

to the type of site and to the questions to be answered. In these sites the use of 2–3 cm XUs might also be giving a false sense of the precision of the data recovered, seen also in radiocarbon sample depths given in Table 1 to millimetre ‘accuracy’ rather than just to the nearest centimetre. Displacement of the sample by more than that would occur simply by resting one’s hand on the excavating surface immediately above it.

Finally, what has happened now to these clearly significant sites? Have they already been destroyed with no further work undertaken, or will they be protected during construction of the gas terminal? Given their undoubted significance we need to know.

The Caution Bay sites are a very significant addition to our knowledge of mainland PNG history and McNiven et al. are to be congratulated on providing a preliminary announcement of them. From this team we can also expect to see the timely publication of more detailed results to which we all aspire, but which many of us fail miserably to achieve.

References

- Burley, D.V. 1994 Settlement pattern and Tongan prehistory: Reconsiderations from Ha’apai. *Journal of the Polynesian Society* 103(4):379–411.
- Burley, D.V. 2007 In search of Lapita and Plainware settlements in Vava’u, Kingdom of Tonga. In S. Bedford, C. Sand and S. Connaughton (eds), *Oceanic Explorations: Lapita and Western Pacific Settlement*, pp.187–198. Terra Australis 28. Canberra: ANU E Press.
- Burley, D.V., D.E. Nelson and R. Shutler Jr 1995 Rethinking Tongan Lapita chronology in Ha’apai. *Archaeology in Oceania* 30(3):132–134.
- Dickinson, W.D. 2007 Palaeoenvironment of Lapita sites on Fanga ‘Uta Lagoon, Tongatapu, Kingdom of Tonga. In S. Bedford, C. Sand and S. Connaughton (eds), *Oceanic Explorations: Lapita and Western Pacific Settlement*, pp.177–186. Terra Australis 28. Canberra: ANU E Press.
- Galipaud, J.-C. 2000 The Lapita site of Atanoasao, Malo, Vanuatu. *World Archaeological Bulletin* 12:41–55.
- Galipaud, J.-C. 2002 Under the volcano: Ni-Vanuatu and their environment. In R. Torrence and J. Grattan (eds), *Natural Disasters and Cultural Change*, pp.162–171. *One World Archaeology* 45. London: Routledge.
- Hedrick, J.D. 1971 Lapita style pottery from Malo Island. *Journal of the Polynesian Society* 80(1):5–19.
- Hedrick, J.D. n.d. Archaeological Investigations of Malo Prehistory: Lapita Settlement Strategy in the Northern New Hebrides. Unpublished PhD Thesis, University of Pennsylvania, Philadelphia.

RESPONSE

LAPITA ON THE SOUTH COAST OF PAPUA NEW GUINEA: CHALLENGING NEW HORIZONS IN PACIFIC ARCHAEOLOGY

Ian J. McNiven¹, Bruno David¹, Thomas Richards¹, Cassandra Rowe¹, Matthew Leavesley², Jerome Mialanes¹, Sean P. Connaughton³, Bryce Barker⁴, Ken Aplin⁵, Brit Asmussen^{6,7}, Patrick Faulkner⁷ and Sean Ulm⁸

¹ School of Geography and Environmental Science, Monash University, Clayton Vic. 3800, Australia <ian.mcniven@monash.edu> <bruno.david@monash.edu> <thomas.richards@monash.edu> <jerome.mialanes@monash.edu>

² Anthropology, University of Papua New Guinea, PO Box 320, University PO NCD, Papua New Guinea <matthew.leavesley@gmail.com>

³ Department of Archaeology, Simon Fraser University, Burnaby BC V5A 1S6, Canada <spconnau@sfu.ca>

⁴ School of Humanities and Communication, University of Southern Queensland, Toowoomba Qld 4350, Australia <bryce.barker@usq.edu.au>

⁵ Division of Mammals, National Museum of Natural History, Smithsonian Institution, Washington D.C. 20013-7012, USA <aplinsk@si.edu>

⁶ Cultural Environments, Queensland Museum, PO Box 3300, South Brisbane Qld 4101, Australia <brit.asmussen@qm.qld.gov.au>

⁷ School of Social Science, The University of Queensland, Brisbane Qld 4072, Australia <p.faulkner@uq.edu.au>

⁸ Department of Anthropology, Archaeology and Sociology, School of Arts and Social Sciences, James Cook University, PO Box 6811, Cairns Qld 4870, Australia <sean.ulm@jcu.edu.au>

We thank all the commentators for their thoughtful comments, and especially Jim Specht for initiating this stimulating Forum on the discovery of Lapita ceramics at Caution Bay on the south coast of mainland Papua New Guinea. All flag numerous important implications of these discoveries for Pacific archaeology. To make the most economical use of our limited space to respond, we address key Lapita-related criticisms and queries raised by the five commentators.

Caution Bay Excavations and Analyses

We acknowledge the frustration of some commentators that only ‘limited information is currently available’ (Specht, Sand), but point out that detailed analyses of the ceramics, stone artefacts, shells (including valuables and other artefacts), bones etc. excavated from 122 stratified sites using over 5000 separate excavation units (XUs), have been ongoing since we returned from fieldwork in April 2010 and will continue for several years. Detailed analyses and interpretations of excavated sites, including >1000 AMS dates, will be detailed in future publications.

