The Journal of Pacific History

Lapita and Proto-Oceanic

Mark Donohue & Tim Denham

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Thinking Outside the Pot?

MARK DONOHUE AND TIM DENHAM

ABSTRACT

Linguistics and archaeology have been, and continue to be, entwined in the discourse on the early human history of the Pacific. It is commonly assumed, explicitly or otherwise, that the bearers of the Lapita culture were speakers of Proto-Oceanic, the ancestor of the Austronesian languages of most of the Pacific. In this discursive piece, the chronological data for the location and timing of the emergence of Lapita pottery are compared with the linguistic data for the source region of Proto-Oceanic. Although both pottery and proto-language may possibly originate in the same location, this is not the most likely scenario if the evidence from the two disciplines is evaluated independently. There is no necessary historical association for the emergence of the Proto-Oceanic language and Lapita pottery. The Proto-Oceanic language and Lapita pottery should not be assumed to represent a single historical vector, as is commonly the case; rather, they should be considered discrete and separate historical phenomena.

IT IS NOW WIDELY ASSUMED IN ARCHAEOLOGICAL AND LINGUISTIC CIRCLES THAT THE culture that produced Lapita pots in Melanesia spoke the Proto-Oceanic language, the ancestral language of Austronesian languages in Near and Remote Oceania. (A notable exception is Terrell et al.)[1] Based on the convergence of findings of research within their respective fields of linguistics and archaeology, Pawley and Green made an early and explicit claim: 'The material cultures initiating the archaeological sequence on each island group so far investigated in this area can be strongly associated with Austronesian languages'.[2] They later declared that 'the arguments for connecting bearers of the Lapita cultural complex with the dispersal of dialects of Proto-Oceanic now seem much stronger than they did a decade ago'.[3] From these initially tentative associations, there are

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[1] John Terrell, Terry L. Hunt, and Joel Bradshaw, 'On the location of the Proto-Oceanic homeland', *Pacific Studies*, 25:3 (2002), 57–93.

[2] Andrew Pawley and Roger Green, 'Dating the dispersal of the Oceanic languages', *Oceanic Linguistics*, 12:1/2 (1973), 2.

[3] Andrew Pawley and Roger Green, 'The Proto-Oceanic language community', *The Journal of Pacific History*, 19 (1984), 142.

now more widespread and forthright statements. Pawley has reiterated this position: 'The bearers of the Early Lapita culture who occupied parts of the Bismarck Archipelago around 3300 BP can be equated with the speech community that spoke Proto Oceanic, the Austronesian interstage that was the immediate ancestor of all the Oceanic languages';[4] 'the initial spread of the Lapita culture and the initial dispersal of the Oceanic languages were part of one and the same event';[5] and, even more definitely, 'by 3300 BP there were Lapita settlements at or close to at least three corners of the Bismarck quadrilateral and at certain points inside it . . . these communities spoke an Austronesian language of the Oceanic branch'.[6] Kirch similarly assumes that the Lapita record and the history reconstructed by linguistic methodologies are congruent: 'The archaeological model and its dating are remarkably consistent with the internal relationships or subgrouping (the "family tree") of the Austronesian languages as worked out through careful linguistic comparisons'.[7] Similar assumptions are reasserted by Sheppard[8] and in associated comments by Pawley[9] and Ross,[10] namely that the Bismarck Archipelago is the region from which Lapita pottery and Oceanic languages dispersed.

Despite these repeated assertions, the question of the location of the culture that introduced and spoke Proto-Oceanic is a logically separate question to that of the location of the earliest Lapita sites in Island Melanesia. One question addresses a *linguistic* problem, and the other, an *archaeological* problem. Although the answers to these two questions may be related by virtue of a possible correlation between likely homelands, the people involved, and later dispersals, this needs to be *demonstrated*. It should not be repeatedly *assumed* that the bearers of Lapita pottery spoke Proto-Oceanic languages and that the two phenomena originated in the Bismarck Archipelago, from whence they spread eastward. In order to avoid circularity and conflation, the two questions should be investigated separately, and only then should the answers be compared.[11] Such a method is adopted and followed in this paper.

In this discussion piece, we re-evaluate the assumption that the origins of Lapita pottery and Proto-Oceanic languages are necessarily associated.

[4] Andrew Pawley, 'The origins of early Lapita culture: the testimony of historical linguistics', in Stuart Bedford, Christophe Sand, and Sean P. Connaughton (eds), *Oceanic Explorations: Lapita and Western Pacific settlement* (Canberra 2007), 18.

[5] Ibid., 25.

[6] Andrew Pawley, 'Where and when was Proto-Oceanic spoken? Archaeological and linguistic evidence', in Yury A. Lander and Alexander K. Oglobin (eds), *Language and Text in the Austronesian World: studies in honour of Ülo Sirk* (Munich 2008), 61.

[7] Patrick Vinton Kirch, *On the Road of the Winds: an archaeological history of the Pacific Islands before European contact* (Berkeley 2000), 92.

[8] Peter J. Sheppard, 'Lapita colonization across the Near/Remote Oceania boundary', *Current Anthropology*, 52:6 (2011), 799–840.

[9] Andrew Pawley, 'Comment to "Lapita colonization across the Near/Remote Oceania boundary"', *Current Anthropology*, 52:6 (2011), 825–26.

[10] Malcolm Ross, 'Comment to "Lapita colonization across the Near/Remote Oceania boundary"', *Current Anthropology*, 52:6 (2011), 826–27.

[11] See Stephen Oppenheimer, 'The "express train" from Taiwan to Polynesia: on the congruence of proxy lines of evidence', *World Archaeology*, 36:4 (2004), 591–600.

First, we review the chronological evidence for the emergence and dispersal of Lapita, with reference to a new Bayesian analysis of relevant radiocarbon dates. The sole intention of the chronological review is to determine the region in which Lapita first occurred; it is not to discuss other aspects of this relatively well-documented cultural efflorescence.[12] Second, we present a thorough methodological examination of the historical linguistic evidence to determine the most likely homeland for Proto-Oceanic languages. Third, we consider the degree of congruence or disjuncture between the archaeological and linguistic evidence. It emerges that the data from the two disciplines are separate and, when assessed independently, raise important questions about the complexities of the prehistory of this part of the world.

