Asia from Egypt and Anatolia across Mesopotamia to Persia" (Ford 1992:34).

That this was part of a decoration system not restricted to woven material, and at the same time has continuities with the present, is indicated by a similarity between aspects of the decoration on the Pazyrak carpet and those on stone floor panels in the royal palaces of Assyria, dated c.2600-2900 B.P. (Ford 1992:34, 35), and by the motifs on a felt saddle rug from the same Siberian tombs, with decoration similar to that on 15th century Anatolian carpets (Bennett 1985:197).

TECHNOLOGY

The technology of carpet weaving resembles that of ceramics, in that the basic medium carrying the decoration is also manufactured, and contains a number of decisions on the part of the weaver/carpet maker. These include the type and quality of material, the type and size of knot or weave, and the colour. The weaving technique also resembles to some

degree the end tool impressing of ceramics, in that the decoration is made up of small discrete units: the knots being the equivalent of teeth in the pottery stamp, and not in continuous lines as in carving or painting.

One of the few motifs used in oriental carpet weaving about which there is little dissent as to identification and meaning is the *mihrab*. This occurs exclusively on prayer rugs (although there are prayer rugs without it, and today there are rugs with it which will never be used in prayer) over the entire geographical spread mentioned above.

The motif itself, in its fullest form, takes the shape of an arch or arches (up to three), similar to those in religious buildings practically world-wide. It represents the portal through which all who aspire to everlasting life must pass, and it is common to religions as diverse as Hindu, Protestant, Judaic and Catholic. A series of arches forms an arcade, "a conventional medieval representation of the entrance to Heaven" (Glassie 1989:153). The same author notes the resemblance of the arch to a tombstone, which in turn symbolises the head and shoulders of the human body (Glassie 1989:153).

While there may be a common ancestor for the arch as a symbol, with one authority presenting evidence for early Christian and even pre-Christian use (Gantzhorn 1998:477), it has also been pointed out, with regard to natural forms widespread in world art, that there is a "logic that spreads the surface of art with a master set of images" (Glassie 1989:153), and it may not be meaningful to discuss the ultimate source of the *mihrab*.

The age of the *mihrab* motif as a symbol of Islam is not known, but it probably occurred in some form and in some medium from the time of Muhammed, since a verse of the Koran has been translated as follows:

> God is the light of the heavens and earth;
> the likeness of His Light is a niche
> wherein is a lamp
> (the lamp in a glass,
> the glass as it were a glittering star) ...
> (Smart 1989:280).

It has been suggested that a pointed arch was first used in 870 A.D. in the mosque of Ibu Tulun in Cairo, and that this became a symbol for the Islamic faith (Justin 1980:37). In its most elaborate form the motif includes, besides the arch itself, other religious details from mosque architecture and also artifacts associated with worship.

The meaning of this motif throughout the Muslim world is unambiguous, and the *mihrab* is described by Glassie as "the most obvious and abundant example ...[of religious architecture]... As close as one can come to an image of God is a niche to capture light" (Glassie 1993:158; brackets added).

The earliest known representation of the *mihrab* appears to be that on a 13th century tile from Persia, which shows a *mihrab* with hanging lamp (Ettinghausen 1976:74). A stylised version, also with hanging lamps, appears on a multiple-niche prayer rug that may date to the 13th or 14th century (Day 1996:61, Gantzhorn 1998:504). The motif is also known on a Persian miniature dated to 1436 A.D. (Bennett 1985:104). Another early woven example, a Paramamluk from Southeast Anatolia or Syria, may date to the 15th century (Gantzhorn 1998:215, 504, Mills 1997:72), and a number of Turkish or Anatolian prayer rugs with the *mihrab* motif have been assigned to the 16th century (e.g. Bennett 1985:104).

These dates are estimated mainly on stylistic grounds, and on similarity to detail in rugs depicted in European paintings of that time. Neither the art history approach nor the attempts, so far, to use radiocarbon dating, can be taken to provide anything but an approximate estimate. There is, however, no reason to suppose that weavers were later to incorporate the design into their work than artists in other mediums.

The motif, whatever its time depth, certainly underwent some kind of elaboration and proliferation in the renaissance of Islamic art that took place with the rise of Islamic political dynasties, such as that of the Ottomans, after the Mongol invasions in the 13th and 14th centuries. It is with changes in this motif since then that we are concerned, and within this almost solely with different representations of the *mihrab* motif on Anatolian carpets manufactured within the last 300-400 years.

PRODUCTION CENTRES

Most writers on carpets distinguish four types of production centres – court ateliers in cities, town/city workshops, village/cottage industries and nomadic weavings (e.g. Thompson 1993). These are somewhat arbitrary points on a continuum, and there are difficulties with changes in status – villages becoming towns, or nomads settling some hundreds of years ago, building mosques and developing new associations. However in general these distinctions seem to provide a valid base for analysis.

Court ateliers, working from cartoons or patterns, produced elaborately decorated items for the rulers of the Islamic courts in the 16th and 17th centuries, and in a variety of media including carpets, ceramics, calligraphy and painting (Thompson 1993:147). The prayer rugs from these centres are highly decorated; the outline of the *mihrab* itself may be supported by a number of columns, it may have internal decoration featuring a hanging lamp (the light of God) or a tree of life, water ewers and combs symbolic of cleansing the body, a panel of flowers at the base of the arch

that signifies the garden of Paradise, representations of the pulpit and steps that are situated in the mosque beside the *mihrab*, cypress trees (a cross-cultural symbol of the next world said to stand for immortality in Islamic art [e.g. Iten-Maritz 1977:152], or perhaps to double as the tree of life [Justin 1980:37]), and a panel or panels containing verses from the Koran.

Simplification through time in court carpets themselves may be visible; one writer suggests that the differences between a 17th century Ladik rug with a large triple arch *mihrab* (featured in a 1664 painting by Nicholaes van Gelder), and 18th century examples from the same centre with smaller *mihrabs* and few if any supporting columns, may be an example of this (Bennett 1985:201-3).

These complex designs moved out from the courts through the other production centres, becoming simpler and more stylised on the way. The *mihrab*, at about the village stage, could be merely an outline, and in nomadic weavings was often represented solely by the apex of the arch. This process was accompanied by a change from mainly curvilinear patterns to geometric, a reduction in the number of knots per unit area, a change in materials from mainly cotton and silk to wool, and the use of fewer colours (O'Bannon 1995:20, 21).

CHANGES IN A MOTIF

Apart from mere simplification of design, the *mihrab* arch can also undergo a transformation in shape, becoming double-ended and/or starting to split into two or more diamonds or lozenges, to eventually merge with or become identified as quite separate carpet types. Prayer rugs with medallions or *guls* inside the *mihrab*, or with the latter replacing the motif from the base, are following the same process, which eventually results in the rug becoming a purely tribal statement.

The *gul* (or *gol*) motifs are at the other end of the design scale from the *mihrab*. These are tribal emblems, the domain of rural and especially nomadic peoples, where (referring to Turkoman weavings) it has been said that "each family or clan ... had its carpet design, as one has a sign manual" which were "almost as unmistakeable as an accent" (Mumford 1981:60, 228). These designs, which are often expressed on flatweaves or *kilims* are, in all likelihood, more ancient than Islam, arriving in Anatolia with the Turkoman and Mongol invaders from the steppes of Central Asia after 1000 A.D.

Some of the above mentioned changes are illustrated in Figure 22. In the top row (I) are different forms of multi-columned *mihrabs*, from one of the most elaborate 16th century Ottoman Court rug (Ia) through town/village weavings to a tribal/nomadic representation of the same theme (Ie), the latter probably from the late 19th century or early 20th. Of more importance than chronology however is the spatial element; it is conceivable that all these rugs could have been produced at much the same time, the variation dependent on the social factors mentioned above, i.e. the context of production.

The next four rows of carpet designs each show how the *mihrab* motif in a prayer rug can undergo transformations into other designs, until eventually the arch has disappeared and another type of carpet is present.

In row IIa-d the *mihrab* is being replaced by tribal *guls*, initially within the *mihrab* field and subsequently leaving only a remnant of the top of the arch. The last example (IId) is a purely secular and tribal rug.

In row IIIa-e the *mihrab* becomes represented by repetitions of the top of the arch, until eventually only one of these remains. With regard to Caucasian rugs such as IIIe, it has been pointed out that their fields and borders can be indistinguishable from those of secular rugs, with the single *mihrab* arch "woven rather incongruously on top" (Bennett 1985:157).

Row IVa-d shows the *mihrab* in various stages of altering into hooked diamond motifs, some representations of which are referred to as *guls* (e.g Gantzhorn 1998:432, 433). Again the last example (IVd) is a secular carpet.

In row Va-e the *mihrab* becomes double-ended, thus losing its directional aspect for prayer, and becoming somewhat ambivalent in interpretation. Some examples (e.g. Vb) are still regarded as a prayer rug (Bennett 1985:200) while others (e.g. Vc) are not (Iten-Maritz 1977:174). A carpet type described by Glassie (1993:626), the *akbas*, consists of a central medallion with an out-facing triangle at both ends, and, although it is not used as a prayer rug, the weavers themselves remark on the motif's similarity to the *mihrab*, and even call the type *mihrapli* or prayer rug.

The next example (Vd) is described as a medallion carpet (Iten-Maritz 1977:321), however it clearly consists of a double-ended *mihrab* within which is an emblem reflecting elements of both the main design and also those of a Turkoman *gul*, an eight-pointed star inside an octagon, the whole within a stepped octagon. Similar motifs (e.g. Ve), some with a hooked outline (the Memling *gul*) are found from West Anatolia through the Caucasus and as far east as Afghanistan and Baluchistan (Gantzhorn 1998:430), and are also recorded in paintings from the 15th century (e.g. Gantzhorn 1998:315, Bennett 1985:98).

It should be emphasised that the sequences presented in Figure 22 are hypothetical only, and there is probably no direct relationship, or at least any demonstrable one, between

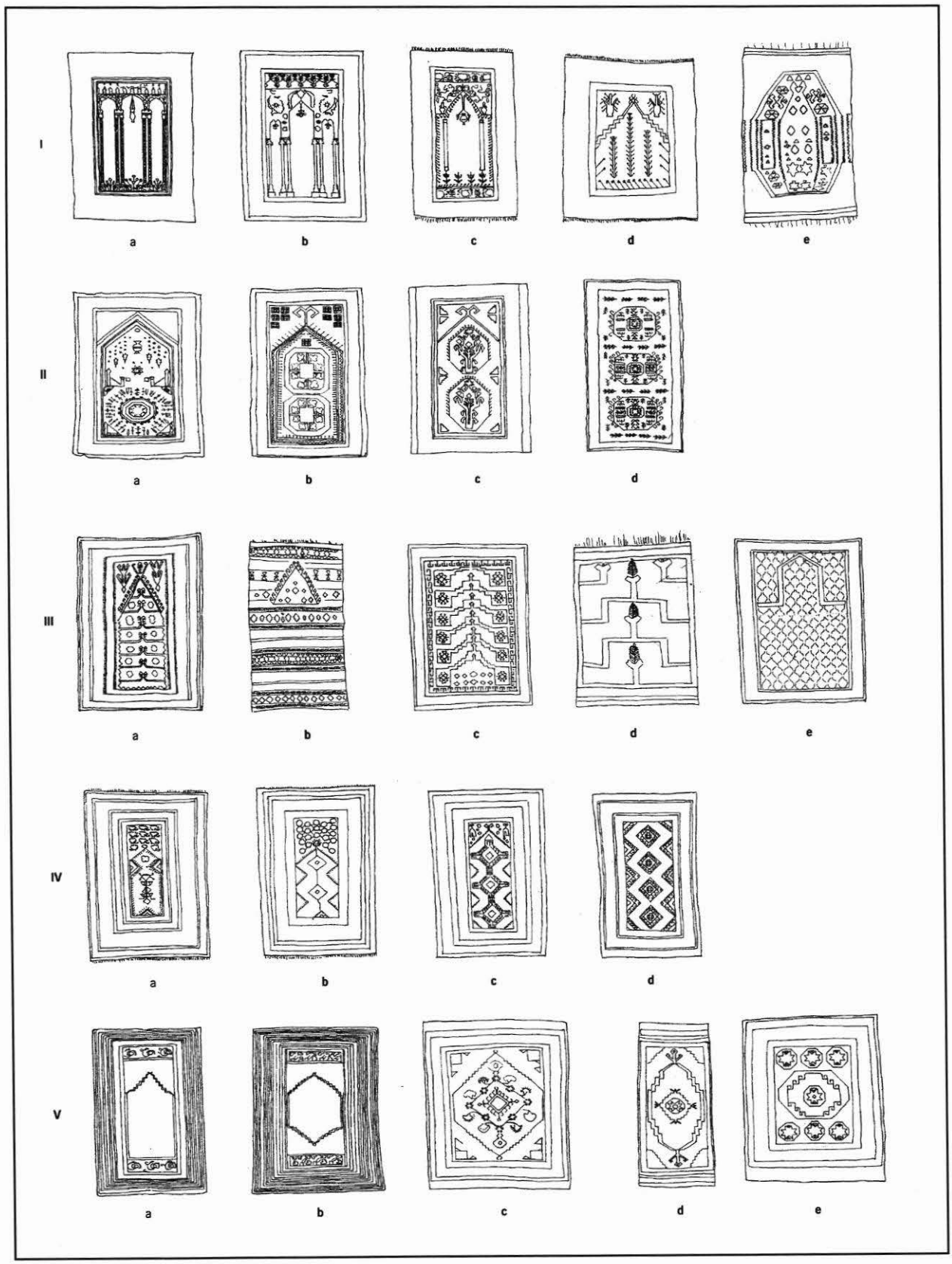

FIGURE 22. Selected Turkish and Caucasian prayer rugs, each row showing different changes to and simplification of the central mihrab motif, with the end examples in rows II, IV and V being secular or tribal specimens. Descriptions in Appendix A.

time and space and simplification of the designs. They are simply an illustration of how a specifically religious motif can be represented in increasingly different transformations or stages – in the direction of either pure stylisation or into a tribal art form. Never-the-less it is clear that at one level time and space must be involved – court carpets of 400-500 years ago are more elaborate than later examples, and these and city workshop productions are very different from nomadic work.

The temporal aspect is probably not as significant as the spatial component – a result of the differing cultural environments of the weavers. Although the only religion throughout is Islam, the complex decoration of the court carpets resulted from the addition of the political power and wealth of the ruler, where design artists and other specialists were responsible for the various steps in the production process. At the other end of the scale, nomadic weavers were free from such formal control, reproduced their designs from memory, were able to alter them at will, and looked after all aspects of the process themselves.

Significantly, too, tribal affiliations are the mainstay in a nomadic way of life, and their outlook on religion more shamanistic. In an article entitled "Between a Tribal and a Court Art: The Turkish Carpet", the author suggests that for some at least of the Turkoman tribes who settled in Anatolia "their conversion to Islam long remained superficial" (Day 1996:56).

The temporal element is perhaps best illustrated by different attitudes towards the *mihrab*. A court edict of 1610 directed to the weavers of Kutahya in West Anatolia exhorted them to refrain from depicting the *mihrab* (amongst other religious symbols) on prayer rugs intended for export, as these would likely be put to infidel use (Day 1996:96). In contrast to this there are now prayer rugs being manufactured in large numbers specifically for export to the west (Ford 1992:126). The process appears to be ongoing – two collectors of Turkish *kilims* recall that some 20 years ago dealers in that country would never walk on old prayer *kilims*, but that today these attitudes have changed (Bandsma and Brandt 1995:153).

CHAPTER 8. PRAYER RUGS AND THEIR RELEVANCE FOR LAPITA AND CERAMIC CHANGE

The relevance of comparing two decorative systems on different materials and from different parts of the world should be clear. Both systems are part of a global art form, and although neither are medium-specific both probably reached their most complex expression on their ceramic and textile canvases. In the Bismarcks, the coming together of ceramic technology and a decorative technique resulted in an efflorescence of artistic expression, in which the decoration became the reason for the pot's very existence and shape; the clay was applied to the already formulated design, and not the other way round. A similar linkage between change in technology and increased importance of decoration is given for the development from woven to tied-knot carpets, where "the reason behind the emergence of the knotted-pile carpet was ... that an existing technique was refined, making possible an improved medium for illustration." (Gantzhorn 1998:52).

It is suggested that the decorated pots of the Lapita people, and the prayer rugs of the faithful, are statements on both the societies' and the individuals' roles in this world, and on their hopes and fears for the next, attempting to communicate, through a decorated interface, with the unknown and unknowable.

That Lapita pottery decoration had an important religious/social dimension has been suggested above by a comparison between the two ends of the Fijian ceramic sequence. It is now proposed that the devolution of the earlier system has parallels with the changes observable in the *mihrab* carpet motif. At one stage, the ceramic equivalent of the court prayer carpet reached from the Bismarcks to Tonga at least, and also probably to Samoa, although no site or at least no part of a site containing it has so far been found north of Tongatapu. This consisted of the highly decorated anthropomorphic and associated designs, executed with the broad zone marker tool, and on a special suite of vessels which featured carinated and pedestalled or footed pots.

The west end of the Lapita range, where the decorative system originated, has produced the most elaborate decoration, as demonstrated specifically by the amount of complex anthropomorphic designs present, and in general by having a more curvilinear system than that in the east. Once across the water gap between New Caledonia/Vanuatu and Fiji, these complex/early anthropomorphic designs are significantly fewer and the total system more stylised; as a result of this the Eastern Lapita system is referred to as rectilinear (e.g. Green 1979a:42). This is solely a result of the same decoration devolution process moving at different speeds (for archaeological evidence of this in the west, see Summerhayes 1996:256), and it is interesting to note that it has been said, with regard to weaving, that it appears "the straight line is the spiritual preserve of nomads and farmers, whereas the curved line presupposes an urbane, courtly and perhaps a more decadent form of society" (Schurmann 1979:15, 16).

To the west of the main water gap some process was working in the outlying sites to maintain the same situation present in the "homeland". This is most likely to have been a result of continued contact with the source area, aided perhaps by some sense of group solidarity engendered by those satellite settlements in island groups with a prior population.

Once across the water gap and in Fiji, contact with the west appears to have virtually halted, with no archaeological evidence for the same (save for one possible example during the early Lapita period, that of Naigani), until c.2100 B.P., when the sudden appearance of a totally different ceramic technology, including carved paddle impressing, is, I believe, as discussed above, best explained as being part of the culture of new arrivals. From that time on, various other pieces of archaeological evidence suggest more arrivals; obsidian from Vanuatu together with some Fiji-wide but short-lived ceramic traits at c.1750 B.P. (Best 1984:643), and also (possibly) the later appearance of the appliqué/ incised/impressed ceramics at c.900 B.P., which evolved into the last stage of the sequence.

This relative isolation resulted in a system which appears to have started to fragment almost immediately, in apparent contrast to the situation in the Reef/Santa Cruz sites.

It is not yet clear how long it took in the Eastern Lapita area for the most obvious marker, the ceramic decoration system, to disappear completely, but for Fiji at least a period of 300-400 years is probably close.

Of relevance to the speed of Lapita expansion is the question of how much design stylisation took place during this process. To answer this requires the identification of the early part of a site, together with good stratigraphic control. The fact that Type 1 and Type 2 "face" sherds appear to be rare in eastern sites simply reflects the quick breakdown of the decorative system through isolation.

Ceramic simplification however is only one part of the whole. There is some intra settlement fragmentation before this has run its course, and not long after this settlements are much more numerous, possibly smaller, and with an inland hilltop component. There should be no surprise that late Lapita sites are inland (see for instance Parke 2000 and Anderson *et al.* 2000) since this move is what might be expected and has indeed been shown (i.e. Figure 8). Personal ornamentation also appears to either become less or to change to some material which does not survive; the disappearance of flake tools is probably associated with this. Fragmented human bones in the middens at this time suggest warfare and cannibalism.

All these changes suggest an evolving society, with the reduction of some centralising force that had been operating in the original settlement area and during the journey from the Bismarcks. The first of these changes, and the most important for the archaeologist, is the stylisation of the ceramic decorative system.

It is suggested above that this process is similar to the simplification of the *mihrab* motif in carpet design. There an underlying religious belief was effected, at one end by the power and influence of the Sultan's courts, and at the other end by the mobile and more naturalistic approach of the nomadic way of life. The initial symbol of religious power, the *mihrab*, fragmented and became assimilated into or replaced by motifs that referred more to inter-group relations.

That Lapita decoration in the east had at its most complex a religious aspect associated with some kind of centralised social system, and with a cosmology that changed little since the initial start from the homeland in the west is certain. If the archaeological evidence from Lakeba is representative of all such sites, then the society started to change soon after settlement, fragmenting into smaller internal units, ultimately spreading back from the beach across the land. At the start of this process, inter-group signalling within a discrete geographical area must have become more important than any tie to a homeland far to the west, and the bands of repeated motifs that resulted from the fragmentation and stylisation of the main anthropomorphic designs may well have assumed the same function as that of the tribal *guls* of the carpet weavers.

At some stage even this function seems to have disappeared, and further impoverishment of the motifs resulted in decoration with no meaning or function save that of tradition – that pots were decorated simply because they always had been, and it would have been a short step from there to plainware vessels.

The actual loss of ceramics in West Polynesia, and the near loss in Fiji, is a result of a nested hierarchy of events. First and most important of these was the reduction in meaning and ultimate discard of the decoration itself. This decoration was so significant to the culture that it could be said that the pots were applied to it, rather than it to the pots. The potter and/or artist's concept of the finished decoration dictated the shape of the pot, with flat out-turned lips and carinations providing surfaces for the design. As these designs became more simplified and stylised so the pot shapes became plainer.

A similar observation has been made by Crosby and Marshall, that "these pots seem to have been built specifically in order to create a surface to which the defining decoration could be applied" (Marshall *et al.* 2000:89).

The loss of cylinder stands, pedestalled vessels and tall ring foot pots differs slightly from the above. These are at another level within the total decorated ceramic system, with their function to raise their contents (a sacred potion?, see below) off the ground or dwelling floor. These are ceremonial vessels, or parts of them, and their decline signals a ritual within the overall system. The distribution of these vessels within sites could be interesting.

The design system, in its process of stylisation, passed through at least three sets of meanings for the society. At its most complex this was an expression of religious belief and of the individual's place in the world. The pots themselves were not sacred, just as prayer rugs are not, although examples of the latter can assume what Glassie (1993:629) terms "sacred significance", and if the two large decorated pots in the pit at Site WK0013A in New Caledonia really did have holes punched through the base (Sand *et al.* 1998:37) then a comparison with Mimbres vessels is inevitable. These beautifully decorated ceramics from the Mimbres Valley in New Mexico, manufactured between about 1000-800 B.P., contained vessels in human form and also depictions of anthropomorphic faces and figures in the decoration (Moulard 1981). The hemispheric bowl forms were often ritually "killed" by having holes knocked through the base prior to becoming grave goods, although the function of both the vessel and the hole are closely associated with both the

burial itself and the spirit of the dead, and in the absence (so far) of any funerary function of Lapita ceramics, the comparison is tenuous.

There is however a link between the Mimbres burial vessels, the highly decorate Lapita pots and the prayer rugs, as all function as interfaces between one world and the next. The Mimbres bowl is said to be representative of the Underworld sky – with the punched hole the link "between the ancestors and the corporal world of the present" (Moulard 1981:xix). Prayer rugs are also an interface between two worlds – to pray through – with some also hung on walls "as profound decoration" (Glassie 1993:158). It is suggested here that the early Lapita pots, with their anthropomorphic designs, performed the same metaphysical function.