Our publications to date include McNiven et al. (2011, 2012), David et al. (2011, 2012), Jones-Amin et al. (in press) and Petchey et al. (in press a, b), with a further three papers under review (David et al. under review a, b; Rowe et al. under review). Two substantial monographs are also well advanced and two others commenced. In addition, two Honours and three Masters theses have been completed, and three PhDs have commenced. Our research and publication approach has been to: 1) conserve key ceramics; 2) announce the discovery; 3) determine ΔR values for individual shell species for Caution Bay to enable accurate radiocarbon age calibration; 4) investigate local palaeoenvironments through pollen cores and related investigations; and 5) publish individual site reports incorporating specialist studies of finds by which to model interpretations.

Striggs and Sand express concern over the fate of the Caution Bay Lapita sites in light of the PNG LNG project; unfortunately, commercial confidentiality and legal sensitivities restrict our commentary on this matter at present. Furthermore, the issue of site protection is a question for the PNG national regulators to address. In the context of salvage archaeology, we do note that Lapita sherds were only identified after we commenced our major excavation programme in September 2009, with no

Lapita sherds evident on the surface of any site. If the sites had been characterised simply and solely on the basis of surface finds, the Lapita levels would have remained undocumented and an entirely new chapter in Pacific history missed.

Spriggs questions the usefulness and value of our ‘fine-grained’ excavation technique employing 2–3 cm thick XUs. Alternatively, he suggests 10 cm XUs would have been adequate and allowed more excavation of sites. Our first response to this suggestion is that we saw little value in obtaining an even larger but coarsely-excavated sample. Our excavation strategy was fine-grained *and* extensive, so we have the best of both worlds: a relatively finely-excavated sample that is also large. At Bogi 1 specifically, our integrated strategy for the excavation of ca 115 m³ of deposit included 2–3 cm thick XUs and use of 2.1 mm mesh sieves for the 3.5 m deep central Squares C and D to provide fine vertical control, while some of the remaining excavation of this site employed coarser methods. Fine-grained excavation provides the opportunity to track vertical changes in discard patterns and post-depositional movement of items. It is precisely because studies have shown items can move vertically over distances of at least 20 cm in some stratigraphic contexts akin to those of Caution Bay that we used 2–3 cm thick XUs to provide the potential to track and document the possible vertical movement of materials. Even if items have moved little, using 10 cm thick XUs ensures all sediments and associated items will be mixed over a zone of 10 cm. Having 2–3 cm vertical resolution of cultural deposits provides opportunities reliably to identify the vertical extent of zones of mixing and accurately to quantify vertical changes in cultural materials and their associated sedimentary matrix.

Spriggs’ comment that ‘use of 2–3 cm XUs might also be giving a false sense of the precision of the data recovered’ is misleading. XUs are an analytical tool, not a statement of chronostratigraphic integrity. It is impossible to identify within a site prior to excavation the chronological resolution of deposits, the degree of vertical mixing of objects and sediments, and where occupational/sedimentary hiatuses occur. Fine-grained excavation, when combined with numerous AMS dates on single organic fragments, provides significant opportunities to better document and understand different scales and tempos of site formation and disturbance processes.

Caution Bay Lapita Landscape

Site Numbers and Sherd Densities

McNiven et al. (2011) noted nine stratified sites with Lapita pottery within a 6.5 x 1.7 km area at Caution Bay. Subsequent radiocarbon dating confirms a number of other stratified sites with pottery dating to within the currently understood Caution Bay Lapita window of ca 2900–2500 cal BP; the latter have not yet been analysed. Our claim that the Caution Bay Lapita sites form ‘the largest contiguous Lapita landscape found anywhere in the Pacific’ is, according to Specht, an ‘overstatement’, as the number and density of sites are ‘not unusual’ and indeed ‘typical of Lapita sites, especially in the Bismarcks’. We concur with Specht that the number and density of Lapita sites on the islands and mainland coast of Garua Harbour on New Britain are similarly impressive and unmatched elsewhere in island Melanesia (Specht and Torrence 2007:131). We add that

Caution Bay is a single, contiguous landscape and not a non-contiguous land- and seascape, island and mainland context, such as Garua Harbour.

Sand queries the apparent low density of sherds at Bogi 1. To provide more data in this regard we note that Square C of Bogi 1 contains 1216 sherds weighing a total of 702 g in the Lapita layers. Most Lapita cultural materials were recovered from the Middle Midden Horizon (SU7b), a well-defined stratigraphic horizon spanning ca 155–130 cm depth in Squares C and D, dating to 2900–2600 cal BP (Figure 1). In Square C, the main XUs taking in the Middle Midden Horizon (XUs 58–67) contained 357 sherds weighing 154 g, representing a density of 1126 (486 g) sherds per cubic metre of deposit. This Lapita horizon also has a very dense cultural shell and vertebrate bone content.

Islands or Mainland?

Specht suggests that it is ‘probable’ that the five Lapita sites located on the linear frontal dune at Caution Bay were ‘originally situated on coastal islands or sand spits before becoming stranded inland following the seaward deposition of sediments’. He is correct that ‘coastal progradation ... must be factored into any reconstruction of the palaeo-geography of the Caution Bay sites’ and this is what we have done, while recognising that Caution Bay is much more than a depositional coastal environment; there is an entire interlinked drainage catchment to consider, incorporating erosional (coastal hill zones, foothill and upland zones), as well as depositional surfaces (fluvial and/or alluvial plains, littoral plains zone) (see McNiven et al. 2012; Rowe et al. under review). We note in relation to the references cited by Specht that Caution Bay is not as geomorphologically active as mainland to offshore districts further north along the coast, which have notably abundant sediment supplies from major rivers. Instead, limited sediment supply from the minor Vaihua River feeding into Caution Bay maintains a relatively narrow littoral complex and displays a stability unusual in New Guinea. In addition, the kinds of tectonic subduction and uplift relevant to the Bismarcks (particularly New Britain) do not apply here. During Lapita occupation, the five sites on the linear sand dune had fringing reefs backed by a protected area of discontinuous littoral plains with extensive plant cover. Sediment accretion was largely limited to the very outer tidal flat, and after ca 2000 cal BP the dune became fronted by mangroves (Rowe et al. under review). The linear dune with the five Lapita



