USE OF THESES

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PREHISTORY WITHOUT POTS

Prehistoric Settlement and Economy of North-west Guadalcanal, Solomon Islands

by

David Roe

VOLUME 1

A thesis submitted for the Degree of Doctor of Philosophy of The Australian National University

February 1993
This thesis is the product of the author's research. For the provision and analysis of some data specialist assistance has been sought and is acknowledged. Except for these instances the thesis is my own original work.

D.Roe
FIRST IMPRESSIONS

The island of Guadalcanal is very large: I do not give the size of it, because it is a great piece of land, and to go round it would take half a year.

from: A True and Correct Account of the Voyage to the Western Isles in the Southern Ocean, made by Hernando Gallego, Native of the Town of La Coruña in the Kingdom of Galicia, in the year of our Lord Jesus Christ one thousand five hundred and sixty-six (Amherst and Thomson 1901:46-47).

Guadalcanal is shaped like a paramecium, or a flat limp letter S on its side. Though different in dimensions, and though mostly uninhabitable, the Canal is about the size of Long Island.

(Manchester 1982:197).

This island of Guadalcanal, for its fertility and the mildness of its air, for water, for agriculture, for cattle, and for fitness for growing things of Castille, is the best of those in the region. .... There are fields full of ginger, cinnamon, sugar-cane, almond of Castille, long-shaped filberts, plantanos [plantains ?], cocoa-nuts, fowls, pigs, fish, sandalwood of various scents (drogas), and many other things.

from: A Short Account collected from the papers which they found in the city of La Plata concerning The Voyage and Discovery of the Western Islands, in the Southern Ocean, commonly called the Isles of Solomon [The Narrative of Pedro Sarmiento] (Amherst and Thomson 1901:91).

.... serpents, crocodiles, centipedes which could crawl across the flesh leaving a trail of swollen skin, land crabs, ... scorpions, lizards, tree leeches, ... wasps as long as your finger and spiders as large as your fist, and mosquitoes, mosquitoes, mosquitoes, all carriers of malaria.

(Manchester 1982:193).

Say a prayer for your pal on Guadalcanal

DEDICATION

to

Bati, Meredith, Rhiannon and Mamere
for putting up with and supporting a part-time husband and
father for so long and with so little complaint

and to

Peter and Kasiano
for being patient teachers, skilled assistants and great friends
ACKNOWLEDGEMENTS

The production of this thesis has owed much to the generosity and help of a large number of people and institutions. I am sure that in listing my debts of gratitude I may have unwittingly omitted several sources of aid that should rightly have been specifically acknowledged; to those people I offer my apologies - the thanks are no less sincere.

In the first instance I owe a special debt to those who supported my application to undertake a PhD programme - Doug Yen, Roger Green, Jack Golson, Matthew Spriggs and Darrell Tryon - and to the Australian National University for granting a scholarship and for providing such excellent facilities in which to study. My supervisory panel - Jack Golson, Doug Yen, Paul Gorecki and Matthew Spriggs - were constant in their support and advice. Jack Golson and Matthew Spriggs have worked overtime in their efforts to make my chapter drafts look a little more like purses than sow's ears and have thankfully dissuaded me from following some of my wilder flights of fancy. I am in debt to Jack Golson to the tune of several, and expertly wielded, red pens that served to reduce the tower-block of flaws in my writing "style". Matthew Spriggs had the onerous task of reading, correcting and re-reading last minute chapter drafts in the hectic lead-up to submission; for his labours and generous moral support I am most grateful.

In the Solomons no fieldwork would have been possible without the support of the Guadalcanal Provincial Government (especially the Hon. Casiano Lovoli, Provincial Minister for Cultural Affairs), and the landowners of Visale and of the Poha and Vura valleys. The personal interest and support of the Hon. Ezekiel Aleuba, M.P. (then Prime Minister of Solomon Islands) was critical to the conclusion of the fieldwork programme.

Throughout the fieldwork season I was ably assisted, expertly guided and generally looked after by Peter Chachi and Kasiano Veomate. Over the past 11 years they have been responsible for providing huge quantities of data on the ethnography and environment of Guadalcanal, from their own (apparently inexhaustible) knowledge and from independent research. I owe them and their families a great debt; I hope that this thesis goes some way towards repaying their hospitality and expertise. During the longer periods in the field in the Poha Valley I was regularly a guest at the Chiri home of Peter Chachi’s parents, Habriel Manengelea and Eremina Rutu. Neither Habriel nor Eremina have lived to see this contribution to the history of their island; the long walk to Chiri will never be the same again.
In the Department I received assistance and support from a number of quarters. Matters secretarial and administrative were dumped on Gabriel Braun who deserves some kind of medal for tolerance and efficiency. Dragi Markovic processed large numbers of films and produced his usual impeccable prints from my less than adequate negatives. Wal Ambrose X-rayed my nuts (thankfully only of the Canarium variety) and Tom Loy sought residues on the few stone tools I managed to find. John Head and the staff of the Radiocarbon Laboratory produced a series of C\(^{14}\) dates in short order and went to great lengths to make sure I understood what they all meant. Ian Faulkner and Win Mumford drew the majority of the figures illustrating sites and sections and Ian Heyward and Kay Dancey of the RSPacS Cartography Unit produced the maps. Jim Neale took my rough sketches and turned them into a highly successful rig for tape, compass and Abney level surveys. Ian Lilley and Jeannine Mummery introduced me to computers in general and the vagaries of the Rainbow in particular; shortly afterwards Ian and Jeannine left the Department and the Rainbows were scrapped. Chris Ballard taught me what a bibliography should be like, introduced me to a great deal of the literature on rock art and made several, and generally fruitless, attempts to improve my theory. I have also benefitted from discussions with Gary Dunnett, Barry Fankhauser, Rhys Jones, Peter Matthews, Holly McEldowney, Paul Packard, Nancy Sharp, Mike Smith, Dirk Spennemann, Jill Thompson and Alan Thorne.

Darrell Tryon and John Chappell considerably improved my knowledge of linguistics and geomorphology respectively.

This thesis relies heavily on a quantity of environmental data. For their major contributions I am sincerely grateful for the time and effort expended on my behalf by Simon Haberle and Mike Green. The results of Simon Haberle’s pollen coring fieldwork in Guadalcanal are presented in an appendix and are fundamental to some of the arguments in this thesis. Mike Green’s study of the human bone from the 1966-68 excavations at Vatuluma Posovi is also presented here as an appendix. His work has added important new information to the data from this site. I received expert help from Doug Yen in the identification and interpretation of plant remains, particularly those of Canarium nuts. The entire complement of bone from the Guadalcanal excavations was inspected by Tim Flannery at the Australian Museum. I am grateful to him not only for the identifications but also for the time taken in the field and at the Museum in discussion. Phil Colman, also at the Australian Museum, provided identifications of a number of ‘problem’ molluscan shells. Corrie Williams, Jerry van Tets and Pat Rich worked on, and identified the majority of, the bird bone and Sarah Colley did the same for the fish material. The Entomology Division of the CSIRO in Canberra provided identifications of Solomon Islands arachnids. Robyn Westcott and David Ellis of the Geology Department at ANU prepared and identified several rock specimens on my behalf. In Honiara Jim Cheatle, Alan Smith and Peter Hopson provided important
material on soils and geology, and Peter Chachi, Ron Cannarella, Geoff Dennis, Chris Henderson, Martin Sebo, Kasiano Veomate, Andrew Tura and Sam Sautelau were instrumental in the compilation of the list of economic flora from the Poha Valley.

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I have left it to the last to thank the four most important people who have helped in innumerable ways and supported me throughout the long time it has taken to produce this thesis. This has been at no small cost to themselves and I hope that they will feel that their sacrifices have been worthwhile. None of the people who have helped me in writing this thesis bears any responsibility for its shortcomings, least of all do Bati, Meredith, Rhiannon and Mamere.
NOTES ON CONVENTIONS

Orthography

The orthography employed in this thesis is based on the system proposed by Hackman (1968). Spellings of place names and vernacular terms therefore employ the following conventions:

ch similar in sound to English 'ch' as in 'church', but more explosive; sometimes rendered elsewhere as 'ts' or 'tz'
ng as in 'sing'
g as in 'got' and always following ng
mb prenasalized b
nd prenasalized d as in 'sand'
nj prenasalized j
gh voiced velar fricative.

C¹⁴ Dates

The conventions of the journal Antiquity are used for the reporting of radiocarbon determinations. Uncalibrated radiocarbon dates are indicated by 'bp'; calibrated dates have been calculated using the CALIB computer program (v. 2.0) of Stuiver and Reimer (1986) and are indicated by 'BP'. Calibrations for radiocarbon dating determinations on charcoal samples were calculated using the ATM20 option of the CALIB program (Pearson and Stuiver 1986, Pearson and Stuiver 1986). Marine shell calibrations use the values given in Stuiver et al. (1986) and employ a Delta-R value of zero as no specific local marine reservoir correction value is available.

Site Numbers

Site numbers have been ascribed in accordance with the Solomon Islands Museum's National Site Survey designation codes (Green 1972, Miller 1979:5-7). Under this system sites are given unique numbers consisting of a two letter prefix indicating the island in which the site is located, a number indicating the relevant 1:50,000 topographical map sheet (Ministry of Overseas Development 1975) and an individual site number. Thus sites in the north-west cape area are prefixed SG-1- (Solomon Islands/Guadalcanal-map sheet no. 9/159/7); those of the Poha and Vura valleys are prefixed SG-2- (map sheet 9/159/8).

Footnotes

The texts of footnotes are given at the end of each chapter.
SUMMARY

This thesis seeks to address some basic problems and issues concerning the archaeology and prehistory of the central Solomon Islands. In particular the archaeological data from a series of excavations and detailed field surveys conducted on the island of Guadalcanal are used to construct a framework for the culture history of this apparently aceramic region and to define a set of questions that must be addressed in future enquiries in this relatively unknown area.

Chapter 1 sets out the main problems which this thesis addresses. The equivocal results from a single excavation in 1966-1968 suggested an aceramic occupation of Guadalcanal and the central Solomons at a time when, elsewhere in the group, well-documented prehistoric settlement sequences are articulated with a regional cultural tradition associated with Lapita ceramics. The major issues stem from a long-standing need to document the central Solomon Islands sequences with a view to filling a major lacuna in our knowledge of the prehistory of island Melanesia.

Chapters 2, 3, 4, 5 and 6 set out the data upon which the inferences and conclusions of chapter 7 are based. Chapter 2 gives a brief overview of the main aspects of Guadalcanal's natural environment and ethnography that have a bearing on the interpretation of the archaeological evidence. The results of the site surveys in the Poha and Vura Valleys and the north-west cape area of Guadalcanal which formed the initial work in this study are discussed also. In chapter 3 the 1966-1968 excavations at the Vatuluma Posovi site are re-evaluated based upon a critical examination of the original records and the results of new work, including important new C¹⁴ dates, from excavations and surveys in 1987-1988. Additional data from a series of excavations in other caves and rockshelters, given in chapter 4, serve to extend our knowledge of the prehistoric occupations of the Poha and Vura valleys and introduce a suite of environmental evidence not available from the Vatuluma Posovi site. Chapter 5 of the thesis discusses a largely unconsidered artefact of Melanesian prehistory - the engraved rock art. The re-evaluation of the Vatuluma Posovi site allowed for the dating of this art tradition and its incorporation into discussions of cultural relationships both in Solomon Islands and the wider Melanesian sphere. In chapter 6 the geographical focus moves from the Poha and Vura valleys to the north-west cape of Guadalcanal enabling the consideration of a number of open settlement and agricultural sites, including a series of irrigated taro pond-field systems.