The Chronology of Early Lapita

Lapita pottery is one of the most distinctive archaeological phenomena in Oceanic (pre)history.[13] Lapita pottery is generally considered to have derived from red-slipped pottery in Island Southeast Asia;[14] an indigenist view of Lapita is now a minor and marginal opinion.[15] The cultural associations of Lapita pottery, whether part of a cultural complex[16] or representing a distinctive way of life,[17] are much debated and unclear within Near Oceania and are not entirely clear for some of the proximal regions of Remote Oceania, such as Vanuatu.[18] These issues, together with those associated with the transformation of Lapita pottery through time (such as design simplification eastwards),[19] are not addressed here. The sole focus of this section is to present recently derived chronological data that locates the region in which Lapita pottery emerged; namely, the intention is to ascertain the location of the earliest Lapita sites in

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[12] Patrick Vinton Kirch, *The Lapita Peoples: ancestors of the Oceanic world* (Oxford 1997); Matthew Spriggs, *The Island Melanesians* (Oxford 1997).

[13] For example, Kirch, *The Lapita Peoples*.

[14] For example, Matthew Spriggs, 'Chronology of the Neolithic transition in Island Southeast Asia and the Western Pacific: a view from 2003', *Review of Archaeology*, 24:2 (2003), 57–80; Matthew Spriggs, 'The Neolithic and Austronesian expansion within Island Southeast Asia and into the Pacific', in Scarlett Chiu and Christophe Sand (eds), *From Southeast Asia to the Pacific: archaeological perspectives on the Austronesian expansion and the Lapita cultural complex* (Taipei 2007), 104–40.

[15] For example, Jim Allen and J. Peter White, 'The Lapita homeland: some new data and an interpretation', *Journal of the Polynesian Society*, 98:2 (1989), 129–46.

[16] R.C. Green, 'The Lapita cultural complex: current evidence and proposed models', *Indo-Pacific Prehistory Association Bulletin*, 11 (1991), 295–305.

[17] Spriggs, *The Island Melanesians*.

[18] Stuart Bedford, Matthew Spriggs, and Ralph Regenvanu, 'The Teouma Lapita site and the early human settlement of the Pacific Islands', *Antiquity*, 80:310 (2006), 812–28; Mark Donohue and Tim Denham, 'The language of Lapita: Vanuatu and an early Papuan presence in the Pacific', *Oceanic Linguistics*, 47:2 (2008), 433–44.

[19] Glenn Summerhayes, *Lapita Interaction* (Canberra 2000); Glenn Summerhayes, 'The rise and transformation of Lapita in the Bismarck Archipelago', in Chiu and Sand (eds), *From Southeast Asia to the Pacific*, 129–72.
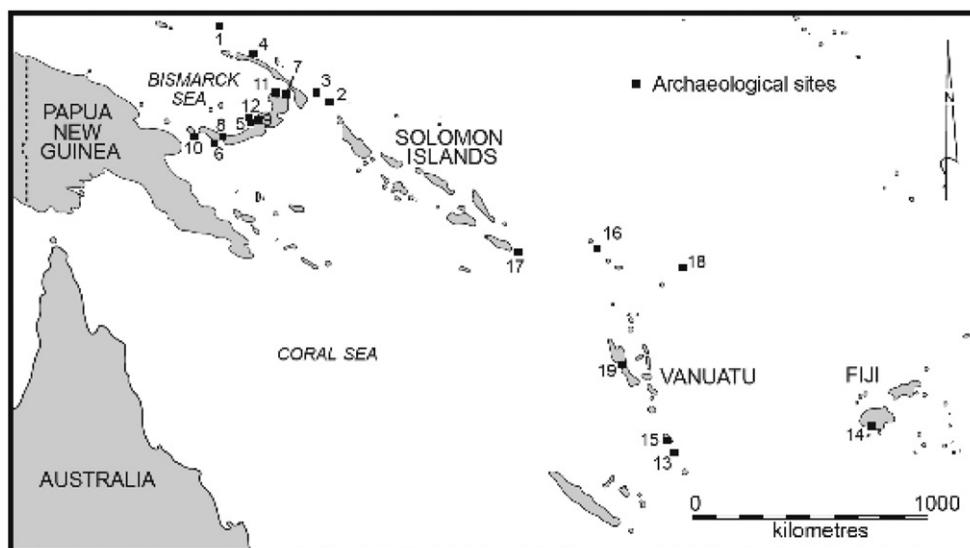
MAP 1: Archaeological sites with radiocarbon dates for early Lapita pottery, place names as follows: 1. Eloaua Island; 2. Yomining; 3. Anir; 4. Balof; 5. Garua Island; 6. Arawe Islands; 7. Makada; 8. Alanglongromo; 9. Boduna Island; 10. Tuam; 11. Watom; 12. Willaumez; 13. Ifo; 14. Bourewa; 15. Efate; 16. Reef Islands; 17. Santa Ana; 18. Anuta; 19. Makué.

order to evaluate the geographical correspondence, or lack thereof, with respect to a historical linguistic reconstruction for the geographical origin of Proto-Oceanic.[20]

A Bayesian analysis and calibration[21] have been undertaken of radiocarbon data sets for early Lapita sites in the Bismarck Archipelago, Vanuatu, and Fiji (Map 1).[22] The derived calibrated date ranges draw heavily on the more conservative chronometric hygiene protocol of Specht.[23] Dates from the Solomon

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[20] We follow widespread practice in Oceanic archaeology in discussing Lapita pottery as the most obvious continuation of the Island Southeast Asian pottery tradition. We do not address the question of the 'coherence' of a 'Lapita cultural complex' as revealed in the archaeological record.

[21] Bayesian analysis and calibration are model-based applications that enable the calibration of radiocarbon age determinations according to various alternative clustering and sequence scenarios. Christopher Bronk Ramsey, 'Bayesian analysis of radiocarbon dates', *Radiocarbon*, 51:1 (2009), 337–60. As well as yielding higher resolution calibrations for most data sets, Bayesian approaches can also provide statistical measures of the likelihood of specific historical scenarios for the chronological data set.