Figure 1 Bogi 1 during excavation showing location of the Middle Midden Horizon, which is the main Lapita-bearing deposit at this site, looking south, 26 March 2010 (photograph by Rob Skelly).

sites is indeed located on maps drawn by Pain and Swadling (1980), but at all times it is joined to the mainland at its northern end (as evidenced by pre- to post-Lapita radiocarbon dates, geomorphological and palynological results). The Pain and Swadling (1980) archaeological sites (including ARD) referred to by Specht are unexcavated, undated and, consequently, not known to date to, or contain, Lapita assemblages.

Beyond the shoreline dune sites, all other Lapita sites identified so far are located inland on non-coastal landforms. While Specht rightly points out that some of these areas are within the Papa Land System (Mabbutt et al. 1965), which incorporates coastal sediments along the coast, nearly all of the land system comprises terrestrial landforms and sediments. McNiven et al. (2011) documented these sites on 'low grassy hills with clay sediments' and McNiven et al. (2012) similarly reported on hill zone excavation results. The coastal hill zone has a piedmont landscape history of (pedi)planation during wet/dry Quaternary episodes and is not defined by sea-level rise (Mabbutt et al. 1965). Shallow lithosols also show affinity with the underlying weathering rock. Excavations within the coastal hill zone did not reveal subsurface mangrove peat layers or intertidal alluvial soils. The presence of pre-Lapita occupation levels radiocarbon dated from ca 6000–2900 cal BP indicates the terrestrial nature of these sediments (with earlier, undated sediments below). The concerns of Specht and Burley over our potential insensitivity to coastal dynamics are thus misplaced.

Obsidian and Lapita

Sand and Irwin make the important point that it is curious that obsidian, which is a hallmark of many Lapita assemblages, was only documented at the end of the Lapita period around 2500 years ago (McNiven et al. 2012). Recently, analysis of additional squares at Bogi 1 has revealed obsidian flakes in basal Lapita levels of Squares PP and TT, dating to ca 2900–2800 cal BP. Apart from representing the earliest known obsidian introduction and use along the south coast of New Guinea, the early Bogi 1 obsidian reveals connections with eastern PNG at least 500 km away (sourcing of the obsidian is underway).

Ceramics

The Caution Bay excavations have revealed ceramic assemblages from 2900 cal BP into the ethnographic period. We have so far systematically analysed ca 80,000 sherds from 13 sites, and in a more cursory manner examined all the in situ ceramics plus those currently being sorted from the other excavated sites. We estimate that the excavated assemblage from all sites totals somewhere between 300,000 and 500,000 sherds. We note, however, that our use of 2.1 mm sieves means that most of these are small sherds, as Irwin rightly points out, but the number of larger, and in this sense more meaningful, sherds is still considerable. This large database, coupled with the fine-grained excavation and intensive radiocarbon dating programme (undertaken only on charcoal and reliably measurable shell species), incorporating species-specific and locality-specific ΔR determinations (Petchey et al. in press a, b), have enabled a high degree of chronostratigraphic resolution by which to identify temporal trends in the three focused ceramic analyses undertaken so far: 1) body decoration; 2) lip decoration; and 3) vessel form. Fabric analyses are being co-ordinated by Glenn

Summerhayes and his postgraduate students and are ongoing, although results are not yet ready for publication. These factors mean that we have systematically been able to determine for each assemblage:

1. Aspects of the taphonomy as they relate to the degree of chronostratigraphic integrity of deposits (including ceramics);
2. The temporal window of individual ceramic traits to within 50 years (calibrated) precision; and,
3. The timing of (and temporal relationships between) changes in body decoration, lip decoration and vessel form.

We are in the process of writing up these results in the context of the existing literature (especially in relation to other Lapita assemblages elsewhere, and the so-called 'EPP' of the south coast of PNG)—a reporting process that will continue over coming years, including monographs on the results of specific excavated sites covering a range of research themes (e.g. pre-Lapita to Lapita trends; terminal Lapita to post-Lapita transformations; coastal vs inland Lapita characteristics and chronologies). In this context, we address the commentators' major points as they relate to Caution Bay's Lapita ceramics.

We begin with a general point of definition, and, with this, of clarification. Within the Lapita academic world, and even more so in the broader ceramic world, different researchers have long used different terminologies to refer to common traits—such as 'crenellated' (e.g. Specht 1968) vs 'notched' (e.g. Bedford 2006)—for what are, in some instances, the same kind of lip decoration. In some cases a given term is used to mean different things by different people: for example 'everted', which usually refers only to rim orientation in Irwin (1985) and David et al. (2009), but is used to refer to a combination of rim orientation and rim course in Summerhayes (2000) and Bedford (2006:75–77). This inconsistency is not entirely problematic as long as researchers define precisely what they mean (which they usually do), and indeed varied approaches can, and do, lead to new insights. We note that in most Lapita regions new decorative designs continue to be discovered and, while the descriptive terminology is to some degree standardised, there is also considerable variability. In describing and analysing the Caution Bay ceramics we largely follow the methods and terminology for characteristics of vessel form applied to the south coast of PNG by Irwin (1985), Frankel et al. (1994) and David et al. (2009) (see also David et al. under review a), although for decorative motifs the existing standardised Lapita terminologies are usually being followed (although these too are numerous).