The thesis conclusion attempts a synthesis of the data as a first step in the formulation of a prehistory for Guadalcanal. The problems of defining the Guadalcanal sequences and their incorporation into a regional framework are discussed, and suggestions for future research requirements are made.
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FILLING THE GAP: THE THESIS

THE PROPOSAL

In 1986 I presented a proposal to undertake a programme of archaeological survey and excavation in north-west Guadalcanal, Solomon Islands, as a means of addressing problems and questions related to the prehistoric settlement and economy of that area in particular and its significance for, and place in, the theories of human settlement and cultural development of island Melanesia.

The research topic that I was then considering was focused on an attempt to place the archaeological evidence of the central Solomon Islands prehistoric sequences in a regional culture history framework. As these sequences were then largely unknown, two broad lines of enquiry were implicitly required to attain my objectives. These were,

(a) the investigation of the nature, chronology and economic base of prehistoric settlement in the area, and

(b) using the data recovered, to address the problem of the extent to which the cultural assemblages of the area conformed to, or differed from, the general pattern of early sites in Island Melanesia south of the Bismarck archipelago.

More specifically, I posed a series of important questions that would require consideration. At a purely local level these were,

i. What is the nature and chronology of the cultural assemblages associated with prehistoric settlement in Guadalcanal?

ii. What is the nature of the economic base supporting prehistoric settlement in Guadalcanal and how does this change through space and time within the study area?

iii. What are the effects of human settlement on the environment in the study areas and to what extent has environment influenced or determined settlement patterning?
iv. To what extent are modern and ethnographically known cultural assemblages related to and derived from the archaeological ones?

v. Is there any evidence within the archaeological record of either intra- or inter-island trade and exchange networks operating to, from or through the study area?

At a regional level, both in terms of the prehistory of Solomon Islands and of Island Melanesia as a whole, the major issues were,

i. To what extent do the cultural assemblages of Guadalcanal conform to an apparently general pattern of early sites in Island Melanesia south of the Bismarck archipelago, i.e. initial settlement by Lapita horticulturalists?

ii. following from (i) above, is there any evidence to suggest pre-Lapita occupation for the Solomons group and what importance does this have for the interpretation of settlement history and economic strategies of Island Melanesia? Lastly,

iii. is there any evidence to indicate aceramic settlement histories for the central Solomons which were contemporary with Lapita cultural groups elsewhere in the archipelago, and if there are, how can such assemblages be articulated with a prehistory which was Lapita-dominated?

Shortly after fieldwork had commenced, new data from Wickler's excavations on Buka established the initial occupation of Kilu Cave at 28,000 BP (Wickler and Spriggs 1988, Wickler 1990) and thereby extended the range of the Pleistocene occupation of Melanesia beyond the Bismarck Archipelago (Allen et al. 1988, Allen et al. 1989) into the northern Solomons group. Wickler and Spriggs noted, 'Equally early occupation of the rest of the main Solomons Islands chain can be expected' based upon falling sea levels that reached their lowest point about 18,000 bp and significantly reduced inter-island water gaps. Indeed at the glacial maximum Guadalcanal would have been separated from the single landmass of 'Greater Bukida' (Diamond 1974) or 'Greater Bougainville' (Spriggs in press), which extended from the Nggela group to Buka, by a channel only some 3km wide (see figure 1). Further support for the early settlement of the central Solomons is suggested by dermatoglyphic studies and data from other studies of the physical anthropology of the Kwaio speakers of inland Malaita. Friedlaender (1987) and Froehlich (1987) present a case for the swamping of a Non-Austronesian population by a subsequent Austronesian migration that has left no clear linguistic or cultural trace of the earlier inhabitants.
This new evidence, therefore, addressed the first part of my second regional question, but the implications of this early occupation still warranted consideration in terms of its significance for the interpretations of the later sequences. The remaining themes of the thesis must be set out in the context of previous archaeological research in the Solomons.

ARCHAEOLOGY IN THE SOLOMONS TO 1986: AN OVERVIEW

Structured archaeological enquiry has not had a long history in the Solomon Islands and the main investigations have concentrated mainly on the northern and southern ends of the group. This brief overview notes the main areas which have seen more than cursory inspection and highlights the major gap in our knowledge of the central islands of the group.

Specht conducted the first major work in Buka and nearby islands in 1967 with a series of excavations that resulted in the formation of a cultural sequence, beginning at about 2700-2500 BP, and characterised by changes in ceramic styles (Specht 1969). The earliest phase included a few dentate-stamped Lapita sherds and obsidians from the Bismarck Archipelago. In southern Bougainville, Terrell's investigations of the archaeology of the Buin plain, using a theoretical framework of 'human biogeography' (Terrell 1976, 1977) inspired by the work of MacArthur and Wilson (1967), identified a pottery tradition spanning the last thousand years (Terrell 1970).

Irwin's investigations of pottery-bearing sites in the Shortland Islands have produced an approximately 1000 year chronology largely paralleling the Buin sequence immediately to the north. Three main phases are identified by increasingly complex ceramic design styles. The earliest plain ware traditions are succeeded by incised and appliqué wares with Irwin's Late Period being distinguished by paddle-impressed ceramics (Irwin 1972, 1973, 1974).

In the western Solomons Chikamori conducted limited survey and excavations in New Georgia, Choiseul and Vella Lavella. The preliminary results of this work was published in Japanese with only a brief English summary (Chikamori 1967). I am unaware of any radiocarbon dates associated with the excavations. Miller's excavation of the Nuatambu site on Choiseul, known as a centre for the production of shell valuables (Miller 1979:66), produced quantities of pottery with incised designs but the site has not been dated.
Extensive site surveys conducted under the auspices of the Solomon Islands National Site Survey have demonstrated the presence of pottery in most areas of the western Solomons (Kolombangara, New Georgia, and Simbo) characterised in the main by incised decorative techniques and notched rims (Miller 1979, Miller and Roe 1982). No dates are available for this tradition but the absence of any record of pottery manufacture in the oral traditions seems to argue that ceramics production ceased in this area some 200/300 years ago at a conservative estimate. On the island of Choiseul pottery manufacture was still being practised sporadically until the 1980s.

On Guadalcanal the 'Poha Cave' (properly named Vatuluma Posovi, the name by which it will be called for the rest of this thesis) excavated by Davenport, Russell and Tedder (Davenport 1968, Davenport, Russell and Tedder n.d.), produced a sequence of C\textsuperscript{14} dates (Black and Green 1975) from an inadequately described stratigraphical sequence. I shall deal with this site in more detail in chapter 3; it is sufficient to note here that the site, as reported, had no ceramics but human occupation was demonstrated at about 3000 BP.

Field surveys conducted in north, central and eastern Guadalcanal by the Guadalcanal Cultural Centre (Roe nd.) did not locate any areas with ceramic sites. These surveys included the area of Marau Sound at the eastern end of the island, where Green had suggested a Lapita site associated with stone adze manufacture might be located (Green 1979b).

In the south-east Solomons Green and Yen's Culture History project (Green and Cresswell 1976, Yen 1982b) marked the first extensive enquiries into the prehistory of the Solomons with a well-defined set of objectives (Green 1976c:10). The project's programme included excavations at the southern tip of San Cristobal (Makira) notably Star Harbour (Green 1976a), Ulawa (Hendren 1976, Ward 1976), Uki (Green 1976b) and on Santa Ana (Swadling 1976, 1978) where Davenport had previously worked (Davenport 1968, 1972). Excavations on Uki and Ulawa documented late prehistoric sequences; for Uki beginning some 500 years ago and that for Ulawa at 1100 BP. The cultural assemblages at Ulawa (Hendren 1976) are marked by an extensive chert industry, the products of which appear to have been widely traded throughout the Solomons (Ward 1976). Davenport's excavations in rockshelter sites on Santa Ana and later investigations by Green (see Swadling 1976) suggest an initial occupation at 3000 BP associated with plain ware pottery that could, in Swadling's view, belong to the Lapita Plain Ware tradition. Green, however, desisted from making such a connection at the time (Black and Green 1975). All of the sherds are heavily eroded and their small number, less than 20 in total, leaves open to question their position in the ceramic traditions of the Solomons.
In the main Santa Cruz group Green excavated large areas of a series of classic Lapita sites (1976e, 1978a), with initial occupation at Nenumbo (SE-RF-2) dated at about 3200-3100 BP (Green 1976e) and at Nanggu (SE-SZ-8) at about 3100 BP (Green 1976e, 1991, McCoy and Cleghorn 1988). The ceramic assemblages include a wealth of dentate stamped motifs (Donovan 1973) on a range of vessel forms (Parker 1981), as well as later plain wares. The subsistence economy of these sites is indicated by faunal remains illustrating the presence of pig and chicken, pointing to the agricultural element of the Lapita complex; Yen conducted field enquiries into Solomon Islands agricultural systems with a view to informing the archaeological record of horticulture and its history (Yen 1976a). The exploitation of natural resources is indicated by the fish remains (Green 1986) and the measurable effect of human predation of the shellfish population (Swadling 1986). The permanence of Lapita settlement, and the distinctive large size of its settlements (Green 1979b), is indicated by structural features (Sheppard and Green 1991). Trade and exchange networks linking these sites with other areas of Island Melanesia are attested by the presence of Bismarck Archipelago and Vanuatu obsidians (Ambrose and Green 1972, Green 1987) and central Solomons cherts and basalts, the latter almost certainly from Guadalcanal (Green 1978b, Moore and Hackman 1978, Sheppard and Pavlish 1992).

Yen's investigations of the Naiavila site on Santa Cruz (Yen 1976b) and Green's excavations at Su'ena on Uki (Green 1976b) took a first look at the inland settlements of the Solomons. Neither site proved to have the antiquity of the Lapita settlements and their investigation, especially that at Naiavila, pointed to some of the practical problems associated with work in environments away from the coast.

Preliminary work on Vanikoro conducted by Kirch, included the excavation of the Emo Dune site (Kirch 1983a). The excavations produced small quantities of Mangaasi pottery (indicating contact with Vanuatu to the south), shell adzes and Conus discs in a deposit dated at 1650 BP.

Excavations in the Polynesian outliers, also undertaken during the Southeast Solomons project, have revealed complex occupational sequences extending back for nearly three millenia. On Anuta initial settlement associated with plain pottery was demonstrated at about 2900 BP (Kirch 1982a, Kirch and Rosendahl 1973a, 1973b, 1976). Following a major hiatus the island appears to have been re-settled by an aceramic cultural group at about 1300 BP. The ancestors of the present Polynesian population mark a third and later intrusion, perhaps some 400 years ago.

Kirch and Yen's Tikopia work (Kirch and Yen 1982) has documented a three phase occupational history. The Kiki phase, with Lapita pottery, Bismarcks obsidians and cherts possibly from Ulawa, begins at about 2800 BP. By about 1900 BP the Lapita
ware is replaced by Mangaasi ceramics almost certainly derived from Vanuatu. The final phase, from about 700 BP onwards is aceramic but imports of basaltic adzes from Polynesia indicate a continuation of contact with other island groups. Taumako's cultural sequence begins at about 2750 BP with a locally manufactured "Lapitoid" pottery (Leach 1985).

The islands of Rennell and Bellona, investigated by Chikamori (Chikamori and Takasugi 1985) and Poulsen (Poulsen and Polach 1972) respectively, are not as well documented archaeologically as the outliers of the east. Rennell was settled by 2090 bp (the material dated is not indicated), and although no pottery was discovered, one piece fishhooks from this horizon are comparable to those of the early sequences of Anuta and Tikopia. Poulsen's work on Bellona has indicated Plain ware ceramics dated at 2050 BP, similar to those from Anuta, Tikopia and Taumako.

