Cultural landscapes on Garua Island, Papua New Guinea

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Important new insights about long-term changes in human behaviour are gained when cultural landscapes rather than focal points or ‘sites’ are studied. The abundance of obsidian artefacts preserved on easily recognized, well-defined and short-lived ground surfaces makes Garua Island an excellent setting for monitoring the changing patterns of human behaviour through time and within cultural landscapes. The results raise questions about traditional interpretations of settlement and land use in Near Oceania, particularly during the time of Lapita pottery.

Key-words: Pacific archaeology, landscape archaeology, Lapita pottery, obsidian, Papua New Guinea

Biases in Lapita archaeology

Most archaeological research on the period characterized by Lapita pottery — dating to c. 3300-1500 cal BP in the Pacific region — has assumed that villages located on the beach were the primary form of settlement (e.g. Kirch 1997: 162, 296) and, by inference, that people were sedentary and had ‘full-on’ agriculture (e.g. Spriggs 1997: 88, 121). One should be suspicious, however, of the unproblematic links made between artefact scatters, permanent settlement and agriculture, especially since they are based on dubious analogies to modern villages, which are often products of European colonization. In contrast, Gosden & Pavlides (1994) argued that Lapita sites were visited irregularly by people practising low-intensity agriculture. It is also possible that at least some Lapita sites represent locations where pottery and shell valuables were made and used on special occasions for particular, possibly ritual, purposes. Testing the orthodox package of Lapita villages, sedentism and agriculture requires considering a broader range of land-use models and employing new methodologies to evaluate them. In this paper I present a case study to show how adopting the perspective of cultural landscapes can lead to a more comprehensive, and therefore more accurate, view of past human behaviour during the time of Lapita pottery.

Cultural landscapes

By definition, the term ‘landscape’ takes in all physical and natural components of the terrestrial environment. For Pacific archaeology it should be combined with ‘seascape’ (Gosden & Pavlides 1994) to encompass adequately the settings where human behaviour took place. Adding ‘cultural’ to land- and seascape emphasizes the role of the individuals who conceptualized these spaces and actively created and modified them in culturally specific ways (cf. Ashmore & Knapp 1999). The process is interactive: human behaviour is both conditioned by the ideological and physical components of cultural landscapes and also incorporated within the landscapes themselves. Since cultural landscapes are the material manifestations of the complex interactions between humans and their environment, they are the ideal focus for archaeological research (Gosden & Head 1994). The terms ‘social’ and ‘cultural’ landscape are both used in the literature, often to mean roughly the same thing. I prefer the latter adjective because it is more inclusive and avoids the possibility of a false dichotomy between the so-called social and utilitarian aspects of behaviour.

Although there are numerous archaeological studies of landscape, most have focused either on the mundane aspects of human behaviour, such as settlement and subsistence (i.e.

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Received 1 February 2001, accepted 8 October 2001, revised 8 March 2002

ANTIQUITY 76 (2002): 766–76
processual studies), or only considered the ritual or sacred components (i.e. post-processual studies) (cf. Knapp and Ashmore in Ashmore & Knapp 1999). Gosden (1989; 1991) introduced the concept of social landscapes to the Pacific region. Although he considered various kinds of human behaviour — conceptions of places, social interaction and mobility — his work was nevertheless tied to specific localities identified by archaeologists by the presence of pottery or other artefact types and called ‘sites’, rather than conceiving of the cultural landscape as a whole.

As with Gosden’s work, many studies assume that one can differentiate the social or ideological aspects of the landscape and relate these to a particular set of archaeological components. These researchers have tended to over-emphasize the built environment (especially monuments, standing stones, etc.) or rock art. These post-processual studies generally concentrate on places or ‘sites’ within a landscape, rather than on the whole landscape itself (e.g. Ashmore & Knapp 1999). In contrast, studies using ‘distributional’ or ‘non-site’ archaeology (e.g. Rossignol & Wandsnider 1992) have targeted the spatial patterning of artefacts across large areas, rather than within specific places. These studies take the individual artefact, rather than the site, as the minimal recording unit (Holdaway et al. 1998: 1), but they too need to be broadened to include the spaces between the artefacts and to incorporate other types of data.

