The stratigraphy of the Ponamla site, northwest Erromango, vanuatu: evidence for 2700 year old stone structures

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The Ponamla site in northwest Erromango was brought to archaeological attention by Sempet Naritantop, former Vanuatu National Museum Fieldworker. He recognised pottery brought to the surface during posthole digging for a fence around the hamlet of Ponamla. I visited the site in 1994 and its potential was confirmed by a shallow test pit dug near where the greatest concentration of pottery had been found. It was a focus of excavation by Stuart Bedford and myself over five weeks in 1995, working with Vanuatu National Museum Fieldworker Jerry Taki. The area of the 1994 test pit was expanded and in three square metres taken to sterile. Over a larger area the top 60 cm or so was cleared off to the level of various stone alignnments which are the subject of this paper (Figure 1). In addition, site area was defined by a test pit transect not reported on here.

When we presented the results of our excavations at seminars in Canberra early in 1996 we were genuinely surprised by the scepticism of some of our colleagues that the structures we reported were of cultural origin. In hindsight, we realise that we made little conscious attempt in excavating to "prove" cultural origin as to us at the time there was absolutely no doubt as to what the stratigraphy of the site represented. We did not dig the site with any suspicion that our interpretation of it might be considered controversial. The excavation was thus aimed at establishing the stratigraphic relation of the various features, not at exposing them completely. Had we felt that the cultural origin of the stone features we encountered would be questioned, we would have dug the area differently.

Ponamla is a bay at the northern end of Erromango facing the island of Efate. On this island, bar one sherd found in secondary deposition in a rockshelter, pottery has only

been found in immediately coastal areas, usually associated with canoe anchorages or access and fresh water. Ponamla is a prime site of this kind, representing a small coastal settlement of the immediately post-Lapita age. A single dentate-stamped Lapita sherd in secondary context hints at an earlier component to the site, perhaps buried by talus slope accumulation.

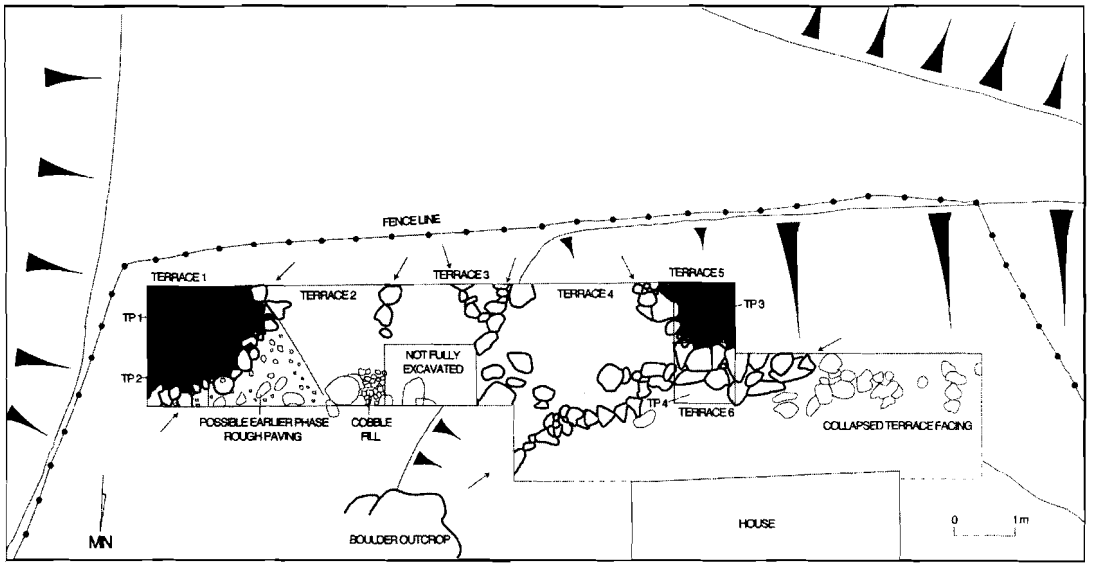

Figure 1
Ponamla: plan of area a, upper structural features.