It should be stressed that when fieldwork in Guadalcanal began, the only known sites in New Ireland and Manus in the Bismarck Archipelago to the north, Vanuatu and New Caledonia to the south, Fiji and west Polynesia to the east, and the other islands of the Solomons which were contemporary with the Vatuluma Posovi site were all related to a ceramic tradition and generally one with distinctive Lapita pottery.

This brief review has demonstrated the very large gap in the archaeological record that is evident in the central Solomons, where from 5 major islands only a single major excavation has been undertaken, and that not fully reported. The absence of pottery from surface collections in these islands was also suggestive of a different cultural history than that recorded elsewhere, but which, apart from the Vatuluma Posovi excavation, was untested by archaeological excavation. Furthermore, most excavations had taken place in coastal locations. Keesing, in his commentary on the gap in the archaeological record from the central Solomons (Keesing 1981), noted that this lack of work in the interior, especially of the high volcanic islands of the area, was prone to an 'excessively littoral' interpretation of Solomon Islands prehistory.

THE PROBLEM

There is now a general consensus that the spread of the Lapita cultural complex at about 3200 BP into the Solomons and the island groups further to the south and east, represents the initial appearance in these areas of horticulturalists speaking Austronesian languages (Green 1979b, Kirch 1987, 1988, Pawley and Green 1984). This hypothesis had previously been advanced by Bellwood (1978, 1980) and Shuttle and Marck (1975). These people had a distinctive suite of portable artefacts, including
polished stone adzes and a range of shell items, including adzes of *Tridacna*, but the most easily recognisable are decorated ceramics (Green 1979b, 1991, Spriggs 1991a). They were also responsible for the introduction of new domesticates into the Pacific - the pig, dog and chicken (Green 1979b, 1991), and their arrival in the Solomons was also marked by an addition to the murid fauna, *Rattus exulans* (cf. Flannery and Wickler 1990).

The prior settlement of the Solomons by Non-Austronesian language groups was also agreed and had been argued on data initially derived from linguistics (Grace 1961, Pawley and Green 1984) and the evidence of human genetics (Friedlander 1987, Froelich 1987), and more recently by the demonstration of Pleistocene occupation in Buka. Prior to this latter evidence, the archaeological signature was deemed to be the location of Lapita sites in essentially coastal and small island situations (cf. Spriggs 1984a:204), suggesting to some that the high volcanic islands were already settled.

The only archaeological evidence for this period in the central Solomons was provided by the lone witness of the Vatuluma Posovi cave on Guadalcanal. The evidence, as reported by the excavators, showed human occupation there at about 3000 BP, with stone and shell tools apparently comparable to the Lapita suite, but with a complete lack of ceramics. That the data was equivocal is demonstrated by the different interpretations of the affinities of the cultural assemblages. Green (Green 1977, 1979b, cf. Green and Mitchell 1983) and Irwin (1981) suggested that the aceramic nature of the site was indicative of a tradition distinct from but contemporary with Lapita. Spriggs (1984a) proffered a different avenue of interpretation, suggesting that the cave represented a special use site and was not a reliable indicator of aceramic traditions. The implication of this, together with his assessment of the artefact range, was that the site could be within the Lapita tradition but simply lacked its most distinctive element. Spriggs declined to make a final judgement on the issue saying that 'The case remains open'. Green's reply to Spriggs' arguments (Green 1985) reinforced his statement that the Vatuluma Posovi assemblages were evidence of a different tradition,

... many caves and rockshelters in Melanesia have now produced Lapita and various other kinds of plain ware pottery as witness sites in the Admiralty Islands, New Ireland, Santa Ana and Fiji. Fotoruma may currently be the only site known with deposits of this age, but there is good reason to think in relation to their content that these deposits, without both obsidian and pottery, but with chert and a number of other items listed by Spriggs, do accurately indicate the local situation at that time.
It should be noted that neither Green nor Spriggs had access to the original artefact collection when they made their various interpretations.

Two major possibilities require consideration in this thesis. Firstly are the north Guadalcanal prehistoric assemblages Lapita in affiliation but lacking pottery (cf. Spriggs 1991b for 'Lapita without pots' on Nissan). Alternatively are they a separate and definable cultural tradition contemporary with Lapita elsewhere. Apart from the attempts by Green and Spriggs to discuss the direct archaeological evidence for the central Solomons, other attempts to integrate these islands into a broader framework had to rely on data from outside of the area to infer links into it. This was achieved through the sourcing of stone tools to south-east Guadalcanal (Green 1978, Moore and Hackman 1978) and, less convincingly, pottery tempers attributed to a Nggela source (Dickinson 1978, Dickinson and Shutler 1979). Clearly the solution to the problem of investigating the central Solomons lay in more data stemming from a structured programme of survey and excavation.

THE FIELDWORK STRATEGY

In order to provide the data required for the consideration of these problems, a fieldwork strategy was required that had the capacity to provide sound data from a range of site types in a variety of environmental zones. The only excavation that had previously been undertaken in Guadalcanal had produced equivocal results and its re-interpretation was obviously required. Using this site as a geographical focus, in an area known to contain other caves and rockshelters, the following tasks were undertaken.

The work at the Vatuluma Posovi site concentrated firstly on a complete and detailed re-survey of the cave so as to provide a framework for the re-interpretation of the stratigraphical sequences from the 1966-1968 work. New excavations were conducted to clarify some problems with the sequences previously reported and to investigate a small area of remnant deposit unrecognised by the original excavators.

These data were expanded by the results obtained from a new series of excavations and test pits in a number of caves and rockshelters in the Poha and Vura valleys. These sites are set in a range of vegetational and altitudinal zones and they allowed the collection of data comparable to that from Vatuluma Posovi and gave the first indications of the nature of prehistoric settlement in truly inland areas of the Solomons and its relationship to that of the coast.
The presence of a major gallery of rock art at the Poha Cave, and the potential to assign a date to it, prompted a wider investigation of this poorly described artefact with a view to its integration into discussions of the prehistory of Island Melanesia. A number of art sites in the caves, river valleys and open areas of the study areas were fully described to provide complementary material for inter-regional analysis, and the relationship of the art and the stratigraphy at the Vatuluma Posovi was established.

In order to assess whether the results from the cave and rockshelter sites were representative of the prehistory of north-west Guadalcanal the geographical focus was shifted by work undertaken in the north-west cape area. Here field surveys sought to identify a range of open settlement sites and agricultural systems that could illuminate the nature of both early coastal settlement and the later prehistoric and historic materials that were unavailable from the enquiries of the sites in the Poha and Vura valleys.

In concert with these archaeological studies, Haberle undertook a pollen coring programme in two swamps of the north Guadalcanal Plains and at the coastal swamp at Ruaniu (appendix 1). The results of this work are important in their illumination of the history of landscape and vegetation changes in north and north-west Guadalcanal, and the human agencies that are partly responsible for them.

In the following chapter I give a brief review of the main aspects of the natural environment and ethnography of Guadalcanal that serve to inform the thesis enquiry in various ways. Chapters 3 and 4 present the results of the cave and rockshelter excavations and a review of their contribution to the establishment of a cultural sequence. The nature and dating of the rock art of the study areas are considered in chapter 5 and its local significance and the wider relationships to other sites in Island Melanesia are discussed. The north-west cape study area forms the subject of chapter 6 in which the excavations and surveys undertaken at coastal and ridge-top settlements are presented together with the information recovered from investigations of the agricultural sites of the area. A final synthesis, including the proposition of a three phase sequence for Guadalcanal's prehistory concludes the thesis.

Footnotes

1Specht et al. refer to aceramic sites on New Britain which may also be contemporary (Specht et al. 1981, 1983).

2After the commencement of this project Spriggs' work on Nissan has also unveiled the presence of Lapita occupation (Spriggs 1991b). Wickler's Buka work resulted in new Lapita sites, on reef flats, being
recorded (Wickler 1990) and in the western Solomons more data on that area's ceramic traditions have been provided by the investigations of Reeve (1989) who described a complex ceramic style involving incised and appliqué designs from the reef site of Panaivili in the New Georgia group. In Nggela undated ceramic sequences from a series of cave excavations have been reported by Rukia (1989). All of these sites were unknown or unpublished at the commencement of the 1987-1988 fieldwork in Guadalcanal.
Chapter 2

GUADALCANAL: ENVIRONMENT, ETHNOGRAPHY AND SURVEYS

THE NATURAL ENVIRONMENT

The Solomon Islands archipelago forms a double chain of islands extending from Bougainville (politically part of Papua New Guinea) in the north-west to San Cristobal (or Makira) in the south-east (figure 1). The Santa Cruz group of islands forms part of the political entity known as Solomon Islands, although on bathymetric grounds they are a northward extension of the Vanuatu group (Hackman 1980:1). Guadalcanal lies in the southern half of the archipelago between 9° 15'S, 159°E and 10° 30'S, 160°E. Guadalcanal is the second largest island of the group, after Bougainville, with an area of 5310 km². In 1986 the population, excluding Honiara, the nation’s capital, was 49,830, with a rural population density of 9 persons/km².

The following notes on geology, physiography and climate are derived principally from the reviews of Chapman and Pirie (1974) and Cheatle and Redfern (1988) and specialist studies of geology (Coleman 1965, Hackman 1980) and of land systems and physiography (Hansell and Wall 1974, 1976). In this thesis I use 'Solomon Islands' to refer to the sovereign state of that name and 'the Solomon Islands' to refer to the geographic archipelago.

Geology and Landforms

The Solomon Islands are located on the margin of the Pacific and Australian continental plates and are therefore prone to intense crustal instability. Coleman (1965) divided the islands into five geological provinces: Atoll, Oceanic Volcanic, Volcanic or New Georgian, Pacific or Malaitan and Central. The greater part of Guadalcanal falls within the Central Province and is characterised by 'intensely faulted cores of pre-Miocene basic lavas, in part metamorphosed to a low grade [and] are overlain by a sedimentary succession' up to 5000m thick (Hackman 1980:1). These lavas form the Mbirao volcanics, which provided material for axe and adze manufacture, and in which the outcropping Tetekanji limestones provide sources of chert.
The north-west cape area lies within Coleman's Volcanic Province. Here plio-Pleistocene basaltic and andesitic cones and lavas (the Gallego volcanics) are surrounded by unstable slopes of clastic sediments (the Tiaro tuff breccias) on which landslides are a common feature. There is a steeply dissected drainage pattern with relatively short rivers and streams. The alluvials of the wider valleys and narrow coastal plain give onto a raised beach terrace of coral debris. Small areas of fringing reefs are present on the coast westwards from Visale.

The Poha and Vura valleys lie within the Central geological province. Here the inland geology is dominated by the Poha diorite formations bounded by outcrops of the Miocene Mbonghe limestones. In the Poha catchment these limestones form a band of cliffed ridges across the northern end of the valley and outcrop to a greater or lesser extent on both the eastern and western ridges of the catchment. Outcrops of this formation area are less common in the Vura valley. On the seaward side the limestones are fronted by a grassed escarpment set on the Pleistocene Honiara beds, 'a group of calcareous sediments of varied lithology which rise from the sea as a series of three or four terraces' (Hackman 1980:46). In some places these rest on the poorly known Lungga beds, 'a satisfactory non-committal term for these Middle Miocene-Upper Pliocene? sediments and volcanics' (Hackman 1980:43). The Pleistocene Honiara Reef limestones define the Honiara beds on their northerly fringe. Alluvial deposition in this area is generally restricted, a feature emphasised by the general narrowness of the valleys with sedimentation being largely confined to small fans at river mouths. These are periodically flushed of sediments by flash flooding caused by cyclonic and heavy storm rainfall. Figures 2 and 3 illustrate the major topographical and geological features of north-west Guadalcanal; plate 1 illustrates the terrain at the mouth of the Poha river.