The ideal archaeology of cultural landscapes should incorporate a broad range of data types and perspectives about past human land use. One solution is the ‘inherent’ view in which ritual and daily life are not segregated. Instead, the former is considered to be integral to the latter (van Dommelen in Ashmore & Knapp 1999). The ideal theory and methodology, then, will not emphasize particular aspects of behaviour over others, but will combine the insights of the ideational studies of the post-processualists with the total landscape approach of distributional archaeology and then go further to take in all elements of space that have been impacted by and impact on human behaviour.

The Garua Island Project
A major aim of the archaeological project conducted on Garua Island, Papua New Guinea (FIGURE 1) has been to monitor changes in human behaviour over relatively long periods, rather than concentrate on short-term events, such as earliest colonization or the short period when Lapita pottery was used. A chronological perspective encompassing long stretches of time provides a better opportunity for comparing and contrasting how people have altered their behaviour in relation to changes in their physical and social environment. The long time perspective should also make it easier to tease out the particular from the general (e.g. whether the introduction of Lapita pottery is a unique event or a continuation of the maintenance of long-distance ties). Research on Garua Island has tried to understand how plant utilization, strategies of forest management, mobility patterns, raw material procurement, artefact manufacture and use, social interaction including exchange, and cultural constructions of landscape altered throughout the Holocene period. To date, interactions between people and their landscapes on Garua Island have been monitored through

1. environmental reconstruction using geology and geomorphology combined with dating (Torrence et al. 2000; Torrence & Stevenson 2000);
2. analysis of sediments to detect human causes and effects concerning pedogenic, geomorphic and volcanic processes (Boyd & Torrence 1996);
3. ecofacts such as starch grains (Therin et al. 1999) and phytoliths (Boyd et al. 1998; Lentfer et al. 2001; Parr et al. 2001);
4 artefacts, including analyses of obsidian characterization (Torrence & Summerhayes 1997), technology (Torrence et al. 2000), use-wear and residues (Barton et al. 1998; Kealhofer et al. 1999) and distributional patterning (Torrence et al. 2000); and 5 deliberate human markings of places such as cup marks and rock art

All these aspects should be woven together to create an understanding of cultural landscape history. In this paper I illustrate just one set of methods — the distributional study of obsidian artefacts — in order to demonstrate the value of looking beyond the site.

Buried landscapes

'Distributional', 'off-site', 'non-site' archaeologies, all of which concentrate on the interpretation of artefact distributions across ground surfaces (e.g. Ebert 1992; Rossignol & Wandsnider 1992; Holdaway et al. 1998), would seem to be ideal methodologies for the study of cultural landscapes because they focus on the broadest spatial scale. The basic assumption of these approaches is that patterns of artefact discard are largely a product of the way people construct their landscapes, move around, subsist and interact with each other and their environment. A very real problem for the Pacific region is dense vegetation that makes surface survey virtually impossible except on beaches and reefs. A more important limitation is that most modern surfaces have been exposed for some time and therefore have had a very long and complex history (e.g. Wandsnider in Rossignol & Wandsnider 1992; Holdaway et al. 1998). Furthermore, many surfaces are relatively unstable and, when combined with human land use, are subject to erosion and redeposition (e.g. Gosden & Webb 1994; Kirch & Hunt 1996). Consequently, the complex palimpsest of artefacts on most ground surfaces means the interpretation of their relation to human behaviour, especially in terms of short-term events, is problematic and may be quite limited (Wandsnider 1992).

