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Lapita sites in the Central Province of mainland Papua New Guinea

Bruno David, Ian J. McNiven, Thomas Richards, Sean P. Connaughton, Matthew Leavesley, Bryce Barker and Cassandra Rowe

Abstract

For over forty years, archaeologists working along Papua New Guinea's southern coastline have sought evidence for early ceramics and its relationship with Lapita wares of Island Melanesia. Failing to find any such evidence of pottery more than 2000 BP, and largely based on the excavation of eight early pottery-bearing sites during the late 1960s into the early 1970s, synchronous colonization some 2000 BP along 500km of the south Papuan coastline by post-Lapita ceramic manufacturers has been posited. This paper presents conclusive evidence for the presence of Lapita ceramics along the Papuan south coast between *c.* 2500 and 2900 cal. BP, thereby indicating that current models of colonization by ceramicists for the region need to be rethought. We conclude with a brief reflection as to why these Lapita horizons were missed by previous researchers.

Keywords

Pacific colonization; South Papuan Lapita Province; Papua New Guinea; Torres Strait.

Introduction

The Lapita pottery-making and pottery-carrying colonizers of the western Pacific are famed worldwide for their expansive travels across some 4500km of seascape from the Bismarcks to Samoa between approximately 3400 and 2900 years ago. Emanating from the Near Oceania islands of the Bismarck Archipelago of northeast Papua New Guinea (PNG),¹ Lapita peoples produced a highly recognizable ceramic assemblage rendered iconic by its dentate-stamped designs banded across the external walls of a range of vessel types and their equally iconic collared and carinated pots, bowls, flat-based dishes and cylinder stands. Other decorative techniques were also present, including incisions, shell

impressions (restricted to Late Lapita), red slipping, burnishing and lime infilling. Plainwares typically make up a majority of assemblages (e.g. Summerhayes 2000a), but it is the highly recognizable dentate stamping, coupled with a range of well-defined banded designs, that make Lapita ceramics so readily identifiable wherever they occur. Over a period of somewhere between fifty and 400 years (Bedford and Sand 2007: 6), Lapita peoples first ventured eastward along the coastlines of already-occupied Melanesian islands immediately to the east of the Bismarcks, and onwards to colonize previously unoccupied islands to the east of the Solomons. As the distances between islands and island groups increased progressively eastward into Remote Oceania (Green 1991), Lapita ceramics eventually ceased to be made, but in time the post-Lapita colonizing process continued into the more remote islands of Polynesia so that by 750 years ago the far distant islands of Hawai'i, Rapa Nui (Easter Island) and Aotearoa (New Zealand) too came to be colonized by Austronesian-speaking descendants of Lapita peoples who were themselves also maritime peoples (cf. Lowe et al. 2000; Wilmshurst et al. 2011). This Austronesian diaspora has been hailed as one of the greatest colonizing seafaring ventures of the human species.

Yet two of the great mysteries of this expansive process of exploration and colonization are: first, why Lapita potters do not appear to have ventured onto the large continental island of New Guinea nearby; and, second, why Lapita peoples never ventured the 600km southward and then southwest-ward that would have seen them enter the southern waters separating the main island of New Guinea from Australia, despite travelling eastward some 4500km. As Anson noted, 'No Lapita sites have yet been found west of the Bismarck Archipelago' (1986: 157). Following McNiven et al. (2011), we present new evidence suggesting otherwise, with dentate-stamped and other ceramics with Lapita motifs and of known Middle to Late Lapita age indicating that Lapita peoples did in fact travel southwest-ward along the southern New Guinea coast and establish settlements close to the present city of Port Moresby. Such a view reverses more than forty years of conventional modelling on the archaeology of the southern New Guinea coast and Lapita dispersal.

Lapita ceramics

The geographical spread of Lapita material culture corresponds closely with the geographical spread of ethnographic Austronesian languages across the western Pacific. There is therefore a universally accepted understanding that Lapita peoples were Austronesian language speakers, although the degree to which Lapita ways of doing things evolved through interactions with pre-established non-Austronesian speaking indigenous peoples is widely debated (e.g. Green's (2000) 'Triple-I' model).

The commonest and most iconic items of Lapita material culture are the ceramics, in particular dentate-stamped pottery consisting of a range of needlepoint to coarser-tined dentate-stamped designs banded around bowls, collared and carinated pots, jars, dishes, globular pots and pedestals in repeated geometric designs. Many attempts at characterizing Lapita decoration have followed Mead et al.'s (1973) language of design at the expense of analysing complete motifs for themselves, some of which are highly complex constructions; Anson's (1983) later, influential work was based on motifs and alloforms. While non-figurative decorations of repeated pattern are the norm, some figurative forms

also exist, including highly abstract but relatively rare faces constructed of geometric design elements and even rarer three-dimensional faces (cf. Spriggs 1990; Summerhayes 1998; Torrence and White 2001). These predominantly comb dentate-stamped, incised and shell-impressed decorations have come to be recognized from the westernmost to easternmost edges of Lapita's distribution, with some conventions such as shell impressions occurring only in Late Lapita and post-Lapita assemblages.