The geology of the island has produced five well-defined regions:

a) a high mountain spine aligned parallel to the south coast. These mountains form the bulk of the main watershed of the island, occupying 2240 km², with the highest summits being Popomanaseu and Makarakomburu at 2330m and 2450m asl respectively. Their ridges are long and predominantly narrow and fall in steep, often unstable slopes to deeply incised boulder floored valleys. These valleys have until recently been sparsely populated and have been used regularly as trans-island trackways. The sources of all the major rivers of the island lie within these mountains;

b) dissected central hills formed on calcareous and non-calcareous sediments forming a band of east-west aligned ridges rising to 1000m in altitude in places. Ridge-tops are generally broad with an even northwards gradient;
c) a fringe of dissected, low foothills running eastwards from Honiara, and comprising terrace and dissected terrace landscapes rising to 450m at Mount Austen;

d) the massive north Guadalcanal alluvial plains, extending to a maximum of 11km inland, are a unique physiographic feature in the Solomon Islands. They are comprised of young fluvial sediments washed in from the hills and mountains to the south, and reach a height of 50m asl. at the borders of the northern foothills;

e) the north-western area of extinct volcanoes.

The topography of the study areas has had some important influences on the populations of that area. As these will be discussed more fully later I shall only make some general comments here. The dissected terrain that characterises much of the north-western region produces narrow ridge tops and steep ridge slopes. In the Poha and Vura valleys the narrow valley bottoms with fast flowing rivers and streams are highly prone to flash flooding. At the north-western end of the island valley floors are broader and both streams and major rivers, such as the Sara, are seasonally dry. Settlement and subsistence patterns are therefore constrained by the natural relief. Villages are generally restricted to the ridge tops and subsistence gardens often have to utilise alarmingly steep slopes that are liable to heavy soil loss both during and immediately after cultivation. This is especially true of the Visale area where catastrophic landslides, often triggered by earth tremors, have resulted in substantial loss of life and major landscape transformations (Raucaz 1928:154).

Studies relating specifically to rates of uplift and subsidence for Guadalcanal have begun only recently, and although a statement about general trends is possible, detailed information will only become available following work in progress (Taylor pers. comm.). Guadalcanal has a general pattern of uplift in the north-west and south-east and subsidence in the north-east and south-west, as though the island were twisting around a central pivot. The Marau Sound area of east Guadalcanal is essentially stable but this picture masks events of both uplift and subsidence that cancel each other out. Taylor's preliminary studies have suggested that the low coastal terrace, reaching 4m-5m above sea level, running from the north-west cape to Honiara is Holocene in age and represents the only formation of this type to have emerged in the past 50,000 years. The terrace, he suggests,

... would have begun to emerge 5000-6000 years ago. Uplift rates should range from nearly zero near Cape Esperance to perhaps 0.5mm-0.8mm/yr in the Honiara area.

Haberle's work at the Ruaniu swamp site (appendix 1) could find no trace of any significant uplift event in the 3500 year sequence there, thus supporting Taylor's hypothesis.
Figure 1 indicates the extent of the dry land mass exposed by the low sea levels at the last glacial maximum (c. 18,000 BP), and from which Guadalcanal was separated by only a narrow channel some 2-3km wide. Assessments of the effects of sea level change on Guadalcanal coastal settlement locations are impossible until further local data are available. Thus although Clark states that 'local dynamics (marine and terrestrial) of an area can have significant implications for site formation and transformation processes' (1989:29), Chappell has warned that, in the absence of specific data, 'factors such as sea level changes and climatic changes should not be assumed for one area in the light of what has been demonstrated for a distant and different area' (1982:78).

Climate

The Solomon islands climate is largely influenced by the Inter Tropical Convergence Zone (ITCZ) an area where warm and humid air masses from the northwest meet cooler and drier air streams from the south-east. This forms a pattern of seasonal winds - the ara\(^1\) south-east trade winds between March and November and the komburu north-west monsoons from December through February. The mountainous spine of Guadalcanal and its essentially east-west axis affects daily wind patterns and causes a distinct rainshadow. This results in two quite different rainfall patterns for the island. A summary of the rainfall data from five rainfall stations is given in table 2.1. The dramatic difference in rainfall between the southern and northern coast will be readily apparent. The generally low rainfall pattern on the northern side of the island has significantly influenced forest regeneration following clearance. Rainfall here tends to be sporadic but heavy with long dry periods the norm. Conversely the south coast is continually wet and at Chikora the highest rainfall readings for any station in Solomon Islands have been recorded. It will be evident from the figures that north and northwest Guadalcanal are at times subject to long periods of water stress. This is compounded by high rates of evapotranspiration based on limited measurements conducted by Hansell and Wall (1976:57) in the Honiara area. Their data indicate that in the period 'between June and November, there is a distinct possibility of crop evaporation exceeding rainfall' and they conclude that

\[\text{The implications for agriculture are that while deeply-rooted vegetation, such as trees and perennial crops, should withstand all but the longest dry periods reasonably well by tapping groundwater, shallow-rooted crops will be much more susceptible and for these supplementary irrigation would be advantageous for some period during most years.}\]
Cyclones are generally uncommon; in the period between 1951 and 1974 only 5 cyclones crossed the Guadalcanal landmass and two of these were in the same year (Hansell and Wall 1974: text map 2). Cyclonic storms cause significant damage and change in all environments (Whitmore 1974) and are occasionally the catalyst for settlement movements and certainly disrupt subsistence agriculture patterns. Particularly severe cyclonic events may render some areas unsuitable for habitation or gardening for long periods and are major forces in topographic restructuring; the 1986 Namu cyclone was responsible for the deposition of 0.5m of sediment over wide areas of the north Guadalcanal Plains in a 24 hour period (Cheatle 1988) and necessitated the evacuation of the entire population of two valleys in the central mountains because of severe landslides.

Marine Resources

Extensive reef development in Guadalcanal is restricted to the Marau Sound area of eastern Guadalcanal and the western coastline. In the latter case reefs enter the north-west cape study area at Visale where small stands of mangroves are also present. In their study of the biomorphology of shores in Solomon Islands, Morton and Challis (1969:483) stated that the reefs of the area 'lack the luxuriance of those in many other parts of the Pacific' and, indeed, that 'much of the intertidal coral is dead'. This is exemplified at Mamara, the area at the mouth of the Poha River, where Morton and Challis coined the term of 'lower eulittoral' for the stratum of *Acropora* and *Montipora* finger rubble that characterises the intertidal zone. As a consequence of these formations marine fish species are restricted in diversity and consist mainly of members of the Labridae, Scaridae and Balistidae families; the main molluscs of this zone are *Trochus*, *Turbo* and *Cypraea*. Mangrove formations in north-west Guadalcanal are now restricted to small patches at the north-west cape although Haberle's work at Ruanui (appendix 1) demonstrates a wider distribution in prehistoric times. Molluscs of this habitat are primarily *Terebralia*, *Cerithidea* and *Pythia* (Morton and Challis 1969:512-513) and members of the Veneridae family of bivalves. The live reef formations at Visale provide a greater diversity of marine resources, especially in the form of reef bivalves such as *Tridacna*.

Terrestrial Flora and Fauna

The terrestrial flora and fauna of Guadalcanal is richer than all of the other islands of the archipelago, with the exception of Bougainville to the north, but depauperate in
relation to the natural wealth of mainland New Guinea. As one progresses eastwards into the Pacific the diversity of the flora and fauna decreases rapidly with the loss of many species of terrestrial fauna and a reduction in true rainforest plants.

The main source of data on the vegetation of Solomon Islands is Whitmore (1966) recently supplemented by the studies of Hancock and Henderson (1988). Seven major vegetational zones can be identified:

a) lowland rainforest represents the climax vegetation over much of the Solomon Islands. It is a species-rich environment characterised by large buttressed trees up to 45m in height. Species include *Calophyllum, Parinari, Dillenia, Terminalia* and *Pometia*. Palms also are common in this zone. This grades, at varying altitudes into

b) montane moss forest with small trees 6-12m in height often with ferns, mosses and orchids. Forest of this type crowns the summit of Mt. Gallego in north-west Guadalcanal;

c) secondary regrowth in old cultivation areas recolonised by low level scrub and thicket, often including *Hibiscus tiliaeus*;

d) open heath with ferns, bushes and occasional *Casuarina*

e) grasslands dominated by *Themeda australis* and forming sharp boundaries with forest, with some small areas indicating the re-establishment of forest;

f) saline swamps with mangroves of *Rhizophora* and *Bruguiera*, largely restricted to eastern and north-eastern Guadalcanal;

g) freshwater swamps often with *Phragmites* reeds, *Pandanus* and *Terminalia*.

A map indicating the major vegetational zones of the north-west Guadalcanal area is given in figure 4.

The forests provided a source for materials for house construction, artefact manufacture, cordage, medicine and ritual. Table 2.2 presents a list of economically important plants from the Poha Valley compiled by informants from that area. This catalogue was compiled as an exercise in ethnobotany during the present study and reflects a Melanesian view of the forests and an assessment of their resources. The table also includes the range of cultivated plants that are, or were once, grown in subsistence gardens. Identifications of locally classified taxa are given where known. Plants are classed in three categories: wild, domesticated (planted) and "tended". Useful plants are encouraged in their growth and distribution by selective weeding and clearance; in this way the techniques of inland communities with regard to forest plants are a form Harris' 'wild plant-food production' and particularly what he terms 'protective tending' (Harris 1989:17). More data on the subsistence economy are briefly discussed below.
In the forest areas of Guadalcanal a variety of hunting and trapping methods were practised and targeted a range of endemic and introduced animals - bats, flying foxes, possum (*Phalanger orientalis*), arboreal rats, feral pigs and birds (especially the *Ducula* pigeons and the hornbill, *Rhyticeros plicatus*). Fishing and the collection of shellfish provided other dietary supplements. The major faunal species utilised by the people of the north-west Guadalcanal area are given in table 2.3. The list is probably incomplete with regard to freshwater fishes and mollusca as these two groups are presently poorly described in the literature. Like the economic plants list, the table reflects an indigenous perspective of the useful fauna of the forests, rivers and swamps. The forest flora and the terrestrial fauna of the study areas, as represented in the archaeological record, is shown in plates 2 and 3.

**People and the Landscape**

In Guadalcanal, as elsewhere in the Pacific, the environmental impact of human settlement has been significant (for recent reviews see Swadling and Hope 1992, White and Flannery 1992). The dramatic alteration of landscapes (e.g. Bayliss-Smith 1988, Brookfield 1979, Gillieson et al. 1986, Hope and Spriggs 1982, Hughes et al. 1979, Kirch 1983b, Spriggs 1985) and an increasingly long list of faunal extinctions for the Pacific (e.g. Balouet and Olson 1989, Flannery et al. 1988, Flannery and Wickler 1990, Olson and James 1984, Steadman 1989, Swadling 1986) have been documented through palynological and archaeological studies.

Perhaps the most striking feature of the Guadalcanal landscape is the extensive grasslands of *Themeda australis* and *Imperata cylindrica* of the northern plains and lowlands. Although originally it was claimed that these were a result of local climatic conditions (Pendleton 1949), Haberle's palynological studies (appendix 1) have now provided the first detailed vegetation history for the central Solomons. He has been able to demonstrate that massive grassland extensions at the expense of forest taxa beginning about 2200 years ago are associated with burning events consistent with forest clearance (see appendix 1). The anthropogenic origin of the grasslands of north Guadalcanal is now established.