[22] See Tim Denham, Chrisopher Bronk Ramsey, and Jim Specht. 'Dating the appearance of Lapita pottery in the Bismarck Archipelago and its dispersal to Remote Oceania', *Archaeology in Oceania*, 47:1 (2012), 39–46. This article draws on and expands two earlier works: Spriggs, 'Chronology of the Neolithic transition'; Jim Specht, 'Small islands in the big picture: the formative period of Lapita in the Bismarck Archipelago', in Bedford, Sand, and Connaughton, *Oceanic Explorations*, 51–70.

[23] Specht, 'Small islands in the big picture'. Chronometric hygiene is a method that has been developed and applied to assess the veracity of radiocarbon dates from archaeological contexts. Matthew Spriggs, 'The dating of the Island S.E. Asian Neolithic: an attempt at chronometric hygiene and linguistic correlation', *Antiquity*, 63:240 (1989), 587–613. It includes both absolute and relative criteria for assessing whether an individual date is reliable or not.

Islands[24] were excluded from analysis owing to problems of broad age determinations and other hygiene criteria. Although there are early Lapita sites in other archipelagos, the Bayesian analysis focused on Vanuatu[25] and Fiji[26] because they are the most proximal regions and provide the earliest chronologies for Lapita dispersal into the Western Pacific.

The Bayesian analysis clearly demonstrates that the earliest dates for Lapita pottery occur in the Mussau group and date to 3470–3250 cal BP.[27] Mussau, however, is only slightly earlier than the rest of the Bismarck Archipelago, in which the earliest Lapita sites occur at 3360–3240 cal BP. After 130–290 years, Lapita dispersed from the Bismarck Archipelago to Vanuatu by 3250–3100 cal BP and to Fiji by 3130–3010 cal BP. Currently, radiocarbon chronologies are of insufficient resolution to determine internal sequences for the spread of Lapita within the Bismarck Archipelago beyond Mussau, but these sites are slightly later (sites 2–12). Based on current radiocarbon dating evidence, Lapita dispersed to Remote Oceania c. 100–300 years after its first appearance in the Bismarck Archipelago (sites 13–19).

Linguistic Arguments for a 'Homeland'

An initial caveat is necessary when discussing Proto-Oceanic. There is ample evidence to link the Oceanic languages together as having had a single founder event distinguishing them from more westerly Austronesian languages.[28] Nonetheless, it is not clear whether there was a *single* founder community speaking Proto-Oceanic at the time of the break-up of the Oceanic languages into the nine first-order subgroups that are now recognised (Table 1, Map 2).[29]

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[24] R.C. Green, 'A reappraisal of the dating from some Lapita sites in the Reef/Santa Cruz group of the Southeast Solomons', *Journal of the Polynesian Society*, 100:2 (1991), 197–207; Patrick V. Kirch and Paul H. Rosendahl, 'Archaeological investigation of Anuta', in D.E. Yen and Janet Gordon (eds), *Anuta: a Polynesian outlier in the Solomon Islands* (Honolulu 1973), 25–108.

[25] Bedford, Spriggs, and Regenvanu, 'The Teouma Lapita site'; Jean-Christophe Galipaud and Mary Clare Swete Kelly, 'Makué (Aore Island, Santo, Vanuatu): a new Lapita site in the ambit of New Britain obsidian distribution', in Bedford, Sand, and Connaughton, *Oceanic Explorations*, 151–62.

[26] Patrick D. Nunn, 'Echoes from a distance: research into the Lapita occupation of the Rove Peninsula, southwest Viti Levu, Fiji', in Bedford, Sand, and Connaughton, *Oceanic Explorations*, 163–76.

[27] Denham, Ramsey, and Specht, 'Dating the appearance of Lapita pottery', 43. The date ranges used here are at the 68.2% confidence level 'because they reflect the central tendency in the probability distributions for a given dataset'. Ibid. See also Patrick Vinton Kirch, 'A radiocarbon chronology for the Mussau Islands', in Patrick Vinton Kirch (ed.), *Lapita and its Transformations in Near Oceania: archaeological investigations in the Mussau Islands, Papua New Guinea, 1985–88*, vol. 1: *Introduction, Stratigraphy, Chronology* (Berkeley 2001), 196–236; Glenn Summerhayes, Elizabeth Matiso-Smith, Herman Mandui, Jim Allen, Jim Specht, Nicholas Hogg, and Sheryl McPherson, 'Tamuarawai (EQS): an early Lapita site on Emirau, New Ireland, PNG', *Journal of Pacific Archaeology*, 1:1 (2010), 62–75.

[28] For example, John Lynch, Malcolm Ross, and Terry Crowley, *The Oceanic Languages* (Richmond, UK 2002).

[29] This listing incorporates recent work identifying Temotu as a separate primary subgroup of Oceanic. Malcolm Ross, Andrew Pawley, and Meredith Osmond, *The Lexicon of Proto-Oceanic*, vol. 3: *Plants* (Canberra 2008). It takes a cautious view of the connections that have sometimes been grouped as Central-Eastern Pacific (groups e–i in Table 1). We also adopt a cautious position with respect to Blust, that all the subgroups other than Admiralties should be grouped together on the basis of a shared merger, *s and *j as *s. Robert Blust,

