

The use of landscape in identifying potential sources of Caroline island colonisation

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The eastern Caroline islands are located in the northwest tropical Pacific and are outside of the known Lapita pottery using area. In this paper I suggest that the eastern Caroline Islanders appear to have links with ancestral Lapita pottery using communities, while the western Carolinians do not share these links. To illustrate this I compare the material remains of early settlement, around 2,000 bp, in the eastern Caroline high islands with Lapita and Late Lapita assemblages and sites. Then I turn to the landscape archaeology of Belau (Palau) in the west Carolines and highlight its difference from the other islands. This difference will be explained in relation to the direction of travel of the individual communities. Intoh (this volume) describes the evidence of ceramics and linguistics in relation to the early settlement of the three eastern Carolinian high islands of Chuuk (formerly Truk) Lagoon, Pohnpei, and Kosrae (see also Rainbird 1994, 1995). Here I first discuss the ceramic evidence.

■ Ceramics

Late Lapita Plainware is accepted as deriving from the tradition of Lapita ceramics (Kirch 1990), which includes undecorated as well as decorated pots (Kirch and Hunt 1988; Spriggs 1990). According to Spriggs (1995) ceramics in Lapita areas become either undecorated or minimally decorated through time and after about 2,500 to 2,000 BP the majority of ceramics are regarded as Late Lapita Plainware.

In order to establish the supposed similarity of the eastern Carolinian ceramics with those derived from the Lapita tradition I reviewed artefact reports from a number of

research projects in insular Near and Remote Oceania located south and southeast of the eastern Carolines. The burgeoning evidence of continued contact throughout the settled Pacific island world (e.g. Allen 1996; Walter and Sheppard 1996) emphasises the necessity of considering all assemblages dating to approximately 2000 bp or earlier. It is also possible that if the original settlers of the eastern Carolines are derived from what Green (1974, 1979), in his division, has termed the “western Lapita” area, then their dispersal may have been to the east as well as the north and comparable traits may be recognised from assemblages within the ‘eastern’ area.

The site of To’aga in the Manu’a Islands of American Samoa perhaps provides one such example from the eastern area. Excavations directed by Kirch and Hunt (1993) recovered a range of material culture spanning the history of settlement on the island. The pottery description of Hunt and Erkelens reports that (1993: 147):

The assemblage is simple in form and carries very little decoration. Decorative attributes are restricted to impressing and notching on the lip, red-slip, carved paddle impression, and incision. Such a short roster departs dramatically from assemblages of comparable age from Mulifanua, ‘Upolo, and from assemblages in Tonga and Fiji. That the pottery is different from other assemblages may be true, but the description is closer to one for eastern Carolinian pottery. The four of the five ¹⁴C determinations on charcoal date the appearance of the To’aga ceramics to the first half of the third millennium BP (Kirch 1993: 89).

From the western Lapita corpus decorated Lapita sherds from Reef Santa Cruz exhibit characteristic parallel notching and carination (Green and Cresswell 1976). These examples have associated dates of almost a millennium prior to their possible Carolinian descendents. In the Banks Islands Ward (1979) found pottery with some similarities to that from the Carolines (e.g., Calcareous Sand Tempered [CST] and notched rims), and he argued for a relationship with the Lapita derived Mangaasi tradition of Vanuatu. Ward highlights the differences by noting the features of the Erueti, Vanuatu assemblage which exhibit (ibid.: 7-26) flat rims with parallel notching of the outer or both edges.

Plainware ceramics recovered by Kirch and Rosendahl (1973) from the Polynesian Outlier of Anutu share a few similarities with the eastern Carolinian ceramics, for example, CST and carination, but do not have notched rims, and are poorly dated. However, Kirch (1988) makes a connection between the Anutu ceramics and those recovered by Kirch and Yen (1982) from Tikopia which he describes as: “largely plain, with only five sherds bearing dentate-stamped designs, although a number of rims are crenated or notched. Calcareous sand temper dominates (79 % of sherds), and vessel forms include [carinated and globular types]” (Kirch 1988: 188). This description suggests similarities with the Carolinian assemblages, but the notching is rather different, taking the form of “parallel notches cut or incised perpendicularly across the lip” (Kirch and Yen 1982: 196) which produces a crenallated rim, a style not reported from the

Carolines. This review, I feel, illustrates the general homogeneity of plain ceramics related to the initial movement of people into the Pacific after c. 3500 BP. It also illustrates the heterogeneity of the ceramics when viewed at a more detailed scale. The latter makes impossible the identification, using ceramics, of a specific location from which the eastern Carolinians derived. Anywhere within the area settled by Lapita pottery users is a potential source. This is similarly the case for other types of portable material culture such as shell artefacts. However, closer definition may be provided by other aspects of the material remains, such as settlement type and location.