Human impact is less immediately obvious within the forests of the Guadalcanal uplands but in many ways no less significant. In the lowland forests extensive plant management is apparent, to such a degree indeed that any claims for the existence of 'virgin' or primary rainforest below 2000m elevation would be scarcely tenable. The planting of economic species, such as *Canarium*, bamboos and a wide variety of fruit and nut trees, and the encouragement of other useful plants through selective felling and
tending of useful taxa has resulted in a managed forest. In many ways the forests of lowland Guadalcanal can be seen as informal extensions of subsistence gardens. The ability of human populations to adapt their lifestyles to changes in the environment has partially obscured the impacts that they have caused in the past; this is especially true of the lowland forests of Guadalcanal.

SOME ETHNOGRAPHIC NOTES

The ethnographic and anthropological literature for Guadalcanal is not extensive and is particularly lacking in any substantial reviews of material culture for which the main sources, somewhat ironically, concern the essentially Malaitan area of Marau Sound (e.g. Brenchley 1873, Waite 1987). The major ethnographic works remain the various accounts of north-east Guadalcanal (Hogbin 1937a, 1937b, 1938, 1964, Wright 1938), detailed work on the cultural revival group of the Weather Coast known as the Moro Movement (Davenport and Çoker 1967, O'Connor 1973) and more general descriptive sources (eg. Paravicini 1931, Woodford 1888, 1890a, 1890b). Some early mission literature also provides important information, often with illuminating photographs (Châtelet 1904, Pavese 1926, Raucaz 1928, Wilson 1932). More recent socio-economic studies with data on subsistence economies, population dynamics and patterns of social change in the historic and recent periods, cover the Weather Coast (eg. Bennett 1974, Chapman 1976, 1987, Chapman and Pirie 1974), north-central Guadalcanal (Lasaqa 1972) and north-west Guadalcanal (Bathgate 1973, 1975, 1985). The value of the records of the first European observers given in the 1568 Spanish accounts of Meñdana's voyage of 'discovery' (Amherst and Thomson 1901) cannot be overstressed as they give particularly detailed accounts of the 'ethnographic endpoint'.

I do not intend here to attempt an anthropological or ethnographical summary. Rather I note some areas pertinent to the interpretation of some of the archaeological data which this thesis presents, and indicate some aspects of the social and economic systems with which the late prehistoric sites are associated. In so doing I draw upon the published sources and personal observations and records.

Language

63 languages, and as many dialects again, from Solomon Islands have been described and reviewed by Tryon and Hackman (1983); a further 21 languages are described from Bougainville and Buka (Allen and Hurd 1965). Papuan or Non-
Austronesian (NAN) languages, although widely distributed from Vella Lavella in the western Solomons to the Santa Cruz group, are few in number; in the Santa Cruz group NAN languages reach their most easterly distribution (Green 1976d:47). It is still unclear whether the seven NAN languages of Solomon Islands, including that spoken on Savo Island off the northwest tip of Guadalcanal, are evidence of a recent intrusion or are indicative of relict pre-Austronesian populations. In the central Solomons the languages of Guadalcanal, Nggela, Malaita, Makira (San Cristobal) and southern Isabel form a distinct sub-group of the Oceanic group of the Austronesian languages - Southeast Solomonic; those of the western Solomons and northern Isabel form a second sub-group. The languages of the southeast Solomonic group are more conservative than those of the western area and exhibit less evidence of change through the adoption of loan words from other languages (Tryon pers. comm.). It has recently been suggested that the western Solomons Austronesian language group is associated with a secondary migration of Austronesian speakers that overran or absorbed a pre-existing population allied to the southeast Solomonic group (Ross 1989). Green (1976d:48), using data from Pawley (1972) proposing that the Guadalcanal-Nggelic and Cristobal-Malaitan languages arose from the dissolution of the Proto-eastern Oceanic subgroup between 4000 and 3000 years ago, concluded that,

One might expect, therefore, archaeological cultural traditions from some parts of the region now occupied by speakers of these languages [Guadalcanal-Nggelic and Cristobal-Malaitan] to have upwards of 3000 years of continuity, starting with early historic cultural assemblages and going back to an ancestral complex in a more or less uninterrupted sequence.

This, Green argues, is the case for the 3000 year sequence from the Poha Cave (Vatuluma Posovi; see chapter 3).

The people of Guadalcanal generally give full language status to many of the dialects identified on linguistic criteria. Thus local residents name 19 languages, two of which - Marau and Longgu - are essentially dialects of the languages of east Malaita. Tryon and Hackman (1983) arrange these locally defined languages into 7 groups (see figure 5); the coastal languages in particular form a cline of change.

Social Structure

Within Guadalcanal much confusion has arisen from an assumption that the social structure of areas whose inhabitants speak similar languages ought likewise to be similar. It is clear however that whilst some general rules apply outside of the Malaitan
speaking areas of Longgu and Marau, local details are much at variance (Hogbin 1937, 1964, O'Connor 1973, Wright 1938). This is due largely to differences in interpretation by scholars rather than gross differences in the structures themselves.

In north-west Guadalcanal the main division upon which most informants agree is a pair of exogamous matrilineal moieties known as Manukama (or Garavu) and Manukiki. Each moiety (duli) is divided into numerous sub-clans known as puku. Sub-units (tina, or sometimes rau) are comprised of the maternal grandmother, brothers and sisters, and maternal first cousins (Bathgate 1985:83). The moieties trace their origin to a common ancestral, mythical figure, the smaller units from named individuals who have been able to secure ownership of particular pieces of land.

Interrmarriage between the sub-clans of a moiety is prohibited and at marriage a woman leaves her family to reside in the village of her husband. Male children return to the district of their own sub-clan in early manhood. Settlement sites, especially small hamlets of the interior, are thus often specifically associated with one of the two moieties. Land ownership is vested in the sub-clan of the main moieties and each may own several areas. The landscape is therefore divided into a patchwork of small units. The primary right to use land is vested in the members of a lineage although the land of the father's lineage may be utilised as well. Such usage is however not a right but a privilege; land ownership may thus be graded into primary right holders and usufruct right holders. Similarly individuals may grant right of usage to others, an arrangement normally sealed by the payment of shell valuables and pigs. Access to land for subsistence gardening activities and the establishment of settlements is therefore governed as much by social and political factors as by purely environmental concerns of soil type, defensibility and immediate access to water supplies.

On the larger islands of the Solomons group, inland and coastal populations, even when they are related by lineage affiliation, identify themselves as 'bush people' or 'salt-water people'. Thus, although individuals of bush communities in Guadalcanal may, through membership of a particular lineage, have theoretical access to the resources of their kinsmen on the coast through chachapa ('corridors'), this right is rarely exercised. Similarly, coastal people may profess no knowledge of particular gardening methods or the names of forest plants, such information being the preserve of the bush communities. Many of the intra-island trade and exchange networks of the Solomons have 'institutionalised' this conceptual framework which may best be described as a system of complementary opposition. Thus although many tensions are evident between these groups, and each may speak in a deprecating way of the other, each is dependant upon the other for the provision of some resources. In some cases this interdependence takes the form of simple exchanges of coastal goods (such as fish and shellfish) for products of the interior, particularly taro and, in some areas, Canarium
nests. Other forms of exchange are clearly artificial and cannot be explained as solutions to problems caused by differences in the availability of particular commodities. The apparently unnecessary import of *Morinda citrifolia* dyes from Tetekanji and Mbirao in east Guadalcanal to the Malango district in north Guadalcanal is a case in point. Clearly complex economic, social and political forces underwrite the internal trade and exchange mechanisms of the island. At least in part, these systems operate for the reduction of tension and conflict and the maintenance of a *status quo* in the control of various resources.

Although a gross generalisation, it may be said that the social structure of most central Solomons groups is essentially non-hierarchical. There is no hereditary chieftainship and assumption of 'big-man' status (cf. Sahlins 1963) depends upon the ability to amass, distribute and manage property and wealth for political advantage and social prestige. In Guadalcanal different sorts of big-men had different responsibilities, with *malaghai* being warriors and warfare leaders, *taovia* being secular authorities responsible for controlling social relations and community activities, and *tinoni tarungaha* the priests responsible for ritual affairs. The latter maintained control over the use of shrines (see below).

**Settlement Patterns and Architecture**

The earliest data on Guadalcanal settlement patterns and architecture are provided by various observations in the Spanish accounts of 1568. All of the accounts remark the large size of many of the coastal villages, and while some degree of exaggeration may have been applied in an effort to impress the royal patrons of the expedition, there is a consistency about them that gives evidence either of conspiracy to defraud or, more probably, some accuracy of reportage. Amongst the observations the following serve to give an indication of the numbers of villages seen, their size and location and some details of house construction. Gallego, the Chief Pilot, commented on the density of coastal villages (Amherst and Thomson 1901:40):

*Those in the brigantine, sailing up the coast of this island from the south-east [north-west ?] to the north-west [south-east ?], found many villages near a river which was about a league from where the ships lay. We went ahead, and came to the Rio de Ortega, which is another league further. The whole coast seemed full of villages, ....*

This observation was elaborated by Mendaña in his report of Gallego's voyage in the brigantine (Amherst and Thomson 1901:177)
He coasted along the island of Guadalcanal towards the east for more than 30 leagues. All that part of it which he passed was thickly populated in large villages; he saw a town which extended for more than 3 leagues, all in a plain under palm trees.

Sarmiento noted significant settlements in the hinterland (Amherst and Thomson 1901:90),

From this port went out a commander called Andres Nuñez with twenty-seven men, who went inland 7 leagues. He found large villages with much people and food...

Mendaña's own account (Amherst and Thomson 1901:175-6) provides supporting evidence for the Gallego and Sarmiento records

Another day I went two leagues inland with twenty-six men and Pedro de Ortega. We climbed a small steep hill which we saw, and from which a great part of the island was visible. From the time I landed until we reached the top of the hill, I counted thirty villages and more. From the summit of the hill we saw towards the east and the south-east many thickly-populated plains; and it is not surprising that the plains should be populated since the mountains are.

Village layout and architectural styles are also recorded. Catoira's description (Amherst and Thomson 1901:309) of platformed houses could equally apply to many inland villages of Guadalcanal today,

We returned by another road which seemed to lead straight on; and entered another village, where there were seventy houses, placed in regular order, with a street between them, made of baskets of earth, piled against the houses.

The use of grass for house construction, again from the account of Catoira (ibid:292) is no longer employed in Guadalcanal,

The Master of the Camp .... went to a regularly laid-out village, which had twenty-six houses, or huts, very large and well made, all of canes, and thatched with the grass of the savannah, for they do not seem to have palm-trees on the coast, which is a sign of a fertile soil and a mild climate.

