



NEW ZEALAND JOURNAL OF ARCHAEOLOGY



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Archaeological Investigations on Watom Island: Early Work, Outcomes of Recent Investigations and Future Prospects

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ABSTRACT

The set of papers in this volume on various aspects of the Reber-Rakival Lapita site offers an opportunity for some additional commentary, although each paper provides its own conclusions. Three themes are explored. The first evaluates Meyer's original observations in the light of what has been learned from the more recent investigations. The outcome is quite favourable to Meyer. The second draws the more recent investigations together to answer the question: in what sense is Reber-Rakival to be seen as a chronologically very late example of a Lapita site, typical of those usually assigned to the cultural complex, but one which also covers the transition to something else in the first few centuries AD? The answer, as might be expected, varies according to the temporal, ceramic, non-ceramic artefact, economic, settlement, and biological evidence under consideration. In general, however, the conclusion that it began as a Lapita site appears soundly based. Finally, some of the unresolved issues about the site are highlighted and suggestions made about how some of them might be tackled through future research.

Keywords: PAPUA NEW GUINEA, WATOM, REBER-RAKIVAL SITE, LAPITA, MEYER.

INTRODUCTION

No overview of what archaeologists have learned over the past three decades about Lapita pottery and associated items at the Reber-Rakival site on Watom Island can overlook what Father Otto Meyer directly (and indirectly through Father O'Reilly and various gifts of pottery and other items to European and Australian museums) accomplished in his investigations between 1909 and the 1930s. He had understood most of the basics about the stratigraphy and content of the site right from the beginning; it was only when he (or others, including later archaeologists) attempted to interpret the modest amount of published evidence that problems arose. The standards of modern archaeology require well analysed cultural assemblages from secure and independently dated stratigraphic contexts. Some 90 years after its discovery, information approaching that standard has now been achieved for

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some localities (SAC, SDI) in the Reber-Rakival site. This allows us to suggest ages for other materials from the site. Thus, although SAD and the various museum collections are not securely placed stratigraphically and temporally, their age can be estimated using motif comparisons with pottery in the more secure assemblages (Anson 2000a). This may also prove to be the case for changes in obsidian sources.

For a time, Meyer's Watom Island collections, confirmed and supplemented by Specht's work in 1966–67, although poorly contextualised, stood as the most western assemblages representative of sites traditionally assigned to the Lapita cultural complex. In the next few decades, even more disturbed assemblages from Ambitle, Talasea, and Mussau were added to the western cluster. On the basis of pottery studies, Anson (1983, 1986) suggested that as a group the latter were not only different in their design and motif content from Watom but also probably earlier in age. This has now been confirmed. However, it was not until the Lapita Homeland Project (Gosden *et al.* 1989; Allen and Gosden 1991) and the identification and investigation of a number of sites with Lapita pottery in the Bismarck Archipelago that one could fully appreciate the context within which the principal Lapita associated materials from Watom Island should be placed. It is now evident that the bulk of the assemblages from the Reber-Rakival Lapita site belong to the period 500 BC to AD 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. These are usually dated to between 1550 and 600 BC (Kirch 1997: 58–61; Gosden *et al.* 1989: Table 1), or perhaps begin rather later than 1550 BC (Specht and Gosden 1997).

Once it is appreciated that the principal Reber-Rakival assemblages and collections derive from contexts which date to the very latest part of the Lapita sequences in the Bismarck Archipelago and document the beginnings of a transition to something else, their importance to a current problem is evident. It also resolves the issue initially raised by O'Reilly, who thought that the pottery collections from the site contained one type that was "clearly Melanesian" and another which did not seem to resemble any then known "Melanesian type", although he was later to point out its similarity to pottery of a Lapita type subsequently found on the Ile des Pins in New Caledonia. Spriggs (1984, 1991) has taken this important issue up under the heading: "Lapita and its successors", and proposed five possible, though partial and overlapping models, which may be involved in Lapita's disappearance (1997: 152–161).