Archaeologists have long tried to determine the degree of geographical and temporal variation in Lapita ceramic practice, with broad consensus being reached in recent years. Green (1978, 1979) originally proposed a division of Western versus Eastern Lapita, while Anson (1983), Kirch (1997) and Sand (2000, 2001) further subdivided the Lapita world into an additional set of regional provinces including Far Western/Western, Western/Central, Southern and Eastern (Fig. 1). While there is a general view that the richness of motif forms decreases towards the eastern end of Lapita's reach, some authors have argued that the major differences in design conventions between so-called 'provinces' should be explained as a reduction of dentate-stamped decoration through time rather than across space. Summerhayes (e.g. 2000b, 2001) thus defined an Early, Middle and Late Lapita based on temporal differences, arguing that the apparent regional variations characterized by the Lapita provinces are in fact temporal differences in assemblages. Thus, as Summerhayes notes, 'early Lapita assemblages are seen in terms of a predominance of dentate stamping and some incised decoration, with later assemblages showing "fewer dentate-stamped sherds, an increase in incision, and some sherds which are transitional to late industries with impressed applied and incised decorations"' (Gosden *et al.* 1989: 571)' (2001: 55). This debate over temporal versus spatial causes of assemblage variation is not yet fully resolved. Towards the end of the Lapita period, in most areas dentate stamping gives way to linear incisions and to plainware, although both incision and plainware are themselves also part of the earlier Lapita corpus. Indeed, it is unusual for dentate stamping to make up more than 10 per cent of any given Lapita assemblage (Burley 1998; Kirch 1997, 2000).

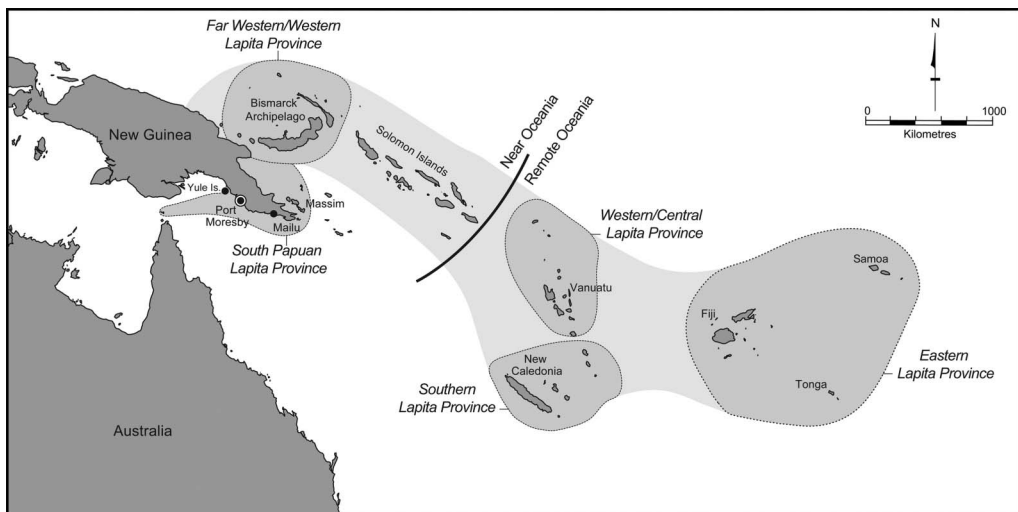


Figure 1 The western Pacific showing the spatial distribution of Lapita Provinces.

The traditional description of Lapita's linear eastward expansion from the Bismarcks to Samoa has come with an emphasis on questions of origins and the timing of rapid expansion across the western Pacific. 'Lapita dispersal' has often come to refer to initial Lapita colonization into any given region from an original Melanesian homeland in the Bismarcks, rather than to the dynamics of movement across space and through time. More considered attention to later Lapita dates, and finer chronological control through the employment of fine-resolution excavation and dating techniques, would allow us to focus more on post-colonization expansions and interactions along with transformations, issues relevant also to the *process* of widespread expansion (for exceptional considerations of later Lapita dispersals, see, e.g., Findlater et al. 2009; Summerhayes 2004). However, few detailed site reports systematically analysing and illustrating ceramic conventions within particular sites and regions through time and with good chronological control have been presented. General agreement exists between researchers that Lapita commenced sometime between 3500 and 3300 BP in the Bismarcks (see Summerhayes (2007) for a critique of the early dates). In contrast, different views exist on the timing of the end of the Lapita period across the Lapita world, with estimates ranging from 2800 BP (e.g. Bedford and Clark 2001) to *c.* 2000 BP (e.g. Spriggs 1996); however, in recent years an increasing number of Lapita specialists have come to see the period between 2700 and 2200 BP as a period of transformation and regionalization from Late Lapita to post-Lapita.