At some stage in the devolution of the decoration the original message changed into something different. The stylisation of the anthropomorphic and associated designs into simple repeating elements, together with the increasing use of what once were fillers and borders as the main decoration design, and the loss of the roulette stamp, suggests that the original meaning of the decoration had been lost, and that it was now fulfilling another function. The most likely direction that this would have taken is towards regional groupings, and within this perhaps some more local affiliations; to be expected as older relationships to the west broke down, and newer ones arose within the Fiji-Tonga-Samoa region.

This stage can perhaps be compared to that of the village/nomadic prayer mats where the *mihrab*, the Islamic-wide representation of religious architecture and worship, blends with or transforms into a more tribal decoration, as depicted by medallions or *guls*.

The last stage, where the ceramic decoration is restricted first to a simple band in the upper shoulder/neck region of the pot, and finally to the rim itself, with simple repetitive motifs of arcs or horizontal chevrons, can have little cultural significance other than habit or tradition, and as such is vulnerable, just as at a later stage were the pots themselves, to the final demise. It has however been suggested that the original meaning of the decoration could have survived the stylisation process, and that although the more abstract designs might be unrecognisable to a "culturally non-informed viewer (such as an archaeologist)", the symbolic information would still be there as "part of the shared knowledge passed down through successive generations (Kirch 1997:138, 139, and see Kirch 2000:104, Spriggs 1993:12 for similar statements). This however is hardly likely to have been the case. As shown most clearly in the Lakeba situation, the design decay is accompanied by changes in every other archaeologically visible aspect of the culture, in keeping with Forge's statements that art style changes in step with other cultural changes, and that "change, of course, should ... occur in art style if the meanings that are being conveyed change" (Forge 1979:284, 285).

In the much-studied field of oriental carpet decoration, similar observations are common, such as "the declining standards [of tribal weaving] we are discussing reflect a fundamental change in the whole fabric of community life" (Thompson 1993:97), and "it seems safe to assume that decay in art ... was contemporary with national decline" (Mumford 1981:58). The former author even states that the process can be used as a method of "sequential dating", adding that the rate varied between geographical areas (Thompson 1993:84).

Changes in meaning of the various motifs during this process is also a common theme (e.g. Day 1985:35, Forde 1992:132, Schurmann 1979:23), with the weaver said to be unaware of the earlier meaning(s). Of interest with regard to the often used comparison of Lapita decoration as a language are the observations of Mumford. Writing in 1890, he suggested that

> rugs are written pages. In their maze of designs is a symbol language which ... has unhappily been all but lost ... it must be believed ... that none of the dialects is understood by the weaver who employs it at the present day (Mumford 1981:56).

It is more than probable that it is only the culturally non-informed observer of the Lapita decorative system, distanced by time and with a vast body of comparative material to work with, who has been or will be able to chart the course of the changing motifs, and attempt to understand their meanings.

Motif analyses of Lapita decoration to date have tended to use site assemblages as one unit. This would tend to hide or blur relationships; for instance the early complex decoration would have connections with the parent settlements, the middle period with developing local alliances, with the last stage cutting across the other two and producing "noise". The use of equal - weighting coefficients such as the Robinson (in the area under discussion), would however go some way towards separating the first two at least. Different site types would also tend to confuse the issue, as when very short-lived settlements such as Natunuku and Naigani (see below) are compared with sites similar to Wakea on Lakeba, the latter with a time depth possibly up to 100 times greater than the former.

One of the most detailed of such analyses, that of Anson, produced evidence for what might be local grouping. This resulted from the shape and number of infill lines within triangle motifs, which served to distinguish between Watom assemblages and those from Ambitle, Talasea and Eloaua (Anson 1983:57-63, 1986:160). The problem with interpreting such results, as has been pointed out (Summerhayes

1996:17), is in distinguishing between what might be real relationships as opposed to merely the result of casual contact within a geographical area. However it might be expected that such similarities in decoration would only result from sustained contact, and this is unlikely to have been purely casual.

The ceramic technology of the Lapita potters has often been criticised, with the pots referred to as "neither particularly well made nor physically strong" (e.g. Green 1996a:727). A recent article by Ambrose has gone further, suggesting that through chance selection (a piratical kidnapping?) the "Lucy" of the Bismarck potters did not have all her ceramic marbles, and that for the better part of the next c.1000 years and 5000km her descendants continued to copy her flawed technology, until "the shackle of the emblematic design system was discarded as technological improvements appeared" (Ambrose 1997:535).

It seems unlikely that any society (except our own) would put up with shoddy work and an item that did not perform. Had "an incomplete transmission of the pottery technology ... sufficient to produce vessels with highly formalised surface decoration, but with limited information on fabric preparation and firing" (Ambrose 1997:535) really taken place, and with perceived disadvantages to the users, then this situation would have been corrected in short order.

As an example of the poor technology employed by Lapita potters, Ambrose cites Clough's (1992) findings from a sample of Reef/Santa Cruz Island sherds, which he states indicates that different clay-temper mixes were used in the same vessels, setting up differential stresses in both the drying and firing stages (Ambrose 1997:529). However only one of the 40 samples selected showed this, a rim and neck sherd, and this was chosen because it appeared unusual in the assemblage (R. Clough pers. comm.). Apart from being a rare occurrence, and with no means of knowing exactly what the difference between the rim and neck bodies was anyway (the sherd has not been relocated, and appears to have been destroyed in the analysis), it would seem unwise to extrapolate from this one example to Lapita ceramic technology in general.

It makes more sense to assume that the Lapita potters knew exactly what they were doing, and that their pots fulfilled the purpose for which they were required. As suggested above, this was in the first instance to display the decoration, but a utilitarian aspect was also present. The sandy body and low and presumably quick firing regime was a technology that enabled a variety of clays and tempers to be used, a good strategy for people moving quickly through the landscape, and which reduced the risk of loss during production, and resulted in pots with good thermal shock qualities. The porosity of the body is often cited as a disadvantage with regard to storing liquids, however the finishing process floats a clay layer to the surface, which would tend to seal this off.

The technology's main shortcoming would have been in vessel strength, and this one fact alone should have sent warning signals to those who have insisted that Lapita was first and foremost a trade ware. It is in fact the antithesis of such a ware; the decoration is time consuming to apply, the numbers of vessels produced per unit of clay is too low (i.e. the vessel walls are thick), there are multiple vessel shapes, and it would not have travelled well. A very early observation by the Hibernia missionaries, temporarily shipwrecked in late 1809 on an island off the northwest end of Vanua Levu, reinforces these points. On Friday 29 December 1809 they were

> Rather alarmed by the sight of a fleet of 15 canoes ... They told us they were strangers belonging to an island to the westward called Anganga, or Angana [Yaqaga]. They had on board the canoes a number of new jars which they were taking over to Takaunove [Cakaudrove] to sell ... Some of the jars we bought today for curiosity sake. They are not glassed and too thin and porous to hold liquids; but they answer their purpose of stewing their victuals in them. Some of them are very large, but all we have seen [are] of one pattern. (Davies 1922:145, 146; brackets added).

However it has yet to be proved whether in fact there was excessive breakage in Lapita sites; Irwin (1977:291) for instance gives three months as the average life of a pot in a Mailu village which produced pots for trade and it may well be that as long as there was ready access to clay and temper such a rapid turnover was acceptable. Certainly the shorter the vessel life the greater the opportunity for the decoration to record changes in the society.

Although the next ceramics are described as Polynesian Plainware, this is not strictly correct, as decoration was still present, in the first part at least, in the form of burnishing and slipping, and on objects other than vessels, as for instance the miniature burnished and impressed "potstand" recovered on Lakeba (Best 1984: Pl. 3.6B). These however carry a different message to the dentate designs, in that it is the shape of the vessel as a whole that is being accentuated.

The rise in frequency of the expanded rim, associated with the changes in vessel form from those with strongly everted rims to those which are vertical or inverted, is a direct result of the change of locus of the most vulnerable part of the pot from the neck (protected by the everted rim flange), to the rim itself, which is thickened as a consequence. These vessels occur within the Lapita ceramics proper, where the expanded rim has a flat surface, often decorated with a line of simple motifs, mostly the final arc shape. Later, with no need of decoration, the lips are rounded.

By the time this stage in the ceramics is reached, their status has changed dramatically. In addition to the disappearance of the decoration, no longer are specific, often exotic, and rare tempers sought for and used, being replaced with local coarse grained lithic material. The ceramics have reached the end of the process which began soon after initial settlement, and now have a purely utilitarian role, rendering them susceptible to influences that prior to this would not have affected their production.

There is some slight evidence, on Lakeba at least, to suggest that ceramic technical expertise continues to decrease with time, and this is shown in the amount of temper added to the clay (see Figure 7). As a subjective aside, the pots look more crudely made, although attempts to quantify this did not succeed. Very preliminary tests on sherd strength did not find any significant differences between the decorated Lapita ware and the later plainware (Best 1984:Appendix J).

At this point in time the role of ceramic vessels in the society had been pushed to the edge. Competing methods of cooking such as the earth oven, present from the start, were always a ready alternative, and the spread of settlements over the landscape, and conflict between these, is likely to have increased the costs of obtaining raw material such as clay for some of the pottery-making settlements. It could have taken some relatively minor incident in one area, for example the accidental death of the only potter or potters in a village, to have started a chain reaction throughout the islands as life without pots was seen to contain no real disadvantages.

In Fiji these same processes seem to have been in train, and there is no reason not to suppose that eventually this island group would also have lost their ceramics. However this did not happen, and one of the main reasons could have been a change in the focus of production. While it is widely accepted (as discussed above) that the early pottery was manufactured locally for local use, the carved paddle impressed ware fills many requirements for a trade ware (also covered above). I believe that the appearance of a new technology, one which (in Lau at least) effected every part of the ceramic process, was responsible, not so much for breathing new life into a dying tradition, but by replacing it with a new one. If the example given by Marshall *et al.* (2000:92) and referred to above translates across Fiji, then perhaps pots were not made locally again until the equivalent of Lapita reappears – the specialised vessel shapes and complex decoration of the late end of the sequence.

CHAPTER 9. SOME LATE FIJIAN ARTIFACTS AND THEIR MEANING FOR LAPITA

It has been suggested above that a study of Eastern Lapita ceramics, set into the context of the total Fijian ceramic sequence, and with reference to a decorative system on another material and in another hemisphere, can contribute to understanding the reasons behind both the eastwards expansion of the culture and its consequent decline. Previous theories have failed to build on the archaeological evidence and to distinguish, as mentioned above, between cause and effect, with the observation of Irwin (1998:132) that "interpretations of colonisation which weight significant changes in voyaging strategy and/or the "pull" of untapped food resources as the major motivations for on-going colonisation of remote tropical islands of the Pacific may not be sufficiently distinguishing means from ends".

This is not to dismiss the achievements of the incipient voyagers – the ability to travel long distances at sea and return, to colonise effectively, to cope with new and changing environments, to erect and maintain trade/exchange networks, etc. – these were all necessary skills to be able to get to the starting line and to succeed in any exploratory venture. They are "causal variables" only in so much that without them the voyages would not have been attempted. The spark that ignited the latter came from something else altogether, and for an understanding of what might have kindled that expansion we need to look more closely at the late end of the Fijian sequence, at artifacts in both ceramic and wood.

The similarities between the two ends of the ceramic sequence in Fiji are so striking that they can only be due to the same or similar cause(s). Common to both are a suite of complex and similar ceramic vessel forms with their highly visible and highly ornate decoration, executed using the same techniques, with anthropomorphic or naturalistic images and designs, and found in sites with a centralised distribution of ceramics. When vessels and images in other materials are added to these the comparison is even more startling (Figure 23).

Thanks to the indefatigable early recorders; the missionaries, traders, seamen, explorers, castaways, deserters etc., and the collections of artifacts some of them made, we are able to reconstruct the later end in some detail, and to understand the values that the society placed on some of the items.

Foremost among the late/early ceramic similarities on Lakeba are unusual vessels, often carinated, and with complex decoration on their upper part and rim. The decoration is executed with individual tools (as opposed to a carved paddle) and is thus labour intensive and with a social cost. The distribution of both the total ceramics and the specialised vessels shows a strong central focus within the settlements. That both these factors are a result of the hierarchical social system is attested to in the later period by tradition, historical records and archaeology.

In addition, some of the vessel forms produced in the same era for the larger power centres in the Rewa Delta, which were not found on Lakeba, are directly associated with that power. Amongst the collections of pots acquired by Europeans last century, from about the 1840s on, are circular pedestalled and ring foot dishes, vessels made in the forms of turtles, *tabua*, *drua* or double-hulled canoes, *bilo* or coconut drinking cups, fruit and, extremely rarely, anthropomorphic water jars (see the collections of Gordon Cumming and Baron von Hugel, and those of the Fiji Museum, Auckland War Memorial Museum and Otago Museum).

The place of these vessels in the culture is known either through the significance of the artifact that is being represented, or through their identical wooden equivalents, elegantly carved in *vesi* (*Intsia bijuga*), described and illustrated in early missionary accounts, and eagerly collected by them. *Vesi* itself was known as *kautabu* or sacred wood, used only for chiefs or priests vessels (Clunie 1996:9). All the above types save the *tabua* are also known in *vesi*, with the addition of a vessel in the form of a duck, and all are priests' *yaqona* and oil dishes, residing in temples, sacred in status, and strictly for the use of the priest (Clunie 1996).

These are described by Clunie (1996:7) as "material manifestations of a forgotten *yaqona* drinking culture distinct from the celebrated Tongan-derived *kava* ring". This is the

burau ceremony, in which the drinker kneels to drink from the dish, the ritual when the priest was in communion with the god, and indeed was possessed by him (Clunie 1996:10).

Two examples of ceramic anthropomorphic images are known, both *saqa* or water jars, one in Auckland Museum and the other in Otago Museum (illustrated in Meyer 1995:461). Both were part of small collections of odds and ends presented to the museums concerned by descendants of 19th century collectors. No further provenance is available, and the only indication of their age is that one (Auckland Museum number 11818E) was donated in 1886. Plate 4 shows the Auckland example.

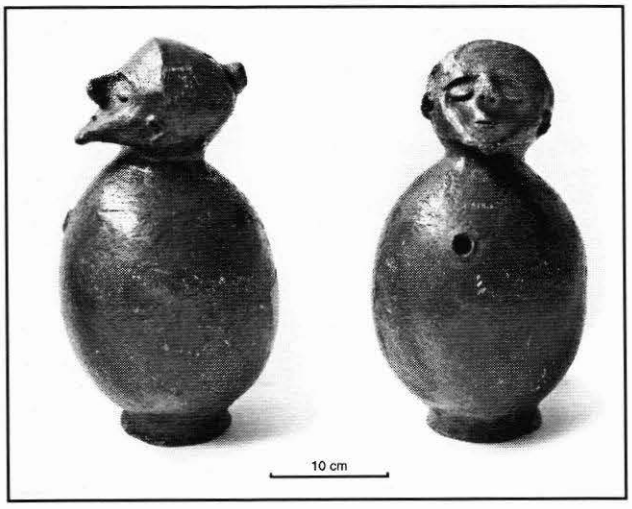

PLATE 4. Anthropomorphic ceramic vessel from Fiji, held at Auckland War Memorial Museum. Accession number 11818E. Photograph by Hamish Macdonald, reproduced courtesy of the Museum.

The Otago Museum specimen was described in 1940 by Maclachlan (1940:262). The lack of similar vessels in the major early collections, together with no mention of these in the literature, suggests that they are not only extremely rare, but may have been part of temple furniture in an area or areas not often reached by early explorers, and where the old religion survived for longer. Inland and mountainous Viti Levu is a case in point: it was at Namosi in the 1870s that an ivory double-figurine had finally lost enough of its power to be disposed of to a European (Clunie 1982), and at Nakorovatu on 27 June 1875 Baron Von Hugel, referring to a circular footed priest's *yaqona* bowl in *vesi*, remarked that "there can never have been more than a very limited number of these strange dishes. On the coast they have, of course, long since ceased to exist, and even here in the mountains they are very scarce" (Von Hugel 1990:36). In contrast, the most powerful chiefdom in Fiji, that of Bau, exposed to the new cultural influences from the start, was surrendering its religious artifacts as early as 1839, and by the mid 1850s "the ancestor gods [had] reeled into a last retreat as first missionary then colonial collectors fell upon the corpses of their sacred relics" (Clunie 1996:110).

Anthropomorphic images were present in early contact Fijian culture, although how widespread these were is not known. A few have survived, both in wood and ivory (the latter manufactured in Tonga), and all appear to have been housed in temples; manifestations of ancestor gods and possessed by them on certain occasions (Clunie 1996:7). These were usually free standing figures (e.g. Clunie 1987) or as suspension hooks (Clunie 1982), but were also carved in positive relief on the *vesi* wall slabs of temples (Clunie 1996:13), or were functional as in the above mentioned priest's *yaqona* drinking dishes, of which only "a handful" are recorded (Clunie 1996:12).

Many of the subjects of the other naturalistic pieces are known to have had sacred or chiefly connotations. The turtle was a chiefly food (with parallels throughout the world), but was also more than that. Sahlins (1978:85-89) has emphasised the relationship between turtles and men, in that both are sacred food items, with the same ceremonies and prayers for their capture, and that the dead turtle can also represent a chief. Turtles were also sacrificed to the gods: on 15 October 1840 the missionary Calvert saw some being dragged to a temple on Lakeba as an offering (Sahlins 1978:87) – the temple was probably on the ring-ditch site at Tubou from which the surface collection of ceramics was taken.

Tabua were usually whale teeth, but during the years of the sandalwood trade were also carved from other materials, such as elephant or walrus ivory, whalebone, and even possibly stone, mostly in the shape of a whale's tooth. These were symbols of immense and often sacred power, with an early observer describing the significance of one of these teeth as "about the price of a human life, even when the party slain is of rank" (Wilkes 1845:103). Both whales and turtles, since they live in the sea and breath air, are partway between the two great divisions of Fijian cosmology, the land and the sea, and thus between one world and the next.

Large double-hulled canoes were sacred objects too, built of the chiefly wood *vesi*, and functioning as a significant weapon in the arsenal of the chief, carrying large numbers of warriors into battle, transporting victims for sacrifice, and bringing back tribute from his realm (Sahlins 1978:75). Their deck layout was a reproduction in miniature of the centre of a chiefly village, with a *rara* or ceremonial ground, a house for the chief, and *lali* gongs (Phelps-Hooper 1982:248). Small *burekalou* or temples, about 80cm high and made of sinnet and reeds, could also be carried on voyages. These were normally housed in the most sacred part of the

real temple (Clunie 1982:i and see Williams 1858:223), sometimes containing small ivory or wooden images (Kleinschmidt 1984:188 and see Figure 23 IIIf) or other sacred items which themselves were *waqa* or vessels which the god could enter when invoked (Clunie 1996:7). It is not surprising that these *waqatabu* or sacred craft were described by the missionary Cargill as being "adored as gods" (Cargill 1837: November 30).

The coconut shell cup or *bilo* was an integral part of the *yaqona* drinking ceremony itself. One of the wooden dishes collected by the Methodist missionaries in the 1850s, and shown in Williams (1858:60) resembles a coconut shell on three legs, and a recent observation by Clunie regarding a circular pedestalled dish held at the Cambridge University Museum of Archaeology and Anthropology has identified its form as based on a coconut *bilo* seated on a *toqi* or coiled sennit stand (Clunie pers. comm., and see Kleinschmidt 1984:174).

For the remainder there are brief evocative references which suggest similar symbolic connections. Fruit shaped dishes are relatively common, and present in the very earliest 19th century assemblages; in both wood and pottery (with one known small ivory example, see below) are those modelled on the fruit of the *leba* (*Syzygium neurocalyx*). Restricted to pottery alone are vessels in the form of *moli*, the fruit of the shaddock (*Citrus grandis*) and while these have been identified as being for women of high rank (Rossitto 1995:15), no historic basis for this has been found.

The significance of the *leba* and *moli* is not clear. A botanical account of the former, from the 1860s, describes the fruit as

> prominently ribbed and of a deep purple colour. It has a most agreeable scent, gravitating between that of an apple and a melon, and contains from 3-5 large angular seeds of a most beautiful carmine colour. The natives wear the whole fruit, or part of it, around their neck, suspended on a string, for the sake of its delicious odour, and also scent with it the cocoa-nut oil used for greasing their naked bodies (Seemann 1865-1873:78).

Miniature reproductions in ivory, of the fruit itself (Von Hugel 1990: Pl. 3) and as a double oil dish c.92mm long (Von Hugel n.d., Vol. 2:41), the former at least a pendant, indicate that the fruit or tree held some special meaning beyond that of a perfume or ornament.

A reference which refers to the *leba* (and *moli*) points to a sacred and chiefly connotation. This is an entry in the Reverend David Cargill's journal for 2 October 1839, describing in great detail the death and burial of one of the King of Rewa's brothers. The funeral rites are given, and these include oiling the body, painting the face, arms (down to the elbows) neck and breast with a black sooty preparation, wrapping a white bandage around the head, and placing a club in his hands. Each tribe presented a whale's tooth, and wives were strangled. After the grave had been dug, four leaves of the *leba* (*drau ni leba*) were placed at the base of the grave, two at each end. Mats and the bodies were then put in the pit, and another four *leba* leaves, again two at each end, placed above the bodies. The gravediggers and any women who had touched the dead cleansed themselves with shaddock leaves (Cargill 1839).

Shaddock leaves are also mentioned in an 1834 account of burial customs, probably in the Bau region, where they again have a cleansing function for the participants immediately after the event and before they repaired to the temple and drank *yaqona* (Osborn 1834:198).

Lemon trees themselves were also sacred (*kautabu*), with the bones of sacrificed cannibal victims placed in forked limbs (Clunie 1986: note 196, Spennemann 1987:29-35). Lemon trees are found today on old house mounds and graves, presumably descendants of original plantings.

Vesi dishes shaped like a flying duck were noted in temples at Levuka, Bau, Viwa and Rewa, between 1838 and 1856 (Clunie 1996:12). The only reference sighted which suggests a symbolic importance for this bird concerns an origin tradition recorded in 1834. The main god in Fijian traditions was Degei, who lived in a cave in the Nakauvadra mountains of northeast Viti Levu, and who in most early accounts is described as taking the form of a snake or part snake – part stone (e.g. Lawry 1850:125, Wallis 1851:56, Wilkes 1845:83), although the earliest record, that of D'Urville in 1827, does not mention the god's form (D'Urville 1835:102).

The 1834 version was recorded by Warren Osborn, clerk on the ship *Emerald*, who was left at Bau for about three months. In this so-far unique description Degei is portrayed as being "in the shape of half snake & half rat he is according to their account most delicately spotted & his eyes like fire his head is shaped like that of a duck is some 3 foot long as large round as a man" (Osborn 1834:139). That it was the head which resembled that of a duck indicates the bird had some symbolic importance.

This origin tradition has been described as European inspired (France 1966) but appears to have an original base with later European embellishments. The 1834 account, which predates by one year the arrival of the first of the European missionaries (but was recorded four years after four religious teachers – a Lakeban and three Tahitians – settled on Lakeba and the neighbouring island of Oneata), is unlikely to have been influenced by other cultures.

The naturalistic pottery vessels, although representing the same objects as those in wood are, save for the *leba* dish, functionally different in that they are hollow vessels, probably for water. Some of these have been found on the mounds of abandoned temples, such as the priest's drinking vessel, in the form of either a sperm whale tooth, plantain or canoe hull, collected from such a location at Muanasau, Rewa (Clunie 1986:143, Palmer 1971: Fig. 1c). This temple mound had been deserted since the 1850s, and found with this vessel were four other highly decorated *saqas* of the more standard form (see below). These small naturalistic drinking vessels are described as "popular in chiefly households in southeast Vitilevu during the 1800s" (Clunie 1986:143), and an illustration of the inside of a chief's house, in 1876, shows a number of these small *saqa* (Gordon Cumming 1882:208).