MEYER'S OBSERVATIONS AND THEIR CREDIBILITY

In the light of what is known now, it is apparent that most of the observations (published and unpublished) made by Meyer over some three decades (Anson 2000b), and by O'Reilly drawing on Meyer, have a sound empirical basis. The stratigraphy of the Reber-Rakival site is much as they described, including their claim that the source of the pottery is the lowest cultural layer just above a sand beach or related basal deposit. However, their observation that at Maravot (SAD) the plain pottery lay at the top of the basal cultural deposit and the decorated pottery lower down has not been upheld by any later investigations. Various kinds of decorated pottery occur in all cultural layers under the ash, wherever investigated. What has been demonstrated is that the lowest cultural zone at SAC can be separated into two distinct layers whose ceramic content is different (Green and Anson 2000), a finding confirmed at SDI, where four layers are involved (Anson 2000c). While Meyer did not explicitly recognise the source of the overlying yellow earth as a volcanic ashfall, he did

note its pumiceous nature and that at times it occurred in lenses of pure pumice. Moreover, he stated most of it was alluvial (i.e., in secondary deposition), which our stratigraphic records have confirmed.

Meyer's description of the content of the cultural layers under the ash is also strongly supported. They do contain two types of pottery, one dentate-stamped and the other showing a range of applied relief (*appliqué*) and nail-impressed decoration. The more recent investigations, however, showed that both types occur in SAD, and that the two occur in association at SDI, at least in some of the upper three layers, while nail-impressed pottery is in the upper layer (C1) at SAC. Meyer's claim that pieces with applied motifs were more common in his excavations at Kainapirina (SAC) than at Maravot (SAD), suggests that failure to recover them from later excavations at SAC is probably due to sampling error.

An unappreciated aspect of Meyer's observations, because his published notes were in German and many of the details remained unpublished, was his early contribution to defining what is today known as the Lapita cultural complex, i.e., the extension of Lapita to the non-ceramic items associated with the dentate-stamped pottery. He was the first to list aspects of the faunal material to be found in Lapita sites. These included fish and bird bones, and a range of shellfish (*Trochus*, *Turbo*, *Conus*, *Strombus*, *Tridacna*, *Hippopus*, *Terebra*, etc.), as well as pig—represented by tusks, molars and other teeth, along with parts of the skull. He also described one item of flora, coconut shell, and indicated that one might expect to find human bone in association with the pottery, as well as in later non-ceramic contexts.

Meyer also listed a range of associated artefacts, now all documented from more recent excavations at this site and at many others containing Lapita pottery. These include *Trochus* and *Conus* shell arm rings, bracelet or disc fragments, *Trochus* fishhooks, stone adzes, quantities of obsidian flakes, various shaped pieces of green and other stone used as knives, along with red ochre and sling stones. Poulsen (1987: 176, 218) described four adzes of oval to lenticular cross-section, a *Conus* gouge, and a rectangular broad bracelet shell unit now in the Meyer collection at the Musée de l'Homme. The presence of red ochre and sling stones is only tentatively demonstrated from the more recent investigations at the Reber-Rakival site, but they are known from other Lapita sites and Meyer's claims can therefore be accepted.

Finally, it should be noted that it was Meyer who began the practice of what has now become the study of Lapita motifs. In Figures 1 to 3 of his 1910 article he abstracted from different individual sherds the first set of 18 motifs and one zone marker (Meyer 1910: 1160). For example, two of his motifs (Meyer 1910: Fig. 1, second from top; Fig. 2, third from top) actually occur one below the other on the same sherd (Fig. 1), while two others occur on the lip (Meyer 1910: Fig. 2, sixth from top) and a third on the outer face of a flat bottomed dish (Meyer 1910: Fig. 3, sixth from top).³

Not surprisingly, the more general interpretations by Meyer and O'Reilly were largely speculative and dependent on consultations with other experts. Where most would feel they went badly astray is in their consideration of an origin in South America (anticipating Heyerdahl 1952) or Spain (anticipating Langdon 1975) for the 'non-Melanesian' dentate-stamped pottery now called Lapita. Still, many would applaud as perceptive their comparison of the Lapita designs from Watom with those on various Asian vessels, and

³The full set of his motif illustrations can be found in Anson 2000b: Fig. 6.

consider their inference that this pointed to a possible origin in that direction to be not at all wide of the mark.