The southern Papua New Guinea coastline and Lapita

The south coast of mainland PNG, with its apparent lack of Lapita sites at the edge of the Lapita world, has a role to play in debates on Lapita dispersal. Lapita sites are generally understood to be largely restricted to small islands and the narrow coastal strip of larger continental islands (but see Specht and Torrence 2007), raising questions as to whether Lapita peoples were 'strandloopers' who stuck to the coast (Groube 1971) or gardeners who also ventured some distance inland (e.g. see Gosden 1992; Kirch 1989; Ross 1996; Pawley 2007 for evidence of Lapita horticulture and arboriculture). While the coastal fringes of the large continental islands of the Bismarck Archipelago contain abundant Lapita remains (e.g. Specht 1974; Summerhayes 2000b), until now the only Lapita sherds ever found on the large island of New Guinea have been a surface find from the north coast 'picked up somewhere around Aitape (i.e. presumably on the mainland) during World War II', a sherd on Ali Island off the Aitape coast found in 1993 (Terrell and Schechter 2007: 65) and undated pedestalled bowls with a strong resemblance to Lapita wares from Collingwood Bay (Egloff 1979: 40). This failure to find unequivocal, stratified Lapita ceramics on the New Guinea mainland, despite more than forty years of field research by virtually all archaeologists who have worked along its coastline, has led Lilley to conclude that 'we can maintain that the New Guinea mainland was avoided by Lapita makers and users' (2008: 79).

Since the late 1960s, with concentrated efforts in the 1970s and early 1980s, researchers have sought evidence for Lapita intrusions along the eastern tip of New Guinea southwest-ward onto the south Papuan coastline. Models of colonization by ceramic-making or ceramic-carrying immigrants to the south coast of mainland PNG have largely been based on excavations at eight sites: Oraido 1, Selai and Mailu 3 in the Mailu region (Irwin 1985), Nebira

2, Nebira 4, Eriama and Taurama in the Port Moresby region (Allen 1972; Bulmer 1978, 1999) and Oposisi on Yule Island (Vanderwal 1973; see also Allen et al. 2011), with support from Collingwood Bay and the Massim (Bickler 1998; Egloff 1979; Negishi and Ono 2009) (see also David et al. 2010) (Fig. 1). Almost all commentators have argued for a colonizing event horizon around 2000 BP. All researchers agree that no Lapita ceramics have been found along the south coast of mainland PNG, although all also agree that each area studied contains strong Lapita influence. Crucially, there is a general understanding that the earliest ceramic sites represent the timing of a colonizing event to the south coast by Austronesian-speaking bearers of post-Lapita wares who themselves were descendants of Lapita peoples. Allen summarized the situation in an early general review of the Massim-southern Papuan evidence:

The earliest known pottery using and producing communities appear on the south coast of Papua around 2000 years ago. . . . Culturally the people concerned are viewed as a back migration of Austronesian speakers presumably from somewhere in island Melanesia although an exact derivation is yet to be suggested. Significantly the earliest levels of these sites contain pottery similar and presumably generically related to Lapita. (Allen 1977: 391)

Vanderwal initially thought that ‘actual migration [was] involved’ (1973: 233), concluding that ‘there can be little room for doubt that the Oposisi culture is another transformation of the Pacific Lapita’ (1973: 234).

In 1991, Irwin published an influential review of the southern PNG coast evidence consistent with Allen’s earlier views, pointing out that ‘Papua and Massim form a continuous region and, after nearly 20 years of modern although piecemeal archaeology, there is now a context of information full enough for a wider regional integration’ (1991: 503). He divided the ‘visible prehistory’ of the region into four periods, the earliest of which, the period of Colonization, was dated from 2000 to 1600 years ago and characterized by the ‘sudden appearance’ along a 500km front from Mailu in the east to Yule Island in the west of a common ceramic tradition which he called Early Papuan Ware (Irwin 1991: 507). Irwin based his interpretations on the same eight excavated sites that had previously been the basis for all other south Papuan chronological models, as no new Colonization-period sites had been excavated since the early 1970s. He noted that ‘as yet little evidence has been found on the south Papuan coast, or in the Massim . . . which dates earlier than 2000 years ago’, the 2000 BP event horizon constituting:

an episode of colonisation and with the appearance of a number of communities making a kind of pottery which has been called Early Papuan Ware. This material will probably prove to be derived ultimately from Lapita pottery but the gap in time and space has yet to be documented.

(Irwin 1991: 503)

Sixteen years after Irwin’s pronouncements, Summerhayes and Allen (2007) revisited Allen and Irwin’s conclusions of a 2000 year old colonisation event-horizon, expanding their notion of a broad-front period of colonization to include new research results from the Massim produced in the intervening years that ‘extended what might loosely be called the South

Papuan Province into these islands' (Summerhayes and Allen 2007: 97). They repeated Allen and Irwin's earlier views that '[a]vailable dates in Papua . . . show this [colonization] event also to be archaeologically instantaneous, likely occurring somewhere short of 2,000 years ago' (Summerhayes and Allen 2007: 102). The belief that Lapita was absent from the south coast, and was not likely to be found on the southern New Guinea mainland, was by now firming up with a continued absence of evidence for pre-2000 BP ceramics. They renamed this earliest widespread tradition the Early Papuan Pottery (EPP) as a way of unifying the numerous earlier ceramic codes, a name that has now been adopted by many researchers.