These vessels can also be extremely small, so much so that an observation made on 14 August 1849 describes them as "drinking vessels so small as to appear intended for playthings for children" (Erskine 1853:194). The same term was used by Kleinschmidt in 1877/78 when describing the attitude of the inland hill tribes of Viti Levu towards these vessels which were "made in such variety and profusion on the Tai Levu [Tailevu] coast and along the lower reaches of the Rewa River" (Kleinschmidt 1984:172, 173).

The capacities of two early examples (numbers 82-477, 82-479) held in the Fiji Museum were determined. These were a triple canoe or *tabua* and a triple *moli* (lemon), which held 500 and 400ml respectively. Given a standard size cup or bilo of 100mm diameter and 50mm depth, three to five servings would be possible. This suggests that they were functional; not for a *yaqona* circle but for a more specific and individual ceremony, where the *yaqona* dish was smaller. The various naturalistic wooden dishes of the priests – such as the canoe, human, and duck forms – are candidates, and the finding of one of these small pottery vessels on a Rewa temple mound, as described above, is significant.

An example in the Field Museum of Natural History, Chicago, of a double canoe or *tabua*, has on the attached label "it is said that vessels of this peculiar shape, although sometimes with three compartments were used by the chiefs only being hung from the necks by strings as a badge of chieftainship". Although their use as such is probably apocryphal, since there is no record of these vessels being used in that way, their association with chiefs is important. This item was purchased in a sale of Fiji artifacts in June 1851, apparently from the Wesleyan Mission, and it is possible that it was among the vessels acquired by the Rev. Walter Lawry on or before 14 October 1847 (when he recorded "double canoes and drinking vessels are made in small models"), and which he was planning to send to two Staffordshire Potteries for their comments on how Fijian potters could improve their work (Lawry 1850:69).

The same vessel types were described almost 100 years later as probably late and part of the tourist trade (Surridge 1944:18), and also unlikely to have been based on real forms (Maclachlan 1940:265). A recent publication even attributes all the "remarkable diversification of pottery forms" evident in Fiji from about 1600 A.D., which include these, as being European-inspired (Routledge 1985:25).

There was however no European influence operating on these vessels, and although they are functionally different and probably in a lesser category than the finely carved wooden items, never-the-less they are all part of a religious/chiefly system of great significance, which appears to have developed over a period of at least 500 years.

CHAPTER 10. SIMILARITIES BETWEEN THE ARTISTIC SYSTEMS OF LAPITA AND LATE FIJI

The two artistic systems, early and late, have some general similarities in structure. Although the former has had the most intensive analysis (Mead *et al.* 1975, Sharp 1988), the late period has also been studied (Palmer 1971:77-103, Surridge 1944:17-36, and more recently and comprehensively by Rossitto 1994, 1995).

The areas on vessels favoured for decoration are usually those visible from above or from a slightly oblique angle. Special vessels such as the flat-based and *leba* dishes can be decorated on the underside. The decoration areas or zones are bounded or framed by markers, which emphasise features of the pot; the rim and shoulder or mid point, and more rarely the base. These decoration areas may either continue around the vessel, or be further divided horizontally or vertically, and, in the late period at least, obliquely. Both systems use basic elements usually combined to form motifs, which can then be used to build up more complex designs.

Common to both the early Lapita and the late Eastern Viti Levu [Rewa] systems is the use of prominent markers to emphasise the main design and zone boundaries, achieved in the former mainly by the roulette stamp and in the latter by appliqué strips. These strips produce designs such as circles with spreading rays and semicircles of up to six concentric lines, with shell impressing or incising between these. The use of appliqué increases in the late period (see Figure 5), although this is not apparent in Palmer's data, and probably occurs not long prior to this. Rossitto makes an interesting point that today applied decoration is preferred because of its richness and textural affect, which is not reduced, as impressed and incised work might be, by the glazing process (Rossitto 1995:37). According to her it is also easier to produce a design with this technique, due to the fewer decorative units required.

The basic nature of these similarities, given the restrictions imposed by a set of simple tools and techniques, and similar curved and tapering surfaces to decorate, does not suggest any relationship between the two ends of the sequence. No motifs are common to the two systems, save those that might be expected due to their simplicity and ubiquitous nature. The importance of the two decorative systems is not that they are related in any way, but that they are a similar response to what are almost certainly similar situations.

The Fiji encountered by the first Europeans was an extremely dangerous place, so much so that Tongans were afraid to venture too close, and some Europeans thought twice about it too (e.g. Sparshatt 1839:7, Williams 1984:48). Archaeology tells us that this was the end of a process which had started some 500 years before, when ceramics began to show signs of social stratification through unusual pot forms and complex decoration, with the start of fortifications at the same time or not long after. The various socio-political "empires" that the Europeans met consisted of uneasy confederations, within which every alliance and every tier was constantly under threat.

At the head of this system was the great chief (or, as the missionaries described him, the king); above him again the gods, former chiefs now resident in the next world; and below him ranks of lesser chiefs and clan heads. The distinction between god and chief is a loose one; Phelps (Phelps-Hooper 1982:237-39), writing about Lau, quotes both historic and contemporary sources that ascribe semi-divine power to those in authority. Direct contact with and advice from the gods was achieved only through the priest in his temple, in a ceremony where the god entered the priest's body and possessed him, being sustained by human flesh and *yaqona*, which passed untouched through his host's lips by means of a fork and drinking straw (Clunie 1996:10).

Yaqona was also drunk both inside and outside the temple as part of chiefly ceremonies, with special water jugs and either Tongan-derived wooden *kava* bowls or the wide-lipped ceramic *dari*, served in the circle according to the social standing of the participants. This too had a strong religious nature, with prayers to the ancestor gods, and this was the ceremony described by Reid (see above) as reminiscent of communion.

The late end of the Fijian ceramic sequence thus reflects part of a socio-political-religious system, not only in the efflorescence of end tool decoration itself, but also with the

appearance of certain vessel forms such as carinated pots, and in the reproduction of objects which belong solely to the domains of the chiefs, priests and gods. As has been seen, most of these had their equivalent in the sacred *vesi*, with the same or associated functions.

Their equivalent can be seen in a number of artifacts in Turkish art. These, although not religious in themselves, carry the same message as the prayer rug; ceramic tiles and wooden dowry chests bear the *mihrab* design, ceramic plates may be painted with the flowering prunus (tree of life) or a ewer (both associated with the *mihrab* and religious worship), mosque lamps are also reproduced in ceramic, and small models of mosque minarets emphasise the most visible piece of religious architecture, the signpost to the *mihrab* itself (Glassie 1993:161, 186, 538, 547, 554 and 561). These are all part of what Glassie (1993:186) refers to as an associational set, a group of items that serve to remind and emphasise the *status quo*, and in which miniaturisation (or enlargement) to such a degree as to make the object non-functional can occur; small reading stands for the Koran and overlarge prayer beads are examples (Glassie 1993:162).

Examples of the latter in the late Fijian period include ivory ornaments featuring items such as a 92mm long double-*leba* oil dish (Von Hugel n.d:41), *leba* and turtle pendants (Von Hugel 1990: Pl. 3), and a necklace of human figures (Von Hugel 1990: Pl.VII); all miniaturisations of objects with larger significance. Although, as discussed, the very small ceramic drinking vessels could well have been functional, it is also possible that they had a symbolic function similar to the above.

Figure 23 compares selected items of material culture, in ceramics, wood, bone and ivory, from early Lapita and contact Fijian societies. The Lapita ceramics, in their decoration and multiplicity of forms alone, are more similar to those of the late end of the Fijian sequence than of any

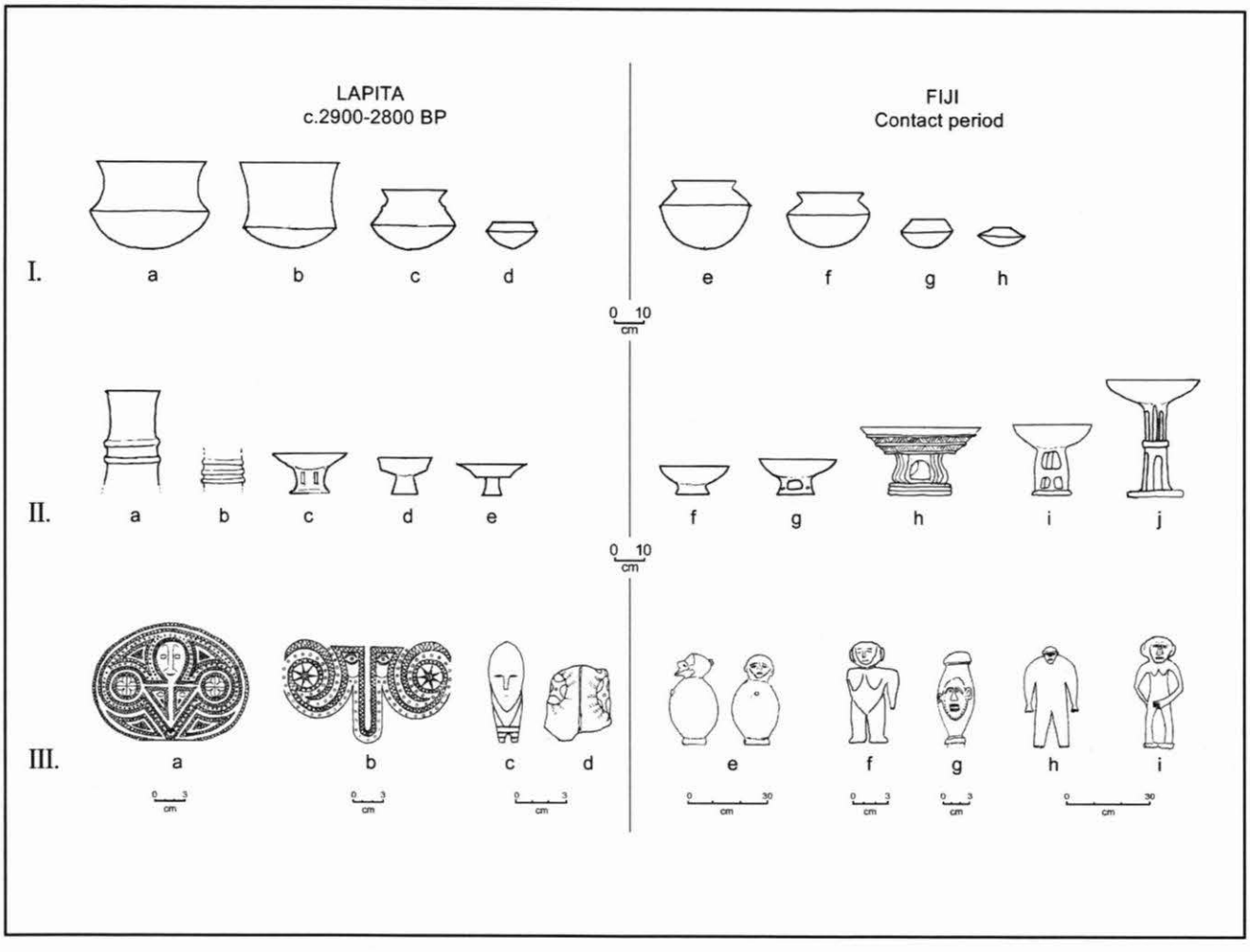

FIGURE 23. Comparison of artifacts from early Lapita assemblages and those of Fiji in the period of European contact (Ig and IIh not to scale). Descriptions in Appendix B.

other time in the 3000 years. The forms themselves are strikingly alike; the carinated, ring foot and possible ring stand vessels, and the small cups or *bilos*. Add the pedestalled vessels (some with cut-outs) from New Caledonia (Sand 2000:23) and the Bismarcks (Kirch 1997:121, 2001c:108 Fig. 4.30:117, Fig. 4.39), and the similarity is even stronger.

Flat-based dishes, present across the spectrum of sites from west to east, are, as Sand has shown for the New Caledonia assemblages, also associated with the class of pedestalled vessels (Sand 1996:37, 120, 121). In the New Caledonian sites these are either on pedestals or show the attachment marks of such on the base. Although no similar examples have been reported from the eastern area, this may be due to the difficulty of identifying the traces of a pedestal attachment. Certainly the unique flat base indicates that these were either made with a pedestal or placed on one, and the presence of decoration that over-runs the base angle to occur on the underside could either be to connect the dish's decoration with that of the pedestal or as the stylised version of such a foot. In this respect it should be noted that the ceramic *burau yaqona* bowl at the Fiji Museum (number 378/30 - see Figure 22, IIg), probably dating to the mid-19th century, is decorated with zig-zag incising on the base of the cut-out pedestal foot). At the Mussau site of Talepakemalai, flat-based dishes (along with carinated vessels) are said to increase as the deposits grow younger, while pedestalled vessels decrease (Spriggs 1997:116). This process, if correct, has not been noted for the Eastern Lapita assemblages, possibly due to the relative scarcity of the dishes and the disturbed stratigraphy.

The anthropomorphic connection is significant too (Figure 23, III). For the late Fijian period there are the ceramic water jars, wooden oil/*yaqona* dishes, and wooden and ivory figures, together with rare representations on other objects such as a spurred "snake" club (Clunie 1986:113), and on the flesh forks of priests (Clunie 1986:123, 125, 190, 191).

In the early period the Lapita ceramic design system was to a large extent based on the human face, while in addition rare three-dimensional figures have also been found. These consist of a modelled human head with dentate decoration from Kamgot in the New Ireland Province (Summerhayes 1998:100), and recently three similar objects were recovered from the sea off Site FEA on Boduna Island, West New Britain (Torrence and White 2001). The latter are modelled faces from the sides of vessels, and two of these have dentate-stamp designs which are probably tattoos. Part of a dentate-stamped human figure (Figure 23, IIId) was found at the Reef Islands site of RF-6 (Green 1979b:17). An undecorated head, human or animal, was found at Koumac, New Caledonia (Sand 1996:122), and there is also mention of "raised bumps of clay ... in the form of human faces" on some rims or necks of vessels in New Caledonian sites (Sand 1999a:48). A bird's head (of which there may have been two – R. Green pers. comm.) was found at the Santa Cruz site of SZ-8 (Green 1979a:41). Added to these in another material is the bone anthropomorphic image (Figure 22, IIIc) from the Talepakemalai site in the Mussau Islands (Kirch 1997:140).

This monograph has attempted to put forward evidence that for the Fiji/West Polynesia region, a religious aspect can be attributed to the initial highly decorated ceramic system, and change in this through time was accompanied by a change from a centralised hierarchical society to one more diffuse and less structured, with the ultimate loss of the pots themselves in West Polynesia resulting from the same process.

Given the above, can the situation in the Fiji region be used to answer some questions both in the western Homeland area, regarding its whereabouts and the reason(s) behind the eastern expansion, and its extension further out into Polynesia?

CHAPTER 11. LAPITA REVISITED

WESTERN ANCESTORS

The expansion of pots and people known as Lapita is but one stage in a process that first reaches a certain threshold of archaeological visibility off South China in Island Southeast Asia, and which continued as far as Hawaii, Easter Island and New Zealand, all in a matter of some 4000 years. This journey can be divided into three distinct parts: through Island Southeast Asia to the Bismarcks, from the Bismarcks to Tonga/Samoa, and from Tonga/Samoa over the rest of Polynesia. The middle section stands out from the others by reason of two factors: the speed of the movement, and the specialised and highly decorated ceramics accompanying it. These, it has been suggested, are interrelated.

The first part of the movement concerns Austronesian language speakers with a material culture having some parallels to that of Lapita, expanding from Taiwan to the Halmaheras between about 5000-3500 B.P. Similar to both are a basic ceramic set of plainware vessels; bowls and everted rim pots, sometimes red-slipped, shell and stone tools, and shell ornaments (Kirch 1997:48, Spriggs 1996a: Table 22.1). Some sites within this region, however, have ceramic assemblages with a component bearing more marked resemblances to Lapita, in both vessel shape and decoration.

Here the decoration includes a form of punctation which resembles (and in some cases may be) dentate-stamping, together with incising, appliqué, cut-outs, modelling, lime-infilling, and the use of red slip, although the latter may be the least significant, since it is widespread throughout the region. Vessel shapes include pedestalled or ring foot bowls, carinated jars, and lids. The latter category has not been well documented for Lapita sites, probably due to the difficulty of identification, but the single sherd from Aitape is a likely example (Spriggs 1990a:100), and they are recorded (and briefly described) for New Caledonian sites (Sand 1999a:48, 1999c:16, 2000:23), and Buka (Wickler 2001:83), with a possible identification at Watom (Anson 1983:35). Many of these selected traits are considered to be indicators of a more than utilitarian value to the vessels, akin to the situation for the late Fijian sequence.

Such sites are known for Taiwan, the Philippines, and Sulawesi, and a few of these are briefly described below.

At Ta-p'en-k'eng and associated Yuanshan sites in North Taiwan the assemblage includes ring feet (with rare cut-outs) and carinations or "angular curves" and lids (Chang 1969:182,183), and with decoration consisting of incising and what is described as punctation, consisting of either shell-edge or rows of impressed dots. It is not clear whether the latter have been made with a manufactured dentate tool, however they have been described as such (Bellwood 1979:206, 1985:247). Some of the pottery is also red-slipped. The sites date from c.4500 B.P., although Spriggs (1989:607) suggests that the above mentioned traits may be later, from 3000 B.P.

Three sites in the Philippines have pottery forms and decoration resembling those of Lapita. These are the Lal-lo and Magapit sites of North Luzon and the Batungan Caves on Masbate Island. The former contain both carinated and pedestalled or ring-foot vessels, together with incision and end tool impressing resembling dentate-stamping, described as "small punctate dots (and occasionally dashes) in rows, zig-zag lines, or geometric patterns" (Thiel 1986:84, and see Aoyagi *et al.* 1991). These are sometimes lime-infilled. Originally dated at c.3600±100 B.P., the site is now thought to be c.3200-2400 B.P. (Spriggs 1996b:35).

The Batungan site assemblages include one ring-foot vessel and a number with carinations, with decoration featuring incision, "dentate stamping" (Bellwood 1985:247), notched appliqué ribs, red slip, and some lime infilling (Solheim 1968:28, 37, 49, 50). One of the illustrated motifs is identical to M25 in the Lapita repertoire, and indeed these sherds would not look out of place in a typical Lapita assemblage, even to bands infilled with diagonal impressing, resembling the "zone markers" of Lapita. The assemblage appears typologically earlier than that from an adjacent cave dated to 2800 B.P. (Spriggs 1989:607).

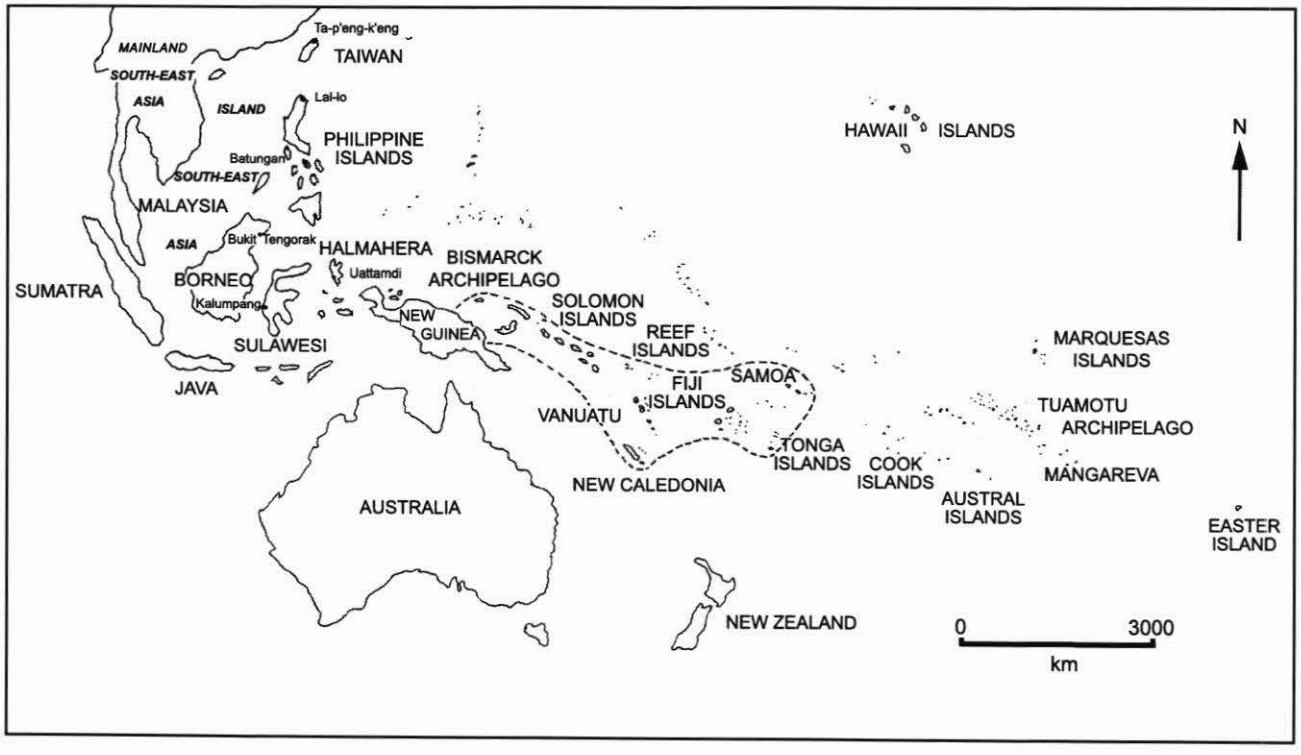

FIGURE 24. Island Southeast Asia, with sites mentioned in text, and the Pacific (Lapita distribution outlined).

Similar ceramics, but with rare decoration, were found in the lowest layer at the site of Bukit Tengkorak in Northeast Borneo. The assemblage included pedestalled and carinated vessels, also lids, with red slip and some incision and punctation (Bellwood 1989:135, 136). The layer was dated to 2935-2049 B.P. Decoration became more common in the upper two layers, with the material from the top layer resembling that of Kalumpang.

On Sulawesi the site of Kalumpang has produced pedestal stands, some with cut-outs, vessels with carinations, some lids, and decoration featuring geometric designs outlined by incising and filled with either rows of dots formed by single punctation or by shell impressing, the latter in bands which again resemble Lapita designs. The decorated potsherds are described as mostly red (Van Heekeren 1972:187). The decoration also includes anthropomorphic designs and a modelled head, possibly from a vessel body. The site is undated, but it lacks metal and on a number of stylistic grounds is probably between c.2000 and 3000 years old (Beyer 1952, Bellwood 1985:248). Another site with similar pottery, Minanga Sipakko, was found one kilometre downstream from Kalumpang.

Recent excavations in the island group closest to Western New Guinea, the Halmaheras, have produced an assemblage of about the same age as the earliest Lapita sites in the Bismarcks. The Uattamdi ceramics have the same basic vessel shapes as these, but lack the specialised types described above that occur in both Island Southeast Asian and Lapita sites (Bellwood 1992). The vessels are undecorated save for a red slip, and some rim notching at the top of the layer, the earliest date for which at two standard deviations is 3555-3002 B.P. (Spriggs 1996b:35). The assemblage is considered by both Bellwood and Kirch to be "virtually identical in vessel form" to that from the Mussau site (Kirch 1997:50,283). It is however the dissimilarities between them that are important, the more so when the lack of decoration is also taken into account.

There are therefore similarities between site assemblages from Taiwan to the Halmaheras and Sulawesi (and possibly Timor), a distance of some 3000km, and those of the Bismarck Lapita. These are in both a ceramic base that features plain utilitarian vessels, and also in the occasional appearance of specific ceramic vessel forms and decoration, the latter sometimes a quasi-dentate at least. The expected north-south cline in the dates has been demonstrated by Spriggs (1989, 1990b, 1996b). What Spriggs has also shown is that on present evidence, and with dubious dates removed, those assemblages containing the more complex ceramics are later (although sometimes not by much) than the earliest Bismarck Lapita sites (Spriggs 1989:607). However also a victim of chronometric hygiene has been the early date from Mussau, now suggested as 3300-3200 B.P. (Specht and

Gosden 1997:181-87), and which is supported by the dates from Arawe and Anir, which are no earlier than 3300 B.P. (Summerhayes 2000b:7). This just overlaps at two standard deviations with the earliest Lal-lo date, and could be close to the Batungan and also possibly Kalumpang ages. Another couple of hygienical tweaks and a direct connection between these sites could be postulated. At present however it's close but no cigar.