TABLE 1. Primary subgroups of Oceanic.[30]

a	Yapese
b	Admiralties
c	Mussau
d	Western Oceanic
e	Southeast Solomons
f	Temotu
g	Southern Oceanic
h	Micronesian
i	Central Pacific
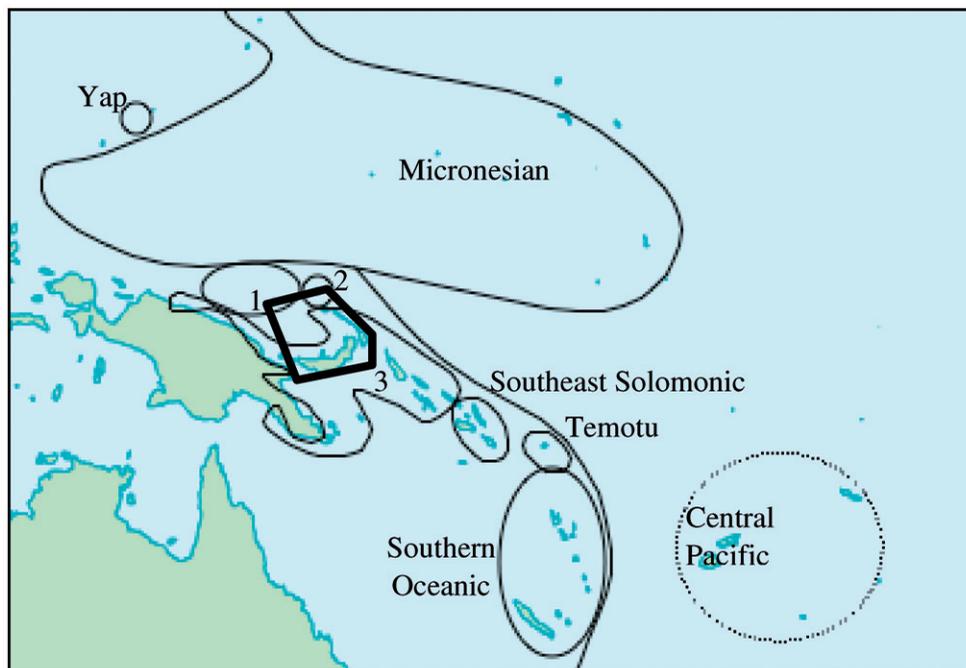
MAP 2: The nine primary subgroups of Oceanic. 1. Admiralities; 2. Mussau; 3. Western Oceanic. Other subgroups are as named. The polygon in the Bismarck Archipelago is the region described as the likely homeland of Proto-Oceanic in Pawley, 'Where and when was Proto-Oceanic spoken?' The Central Pacific subgroup occupies the right side of the map, but all first-order subgroups are present in the Fiji-Tonga regions shown in the dotted circle.

Blust argues for a primary division between the languages of the Admiralties, on the one hand, and all the other Oceanic languages, on the other,[31] though this

(footnote continued)

'A note on higher-order subgroups in Oceanic', *Oceanic Linguistics*, 37:1 (1998), 99–140. Pawley notes that this is only a single change of a phonetically 'natural' kind and therefore 'far from compelling'. Pawley, 'Where and when was Proto-Oceanic spoken?', 53. We shall consider two possibilities, the first assuming that Blust is correct about the Admiralties languages being the first split off Proto-Oceanic and the second assuming that there are, as in Table 1, nine first-order subgroups. Ross, Pawley, and Osmond, *The Lexicon of Proto-Oceanic*.

[30] Following Ross, Pawley, and Osmond, *The Lexicon of Proto-Oceanic*.

[31] Blust, 'A note on higher-order subgroups'.

subgrouping is not pursued in other work.[32] We follow most work, including recent statements by Pawley and Ross,[33] and adopt a position that takes nine first-order subgroupings, following the results of research by these specialists in Oceanic historical linguistics based on the principles of the comparative method (Table 1).

Importantly, note that, from the perspective of the linguistic evidence, none of these subgroups can be taken to be 'earlier' or 'later' than any of the others since they are all first-order members of the Oceanic subfamily. The fan-like divergence of the proto-language into subgroups suggests that we are dealing not with a unified proto-language at the point of break-up of the different subgroups but with a *linkage*, or *dialect* (or *language*) *chain*.[34] That is, rather than a discrete and uniform language existing from which all the Oceanic languages have descended, it might be the case that some level of breakup was happening even as Proto-Oceanic was forming. If this is so, we might suspect that, rather than a single compact and delimited homeland, we are in fact dealing with a speech community spread over a possibly wide range. This is the methodological approach taken by most authors who have addressed the question.[35] We shall return to this point later, but first proceed as if we are dealing with the question of locating a single language.

A number of different principles have been used in linguistics to determine a 'homeland'. One of the most important techniques for establishing a homeland, reconstructing terminologies that are confined to particular biogeographic zones, is not effective with respect to Oceanic.[36] In principle, determining that particular species of flora and fauna were present at the time of the reconstructed proto-language allows us to narrow down the possible locations for the homeland on the basis of knowledge of biogeographic spreads. Owing to the lack of differentiation of the flora and fauna in the regions occupied by speakers of Oceanic languages, all we can do is note that the evidence points to a non-Polynesian, coastal location.[37]

A second approach to locating the dispersal centre of a cultural entity might take the average of the coordinates for all the modern languages. This method, crudely applied, would assume that every modern attested language carries equal weight in determining the location of the homeland, effectively giving them each the status of first-order subgroups. We shall refer to this approach as the 'simplistic' approach, while noting that it is applicable for samples that are not

[32] For example, Lynch, Ross, and Crowley, *The Oceanic Languages*; Ross, Pawley, and Osmond, *The Lexicon of Proto-Oceanic*.

[33] Pawley, 'Comment to "Lapita colonization"'; Ross, 'Comment to "Lapita colonization"'.

[34] Following Ross for the languages of Near Oceania: Malcolm Ross, *Proto-Oceanic and the Austronesian Oceanic languages of Western Melanesia* (Canberra 1988).

[35] Among many other examples, see George W. Grace, 'Subgrouping of Malayo-Polynesian: a report of tentative findings', *American Anthropologist*, 57:2 (1955), 337–39; George W. Grace, 'Austronesian linguistics and culture history', *American Anthropologist*, 63:2 (1961), 359–68; George W. Grace, 'The linguistic evidence', *Current Anthropology*, 5:5 (1964), 361–68; Pawley and Green, 'Dating the dispersal'; Pawley and Green, 'The Proto-Oceanic language community'; Pawley, 'The origins of early Lapita culture'; Pawley, 'Where and when was Proto-Oceanic spoken?'