Mendaña's records indicate a large population on the north coast settled in large villages with an agriculture based largely on yam cultivation. The grasslands were
obviously already a major feature of the landscape and the records note numerous fires on the northern plains (Amherst and Thomson 1901:309). The records of later observers indicate the substantial changes that occurred following later European contact. Specific records for north-west Guadalcanal are provided by Paravicini (1931) who noted very few villages at all and only one of any real size - the village of 80 houses at Kakambona near the mouth of the Poha valley. In the Honiara area particularly, his reaction to the lack of people was to question the reliability of the Spanish records (Paravicini 1931:60). The cause of this apparently extensive population decline was a well documented massive social disruption of settlement in north and west Guadalcanal from the mid to late nineteenth century. Its cause was a dramatic increase in the frequency and impact of headhunting raids from Savo, the Russell Islands, and the western Solomons (Chapman and Pirie 1974:2, 16, Griffiths 1943, Wall and Kuschel 1975:61, Wilson 1932:209, Woodford 1922:69, Wrightson n.d.:n.p.), that followed the establishment of constant European trading contacts (McKinnon 1975). The response to this phenomena was a desertion of the coastal zone for more secure habitation areas in inland locations (Bathgate 1975:83, Zelenietz 1977:103; cf. Goldie 1909:25 and Scheffler 1965:3 for similar responses in the western Solomons and Choiseul). The re-settlement of the coastal areas was only allowed by the cessation of head-hunting that was achieved by the establishment of the pax Britannica. Introduced 'European' diseases (cf. Paravicini 1931:47) and the effects of the labour trade (Woodford 1922:69) certainly led to a general reduction in population in Guadalcanal and were contributing factors to the social disintegration of this period.

As agriculture was the major preoccupation of the inland, and many of the coastal communities of Guadalcanal, the requirements of the swidden system and the availability of suitable garden land were the main determinants in settlement patterns and the choice of village sites. It will be noted below that the agricultural systems also strongly influenced political systems. Considerations of the defensibility of villages were probably the major factor in village siting on a local scale. The close proximity of a water source does not seem to have been particularly important because, as most foods were prepared by baking or roasting, the relatively small quantities of water that were required were collected in bamboo tubes. If a water source was relatively close a bamboo conduit (chocho) was sometimes constructed to facilitate collection.

In the interior of the island settlements tended to be smaller than those on the coast, but some larger settlements are well documented (Paravicini 1931:82). These were mainly associated with particularly influential leaders (the taovia) who could command wide support and who controlled, or managed, large areas of land. As such settlements tended also to be associated with several garden areas at one time, garden plots usually had small houses associated with them. This allowed prolonged work on gardens at times of planting, weeding and harvesting without the need to return to the
main settlement every night. However some smaller social groupings, with correspondingly smaller labour pools and less available land areas were probably more prone to movement.

Villages, particularly the larger settlements, were laid out according to a fairly regular plan. Generally this consisted of a single, sometimes double row, of houses with the path into the village passing in front of them (cf. Paravicini 1933:148, figure 1). The houses themselves had both a front and rear door, the latter giving access from the cooking hearth and food preparation areas to the ridge slopes where household rubbish was discarded. This side of the village was also reserved for the female latrine areas, men having similar facilities on the opposite side of the ridge crest. Village shrines, if there were any, were located at the more elevated end of the village. Most villages had a luma or single men's house where youths were instructed in the manly arts and in which they lived from the time of puberty. Luma also served as 'guest houses' for male visitors.

House walls were constructed either of bamboo poles laid horizontally and lashed in place to vertical palm wood laths, or large panels of woven bamboo with complex patterns highlighted by the use of dyed colours. The lashings often assumed decorative styles. A small doorway, with raised sill to make access by enemies difficult, was closed by a sliding panel of bamboo poles. Roofs were constructed of sago palm leaf panels tied to the roof frame with loia cane and sometimes decorated with gable finials. Within the house a slightly raised floor of beaten earth was formed either by the construction of a platform and/or a facing or river stones or horizontally-laid bamboo poles. Internal structures were few, the most important being the ovens (umu) at the rear of the house, sometimes associated with ritual stones, and a wooden rack suspended in the ceiling for the storage of food and utensils and weapons of wood and fibre. The racks thus served a dual purpose - as a smoking frame for food preservation and as a means of preventing insect attack on artefacts.

The Subsistence Economy

Brookfield and Hart (1971:106) describe the agricultural systems of Solomon Islands as both 'low intensity' and of 'low technological level'. Whilst this may true of the situation today Yen (1976a:60) has warned that,

we must remind ourselves that we are not seeing the endpoint of indigenous achievement in subsistence. Instead what we see is agriculture in transition - with such changes within the native system as the sweet potato ascendency in the cropping pattern,
[and] the near century long conversion of labour to copra production.

Thus the 'traditional' agriculture of 1990 is but a fragment of more diverse, and technologically complex systems that operated in the past. In reconstructing a picture of indigenous agriculture in Guadalcanal reference has to be made to the early written records, especially those associated with the first voyage of Alvaro de Mendaña in 1568 and which include mention of irrigated agricultural techniques not documented elsewhere in the ethnographic record (Amherst and Thomson 1901:306), and the testimony of oral tradition. In chapter 6 evidence available from archaeological survey and excavations of prehistoric agricultural sites is presented.

From about 1900 onwards massive changes were wrought on the agricultural economies of Guadalcanal by, inter alia, the establishment of large coconut plantations, population movements associated with mission establishment on the coast, the requirements to pay tax to the recently established British Solomon Islands Protectorate, the introduction of new crops (particularly the sweet potato, Ipomoea batatas) and the major social (and physical) upheavals associated with World War II. Although the following account reconstructs the traditional agriculture of Guadalcanal on the eve of this period of rapid change, many of its elements are still apparent today.

The basic structure of Guadalcanal's agriculture was a swidden system for the cultivation of the two staple root crops, taro (mainly Colocasia esculenta) and yam (Dioscorea spp.). Sugarcane (Saccharum officinarum), banana (Musa spp.) and coconut (Cocos nucifera) were all cultivated as indigenous crops. A wide range of tree crops, including the betel nut palm (Areca catechu), together with a host of edible greens were either specifically cultivated or tended.

Of particular importance in this suite of plants are two species of Canarium 'almonds', C. indicum and the 'wild' C. salomonense. These two species are grouped by informants into a single taxa called chela, and are subdivided into three further groups: hanjoha (C. salomonense), a number of varieties of ngali (C. indicum) and muki (also C. indicum). Plate 2a shows X-rays of C. salomonense and several locally recognised varieties of C. indicum. Canarium trees are a much valued asset and are individually owned. They provide a protein-rich nut that lends itself to storage, either as whole nuts or as a paste. Whole nuts were laid on racks above household fireplaces and storage for 3-4 years was possible in this manner. Canarium paste was packed into bamboo tubes and stored in a similar location but had a 'shelf-life' of only about 6 months. The importance of Canarium, not only in Guadalcanal but throughout the Solomon Islands, is reflected in its use as a marker in traditional calendars, and by the ritual which surrounded its harvesting (Guppy 1887:66-77, Ivens 1927:367, Woodford 1890:26-28). The subsidiary uses of Canarium included its use as a timber, the collection of sap
exudate for candles\(^4\) and the retention of nutshells as kindling material for domestic fires.

Animal husbandry was restricted to pig rearing, although probably never on a large scale. Pork, according to oral tradition, was not a common element of diet and the importance of pig in ritual and the reservation of its flesh largely for consumption at traditional feasts certainly seems to support this testimony. Chickens were recorded by Mendaña on Guadalcanal (Amherst and Thomson 1901:91) but there is presently no evidence from archaeological excavation that gives any firm indication of when these birds may have been introduced.

The agricultural systems of Guadalcanal show significant variations as adaptations to the different micro-environments and climatic situations in which they operated. A full discussion of these variations is outside the scope of this general review but it should be noted that cultivation techniques and crop dominance patterns (\textit{viz.} taro as against yam) exhibit important differences.

Dryland taro cultivation seems to have reached its most complex form in the interior uplands of the island, although both \textit{Colocasia esculenta} and \textit{Cyrtosperma merkusii} were also grown in suitable lowland situations. Taro cultivation areas were chosen with care and much emphasis was placed on the identification of appropriate soils, either by the presence of indicator plants or by detailed assessments of the soils themselves. Gardens were often, due to topographical constraints, laid out on exceedingly steep slopes. Site clearance may or may not have been accompanied by burning of the covering vegetation. Longitudinal and lateral divisions of the garden area were made with branches or small tree trunks and although the lateral divisions are often cited as erosion control barriers, gardeners today do not regard such features as a preventative measure against soil creep. Usually a single crop was raised from each area, although two crops are fairly common. Thus whilst one garden was under cultivation, another was in preparation. Rotational fallows of 8 to 10 years were employed to ensure the rejuvenation of soil fertility. Taro cultivation was, and in some areas still is, accompanied by rigourous ritual at planting, weeding and harvest times and many methods of prevention and cure of pest and disease attack were known and practised.

The cultivation of yams (\textit{Dioscorea alata} and \textit{D. esculenta}) was more common in the lowland areas of Guadalcanal and especially so on the northern plains. The onset of the extensive grasslands of \textit{Themeda australis} in north Guadalcanal may well have led to this dominance as the soils and climate in that area are now largely unsuitable for taro cultivation. As with taro a number of gardening techniques are documented for yam horticulture (Tedder and Tedder 1974).
The Spanish accounts of 1568 indicate that yam cultivation had already achieved a predominant status at that time. In the account attributed to Mendaña he records (Amherst and Thomson 1901:150),

*In the huts we found a great quantity of their provisions, which are panaes and Ŧame, which we took for our food.*

This is presumably a reference to yam storage houses (Yen 1974b:40), to which there is a more explicit reference - a large house 'where they found a great quantity of food and nothing else' - in the account of Catoira (Amherst and Thomson 1901:372). Catoira also writes (Amherst and Thomson 1901:305),

*And after they had gone a quarter of a league into the interior, entering a palm-grove they went up a hill, whence they saw a ravine, and on the sides of it they saw some villages, very bright and pleasant to look at, encompassed by groves of palm-trees and plantains and other trees, and many fields near the village planted with their food, which is pana and Ŧame.*

The identification of the two types of yam mentioned here - 'pana' and 'ďame' - has been discussed by Yen (1974:39).

**Pana**, the Lenggo language name for *Dioscorea esculenta*, seems to have been largely restricted to the northern plains. Varieties of *D. bulbifera*, *D. pentaphylla* and *D. nummularia* are cultivated, but less commonly than *D. alata* (the 'ďame' of the Spanish records) and *D. esculenta*; 'wild yams' of these species are also gathered. Yam cultivation was also associated with much ritual, including the use of small chert flakes for garden magic (Tedder and Tedder 1974:42) and a similar degree of expertise and care was evident in yam gardens and gardening as it was for taro. Yam cultivation seems to have been less important in the central uplands and yam tubers may well have been an item of exchange in the past. As both taro and yam are seasonal crops, times of foods shortages were known and foraged foods then became an essential part of the daily diet.

Such was the importance of root crop agriculture that it has been claimed that the social systems and settlement patterning of Guadalcanal were in large part determined by the relative importance of taro as against yam (Scheffler and Larmour 1987). Thus the ready availability of suitable yam garden land and the long storage properties of the tubers allowed for more sedentary settlement, greater stability and, perhaps, complexity (cf. Wright 1938) in social organisation. The cultivation of taro, which requires rather specific types of soils, necessitated the frequent movement of garden plots and was dependent upon the ability to maintain control over relatively large land areas. This resulted in smaller and less permanent settlements and a greater opportunity for the
political advancement of individuals - 'big-men' - who were able to exploit the scarcity of suitable taro cultivation areas.

Material Culture, Trade and Exchange

A full discussion of Guadalcanal's material culture would provide enough data for a thesis in itself and I will consider only some of the more durable items recorded from the ethnography that might be expected to survive in the archaeological record. Firstly two items must be noted that do not occur in Guadalcanal, but which are known elsewhere in Solomon Islands or adjacent parts of Island Melanesia, either in ethnographic or archaeological contexts.