The main site area appears to be a remnant Pleistocene alluvial terrace, subject to talus slope encroachment from the limestone hillslope at its eastern edge. A series of stone rubble ridges comes off the talus slope along the terrace. Rather than being simple landslip features, they appear, at least in part, to represent human clearance of talus rubble to form flat areas for placing houses. The most seaward ridge, where excavation was concentrated, accumulated by seemingly different processes. It was built-up as the result of intensive cultural activity, constrained by the construction of terraces of talus-derived limestone boulders and volcanic oven stones carried to the site as manuports either from the beach or the riverbed west of the site. The ridge above the site and for some distance inland is of limestone and there is no possible source upslope for volcanic rocks.

The remnant alluvial terrace itself narrows inland to disappear just beyond the upper end of the pottery scatter, in an area where the terrace is about 10 m above the river and perhaps 12 m asl. The other bank of the river is extremely low, an alluvial flat relating to present sea level. The terrace on which the site sits does not appear to relate to present sea level. There is no evidence of local faulting in this area so I do not believe it relates to recent co-seismic uplift. It resembles Pleistocene alluvial terraces seen on other Vanuatu islands. Although the cultural deposit rests on sterile alluvium, there is no evidence of the cultural deposit itself being affected by alluvial processes. Thus the ubiquitous volcanic rocks which we interpret as oven stones and/or constructional features could not have entered the site naturally as a result of high energy flood events. At the main excavated area there is no direct evidence of talus slope encroachment in the prehistoric period, although it is possible that colluvial deposits have buried part of the site immediately to the east.

The excavated cultural deposit below layer one built up through depositional processes associated with use of the area as an intensive cooking and possibly pottery-production site. The density and state of preservation of the artefactual material suggest that the deposit is in situ. Nearly complete, broken pots were commonly encountered during excavation, as were bones of all size ranges, including pieces showing old breaks. Large pieces of carbonised coconut and other nut fragments were also found throughout the deposit. The sediment itself seemed typical of what one would expect from an area of intense cooking activity, with many fragments of fire-cracked rock in an organically-rich matrix. Oven rakeout in the form of ash lenses was also encountered. The consistent and tight range of radiocarbon dates and the evidence for stylistic change in pottery within the deposit (see Bedford, this volume) further support its stratigraphic integrity.

There are at least three levels of structural features within the cultural deposit, exposed in particular in Test Pits 1 and 2 (Fig. 2, 3, 4). The lowest is a stone paving of volcanic and coral cobbles and tabular coral boulders directly over sterile alluvial deposits at about 190 cm below datum (the datum is between 20 and 40 cm above the surface of the test pits). A charcoal date of 2550±70 BP came from here, calibrating to 2718 BP with a 2 sd range of 2776-2358 BP. Test pit 3, some 8m away, revealed a similar feature. Given the relatively small area exposed, this identification is the most tentative of our interpretations.

In test pits 1 and 2 the cultural deposit subsequently built up through midden deposition and then a terrace of large coral boulders was constructed with an infill behind of smaller volcanic and coral cobbles. The outer facing of this runs across the test pits at the boundary of test pits1 and 2. Its form and function only became clear when test pit 2 was dug. By then we had lifted out one of the large facing stones to penetrate beneath it, hence its unphotogenic appearance and perhaps some of the Canberra scepticism.

The base of this terrace was at about 155 cm and its top was at 110-120 cm below datum. A marine shell sample associated with its construction gave a date of 3040±90

BP, which calibrates to 2776 BP, with a range of 3006-2673 BP. This terrace became buried as cooking debris and midden accumulated against and over it. A charcoal sample from 100-110 cm gave a date of 2550±70 BP, calibrating to 2718 BP, exactly the same value as the lowest dated sample. Shell and charcoal samples from 80 cm, the top of this midden/cooking deposit gave ages of 2560±140 BP for charcoal and 2840±70 BP for marine shell, calibrating to 2734 BP (range 2944-2326 BP) and 2648 BP (range 2743-2348 BP) respectively.