[36] Pawley, 'Where and when was Proto-Oceanic spoken?', 47.
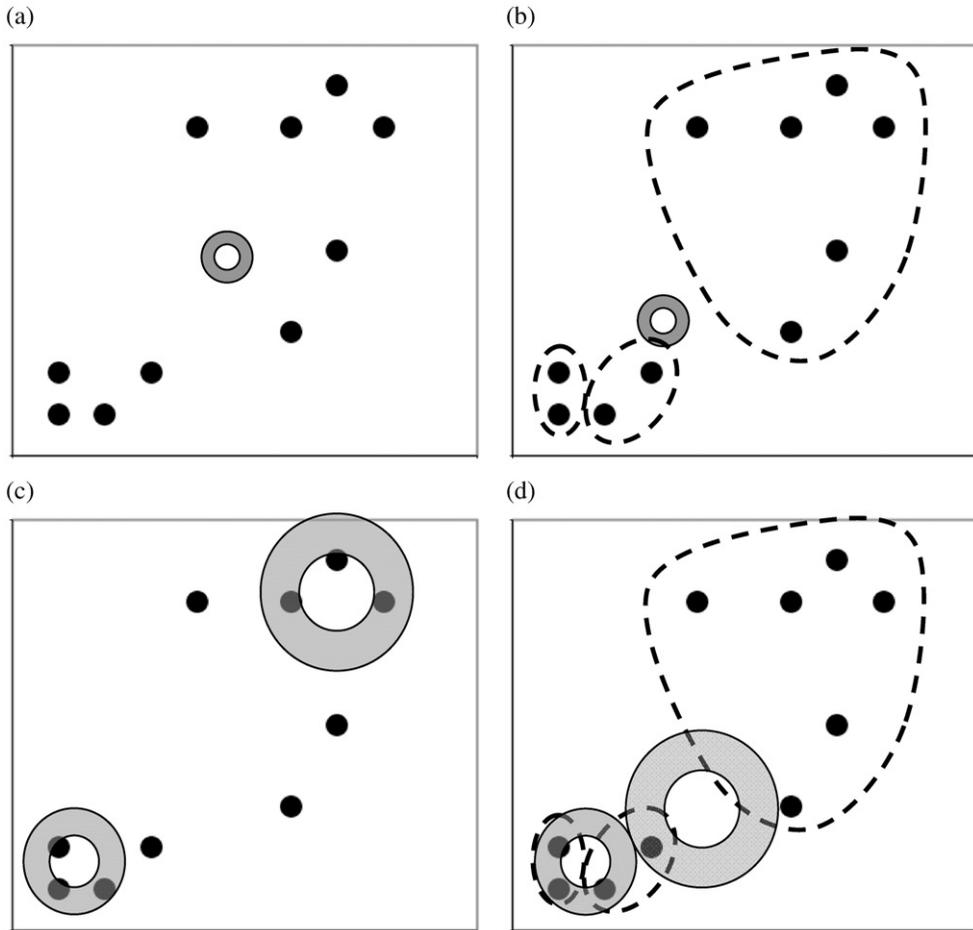
[37] Ibid.

FIGURE 1: Multiple ways of determining linguistic 'centres': (a) no hierarchy for set members; (b) hierarchically ordered set members; (c) greatest diversity of first-order groups (following a); (d) greatest diversity of first-order groups (following b).

hierarchically ordered. This approach is illustrated in Figure 1a. Here the ten sample points are distributed across the space in which they occur, and the centre, calculated simply by averaging their x and y coordinates, is shown by a grey ring.

We can refine this method to devise a more 'sophisticated' approach. First, we determine the geographic centres of the different first-order subgroups, taking account of the weight of the hierarchically embedded structure of the local subgroups, and then average the resulting subgroup coordinates. An example of how this diverges from the first method can be seen in Figure 1b, which takes the same ten points but assumes that they can be divided into three subgroups. Rather than averaging ten coordinates, the centre of each subgroup is first calculated, and then the resulting three group means are averaged together,

resulting in a centre that favours the region with the most higher-level taxonomic units.

By yet another widely regarded method, a linguistic homeland should be located in an area where there is maximal first-order diversity.[38] This method involves examining the first-order groupings and determining, as above, where the 'centre' of the groupings falls, accounting for a dispersal of the primary subgroups with the least distance involved in the posited migratory moves.[39] Pawley raises this issue:

> According to the principle of least moves, the most probable homeland is that which needs the fewest moves to account for the distribution of the subgroups. However, the internal classification of Oceanic languages does not overwhelmingly favour a particular small region as the dispersal centre.[40]

Pawley goes on to decide that one area can be best identified as a centre of genetic diversity:

> The centre of genetic diversity in Oceanic…lies in the central and eastern parts of Bismarck Archipelago, in the quadrilateral whose corners are the Admiralties, Mussau, southeast New Ireland and southwest New Britain.[41]

> East of the Bismarck Archipelago there are a number of high-order branches of Nuclear Oceanic but no single region which harbours a concentration of high-order subgroups comparable to the Bismarcks.[42]

These approaches, the 'simplistic' and 'sophisticated' methods as well as the centre-of-diversity method, are illustrated in Figures 1a–d. All methods derive geographic centres of linguistic communities for the ten sample points. In Figure 1a, we mark the 'centre' that can be determined simply by averaging the coordinates for each of the sample points; this approach is justified only if there is no predetermined structure to the data. Figure 1b shows the overall 'centre' assuming three subgroups in the data; these are indicated with dashed lines. Compared with Figure 1a, the centre in Figure 1b has moved down and to the left, reflecting the higher weight of the two subgroups in the lower left corner. In this second scenario, the overall centre is defined by averaging the subgroup centres, not the individual sample point centres. In Figures 1c and d, we examine the metric of centre-of-diversity. Figure 1c shows that the search for maximum diversity in a hierarchically unordered group (matching the assumptions in Figure 1a) has two possible results (controlling to some extent for the size of the region in which the diversity is found), with a centre in the bottom left or towards the top right, each of which contains three sample points.

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[38] Edward Sapir, *Time Perspective in Aboriginal American Culture: a study in method* (Ottawa 1916); Isadore Dyen, 'Language distribution and migration theory', *Language*, 32:4 (1956), 611–26. This work builds on the principles espoused by Vavilov, beginning with N.I. Vavilov, *Origin and Geography of Cultivated Plants*, tr. Doris Löve (Cambridge, UK 1992 [1940]).