Meyer, however, was extremely humble about these speculations, saying "but what do I poor hermit priest know of these scientific questions". With the advantage of hindsight, we have the utmost respect for what he did accomplish, and hope that our colleagues will in the future honour his memory for much more than the simple fact that he was the first person to report on the accidental discovery of what came to be called Lapita pottery.

IN WHAT SENSE IS REBER-RAKIVAL A LAPITA SITE?

Today the Reber-Rakival site on Watom is cited in nearly all literature about Lapita as the first site of this kind to be found. Specht (1968) returned to excavate it, because Meyer's descriptions raised questions which could not be answered from his few short published accounts. Although the stratigraphic integrity of its contents has at times been challenged, Watom has remained one of the so-called 'type sites' for defining Lapita, along with localities 13, 13A and 13B in the Foué Lapita site, New Caledonia (Sand 1998). Allen (1991: 6), in his review of the Lapita Homeland Project, has raised the issue of what are "true Lapita sites". He considered it an inadequate strategy to adopt either the interpretive extreme of a Lapita homeland solely within the Bismarcks or an equally implausible total migration theory from Southeast Asia. In this context he noted Turner's (1989: 296) use of fairly common particularising arguments about two Lapita dentitions from the Watom SAC burial ground. In Turner's view, the teeth are more like those of recent nearby Melanesians than they are like those of Hawaiians from the Mokapu burial ground or recent Thai populations. Thus as Allen (1991: 6) pointed out, it follows from Turner's argument that sites "with Lapita pottery but Melanesian teeth cannot be real Lapita sites." Allen's ironic response is "Bad luck Watom." Green (1994: 31-32) also discussed the issue of identifying Lapita sites in Near Oceania and concluded that some sites in that region, with only a few sherds of decorated Lapita pottery, do not provide sufficient evidence to warrant assigning them to the Lapita cultural complex. Rather, they should simply be assigned to a category of site occupied during the time interval of the Lapita horizon. However, Green (1994: 32) did assign Watom to this complex, along with sites from the Arawe Islands and the Mussau Group, as ones containing most of the elements one might expect in such sites. Watom differs from the others in that most of its material represents a later stage when Lapita pottery was in the process of giving way to something else.

TEMPORAL AND CERAMIC CONSIDERATIONS

Starting with the earliest deposits, it is possible to say that layer C4 at SDI, which dates to the eighth to tenth century BC, can most probably be assigned to the Lapita cultural complex, although not to its early or Far Western stage. It is ceramically most compatible with a later Western Lapita decorative stage identified in the Bismarck Archipelago by Summerhayes (1996: 194, 261). The Bismarck 'Western' assemblages begin with sites such as FNT, FSZ, FOJ and FOH which, on the basis of motif comparisons, lie between the earliest 'Far Western' sites and the later assemblages from Watom. Although we do not have a large enough dated sample for this period in the Reber-Rakival site to be sure, a high degree of dentate-stamped decoration does occur on sherds in layer C4 at SDI, as would be



Figure 1: Lapita sherd in the Meyer collection in the Museum für Völkerkunde, Basle.

expected at that initial stage in the Lapita occupation of Watom. Little is known about the assemblage at this time apart from the ceramics and a few pieces of obsidian.