Garua Island offers a unique possibility for overcoming some of the taphonomic nightmares that beset landscape archaeology. As shown in Figure 2, ancient ground surfaces, each of which had a relatively short life, were sealed by a layer of airfall tephra (volcanic ash) (Torrence et al. 2000). The distinctive and dateable tephras effectively isolate one time slice from the next. The artefacts preserved within the buried soils allow us to reconstruct landscapes that were created and modified over a moderate length of time. This is the good news for distributional approaches. The bad news is that plotting the position of individual artefacts over large areas, as in the classic surface-distribution studies (e.g. Ebert 1992; Holdaway et al. 1998), is not feasible. When one has to dig down almost two metres to reach soils dated to c. 5000 years ago, time, energy and the tolerance of land owners grossly limit how much area can be exposed. Sampling is therefore a necessity.

A one-metre square area of land surface obtained by excavation using natural stratigraphic layers comprises the basic sample. Geomorphological analysis determined if the sediments...
were in situ (Boyd & Torrence 1996). In total 177 landscape samples dated to three periods were recovered from 69 test pits. Use-wear samples were collected from each stratigraphic unit. Column samples for plant microfossils were taken from a large proportion of the pits. This paper presents an interpretation of changes in cultural landscapes based on the relative density of obsidian artefacts associated with the buried ground surfaces.

Tephra stratigraphy
During the past 5900 years, falls of airfall tephra from three volcanic events buried and sealed a series of landscapes on Garua Island (Torrence et al. 2000). Some of the tephra layers are quite thin and/or discontinuous and so, for the purpose of analysis, I have concentrated on three well-preserved buried soil horizons. Radiocarbon and obsidian hydration dates have substantiated the stratigraphic interpretations (cf. Torrence et al. 2000; Torrence & Stevenson 2000). The relationship between the stratigraphy and chronological periods is shown in Figure 3.

Period I (5900–3600 cal BP) is placed between the W-K2 and W-K1 tephras, but since W-K1 was rarely preserved in situ, a 20-cm thick sample of the soil under W-K2 was used as a best approximation based on radiocarbon dates from preliminary excavations.

Period II (3400–1000 cal BP) is situated between the W-K2 and Dk tephras and includes the time of Lapita pottery.

Period III (1000 cal BP–present) is above the Dk tephra.

Deposition on the three ground surfaces formed on the 3 tephras took place over slightly different lengths of time, with Period III shorter than the others. In terms of most surface archaeology, however, the length of time incorporated in each buried soil is very short (cf. Sullivan 1998).

Sampling
The spatial distribution of the sample test pits is presented in Figure 4. In order to ensure that the buried Garua landscapes were comprehensively and efficiently sampled given the resources available, I employed judgmental sampling within a stratified design with geology, stream catchments, physiography and topography defining the strata. The value of this approach is that it directed research to zones which had previously been ignored, especially the inland portion of the island. The first sam-

![Figure 3. Section from sample test pit D4 (PNG national site code FAAN) showing the relationship between the buried soils, volcanic tephras and chronological periods. For location see Figure 4.](image-url)
plunging frame is composed of the two basic geological units of the island. These correspond with the Hamilton and Baki peaks which are separated by a major stream catchment (Figure 4). The raised coral exposed within the modern stream bed indicates that the Hamilton side was once a separate island. Obsidian outcrops on each side of the island were formed in different types of rhyolite and have distinctively different physical appearances, flaking properties and chemical compositions (e.g. Torrence et al. 1992; Bird et al. 1997).

Secondly, five stream catchments were sampled. Thirdly, the physiographic zones were sampled in roughly equal proportions to their occurrence, with the exception of the steep upland which was under-represented because buried soils were poorly preserved (Table 1). Fourthly, topographic features identified during the course of the fieldwork were sampled in the relative frequencies listed in Table 2. Steep slopes and valley bottoms were sampled at a lower frequency than their occurrence because erosion had removed many buried horizons.