Above this is a cobble and boulder floor. This may represent more than one phase, but if so they were very close together in time. It may be that an initial floor of cobbles was later covered by a surface including much larger coral boulders. Alternatively the lower surface may just have been the bedding for the larger boulders. This construction occurs between about 60 and 80 cms. Associated with the upper larger boulders but possibly just filtered down among them was a marine shell sample which dated to 2620±70 BP, calibrated to 2305 BP (range 2452-2114 BP).

Above it and seemingly after it was abandoned is an ephemeral shell midden layer which was exposed on the surface for a time, hence its chalky appearance. A marine shell sample from this midden in Square 1.2, at 42 cm below datum gave an age of 2750±70 BP, calibrated to 2432 BP (range 2698-2300 BP). This would appear to represent final use of the site in the pottery-using period, immediately prior to its abandonment. Sherds found above this level in the upper "plowzone" of layer one to the surface are probably in secondary deposition.

When excavation of the upper cultural deposits associated with the cobble and boulder floor was extended to the west it was seen to be the paved surface of a terrace, dropping to the west some 40 cm (Fig. 5). Another lower terrace (Terrace 2) was exposed in section 180 cm to the west, dropping about 20 cm then a line of coral boulders and a further terrace (3) some 2.4 m to the west dropping 20 cm. A further 1.8 m to the west along terrace 4 the section encountered a similar terrace and cobble floor to thc first, rising up again. by 20-25 cm (terrace 5).

Exposed when a house was recently constructed, and further cleared in 1995, is a long terrace running west to east to join a coral outcrop just north of our excavation. All of these terraces and walls in the extension of the excavation were associated with the latest phase of stone construction with a *terminus ante quem* of 2300 BP but probably nearer 2700-2600 BP. In all areas intact cultural deposits continued under the terrace features but were not excavated much below the upper terraces except at their western end (test pits 3 and 4). In test pit 1.9 another terrace facing immediately below the upper terrace level was partially exposed (Fig. 5). Elsewhere in the site, terrace features of the same type are exposed as surface features, some of which are associated with a former village site occupied within the memory of older Erromangan informants in an area with no evidence of earlier cultural deposits. The current hamlet of Ponamla appears to utilise some terraces which may have originally been constructed during the latest period of pottery use at the site.

The cultural deposit below this upper construction phase in test pits one and two built up extremely rapidly, all radiocarbon ages overlapping considerably at one standard deviation to produce calibrated ages of 2776 to 2648 BP (5 samples: 3 charcoal and 2 shell) through two construction phases and 1.2 m of deposit. During this period there was stylistic development in the pottery (Bedford, this volume).

Discussion

A similar stone terrace alignment was observed at Ifo in southern Erromango, in the top of a beachridge many tens of metres away from any natural source of large talus boulders. Suggestions in that case of some natural linear accumulation of hillslope boulders would be impossible, further giving confidence that our original interpretation of the Ponamla features was correct. There are many examples of low, rough terrace structures in use today in the Pacific as bases for house platforms or, as illustrated in Kirch's recent book "The Wet and the Dry", for open-sided cooking structures and other activity areas (1994:Figures 30, 72). The Ponamla examples would appear to represent the earliest substantial stone structures of this type yet encountered in the western Pacific.

Bibliographie

KIRCH (P.V.), 1995 — The Wet and the Dry: *Irrigation and Agricultural Intensification in Polynesia*. University of Chicago Press. Chicago, IL.