Taking a different slant on the question of colonization, Bulmer (1999: 543, 572) renamed the earliest south Papuan coast ceramic tradition the Laloki Style. Reviewing the similarities between Lapita and the 2000-year-old southern Papuan techniques of decoration, vessel forms and decorative designs, Bulmer concluded that:

The comparison of Lapita decoration with Early Laloki techniques is obvious, that is, the common use of slipping, and the variety of dentate stamping, shell impressing, incising, and lime infilling is closely similar, although the characteristic notching and scalloping of pot rims is not present in Early Laloki. The body and rim grooving and painting found in Early Laloki is not present in Lapita.

(Bulmer 1999: 568)

As such, 'It is possible that the hypothetical original Southern Papuan settlers were a colony of Lapita origins, and that the Early Laloki pottery style developed from Lapita within Southern Papua' (Bulmer 1999: 573).

Here we present new evidence that demonstrates that the older models of post-Lapita origins for ceramics along the south Papuan coast must now be revised and that Lapita was the earliest ceramic occupation.

The new sites

We have excavated at least nine stratified Lapita sites at Caution Bay (analysis of additional excavated sites is in progress and may reveal further Lapita assemblages); eight selected sherds from two coastal sites and one inland site are described below (Fig. 2). Radiocarbon determinations were made by the University of Waikato Radiocarbon Dating Laboratory and calibrations undertaken using Calib 6.0 (Table 1).

Bogi 1 (PNG National Museum site code ABEN)

Bogi 1 is located midway along a 2km-long linear, vegetated dune fronting the shoreline. The surface of the site features marine shells and stone artefacts scattered over an area of at least 50m x 30m. Highest shell concentrations are on the dune top, which is located 45m inland and 4m above the high water mark. Excavations revealed three levels of concentrated midden deposit, with the deepest and oldest cultural materials occurring at least 2.5m below the surface and dating to *c.* 4200 cal. BP. The Lapita horizon occurs as a distinctive set of chrono-stratigraphic units dated to *c.* 2500–2900 cal. BP (McNiven et al.

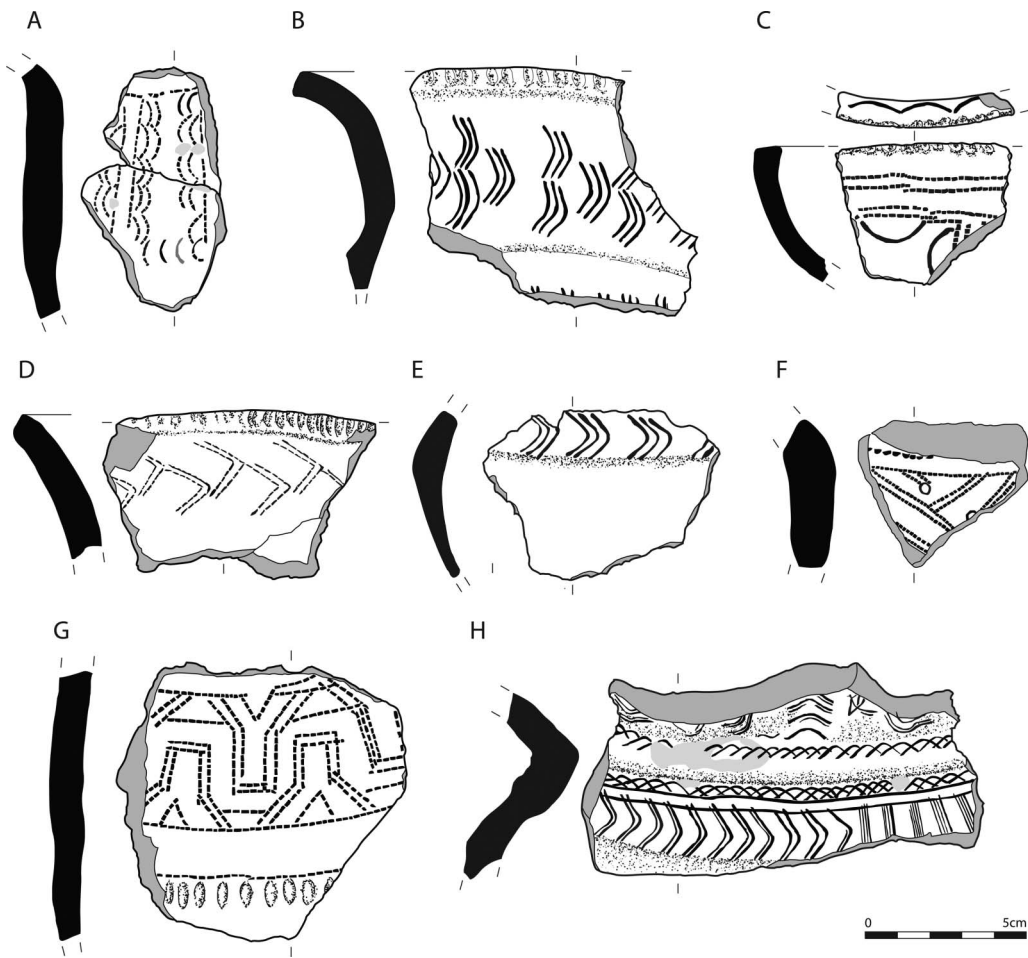


Figure 2 Examples of Lapita sherds from sites Bogi 1 (sherds A, B), Tanamu 1 (sherds D, E, F, H) and Moiapu 1 (sherds C, G).