[39] There are a number of unfortunate assumptions built into this model, which we shall address later, not least the assumption that language differentiation correlates with demic diffusion.

[40] Pawley, 'Where and when was Proto-Oceanic spoken?', 53.

[41] Ibid.

[42] Ibid., 55.

No other similarly sized region will contain this much diversity. If the sample points have predetermined structure, as in Figure 1d, there are two rather proximal contenders for the centre-of-diversity, each of which hugs the 'border' between two of the three first-order subgroups in the bottom left. With slightly more geographic flexibility, we might select the whole bottom left quadrant, as then we could include parts of all three subgroups. Even without this, we can definitively exclude the top right corner as a centre of (first-order) diversity, since that region encompasses only one of the three first-order groups. If the data set is even more hierarchically structured, this process can be applied iteratively, in a bottom-up fashion, to arrive at an overall 'centre' for the data set as a whole.

At first glance, the Bismarck Archipelago seems to meet the centre-of-diversity criteria well (see Map 2). In the quadrilateral described by Pawley, we find that three first-order subgroups are represented: Admiralties, Mussau, and Western Oceanic.[43] The results of both the (flawed) simplistic approach and the (more justified) sophisticated methodology are shown in Map 3, where the geographic centre, by whichever method is applied, is clearly further east than the polygon shown in Map 2. This result is to some extent determined by the eastern starting points of Central Pacific and Micronesian. While it is true that these locations must be interpreted in terms of socially realistic scenarios that have people living near islands, it is also true that the 'centre of diversity' method shows no correspondence with the geographic source of Lapita pottery.

We might argue that, regardless of the 'geographic centre', the centre of diversity that Pawley describes[44] is in the Bismarcks and is west of the region shown in dashed lines in Map 3. This qualitative approach should carry at least as much weight as our blind quantitative methodology. Is this, then, the end of the search? No. We have established that the area identified by Pawley is a *plausible* homeland for Proto-Oceanic by that method but not that it is the *only* such plausible homeland. We similarly find three primary subgroups in the Solomons, where Western Oceanic, Southeast Solomons, and Temotu are all represented, in a region more congruent with the 'geographic centre' results. With only a slight expansion, we could include a network that covers the area occupied by speakers of Southeast Solomonic languages, the Temotu languages, and those of northern Vanuatu. In terms of primary diversity in a compact region, we have a rival to the Bismarcks as a likely homeland for Proto-Oceanic. Map 2 shows the locations of the primary subgroups of Oceanic and the

[43] We do not count Micronesian as being 'adjacent' to this local area since there is strong and unrefuted evidence that Micronesia (excluding the Mariana Islands and Palau) has its linguistic origins in the eastern portion of its range, thus showing a provenance not directly associated with the Bismarck Archipelago to the southwest but rather possibly the southeast Solomon Islands, though the evidence is not overwhelming. See Robert Blust, 'Malaita-Micronesian: an Eastern Oceanic subgroup?, *Journal of the Polynesian Society*, 93:2 (1984), 99–140; Robert Blust, 'Malaita-Micronesian once again', *Oceanic Linguistics*, 49:2 (2010), 559–67. Yapese, spoken in western Micronesia, is a single language subgroup that proves challenging for an integrated history of Oceania. Since it is a single language and not a filled-out subgroup, it is hard to argue on linguistic grounds about the origin and source of earlier movements of the language and its speakers.

[44] Pawley, 'Where and when was Proto-Oceanic spoken?'
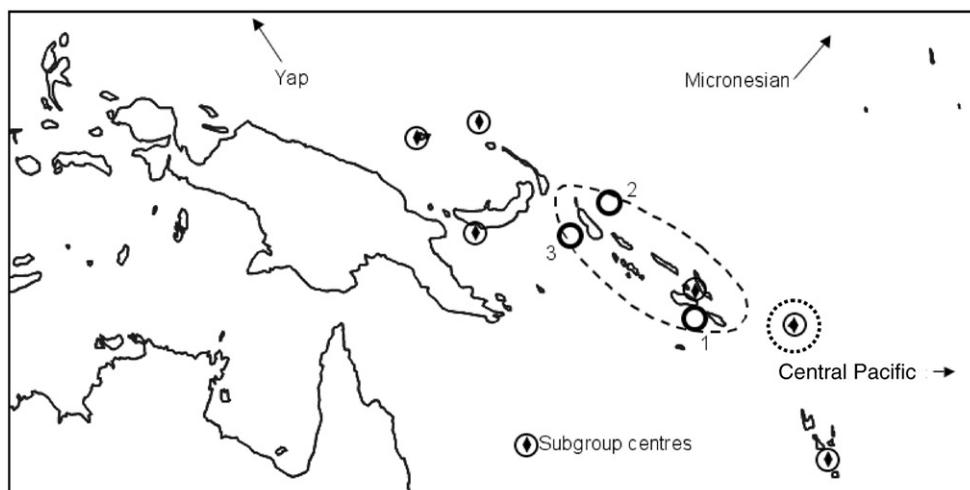
MAP 3: Inferred centres of dispersal for Proto-Oceanic subgroups according to different methodologies: 1 indicates the geographic centre of all Oceanic languages ('simple' approach); 2 shows the geographic centre of the nine first-order subgroups of Oceanic ('sophisticated' approach); and 3 shows the geographic centre if we assume Blust's position, in which all languages other than those of the Admiralties are a single subgroup. For six of these subgroups, the geographic centres are shown with a diamond inside a circle (the others – Yapese, Micronesian and Central Pacific – are off the map). The dotted circle around the Temotu languages marks the centre following the application of the methodology in Søren Wichmann, André Müller, and Viveka Velupillai, 'Homelands of the world's language families: a quantitative approach', *Diachronica*, 27:2 (2010), 247–76.

quadrilateral described by Pawley for the Bismarcks, a polygon stretching almost one thousand kilometres from west to east. It is clear that the same area, or same distances, placed in the Solomons can also encompass three subgroups.[45] Further, this polygon is closer to the geographic centre described in Map 3. Finally, applying the centre-of-diversity methodology reported in Wichmann et al.,[46] which has shown promising results when calibrated against families with better-understood histories, the most likely homeland is calculated to be in the Temotu area (Map 3).[47] Is there a principled way to choose between these approaches? The weight of linguistic opinion favours the more sophisticated approach, taking into account information about the hierarchical structure of the subgroups as discussed above. Our point, however, is that, regardless of which approach is used, the linguistic evidence does not suggest a homeland that is congruent with the homeland of Lapita pottery as discussed above.