What are we to make of this distribution? For those who support the intrusion model the trail is clear, leading back through Island Southeast Asia to Taiwan and even beyond (e.g. Bellwood 1985, Kirch 1997, Spriggs 1996a). Somewhere east of the Halmaheras a suite of ceramics similar to that from Uattamdi developed into full-blown Lapita, which on present evidence seems to arrive or appear in the Bismarcks with a full head of steam, and which more or less kept on going. Although no-one has been bold enough to state that there was no local Bismarck contribution involved at all, Spriggs (1996a:344) comes close to this when he describes any such as possibly insignificant.

On the other hand, the local development model emphasises continuity with earlier sites in the Bismarcks, mainly in patterns of trade, but also in other artifacts, and suggests that it is only the pottery which is intrusive, and that this could have been acquired during voyaging forays rather than having accompanied migrants into the area (Allen and White 1989:142, Specht and Gosden 1997:190, White and Harris 1997, White *et al.* 1988:416). This time it is the arrival of people which is considered insignificant, if indeed this happened at all (White *et al.* 1988:416).

Archaeology in the not-too-distant future will undoubtedly find which one of these is closest to reality. Until then present evidence has to suffice, and of this the most important is the appearance of Lapita-like assemblages on the route to the Bismarcks. There are three main explanations for this

1. As a result of reverse contact or migration.
2. As a direct ancestor to the Bismarck sites.
3. As a result of processes occurring in the Island Southeast Asian sites that are similar to, but independent from, those that took place in the Bismarcks.

The case for east-to-west ceramic influence has been advanced mainly by Spriggs (1989:607, 1995:125, 1996b:328), and takes the form of either down-the-line contact, likened to the spread of metal in Island Southeast Asia between c.2300-2000 B.P. (Spriggs 1989:607), or through return migration (Spriggs 1995:125), a concept advanced by Anthony (1990:904, 905). This explanation is, on the face of it, eminently plausible, and has the advantage of summarily dismissing some quite marked similarities between the two areas as unimportant.

However neither of these explanations is particularly convincing. Although the Talasea obsidian in Bukit Tengkorak does suggest that the first type (presumably) of contact scenario did occur, for a fully fledged ceramic tradition (with a significant socio-religious parameter) to be transferred indirectly over great distances is simply not possible. For this to have taken place requires the second process; a movement of people, carrying their technology and beliefs with them, and profoundly influencing the societies with which they come into contact. There are two objections to this: the sites in question are spread over a large area, and would have required multiple reverse migrant streams, and, more importantly, both the designs and the dentate-stamping techniques would more clearly resemble that of the Bismarck Lapita, with unmistakable block and roulette tools.

If substantial interaction or back migration did take place between the Bismarcks and Island Southeast Asia, then it would have been more likely to have occurred earlier rather than later, probably at the same time as the eastwards push, at a time when the most movement seems to have taken place, and when the ceramics were at their most complex.

The next alternative is the simplest and therefore the most attractive, and for that reason alone is almost certainly incorrect! This supposes that either the dates for sites such as Lal-lo or the Batungan Caves are too young, or that there are earlier parts of the same sites, or that similar sites exist in Island Southeast Asia which are in turn ancestral to these. Missing so far is any sign of either earlier sites in Island Southeast Asia or along the New Guinea landmass (given that the Aitape sherd is indeed intrusive). For the present then this explanation is rejected.

This leaves the third option – that given certain sets of circumstances both the society and its art forms undergo similar transformations. These would presumably coincide with periods of consolidation within the overall southerly or easterly movement, perhaps the formation of "archipelago cultures" (Gosden and Specht 1991:277); social cauldrons from which emerged individuals or lineages – the "apex-families" of Anthony (1990:904). This assumes the independent appearance of similar specialised vessel shapes and decoration, which is not as unlikely as might be thought.

Almost identical vessel shapes to those in early Lapita assemblages reappear, as has been shown, 2000 years later in the Fijian sequence, as a response to both the influences of the decoration itself and to the associated emergence of powerful chiefs able to manipulate the religious system. While there are also parallels between these two systems in

the decoration type, in that end tool impressing (which includes dentate-stamping) is the most popular method at both ends of the sequence due to its ability to create complex compositions, the similarities in design to Lapita (such as those at the Batungan and Kalumpang sites) require another explanation. The most likely candidate for this may be that a basic way of organising artistic expression is present in the societies involved, with its roots in the original expansion of the Austronesian speakers, and with a design system which occurs throughout Island Southeast Asia on materials other than ceramics, but which, given the situations described above, is transferred to pots.

This has already been suggested by Green (1985:220) in a reversal of the process proposed by him for the Polynesian end of Lapita (Green (1979b). The latter has already been criticised above, however in that case the two ends of the process were separated by a gap of 2000 years in which almost all aspects of the culture, as shown in the archaeological record, underwent extreme change. The general view of the Neolithic peopling of Island Southeast Asia is of a fairly homogenous cultural base, including stone and shell tools, ornaments and economy (e.g. Kirch 1997:50, 52), from which similar developments are more feasible.

If the above is correct, then for the indigenous development theory to be acceptable it was not only the pottery itself that was acquired, by raid or trade, but also a significant part of the donor society's belief system and its artistic mode of expression, not to mention its language. The appearance of Proto Oceanic in the very place where the earliest Lapita sites have been found, and its close relationship with languages to the west, would have to be explained other than by the movement of people. This seems extremely unlikely, and I believe it is only the extent of migration into the Bismarcks that remains to be determined. This is returned to below.

At the east end of the range, in the Lau/Tonga/Samoa region, all archaeological evidence suggests that the Lapita odyssey was coming to an end. Certain vessel shapes, such as the cylinder stands, have not been recorded at all, while other forms such as flat-based dishes are rare in all but the earliest sites. Complex decoration, executed by the roulette stamp, is also extremely rare outside Natunuku and Naigani, down to c.0.5% of the decorated sherd assemblage at Lakeba, and in fact has not been identified in Tonga or Samoa for other than the Tongatapu Site TO-2 (see Table 4 for data). Its presence in Tonga, along with the M33 motif, means that, contrary to the findings of Burley *et al.* (2001:101), anthropomorphic designs and densely applied motifs were part of the earliest assemblages, although these assemblages are probably small and rare. If the Lakeba situation is typical, then in open sites these sherds will be restricted to a small area in the middle/highest point of the settlement, and will only be found by accident or through working out the size of the site and the total sherd concentration within it, which was not or could not be achieved at Niuatoputapu and Mulifanua, and may not have been accomplished in many of the other Tongan sites either.

This leads to a problem of dating. Seldom have archaeologists been able to locate or identify the early part of an open Lapita site and date it – normally a grab-bag of samples from disturbed stratigraphy within a site that was probably occupied for some hundreds of years suffices, and thus the actual timing, and in some cases direction, of the spread east is not clear. An example (unavoidable in this particular situation) is the submerged site of Mulifanua, where two attempts to date shell (midden?) in the coquina crust which formed over the site, and which incorporated few sherds (Jennings 1974:176), have resulted in dates ranging at one standard deviation from 3209-2778 cal B.P. to 2535-2332 cal B.P. (Petchey 2001:65). A sample of turtle bone found with the main body of sherds under the crust has given a date at one standard deviation of 2838-2722 cal B.P. (Petchey 2001:65), or 2920-2685 B.P. at two standard deviations (Petchey pers comm). It is thus extremely difficult to assess either how early the site is or for how long it was occupied, and although this is a case where the archaeologists concerned had no choice in materials or provenance, this has not been taken into account by those pushing for a shorter Lapita timespan in the eastern area: a date of c.2750 cal B.P. for instance has been quoted for the site (Burley *et al.* 1999:65).

Although ceramics (17 sherds in all) have been found in six sites in Central and Eastern Polynesia, two in the Southern Cooks and four in the Marquesas, only in the latter case have sherds with indigenous tempers been identified. Five examples from three sites are presumed to have been locally manufactured, and probably date to between A.D. 100-500 (Dickinson *et al.* 1998:121). The exotic Marquesan and Cook Islands sherds are thought to be probable imports from Fiji and Tonga, possibly arriving in the former group c.A.D. 1300-1650 or even later, and in the latter earlier than c.A.D. 1300 (Dickinson *et al.* 1998:128, 130). European transport is suggested for the Marquesan examples, however indigenous contact between Fiji and the Marquesas, through Mangaia, with East Polynesian pearlshell traded for Fijian *kula* (parrot) feathers and turtle shell, is apparently recorded in Marquesan traditions (pers. comm. Fergus Clunie).

WATER GAPS AND PAUSES

At present Upolu, Samoa, is the last island in the east with a typical Lapita site, one with dentate-stamped ceramics. That more such sites will be found at the present limit of the distri-

bution is certain. On Samoa itself, the large green plano-convex adze encrusted with traces of marine worm tubes, found at the back of the village flats at Luatuan'uu (Green *et al.* 1988), at a location where potsherds have been found by the author, is just one of the likely places. American Samoa, a mere 100km away, must also have been reached by the original voyagers. The complex geomorphological/tectonic situation of both these islands (Dickinson and Green 1998), coupled with the relative lack of research at the eastern frontier of the Lapita world, are contributing factors to the gap.

In American Samoa the first recorded prehistoric ceramic was a single potsherd found in 1980 by Jeffrey Clark (1981:6), on Malaloto ridge inland of Leone. In 1986 two ceramic sites were located in the islands: AS-13-1 at Toaga on Ofu in the Manu'a Group (Kirch *et al.* 1990, Kirch and Hunt 1993), and AS-21-5 in 'Aoa Valley on Tutuila (Clark 1988, Clark and Herdrich 1986). The avifaunal analysis from Toaga suggests that while this type of site was early, within the first c.1000 years of settlement, it did not represent the first exploitation of the environment (Steadman 1993:226). Another such site on Ofu, also with obsidian and shell fishhooks (AS-13-13) was test-excavated by the author in 1991 (Best 1992a:24-29).

Since then a number of surveys have located further ceramic sites: two on Aunu'u Island in 1992, AS-22-42 (Best 1992b:16-25) and an undescribed site, one (three sherds) at Alega on the south coast of Tutuila in 1990, AS-23-22 (Clark 1993:80), one at Malaeimi Valley (Epi Suafo'a pers. comm.), and a few sherds on and around the Tatagamatau fortification (Best *et al.* 1989:34, 35). The steep inland terrain and dense vegetation of American Samoa make inland sites difficult to locate, while any coastal sites there are likely to be either submerged (in the Manu'a Group), or uplifted and buried by colluvium (on Tutuila), together with the probable masking effect of colluvial cover at coastal sites (Dickinson and Green 1998:255-57).

How reliable is the archaeological evidence that Lapita expansion did not carry on, into Central Polynesia at least? The answer is probably not very. If sites are there then they may be from an initial scouting or discovery phase (if this ever existed), and thus would be small and difficult to locate, and also possibly more easily removed or disguised by erosion. It has been suggested that the earliest evidence for occupation on Aitutaki may have been thus effected, associated with a particular type of reef formation (Allen 1998:20).

Evidence from faunal material, the "biotic signature", is not unequivocal for the Southern Cooks, but there are archaeological indications that early settlement was taking place on Aitutaki (Allen 1998) and Mangaia (Steadman and Kirch 1990) at c.1000 B.P., and thus initial contact may not have started much before that anywhere in the group itself. There are claims for considerably earlier settlement on Mangaia, of c.2500 B.P. and 1600 B.P., based on pollen and sediment core results, said to indicate that forest clearance was under way at those times (Kirch and Ellison 1994, Steadman and Kirch 1990). However the association of these with human activities has been questioned, especially the gap between these early dates and the later ones associated with faunal extinctions (Anderson 1994, 1995, Spriggs and Anderson 1993).

Archaeological evidence then, such as it is, does suggest a pause of some duration in the Tonga/Samoa region. Linguistic evidence too, from as far back as the mid 1960s, and up to the present, provides support for this (e.g. Green 1966, Marck 2000:5, 127, Pawley 1996:404). The latter author states the case in a firm knuckle-rapping style "what the linguistic evidence does indicate, very strongly, is a long delay after Western Polynesia was settled, before the effective colonisation of Central Polynesia" (Pawley 1996:404).

Against this is aligned the theoretical approach of Irwin, who first challenged the pause in 1981, tackled it again as a by-product of his computer simulations on Pacific voyaging (Irwin 1992), and recently devoted an article to the subject (Irwin 1998). In general, Irwin's approach sees Lapita voyaging as part of a larger cultural process, even setting it into a two million year timetable, from the savannahs of Africa to outer space (Irwin 1992:214). Initially opposed to any halt in West Polynesia (Irwin 1981), he subsequently accepted one as "undeniable", and in the order of 500 years (Irwin 1998:135, 137), although more recently this is this is referred to as a "so-called" and "alleged" pause (Irwin 2000:405, 407). Recent redating of the early end of the Tongan sequence to 2900 cal B.P. (Burley *et al.* 2001:103) has not helped to close the gap, which now stands at close to 1000 years. Any pause in colonisation is seen not as a result of any increase in navigational difficulties, but rather in climatic differences and in the slower rate of colonisation due to less land in more sea (Irwin 1998:136), and in the increased costs of maintaining social contact, with "the secure settlement of islands apparently ... as much a social matter as an ecological or navigational one" (Irwin 2000:407).

Irwin (2000:403) also suggests that small islands are preferred for settlement only if they are close to larger islands, as is the case for most such sites en route to Western Polynesia, and that the small size of Tonga and Samoa meant that these were marginal for settlement. However this does not seem to be reflected in the pattern of settlement in Tonga or the Lau Group, both in number of sites and in site type – Site 196 (Wakea) on Lakeba is the largest located so far in the

Fiji Group, and has been described as representing a "gateway community" (Clark and Anderson 2001:86), a centre from which further exploration and settlement can commence. Although these island groups are larger than the next available in Central Polynesia, there does not appear to be any archaeological sign of strain, and it may be that the social interaction side of the equation is not one of the main parameters. Never-the-less, as Irwin suggests, it may well have been a contributing factor in the hiatus of settlement.

On present evidence however the entire journey from the Bismarcks to Samoa appears to have taken place in a considerably shorter period of time than that represented in the "pause", and this makes it difficult to agree with Irwin that the latter can be seen is "in the context of a culturally continuous process of colonisation" (Irwin 1998:137, and also 1997:154, 155, 161, 162).

It may however be significant that the two largest water gaps between the Bismarcks and the Southern Cooks are between Vanuatu/New Caledonia and Fiji, and Samoa/Tonga and the Cooks. In Irwin's simulations, 13% of the canoes leaving either New Caledonia or Vanuatu reach Fiji, while in voyages from Samoa and Tonga to the Southern Cooks, 10% and 8% respectively hit the target (Irwin 1992:148-53).

As outlined above, the western and eastern parts of the Lapita decorative system have been characterised as curvilinear and geometric respectively (although the Natunuku material would probably fit somewhere between), and this has been explained as the same devolving system travelling at different speeds. From the Bismarcks to New Caledonia the ceramics feature a significant amount of anthropomorphic and other complex designs, often executed with the roulette stamp, with pedestalled and ring-foot vessels prevalent in the assemblages. There are no inter-island water gaps larger than c.350km within this region, and an initial period of sustained contact with the source area, whether direct or more probably down-the-line, is likely to be the main reason why the decorative system took longer to start its slide.

The first large water gap along the 5000km journey from the Bismarcks to Tonga/Samoa occurs between New Caledonia/Vanuatu and Fiji (of c.900km), and this has always been accepted by archaeologists as a significant barrier, restricting the number of successful crossings. Irwin's work however suggests that the size of the water gap has no bearing on the ease of crossing. The same percentage (38-39%) of canoes sailing within the various island arcs between the Solomons and the Reef Islands, Vanuatu, and New Caledonia, and between New Caledonia/Vanuatu and Fiji reach the targets and return, despite the almost threefold increase in distance of the latter (Irwin 1992: calculated from Tables 2, 4). If this is correct, then any difference between the east and west decoration systems is not due to any isolation factor. Set against this however is the archaeological evidence from Fiji, both in ceramics and obsidian, which suggests that although there may have been more than one crossing in the early period of expansion, no more were achieved until at least c.2000 B.P.

Island-hopping may have occurred at some stages. Although Santa Cruz is one of the voyaging origin locales, the success rate of the canoes to the nearest island group with Lapita sites, Vanuatu, is not given. To digress a little, the Santa Cruz Group is the most easterly limit of the breeding range of the saltwater crocodile *Crocodilus porosus*. There are numerous accounts of crocodiles having reached Vanuatu, probably from Santa Cruz – to the Banks Group, Santo and Malo (Best 1988:246). This might indicate that Vanuatu and probably New Caledonia could have been reached by island-to-island travel, less difficult than traversing the longer stretch from the Solomons. It is also not clear whether the size of Irwin's canoe fleets are merely a statistical construct or, as he seems to imply, a reality, the figure of 25 being chosen "because that number appeared to represent larger fleets" (Irwin 1992:141). During the expansion phase of Lapita, once past the Solomons at least, it is unlikely that a settlement or even a number of them could muster anything approaching this, and another strategy is possible. One alternative is that once a new settlement had been established, a single canoe carrying the most experienced navigator could have set out on scouting voyages of incremental length, while the rest of the group, without a life-risking investment in the search, carried on establishing themselves (Hans Bader pers. comm.). Whether this type of strategy would significantly effect the probabilities of successful voyaging as stated by Irwin is unknown; in the long term probably not.

Leaving the problem of this water gap for the moment, the eastern section of the Lapita world, as viewed through the ceramic decoration, shows a fairly clear picture. Settlement throughout the Fiji/Tonga/Samoa area must have been a progressive manoeuvre, but probably also quite fast, possibly within 100 years. This is at present too short a time to register in the available C14 dates, given the difficulties of obtaining samples securely associated with events, and with the large standard deviations.

DATING THE MOVE

Radiocarbon dating

As for the move itself, a number of points can be made. The duration of the journey is in dispute, due to the inbuilt variation of the radiocarbon dating process and the tendency of Pacific archaeologists to take samples from other than

discrete features. We need to know, for instance, when the movement into the Bismarcks occurred and when the first voyages east commenced, and we need samples from the earliest part of any site sampled east of there.

Two recent articles have proposed different chronologies for the spread, a short one from c.2900-2700 B.P. (Anderson and Clark 1999) and a longer clinal one, from c.3300-2800/2850 B.P. (Burley *et al.* 1999). The former uses the corpus of Fijian C14 dates, while Burley bases his results on 31 dates from Ha'apai. There are problems with both interpretations. While Anderson and Clark (1999:36) correctly identify the dates in the Lakeba rockshelter associated with the Lapita occupation (unlike Kirch and Hunt 1988:22, Table 2.3, Petchey 1995:95, Spriggs 1990b:13, Table 1), they do not mention that there is another occupation (Layer X1) below the lowest dated layer, and another (S1) with dentate-stamped ceramics above the youngest dated layer (Best 1984:67, and Appendix A, Table A5). This could add up to 100 years to the time span of the ceramics.

Anderson and Clark (1999:36) also correctly omit another date (NZ 4594) not associated with dentate Lapita, but which has been mistakenly identified or quoted as such (e.g. Burley *et al.* 1999:65, Kirch and Hunt 1988:22). While on the subject of the Lakeba C14 dates, another (NZ 4808) has been associated in error with dentate-stamped pottery (Phelan 1997: Appendix 1), and this and three other dates (NZ 4809, 4589 and 4590) have all had an extra marine correction applied by Kirch and Hunt (1988: Table 2.3). This has resulted in what appears to be two periods of Lapita occupation at the Lakeba sites of 101/7/196 and 197 (see Phelan 1997: Fig. 2.6), but which in reality are just products of the extra correction.

The early Natunuku date for Layer 6 is discounted partly on the "Gakushuin effect" and partly because Layer 5 has been dated to c.2500-2300 cal B.P. "with the probability remaining that Layer 6 was earlier still" (Anderson and Clark 1999:33). There is no apparent continuity between the *in situ* ceramics in Layers 6 and 5 which would suggest an unbroken occupation. Layer 6 can be shown to be stylistically earlier than the lowest Yanuca material (see Table 4), while the assemblage from Layer 5 is best attributed to the Plainware period, with possibly a few late Lapita vessels present.

Comparison of the decorated sherd assemblage from Layer 6 with those from all higher layers, including the assemblage collected from the site surface, shows that the percentage of the roulette stamp is identical (16%) in both (n=560). This suggests an intensity of initial occupation for perhaps a very short time, possibly only a few years (or seasons) followed by a change in site use, probably to occasional intermittent occupation. The same situation is present at the Naigani site, where the percentages of the roulette stamp are the same, at 7%, in both the lower layers and in all those above (n=353). Subsequently the Natunuku site was massively disturbed, mainly from grave-digging, with most of the dentate-stamped sherds that occur above Layer 6 being redeposited. Based on the ceramics and their relationship to assemblages from other dated Lapita sites in Fiji, and taking into account that the Gakushuin result, although probably incorrect, does indicate that the site is early, I consider that a date for Layer 6 of about 3000 cal B.P. is likely. A recent article by Clark and Anderson (2001:85) suggests a "proxy" age range of 3000-2900 cal B.P. for the site, based on dates from Lapita settlements in New Caledonia and Vanuatu.

Anderson and Clark also compare the distribution of ages for the Bismarcks and Fiji, noting a concentration in both regions between c.2800-2700 cal B.P. Earlier dates are accepted for the former area but not for the latter, and it is proposed that the settlement of the eastern islands, an event so sudden that it cannot be detected in the radiocarbon record, was a result of population/settlement growth in the West Pacific at that time (Anderson and Clark 1999:37). This would leave a period of up to 300 years in the Bismarcks before the move began, during which time the decoration and vessel forms were already in decline (Kirch 1997:154). Earlier dates than those of the proposed move from the intervening island groups of New Caledonia and the Reef/Santa Cruz are also dismissed or omitted. What the authors may be seeing in the data is a process that took place after the expansion in both regions.

One test of Anderson and Clark's theory would be whether the ceramics in the earliest sites east of the Bismarcks match those of the source area at the time of the posited move, or are more similar to those in the preceding 300 years. Evidence from the Reef/Santa Cruz sites at least suggests that the latter is the case (see below).

Burley *et al.* (1999:63) present an impressive array of AMS dates for Ha'apai, which suggest that initial settlement of the group was not before 2850 cal B.P., and that decorated Lapita ceramics may have disappeared within 200 or even 100 years. Two earlier dates are discarded mainly due to the temporal expectations produced by the other 27 dates (Burley *et al.* 1999:63). The samples appear to consist mainly of small charcoal flecks in the matrix, not the ideal situation, but unless some process similar to that at the Niuatoputapu sites of NT-90, 93 and 100 (which produced a set of practically identical dates around 1300 B.P. for the continued production of Plainware) is operating, the sheer weight of sample numbers suggests that something real is being dated.

Objections on the basis that the earliest part of the sites may not have been located apply to almost all such sites in the region, with the exception of the rockshelter on Lakeba (197),

which unfortunately did not produce enough reliable dates from the lowest layer to establish the first arrival at the island. In areal comparisons Burley *et al.* (1999:65) quote the Mulifanua date of 2750 cal B.P., and the recalculated radiocarbon age of 2800±90 B.P. for Natunuku. These last two occupations thus appear similar in time (although use of the two sigma ranges of 2920-2685 B.P. and 3201-2750 B.P. respectively tend to open it up a bit), however they are not only two ends of a continuum of settlement that took place throughout three major island groups, but their ceramics are significantly different.