Three transects were selected to simplify transport of people and equipment. As shown in Figure 4, two north–south transects sample the interior regions: one runs across the western side of Mt Baki and another was placed to the east of Mt Hamilton. A third transect runs east–west from the coast to the top of Mt Hamilton and provides a direct comparison of coast and interior regions. The coastal plain on the southwestern part of the island was intensively sampled because elsewhere this zone largely consists of recent alluviation.

### Obsidian artefact distributions

Nearly all the test pits produced large quantities of obsidian chipped stone artefacts. Also surprising was the relatively widespread distribution of Lapita pottery and the large numbers of potsherds in unusual settings, particularly some inland hill and ridge tops (Figure 5; cf. Torrence & Stevenson 2000). There are virtually no empty patches on these landscapes. Only one test pit (B1), located in a valley with high runoff, had low counts of artefacts for all periods. One astute volunteer asked how the past barefoot residents avoided seriously cutting their feet on the abundant sharp obsidian flakes that seem to carpet the landscapes.

To get a preliminary impression of the distribution of obsidian artefacts, raw counts were transformed to numbers per 0.1 cubic metre. These were then divided into low (0–5), medium (6–60) and high (>60) classes. Table 3, which summarizes the occurrence of density
classes for each period, highlights some very intriguing patterns. (Since not all buried landscapes are preserved in every test pit, totals vary.) Artefacts are most abundant in Period I with high counts for 40 pits, comprising 65% of the total, and only 4 low examples. As shown in Figure 6a, test pits containing high densities of artefacts are continuously distributed across the landscape with no special preference for physiographic type. There are no empty spaces, no significant clusters and little preference regarding situation in terms of inland or coastal location.

It is worth noting that during Period I the sea level reached the base of the coastal cliffs and most of the current coastal plain did not exist. The two coastal pits with low counts, FCY II and FAS II (Figure 4), are located in areas where active fans were operating and the material may therefore have been re-deposited. In any case, these were probably not favourable settings for human activity. If these cases are eliminated, there are only 2 low-density locations: the very top of Mt Hamilton and a very damp valley bottom. In summary, during Period I large quantities of obsidian were utilized over the whole island and the entire landscape was treated equally in terms of artefact discard. By implication, the island was conceived of as uniform for at least some activities.

Period II (Figure 6b) represents a significant shift in behavior because the relative size of the low density class is much larger than in the previous period and cases are more evenly spread among the classes (cf. chi-square results in Table 4). The smaller number of preserved contexts in Period II reflects higher rates of erosion, possibly because of the instability of the W-K1 tephra, but this is unlikely to have affected the relative distribution among the density categories. Unlike the previous period, there is a much lower relative number of samples with large quantities of obsidian and, significantly, a much higher percentage of places have low rates of discard. These data represent a trend in the discard of obsidian artefacts from an even spread to somewhat discrete clusters surrounded by areas with low densities of material.

The majority of high density samples are located in the inland zones on hills or ridge tops, although most of these have a good view of the sea. This pattern was not expected, be-

![Garua Island Map](image)

**Figure 5. Location and relative abundance of pottery on Garua Island. S indicates pottery is a surface find. Star size designates quantity of sherds: small (1–9), medium (10–40), large (>50).**

cause the settlement pattern of sites with Lapita pottery, which date to this period, has been strongly linked to beach settings in other regions (e.g. Kirch 1997: 162). The three high-density test pits located on the coastal plain (D5, D6, D7) are quite close together and may represent samples of a single high-density scatter. Two other test pits near the coast contained

<table>
<thead>
<tr>
<th>obsidian abundance</th>
<th>Period I no.</th>
<th>Period I %</th>
<th>Period II no.</th>
<th>Period II %</th>
<th>Period III no.</th>
<th>Period III %</th>
</tr>
</thead>
<tbody>
<tr>
<td>high</td>
<td>40</td>
<td>65</td>
<td>20</td>
<td>39</td>
<td>14</td>
<td>22</td>
</tr>
<tr>
<td>medium</td>
<td>18</td>
<td>29</td>
<td>19</td>
<td>37</td>
<td>29</td>
<td>45</td>
</tr>
<tr>
<td>low</td>
<td>4</td>
<td>6</td>
<td>12</td>
<td>24</td>
<td>21</td>
<td>33</td>
</tr>
<tr>
<td>total</td>
<td>62</td>
<td>51</td>
<td>51</td>
<td>64</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 3. Relative abundance of obsidian.**