Dentate-Stamped Terminology

In light of comments by Specht and Burley we again take the opportunity to explain our use of 'comb dentate-stamped' rather than simply 'dentate-stamped' (the two nomenclatures are not exactly synonymous) (see David et al. 2012:78–79). What the archaeologist sees when they examine a dentate-stamped sherd is a set of dentate ('tooth-like') impressions, not the tool that was used to make the decoration. 'Dentate-stamped' refers to the form (set of indentations) and the method of decoration (impression or stamping). This does not, in the first instance, necessarily imply combs. For this

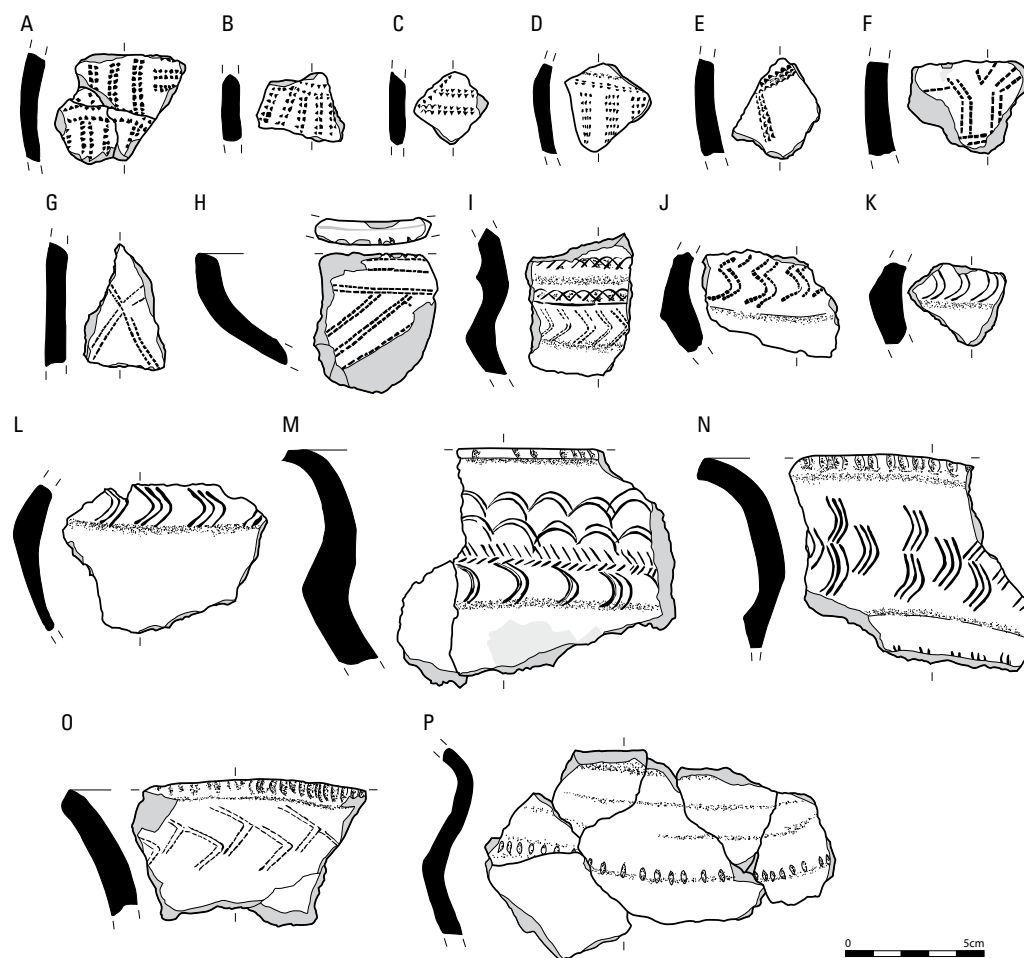


Figure 2 Examples of decorated sherds from Caution Bay. A–E: Shell dentate-stamped sherds of the Linear Shell Edge-Impressed Tradition (cf. David et al. 2012) from Bogi 1 (sherds A–C) and PNG National Museum and Art Gallery site code ABIV (sherds D–E). F–P: Lapita sherds from Moiapu 1 (sherd F), Bogi 1 (sherds G, M–N, P), PNG National Museum and Art Gallery site code AAWA (sherd H), Tanamu 1 (sherds I–L, O).

same reason Poulsen (1964:185) explicitly repeatedly referred to ‘toothed stick’ (and once ‘dentate stamped’ impressions when referring to Lapita comb dentate-stamped designs). The problem may be redundant for those regions where all dentate-stamped ceramics were done with combs or comb-like tined implements. However, along the south coast of mainland PNG there is another kind of pottery with dentate impressions: those impressed with shells containing rows of tooth-like projections (Figure 2a–e). This requires us to refine what we mean by dentate-stamped, in Specht’s words ‘to ensure that misunderstandings and misinterpretations do not enter the literature’. Specifying the tool, the mark, and the method (where desirable)—comb dentate-stamped—allows us better to compare, for example, the comb dentate-stamped sherds of the Lapita period with those of shell dentate impressions of the post-Lapita period in Caution Bay.