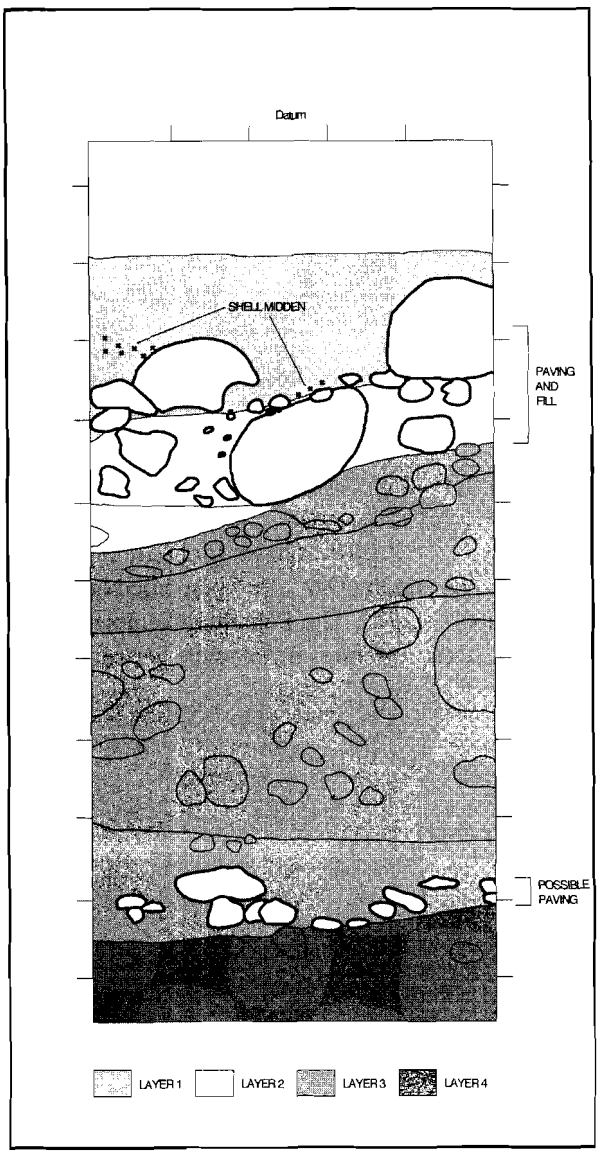

Figure 2
Test pit 1.1, North section.