2011) and the 8m × 9m excavation pit revealed thousands of Lapita period sherds. Here we describe two sherds from the Lapita horizon at Bogi 1 simply to make the point that what we are dealing with at this site is unambiguously Lapita.

Sherd A in Figure 2 is 7.3cm long, and consists of a body sherd decorated with a row of comb dentate-stamped impressions, above a row of columns each consisting of paired centre lines bordered on each side by stacked double arcs, of comb dentate impressions. It comes from 155cm below ground, and is clearly positioned within the Lapita horizon of *c.* 2500–2900 cal. BP (see McNiven et al. 2011: fig. 3).

The rim sherd B in Figure 2 is 10.8cm long. Lip decoration consists of closely spaced stick(?) or finger(?) impressions extending across the lip. The body decoration consists of triple arcs impressed with a thin tool, stacked and side-by-side with alternating centrally positioned triple arcs around the collar; the very ends of the triple impressions made with a thin tool also occur just below the carination, indicating a continuation of this design at lower levels of the vessel. The collar height is 4.2cm. This sherd comes from 159cm below

Table 1 Radiocarbon determinations for the new New Guinean sites discussed in the text

Site	Excavation unit (XU)	Wk-laboratory code	Material dated	$\delta^{13}\text{C}\text{‰}$	% Modern	^{14}C age (BP)	Calibrated age BP (1σ probability distribution)	Calibrated age BP (2σ probability distribution)
Bogi 1, square D	67a	27707	charcoal	-26.5 ± 0.2	70.7 ± 0.2	2783 ± 30	2847–2928 (0.985) 2939–2941 (0.015)	2793–2833 (0.138) 2837–2955 (0.862)
Tanamu 1, square A	35	27506	charcoal	-26.7 ± 0.2	70.2 ± 0.2	2842 ± 30	2887–2907 (0.210) 2922–2993 (0.790)	2867–3039 (0.969) 3047–3062 (0.031)
Moiapu 1, square F	23	27501	charcoal	-25.7 ± 0.2	73.5 ± 0.2	2470 ± 30	2469–2544 (0.403) 2562–2572 (0.042)	2365–2414 (0.087) 2433–2621 (0.612)
							2584–2616 (0.181) 2635–2701 (0.374)	2630–2711 (0.301)
	63	30042	charcoal	-21.2 ± 0.2	72.8 ± 0.2	2551 ± 26	2552–2555 (0.022) 2618–2633 (0.217)	2503–2532 (0.055) 2536–2593 (0.183)
							2705–2744 (0.761)	2614–2637 (0.181)
	68	27632	charcoal	-26.1 ± 0.2	73.1 ± 0.2	2515 ± 30	2503–2530 (0.171) 2537–2594 (0.437)	2696–2748 (0.581) 2488–2644 (0.720)
							2614–2637 (0.191)	2654–2739 (0.280)
	80	27633	charcoal	-26.2 ± 0.2	73.0 ± 0.2	2529 ± 30	2696–2721 (0.200) 2519–2525 (0.037)	2491–2602 (0.483) 2607–2642 (0.186)
							2541–2591 (0.388) 2615–2636 (0.211)	2677–2744 (0.331)
							2698–2736 (0.364)	

*Notes*All ^{14}C ages are AMS on individual pieces of charcoal

Calibrations undertaken using Calib 6.0 using INTCAL09 curve selection

ground, consistent with a Lapita age as indicated by an AMS radiocarbon determination of 2783 ± 30 BP (Wk-27707) on charcoal from 151cm depth (=2837–2955 cal. BP at highest (0.862) 2 sigma probability).

Tanamu 1

Site Tanamu 1 is located 140m southeast of Bogi 1 along the same exposed coastal sand dune. The site is 5m above and 25m to the east of the high tide mark near the inland margins of the mangroves. Like Bogi 1, Tanamu 1 exhibits three distinct levels of dense midden material evidencing focused occupation; the middle is the Lapita level. The lowermost *in situ* and 3-D plotted ceramics come from 73.8cm below the surface, in XU36 of Square B at the level of a major stratigraphic change. A radiocarbon date of 2842 ± 30 BP (Wk-27506) (=2867–3039 cal. BP at highest (0.969) 2 sigma probability) was obtained on an *in situ* charcoal sample collected from 70.5cm below ground in juxtaposed Square A, and thus dates the level of the earliest *in situ* excavated ceramics at Tanamu 1.