Furthermore, in light of comments, we need to be clear on the language: comb impressed (with whatever tool) is not the same as ‘to comb’ or ‘combed’, and there is no excuse for confounding these different meanings. As a separate issue, in answer to Specht, combing is neither seen in the Caution Bay Lapita (comb dentate-stamped) nor post-Lapita (e.g. shell dentate-stamped) assemblages. And the indentations by the two forms of impression (comb and shell) found along the south coast of mainland PNG are similar in form in many, but not all, ways (as long recognised by Vanderwal [e.g. 1973] in

particular, but also by Allen, Bulmer, Irwin and others). But in the Caution Bay sites analysed so far, the Lapita (always comb dentate-stamped) and post-Lapita (always shell dentate-stamped) versions *are separated by hundreds of years of plain body wares*, with no temporal overlap of the two—shell dentate impressions occurring only after a long period of transformation of vessel forms following the Lapita era. A detailed presentation of the shell dentate-stamped sherds from two excavated squares at Bogi 1 has been published in David et al. (2012). These predominantly edge-impressed *Anadara granosa* indentations of the post-Lapita Linear Shell Edge-Impressed Tradition are different to, and earlier than, the predominantly shell valve back impressions of Vanderwal’s (1973) pottery decorative Style 1, of Type A from Oposisi Zone IIC, at least one and probably two of the sherds (Allen 1972:Figure 7 #19 and #20) from Horizon 3/Style H at Nebira 4 (>1511–1887 cal BP), and Irwin’s (1985) Early Period pottery at Amazon Bay-Mailu (the earliest part of the ‘EPP’), a style we have no evidence for in any Caution Bay site analysed so far (and for which there may be some unexplored regional variability). We have discussed this issue elsewhere (David et al. 2012:88, under review b), suggesting that our edge-impressed shell indentations probably transformed to such back-impressed decoration sometime between 2000 and 1700 cal BP, although differences between the two may also, or alternatively, relate to regional variation.

Expectedness of the Caution Bay Finds

Specht is correct in noting that researchers (in particular Vanderwal [e.g. 1973] and Irwin [e.g. 1991]) had long recognised similarities between the ‘Lapitoid’ decoration of shell-impressed sherds dating short of 2000 BP along the south coast of mainland PNG and older Lapita wares further to the northeast; however, since the 1970s they have also often explicitly concluded that evidence of a presumably Lapita ancestry for the south coast ceramics would probably not be found along the south coast but rather somewhere further afield, and colonisation models were devised accordingly (often with good reason). Irwin (e.g. 1991:503) was more equivocal, leaving the matter open to debate and further fieldwork. Bulmer (1999) alone continued to voice, with increasing conviction, the possibility and even likelihood of an *in situ* development of Lapita to post-Lapita along the south coast (although it was the occurrence of red slip rather than dentate impressions that formed the focus of her argument). The major theoretical question for Bulmer (1999:545) was ‘considering whether it is possible or likely that the southern Papuan pottery style derived directly or indirectly from Lapita’. In doing so, and contra the sentiments of Specht, Bulmer emphasised the hypermetropic view of Lapita ancestry away from the south coast (in particular Port Moresby region) prevalent at the time, and with this comes the generally unexpected nature of our Lapita finds at Caution Bay: ‘after a quarter century this [Lapita] relationship is still virtually ignored’, and ‘there is still a “Lapita pottery fence” across the sea south of New Britain’ (Bulmer 1999:543). For most researchers from Port Moresby westward, south coast ceramics reminiscent of (earlier) Lapita ceramics were assumed to have been brought in by descendant populations from the outside, thereby connecting the south coast of PNG with areas to the east *during post-Lapita times*. We cannot, and should not, treat Bulmer’s (or Irwin’s) views as typical of how other archaeologists considered the matter: she alone went out on a limb to argue the point of *in situ* Lapita developments, and while Vanderwal and others long argued for ultimate Lapita ancestry for south coast ceramics, only Bulmer continued to argue for local developments *from Lapita* in southern PNG. It is thus disingenuous to say that our Caution Bay finds were ‘expected’: this is easy to say after the fact, but in the years preceding this a number of people were saying or implying the opposite—that Lapita did not occur along the south coast of PNG and that the first ceramicists there were post-Lapita colonisers coming from the east about 2000 years ago (Egloff’s [1979] finds notwithstanding; see David et al. [2011, under review b]). Bedford rightly notes that speculations on possible Lapita contacts with northeast Australia have been advanced (e.g. Clark and Bedford 2008; Irwin 1992), but our comments focused on overturning orthodoxy related specifically to mainland New Guinea.

Early, Middle and Late Lapita and the Interlocking House Motif

Specht repeatedly identifies the Caution Bay Lapita sites as of ‘Middle-Late Lapita’ to ‘post-Lapita’. We note that until we have published the >1000 AMS dates from these sites, and indeed the Lapita assemblages themselves, it is premature to make a call on the full Caution Bay chronology on the handful of sherds published when we announced the discovery. From Bogi 1

alone we have a total of 168 AMS radiocarbon dates, enabling a fine-grained dating of the site and understanding of its chronostratigraphy, and similarly there is an excellent sequence of 59 AMS radiocarbon dates from Tanamu 1 (which includes a Lapita assemblage dating to 2900–2850 cal BP). Many of our dates associated with Lapita ceramics are earlier than those of Kasasinabwana, and take into account detailed local and species-specific ΔR investigations.