In the ceramics from SAD and layer C2 at the base of SAC, we do have a sufficient corpus of decorated sherds, along with a full compilation of their motifs, to be certain that they belong to a late stage of the Bismarck Archipelago 'Western' Lapita motif cluster identified by Summerhayes. Their affinities, therefore, are with sites of the more distant Vanuatu or New Caledonia-Fiji regions (see Anson 1983; Summerhayes 1996: 11, Fig. 10) as well as with the later Bismarck Lapita assemblages, much closer to hand in the Garua and Arawe regions.

The dating of the material from SAD and the assemblage from layer C2 at the base of SAC is highly dependent on the radiocarbon dates and sequence at the latter site. We think that the layer C2 occupation began about 400 BC or perhaps earlier and was followed by the use of this locality as a burial ground between 300 and 100 BC. On the basis of the similarities between motifs in the SAD corpus and those of layer C2 at SAC (Anson 2000a), we believe that a date of about 400 BC or earlier is also implied for SAD. This places these

materials just within the very latest part of the Lapita horizon, dated in Near Oceania (as noted above) between about 1550 and 600 BC (Kirch 1997: Fig. 3.3).

Watom therefore has a pottery component that can be placed quite satisfactorily toward the very end of the Lapita ceramic series. On the other hand, it also has a later pottery component in layer C1 at SAC and layers C3, C2 and C1 at SDI. This defines the transition from the Lapita ceramic series to the styles of pottery that followed in the period between 150 BC up to AD 200. It is apparent in our data that the compositionally distinct nail-impressed and applied-relief pottery, found in association with dentate-stamped and incised Lapita from as early as 400 BC through to AD 200 is, like most of the other pottery, of local manufacture (Anson 1999). Moreover, toward the end of that time (after 100 BC) the frequency of sherds decorated in the Lapita style had declined very significantly. This raises the issue of whether pots in the Lapita style were still being manufactured, whether surviving heirloom pots were occasionally still being broken and incorporated in the deposits, or whether there were now no Lapita pots and only odd sherds from levels below were becoming mixed with locally manufactured later pottery of a different style.

Our evidence strongly supports the view that there was an overlap in time between Lapita style ceramics and nail-impressed and applied-relief pottery. The two kinds document a transitional change in style rather than an abrupt break in ceramic continuity. This is most evident in the motif sharing between decorated sherds in layers C2 and C1 at SAC (Anson 2000a). It would appear from this that pottery in the Lapita style was still being manufactured in the first two centuries BC, along with other kinds of pottery. Heirloom effects or mixing of pottery from lower layers may, however, be more likely for the few sherds in the upper layers at SDI, dating from the early first and second centuries AD. We might, therefore, need to apply some name other than Lapita to the kinds of pottery that follow, instead of using the descriptive one of 'incised and applied relief'. What we cannot fully evaluate is just how abrupt culturally that style change really was. However, we have no reason to see it as signalling a replacement of one group by another or as forming a separate cultural tradition (Spriggs 1997: 126). In sum, the Watom sequence, ceramically and temporally, begins as Lapita, but certainly another archaeological term for it becomes increasingly appropriate after 100 BC. Thus White and Murray-Wallace (1996: 43) conclude that "while it may be a ceramic tradition derived from Lapita, it is an expression of a different cultural pattern and set of associations, the nature of which still needs to be explored".

OTHER PORTABLE ARTEFACT CONSIDERATIONS

As noted above, with respect to Meyer's rather neglected observations on the topic, items associated with the assemblages from both cultural layers of SAC and the upper three layers of SDI are fairly typical of portable artefacts found in other Lapita sites. This applies particularly to the various adze types and the three kinds of obsidian, but is also true of the fishhook and shell ornaments, for example. Their numbers are limited, but typologically none seems out of place in a Lapita context (Green and Anson 2000). The adzes, of course, are particularly distinctive, especially the plano-lateral sectioned examples, and quite different from the later 'Melanesian' adzes from New Britain. Drawing on all the adzes collected by Meyer, Specht and ourselves from definite and probable ceramic contexts, a typologically varied Watom Lapita adze kit can now be described.