Sherd D in Figure 2 contains a repeated, two-tiered series of paired comb dentate-stamped angled lines around the rim. The impressions appear to have been made with a single, thin tool. The lip is grooved with impressions likely to represent stick side-impressions.

Body sherd E in Figure 2 contains sets of three curved lines impressed with a thin tool, repeated as a row immediately above the carination.

Sherd F in Figure 2 comes from 56.8cm below ground, 13.7cm above a radiocarbon determination of 2842 ± 30 BP near basal *in situ* ceramics. This sherd is 5.0cm long. It contains needlepoint dentate-stamped paired horizontal lines crossed by paired diagonal lines. Small, 3.5mm-diameter impressed circles are located in the spaces between the crossing dentate-stamped lines. The dentate-stamping, impressed circles and linear design are each classic Lapita conventions; examples of the impressed circles are found in Specht and Torrence (2007: fig. 11a) from the Bismarcks, Sand (2007: fig. 2) from New Caledonia and Poulsen (1987: pl. 48.2) from Tonga.

Sherd H in Figure 2 was excavated from 56.7cm below ground, at a virtually identical level to sherd F. It is thus dated to a similar age. It consists of a rim or collar sherd (without lip) from a carinated pot. The pot is 40cm diameter at the carination (orifice diameter not available as the sherd does not contain a lip). This large, 12.2cm-long sherd is of irregular curve and irregular, 6.1–10mm wall thickness along the rim or collar. Not enough of the body below the carination has survived to determine the shape of its base, but the uppermost preserved curvature indicates a likely globular body. The vessel is a classic Lapita carinated pot, such as generally seen, for example, in Bedford et al. (2007: fig. 8) from Vanuatu and Poulsen (1987: pl. 54.7) from Tonga.

Sherd H shows no signs of red slipping, burnishing or lime infilling. It consists of a repeated impressed parallel curve pattern on the rim or collar, each curve pattern being 15.8mm long (measured from end to end in a straight line). At the neck below, this zone marker consists of overlapping impressed curves, each curve being 13.9mm long: a single thin, curved design was used to create the overlapping arcs of the curve pattern. A roulette was not used (cf. Ambrose 2007). Immediately below this overlapping curve pattern, approximately 4.7mm below the neck and 22.8mm above the carination, the wall is thickened (i.e. raised) as a blank zone some 8mm wide. Below this is a second band of

overlapping arcs of same dimensions as the first, and therefore made with the same tool and in the same manner. Two parallel horizontal lines then separate this band from the final set of decorations located 16mm from the carination to the carination edge. This consists of a set of repeated parallel curves again 15.8mm long – made with the same tool as the paired curves on the rim or collar.

All tool edges used for decoration are of uniform thinness. This incised and (non-dentate-stamped) impressed sherd is of classic Lapita decorative design (especially the bands above the carination), as seen, for example, in Specht and Torrence (2007: fig. 12ab, 12ac) from the Bismarcks and Bedford et al. (2007: fig. 9) from Vanuatu among other occurrences.

Moiapu 1 (PNG National Museum site code AAYM)

Moiapu 1 is one of a number of sites located on a low ridge oriented NNE to SSW, inland *c.* 1.5km from the coast and broadly in the middle of the study area. Although located only 41m above sea level, the ridge line itself overlooks the surrounding region for several kilometres, including the coastal sites of Bogi 1 and Tanamu 1.

The excavations at Moiapu 1 consist of several 1m × 1m pits, from which only one is reported here (Square F). Square F was excavated in *c.* 2cm excavation units going down 184cm into sterile sediments. Unlike Bogi 1 and Tanamu 1, Moiapu 1 appears to reflect a single phase of occupation, as suggested by radiocarbon determinations from XU23 (2470 ± 30 BP; Wk-27501); XU63 (2551 ± 26 BP; Wk-30042); XU68 (2515 ± 30 BP; Wk-27632) and XU80 (2529 ± 30 BP; Wk-27633). Given the statistical similarity of these determinations, it is likely that Moiapu 1 was used for a period as short as twenty to fifty years.

Sherd C in Figure 2 is a rim sherd excavated from 105cm below the ground surface from a matrix dominated by oven stones. The rim has a series of notches on the convex edge of the lip, and a series of connecting semi-circular dentate impressions on top of the lip. The convex side of the sherd is decorated with two rows of paired horizontal dentate impressed lines. Similarly paired dentate lines extend vertically below the lower of the two sets of horizontal lines. Other fragments from the same site suggest that they form a band of interconnected squares/rectangles. The decoration is completed with the addition of two impressed semi-circular arc motifs. One is immediately below the lower of the horizontal lines and the second is adjacent to the horizontal lines.