As Sand notes, it is too early in the analysis to determine the nature of chronological change within the Lapita period at Caution Bay. Burley’s question of whether Caution Bay contains earlier Lapita assemblages is an apt question that we cannot answer definitively at this stage of analysis. However, a number of sherds with the interlocking house dentate-stamped motif all appear to be firmly dated within the 2900–2500 cal BP period at the hinterland site of Moiapu 1 (e.g. Figure 2f), although we remain cautious because analysis of this site is still in progress. The illustration of our largest interlocking house motif sherd in different orientations in McNiven et al. (2011:Figure 5C) and David et al. (2011) was done on purpose after consulting Lapita specialists, who explicitly pointed out in relation to this particular, relatively flat sherd that it is common for Lapita specialists to assume one or other ‘correct’ orientation, but, unless a particular sherd or vessel has enough features on it, we should be wary of giving it one or other orientation. While the row of stick(?) impressions suggested to us that the David et al. (2011) version had the correct orientation (as Spriggs notes), given that so far at Caution Bay such impressions always occur on carinations (e.g. Figures 2p and 3), and comb dentate-stamped designs virtually never occur below such impressions, we decided to publish this sherd both ways to signal that, by itself, the sherd does not possess the necessary features for us to make a reliable, independent call.

Because of space limitations, we address the issue of the sherd with the comb dentate-stamped square designs, along with other comments relating to the ‘EPP’, in another, forthcoming paper (David et al. under review b).

Cylinder Stands

We concur with Specht that cylinder stands are not usually common anywhere in the Lapita world, and especially less so during Late Lapita times. However, we maintain our original position that the single Bogi 1 sherd is probably a cylinder stand (and, contra Specht’s statement, the sherd was illustrated in McNiven et al. 2011 as Figure 5a, but not explicitly identified as a cylinder stand in the caption). It was identified by the presence of parallel lips curving around the top and base of the sherd. The base has a broken horizontal extension, either a short flange (making it a cylinder stand *sensu stricto*) or a base (making it an unusual shallow stand with base) (Figure 4b). The sherd is unlikely to be from a shallow tray, pedestalled platter, lid or flat-based dish, as the wall angle and lip characteristics are inappropriate.

South Papua Lapita Province

At Caution Bay, Lapita ceramics with shell impressions have not yet been identified, and incisions are extremely limited (always minor elements of comb dentate-stamped or otherwise impressed vessels). Relief elements are minor and rare.

Carinations sometimes contain a single row of oval stick(?) impressions (Figure 2p). Fingernail-impressed or pinched sherds appear to be absent, with the exception of probable pinched lips and rare pinched thickened collars. From the assemblages studied so far there is no evidence of post-Lapita incised (or appliqué) designs dating to before ca 1700 cal BP.

We appreciate that the full Caution Bay ceramic assemblage has not yet been published and therefore it is not yet possible for any kind of detailed assessment to be made about our claims for a South Papuan Lapita Province, as Burley and Irwin have noted. Our designation is largely made on the overwhelming predominance of a single major motif element throughout the Caution Bay assemblages: sets of parallel comb dentate-stamped or plain arcs, usually appearing in pairs or triplicate and arranged in relatively simple arrangements around the rims, collars and shoulders of pots (e.g. Figures 2i–2o and 4a). While such motifs occur in Lapita assemblages elsewhere, their predominance at virtually all the Caution Bay Lapita sites stands this region apart from all others. Whether this connects stylistically the contemporaneous ceramic sites of Torres Strait to the Massim is not yet known, and therefore the exact extent of the South Papuan Lapita Province is open to further assessment; we were largely flagging that, decoratively, there is something different about the total assemblage from Caution Bay (whether this be due to ‘distance-decay of design complexity’ and/or ‘decay within regions over time’ [Spriggs 1990:18]). In a related comment, and contra Spriggs, the Caution Bay Lapita sites dating to 2900–2500 cal BP do not indicate a ‘transitioning into post-Lapita assemblages’ or devolution into post-Lapita (other than by definition Middle and Late Lapita means that it is an intermediate point between Early Lapita and post-Lapita), but rather a regionalised, in many ways simplified, Middle to Late Lapita assemblage, as Irwin also notes. However, it is certainly the case that after a few hundred years of doing things in particular ways, between 2500 and 2450 cal BP the Caution Bay Lapita ceramics analysed so far rapidly transform into post-Lapita, with a complete breakdown of a decorative system of comb dentate-stamping, impressed arcs and total disappearance of collared and carinated pots. As to the decoration and other Lapita characteristics of the various sites, as asked by Spriggs, space does not allow their presentation here (some of those sites have large numbers of sherds) and will have to await publication of the site reports.

Part of the basis of Irwin’s questioning of the validity of the South Papua Lapita Province is what he sees as tenuous links with dubious claims for 2500 year old pottery in Torres Strait. McNiven et al.’s (2006) argument for ca 2500 year old pottery at Mask Cave in western Torres Strait was based on detailed assessment of site stratigraphy and chronology. McNiven et al. concluded that the evidence *collectively* and *on balance* pointed towards the deepest sherds dating to ca 2500 years ago within Phase 2 (2100–2600 cal BP) and not to the more recent pottery levels of Phase 3 (1500–1700 cal BP). Irwin’s suggestion that the deepest sherds represent downward movement of Phase 3 sherds would require massive disturbance of the deposit, for which there is no evidence. Ultimate resolution of this issue will require direct OSL or TL dating of the Mask Cave sherds. Whatever the case, McNiven et al. (2006:75) hypothesised that pottery dating back to 2800–2500 years ago would be found on the southern



Figure 3 Comb dentate-stamped partial vessel with impressions on the carination from Lapita site Moiapu 1, Square F (photograph by Matthew Leavesley).