In addition, two recent AMS ages for Level 1 at Sigatoka are identical to the Birks' Gakushuin date, indicating securely that the end of the decoration sequence, the dentate rim arcs, lines and notching, occurred at c.2500 B.P. (Burley *et al.* 1999:66). This is the only discrete short-period layer containing the end of the Lapita decoration sequence (Layer S in the Lakeba rockshelter Site 196 had similar ceramics but was not dated), and some significance must be given to the dates. This is c.200 years later than the youngest date of c.2700 cal B.P. for Ha'apai, and together with similar later dates indicated from both Lakeba and Vuki's Mound suggest not that regional variation is operating (Burley *et al.* 1999:66), but that the Ha'apai sequence has been artificially compressed.

More important than Burley's revised chronology itself are the inferences drawn from it, which include a new interpretation of the Lapita-Plainware transition, now said to have been a sudden process and not one involving gradual stylistic change (Burley *et al.* 1999:66). The Ha'apai ceramics themselves however are evidence that the devolution process was working, since even in their most elaborate form they are not comparable with those at Natunuku or even Yanuca. This process is followed to the end in Tonga (Poulsen 1967, 1987 and Spennemann 1989:105), and in Lakeba (Best 1984), and there are aspects of the ceramics at both the Niuatoputapu and Mulifanua sites that indicate the same process is going on there. Most important of these are the small red-slipped bowls, sometimes with the last stage of dentate decoration on the lip or rim, and often with a calcareous temper, which occur near the end of the decorated ware at Lakeba, and are also found at Natunuku, Niuatoputapu and Mulifanua.

Of the two proposed settlement strategies, clinal versus rapid, the former is the more attractive, since at sites from the Bismarcks to Tonga decreasing amounts of elaborate decoration executed with fine-toothed tools are present in the assemblages, indicating both a start from the homeland before the simplification process began, and enough time on the way for this to commence. There must also be a minimum limit to the speed of the movement, if only to provide enough individuals to carry it out. If a clinal process is accepted, however, then it would also have operated in the Fiji-Tonga-Samoa region, and even if Burley *et al.* (1999) are correct in their initial settlement of Ha'apai at c.2850-2800 cal B.P., the Fijian sites on Viti Levu could be expected to be significantly earlier. Burley (2001:101,103) however, like Anderson and Clark for Fiji, has had to revise his earliest date for the settlement of Tonga in the light of his re-excavation of Poulsen's Site TO 2, and has pushed it back to 2900 cal B.P.

It is also possible that the speed of the movement is not as unusual as has been suggested. The only comparison to date has been with the migration of Neolithic farmers from the Near East to Europe (Kirch 1997:62, 63). Assuming the time taken by the Lapita travellers to be between 300-500 years, Kirch points out that those colonists moved at an average rate of about 180-300km every 20 year generation. This, compared with about 20km per generation of the Neolithic farmers was, as Kirch (1997:63) remarks, an order of magnitude more rapid. It is, however, directly comparable with the colonisation of the Americas by the Clovis point hunter-gatherers, at an average rate over some 13,000km of about 250km per generation (Diamond 1998:45).

It should perhaps be pointed out that even faster movements are recorded, although through already populated regions. An example is the spread of the Muslim armies after the death of the Prophet, a rate of c.850km per generation (Gascoigne 1977:107).

Relative dating

Radiocarbon dating is thus, at present, not sufficiently accurate, or not used sufficiently accurately, to answer many of the questions posed by the Lapita expansion. Certain aspects of the ceramics however are able to provide an extremely sensitive method of relative dating. These are both the decoration itself, and within this the roulette stamps and their variations, and the specialised vessel shapes: the stands, both pedestal and cylinder in type, flat-based dishes, carinated vessels, and the rare ring-foot vessel.

Of the vessel shapes, the pedestal and cylinder stands apply mainly to the central and west assemblages, and, with the ring-foot vessel, have the function of raising the vessel off the ground, and this can only be for increased status (an exception is the very low ring-foot, used to stabilise a round-based vessel). All occur in the Lapita ceramic assemblages, with the most complex in the west, and the types may merge towards the east.

Cylinder stands: These stands have yet to be fully studied, and unrecognised examples of simplified versions probably exist in assemblages east of the Bismarcks. Their function was probably to support a flat-base vessel, but this has not yet been demonstrated (however see below). The initial stage seems to be represented by the examples at Talepakemalai: a cylinder about 40cm high and 16cm wide, parallel-sided with (presumably) a flared base, and with two horizontal ridges

about 5cm apart just under half way up the stand (Kirch 1997:137, Kirch (ed.) 2001: frontispiece). The illustrated example from Talepakemalai is highly decorated, with a double-face design above the ridges, and just possibly a slightly simplified version below, although this is only hinted at in the fragment which has survived. The space between the two ridges, which are themselves decorated, has been left plain, presumably to emphasise some difference between the lower and upper parts. These decorated ridges with a plain area between – c.1-2cm wide – appear to be a diagnostic feature of the vessel form, and being the strongest part are most likely to survive in large and recognisable pieces.

These cylinder stands, and bowls with pedestalled or ring-feet (some with cut-outs) dominate the early Zone C deposits (Kirch 1997:154). After c.1200 B.C. these had been replaced by open bowls and flat-based dishes, dentate-stamping had become more open and made with coarser tools, and incising was on the increase (see also Kirch *et al.* 1991:151). Both the two vessel forms and dentate-stamping itself became rare in the period between c.800-500 B.C. (Kirch 1997:154).

A sherd from the ridged part of the vessel wall, with finely executed designs, has been found at Ambitle (Bellwood 1979: Fig. 9.13d), and another (or possibly the same one) from the site is shown in section by Anson (1983: Fig. III.8). What is almost certainly another example is shown from Watom (Specht 1968: Pl. 3a), the latter with a more careless or simplified style of decoration.

Found at Site FOH on Adwe in West New Britain is an object identified as a possible spout (Summerhayes 2000a: Fig. 6.2, number 10132). This is a cylinder c.8cm in diameter and 10 plus cm tall, with up to 17mm thick walls decorated with a band of grooving/channelling around the mid-point. This, although considerably smaller than any of the above, does appear to be in the same functional class, and could possibly have derived from them.

At least four cylinder stands are known from the Reef/Santa Cruz sites, again from the mid-section of the vessel (Figure 25). Two of these are illustrated as "ribbed sherds" in Parker (1981: Pl. 6), another two were found by the author during a quick examination of the assemblage, and more are probably present. These are all from Site RF-2, and have diameters of c.14cm, and one has a triple ridge. These are similar to the equivalent part of the vessel illustrated by Kirch for Talepakemalai, even, on one, to the organisation of the decoration, bands of roulette stamp and small impressed circles parallel with the ridge sides, and another motif (abraded but possibly Anson Motif 38) along the ridge edge.

What may be descendants from the type cylinder stands have been recorded for New Caledonia. These are associated with flat-based dishes, and may retain the last link with the cylinder stands. According to Sand (2000:23 and pers. comm.) these are cylinders with one or two coils around it with specific decoration. They have not yet been illustrated. No examples are known as yet from further east.

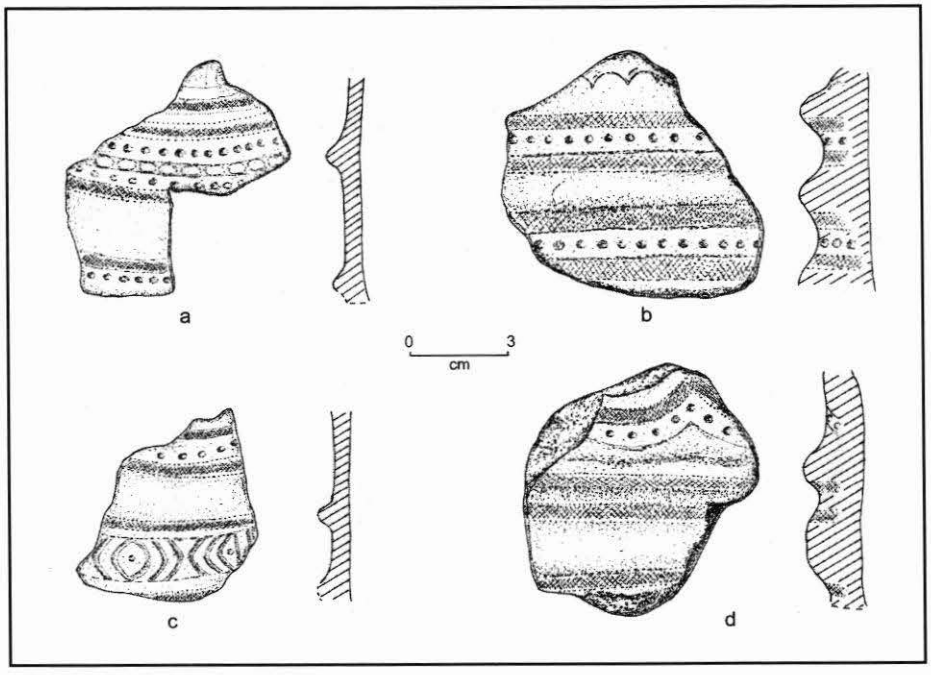

FIGURE 25. Cylinder stand sherds from Site RF-2, Reef Islands.

Pedestal stands: These taper in from a flared base, sometimes with cut-outs in the lower sides. A number (not stated) were found at Talepakemalai, and the two illustrated (Kirch 1997:121) are highly decorated. These are described by Kirch as pedestal or ring-foot, but for the purpose of this monograph the latter term is restricted to true ring feet, as described below.

From the three West New Britain site assemblages analysed by Summerhayes (2000a), a total of 31 pedestal stands were identified. Eight of these are plain, the rest either dentate or a combination of dentate and cut-outs or excision. On the basis of decoration and vessel form, Summerhayes (2000a:231) is able to distinguish between an early period (represented by Site FNY and the lower layers at Site FOH) and a later one consisting of the upper layers at FOH and Site FOJ. The former he sees as grouping with the earlier Far Western Bismarck sites, and the latter with those in Western Lapita. The frequencies of pedestal stands reflects this; in the early group at 9%, in the later at 3%. The dentate decoration itself on the stands appears to be considerably less complex than on the two illustrated from Talepakemalai.

Three possible pedestal bases or ring feet were found at Buka (Wickler 2001:87 and Fig. 4.14). At present no pedestals have been identified for either Watom or the Reef/Santa Cruz sites, although examples could be in a miscellaneous category. Neither have they yet been recorded for Vanuatu.

For New Caledonia all the illustrated stands are of the standard pedestal type, although apparently smaller than the West New Britain examples, and with less of a flare at the base (e.g. Sand 1999d:20). One of these apparently has cut-outs (Sand 2000:23).

Neither pedestal nor cylinder stands have yet been securely identified for Fiji. The so-called potstands or rests are a different and later item in Lapita assemblages, in fact probably appearing close to or at the end of the period characterised by decorated ceramics. A detailed analysis of the Natunuku decorated sherds by the author did not locate any examples of the former, and since this site must be the earliest yet found, or at least reported on, in Fiji (see below) their absence as decorated examples is probably significant. They are almost certainly present however, considering the number of flat-based vessels. Four "stands" are listed but not illustrated by Davidson *et al.* (1990: Table 8), and are thought by the authors to be feet from potstands. Since three are from Layer 6 they could well be pedestal supports for flat-based dishes.

At least one probable stand similar to the pedestal type is recorded for the Tongatapu Group. This is the base of a slightly waisted cylindrical vessel, decorated with Motif P36, and c.11cm in diameter. There are two or possibly three openings c.35mm high just above the base. One of these at least has a row of four nubbins rimming the only remaining side of the aperture (Poulsen 1967:174 and Figs 67.3, 88.13). This was from horizon II in Site TO-5, which is said to belong to the earliest horizon at the Tongan sites (Poulsen 1976: Fig. 5). Other conical hollow stands appear to be the later pot rests (Poulsen 1967: Figs 67, 89).

Another possible stand, of a different shape to any previously recorded, was found at the Ha'apai site of Faleloa. This is a short open-ended convex-sided cylinder c.9.5cm tall, of unstated diameter, with dentate-stamped sides (Shutler *et al.* 1994: Fig. 7m). The authors describe it as "collar-like", and it is so different from any other true stand in its shape and symmetry that it may have another function, possibly decorative.

Ring-foot vessels: In these vessels the foot appears as a continuation of the vessel sides (see Best 1984: Fig. 3.1). One was found at Site 196 on Lakeba, in Layer B1 Square 16. This was in the centre of the earliest part of the site (c.14m from the two rouletted sherds), with dentate-stamp decoration above and below the base-foot junction (Motif M3b above, unidentifiable below). No other examples have been reported for the eastern region.

There is thus a sequence from the Bismarcks to New Caledonia of cylinder and pedestal stand simplification, with rarer examples further to the east.

While the stands described above appear to be a sensitive relative dating tool for Far Western, Western and Southern Lapita assemblages, their low frequency or level of identification from the Eastern area means that other aspects of the vessel shapes and decoration are more useful. These are the frequencies of the decoration itself, rouletting, flat-based dishes (more easily identified than their stands) and carinations.

The frequencies of dentate-stamping and incising can be a powerful indicator of the relative ages of assemblages, and have been used as such for some time, with recent examples comparing both Lapita areas (e.g. Sand 2001:72), and sites within one island (e.g. Clark and Anderson 2001:82). It is however a fairly coarse measure, and requires above all that the assemblages consist of discrete Lapita deposits, not always an easy task. The Natunuku site exemplifies this problem, with the overall figure of all sherds for Layer 6 at 40% (Davidson *et al.* 1990:135). However this includes all types of decoration, not just Lapita, although it is stated that "the great majority of decorated sherds from layer 6, however, carry decoration compatible with the Lapita style as it has been recognised elsewhere" (Davidson *et al.* 1990:135, 136). There may also have been problems with the calculations (letter from Davidson to author 24.7.1990). The Natunuku assemblage was examined by the author in 1981, and a figure of 33.08% was arrived at for all decorated sherds

	Rouletting [%]	Flat-based dishes [%]	Carinations [%]
Natunuku	16.0 (n=248)	15.7 (n=127)	37 (n=107)
Yanuca	1.2 (n=340)	6.3 (n=207)	43 (n=194)
Lakeba	0.5 (n=526)	0.7 (n=281)	33 (n=281)
Naigani	7.7 (n=142)	0.6 (n=164)	21.3 (n=164)
Tonga	0.5 (n=1196)	1.6 (n=1294)	24.4 (n=1294)

TABLE 4. Relative chronology of selected Lapita ceramic vessel shapes and decoration types.

from Layer 6 (n=538), with dentate-stamped at 31.4% and incised at 1.67%. As stated elsewhere in this work, I believe that the decreasing figures for the higher layers represent in the main the degree of disturbance.

The problems with the Naigani figures have been mentioned above: from my analysis a total of 1248 sherds were judged to be from levels and features representing the early occupation, and of these 299 (24%) were dentate-stamped, and 119 (9.5%) incised.

The use of some aspect of the dentate-stamping itself gets round these problems, and the example used in this work is the roulette marker, which in the east appears to be associated with flat-based and sharply carinated vessels. This tool was, as stated above, a technique only used in the most complex of decorations, while the flat-based dishes are part of a vessel or type of vessel associated with the cylinder and pedestal stands, some with cut-outs, that occur from New Caledonia west.

Table 4 shows the percentages of these in four Fijian sites and one Tongan. The roulette tool in Fijian sites is a percentage of the total dentate-stamped sherds in the lower layers of the assemblages. The frequency of the roulette stamp in Tonga is taken from the data for Site TO-2, using Poulsen Motifs Q6, 6/7, 12, 13 (Poulsen 1967: Table 42). The flat-based dish and carination figures in the Fijian sites represent the number of base/side angle sherds and carinated sherds from the lowest layer in Squares A, C, D, G and E at Natunuku, those from levels 3-7 in the lowest layer at Yanuca, and from the lower layers at Naigani (Sq. 2 Lyr. B2 and 3: Sqs 3 and 3 ext. Lyr. B1: Sq. 4 Lyr. C2, 3: Sq. 4a ext. and 4C Lyr. B2, 3, 4: Sq. 6 Lyr. B3, 4: Sq. 7 Lyrs B5, C1: Sq. 7 ext. Lyrs B3-C3: Sq. 9 Lyrs B5-C3: Sq. 12 ext. Lyrs B3-C1: Sq. 13 Lyr. C7-12). These are expressed as percentages of all dentate-stamped and incised body sherds in those layers. The Tongan data is taken from Poulsen (1987 Vol.2: Tables 13, 33 and 47), while all the Fiji data was compiled by the author.

The carination figures show that while other aspects of the decoration and vessel shape are changing fast, the importance of this vessel shape, designed to show off the decoration, is not, and thus the decoration itself is still important. Apart from these sites no other assemblage from the east has been described in such a way that direct comparison with any of the above categories can be achieved.

No rouletting has been recorded from the Mulifanua site (Baquie 1975), from Niuatoputapu (Kirch 1988a:175, 176), or any of the Northern Ha'apai sites (Burley 1991, 1992 and pers. comm). The TO-2 site on Tongatapu is unlikely to be the only place in the east where it occurs, but if the other Tongan and Samoan sites resemble that on Lakeba, where the tool is present for the whole site assemblage at 0.15%, and only in specific site areas, then these sherds would be difficult indeed to locate.

The distribution of flat-based dishes in eastern sites approximately parallels that of the roulette tool. Despite their unique appearance when complete, flat-based dishes are actually difficult to identify in assemblages, unless they are represented by unusually large sherds. Once the rim and base are separated, the former resembles a number of other strongly everted rim types, and the latter, if small enough, can be confused with acute carinations. The Natunuku assemblage for instance is said to contain at least 50 such vessels (Shaw 1975:46) and 52 sherds attributed to this vessel type are listed by Davidson *et al.* (1990:140). Of these however only five are from the base and/or base angle, the rest from the rim, and although the circumference of the base is certainly smaller than that of the rim (c.70%) it still has an area of c.400cm^2, and it is clear that this part of the vessel is well under-represented. It is clear too that a number of the rims assigned to flat-based dishes are actually from a different vessel type, one with an acute carination and sharply inverted upper body (e.g. Best 1984: Fig. 3.56d). A similar situation exists for Yanuca, where 30 vessels are claimed (Birks and Birks 1975:8). Nineteen base angle

sherds were identified at each site, and the actual minimum numbers of vessels is probably between 12-15. The single example from Naigani is a flat base sherd, which could have come from another vessel type such as a ring-foot dish.

Shutler *et al.* (1994:63 Fig. 7g, i) have illustrated two supposed examples of flat-based dishes from the Faleloa site on Foa Island, Northern Ha'apai. These however have a raised pinched/appliqué band separating two decoration fields about half way up the body curve, and this is characteristic of the restricted-orifice vessels with acute carinations mentioned above. In addition, although neither rim is present, and thus the orientation of the sherd is more difficult to achieve, the bands of decoration around the side indicate that the rim was inverted, as with a pot, not everted like those of flat-based dishes. For the site of Mulifanua in Samoa this vessel type is said to be a minor component of the assemblage (Petchey 1995:64), and those present appear to be plain.

In sites to the west both the rouletting tool and flat-based dishes are a significant part of early Lapita assemblages, although this is difficult to quantify since the data is rarely available. The Lapita sites of New Caledonia have produced a large number of pots with complex decoration, which feature rouletted bands both as zone markers and as part of the main design (Sand 1996, 1997). Five types of decorated flat-based vessels have been identified in the assemblages, three of these with stands (Sand 1997:540). The stands are described as having one or two appliqué clay bands at about the mid-point, with specific decoration (Sand 2000:23 and pers. comm.). These stands are said to be "fairly common in the early phase" (Sand pers. comm.). There is as yet no quantitative data on any temporal change in these categories, but Sand (2001:68) states that this has been achieved for the design motifs at Site Wk0013A, and a corollary of this may be a change in vessel forms too.

Lapita sites on Vanuatu have not yet been fully described, and information on restricted zone markers, stands or flat-based dishes is not readily available. The large assemblages (1062 and 1485 decorated sherds) from the sites of Avunatari and Batuni'urunga, on the north coast of Malo, provide the best information. Of the 115 motifs identified, c.17 are formed by or include rouletted bands (Hedrick n.d.: Appendix B), and this is probably an under-representation since at least one appears in a figure and not in the motif list (Hedrick n.d.:30). Of the 16 provenanced examples eight were found only at Batuni'urunga, and this may indicate relative age.

A number of complex anthropomorphic designs are present at the site, again with another illustrated in a text figure on page 134 and not in Appendix B. Flat-based vessels were apparently found at both sites (Hedrick n.d.: 98, 125). No pedestal bases are recorded, although it is likely that they are present.

Recent archaeological work in the archipelago has considerably altered the previous ceramic sequence (e.g. Bedford 2000a, 2000b, Bedford *et al.* 1998, Bedford and Spriggs 2000). The islands are now said to have been settled first by Lapita immigrants c.3000 B.P., with dentate-stamped ware and some incising. So far the Malo Island sites are by far the largest, and also the earliest. Dentate-stamping is said to have disappeared after several hundred years, possibly even as early as 2800 B.P. (Bedford 2000b:164). This was followed by plainwares and/or incised wares, together with a reduction in the number of vessel forms, and then, after c.2500 B.P., in the central islands at least, by various wares decorated by one or a number of the following techniques: incision, appliqué, and punctation. In the south (Erromango) fingernail impressing became the dominant post-Lapita decorative technique (Bedford 2000a).

Data on the restricted zone markers is however presented for the Buka sites of DJQ and DJF (Wickler 2001:272, 273), apparently the only time this has been done for any Lapita site. When calculated against the number of motifs the stylistically early site (DJQ) has a slightly higher percentage (42%) than Site DAF (37%). The intermediate site of DES has 77%, however the sample size is small (39) and less than a quarter of that from the next assemblage. Wickler (2001:123) also regards the markers as occurring "only as primary horizontal boundaries", although one of his examples of tight/dense RZ4 markers features concentric bands, and is obviously part of a larger curvilinear design (Wickler 2001:113, Fig. 5.5f).

In the Watom site the band decoration is again not mentioned, and does not feature in the catalogue of 516 motifs. However of the 51 dentate-stamped sherds illustrated by Anson (1983: Pls 1, 5 and 10, and Fig. II, 2000a: Fig. 7), and by Green (2000b:13-19) and Green and Anson (2000a: Fig. 14), again over 50% (26 or 27) appear to be decorated with the roulette tool. Flat-based dishes were found on Watom; one reference says three (Anson 1983:35) while another describes them as common (Anson 1983:260). No pedestal bases are reported, although a few dentate-stamped sherds from small diameter vessels are noted, and tentatively described as parts of beakers or lids (Anson 1983:35, Specht 1968:127); these may well have been stands (see below). One of Meyer's sherds, illustrated in Specht (1968: Pl. 3a), has certain similarities to the cylinder stand from Talepakemalai, in decoration type and layout, and also in probable location on the vessel with regard to a raised horizontal band. No quantitative data on incising at this site is recorded.

In Summerhayes' analysis of the West New Britain sites the rouletted bands are not mentioned, and it is not always clear in the drawings of the sherds what is a continuous band and what is a zone of multiple dentate. However well over half of the 100 or so sherds illustrated appear to have the equivalent of the roulette marker (Summerhayes 1996: Figs 5.3-6, 5.16-20, 5.30-31, 5.34-36, 6.1, 8.2-3, 9.3). Flat-based dishes are present, but are subsumed into a category (Form I bowls) which includes vessel types with both round and flat bases, and one shouldered, with orifice diameters ranging from 12-38cm (Summerhayes 1996:122). Both these vessel forms, together with dentate-stamping, decrease in the sites through time, while incising increases (Summerhayes 1996:104, 127, 184, 252). Pedestals (vessel form V111) are also present in the West New Britain assemblages, some with cut-outs, and range from 10-28cm in diameter. The parallel between this sequence and that in the Mussau sites is emphasised by Summerhayes (1996:254).