Sherd G in Figure 2 was excavated from 115cm below the ground surface, clearly within a matrix dominated by oven stones. The motif is consistent with Mead et al. (1973) motif M44 and Anson's (1983) motif 503, commonly known as the interlocking 'house' motif. Similar examples have been found at Watom, some of which are in the Musée du Quai Branly collection (e.g. item 71.1934.188.1300-1-5). Below this band is a blank space under which there is a single dentate line above a row of vertical stick impressions along what might be the shoulder of the vessel.

Discussion

For over forty years, archaeologists working in the southern lowlands of PNG have focused on the coast, seeking evidence of people who brought ceramic traditions. By the

1990s, the chronological pattern established at a handful of poorly dated sites had become so familiar that the absence of Lapita was a given, so much so that the 2000 BP ceramic tradition found to be widespread across a 500km coastal front had become accepted as a colonizing event horizon by *descendants* of Lapita peoples coming from somewhere to the north east, and coined ‘Lapita writ small’ by the latest reviewers of the Papuan evidence (Summerhayes and Allen 2007). In recognizing a solid yet undefined connection between the earliest, 2000-year-old ceramics of southern Papua and those of Lapita a few hundred years earlier to the north east, Summerhayes and Allen concluded that:

Although the Papuan diaspora involved pot-making Austronesian speakers, themselves ultimately Lapita descendants, an important difference between the two colonisations is that in Papua, people colonised a continental size landmass, something that Lapita itself seems not to have achieved, whether or not it was attempted.

(Summerhayes and Allen 2007: 98)

They surmised that, although ‘future discovery of Lapita on the Papuan mainland and in the Massim’ cannot be ruled out, ‘given the now extensive work in the Massim, it seems improbable that Lapita sites have been missed, given their high visibility elsewhere’ (Summerhayes and Allen 2007: 98–9). They thus concluded that the Lapita and south Papuan evidence suggested ‘two different rapid colonisations, separated in time and space, both occupying new large territories’ (Summerhayes and Allen 2007: 115). The new evidence of Lapita-period finds along the south Papuan mainland presented here implicates a Lapita-period process of exploration and colonization that included rather than excluded the Massim-south Papuan coast.

Summerhayes and Allen also pointed out that the ‘early elaborate’ ceramics of the EPP are ‘a reflection of the homeland culture’ which is presumably itself Lapita, and that ‘these “homeland cultures” remain elusive’ (2007: 116). They noted that ‘nor can we point to antecedents of the initial highly decorated shell impressed wares of the EPP beyond the Massim’ (Summerhayes and Allen 2007: 116). We argue that the reason for this is that Lapita ancestors directly came to, and colonized, the south Papuan coast-Massim region, creating an ancestral domain from which the so-called Early Papuan Pottery evolved *in situ*.

The discovery of Lapita finds near Port Moresby dating to some 900 years prior to the earliest previously known ceramics in the region, implies an earlier colonizing event than previously known and the *in situ* evolution of the EPP directly from the antecedent Lapita in the Papuan lowlands. We identify this southern extension of the known Lapita universe as the South Papuan Lapita Province (Fig. 1), characterized between *c.* 2500 and 2900 cal. BP by a predominance of impressions of paired or triple curves made by dentate or continuous-edged thin tools, with an absence of dentate-stamped faces, and an absence of flat-bottom vessels which are present in other Lapita provinces. The South Papuan Lapita Province appears to constitute a depauperate motif and vessel shape range, a product of a founder effect, a Middle to Late Lapita diminution of the earlier Lapita design corpus with regional differentiation increasing during Late Lapita, or both.

A Lapita-period presence in southern PNG was recently flagged by McNiven et al. (2006) who reported the presence of five red-slipped sherds associated with a radiocarbon determination of 2507 ± 42 BP (Wk-11904) from Pulu islet in western Torres Strait

between New Guinea and mainland Australia, suggesting that pottery-making maritime specialists had ventured along the south Papuan coast during Late Lapita times, although the undecorated (apart from red slip) Torres Strait sherds did not allow attribution to Lapita or other archaeological ceramic traditions. The new finds presented here, and their interpretation as indicating Lapita-period colonization by ceramic producers along the south Papuan coast 900 years before previous known ceramics, make it likely that the Torres Strait sherds relate to Lapita and suggest that Lapita seafarers, and possibly even Lapita colonists, ventured as far west as Torres Strait by approximately 2500 BP (in which case we could extend the South Papuan Lapita Province to include Torres Strait).

The Bogi 1, Tanamu 1 and Moiapu 1 pottery sherds reported here represent the oldest known ceramics from the island of New Guinea. Older (supposedly pre-Lapita) sherds dating to 5410 ± 90 BP (ANU-7611) have previously been reported from Taora and Lachitu rockshelters along the northern New Guinea coastline, but the limited published details from those sites indicate serious chrono-stratigraphic problems or misinterpretations (Gorecki et al. 1991). If we accept that the Lachitu ceramics, 'most of which were in the upper 5cm of the deposit' (Gorecki et al. 1991: 121) date to the last 780 ± 70 BP (ANU-7698, being a shell date already incorporating a -400 years reservoir correction), and that the Taora ceramics found in sediments with 'no clear stratigraphic change throughout the cultural deposit' have been reworked for up to some 25cm, then all of these excavated sherds would date to the last *c.* 2000 years. Recent re-excavation by Sue O'Connor and her team at these sites, incorporating detailed geomorphological investigations, has confirmed the post-2000 BP age of the Taora and Lachitu ceramics (O'Connor pers. comm.).