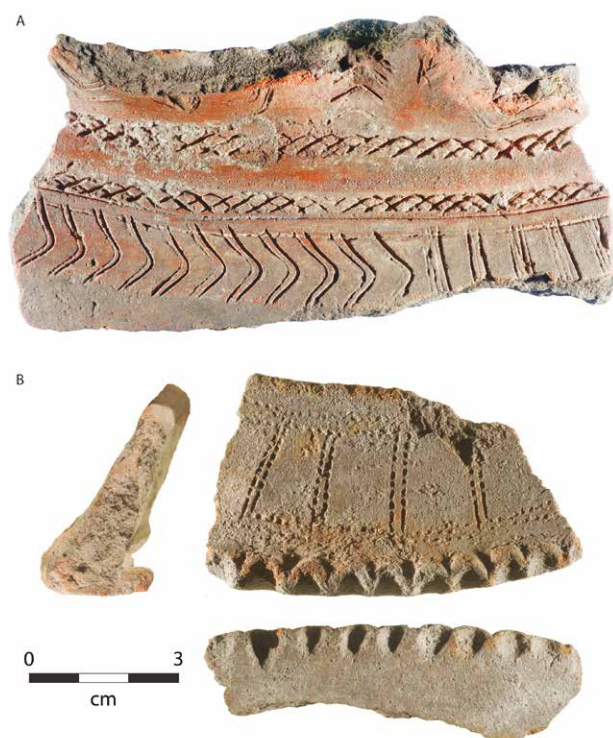


Figure 4 A: Large Lapita sherd from Tanamu 1 (2900–2850 cal BP). For a drawing of this sherd see McNiven et al. (2011:Figure 5H) and David et al. (2011:Figure 2H). B: Three views of the Bogi 1 probable cylinder stand (photographs by Steve Morton).

PNG coast, a prediction consistent with the 2900–2500 year old Lapita finds at Caution Bay.

We conclude by noting that, while our ultimate aim is to model the implications of the Caution Bay finds for broader-scaled occupation and interaction, we refrain from doing so until the site-specific and regional data are more fully analysed and presented.

References

- Allen, J. 1972 Nebira 4: An early Austronesian site in central Papua. *Archaeology and Physical Anthropology in Oceania* 7:92–124.
- Bedford, S. 2006 *Pieces of the Vanuatu Puzzle: Archaeology of the North, South and Centre*. Terra Australis 23. Canberra: ANU E Press.
- Bulmer, S.E. 1999 Revisiting red slip: The Laloki style pottery of southern Papua and its possible relationship to Lapita. In J-C. Galipaud and I. Lilley (eds),