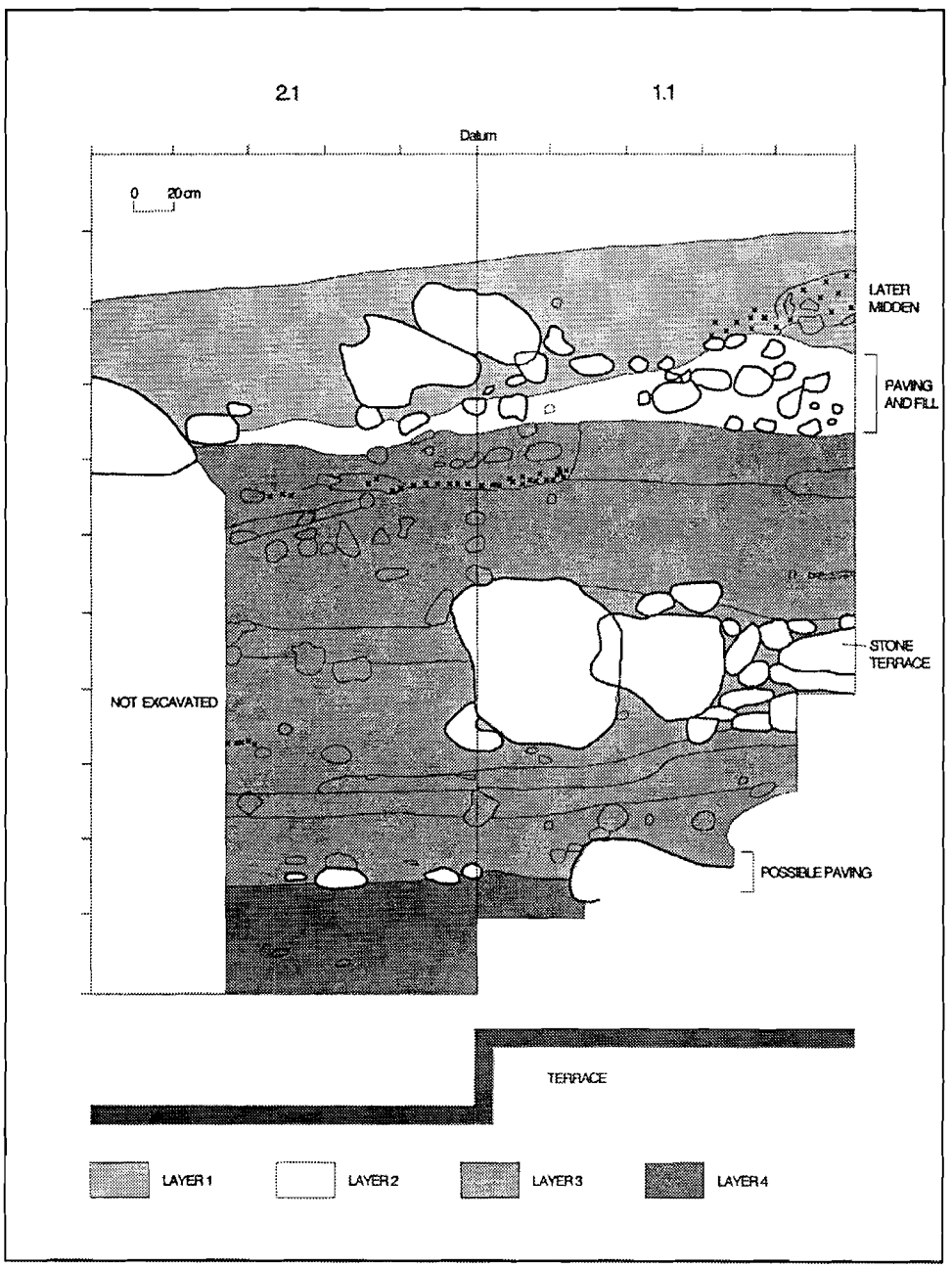

Figure 3
Test pits 2.1 and East section.