Ceramics are unknown from the central Solomons and on Guadalcanal their place seems to have been taken by distinctive wooden bowls (popo). Smaller popo are commonly up to 40cm in height and 25cm in diameter and were used in domestic contexts for boiling foods. This technique involved the use of specifically selected stones which were heated on open fires and then placed into the water-filled bowls. These stones were stored separately from the normal umu oven stones on the hearth structures in domestic dwellings. Conceivably these stones might be identified in archaeological contexts by distinctive fracture patterns or rock type, but as the technique of stone boiling is now largely in abeyance, the collection of samples of the 'correct' stone type might be problematical. In this form of cooking stones come into direct contact with the foodstuffs being prepared and a further possibility exists of the presence of residues being retained upon these artefacts. Larger popo, up to 1.5m in height and 0.7m in diameter, were reserved for food presentations at feasts and do not appear to have been used for cooking.

Obsidian, widely traded in prehistoric contexts (eg Ambrose and Green 1972), is likewise unknown from Guadalcanal, save for an oblique reference from oral traditions, collected on Nggela and reported by Codrington to Montgomery (Montgomery 1896:191). The story related to Codrington concerned the 'wild men' or 'mumuolu' of the Guadalcanal mountains who carried bags which contained pieces of a black glassy rock which he assumed to be obsidian. No confirmation of its presence has ever been made.

Chert (nandi) was employed as a raw material for a range of tools in the central Solomons. These include flaked adzes (Harrison 1931, 1932, , Hendren 1976, Ivens 1931, Ross 1970, Ward 1976), pump drill bits (Ivens 1931:424, Paravicini 1942-1945:164, Woodford 1908), Canarium anvils (Ivens 1931:422), shaving implements
tools used in canoe manufacture (Ivens 1942:424) surgical instruments and possibly spear tips (Ivens 1931:424). There is however little information specific to Guadalcanal regarding chert use. Chert adzes are not known (Miller 1979:152, Wall 1974a) and informants in the north-west Guadalcanal area knew only that it had been used for minor surgical procedures (boil-lancing) and suggested its use also in the incision of designs on bamboo lime containers (pokemare). Chert use for garden magic has been noted above in the context of yam cultivation; a similar function was ascribed to it, in the form of nodules, by informants in the Marau Sound area.

Volcanic stone, particularly from the Mbirao meta-basic formations of south-east Guadalcanal, was utilised for polished stone adze (hila vatu) manufacture. The products enjoy a wide distribution in Guadalcanal and were an important item of exchange up until the the recent past (Green 1976c:13). Bifacial stone axes are not generally recognised by informants as an indigenous artefact, suggesting their abandonment as a tool type has some antiquity. They are, however, reported as surface finds and, based upon a preliminary assessment of the Solomon Islands Museum collections, include waisted forms of several kinds - flaked and unpolished, boulder spalls and polished bifacial forms such as that reported by Rukia from Ravunegha at the foot of the Poha Valley (Rukia 1989:40). This latter type is similar to others reported from San Cristobal (Makira) by Green (1976a:138) and from Santa Ana by Davenport (1972:177).

Other stone artefacts of common distribution are tinge anvils and kundale hammers for the processing of Canarium nuts and which are associated with most settlements and often with individual trees.

The commonest forms of shell artefact are the various forms of currency units widely used in bridewealth transactions and compensation settlements (eg. Hogbin 1964:25). Marau was a known centre of production until recent times and surface finds there include numbers of smoothing stones for bead polishing (cf. Paravicini 1942-1945:166). Major imports of shell currency from Malaita and and smaller quantities from northern San Cristobal are also known (Codrington 1891:294, Hogbin 1964:47, Quiggin 1949:163).

Shell armrings of Tridacna (kato), and possibly Trochus, and one-piece and compound fishhooks (the latter an apparently rare form, see Bell, Specht and Hain 1986) are apparently more common in north-east Guadalcanal and Marau than in other areas, but this observation requires further investigation. In the north-west Guadalcanal area no items of these types were held by informants who were interviewed in the context of the present study.
The inter-island trade and exchange networks of the south-east Solomons have been reviewed by Green (1976c:13) and Mead (1977:143, 157). Green notes the widespread network that linked Malaita, Guadalcanal, San Cristobal, Uki and Ulawa although Mead questions whether Guadalcanal and Malaita were fully integrated and suggests that some shell valuables did not reach these latter two islands. Items of exchange emanating from Guadalcanal sources other than the stone adzes mentioned above, appear to have consisted mainly of food (particularly pigs, yams and perhaps taro), dog teeth (from Tetekanji), woven shields (tako) and wooden clubs (Hogbin 1964:47, Waite 1979:218). These were exchanged mainly for canoes from Nggela and Malaitan shell valuables; informants in Marau also noted the import of flakes and large chunks of chert.

Intra-island exchanges between inland and coastal communities involved movements of taro, Canarium nuts, woven mbore armbands and belts, changgi fibre armbands, dog teeth and, occasionally, women from the interior. There were reciprocal movements of fish, marine shell products (dafi chest ornaments, vatuhumi razors, tue shell cutting tools etc.), yams and woven mats. Products entering the networks from the Weather Coast of Guadalcanal included the stone adzes, kolasi sharpening stones and, from the Marau Sound area, shell valuables. In west Guadalcanal oven stones from the Mbambanakira area, and possibly some species of bivalve shells with restricted natural distributions, were items of exchange value, but I have no data on reciprocal products. Many of these movements probably followed well-defined trans-island trackways and lateral movements of goods seem to have been less common, probably because of topographical constraints.

THE SITE SURVEYS

The site surveys (see figures 6 and 7) that were conducted as part of this study had the following targets:

a) to identify the range of site types in the study area that were known to local informants, as a means of investigating the later prehistoric and historic settlement patterns

b) to locate archaeological sites with excavation potential, especially open sites, in both inland and coastal situations, and caves and rockshelters, so as to be able to investigate the prehistoric record of settlement, and

c) to search for sites of two specific classes:
i) a larger sample of rock art sites was required to create a corpus of material for comparative studies with other parts of the Solomon Islands and to further assess the importance of known rock art sites in the study areas, and

ii) a further attempt (following Yen's necessarily cursory surveys - 1976:62-63) to locate evidence for the forms of agricultural systems that existed in the past, especially irrigation systems for which there are some indication in the historical record (Amherst and Thomson 1901:306).

**Methods**

With much of the study area situated in dense lowland forest the success rate of 'blind' site surveys was likely to be low due to poor site visibility in situations with heavy tree cover and deep leaf litter accumulations. Similarly the detail available on the 1:50,000 topographic map sheets for the island of Guadalcanal (Ministry of Overseas Development 1975), derived from air photo interpretation, is not fine enough for the prediction of likely areas for site locations. This is especially the case for outcropping limestone wherein shelters and caves suitable for human habitation might reasonably be expected to occur. Furthermore, given that the dominant topography consists of steep-sided and narrow ridges, with similarly constricted valley bottoms, it was presumed that the number of potential open settlement sites was likely to be restricted and that prehistoric settlements were likely to occur where subsequent historic and proto-historic settlements had been located. Based upon this presumption, site surveys in forested areas were planned following consultation with local landowners concerning the location of known historic and recent settlement areas, caves and rockshelters. Details of other sites, especially those with engraved rock art, were also sought, as were the locations of sites where old artefacts had been recovered, either as surface finds or during the course of gardening activities.

The major exception to this strategy was in the northwest coast region where, because of an absence of forest cover and a lack of informants conversant enough with the terrain, site survey was conducted without prior local information.

Of the surveys reported here, that in the Poha River catchment was the most thorough, although some areas were difficult, or impossible, to visit because of rival claims to ownership and access rights. The surveys not only involved site location and recording, but also the documentation of any oral traditions relating to historic sites. It became apparent that the present population of the upper Poha valley has not had a long history of settlement in the area, having originally moved into the area from the Mbetikama River headwaters in the east. As local informants showed a general
reluctance to divulge genealogical information that might be 'pirated' for use in land dispute cases, it is difficult to determine at what time this relocation took place, although it seems unlikely to have occurred more than 200 years ago.

The Vura Valley survey was occasioned by the entry to that area of a multinational logging company, and the scope of the survey was largely dictated by their proposed area of operation. Although the survey was of short duration and lacked the coverage of the Poha work, site visits served both to provide a comparison with the suite of sites recorded from the Poha catchment, and to enlarge the picture of traditional settlement patterning in the lowland hills area.

Despite extensive searches for sites in the coastal zone, this area remains something of an archaeological blank. There appear to be three main factors affecting this situation. Large-scale plantations, initially of coconuts and more recently of cocoa, have undoubtedly destroyed many archaeological features. This has been exacerbated in narrow coastal belt locations by the construction of the north Guadalcanal road. The Guadalcanal Campaign of 1942-1943 saw massive clearance measures undertaken by American engineers to provide sites for camps and for the destruction of malarial mosquito breeding areas. One such camp was a bivouac area at Kakambona near the mouth of the Poha River (Bennett et al. 1988:110, un-numbered plate). These clearances involved the bulldozing of many stretches of littoral forest, including that at the mouth of the Poha Valley, and must surely have destroyed all trace of coastal settlement sites in that area.

Very few sites previously unknown to the local population were discovered during forest survey and the majority therefore cannot be considered to have any great antiquity, except where they coincide with sites proven to have been used in the remote past, such as the cave and rockshelter sites.

Site Types

Identification of site types was made by informants during field surveys and some may represent interpretations by them rather than actual knowledge. Site descriptions in this thesis use, where appropriate, the vernacular terms for observed structures, thus:

_Peo_ - usually an unkerbed cairn, often of large blocks and always in an elevated position, marking the site of a 'shrine'. _Peo_ are 'owned' by kinship groups and propitiatory offerings were made at such sites for, _inter alia_, success in warfare,
plentiful harvests and divinations. In traditional settlements the peo was always located at the upper boundary of the village and was off-limits to all women.

In some areas of Guadalcanal the ritual associated with shrine usage is another example of the complementary opposition principle noted above. Thus rituals at a shrine owned by a scion of the Manukiki moiety could only be performed by a member of the Garavu moiety and vice versa; indeed owners of the shrine were prohibited ever from entering it. The consumption of ritual pigs was likewise constrained. At some sites in inland Guadalcanal this system resulted in the ‘pairing’ of shrines, with the tinoni tarungaha of lineage A conducting rituals for lineage B and vice versa (Roe and Gorecki 1989:19). The extent to which this system operated in the north-west Guadalcanal area is uncertain but dual shrines are known from the area (eg. at Sambagahakiki, SG-2-9; figure 8). Shrines were used largely for supplications to ensure good harvests and the like. They were also employed in divinations, especially for illnesses associated with sorcery and poisoning, the most common of which were vele and piro (Hogbin 1964:56, Ivens 1927:291, Wright 1940, Wrightson n.d., np).

Two classes of spirits are associated with shrines. Vighona are female spirits which often assume the form of a snake and which have had no previous life as a human being. Tarunga are the powerful spirits of human ancestors. Both forms of spirits have the capability to assist in successful enterprises, commonly gardening and warfare, but can also be the major causes of sickness and death. Propitiations are therefore required at shrines with which particular spirits are associated. Spirits are associated with particular lineages although their powers affect all members of the community and actions that lead to actual or ritual desecration of shrines associated with them are particularly grievous offences.