Rouletted bands are present on almost all the illustrated pieces from the Mussau site of Talepakemalai (Kirch 1988b:335, 337, 1997:3, 12, 123, 134, 135), even in the coarser decoration on sherds stratigraphically higher than the "extremely fine needlelike dentate stamping" of those in Zone C (Kirch 1988b:335). Although flat-based dishes are said to be more common in the later Zone B deposits (Kirch 1997:154), they were also present in Zone C, and a highly decorated example was found 2.8m from a cylinder stand with anthropomorphic design (Kirch 2001b:95 and Figs 4.18, 4.26 – the stand is also featured in the frontispiece). These could well have been from the same dwelling, as indicated by the surviving house posts in the immediate vicinity, and may also have been associated in functional terms.

There are then numerous ceramic traits, both in decoration technique and vessel type, that are able to be employed as relative dating markers, both within and between sites, and some of these have already been used as such. Their potential for filling in the gaps left by radiocarbon dating has probably not been fully realised, and it may be possible to eventually achieve a form of absolute dating as well.

At two Lapita sites however the ceramics do not appear to follow the same path as those in the remainder, and these are examined below.

THE WATOM AND REEF/SANTA CRUZ PROBLEMS

Both the Reber-Rakival site on Watom and Site RF-6 in the Reef Islands have assemblages containing complex dentate decoration and specialised vessel shapes, and both stand out from other sites in the immediate region and elsewhere not only by their late radiocarbon dates: 500 B.C.-A.D. 200 in the former, and 800-500 B.C. for RF-6 (Green 1991a:201, Green and Anson 2000b:184), but in the case of the Reef/Santa Cruz sites by their apparent reversal in the direction of ceramic simplification.

Watom

Three main locations are involved: Maravot (SAD) towards the south end of the beach by a stream outlet, Kainapirina (SAC) about 75m north, and Vunavung (SDI) 100m north of that again. The Watom site has produced a total of about 5743 sherds: 217 dentate-stamped, 25 incised, 44 nail impressed, 10 relief, 20-plus brushed and 5467 plain (data from Specht 1968, Anson 2000a: Table 4, 2000b:130, and Green and Anson 2000a: Table 11). Many more are thought to have been obtained by Meyer, but are now missing. Vessel forms include carinated pots, flat-based dishes and (possibly) potstands and lids. The decoration includes three examples of double-face designs and two of single faces, all from Meyer's excavations, with another possible Type 2C from the 1985 excavations at SAC (Green and Anson 2000a: Fig. 14J).

The general stratigraphy consisted of cultural deposits up to 1m thick resting on beach sand and overlain by volcanic ash, the arrival of the latter dated to cal A.D. 650-850 (Green and Anson 2000a:38). The cultural deposits were described by Meyer as a "black earth" (Green 2000b:22), but were able to be further subdivided by Green and Anson into two layers at SAC (C1, C2) and four (C1-4) at SDI (Green and Anson 2000a:36, 37 and Anson 2000a:101). The upper one of these is described as a "black loam", the lowest as "grey sand with midden" or "grey charcoal stained beach sand", and (at SDI) with two "sandy dark brown earths" in between. Dentate-stamped pottery was found in both layers at Kainapirina and the bottom two (save for one sherd) at SDI.

The basal layer (C4) at SD1 was dated to 914-770 cal B.C., and the layer above to 405-264 cal B.C., both at one standard deviation (Anson 2000a:100). The two layers above this were dated to the first few centuries A.D. (Anson 2000a:102). The upper layer was c.50cm thick, the next two up to 30cm, and the base up to 25cm. No internal layering was recorded for any of these. Eight of the 56 sherds from Layer C4 were dentate-stamped, as were three from the 259 sherds in Layer C3. The excavator interprets the four layers as representing cultural deposition occurring intermittently over about 1000 years, with intervals of several hundred years between each (Anson 2000a:102). However there is no evidence for any paleosols, which might have been expected to form during the intervals, and if the sedimentation which produced the deposits (whether terrigenous or marine) continued during these breaks then discrete cultural layers should have been visible.

It is likely that significant disturbance has occurred throughout the deposit. Vegetation (similar to that preserved by the ashfall on the surface of Layer C1), and at least the "scuffage" of Spriggs (1999:18) on surfaces during the build up, are two agencies. The decreasing humus content with depth also indicates that at least some of this will have been associated with post-depositional activities such as gardening. While there is no disputing the overall stratigraphic consistency of the layers (there has not been, for instance, massive disturbance such as at Natunuku), the situation does not allow for much confidence in any findings based on discrete layer boundaries, such as the association of the three dentate-stamped sherds in Layer C3 with the 405-264 cal B.C. date. The single dentate sherd in Layer C1 is also more parsimoniously attributed to disturbance than to the hypothetical and I believe extremely unlikely "heirloom effect".

At SAC the two layers (C1 and C2) under the ash are shallower, each c.30cm thick. Features (including eight adult burials and also possibly one of a young child) have been cut from within these, and extend into the surface of the underlying coral sand by up to 25cm. Nine out of 131 sherds in Layer C2 are dentate-stamped, and 17 out of 525 in Layer C1. Initially a change in ceramic temper types and sherd colour across the layer boundary appeared to support the proposal that the two layers were different cultural units (Green and Anson 1987:127), however temper analysis showed that these were a result of a taphonomic process (Green and Anson 2000a:82). The distribution of sourced obsidian however is significantly different in the two layers, with material from the Admiralty Islands falling off through time, with Talasea sources becoming dominant (Green and Anson 2000a:66-72).

The upper layer, with smaller sherds and pieces of bone than in the lower, and with a greater organic content, is undoubtedly a garden soil, identified as such by the excavators (Green and Anson 2000a:41, 42) and confirmed by the faunal analysis (Smith 2000:144). However a corollary of this is that the interface between the two "layers" is a factor of the gardening process, and post-depositional in origin. To say that Layer C1 "seals in" Layer C2 (Green et al. 1989:217) is a misleading use of the term.

Three dates were obtained from the site, all from shell, and all calibrated with a marine Delta R of zero. One came from the interface of Layers C1 and C2, and gave a date of 160 B.C. - A.D. 38 at one standard deviation. The second appears to come from the fill from the base of a pit in Layer C2, a feature visible at the surface of the layer, with a date of 291-113 B.C. at one standard deviation (Green and Anson 2000a:38, 39). Both of these therefore are likely to date some activity or activities associated with Layer C1 (but see below).

The third date came from a shell 15cm below the surface of the yellow white beach sand underlying Layer C2, and gave a result of 1509-1350 B.C. at one standard deviation. This was considered to be too old for the site with regard to all other dates obtained, and it was suggested that it dated the beach deposit itself, while accepting the possibility that it might have been cultural and related to "an initial occupation of the beach, not associated with the cultural materials in Layer C2 above it" (Green and Anson 2000a:39).

A date had also been obtained from a composite sample taken from at least two of the burials excavated in 1966 by Specht; this was 2420±110 B.P. (Specht 1968:124), and although not calibrated is stated to be statistically compatible with the Layer C2 date (Green and Anson 2000a:39). This date has recently been recalibrated (Petchey pers. comm.) to 160 B.C.-150 A.D. (2110-1800 B.P. at one standard deviation), although it is described as a "working" date, with its reliability affected by sample problems. As it stands however it more resembles the Layer C1 date of 160 B.C.-A.D. 38 than that from Layer C2, however since all three dates overlap at one standard deviation this is probably not significant.

The excavators interpretation of the Kainapirina site is as follows. They regard Layers C1 and C2 as representing periods of occupation (e.g. Green and Anson 2000a:35, 83). The lower records the initial occupation by c.400 B.C. or possibly earlier, and subsequent use as a burial ground between 300 and 100 B.C. Layer C1 represents later occupation between 150 B.C. and A.D. 50, with gardening activities between A.D. 100 and 650 (Green and Anson 2000a:84). All this was sealed in by the Rabaul ashfall between about A.D. 650 and 850 (Green and Anson 2000a:38).

Similarities in motifs between Layers C2 at SAC, the assemblages from the Maravot locality (SAD) about 75m away, and the Meyer collection (the latter two totalling about 3900 sherds and 70% of all sherds recovered at Watom), lead the excavators to conclude that they are approximately contemporary (Anson 2000b:133). There is also continuity in motifs between the assemblages in Layers C2 and C1 at SAC and this, together with the above, enabled the excavators to conclude that

> It is now evident that the bulk of the assemblages from the Reber-Rakival Lapita site belong to the period 500 B.C. to A.D. 200. This means they belong to the very late end of the Lapita horizon and continue well after most of the assemblages known from elsewhere in the Bismarck Archipelago (Green and Anson 2000b:184).

Green and Anson quote 600 B.C. as the presently recognised end of Lapita in the Bismarcks, a date supported by Anderson and Clark (1999: Fig. 4), and by Kirch's (2001a:213, 219)

latest chronology for Talepakemalai, but not by Specht and Gosden (1997: Fig. 4) who prefer a younger range of 2300-2100 B.P. The Watom site however is said to be significantly younger than even the latter range.

Another indication that the proposed Watom results are unusually late comes from work on the Duke of York Islands, just under 50km east of Watom. Test excavations were carried out at six Lapita sites (Lilley 1991:164), with sufficient similarities in their ceramics to lead Gosden *et al.* (1989) to suggest that they were contemporary and interacted with Watom. Dates from these range (at two standard deviations) from 2990-2740 B.P., 2850-2550 B.P. and 2760-2360 B.P. (Specht and Gosden 1997: Appendix 2). Although there is no clear indication as to where in the various sequences these refer, the fact that they are all older than the SAC dates is significant.

A recent article by Summerhayes (2001) also helps to put the Watom site into perspective. Summerhayes compares Lapita assemblages from Mussau, Anir and the Arawe Islands, three locations forming the points of a triangle with 500 km sides, with Watom as close to the centre of this as one could get without swimming. The assemblages indicate that the three islands "were part of a wider social network in which changes in decoration occur at the same pace" (Summerhayes 2001:62). Although detailed information on the Arawe and Anir dates is in press, the available information indicates that of the seven sites with reliable radiocarbon determinations, only one has a date range which extends into the late 3rd millennium B.P., and which overlaps at two standard deviations with the Layer C2 date (Summerhayes 2001:55, 56).

Green and Anson's findings rely almost entirely on the two 1985 radiocarbon dates from SAC, and especially that from Layer C2. The provenance of the *Tridacna* sp. shell from which the latter were obtained is crucial: whether it can be securely associated with the ceramics or not. It is however not clear whether the shell was in the fill of a pit feature or separate from this in the wall of the pit. The shell is described as

> the lowermost in a stack resting on top of the yellow-white sand beach layer. The shells proved to be partly contained in a pit feature ... which cut down into zone D ... The shell itself was from spit 2 in layer C2. The whole pile formed part of the infill of the pit, consisting of numbers of volcanic and coral rocks as well as the shells, which first became apparent at the base of layer C1 ... and which spilled eastwards down, across and outside the pit (Green and Anson 2000a:38).

The same shell is described elsewhere as from the base of C2 (Green *et al.* 1989:217) and from C2 (Green and Anson 2000a: Fig. 2). However Green and Anson (2000a:38, 39) go on to say that "one would therefore judge it *not* to date the first occupation features of layer C2, but to the subsequent burials and stone alignments which followed these initial activities". But where was the surface from which the burials were dug?

That the original burial pits extended higher than the Layers C2/C1 interface is made clear by the excavators, who state

> Our interpretation of overall disturbance to a depth of 30cm or occasionally even more is consistent with our finding of a few fragments of human bone in the lower spits of Layer C1 ... it is also consistent with the evidence from the burials of Layer C2 that most of them had been disturbed in antiquity and a variety of skeletal parts perhaps lost or removed through this process (Green and Anson 2000a:42).

Since a burial pit would presumably have been dug deep enough to contain the body with a bit to spare, and that flesh and ligament decay, together with the subsidence of the grave fill, would result in the bones working further towards the base of the pit, the original surface from which the graves were dug would have been well within Layer C1. The average archaeological depth of the seven burial pits is 27cm (Green and Anson 2000a: Appendix 2), which also suggests that a considerable amount is missing.

If the above interpretation is correct, then the artifactual material within Layer C2 (at least) has not been dated. There is evidence for two if not three periods of occupation or rebuilding earlier than the burials (Green and Anson 2000a:44, 45), and this could span a considerable period. Whatever the level of the initial occupation, which was possibly close to the base of Layer C2, although Specht identifies this as simply the limit of discolouration from the layer, which "merges" into the sterile beach (Specht 1968:35), incremental build-up of storm-derived sand would have raised the occupation surface through time, as is suggested for SDI 100m away (Anson 2000a:102). There would thus have been occupation surfaces within Layer C2 at least, and it is of interest that the top spit of the layer contained a greater percentage of weathered bone than immediately below or above (Smith 2000:143), and a longer than usual hiatus may have occurred within that 10cm spit.

The early date from the shell 15cm into the base coral sand could be relevant to the above; this was recalculated (by deducting 400 years for the Ocean Reservoir Effect and applying the atmospheric curve), and resulted in a two standard deviations range of 3470-3070 B.P. (Specht and Gosden 1997: Appendix 1). The younger end of the range is acceptable given the date from other Bismarck sites, although it is some 200 years older than the similarly recalculated date for Layer C4 at SDI.

Rather than the scenario advanced by Green and Anson, which sees dentate-stamped pottery (often with complex designs) starting as early as c.2850 B.P. at a frequency of 14%, as shown in Layer C4 at SDI (although a sample size of eight decorated sherds is surely suspect), and continuing at a very low percentage until c.1750 B.P., a more realistic model can be proposed. This sees an early settlement starting at between c.3000-2800 B.P., with a high percentage of decorated pots, which by c.2500 B.P. have lost their decoration. Given the amount of disturbance in Layer C2 at SAC, traces of the equivalent occupation to that in Layer C4 at SDI would be hard to identify, with the ceramics redistributed throughout the rest of Layer C2 and part of C1.

This would not affect Anson's findings concerning the relationships on motif frequencies within the site, nor of the site's relative chronology with regard to the Far Western Lapita grouping, but would simply make this some 500 years earlier. It would, however, affect the relationship between nail-impressed and dentate-stamped pottery which, because they occur together in Layer C1 at SAC are said to be contemporary (Green and Anson 2000a:77). Nail impression could well be later, as could some of the "brushed" pottery, which closely resembles the Plainware that is part of Lapita in Remote Oceania but which also replaces it.

This alternative interpretation of the stratigraphy, together with the recalibrated age for the burials themselves, indicates that there is no clear association between the ceramics and the dates, and that the latter are becoming, for Lapita anywhere, very late indeed. I suggest that in many respects the Kainapirina location at least resembles that of Natunuku, in that an early and relatively short-lived Lapita occupation has been significantly disturbed by later burials and other features, rendering interpretation extremely difficult. Although Green and Anson (2000a:84) rebut the view that much of the Watom site is badly disturbed, the reality is that with Layer C1 a well-worked garden soil, and the plan of Layer C2 pock-marked with eight burials, another eight large pits and an oven, and about 20 postholes (Green and Anson 2000a: Fig. 8), this must be regarded as a somewhat optimistic viewpoint.

The Natunuku burial, long thought to be of Lapita association (although stratigraphically this has always been doubtful), was redated (Davidson and Leach 1993) to much the same age as the Watom individuals (with which it apparently has some affinities), and is now referred to as "post-Lapita" (Green and Anson 2000b:191). The Watom burials themselves could well also be referred to as such. With regard to the burials as a whole, and the suggestion that they were part of an on-going Lapita settlement, it is perhaps more likely that they would have been placed there by a different group of people from a later period, who had no ties to or perhaps knowledge of the site.

If the burials are later then what this means for either the Natunuku or Watom individuals in terms of cultural or genetic relationships to the earlier settlers on the beach is a matter for further research, but if there were any differences then they could be more likely to occur with the Watom individuals, if the original settlers there were intruders into an already occupied land.

Reef/Santa Cruz

The excavation of these sites by Green set new standards: the dimensions of the settlements were determined, random and systematic sampling strategies were employed, and one large areal excavation achieved. The first large assemblages of highly decorated Lapita material were recovered, including a number of anthropomorphic designs, and the conclusions drawn from the subsequent artifact analyses have been influential in the interpretation of the Lapita culture. The chronological ordering of these three sites is reviewed below.

The three main sites, SE-RF-2 (Nenumbo), SE-RF-6 (Ngamanie), and SE-SZ-8 (Nanggu), were excavated in that order between January and March 1971, with RF-2 re-excavated in 1975/76. The first radiocarbon dates (on charcoal) for the sites reached Green (1971a:3) in the field on 18 July 1971, and were described as spanning from 2800-3000 to c.2500 years B.P. These were results from RF-2 and RF-6 respectively, and a comparison was made by Green between these dates and those from Fiji, which covered the same range. A single sample from SZ-8 was considerably younger than expected, and is discussed in more detail below.

The first analysis of the decoration, undertaken in 1972, proposed that the sequential ordering of the sites, early to late, was SZ-8 to RF-2 to RF-6 (Donovan 1973a). This work was heavily influenced by the artistic merit of the decoration – simple/complex, tight/loosely executed (Donovan pers. comm.). An analysis of ceramic form was interpreted as supporting this, with the greatest complexity of vessels in the SZ-8 site (Parker 1981:79).

Two radiocarbon results on *Tridacna* sp. from SZ-8, obtained after the ceramic analysis, appeared to confirm the sequence. With two dates from each of the three sites Green placed SZ-8 earlier than the 14th century B.C., RF-2 in the 12th century B.C., and RF-6 in the 7th century B.C. (Green 1976:263).

It is worth mentioning at this point the provenances and types of the various C14 samples from these sites. The two *Tridacna* samples from SZ-8 were from 150mm and 200mm unit levels; of the four charcoal samples from RF-2 only one was from a discrete feature, an oven, while the others are from pits; and the two samples from RF-6 were both described as "scattered charcoal" from the bases of pits, associated with probable ovens (Black and Green 1977:50).

The actual stratigraphic context of the samples has not been published, so the integrity of the pits from which most of the charcoal samples came – the secure identification of the surface of origin – cannot be judged. The excavator ran into this very difficulty with a charcoal sample from SZ-8, which was described as from the "first real oven" found at the site, and although at the base of the brown loam gardening soil was still regarded as probably associated with the Lapita occupation (Green 1971b:67). This returned a date of 1040 A.D. (Green 1971a:3) or 960-1160 A.D. (Black and Green 1977:49), and was subsequently described as from a "brown garden soil layer mantling the Lapita occupation of the site. It indicates garden soil over the site is younger than Lapita occupation and has an antiquity of approximately 1000 years" (Black and Green 1977:51).

Obsidian hydration dating was also attempted, with credible results for RF-2, and a range of dates for the other two sites, some of these indicating that SZ-8 was the oldest (Green 1976:263). The amount of obsidian excavated per unit area was greatest in SZ-8 and least in RF-6, with the average flake weight reducing in the same order (Green 1991a:206). Ninety-eight percent of the flakes originated from over 2000km away to the west (Talasea and Lou), while Banks Island obsidian was found in only small quantities at all three sites (Sheppard 1996:109). Chert material from 400km and 100km away increased from SZ-8 to RF-6 (Green 1991a:200), however the lower quality Duff chert was only found in SZ-8 and RF-2 (Sheppard 1993:124).

Up until 1988 the fit between the absolute and relative dating methods for the three sites was good. In that year however Kirch and Hunt published calibrated radiocarbon ages for the two shell samples from SZ-8, and these removed any age difference between this site and RF-2, and indeed provided the possibility that the site order might even be reversed, by as much as 350 years (Kirch and Hunt 1988:20). Green, in an article reappraising the dating of the three sites, admitted that the previously published estimates for SZ-8 were "very probably in error" and, based on the new dates "the indications are that, if SZ-8 is (in its ceramic and lithic content) earlier than RF-2 ...[then]... the interval is something less than a century or two" (Green 1991a:201; brackets added).

In *The Lapita Peoples* Kirch is somewhat ambivalent in his treatment of the problem (Kirch 1997:155, 156). On the one hand he states that

> On the basis of radiocarbon ages, and of statistical comparisons of ceramic decorative motifs and vessel forms, it is clear that the oldest of these three sites is Nanggu (SZ-8). A single radiocarbon date from Nanggu yielded an age of 3140±70 B.P. (1048-876 cal B.C.). The Nenumbo site (RF-2) seems to be only slightly younger in age, with a pooled mean date from four radiocarbon ages of 2838±54 B.P. (1187-926 cal B.C.).

Referenced in a footnote however is the admission that the situation is not as clear cut as the text might suppose "on the basis of radiocarbon dates alone, SZ-8 and RF-2 might be considered contemporaneous" (Kirch 1997:296). On these figures however it is the Nanggu site that seems to be slightly younger, and if a Delta R of 100 is used then the age range for this site is younger still, at 919-789 cal B.C., and now the RF-2/SZ-8 dates do not overlap at one standard deviation.

The date for RF-6 is calculated at 791-431 cal B.C. (Green 1991a:206), and for the last 29 years this site has always been considered the youngest (e.g. Green 1991a, Kirch 1997:156, Sheppard 1993:123, Spriggs 1997:134).

A more recent attempt at obsidian hydration dating appears to confirm that RF-6 is the youngest site, but puts SZ-8 at c.300 years younger than RF-2, with Ambrose (1996:253) commenting that "in general, the relative age of the three sites based on hydration dates differs from that presented in Green's revised sequence".

The ceramic evidence has always seemed to be the most reliable indicator of intra-site relationships, and various authors, using Donovan's findings, have emphasised the simplification of both decoration and form from SZ-8 through RF-2 to RF-6 (e.g. Green 1979a:43, 1991b:199, Kirch 1997:156, Sheppard 1993:123, Spriggs 1997:134).

This interpretation is incorrect. Donovan's analysis noted that RF-2 and RF-6 (at that time referred to as RL2 and RL6) were comparable in technical skill and had a "neater, tighter style" (Donovan 1973a:49), with a "greater complexity of many of the RL2 and RL6 motifs and elements" (Donovan 1973a:36), while at the other site "the SZ8 design field is often executed in an inferior manner. The zone markers are often broader and consequently appear heavier, [and] motifs are sometimes roughly constructed" (Donovan 1973a:49). Donovan (1973a:50) also commented that

> though many of the SZ8 motifs do not appear to be as complex as those from the other two sites, they have more apparent affinities with RL2 than with RL6. Their stylistic quality is suggestive of a freedom which has been lost in the more elaborate construction of many RL2 motifs.

Incising was present at all sites, being rare in RF-6, and more common in RF-2 and SZ-8 (Donovan 1973a:6).

Vessel shapes are also said to confirm the original sequencing of the sites, with the greater diversity in SZ-8 (Green 1991a:198, Kirch 1997:156), and the least in RF-6 (Kirch 1997:156). However both RF-2 and RF-6 have nine

vessel types and a figurine or object (Parker 1981:78), and SZ-8 has only one vessel form not found at either of the other sites. This is Type 14, based on 14 sherds "from a curious type of vessel which is composed of rings arranged vertically one above the other" (Parker 1981:77-78), and which appears to be from large thick-walled bowls, up to 10 in number. Flat-based dishes are said by Donovan (1973a:51) to be restricted to RF-2 and RF-6, however Parker (1981:78) records them as "very common" at all three sites. The single odd-looking ring-foot dish at SZ-8 and possibly also at RF-6 (vessel type 11, Parker 1981:79) is unlikely to be an early form, and the occasional appearance of similar vessels in (probably) later sites to the east (e.g. Best 1984:294 for Lakeba) reduces its usefulness as a chronological marker.