<table>
<thead>
<tr>
<th>periods</th>
<th>chi-square</th>
<th>P &lt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>26.8</td>
<td>0.0001</td>
</tr>
<tr>
<td>I and II</td>
<td>9.7</td>
<td>0.0078</td>
</tr>
<tr>
<td>I and III</td>
<td>26.6</td>
<td>0.0001</td>
</tr>
<tr>
<td>II and III</td>
<td>4.2</td>
<td>0.1237</td>
</tr>
</tbody>
</table>

**Table 4. Comparisons of relative abundance of obsidian (based on Table 3).**
very few artefacts (FCY II, FAS II; cf. Figure 4). Furthermore, the upland plain around the base of the volcanic cone that makes up Mt Hamilton has very little material, unlike the previous period. To sum up, in Period II one can identify a more clustered distribution than Period I, movement onto the new coastal plain, a focus on ridges and hilltops and a tendency to avoid the high interior regions of the island.

Period III continues the trend toward a clustered distribution of material. There is a smaller percentage of cases in the high-density category and a larger proportion in the low group, although the pattern is not significantly different from Period II as measured by the chi-square statistic (Table 4; cf. Figure 6c). What is most striking, however, is that the high-density samples are all in upland regions and more than half do not have a direct view of the sea, whereas the low or medium densities are coastal. This represents a significant refocusing of some activities to an area with little use in the previous period.

In summary, in the three periods examined, the spatial patterns of obsidian densities within the test pits vary markedly. In Period I there is a homogenous spread of obsidian across the landscape with all areas containing large amounts of obsidian. In contrast, Period II is characterized by a slightly clustered pattern and the majority of places with the highest rates of discard avoid the interior and, although not situated on the beach, appear to be oriented toward the coast. Period III continues the trend toward a clustered pattern with increasingly empty spaces in between, suggesting that through time activities involving stone artefacts were increasingly restricted in space. Finally, in Period III the bulk of obsidian discard moved from coastal hills and ridge to the interior portions of the island.

**Change in cultural landscapes**

Significant differences in how people created their cultural landscapes on Garua Island are clearly reflected by the distribution of obsidian among the test pits as well as their spatial patterning across the island. Preliminary hypotheses for these shifts emphasize subsistence and mobility patterns and the nature of social

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*Figure 6. Relative density of obsidian artefacts in the test pits on Garua Island: a Period I; b Period II; c Period III.*
conflict. Variation in the clustered nature of artefact discard can be correlated with temporal patterning in raw material procurement and lithic technology which together indicate a reduction in mobility, probably caused by an increase in the intensity of land management (Torrence et al. 2000; cf. Torrence in Galipaud 1992). From at least 10,000cal. BP, gearing-up of multi-purpose obsidian tools took place at very specific raw material sources and was backed up by continuous maintenance as groups moved over relatively large areas practicing a low intensity form of land management. Through time this pattern of behaviour gradually became more expedient. In Periods II and III stone obtained through local exchange systems was stockpiled at places which were occupied for a longer time because of a shift to more intense forms of cultivation. Use-wear residue studies of sites on the mainland (Fullagar in Galipaud 1992; Kealhofer et al. 1999) and Pavlides' (1999) study of the interior of West New Britain also support this general picture.

The test-pit data indicate a continuous change from a widespread distribution of activities that could be associated with multiple, short-term activities, to one that was more focused on a few particular places, which might be reconstructed as longer-term occupations. It is quite significant that, although the major change took place between Periods I and II, the trend towards localized obsidian working continued into Period III. One might infer from these results that the pattern of land use during the time of Lapita pottery was less sedentary than in the most recent 1000 years, thereby providing support for Gosden & Pavlides' (1994) model.