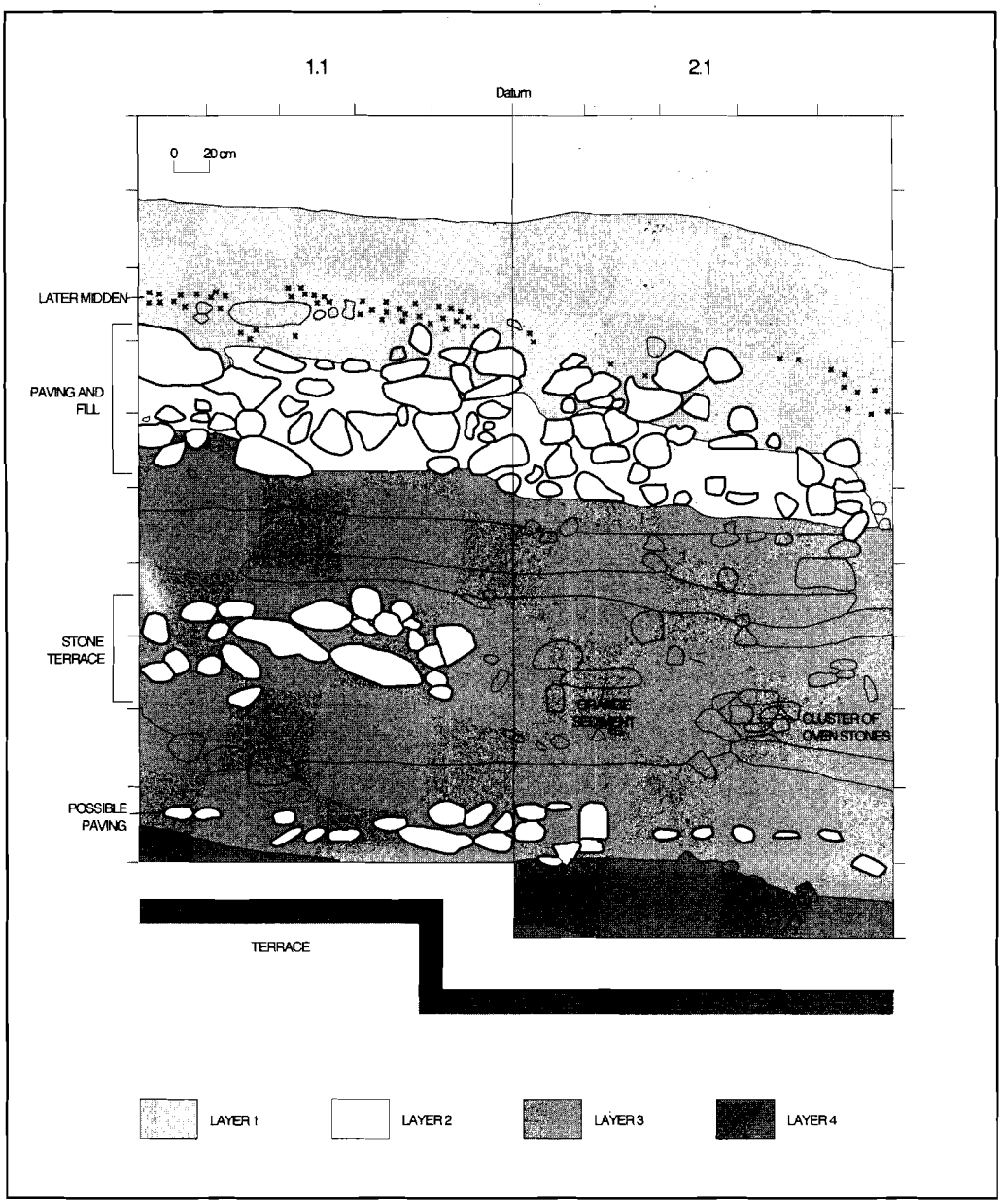

Figure 4
Ponamla: Test pits 1.1 and 2.1, West section.

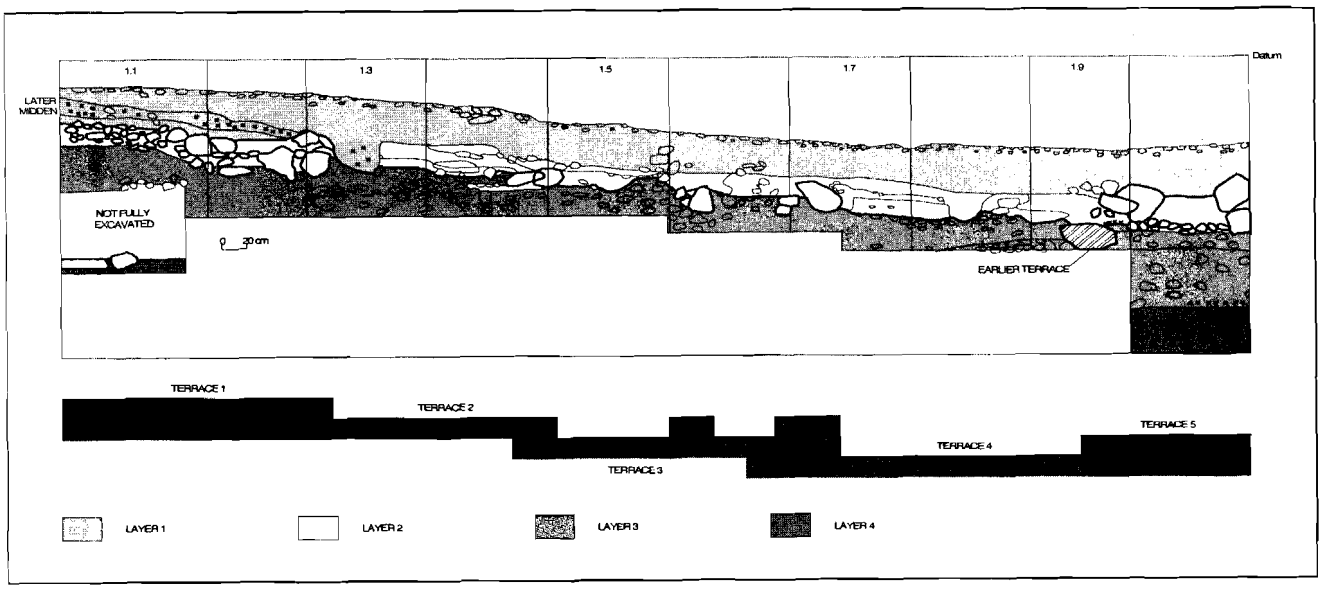

Figure 5
Ponamla area A, S. section.