Differing proportions of motifs between the sites are also held to indicate that SZ-8 is the oldest and RF-6 the youngest, with

> an impoverishment of the design system of RF-6 with respect to SZ-8 and RF-2 through loss of motifs both restricted to the area and among those which are wider spread. This is consistent with the fact that of the 23 motifs unique to individual sites, SZ-8 has 6, RF-2 has 14, and RF-6 has 3 (Green 1978:13).

However the number of different motifs recorded for each site in 1973 is directly proportional to the areas excavated at that time; RF-2: 72m² and 242 motifs, SZ-8: 51m² and 165 motifs, RF-6: 20m² and 82 motifs, with 3-4 new motifs added for every m² dug at each site. Although I suspect these are mainly alloforms of motifs already present, never-the-less the posited impoverishment of the design system of RF-6, and also the chronological ordering of the three sites on their motif component (Green 1978:12, 13, 1979:43), would appear to be a product of sample size differences.

The data on site sizes and areas sampled is summarised in Table 5. It is possible, when sampling the results of human behaviour, that despite the use of strategies to counter the problem, the enormous disparity between the percentages of the sites' areas actually excavated (a factor of 36 between RF-6 and RF-2) has resulted in the recovery of non-representative samples.

The possibility of sampling problems has been mentioned by both Parker and Sheppard. The former commented that "if a much larger area of these last two sites [RF-6 and SZ-8] was sampled, then it is likely that a much wider range of vessel form and decoration would result" (Parker 1981:118). Sheppard's analysis of the sites' lithics (only c.4% of which are in RF-6) also notes the intra-site differences, and warns against generalising from RF-2 to the other two sites (Sheppard 1993:123, 131).

Although insufficient detail on the ceramic decoration at the sites has been published to allow a quantitative analysis of the roulette stamp marker, the percentages of motifs which include this in each site assemblage can be calculated from the motif catalogue (Donovan 1973b). These show an increase from 6% in SZ-8 to 15% in RF-2 to 18% in RF-6. In addition, the most complex of the rouletted bands, that of the multiple diamonds (RZ3) is most common in RF-6, where it occurs in about the same frequency as RZ4 – the more roughly executed and asymmetric cross-hatching which resembles parallel crescents (Donovan 1973a:24) – but is less frequent at RF-2, where RZ4 is more widely used (Donovan 1973b:2). At the same time incising is increasing in the other direction, from 12% in the lower levels of RF-6 to 25% and 29% in the lower levels of SZ-8 and RF-2 respectively (Donovan 1973a:12).

The original ceramic analysis ordered the sites on a theoretical basis, one that described the elaborate motifs of RF-2 and RF-6 as representing the end of a stylistic process,

Site	Site size (m^2)	Area sampled (m^2)	Area excavated (m^2)	Site sampled (%)	Site excavated (%)
RF-2	1100	153.5 (72*)	135.5 (72*)	13.9 (6.5*)	13.9 (6.5*)
RF-6	10,800	180	20	1.7	0.2
SZ-8	14,000	459	51	3.3	0.4

*Refers to ceramic analysis only

TABLE 5. Reef/Santa Cruz Lapita site area data (percentages for RF-6 and SZ-8 are rounded to nearest 0.1%).

which must have gone through an inventive developmental stage. As remarked in one of the above quotes, the freedom of the stylistic quality of SZ-8 motifs has been lost in the other two sites (Donovan 1973a:50).

However, in an interesting comment on the penultimate page of her thesis, Donovan admits that "it could be convincingly argued that SZ8 represents a younger site than RL2" (Donovan 1973a:50, emphasis added). If this were indeed so then the sites' sequence would be reversed, making RF-6 the oldest.

Some independent evidence for a reversed chronology comes from the Buka sites. Although Wickler noted that stylistic change in Lapita decoration was the opposite for the Reef/Santa Cruz sites compared to other sites in the Bismarcks, he did not question this. He compared the Buka/Nissan site assemblages with those from the Reef/Santa Cruz in both unequal and equal weighting methods, and also in shared motifs. In the unequal weighting coefficient the earliest site at Buka (DJQ) was most similar to RF-6 and least similar to SZ8, while the later site of DAF was more similar to SZ-8 and RF-2 (Wickler 2001:129). The equal weighting coefficient was used to compare all Buka/Nissan sites with those from the Reef/Santa Cruz, and these were most similar to SZ-8. Shared motifs percentages again found the most similarities between the Buka/Nissan sites and SZ-8 and RF-2 (Wickler 2001:129). Thus the earliest site at Buka is closest to the so-called chronologically latest site in the Reef/Santa Cruz, and the Buka/Nissan assemblages as a whole are closest to the so-called chronologically early Reef/Santa Cruz sites. If the site sequence at the latter is reversed, as suggested, then the situation makes sense.

The approach taken to the ceramic analysis, which must have been influenced by knowledge of the RF-2 and RF-6 dates, led to a different interpretation of the process of decoration change in the Reef/Santa Cruz region. Initially this was described as "quite different" from that which took place to the east, with little decline in the decoration over time (Green 1974c:255, 256). In a subsequent article it was stated that "following the establishment of the local design system in the area, there was initially some local efflorescence, after which innovation in the system declined" (Green 1978:13). Later Green stressed the simplification process in vessel shape and decoration from SZ-8 through to RF-6 (Green 1991a:199).

In other words, the ceramic sequences of the two regions, the Bismarcks and Reef/Santa Cruz, are said to have pursued diametrically opposed paths while maintaining significant contact – a situation so far unique in Lapita ceramics.

In this respect it is ironic that of all Lapita sites studied, those of the Reef/Santa Cruz are shown to have had the most long range external contact – in this case to the Bismarcks (see Spriggs 1997:136) – so much so in fact that Green warns the sites may be atypical of Lapita settlements in general (Green 1996b:125). With regard to the obsidian on the sites, 98.6% of which came from 2000km distance (Sheppard 1992:147), and was not treated as though it was a scarce and valuable commodity (Sheppard 1996:135).

The three Lapita sites on Buka, on the northern tip of the main Solomons chain, are the last early sites located until those in the Reef/Santa Cruz Group, over 1000km away. Two late Lapita sites are known for the territory between: one assemblage found at a reef passage into Roviana Lagoon, New Georgia (Felgate 2001), and recently another apparently similar site located on the neighbouring island of Kolombangara (Summerhayes pers. comm.). Felgate (2001) suggests that lack of intensive surveys, especially in the inter-tidal areas where the earlier sites occur, together with generally unfavourable environments for preservation, may be the reason for the present lacuna of Solomon Island Lapita sites.

Swadling (1996b) has proposed an alternative factor; that a shortage of productive inter-tidal reef resources could have rendered the coastline an unattractive proposition for settlement. Always a possibility too is the "house full" argument, which sees the islands (somehow unlike the Bismarcks) as a socially hostile situation which inhibited early settlement in the group.

Although the lack of suitably oriented archaeological surveys along the long and convoluted coastlines of the group certainly means that early Lapita sites are statistically likely, the large amount of material moving between the Bismarcks and Reef/Santa Cruz Group could argue against this, in that it might indicate a lack of intervening filter sites which would have acted to remove or replace the goods from the source area.

A number of other sites of similar age have been excavated in the Reef/Santa Cruz Group, and although none have yet been reported in full, the information that is available does little to clarify the situation. The site of SZ-47, described as "an early plainware Lapita site" with a date of 1430 - 942 B.C., is regarded as being pene-contemporaneous with SZ-8 and RF-2, while Layer V1 of Site SZ-33, which contained dentate-stamped sherds, and which is dated to 909 - 399 B.C., is compared to RF-6 (Green 1991a:201). Two separate ceramic traditions were proposed for the area to explain the coexistence of three sites with plain pottery (two on Santa Cruz and the other on Anuta), and Site RF-6 with its highly decorated and late ceramics (McCoy and Cleghorn 1988:113). This has already been reinterpreted by Spriggs as

being more realistically representing a chronological separation (Spriggs 1997:135, 136).

The site of RF-19, excavated by Green in 1979, and containing mostly plainware, has recently been dated to much the same time as RF-6 (M. Doherty pers. comm.)

To the southeast, some 360km away on Tikopia, the earliest located site (TK-4), which had all the hallmarks of the first settlement of the island, produced a ceramic assemblage of 3662 sherds, of which only five were dentate-stamped, another three had appliqué decoration, and one was incised (Kirch and Yen 1982:198, Fig. 81). The age of the site is given as 2864-2748 cal B.P. (Spriggs 1990b:10, Table 1).

In the Vanuatu sites the sequence also appears to contradict that proposed for the Reef/Santa Cruz material. At the time that complex dentate-stamped decoration with little incising was still occurring at the so-called youngest site RF-6, decoration on Lapita assemblages in Vanuatu was either on the way out or had disappeared. Although the starting dates for both island groups are probably about 3000 B.P., no dentate decoration is known from sites younger than 2800 cal B.P. (Bedford 2000b:164), although use of two standard deviation age ranges would probably extend that closer to 2700 cal B.P., and to the "few hundred years" also expressed as the duration of the decorated Lapita ware in Vanuatu (Bedford 2000a:240).

It was the RF-6 site, with its late dates and complex decoration, that led Green to state that the Western Lapita ceramics did not

> reflect a decline to extinction of the decorative system itself through loss, as in the Eastern Lapita, of the more elaborate vessel forms on which such decoration occurs ... Rather, Western Lapita ceramics, as I define them, retain their array of shouldered jars, bowls and flat-bottomed dishes, with their highly complex decorative designs, throughout the sequence" (Green 1978:13).

There is now convincing evidence from the ceramics at the sites, and from other ceramic sequences in the region, that in fact the Western Lapita system did follow the same devolutionary path as that for other Lapita regions, although possibly at a different rate. This evidence includes a sequence from fine elaborate to coarser and simpler decoration, with the declining use of the roulette stamp, and even in the type of rouletted decoration, and in the accompanying increase in incising. This parallels the situation at all other known sites where sequences have been worked out, and, together with the growing number of Reef/Santa Cruz sites containing assemblages of plainware that are apparently contemporary with the elaborate and highly decorated assemblage from RF-6, makes the latter stand out from the rest, not only locally but also when compared to others further afield.

The site assemblages make more sense if the accepted order is reversed, with RF-6 the oldest and SZ-8 the youngest. The "lack of innovation" in RF-6 and the "local efflorescence" of decoration in SZ-8 are actually evidence for the start of the design simplification process, and the concurrent increase of incising emphasises the direction that this is taking. Evidence from vessel form has similarly been misinterpreted – the few odd vessel shapes in SZ-8 are not the result of a complex developing system but rather one that is coming apart.

Standing against the proposed reversed chronology are the RF-6 dates and the lithic distribution. The use of diffuse scattered charcoal in pits whose origin is uncertain must be regarded with some caution – a similar situation at Poulsen's Tongan sites provides a clear warning. The obsidian and chert ratios are perhaps more difficult to question, although as stated above, significant sampling error could be operating.

Supporting evidence for the rejigged sequence can only come from a re-examination of the ceramics, with emphasis on other characteristics such as temper, and/or re-excavation of RF-6, with the identification and dating of *in situ* Lapita features.

Review of the Watom and Reef/Santa Cruz sequences has relied mainly on stylistic and stratigraphic grounds. Equally important is the context of the site or sites in question, in that both stand out from others in their regions like cuckoos in the Lapita nest. Why should the latter sites continue to produce increasingly complex decoration in large quantities when the others in the area are either producing different pottery or have become aceramic? The same criticism applies for the Watom site, but here the small amount of dentate-stamped pottery, which has yet to be shown to undergo simplification, continues for a period which the excavators suggest is up to 1000 years or more, and up to 800 years later than its neighbours. And all this when communications between sites and regions is said to be high.

The only alternative explanation for these disparities is "regional variation". This however is a blanket term to cover differences which cannot be explained in any other way, and I believe that enough information on the Lapita cultural complex is now in to be able to state that variation to such a degree as shown in these two cases is not possible.

DISCUSSION

The information from all sites and regions therefore indicates or suggests a decrease through time in the use of the roulette stamp and related markers, and of cylinder and pedestal stands and the vessels associated with them, and, outside the Bismarcks at least, carinated vessels. Using these traits as indicators of the initial stage of the eastwards movement, and

of some motive behind it, the last stage of the push can therefore be shown to be running out of steam as it approached Tonga and Samoa. The largest inter-island water gaps in the Fiji/Western Polynesia area are under 300km, and once the main Tongan Group was reached, probably through Lau, two gaps of c.250km were left in the Tongan chain to cross before Samoa was reached.

After Samoa, the next island group to be eventually settled, the Southern Cooks, was a minimum of 1200km away. Added to this was the different ratio of the land areas of the two island groups relative to that of their surrounding ocean, with the Southern Cooks 22 times smaller than Samoa (Irwin 1998:126, 127). That there could be a physical aspect to any possible pause in the Samoa/Tonga area is now accepted by Irwin; the cost of sailing east was increasing (Irwin 1992:151) and the present archaeological limit of Lapita could have been effected by differing land/sea ratios (Irwin 1998:127). However Irwin (1998:136) sees the main difficulties in the colonisation of Central and Eastern Polynesia as being mainly in climatic and social factors, not navigational, with the pause a result of having to develop new strategies to cope with these.

So at least two factors were operating at the eastern limit of the Lapita world; decreasing motivation as indicated by a severe reduction in aspects of the ceramics taken to reflect a socio-political/religious role, and an increase in the difficulties of voyaging itself, relative to those that applied immediately prior to this as the colonists worked their way through the Tongan Archipelago. The combination of these, I suggest, robbed the Lapita expansion of its last momentum. By the time the next lands to the east were settled, whether 500 or even 1500 years later (e.g. Spriggs and Anderson 1993:211), this would have been by descendants of Lapita with a different social charter, and who followed a different star.

At much the same time as the Lapita adventure was faltering in Samoa/Tonga, the New Caledonia/Vanuatu to Fiji water gap would also have been affecting communications. As a stretch of water to cross, while fuelled by a fierce cultural motive, it was indeed no barrier at all. Once this had been accomplished, and a new frontier established to the east, it would have been just too great a distance over which to voyage simply to maintain ties or exchange pleasantries, and, as the archaeological evidence from Fiji suggests, the next crossing (or certainly the next intentional and effectual one) was not accomplished again for another 1000 years.

It has been suggested recently by Summerhayes that

> The idea that the water gap between Vanuatu and Fiji inhibited two way voyaging has now been discredited by Irwin (1992) – two way voyages were possible ... with the blindfold of distance removed, archaeologists should open their eyes and recognise the obvious. Similar changes in the Lapita decorative system occur in the west and east ... they were the product of information exchange which necessitates the movement of people. Communication was ongoing indicating a more socially interactive network over a 1000 year period (Summerhayes 1996:257).

Irwin's work does indeed demonstrate that two way voyaging across the water gap was not some sort of kamikaze undertaking, but this should be seen in the context of a people who were in the process of undertaking one of the most rapid colonisations known. Without that drive, whatever it was, the stretch of water apparently did inhibit travellers, and the motivation behind the initial push, it is suggested here, started to diminish almost immediately after the event.

The similar changes in the decorative system referred to consist of the overall design simplification, said to indicate similar socio-economic changes, together with the occurrence of motifs common to both the late Eastern and late Western Lapita assemblages (Summerhayes 1996:256). But this is happening at the same time that the communication networks are supposedly breaking down, as expressed in the statement that "few would disagree with the notion that Lapita ends with a retraction of a long distance network into regionalised ones as espoused by Kirch" (Summerhayes 1996:262). These simplified motifs, which can only have been of minimal social importance, were apparently part of an interchange between areas as far apart as Tonga/Samoa and the West Bismarcks (Summerhayes 1996:257). There is a more plausible explanation.

The Lapita decorative system consists of a set of Leggo-type basic building blocks – design elements and simple motifs – which are combined to make increasingly complex designs. As the system breaks down and becomes more simplified, so the decoration returns to its initial foundations. The 25 motifs that Summerhayes finds common to the West New Britain and Eastern Lapita assemblages are extremely basic, and mainly consist of parallel straight lines at either 90 or 45 degrees. Any such similarities between the East and West Lapita motifs at the end of the sequences are most economically explained as a result of this process of simplification (for a similar view see Sand 2001:70, 71), not as information exchange over some 4500km, especially at a time when other archaeological evidence suggests that even local networks may have been breaking down.

CHAPTER 12. THE WHY OF LAPITA

As stated above, the Lapita section of the move into and through the Pacific, as marked by a suite of vessel shapes and elaborate dentate-stamped decoration, stands out from the overall process, and indeed may be unique in the movement of people over the face of the earth. When the colonisers sailed east of the main Solomon Island group they entered an unoccupied world, their subsequent history within this becoming more archaeologically visible than that of their immediate ancestors to the west, as did any further intrusions from that direction.

It has been suggested above, through detailed artifact analysis from a Fijian site, set into the context of both the local sequence and, with respect to the ceramic decoration, into a world context as well, that the Lapita horizon can be inferred to represent a stratified hierarchical society, and that this had a strong religious content. Can this be extrapolated back to the west? If so how far? And can it account for the so far inexplicable and quick spread of those first explorers?

This monograph puts the case that evidence for a belief system similar to that responsible for the specific vessel shapes and anthropomorphic decoration present in the Lapita cultural complex can be identified in some of the ceramic assemblages throughout Island Southeast Asia, and can be traced back to sites much older than Lapita. However no site closer than the Moluccas has so far been found. The Lapita system differs from these only in the sophistication and elaboration of the decoration, which can be allied to the use of true dentate-stamp tools and especially that of the roulette stamp. As Kirch (1997:52) has put it, "the Lapita ceramic complex as a whole is unquestionably an extension of the later Neolithic Southeast Asian ceramic series".

As mentioned above, the claim for an indigenous origin for Lapita is based mainly on presumed continuities in material culture and subsistence elements with pre-Lapita Bismarck communities. A number of Lapita settlements with pre-Lapita components have been located, at least eight of which are in West New Britain (Specht and Gosden 1997:189), with stated continuities between the two including shell tools and polished stone, and at the possible reef site of Apalo obsidian, chert, shell and plant remains (Specht and Gosden 1997:190). Specht and Gosden (1997:190) point out that "the one category that makes a sudden entry into the material culture repertoires of the region with the start of the Lapita period is the pottery itself". This is also the view of White and Harris (1997:105), who show that the movement of obsidian in the same region during Lapita times reflects that of earlier systems, and who emphasise that "there is very little – other than the pottery – that is new or unique in the period beginning c.3600 B.P. and lasting for some 2000 years".

These and similar claims have been seriously challenged. Green, taking the adze kit as an example of one aspect of the material culture, suggests that the bulk of Lapita adzes had affinities with Island Southeast Asia rather than Near Oceania, with only the dorsal region *Tridacna* sp. shell and lenticular section stone adzes as probably local in origin (Green 1991b:301). In a more recent paper he re-examines his Triple-I model and finds that few elements within the Lapita culture do not have possible sources to the west (Green 2000a).

Spriggs (1996a: Table 22.1), in a list of 35 elements of material culture and economic activities present in Bismarck Lapita assemblages, shows that only 13 of these occur in pre-Lapita assemblages in the region, with another four and possibly six from sites of the same age in New Guinea, but that 26 and possibly 33 of the 35 (including lenticular adzes) are present in Neolithic and pre-Neolithic assemblages in Island Southeast Asia.

A similar list of 31 economic plants has six and possibly nine in the Bismarcks, another three and possibly five in New Guinea, and 19 in Island Southeast Asia, some of the latter based on linguistic reconstructions (Spriggs 1996a: Table 22.3).

Although much more than just pottery entered the Bismarcks at the start of the Lapita saga, it is only this artifact, as stressed throughout this work (and see Green 1991b:302) that has the potential for interpreting the type of

human behaviour in question. What shape then did the interface between the indigenous Bismarck societies and the incoming Austronesian speakers actually take?

It is at this point that archaeology lets us down, as we do not yet have any comprehensive fine-grained analyses of all aspects of the ceramic assemblages from Bismarck sites themselves, and no sites at all to the immediate west. The aim of this work is to demonstrate that the situation at the eastern end of the Lapita world, in conjunction with the large amount of data that has been produced in the other regions of Lapita, and with reference to other similar systems, can be used to examine and provide interpretations for what occurred at the western end.

It has been suggested that the Lapita ancestors skirted relatively quickly around the New Guinea landmass, as indicated by genetic evidence (Serjeantson and Hill 1989:287, 288) and by a similar apparent failure by Austronesians to colonise the Asian mainland, attributed to the prior occupations on the larger lands (Bellwood 1995:106, Spriggs 1989:609). If this was so, then the so-called homeland for the last stage of the Austronesian expansion must either have been in the western islands of West Papua, or in the Bismarcks. The former, probably in the Cenderawasih Bay area, cannot be dismissed since it is an archaeological *terra incognita*, and linguistically immediately ancestral to the homeland of the Proto Oceanic interstage in the Bismarcks. If the full development of the Lapita ceramic system took place there however, one might expect the ceramics to have undergone the same simplification en route to the Bismarcks as they did between the latter and the Reef/Santa Cruz islands. Although this has yet to be quantified, it is indicated by the less elaborate cylinder stands and the apparent lack of true pedestals, let alone those with cut-outs, in the Reef/Santa Cruz assemblages. It is also difficult to imagine that the early vessel forms and decoration visible in the Bismarck assemblages, especially that at Talepakemalai, are themselves simplified versions of a yet more elaborate system further to the west. Whether or not the process of design elaboration actually commenced in the West Papua islands is a question future research will answer, however I believe any ceramics found there will resemble those excavated at Halmahera (Bellwood 1992, Irwin *et al.* 1999).

A detailed comparison of the earliest ceramics from the Mussau and Reef/Santa Cruz sites could be enlightening in this respect, as both appear to be settlements established directly after traversing large islands in which, so far, no colonising Lapita settlements have been identified. The degree of stylisation in that west-east journey could then be extrapolated back from the Mussau material, to see if there were any signs or possibility of a more elaborate system.

It is suggested that the energy visible in the earliest ceramics in the Bismarcks (which, if the later date for the initial arrival is accepted, may have started to dissipate almost immediately) may have been too high to have been present for very long. It seems certain that what we see there is Lapita in its fullest flowering, and this is likely to have occurred either *in situ* within the Bismarcks themselves or very close by.

We can suppose then that the Southeast Asian Neolithic revolution arrived in the Bismarcks around 3300 years ago or earlier, with well-established pottery skills and a basic set of (mainly plain) vessels, a strong artistic tradition, and a level of hierarchical ordering to society. There then must, it appears, have been a period between the arrival and the efflorescence of the ceramics (and of the social order). Evidence for this may already be in the recovered data, but could be difficult to recognise. A small amount of disturbance or an interpretation of different ceramics as an activity area of a later occupation could serve to obscure the true identity of an early deposit. It is possible, however, that such a situation has already been identified.

At Talepakemalai, Kirch (1987:172, 1997:172, 2001c) has reported that the settlement encompassed two locations: on the reef flats (Areas B & C) and 50m inland of these on the raised palaeobeach (Area A). Within Area B is a location, Zone C, which has what was initially reported as the earliest ceramics on the site (Kirch 1997:154). While the pottery from Area B was the most elaborately decorated yet found, with specialised vessels including cylinder stands and cut-out pedestals, that on the palaeobeach was different, mainly plain or red-slipped everted-rim pots but also bowls, one of which was carinated, and c.10 dentate-stamped sherds but with a total lack of incising. It is these vessel forms that Bellwood and Kirch (Kirch 1997:283 note 14) see as "virtually identical" to those from Uattamdi in the Halmaheras.