■ Settlement and subsistence

A number of Lapita sites offer similarities with the earliest settlement evidence in the eastern Caroline Islands. Two in the Bismarck Archipelago are, Apalo in the Arawes (Gosden *et al.* 1989; Gosden and Webb 1994), and Talepakemalai in the Mussau group (Kirch 1987; 1988a; Gosden *et al.* 1989). Wickler (1990) reports a number of similar sites from the northern Solomons. The similarity between the location of these sites in Near Oceania and the earliest sites in the eastern Carolines is striking. Like the Near Oceanic examples the Carolinian sites are located on the reef flat and in two out of the three cases located adjacent to deep water passages in the reef. Many of the Near Oceanic sites have been identified as stilt-house settlements and there are a number of indications to suggest a similar interpretation for the Carolinian sites. Although no preserved timbers have been recognised in the small areas of excavation carried out at the early Carolinian sites, one aspect in particular, the sedimentological record, points to stilt-houses as a strong possibility. The Carolinian sites are characterised by the build up of coastal sediments, in the form of artificial islets as at Nan Madol (Fig. 1) (Athens 1990) and the more typical progradation, as observed at Sapota on Fefan for example (see Shutler *et al.* 1984). I suggest, given the evidence from Near Oceania, stilt-houses could have initiated this build-up, later purposefully added to in order to form islets or coastal flatlands. Another similarity is that the pottery from Fefan appear to consist of both water-worn sherds and those retaining integrity. This mixture of sherd condition has been noted by Gosden at the stilt-house village of Apalo (personal communication).

The existence of stilt-houses dating to the period of early settlement may be of no surprise, as the islands when first encountered are likely to have been dense with primary vegetation, having had no resident mammal to restrict growth. Settlement on the reef may have been the only location available until enough space had been cleared on the island proper for both subsistence crops and habitation. The question of subsistence will need to be addressed next, but first, the evidence for habitation should be explicated.



Figure 1
Artificial islet at Nan Madol, Pohnpei.

That is, the early sites of the eastern Carolines are likely to have been settlements of stilt houses located on reef flats. In turn, these types of site are known in the area of the Bismarck Archipelago and northern Solomon Islands during the period of Lapita pottery, suggesting a link between the settlers of the eastern Carolines and the south.

Subsistence

Subsistence strategies at initial colonisation can aid further in the search for origins. Here I venture into the realms of strandlooping versus transported landscapes and founder effect versus habitus. Strandlooping is a term borrowed from African contexts by Groube to describe the method of ‘leap-frogging’ colonisation adopted by the first settlers of Remote Oceanic islands (1971: 312). At first sight Groube’s hypo-

thesis is an appealing explanation for the villages on the coral reefs, the precocious inhabitants subsisting mostly on the marine resources surrounding their dwellings to await the impending arrival of agriculturalists (or setting about it themselves when the mood struck). But this is an unrealistic proposition. As Spriggs (in press) has concluded, it is highly doubtful that survival would be possible without the introduction of subsistence crops and their immediate cultivation. This implies what has been termed a “transported landscape”.

Of the major animals typically transported in the Pacific, only dog has been reported from the early sites on Chuuk, Pohnpei and possibly Kosrae. Evidence of pig is missing for most of the Carolines throughout prehistory (Intoh 1986). This is typical, however, of islands settled late in prehistory. Kirch (1984: 88) has shown that the full complement of subsistence species is common in Near Oceania, but dwindles with distance from source, thus the lack of pigs and other subsistence items, such as the *Canarium* nut tree, in the eastern Carolines does not contradict the hypothesis that Near Oceania was the source of the islanders. Direct evidence for plant staples has been reported from Kosrae where the three taros (*Colocasia*, *Cyrtosperma*, and *Alocasia*) and breadfruit are found associated with the earliest cultural deposits (Murakami 1995; Ward 1995).

It cannot be assumed, but it is likely, that similar subsistence species were introduced by the first settlers of the neighbouring high islands. In *Social Being and Time* Gosden (1994) raises some interesting points regarding the nature of settlement during the Lapita pottery period. He states that (ibid.: 29):

we should not leap to the conclusion that stable farming systems identical to those found today were in existence. Indeed, the high levels of soil erosion from the start of the Lapita period onwards indicate forms of land use unlike the swidden gardening of the present, which does not cause massive erosion. This view, based on the peripheral, and what Gosden believes to be ephemeral, nature of Lapita pottery period settlements may be accounted for by the possibility that from the Lapita pottery period onwards the settlers, initially living on the reefs of islands, actively set about altering the landscape in order to create the conditions they perceived as suitable for settlement and subsistence.