A previously overlooked aspect of the Watom assemblage is its similarity to other Lapita sites in respect to imported items. As is characteristic of most Lapita sites, only a limited

number of pottery sherds proved to be imports; most of these are from nearby New Britain, but a few are from much further away (Dickinson 2000). The vast majority of pots were of local manufacture. However, all three obsidian sources in use are exotic, as is the much more limited amount of chert. Moreover, these materials were transported to the Reber-Rakival site over fairly long to very long distances. Stone materials used for adzes, abraders and grindstones are also exotic. However, as these probably come from nearby locations on the adjacent main island of New Britain, transport distances are, as for some of the pottery, much shorter. Still, if we list pottery, obsidian of three kinds, chert and other stone items as imports (but not in this case oven stones), we have a listing closely matching that now well known from a range of Lapita sites with evidence for exchange (Kirch 1997: 229–239). Moreover, what we know about the trends in obsidian importing in the Reber-Rakival Lapita site fits extremely well into the patterns in obsidian exchange now being recognised for other Lapita sites in the Bismarck region (Allen n.d.). This is especially so for those in the nearby Duke of York Islands (White and Harris 1997).

ECONOMIC CONSIDERATIONS

Besides the evidence for some form of engagement in an exchange system within the Bismarck Archipelago, the two SAC assemblages allow us to address the other aspects of the economy associated with the late part of the Lapita cultural complex. Because of sampling problems, little can be said about the situation at SAD or SDI. However, for layer C2, and to a lesser degree layer C1 at SAC, quite a bit may be ascertained from various lines of evidence.

Nothing remarkable or even particularly Lapita is evident in the shellfish component of layer C2. It is what might be expected in that particular environmental setting and consists largely of shellfish from the intertidal zone and seaward covered parts of the coral reef that lie in front of the site. Although similar non-concentrated shellfish middens are commonly encountered in Lapita sites, this kind of low level shellfish exploitation had probably been going on for millennia before Lapita in many sites in Near Oceania and continued on in many post-Lapita sites as well. The fishbone from both layers C1 and C2 indicates a concentration on shallow water and coral reef fishing. This is typical of the kind of fishing so far exhibited at most Lapita sites which have been examined. They have shown a focus on reef and inshore fishing, but not much evidence of open sea fishing, especially for tuna and bonito. However, once again, there is nothing distinctly Lapita in this; it is a common Oceanic pattern.

Unlike in many of the much earlier pre-Lapita cave sites, there is little evidence to suggest that wild animal hunting was of importance at SAC. Instead, in both layers C1 and C2 there is strong evidence that the site's inhabitants were fully engaged in pig husbandry (Smith 2000) for the meat component of their diet, to which chicken may also be added with less certainty (Specht 1968: 126).

Given the rather uneven and fairly low frequency of pig bones in most Lapita sites studied so far (Kirch 1997: 211), the indication of pig husbandry is an important and unexpected piece of evidence (Smith 2000). It suggests that toward the end of the Lapita horizon in Near Oceania the raising of pigs may have taken on greater significance than it had earlier. It also lends support to the view that there was a substantial terrestrial plant component available from the horticultural and arboricultural part of the economy on which to feed the pigs. The relative proportions of different components of the diet have been reconstructed from the chemistry of the human bones lying between the base of layer C1 and layer C2

(Leach *et al.* 2000). That evidence indicates that at this time the portion of the human diet supported directly and indirectly by terrestrial plants may have been as high as 64%, while fish and shellfish contributed only something like 36%. Inferences from historical linguistics attesting to an Oceanic Austronesian gardening lexicon, from tools and implements used in food production and preparation, and from occasional instances of plant remains in Lapita sites all point to arboriculture and horticulture as the most salient aspect of economies associated with Lapita style ceramics (Kirch 1997: 192–212). This view of a late Lapita economy is strongly supported by the pig and human bone analyses at SAC and certainly distinguishes SAC from other sites where investigators have tried to document the economy associated with their Lapita ceramics and other portable artefacts, but found they had to rely on more indirect means.