[45] Note that we have been comparing areas of similar size; given the probably highly mobile nature of the society that spoke the earliest languages of the Oceanic subgroup, it is not clear why a geographically restricted region is the best model. We return to this point below.

[46] Wichmann, Müller, and Velupillai, 'Homelands of the world's language families'.

[47] Søren Wichmann, pers. comm., March 2012. We know of no archaeological evidence that would be congruent with this result. Linguistically, as we have pointed out, the result is neither expected nor proscribed.

Occam's Razor and the Construction of Human History in Near Oceania

We have seen where different ways of assessing a linguistic 'centre' lead us in the search for an Oceanic homeland. It is clear that the most appropriate candidate for the Proto-Oceanic homeland should include the Solomons within its range.

Against this, we must assess the external relations of Oceanic, given that Oceanic is known to be the linguistic product of an eastern movement of Austronesian languages from Island Southeast Asia. Such an assessment would suggest a more western origin, towards Cenderawasih Bay in the northwest of New Guinea. Earlier assessments have rejected such a western location, dismissing the evidence of geographical proximity in determining a likely homeland for Oceanic, reasonably contending that arguments from the age-area principle supersede arguments from geographic proximity, especially given that Proto-Oceanic society was almost certainly a small, highly mobile maritime group.[48]

As depicted in Maps 2 and 3, homeland-identifying criteria strongly favour the inclusion of the Solomons in the range of a homeland hypothesis for Proto-Oceanic. If we return to the metric used by Pawley and others, assessing the number of first-order subgroups, the greatest diversity can be found in an area that extends from the Admiralties to the Central Pacific, encompassing seven subgroups: Admiralties, Mussau, Meso-Melanesian, Southeast Solomonic, Temotu, Southern Oceanic, and Central Pacific (the region is delimited on Map 4; compare with the locations of the primary subgroups of Oceanic, shown on Map 2). This is an extension of the conclusion reached by Pawley and Green[49] and, for the reasons of mobility and differentiation cited in that article, still without firm refutation. It is true that this region extends across a very large area. If we were to emphasise 'compactness' as a constraining principle, we would be forced, following the methodology reported in Map 3, to shift the 'homeland' to the Solomons. If we relax the constraint on 'compactness', we would have to provide social and technological justification for the decision; the presence of increasingly sophisticated maritime technology in the Pacific makes it unlikely that a Proto-Oceanic-speaking society which had arrived by sea would have been constrained to a single island group.

Non-congruence of Separate Lines of Evidence

Archaeologically, current dating evidence suggests the emergence of Lapita pottery in Mussau and the Bismarcks, with subsequent dispersal to Vanuatu and Fiji c. 100–300 years later. A major caveat is that relatively few investigations have occurred in the Solomon Islands, and any firm conclusion on the chronology of early Lapita must await more detailed investigations there and a more rigorous dating programme across Near Oceania.

[48] Andrew Pawley and Malcolm Ross, 'Austronesian historical linguistics and culture history', *Annual Review of Anthropology*, 22 (1993), 425–59.

[49] Pawley and Green, 'The Proto-Oceanic language community'.
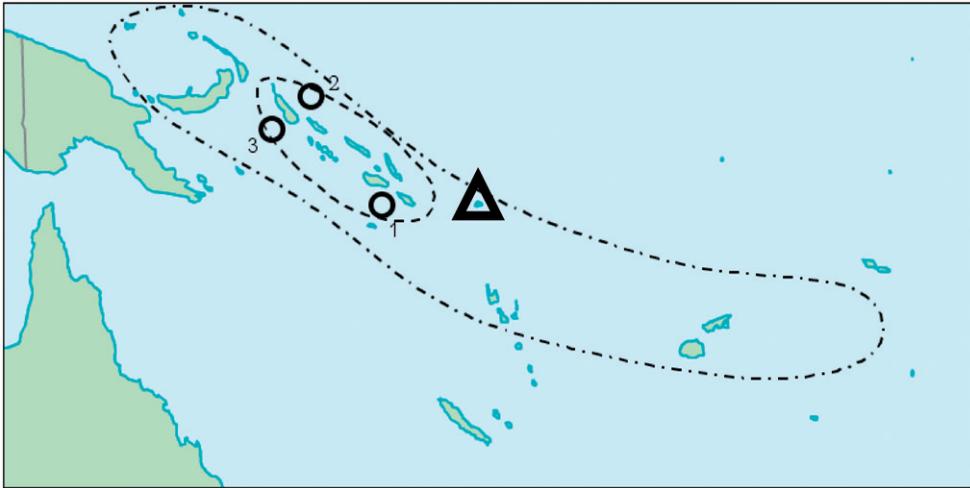
MAP 4: An inclusive view of the Proto-Oceanic range (including information from Map 3). The inner dashed region with numbered references (1, 2, and 3) is the region described in Map 3. The wider region, delimited by the dot–dash line, shows a geographically less constrained region which contains seven of the nine first-order subgroups of Oceanic. The triangle marks the Santa Cruz region of the Solomons, where quantitative analysis of lexical data places the homeland of Oceanic.

Linguistically, we have identified two logical homeland regions for Proto-Oceanic on the basis of the different principles (and controlling for approximately equal areas) that were discussed above, constrained by the identification of primary subgroups. First, there is 'the quadrilateral whose corners are the Admiralties, Mussau, southeast New Ireland and southwest New Britain'.[50] Second, there are two possible regions further east, one of them starting in the central/southeast Solomons bounded approximately by New Georgia/Santa Ysabel in the west and the islands around Santa Cruz in Temotu province in the east, and the other one running from Makira in the southeast Solomons across Santa Cruz to the Banks and Torres Islands in northern Vanuatu.