Area C is further out still on the reef flats, representing a later stage of stilt house occupation, and containing similar vessel forms (often red-slipped) to those on the palaeobeach, but with an incised component (Kirch 2001b:118).

Initially Area A was identified as being probably later than Area B (Kirch 1987:167). Subsequently the radiocarbon dates indicated that the two were contemporary, and thus could have represented different activities, with functional or possibly social differences to the ceramics (Kirch 1997:147, 172). It is now claimed that the beach occupation could be the earliest on the site (Kirch 2001a:219), and thus may represent a footprint from the initial Lapita arrival.

Both chronological and stylistic evidence is claimed for this. Five dates were obtained from the palaeobeach location, and the summed age range calculated as 1530-1310 cal B.C.

at one standard deviation (Kirch 2001a:205). The Area C age range has been calculated, on three dates, at c.1100-800 cal B.C. (Kirch 2001a:213). Two other dates (shell) for the latter were discounted on the basis of being too old, however these were almost identical to two shell dates from Area A that were accepted (Kirch 2001a:223, 224, 229, 230 and Figs 10.5, 10.12,). The palaeobeach age may have been inflated by the inclusion of the date from a wood charcoal sample of cal 1660-1440 B.C. at one standard deviation; the date that has been challenged by Specht and Gosden (1997:185); and Kirch (2001a:205) admits that an old wood factor is possible. In addition, different Delta R values are used in the calibration of the shell dates. Never-the-less, as Kirch (2001a:205) himself comments, "without overly pushing the point, a case might be made for the paleobeach terrace deposits at ECA to be slightly earlier (by ~100-150 years) than those on the adjacent reef flat (i.e., the Area B and W250 transect stilt-house deposits)".

The stylistic evidence may be more convincing. The vertical and horizontal distributions of four aspects of ceramic decoration are presented; these are fine and coarse dentate-stamping, vessels with cut-outs, and incising (Kirch 2001b:108 Fig. 4.30, and 117 Fig. 4.39). The vertical distribution is from Area B, and shows the older deposits dominated by fine dentate-stamping and cut-outs, grading through to the younger units where incising and coarse stamping have become more common. The horizontal distribution is based on 15 test units along a 120m transect running from the palaeobeach to just beyond the Area C excavations, and dramatically shows the transition from fine dentate-stamping on the palaeobeach, through to the equivalent of Area B, with fine and coarse dentate-stamping, cut-outs, and incising, to Area C, where incising is dominant and vessels with cut-outs are missing (Kirch 2001b:117 Fig. 39). The Area C ceramics (or their equivalent at Site EKQ) also have new elements – nubbins, shell-edge stamping and punctation, notched or crenellated rims are common, and manufacturing technology appears to have improved (Kirch 1997:155).

Although the samples for the distributions are small – about 85 sherds for the vertical and 215 for the horizontal – the general trends are clear, and, together with the sedimentation evidence along both this and the other site transect (Kirch 2001b:124-30) which show that the shoreline was prograding, indicates that the ceramic changes have a strong chronological component. Supporting evidence for the Area B and Area C assemblages come from other sites in Mussau; Site EHB for the former (Kirch 2001b:142) and Site EKQ for the latter (Weisler 2001:158). The distribution of decorated sherds at the EKQ rockshelter however shows a layer (IV) c.50-60cm thick, and described as consisting of "dense hearths, ash lenses, fire-altered limestone", which contains only incised sherds, while the layers above and below also contain dentate-stamped sherds (Weisler 2001:156, 159 Fig. 5.13). This distribution is present in both excavated units, which were three metres apart, and while a possible explanation is a massive disturbance at a nearby location, the spoil from which was spread over the Area of the units, it could also be argued that the incised ware also had a functional aspect, associated with cooking activities.

While the Area C ceramics can be shown to be at the late end of the Lapita sequence, and different from the Area A assemblage, there is still a way to go before the assemblage on the palaeobeach can be shown to be earlier than that from the earliest settlement on the reef flats, and not just a result of contemporary activities.

Since radiocarbon dating alone is unlikely to resolve this question (in the near future anyway – see also Kirch 2001a:220), other methods will have to be used. It may be possible to distinguish between the two alternatives in terms of raw materials such as temper, clay and, if the later vessels are slipped, in the chemical characteristics of the slip itself (e.g. Best 1984:377-81), or in the technologies of manufacture and firing.

Temper analysis has already been carried out on samples from Areas A and B (Hunt 1989). There are four temper classes at the former location, and 13 at the latter. Calcareous sands make up 91% and 76% of the tempers in the respective areas, the rest being classified as exotic, with most of these containing black sands in various proportions. The exotic tempers from Area A are said to be present mainly in the upper levels (Hunt 1989:134), thus indicating a developing process rather than a declining one, and perhaps adding weight to its proposed early status.

Changes in decorative technology, if not in the designs themselves, might also be sensitive enough to provide some indication as to the temporal relationship of the two areas. Differential use of the roulette stamp, for instance, or of different types of the same tool, could clarify the relationship of the palaeobeach and reef flat occupations.

What is apparent is that Site ECA in the Mussaus is in the right place (as far west as possible) and at the right time (the earliest so far located) to be a founding settlement. And in this case size does matter – such a large site (82,000 plus m^2) is also what might be expected for a growth and dispersal centre. Whether or not the palaeobeach settlement turns out to be the footprint in the sand will have to depend on further research.

It is time to ask one of what Irwin (1992:41) describes as "the more esoteric questions ... of Lapita ... the motives for colonisation". He continues

> The question of human motives is the most tantalising one of all, and there has been no shortage of possible answers. Among those suggested are adventure, curiosity, the joy of discovery, wanderlust, prestige, exile and shame. Other standards are the search for prized resources, raw materials or trade, the search for empty lands to relieve overpopulation, and possible warfare. Another common theme is stress between senior and junior siblings or branches of a descent group ...[while]... Terrell (1986:65, 66) said that the motives of Pacific expansion could have been as mixed as those of the later European maritime exploration" (Irwin 1992:211-12; brackets added).

Bellwood lists seven possible causes or stimuli which he proposes were working in the Austronesian dispersal, including population growth, an agricultural based economy, maritime expertise, and a desire to explore – to find new territories and raw materials. He adds another "a culturally sanctioned desire to found new settlements in order to become a revered or even deified founder ancestor in the genealogies of future generations", which he suggests evolved at some stage during the expansion itself (Bellwood 1995:103). This is a convincing theory, especially when a sacerdotal aspect is added to the achieved status (Bellwood 1996:18, 19).

Also on the list is the slightly wacky "sinking ship" theory, where rising sea levels in Southeast Asia between 10,000-6000 years ago are said to have resulted in "an enormous migration of thousands of families in search of uninhabited islands" (Nunn 1996:8, and see also Gibbons and Clunie 1986).

Irwin is the only writer to comment on the connection between the most elaborate ceramic decorations and the early and fastest period of expansion (Irwin 1998:130). He regards the former as a result of the latter – the society was fragmenting so quickly that it needed some kind of "social glue" (Spriggs 1997:152) to hold it together, and the decoration filled this role. However, it is suggested here that the decoration and eastwards expansion are both results of some other impulse. As with the later Fijian ceramics, and the example of the carpet decoration, this had both a social and a religious aspect, powerful enough in this instance to fuel a movement of people at a speed and over a distance practically unparalleled elsewhere, and at a time, as Irwin (1998:134) points out, when populations were at their lowest.

There is no reason why such a movement should, initially at least, have been directional – only to the east – and it is more likely to have been a dispersal, spreading out in every direction, and some of the aspects of Lapita culture found west of the Bismarcks, such as the single sherd at Aitape and the obsidian at Bukit Tengkorak, could have resulted from this or a similar process. In most of the other compass quarters however barriers may have been encountered; either social, such as "fences" (e.g. Gorecki 1992) or natural – water gaps that presented navigational or technical problems such as cross-wind sailing. The latter, involving a wider search arc and less chance of return, is considered by Irwin (1992:145) to be a possible reason for why Micronesia and Australia were apparently not reached from the Solomon Islands – that early in the process of exploration the safer upwind direction, with its narrower search arc, was preferred. Archaeological evidence to date certainly suggests that it was only upwind and to the east, moving first along (or past) the Solomon Island chain, that the expansion actually proceeded, until a new and virgin world was entered.

The formation of the Lapita cultural complex in the Bismarcks has already been likened to a diaspora, in this case based on trade, which also "encouraged a more significant movement of population from southeast Asia into the Bismarcks" (Lilley 1999:26), a model derived from the dispersal of the Islamic Hausa traders in Africa. Among the most important pre-conditions for developing and maintaining this process is an authority backed by political ideology, and the most important aspect of this for the Hausa was "a moral community founded on a shared ideology ... derived from a mystical order of Islam" (Lilley 1999:26, 27).

Similar conditions could be said to be behind the rise of the power centres in Eastern Viti Levu some 2000 years later (and which were reflected in changes in some of the artifacts; the ceramic and wood vessels at least), and also in the development of Islamic art during the rise of the Ottoman Empire.

Where I would differ with Lilley is in the effect of the diaspora, and in the role of ceramics in this. The former he sees as instrumental in establishing Lapita in the Bismarcks, and in its development there prior to the expansion east. The decorated Lapita ceramics are an important aspect of "the means of establishing and reinforcing distinctiveness, facilitating communication and maintaining authority among the communities scattered throughout the Bismarcks" (Lilley 1999:27), with the mechanism of this being trade. Lilley (1999:22, 24) makes a distinction between the situation that established and developed the Lapita culture in the Bismarcks and that which may have pertained during the subsequent eastwards expansion. In the latter neither trade nor exchange are thought to have been as important as they were during the formation period in the Bismarcks.

As explained throughout this work, I do not consider the pots themselves to have been important. They were certainly not a trade ware, although they certainly must have been traded. Neither were they a significant part in any exchange

network, although again they must have been exchanged. Neither could they all have been associated with any specific ceremony – there were simply too many of them, and in too many forms. While Lilley may be correct in his model in so far as it gets people and pots into the Bismarcks, in my opinion the role of the ceramics after this, as shown by their increasing complexity of shape and decoration, is not as part of a driving force but, as at the later end of the Fijian sequence, a reflection of another process which is being generated within the society.

They were, I have suggested, a surface over which to spread messages, information which reinforced the observer's place in both this world and the next. I have compared these to prayer rugs. They are also similar in many respects to the towering stained glass windows in cathedrals and churches, decorated in much the same fashion, with pictures involving a frame, fillers and a central figure, and, as with the prayer rugs, also emphasising religion through the medium of light.

Almost a quarter of a century ago Ambrose (1978:332) cautioned that comparisons with ethnographic trade and voyaging did not fit the Lapita situation, and inferred that another factor had to be working. Summerhayes, from a solid base of analytical research, has reiterated the same warning (Summerhayes 2000a:235). The suggestion that the highly decorated pottery from the late end of the Fijian ceramic sequence was locally made and not traded (Marshall *et al.* 2000:92) is an additional caution that ceramics with special shapes and heavily decorated end tool and appliqué designs that have a meaning to the society are not manufactured as trade wares.

Further afield we can again cite the situation with regard to prayer rugs. These are and were traded, exchanged and gifted, but only as part of everyday transactions, not as any driving force accompanying social change. In all these cases it is the decoration on the object which holds the key to its existence and distribution, as a representation of the cosmological forces working on the society. Thus while Irwin's (1998:130) association of the complex decoration and the initial eastwards movement is correct, instead of the decoration resulting from the move both are products of the motivation behind it. And as long as the elaborate anthropomorphic and related designs were being produced, it has been suggested here, the eastwards push continued.

While this monograph is not concerned with past ethnicity, Lilley's comparison with Islam is appropriate. That shared ideology encompasses most of the racial variation on earth, and if such a force was behind the expansion from the Bismarcks, then in that area at least we might expect a number of racially and possibly linguistically diverse peoples to have made up what we call Lapita, as other societies in the area or on its fringes became involved in the process (although if this took place then it apparently left no trace in the linguistic record). This point has already been made by Kirch, who considers "peoples" or "societies" more appropriate terms when describing the human face of Lapita (Kirch 1997:18), and by Summerhayes (2001:62), who writes that "not all Lapita pottery users were Austronesian speakers".

On the other hand, if "Lapita" is merely an ideology, manifested in the archaeological record by remnants of material culture, then the problem for archaeologists, especially in regions where there were no previous or contemporary inhabitants, and little evidence for any significant later external influences, is when to stop using the name. The people who spread inland from the beaches in Fiji, living in settlements up to c.800 years later than those of the first arrivals, are likely to have differed from their colonising ancestors only in their beliefs.

Nearly 50 years ago, the ceramic technologist Anna Shepard (1976:305) wrote that

> In the study of pottery decoration, we have no direct way of knowing what the design meant to the potters – whether it was symbolic or purely decorative, whether it represented something of great significance to them or was merely a traditional form of decoration. But these are things we would like to know, and for which we should always seek and can often find indirect evidence. In analyzing the style of decorative art, in seeking clues to what it reveals of a people's psychology, we should not forget that we are dealing with a mode of expression.

The art of the Lapita peoples, as represented by their pottery decoration, was not some subsidiary aspect of the culture, associated with either economic or episodic ritual events such as dance ceremonies (e.g. Terrell and Welsch 1997:568). Set within the broader horizon of Pacific art, and flaring briefly across it like a shooting star, the decoration carries within its designs information which touches on all aspects of the life and beliefs of these peoples.

Archaeologists have been chastised for failing to see art, religion and ideology as more than just "epiphenomena without causal significance" (Conrad and Demarest 1984:209). Although it may make most Pacific archaeologists uncomfortable, a significant religious component has to be introduced into the Lapita equation. As with the late end of the Fiji sequence, and the emergence of the Ottoman and other empires in the Islamic world, the duality of a socio-economic power and a religious ethic combined to produce enormous social consequences, and the art of both cultures reflected this.

What then happened in the islands off the northeast end of New Guinea some 3300 years ago, that resulted in not only one of the fastest episodes of colonisation yet identified on the planet, but one whose impetus appeared to come apart almost immediately? While Bellwood's causal parameters mentioned above almost certainly have relevance, this would only have been a continuance of the situation during the move to the Bismarcks. If the appearance of quasi dentate-stamping together with specialised vessel forms in Island Southeast Asia itself is a reflection of Bellwood's "founder-ancestor" ideology, then even this important component was already present. Was it just the appearance of the decoration that made a previous process visible – the barium meal of Allen and White (1989:142)?

The archaeological record suggests that the decoration became possible due to an advance in the technology of decoration – the invention of dentate stamps and, especially, the roulette. The dentate stamps themselves would have been a vast improvement on punctate impressing, enabling more complex designs to have been executed more easily and in far less time. The invention of the roulette, however, was a quantum leap that made the flamboyant anthropomorphic designs possible or at least feasible. With this tool all but the tightest curves could be made, in a fraction of the time that would have been needed using a stamp (or, for that matter, a tattooing chisel). The result – a world full of visible ancestor gods, in detail (and also probably size) that must have far exceeded the equivalent on any other medium, such as the human body (see P. and M.N. Ottino-Garanger 1998 for stylised Marquesan tattooed faces).

This can only have reinforced and made more powerful the ideology behind the decoration. The pots were sending a message, just as their descendants were to do some 2500 years later in Fiji, and as did the prayer mats with ornate (and curvilinear) designs of the Ottoman court. It would be far-fetched however to suppose that the invention of a small pottery decorating tool acted as a catalyst resulting in the Lapita expansion. It is more likely to have itself occurred as a result of a process which seems to have taken place within the Bismarcks, and possibly over a very short period of time, which saw a concentration and consolidation of social and religious power in an individual or group, and which would itself have led to the development of the new artists' tools. Whatever happened appears to have reached a level not previously attained during the long journey through Island Southeast Asia, and thus it is likely that something new and exceptional occurred in these islands.

It is suggested then that although founder ideology or something similar probably did underlie the first stage of the Austronesian expansion through Island Southeast Asia, and that even though similar vessel shapes with (possibly) true dentate-stamping were also present at locations along the way, something special happened in the Bismarcks. There we can see the archaeological expression of this: wonderfully portrayed faces that launched, if not a thousand canoes, at least a few hundred; a colonising movement whose momentum came to a stop some 4500km away, and in as short a space of time as some 10 generations. Such a rapid rise (and consequent fall) differs from what might be expected – a gradual and incremental process focusing power in one group. The overall similarity of the most complex and probably earliest designs between the Bismarcks and New Caledonia at least, but still with detectable ceramic simplification in the more specialised vessel shapes, suggests an idealogy not so much based on a replicating process of founder enhancement as on something more monolithic.

Perhaps an event out of the ordinary happened in the Bismarcks, above and beyond that which had gone before – maybe the emergence of a charismatic individual able to manipulate and enlarge an established hierarchical and religious system – a "prophet" who, like many others in history, was able to hear voices and see visions, and who attracted a following and created a movement. Perhaps a local event contributed to the process, such as the Witori eruption on New Britain, which if experienced could have had significance for a group or individual, and which, since Lapita sites are the first to occur there after the event, could have created an opportunity to expand into the area (Spriggs 1997:76).

Such a scenario would certainly go some way to explaining the speed of the dispersal, especially if the short-short chronology turns out to be correct. With settlement in new lands, and a growing reliance on and ties to the land itself, a reversion or change to the worship of more local deities may have accompanied other social reorganisations.

Although Anthony (1990:905) describes migration as a process and not an event, the Lapita expansion, I suggest, could be termed an event within a process. If one had to put a name to it, then "quest" or even "crusade" might be close. The former has already been suggested – although only with reluctance and the accompanying comment that such an idea "is more typical, perhaps, of prehistorians than their silent subjects" (Irwin 1992:212), and a single unifying ideology or faith, such as Islam, has already been introduced into the equation.

We are, it has been said, "the lonely bipeds with the giant dreams" (Ackerman 1997/98:11). This monograph suggests that "Lapita" is the archaeological manifestation of one of these dreams. Although the vision was brief and soon to fade, it was responsible for starting a process which led to the colonisation of the last large expanse on earth, and to one of the last peoples to appear on earth – the Polynesians.

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APPENDICES

APPENDIX A

Figure 22. Descriptions and sources of illustrated items. All are knotted carpets unless stated otherwise.

Ia: Ottoman Court rug, 168 x 127cm, 16th century. In Dilley 1959: Pl.XLVI.
Ib: Ladik, Central Turkey, 200 x 139cm, early 19th century. In Marcuson and Feild 1985:98.
Ic: Konya?, Central Turkey, 168 x 104cm, 1875-1900. In Iten-Maritz 1977:225.
Id: Obruk, Central Turkey?, 114 x 93cm, c.1900, nomadic? In Iten-Maritz 1977:245.
Ie: Corum?, North-Central Turkey, 131 x 85cm, *kilim*, late 19th/early 20th century. In Bandsma and Brandt 1995:87.

IIa: East Mediterranean (Damascus?), 141 x 105cm. 15th century. In Mills 1997:72, Gantzhorn 1998:215.
IIb: Turkoman, Baluchistan, 100 x 76cm, author's collection.
IIc: Turkoman, Baluchistan, 900 x 750cm, private collection.
IId: Shirvan, Caucasus, 231 x 129.5cm, late 18th/early 19th century. In Bennett 1985:153.

IIIa: Obruk, Central Turkey. 172 x 127cm, *kilim*, 1920-1930, nomadic. In Iten-Maritz 1977:246.
IIIb: Derbent, Central Turkey, 197 x 112cm, *kilim*, 19th century?, nomadic? In Bandsma and Brandt 1995:35.
IIIc: Malatya, Eastern Turkey, 175 x 127cm, c.1930, nomadic. In Iten-Maritz 1977:346.
IIId: Obruk, Central Turkey, 168 x 127cm, *kilim* (*cicim*), 1930-1940, nomadic? In Iten-Maritz 1977:249 (see Bandsma and Brandt 1995:77 for similar carpet from Kecimuhsine, Central Turkey).
IIIe: Daghestan, Northeast Caucasus, 152.5 x 101.5cm, 19th century. In Bennett 1985:157.

IVa: Melas, Southwest Turkey, 158 x 113cm, c.1875. In Iten-Maritz 1977:196.
IVb: Melas, Southwest Turkey, 191 x 128cm, 1875-1900. In Iten-Maritz 1977:207.
IVc: Turkoman, Baluchistan, 1370 x 900, private collection.
IVd: Dosemealti village, Southwest Central Turkey, 152 x 91cm, c.1900. In Iten-Maritz 1977:189.

Va: Ghiordes, Western Turkey, 140 x 109cm, late 18th century. In Bennett 1985:200.
Vb: Ghiordes, Western Turkey, 172.5 x 129cm, late 18th century. In Bennett 1985:200.
Vc: Dazkiri, Southwest/Central Turkey, 119 x 105cm, c.1875. In Iten-Maritz 1977:174.
Vd: Kangal, North-Central Turkey, no size or date. In Iten-Maritz 1977:321.
Ve: Manyas, Northwest Turkey, 117 x 100cm, c.1900. In Iten-Maritz 1977:96.

APPENDIX B

Figure 23. Descriptions and sources of illustrated items.

Ia: Ceramic vessel from New Caledonia. In Sand 1999a:46.
Ib: Ceramic vessel from Arawe, West New Britain. In Summerhayes 2000a: Fig 4.2.
Ic: Ceramic vessel from Lakeba, Fiji. In Best 1984: Fig. 3.56d.
Id: Ceramic vessel from Lakeba, Fiji. In Best 1984: Fig. .57b.
Ie: Ceramic vessel from Lakeba, Fiji. In Best 1984: Fig. 3.59e.
If: Ceramic Vessel from Rewa, Fiji. In Palmer 1971: Fig. 4a.
Ig: Ceramic vessel from Yanuya, Fiji. In Palmer 1971: Fig. 10d. (not to scale).
Ih: Ceramic vessel from Lakeba, Fiji. In Best 1984: Fig. 3.59l.

IIa: Ceramic vessel from Mussau, Bismarck Archipelago. In Kirch 1997: Fig. 5.5.
IIb: Ceramic vessel from Arawe, West New Britain. In Summerhayes 2000a: Fig. 6.2.
IIc: Ceramic vessel from Collingwood Bay, Papuan coast. In Egloff 1971:63.
IId: Ceramic vessel from New Caledonia. In Sand 2000: Fig. 3c.
IIe: Ceramic vessel from New Caledonia. In Sand 2000: Fig. 3d.
IIf: Ceramic vessel (*burau*) from Fiji. number 82-484, Fiji Museum.
IIg: Ceramic vessel (*burau*) from Fiji. number 378/30, Fiji Museum.
IIh: Ceramic vessel (*burau*?) from Fiji. In Von Hugel n.d.:104 (not to scale).
IIi: Ceramic vessel (*burau*) from Fiji. From Gordon Cumming painting, held at University of Cambridge Museum of Archaeology and Anthropology.
IIj: Wooden vessel (*burau*) from Fiji. In Von Hugel n.d.:67.

IIIa: Decoration on ceramic vessel, Reef Island Site RF-2. From Spriggs 1990a:87 Fig. 2.
IIIb: Decoration on ceramic vessel, Santa Cruz Site SZ-8. From Spriggs 1990a:105 Fig. 18.
IIIc: Bone image from Talepakemalai site, Mussau Islands. In Kirch 1987:176.
IIId: Ceramic figurine rump, from Reef Island Site RF-6. In Green 1979b:17.
IIIe: Ceramic vessel from Fiji. number 11818E, Auckland War Memorial Museum.
IIIf: Ivory figurine from Fiji. In Clunie 1986:81.
IIIg: Wooden cannibal fork handle, Fiji. In Clunie 1986:123.
IIIh: Wooden *yaqona* dish for priest, Fiji. In Clunie 1996:3.
IIIi: Wooden religious image, Fiji. In Clunie 1982:1-3.