SETTLEMENT CONSIDERATIONS

Watom fits well with other known Lapita sites in its overall size, in its evidence of different activities in various parts of the site, and in the changes in activities at SAC. We are just beginning to appreciate that different parts of Lapita sites contain evidence of different activities (Sheppard and Green 1991; Gosden *et al.* 1989: 573). Hence it is necessary to sample a number of localities in a large Lapita site like Watom (or Foué in New Caledonia, or ECA in Mussau) to even begin to understand its history. One might also reasonably argue that the Lapita settlement of Reber-Rakival on Watom was not markedly different in size from the village there today. Moreover, just as one part of the village today has a cemetery demarcated by a stone wall, so in the past and in much the same locality there was once a somewhat smaller burial ground. The point is that the Watom Reber-Rakival Lapita settlement is probably to be interpreted as a more or less continuously occupied site in which activities and usage shifted from locality to locality over time. It is a typical large, long term Lapita settlement on a newly emerged sand beach (Allen and Gosden 1996: 193). Yet it also has a post-Lapita and, after a long interval, a far more recent non-pottery Tolai component that are not strikingly different in size and layout to the earlier Lapita settlement. The difference is in the cultural content associated with each of the periods.

Finally, we should note that Specht (1969: 233) found evidence of human activity, including obsidian, inland on the crater rim of one of the Watom volcanoes. A radiocarbon sample from under the volcanic ash of the last Rabaul eruption has an uncalibrated date of 2200 ± 80 years BP. This implies that use of the interior was contemporary with those pre-ash Lapita occupations in the Reber-Rakival site on the coast.

BIOLOGICAL CONSIDERATIONS

Drawing on the observations of Turner (1989) about the teeth from the Lapita cemetery, Allen (1991: 6) highlighted the supposed biological affinities of the people of the Reber-Rakival site to much more recent near neighbours in Island Melanesia. However, Turner's use of the term Melanesian as a useful biological category is in our view extremely problematic. More important is a review of his arguments which pointed out they are statistically unsound, making it "clear that the two dentitions from Watom cannot be reliably and exclusively assigned to any group" (Konigsberg 1992: 310) of the three employed by Turner.

Moreover, when comparisons are drawn on a more fine-grained level, things appear rather different, and Houghton's (1989) observations about the Polynesian affinities of the Watom

people seem to have particular merit. Thus Visser (1994) has shown that the osteological observations on most skeletal populations available for comparative study to the Watom material cluster more closely with the post-Lapita Natunuku skeleton from Fiji of approximately the same age and the large skeletal population from the Sigatoka burial ground belonging to the post-Lapita Navatu phase, which is distinguished by its early paddle-impressed style of pottery dating to AD 200 to 300. All these skeletal materials in turn exhibit close affinities with Polynesian skeletal collections of various ages, including some Lapita ones from Lakeba (Fiji) and Tonga. The point here is that claims that the Watom skeletons do not differ *at all* from those of more recent neighbours in Island Melanesia in many of their attributes are unhelpful and almost certainly in error (a) because there is, in our view, no such thing as a 'typical' Melanesian physical type osteologically (it is highly varied), and (b) because some of the evidence suggests their closest affinities in osteological terms in fact lie with near contemporary populations in Remote Oceania far to the east of Watom. Perhaps this is not surprising, given the parallels in the Lapita pottery motifs with those regions. To quote Summerhayes (1996: 257) "...these similarities [in motifs] were not the product of ceramic exchange. They were the product of information exchange which necessitates the movement of people. Communication was on-going indicating a more socially interactive network over a 1,000 year period." Perhaps not directly, but the inhabitants of Watom remained in communication with their relations in Remote Oceania over a long period.