- The Western Pacific from 5000 to 2000 BP: Colonisation and Transformations*, pp.543–577. Paris: IRD Editions.
- Clark, G. and S. Bedford 2008 Friction zones in Lapita colonisation. In G. Clark, F. Leach and S. O'Connor (eds), *Islands of Inquiry: Colonisation, Seafaring and the Archaeology of Maritime Landscapes*, pp.59–73. Terra Australis 29. Canberra: ANU E Press.
- David, B., N. Araho, B. Barker, A. Kuaso and I. Moffat 2009 Keveoki 1: Exploring the *hiri* ceramics trade at a short-lived village site near the Vailala River, Papua New Guinea. *Australian Archaeology* 68:11–22.
- David, B., I.J. McNiven, T. Richards, S.P. Connaughton, M. Leavesley, B. Barker and C. Rowe 2011 Lapita sites in the Central Province of mainland Papua New Guinea. *World Archaeology* 43(4):580–597.
- David, B., I.J. McNiven, M. Leavesley, B. Barker, H. Mandui, T. Richards and R. Skelly 2012 A new ceramic assemblage from Caution Bay, south coast of mainland Papua New Guinea: The Linear Shell Edge-Imprinted Tradition from Bogi 1. *Journal of Pacific Archaeology* 3:73–89.
- David, B., I.J. McNiven, H. Jones-Amin, S.P. Connaughton, C. Parkinson, C. Rowe, T. Richards, M. Leavesley, B. Barker, H. Mandui, G. Campanelli and N. Flood under review a Three reconstructed Lapita pots from Caution Bay, south coast of mainland Papua New Guinea. *Antiquity*.
- David, B., T. Richards, I.J. McNiven, M. Leavesley and B. Barker under review b On dentate-stamped ceramics and the EPP from Caution Bay, south coast of mainland New Guinea. *Australian Archaeology*.
- Egloff, B. 1979 *Recent Prehistory in Southeast Papua*. Terra Australis 4. Canberra: Research School of Pacific Studies, The Australian National University.
- Frankel, D., K. Thompson and R. Vanderwal 1994 Kerema and Kinomere. In D. Frankel and J.W. Rhoads (eds), *Archaeology of a Coastal Exchange System: Sites and Ceramics of the Papuan Gulf*, pp.1–49. Research Papers in Archaeology and Natural History 25. Canberra: The Australian National University.
- Irwin, G. 1985 *The Emergence of Mailu*. Terra Australis 10. Canberra: Research School of Pacific Studies, The Australian National University.
- Irwin, G. 1991 Themes in the prehistory of coastal Papua and the Massim. In A. Pawley (ed.), *Man and a Half: Essays in Pacific Anthropology and Ethnobiology in Honour of Ralph Bulmer*, pp.503–510. Auckland: The Polynesian Society.
- Irwin, G. 1992 *The Prehistoric Exploration and Colonisation of the Pacific*. Cambridge: Cambridge University Press.
- Jones-Amin, H., G. Campanelli, N. Flood, B. David and I.J. McNiven in press Conservation strategies used to conserve two Lapita ceramics from south eastern Papua New Guinea. *Australian Institute for the Conservation of Cultural Material Bulletin*.
- Mabbutt, J.A., P.C. Heyligers, R.M. Scott, J.G. Speight, E.A. Fitzpatrick, J.R. McAlpine and R. Pullen (eds) 1965 *Lands of the Port Moresby-Kairuku Area, Territory of Papua and New Guinea*. CSIRO Land Research Series 14. Melbourne: CSIRO.
- McNiven, I.J., W.R. Dickinson, B. David, M. Weisler, F. von Gnielinski, M. Carter and U. Zoppi 2006 Mask Cave: Red-slipped pottery and the Australian-Papuan settlement of Zenadh Kes (Torres Strait). *Archaeology in Oceania* 41(2):49–81.
- McNiven I.J., B. David, T. Richards, K. Aplin, B. Asmussen, J. Mialanes, M. Leavesley, P. Faulkner and S. Ulm 2011 New direction in the human colonisation of the Pacific: Lapita settlement of the south coast New Guinea. *Australian Archaeology* 72:1–6.
- McNiven, I.J., B. David, K. Aplin, J. Mialanes, B. Asmussen, S. Ulm, P. Faulkner, C. Rowe and T. Richards 2012 Terrestrial engagements by terminal Lapita maritime specialists on the southern Papuan coast. In S.G. Haberle and B. David (eds), *Peopled Landscapes: Archaeological and Biogeographic Approaches to Landscapes*, pp.121–156. Terra Australis 34. Canberra: ANU E Press.
- Pain, C. and P. Swadling 1980 Sea level changes, coastal landforms and human occupation near Port Moresby—A pilot study. *Science and New Guinea* 7:57–68.
- Petchey, F., S. Ulm, B. David, I.J. McNiven, B. Asmussen, H. Tomkins, T. Richards, C. Rowe, M. Leavesley, H. Mandui and J. Stanisic in press a Radiocarbon marine reservoir variability in herbivores and deposit-feeding shellfish from an open coastline, Papua New Guinea. *Radiocarbon* 54:1–11.
- Petchey, F., S. Ulm, B. David, I.J. McNiven, B. Asmussen, H. Tomkins, N. Dolby, K. Aplin, T. Richards, C. Rowe, M. Leavesley and H. Mandui in press b High-resolution radiocarbon dating of marine materials in archaeological contexts: Radiocarbon marine reservoir variability between *Anadara*, *Gafarium*, *Batissa*, *Polymesoda* spp. and Echinoidea at Caution Bay, southern coastal Papua New Guinea. *Archaeological and Anthropological Sciences*.
- Poulsen, J. 1964 Preliminary report on pottery finds in Tonga. *Asian Perspectives* 8:184–195.
- Rowe, C., I.J. McNiven, B. David, T. Richards and M. Leavesley under review Holocene pollen records, southern mainland Papua New Guinea. *The Holocene*.
- Specht, J. 1968 Preliminary report of excavations on Watom Island. *Journal of the Polynesian Society* 77:117–134.
- Specht, J. and R. Torrence 2007 Pottery of the Talasea area, West New Britain Province. In J. Specht and V. Attenbrow (eds), *Archaeological Studies of the Middle and Late Holocene, Papua New Guinea*, pp.131–196. Technical Reports of the Australian Museum 20. Sydney: Australian Museum.
- Spriggs, M. 1990 Dating Lapita: Another view. In M. Spriggs (ed.), *Lapita Design, Form and Composition*, pp.6–27. Occasional Papers in Prehistory 19. Canberra: Department of Prehistory, Research School of Pacific Studies, The Australian National University.
- Summerhayes, G.R. 2000 *Lapita Interaction*. Terra Australis 15. Canberra: Pandanus Press, The Australian National University.
- Vanderwal, R.L. 1973 Prehistoric Studies in Central Coastal Papua. Unpublished PhD thesis, Research School of Pacific Studies, The Australian National University, Canberra.

RESPONSE

SPECHT REPLY

The four commentaries on my paper, that by McNiven et al. (2011) and the rejoinder by McNiven and his colleagues are useful additions to the Lapita literature. Together they open discussions across a range of topics wider than I raised in my initial contribution. This is a welcome situation.

Limitations of space preclude detailed responses to all points raised by the contributors, and I focus here on only four points: landscape change, ceramics, 'expectedness' and Lapita 'provinces'. First, some preliminary comments are required. The results of archaeological research should always be treated as provisional and conditional on future work that may contradict, confuse or clarify existing knowledge and understanding. There is no necessary 'truth', only a picture of what the data looks like from our current theoretical stance. This is not a failure on the part of earlier researchers, but a simple fact of life. Secondly, we generally do not know what we will uncover in our excavations. As McNiven et al. note, no Lapita pottery was visible on the ground surface of any of their sites. We can entertain expectations based on what we know, but we must also be prepared to be wrong. Then there are potential pitfalls in generalising the results from one locality to a regional scale: how representative of a total site are the recoveries from our excavations, and how widely can we extend their implications?

In their rejoinder, McNiven et al. provide welcome detail on several issues, and the promptness with which they are preparing major reports is commendable. Unfortunately, assessment of aspects of their 2011 paper and other contributions (David et al.