It is interesting to compare the preliminary results from Garua Island with those from Gosden’s (1989; 1991; Gosden & Pavlides 1994) landscape studies for the Arawe Islands region on the south coast of New Britain. He found that the Lapita sites represented relatively large concentrations of material located on the coast, whereas in the later period smaller hamlets were dispersed within the inland. On Garua Island clustering of obsidian artefacts is less tight during the time of Lapita pottery, Period II, than in the subsequent period. If, however, one compares the overall spatial distribution of individual test pits with high densities, they are more dispersed in Period III than in Period II, but the difference is not a major one (Figures 6b, 6c). However, the shift from coastal to inland occupation that Gosden has identified is paralleled on Garua Island.

Period II test pits on Garua with high densities of obsidian are found on coastal hill and ridge tops (cf. Torrence & Stevenson 2000) rather than on the beach as in the Arawe Islands (Gosden 1989: 52; Gosden & Webb 1994) and elsewhere (Kirch 1997: 162). The lack of Lapita pottery in original beach contexts on Garua may, however, be partly a product of erosion following recent uplift, but the spread of chipped stone and pottery throughout much of the island at this time is a pattern that is practically unknown outside this region. More recent work targeting cultural landscapes on the adjacent mainland has also recovered Lapita pottery in inland settings and on isolated hilltops (cf. Torrence & Stevenson 2000).

The change between Periods II and III in the location of the densest scatters of obsidian artefacts (coastal to inland) is difficult to explain solely in terms of subsistence, since the distance between dense scatters and different resources is not great enough to have affected travel costs significantly. At the beginning of both periods Garua was reoccupied following a major volcanic eruption, but each time people chose to focus their activities in different physiographic regions. During the time of Lapita pottery, artefact discard gradually moved inland (Torrence & Stevenson 2000), but the foothills of Mt Hamilton, which were heavily used in Period III, were avoided in Period II. In Period II the high-density scatters were usually placed on small hill- and ridge-tops which have well defined steep edges, whereas in Period III they were located in the interior of the island, but not necessarily in such obvious defensible settings. The locational, as opposed to the structural, changes between Periods II and III can perhaps be explained in terms of changes in the nature of social interaction and/or ideological conceptions of appropriate places for certain classes of behaviour. For example, the marked decrease in imported obsidian in Period III implies a reorientation of exchange relationships (Torrence & Summerhayes 1997), which in turn may be linked to changes in the nature of social conflict or warfare.

Although the long-term trend on Garua Island is for a shift toward fewer places with high densities of obsidian, limiting the term ‘site’
to these situations is inappropriate since material was also discarded outside these contexts throughout the past 5000 years at least. Although Lapita pottery is always found in association with relatively abundant quantities of obsidian artefacts, the number of sherds at some inland locations is very small (Torrence & Stevenson 2000), raising the question of what constitutes a Lapita ‘site’ (White in Galipaud 1992). In addition, during Period II there are large quantities of obsidian at places where pottery is absent, suggesting pottery was only discarded in particular contexts, whereas the disposal of obsidian may have involved other activities and carried other meanings. It is clear that throughout the past people moved across and used the entire island, but the cultural landscapes that they created demonstrate that they did this in different ways.

Broader implications
This first-stage analysis of the distributional data collected on Garua Island demonstrates that focusing on cultural landscapes has the potential to alter our understanding of the prehistory of Near Oceania and perhaps further afield. Firstly, the data conclusively demonstrate that, during the past c. 6000 years, the discard of chipped stone artefacts was not limited to specific, circumscribed places which match the definition of a ‘site’ as a well-defined and bounded entity. Significant quantities of material were discarded over much of the land surface and differences in the relative occurrence and spatial patterning of chipped stone artefacts indicate changes in how people used and created their cultural landscapes.