Given the likelihood that Proto-Oceanic, prior to its differentiation into nine primary subgroups, was a dialect chain, it is very reasonable to assume that a chain of dialects or languages was spoken both within and between these two areas as well as potentially beyond them. Since it is all but certain that the Austronesian spread across the Pacific involved wide-faring sailing, we are not constrained to think solely in terms of Near Oceania; we can just as easily surmise that dialects of Proto-Oceanic were spoken as far east as the Solomon Islands[51] or the Fiji–Tonga region (following settlement) as we can assume a tight geographic restriction in the Bismarck Archipelago. Indeed, since Central Pacific is a first-order subgroup, requiring it to be a direct descendant of Proto-Oceanic, this is as

[50] Pawley, 'Where and when was Proto-Oceanic spoken?', 53.
[51] See Terrell, Hunt, and Bradshaw, 'On the location of the Proto-Oceanic homeland'.

logical a conclusion from the standard model of Oceanic subgrouping as is any other location *if we restrict ourselves to the linguistic evidence alone*.[52]

Map 4 shows the range that these assumptions imply; the lack of southwards extension is not based on any set of principles but rather reflects the inclusion of Southern Oceanic in its origins in northern Vanuatu (see the discussion at the end of the previous section regarding 'compactness'), thus rendering the inclusion of all of Vanuatu and New Caledonia 'unnecessary'. We might ask whether or not the earliest colonists of Vanuatu and New Caledonia (and, further, Fiji) spoke Proto-Oceanic (or a language closely related to it). The logical extension to this question would be 'Did the earliest colonists speak *only* Proto-Oceanic (or a language closely related to it)?' since there is no reason to suppose that the earliest colonists either represented a linguistically homogeneous society or remained that way.[53] It is extremely likely (given the modern linguistic landscape in the Pacific) that Proto-Oceanic was spoken at the time of the early settlement of various of the island chains in Remote Oceania, though there is no absolute evidence for this position from linguistics. There are equally no principles to exclude central and southern Vanuatu and New Caledonia other than the supporting data on the lexical 'centre' for Oceanic, which is placed in the eastern Santa Cruz location, as reported above. The reader should note that, as is normal in historical linguistics, we do not know *from the linguistic evidence* what the timing of the earliest Proto-Oceanic stage would have been. It may or may not have occurred with Lapita pottery in its origins, though it is certain that the expansion of early Oceanic languages and the spread of Lapita pottery were two historical events that became entwined to different degrees in different regions within this interaction sphere.[54] It is likely that various times and different places saw diverse processes of spread for both Lapita and Oceanic, involving the same complexity that others have proposed as models of the origins of modern Pacific societies.[55]

The archaeological and linguistic evidence examined here indicates a dramatic lack of congruence between the dispersal centre of Lapita pottery and that of the Oceanic languages. If the archaeological chronologies are taken to inform the linguistic picture, as practised by Pawley,[56] a point of origin in the Bismarck Archipelago can be inferred. In doing so, however, Pawley is no longer dealing with two independent and convergent lines of evidence, and he thereby runs the risk of circular reasoning. For, in reality, any such attempt represents an assumed correspondence between the two lines of evidence, which enables one (archaeology) to be used as a surrogate for the other (linguistics).

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[52] We say nothing about the possible locations of pre-Proto-Oceanic.

[53] Donohue and Denham, 'The language of Lapita'.

[54] The reader will note similarities with ideas expressed in Geoffrey Irwin, *The Prehistoric Exploration and Colonisation of the Pacific* (Cambridge, UK 1992); Geoffrey Irwin, 'Pacific seascapes, canoe performance, and a review of Lapita voyaging with regard to theories of migration', *Asian Perspectives*, 47:1 (2008), 12–27.

[55] Green, 'The Lapita cultural complex'; David J. Addison and Elizabeth Matisoo-Smith, 'Rethinking Polynesians origins: a West-Polynesia triple-I model', *Archaeology in Oceania*, 45:1 (2010), 1–12.

[56] Pawley, 'Where and when was Proto-Oceanic spoken?'

Depending upon the size of the geographical region within which the dialect chain of Proto-Oceanic was spoken, different chronological scenarios emerge. If the dialect chain was restricted to the region encompassing the Bismarck Archipelago and the Solomon Islands,[57] then it could predate Lapita pottery and represent established social networks across this maritime landscape, which in turn may have assisted the relatively rapid spread of Lapita pottery across this region (as inferred by Terrell et al.).[58] If, however, the range of Proto-Oceanic also included Vanuatu and Fiji, namely regions settled after 3250–3100 cal BP, then Proto-Oceanic emerged after the advent of Lapita in the Bismarck Archipelago because it was associated with, or post-dated, the dispersal of Lapita to these islands. According to either scenario, there is no necessary correspondence between the origins, or homeland, of Lapita and Proto-Oceanic.

In summary, the current archaeological and linguistic evidence suggests separate (albeit overlapping) regions for the appearance of Lapita pottery and the emergence of Proto-Oceanic. Lapita originated in the Bismarck Archipelago, plausibly in Mussau, and seems to have derived from red-slipped pottery in Island Southeast Asia. By contrast, Proto-Oceanic most plausibly originated further east, in a much larger area that includes the Solomon Islands chain. Some interpretations of linguistic origin for Oceanic languages would include the Bismarck Archipelago, yet the clear centre of gravity according to several methods is further east. Given this historico-geographical discrepancy, it seems reasonable to disestablish the assumed, and oft-stated, association between Lapita pottery and Proto-Oceanic languages. Lapita pottery and Proto-Oceanic languages should be treated as two separate historico-geographic phenomena, with different origins and dispersals. Although both Lapita pottery and Oceanic languages have predecessors in Island Southeast Asia, their histories in the Pacific are not constrained to follow identical, or causal, lines of development. Although the pathways of the pottery and the languages almost certainly did intertwine for extended periods, there is no basis to assume that the people who made the first Lapita pots spoke a Proto-Oceanic language nor that speakers of early Oceanic languages are especially implicated in the earliest dispersals of such wares.

[57] See Pawley and Green, 'The Proto-Oceanic language community'; Blust, 'A note on the higher-order subgroups'.

[58] Terrell *et al*., 'On the location of the Proto-Oceanic homeland'.