SUMMARY

Returning to the question posed at the beginning of the previous section: in what sense is Reber-Rakival a Lapita site, the answer, we believe, is unequivocal. The site began and continued as a typical settlement of the Near Oceanic Lapita cultural complex. This view is supported by temporal considerations, by all the ceramic evidence, by many of the non-ceramic portable artefacts and by its conforming to what is expected of a Near Oceanic Lapita exchange system. However, the ceramic part of the sequence after 100 to 150 BC suggests that this site also exhibits a transitional component to something that is post-Lapita and therefore requires a different terminology, at least in ceramic terms.

When considering the economic evidence, it is more difficult to be unequivocal. The assemblages of 400 BC and later are associated with an economy that has a basis in horticulture and arboriculture and included pig husbandry. These three components may have had very different historical trajectories in Near Oceania. Thus arboriculture is almost certainly of pre-Lapita age but became part of the Lapita economy. Some aspects of the horticultural system may also be pre-Lapita, but most of it seems to be Southeast Asian (Spriggs 1997: 84–87, 95, Table 4.2). Pig husbandry seems to have followed a different historical pattern in Near Oceania (Spriggs 1997: 93). In short, these components do not permit strong assertions about the Lapita status of the Reber-Rakival site. What they do permit is the inference that terrestrial plant based food production to support the raising of pigs for consumption, which has been a fairly long standing practice in Oceania, was firmly in place in the economy of this site by the end of the Lapita horizon, and appears to go back to a period when SAD was occupied at about 400 BC or before.

We are on stronger ground when it comes to examining the site as a settlement, and the excavations as a sampling of the various activities within it. The Reber-Rakival Lapita settlement exhibits most characteristics of other Lapita sites and one unique feature, a formal

burial ground with evidence about the types of burial practice in use at that time. The one comment that needs to be made is that some of these overall settlement features have persisted in this particular location in the post-Lapita and historic Tolai period as well.

Finally, under biological considerations, we argue that the skeletal material from the Reber-Rakival site during the period 300 to 100 BC is not much removed from what we might expect from a very late to transitional stage in the Lapita sequence in a long occupied area of Near Oceania, containing as it did a wide range of locally varied populations. By then, contacts and breeding with many of these populations (not just those that were perhaps viewed as kin) might be expected, given the evidence that a range of items was imported to the site as part of the exchange practices. In that respect, the Reber-Rakival site is informative as to the kinds of interactions that were taking place in late Lapita and post-Lapita sites in Near Oceania.

The other issue which the evidence from the Reber-Rakival site lets us address is that of the immediate successors to Lapita. Here the evidence, most of it currently ceramic, is indicative. No clear ceramic break or any overwhelming reasons to postulate some kind of cultural replacement are in evidence. Where this question has been investigated, it has usually been through ceramic change and sometimes also through studies of trade and exchange in obsidian. The most useful studies have been done in the Admiralties and further east (Wahome 1995, 1997), in New Ireland (Golson 1991; White and Downie 1980), in the Duke of York Islands (White and Harris 1997) and in Buka (Specht 1969, 1972), in Mussau (Kirch *et al.* 1991; Kirch 1997) and in the Willaumez (Talasea) area (Torrence *et al.* 1996; Torrence and Summerhayes 1997). Yet no one so far has seen fit to propose cultural replacement by non-related peoples. Spriggs (1997: 161) gives perhaps the best recent summary of the current situation.

The non-dentate-stamped component of Lapita pottery and the incised and applied relief styles loosely called Mangaasi deserve attention on the same scale as classic Lapita. The first question of whether those styles are in fact related and/or whether various sub-styles of regional or chronological significance can be identified has recently been answered in the affirmative by Wahome in a broad-ranging regional ceramic study (1997). Within the limits of current poorly defined chronologies he concluded that the earlier incised and applied relief styles are indeed related, that changes in these styles do occur in step over wide areas and that these post-Lapita continuities are broken as the number of pottery making communities declines, particularly in the period after about 1500-1000 B.P. After that time the distances between pottery production areas are such that contacts between them are broken and they no longer see each other's products.