Secondly, the long-term perspective of the Garua research is important because a better understanding of the period with Lapita pottery is gained by comparing it with processes operating before and afterwards. The patterns I have identified suggest a gradual reduction in mobility and, by inference, variations in land-management practices. The major change between Periods I and II suggests a different form of subsistence pattern, perhaps linked to the introduction of new plants and animals, as proposed by a number of scholars (e.g. Spriggs 1997). It is important to note, however, that neither the Lapita system of land use nor social system were stable, and so making direct links between current Pacific societies and their ancestors is more problematic than many scholars admit.

Thirdly, the Garua case study illustrates that important data about human land use are lost when only a few select points are targeted for analysis. If one had taken the traditional approach to Pacific archaeology and only excavated small areas at a few coastal localities, then a very biased picture of changes in how people viewed and used their environments would have been obtained. The distributional study demonstrates that human activity was not always concentrated on the beach or even within the coastal zone, as has so often been assumed, particularly for the Lapita period. The Garua data also show that the inland zone was used extensively during the time of Lapita pottery, that it was visited and used throughout prehistory, and that it was the focus for activity particularly in Period I, when the existing coastal plain did not exist, and again in Period III. The large quantity of obsidian discarded in the interior of the island also indicates that terrestrial resources played an important role in all periods. Archaeological research in Near Oceania therefore needs to alter the methodology used to find and recover archaeological contexts and to recast interpretations of behaviour to include activities taking place away from the coast.

Fourthly, expanding the temporal and spatial framework of the research removes the assumption that in every case excavated material found outside rock shelters is derived from ‘villages’ where all significant activities took place.

Finally, shifting the focus from sites to cultural landscapes should encourage archaeologists to look beyond subsistence and settlement as the most important causal factors and to integrate social and ceremonial constructions of space, as illustrated by the discussion of changes between Periods II and III. As I emphasized previously, ‘cultural’ should be defined to encompass all aspects of behaviour with no strict separation between the mundane and ideological.

The analysis of the Garua Island test-pit data presented here is based on a fraction of what will be learned by studying the material in more detail. For example, a better understanding of the activities that generated the scatters of obsidian artefacts will be gained through techno-
logical and use-wear/residue studies still in progress. It will be interesting to compare and
contrast the differences in activities responsible for the discard of material within the high-
medium- and low-density scatters and between inland versus coastal settings. Further data are
required to test the hypothesis that through time there was a gradual reduction in mobility
combined with an increase in the intensity of land management or that changes in social conflict
took place between Periods II and III. Methods for integrating the rock art are also required.

Garua Island provided a very important opportunity to capitalize on the advantages of
studying cultural landscapes. Certainly, the presence of easily recognized, well-defined and
short-lived buried ground surfaces is a major benefit that cannot be replicated in other areas
of the Pacific where high rates of erosion have remodelled prehistoric landscapes. An added
advantage is the proximity to obsidian sources. The abundance of obsidian artefacts on Garua
provides an excellent 'litmus paper' for detecting the presence of human activities that might not
be so visible in situations where raw material was more carefully conserved. The archaeology
of cultural landscapes using a distributional study of material preserved on buried landscapes
has already provided some unexpected and important results and has opened up exciting and
important new areas of research. Although Garua Island has special properties, the advantages
of studying a wide range of landforms and shifting the emphasis from sites (assumed to be foci of
behaviour) to activities wherever they occur could be shared by many other archaeologists.

Acknowledgements. The research was funded by the Australian Research Council, Australia and
Pacific Foundation, Australian Museum, and Earthwatch Institute. Additional support came from the National Museum and
Art Gallery, National Research Institute, West New Britain Provincial Government and Cultural Centre, Kimbe Bay
Shipping Agencies and Walindi Plantation. Thanks are extended to the international team of volunteers. I am
especially grateful to Jo Bola, Nick Lyons, Les Hartwig and their staff on Garua Plantation and the people of West New
Britain for their assistance, hospitality and friendship.

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