Conclusion

The discovery of Lapita-period ceramics in southern Papua, after more than forty years of widespread modelling of ceramic colonization by post-Lapita peoples no earlier than 2000 BP, conclusively shows earlier contacts between the south Papuan coast and Lapita homelands to the east and north (McNiven et al. 2011). It also begs the question: how did archaeologists come to conclude so consistently and for so long that Lapita, whose iconic ceramics are generally easy to identify, simply did not exist along the south coast of PNG? We offer a set of reasons, all of which, we suggest, had a part to play. These problems are likely to apply to many other archaeological situations around the world:

1. The Lapita horizons are deeply buried. They are unlikely to be found through surface surveys, requiring instead systematic and extensive landscape-based excavation strategies. Lapita sherds at Caution Bay do not feature among surface assemblages, and thus during surveys remain hidden from view. Sub-surface sampling through a large number of fine-grained excavations across the landscape, such as employed at Caution Bay, had never been applied to the south Papuan coast before.
2. The small number of pioneering excavations upon which all subsequent models have been built. A total of eight purported early sites were used to construct all colonization models for the south Papuan coast. Early colonizing sites are rare enough at Caution Bay even after excavating large numbers of sites in a relatively

small area; the chances of finding such sites among the handful previously excavated across the South Papuan region are extremely low.

3. A stuttered incidence of early pottery-making communities and even more spatially stuttered archaeological research along a long coastline. The chances of sampling early colonization sites without knowing which region(s) the early ceramic colonizers went to are remote. This is even more so given that there have only been three small targeted research areas along a 500km coastal stretch (although other places were also surface-walked by archaeologists).
4. Prograding coastlines. While Lapita colonization is well established to have taken place along coastal fringes and offshore islands, in much of mainland PNG the coast has witnessed significant progradation so that Lapita coastal landscapes are now significantly inland. This is not the case at Caution Bay, enhancing our chances of finding Lapita during investigations along or near present-day coastlines.
5. The application of coarse-grained excavation methods and insufficient radiocarbon dating. All the excavations undertaken along the south Papuan coast employed coarse-grained excavation methods (including a number that employed 10cm or thicker excavation units); in a number of cases excavation did not proceed significantly below the lowermost known cultural levels (i.e. sterile levels were not conclusively reached; see McNiven et al. (2006) for a detailed exposition of this problem); in many cases the lowermost cultural materials appear to have been redeposited (indicating the presence of older cultural sediments elsewhere nearby); conventional radiocarbon was employed for dating, requiring relatively large charcoal samples, which were often made up of widely scattered charcoal fragments from near-basal deposits, so that the initial site occupation date had to be estimated in most cases. As the Caution Bay excavations have shown, Lapita levels within some sites were reached only below an overlying, later dense cultural horizon, separated from the Lapita horizon by near culturally sterile sediments.
6. A focus on the earliest sites of oral tradition. For some of their excavations, Bulmer and Allen, among others, targeted the earliest sites of oral traditions. While this may be of great value and interest, it is not, of itself, an adequate strategy for addressing the archaeologically earliest sites, as research has repeatedly shown social memory to fade rapidly after some 400 years (e.g. Bradley 2002; David 2002; Wiessner 2002).
7. No new archaeological excavations have been undertaken since the early 1980s, and no new detailed site reports have been presented since the 1970s, so the same limited (and in some cases flawed) dataset has been used in model construction ever since.
8. Archaeological excavations along the south Papuan coast have all been undertaken by a handful of archaeologists of a single generation of research. This has meant that shared ideas at the time were maintained between peers by mutual effect and passed down *in toto* to subsequent generations ever since. This is not a criticism of a generation of researchers, but rather the simple effect of what happens when virtually all the research, and therefore knowledge generated, in a region is essentially produced during a single short-duration period of research.

Our new results indicate that a major rethinking of earlier models of south Papuan ceramic colonization, Lapita dispersal and regional trends are required. This new south

Papuan evidence will be significant for a better understanding of the early ceramic and cultural history of the island of New Guinea and the Western Pacific.

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Note

1 Throughout this paper we use 'New Guinea' to refer to the large island of that name; and 'Papua New Guinea' to the nation of that name, being New Guinea's eastern half.

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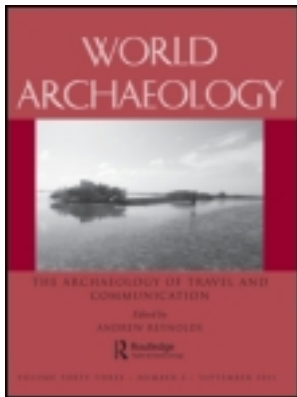
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Lapita sites in the Central Province of mainland Papua New Guinea

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