The Reber-Rakival evidence from about 150 BC to AD 200 is fully compatible with this position and in fact lends considerable support to it.

OUTSTANDING ISSUES

As we observed above, the investigation of a large Lapita site which displays different historical sequences and a range of contrasting activities in various localities requires a wide-ranging sampling strategy to recover a reasonable sample of the information it contains. Although successive investigations have started this process at the Reber-Rakival

site, it is only too evident that more needs to be done to enhance our understanding. Several lines of future investigation with seemingly good potential are therefore suggested.

If the Reber-Rakival site has both a very late and a reasonably early component, then layers C1 to C3 at SDI and layer C4 at the same locality offer great scope for additional investigations. Back against the limestone cliffs these deposits are very deeply buried (up to 2 to 3 m) by the pumiceous alluvium that has washed off the areas further inland. They have therefore not easily been disturbed by either modern activities or events earlier in the last millennium. Moreover, just as in other areas, there is likely to be a basal wave cut notch in the cliffs. Such a notch will be largely filled with the flat-lying deposits underlain by beach sand. There can be no doubt that an expanded excavation of layers C1 to C3 at SDI would greatly enhance our understanding of that transition period between the fourth century BC and the first few centuries AD, both in terms of pottery and in relation to a larger selection of associated portable artefacts. The current eighth to ninth century BC sample from layer C4 of SDI is also minimal and urgently needs to be expanded to provide a better context for the main body of information now available from the 400 to 100 BC period. One could then much better assess long term continuity and change within the Lapita and post-Lapita phase on Watom, which is one of a very few places able to detail this phenomenon in the Bismarck Archipelago.

Finally, in our focus on Lapita, we have almost totally neglected the more recent evidence relating to the period after the major Rabaul eruption of the seventh to ninth centuries AD. One might assume that most of the non-ceramic assemblages of the last millennium are probably of Tolai origin, but this needs to be demonstrated. Meyer recovered one burial in a crouched position that seems to belong to this aceramic period (Anson 2000b), and Specht (1968) found a number of usually extended inhumations along with a number of other structural features at Vunaburigai (SAB). A few post-eruption structural features, a shell adze and early historic portable items were also found in the uppermost deposits of SAC and SAD. Charcoal from a hearth or oven complex at 1.2 to 1.3 m depth at the base of Specht's zone 2 at SAD was dated to the thirteenth and fourteenth centuries AD (Specht 1968: 124). This at present provides the best indication of when reoccupation of the Reber-Rakival site began, at a time when people were apparently no longer making pottery. That evidence and the oral and historical ethnography of the Tolai people and their movement into this area of New Britain from New Ireland after the Rabaul eruption (Parkinson 1907: 54, 597, 612; Neumann 1992: 146; Spriggs 1997: 168; Salisbury 1972) make this a problem fully worthy of further archaeological investigation. The immediate question to pose is: how long have Tolai (and/or others) been living in Rakival village and how much time separates them from Lapita/post-Lapita occupation?

There are other localities within Rakival village (Green and Anson 2000: Fig. 5.1), especially to the rear of the flat between SAC and SDI, that would be worth testing for intact basal zone C deposits. On the evidence from SAB and SAC, these deposits begin anywhere from 25 to 50 m back from the present beach line. Although further work at SAD and SAB is probably not to be recommended because of the extent of disturbance, an expansion of work on the inland part of SAC might also prove rewarding in turning up other kinds of activities and structural features. It was simply a lack of time that precluded our doing this. In short, the potential at the Reber-Rakival site has not been exhausted. When it comes to the more recent period, a whole raft of sites on the island is available for examination as part of the Tolai re-occupation of Watom, as Specht (1968) learned from an unpublished island-wide survey. There may even be other buried pre-ash Lapita age settlements less disturbed than Reber-Rakival to be found.

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Received 10 May 1998

Accepted 28 November 1998