Their aim was to alter the very nature of the landscape by manipulating the vegetation so as to cause erosion and thereby lay the foundations for the subsistence farming systems in a landscape transported as much by mind as by seacraft. This approach to the landscape by the initial settlers would be responsible for creating the conditions described by Gosden (cf. Gosden and Pavlides 1994: 169).

■ The means of colonisation

If these similarities in settlement location and landscape management are a guide to the origins of the first eastern Carolinians then one needs to assess the means by which colonisation occurred. “Canoe” is perhaps a typically European word of derision, and in no way describes the sophisticated and possibly large vessels that were constructed for long-distance voyages of exploration and colonisation. Irwin (1992) has shown in computer simulations that there is likely to have been a high success rate for those attempting to colonise the eastern Carolines from Near Oceania. From Buka, of ten simulated voyages eight successfully reached landfall in the Carolines and from the Reef Santa Cruz Islands, at the opposite end of the Solomons chain, of the 20 simulated voyages nine reached the Carolines, two landed in the Marshalls, eight returned safely without sighting land and the final one was lost at sea (*ibid.*: Table 1). It appears from these simulations, if prevailing climatic conditions have changed little over the last two millennia, that settlement of the Carolines from Near Oceania is plausible.

■ The origins of the east Carolinians

Since Buck’s 1938 proposal that the settlement of the Remote Pacific occurred through the Carolines in a west to east march, the stepping-stone model for colonisation has found repeated support. However, the presence of pottery in the eastern Carolines dating to initial settlement indicates a direct colonisation(s) from another high island (see *Intro* to this volume). The main contenders for a source population are then that they are from Belau and beyond in the west or from the south or southeast. So what of a western derivation for the settlers of the eastern Carolines? The archaeology of Belau provides a useful corpus for comparison. Ceramics appear to be present from initial settlement, but unlike the pottery in the east there is no CST. There are also many differences in other forms of material culture, especially the more common use of *Terebra* and beaked adzes. But, the major difference I wish to highlight here is the sculpting of the landscape.

On the northern islands of Belau there is evidence for terraced hillsides constructed on a monumental scale. These features have been the subject of investigation by Osborne (1966, 1979) and Lucking (1984). The terraces have transformed large areas of the northern islands into sculpted landscapes and are some of the earliest dated archaeological

features in the archipelago. In many cases the terraces completely cover hillsides and often end in a high-sided “crown” at the peak. The steepness and height of some of the terraces have led most archaeologists to believe that they served a dual function for both agriculture and defence. More recently, Lucking has played down the defence attribute by noting that many of the presumed ditches and “footcatchers” can be bypassed and in some instances actually aid ascent to the summit (Lucking and Parmentier 1990: 129).

With the terraces of Belau in mind I return to the eastern Carolines where the evidence from the reef settlements show that the human interaction with the environment is very similar to that which initially occurred in the expansion from Near to Remote Oceania to the south and southeast of the Carolines. This is very different to the interaction with the environment which appears to have been instigated soon after settlement in the Belau Archipelago where the landscape was remodelled in the form of terraces, exhibiting a very different approach to landscape.

If, as I suggest, these patterns reveal real differences in landscape use, then I suggest they also reveal differences in what Pierre Bourdieu (1977) has termed *habitus*, that communal historical consciousness inculcated within the individual and revealed in practice, between the earliest settlers of Belau in the west and those of Chuuk, Pohnpei, and Kosrae in the east. These Belauan features clearly reveal a different approach to landscape management to that of the early settlers of the eastern Carolines, where significant landscape change has also occurred, but in a very different fashion.

Whereas the Belauans went inland to the soils and worked them in situ, the eastern Carolinians set about altering the landscape in a more dynamic way, moving the soil to the coast and in so doing creating coastal lowlands suitable for subsistence crops and habitation. The latter was a high risk method, particularly on many of the small islands of Chuuk Lagoon. Here the fringing reef was not so well-developed and much of the valuable hill soil may be lost into the sea. But it was the habitual experience derived from their ancestors and communities from the south where enhancement of the landscape to allow the transported crops is recorded. As I have outlined above this is a phenomenon which dates from at least the appearance of settlements bearing Lapita pottery. On Belau, the approach to the environment has been more stable, and eminently different.

Conclusion

At a general level the similarities between the material culture of the high islands of the eastern Carolines and that of Lapita pottery using areas during the period 3500-2000 BP are strikingly clear and can be taken to show in broad terms the origins of these mate-

rial forms. At a more detailed level there are differences between the material remains of each of the eastern Carolinian high islands, and clearer differences from the better recorded sites of the Late Lapita period. Although it is still not possible to identify a particular source island or islands for the colonisers of the eastern Carolines, the stilt-house settlement types and indications of land use betray a Lapita ancestry; these, and not the portable material culture, indicate the general direction of colonisation. The Belauans, given their approach to landscape, originate elsewhere.

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