Ngginggilu - an inhumation burial site, usually defined either by a rectangular stone arrangement consisting of a kerb and stone fill, or a sub-circular kerbed structure, or merely by the presence of 'sacred' plants, especially Cordyline fruticosa and Croton species. Older graves of this type are generally of the sub-circular type indicating placement of the corpse in an upright position with the arms bound across the legs, and with the top of the head marginally below the surface to facilitate subsequent removal of the skull. This type of burial is known as sorikuku. Burials of children were regularly made under the floors of houses, as at site SG-2-7, Chakutulu. Rectangular graves are considered to be a later phenomenon and possibly reflect Christian influence. Informants knew of no cases of cremation, although this has been recorded in the Tetekanji district of the north-eastern mountains of Guadalcanal (Wright 1938:99).

Mbeku - exhumed bones of some individuals, especially prominent men, were kept in mbeku sites. Natural features such as crevices in limestone outcrops, for
example at site SG-2-90, Mbulumbaka, were sometimes utilised, but often the *mbeku* was situated close to the settlement area to provide security for the remains. In this case small 'crypts' were constructed, covered with small slabs or low cairns and concealed by a scattering of soil and leaf litter. If the settlement was subsequently relocated, so was the *mbeku*. In some cases cairns, situated adjacent to the settlement's *peo*, were built as repositories.

*Moi* - often unmarked, but sometimes contained within a *mbeku* or *ngginggilu*, a *moi* served as a repository for shell valuables, especially strings of shell beads ('shell money'). The locations of most sites in this group are kept secret for obvious reasons; no valuables were still contained in the examples recorded during the site surveys.

*Vatuluma* - a generic term for caves and rockshelters. Although the term translates today as a 'stone single men's house' there is little indication that cave or rockshelter use was sexually restricted. Their modern use is sporadic and largely confined to hunting parties; in 1978 Vatuluma Ngolu (SG-2-93) was used as a gardening camp by the people of Vatuluma, a small hamlet in the Poha Valley. Informants of the Poha Valley were unaware of any instance of the use of caves for inhumation burials or as shrines (*peo*). The use of caves as yam storage places is suggested by the Spanish accounts of 1568 (Amherst and Thomson 1901:41).

Old village sites (*vera*) may be indicated by any combination of *peo, mbeku,* and *ngginggilu* features. Sites of houses (*vale*) may be marked by platforms cut into slopes, quadrangular platforms of earth, sometimes with kerbs of stone, or *umu* ovens or scatters of oven stone. In many cases there are none of these features and recognition is based purely upon economic plant associations or informant's knowledge of locations. Defended village sites with ditches, fences or both, are recorded in the literature (Woodford 1890:124, 144, Paravicini 1931:76) but none were recorded during survey.

Distinguishing between the different classes of stone cairn features on structural criteria alone is difficult, and without prior knowledge often impossible. Although a *peo* might be identified in terms of its position relative to recognisable settlement sites, the cairn forms of *peo, mbeku* and *ngginggilu* are varied and often indistinguishable. Archaeologically, these forms, in the absence of any bone, would be very difficult to identify with any degree of certainty.

The results of the site surveys are presented in appendix 2 and site location maps are provided by figures 6 and 7. All sites were allocated a site number in accordance with the National Sites Survey numbering scheme of the Solomon Islands National Museum (Miller 1979:5-7). In the results of the surveys the following information is given: the site name (or names, if more than one is recorded) and, where known its
meaning, a grid reference (although these are somewhat approximate, given the problems of accurately locating sites within heavily forested areas) and an indication of altitude, based on readings from a pocket aneroid barometer. Where sites exhibit distinctive features these are briefly described, however the majority of old settlement sites are defined largely by either groups of economic trees (Canarium indicum, Musa spp., Cocos nucifera, Dracaena spp., Cordyline spp., Croton spp. etc.) or knowledge of them is held in the collective memory of oral tradition. Sites subsequently investigated through excavation or more intensive survey are fully described in the relevant chapters of the thesis (chapters 3 - 6 inclusive).

Site plans were made by two main methods: (1) for small sites offsets from an established baseline, usually a 30m tape, were measured and plotted in the field and (2) for larger sites, and those requiring slope measurements, a tape, compass and Abney level survey was undertaken. Where possible the booked readings were drawn up in the field. To facilitate the use of these instruments in forest areas a rig was designed to fit on a 35mm camera tripod that would hold both compass and level. Using this method highly acceptable results were obtained. For detailed levelling of sites under excavation a Dumpy level and graduated staff were employed.

CONCLUSION

The brief reviews of the natural environment and ethnography presented here serve to inform the thesis enquiry in a number of ways. The environment of Guadalcanal is a highly active one with ample evidence of high rates of sediment redeposition and landscape alteration through natural events; in some areas these are exacerbated by the clearance of land for agriculture. These processes are best attested by the north Guadalcanal alluvial plains and their derivation from steep unstable slopes in the central mountains. In the north-west Guadalcanal area similar processes are at work, if on a less dramatic scale. In the Poha and Vura valleys there is another significant process, that of the periodic flushing of alluvial sediments from river valleys. In the north-west Guadalcanal area alluvial deposits are more stable in location but continue to receive increases in sediment, particularly from hillslope failures evidenced by slumping and major landslides. These landscape changes are linked to the distinctive climatic conditions which obtain in north Guadalcanal, and especially long, hot dry periods punctuated by heavy rainfall.

The main repercussions of these events are, firstly, a reduction in the range of environments and topographic locations that are suitable for human settlement or its accompanying agriculture. Secondly, there are implications for the discovery of
archaeological sites whose visibility within the landscape will have been affected both by the stripping of features from hill-tops and ridge slopes, and by their covering with alluvial and colluvial deposits in valley floors and coastal plains. The factors that have affected the development of the social and economic milieu which are the endpoint of the prehistoric sequences have, therefore, included significant environmental determinants. Coping with these varied and constantly changing environmental zones, has produced a variety of systems; one such example is the clear spatial patterning of yam and taro cultivation.

The natural resources of Guadalcanal's forests are relatively rich, inviting an assumption that subsistence agriculture could be readily supplemented by other 'wild' foods, or, indeed that pre-horticultural populations would have been well supplied. It can be seen, however, that this apparent luxuriance owes much to forest management and manipulation (cf. Groube 1989:301). The reconstruction of the subsistence basis of early settlement in Guadalcanal, and elsewhere in Island Melanesia, will need to take due account of this in any assessment of the resources available to founding populations (cf. Bailey et. al. 1989, Spriggs 1992). The same may be said of the available marine resources, which in the north-west Guadalcanal are restricted, apparently at least in part by the sedimentation processes.

Turning to the ethnographic data, it should be recognised that, although the Spanish records provide a useful 'window onto prehistory', they are not altogether representative of the north-west Guadalcanal area and provide data mainly from the area to the east of Honiara. The site surveys conducted in the Poha and Vura valleys and the north-west cape did record some substantial settlements (eg. SG-2-5 Koilmate and SG-1-432 Tuvu II), but smaller hamlets are the norm. The Spanish accounts, cannot therefore, be used indiscriminately in the interpretation of the survey data. The value of the records lies, in the context of this thesis, in their descriptions of settlement layout, architecture and in their description of agricultural practices. The records of Paravicini (1931, 1933) indicate the substantial changes that have occurred since this first event of European contact.

The ethnographic record highlights some of the problem areas likely to occur in interpretations of the archaeological record. Of these the following are the most important:

a) The ephemeral nature of much of the material culture, especially that belonging to groups in the interior of the island has implications for adequately characterising inland settlement and recognising evidence of its interaction, through exchange systems, with coastal groups. Data on trade and exchange will inevitably be weighted towards materials from the coast, especially shell valuables, and items of
stone and chert from restricted sources in Guadalcanal and nearby islands such as Malaita. With these latter exceptions, the material culture of the inland areas is likely to be invisible in the archaeological record.

b) Inland swidden systems of agriculture will leave little direct trace of their existence in forest areas either as features in the landscape or in archaeological deposits. The distinctive settlement patterns associated with inland agriculture and known from the ethnography are however recognisable and, together with the data from caves and rockshelters, represent the only avenues for the investigation of human activity in these areas.

c) In contrast the coastal foothills do have direct indicators of agricultural use. This occurs in two forms - the evidence of the Themeda grasslands and structures associated with irrigation. The settlements associated with these systems are more difficult to trace, with problems of post-abandonment erosion ranking as the major cause.

d) The ethnographic record is lacking in detailed accounts of rockshelter use (cf. Gorecki 1991) that could help in understanding their role in the wider canvas of human interaction with the landscape. In the Poha and Vura valleys this site class is now little used but the larger caves (SG-2-1 Vatuluma Posovi, SG-2-93 Vatuluma Ngolu and SG-2-94 Vatuluma Tavuro) indicate more intensive and varied activities in the past. This kind of usage pattern has no specific ethnographic parallel.

The site surveys identified a range of sites in different parts of the landscape, including the coastal plain, river valleys, inland forests and the open grasslands of the coastal foothills, by which the prehistoric sequences of north-west Guadalcanal could be investigated. The forest surveys provided a quantity of data on late prehistoric to recent settlement patterns and resource exploitation from the accounts of informants accompanying the survey team. Purely archaeological sites include the caves and rockshelters of the Poha and Vura valleys, the majority of the open settlement sites of north-west Guadalcanal, the intensive agricultural systems and several previously unknown rock art sites. The latter site class were seen as important in two ways, firstly as a source of comparative material for the interpretation of the Vatuluma Posovi site and secondly as a linkage between the sites of the Poha and Vura valleys and those of the north-west cape.

The excavation programme described in the following chapters targeted initially the caves and rockshelters of the Poha and Vura valleys as it was assumed that these sites provided the best opportunity to further define the prehistoric sequences already partly known from the Vatuluma Posovi cave. Once work on this group of sites and the rock art of the valley bottom had been completed, complementary data were sought from the north-west cape.
Footnotes

1Unless otherwise noted all vernacular terms in this thesis, indicated by bold print, are given in the Nginia language of north-west Guadalcanal. Many of these terms are shared with Ghari and other dialects of west Guadalcanal group. (see figure 4).

2The Threma grasslands, being the home only of the diminutive Turnix maculosa button-quail, are devoid of any faunal component specifically hunted.

3Lasaqa (1972) and Bathgate (1975) give case studies of the effects of such changes for the north Guadalcanal Plains and north-west Guadalcanal areas respectively.

4The comb of two kinds of honey, kulituru and kulituru mbo ("pig honey" from ground-dwelling bees) was also used for 'candles'.
Chapter 3

VATULUMA POSOVI: AN OLD SITE RE-VISITED

In December 1966 William Davenport of the University of Pennsylvania Museum undertook preliminary excavations at a site that has become known in the literature as the Poha, or Fotoruma, Cave and which initially was assigned the site number BG-4-1 (Green 1972). With several caves and rockshelters now known from the Poha catchment area, and because 'Fotoruma' is apparently a Malaitan mis-pronunciation of a Guadalcanal word, the correct site name of Vatuluma Posovi is used here. The site number has also changed due to the revision of the Solomon Islands national site numbering scheme (Miller 1979: 5-7) and now bears the designation SG-2-1.

Davenport's fieldwork in the then British Solomon Islands Protectorate was some of the earliest archaeological exploration in the country, and together with his excavations on Santa Ana (Davenport 1968; 1972), was preceded only by Chikamori's work in the western Solomons (Chikamori 1967) and Poulsen's excavations on the Polynesian outlier of Bellona (Poulsen and Polach 1972). Davenport's test pits in the rear of the cave were followed by the complete removal of the remaining deposits by Tom Russell and Jim Tedder, both then officers of the Protectorate Government. By the time Davenport submitted a second batch of carbon samples to the University of Pennsylvania laboratory, he was already able to claim that the cave had 'the longest sequence of human occupation of any site in Melanesia east of New Guinea' (Davenport n.d. Correspondence). This was based upon a radiocarbon determination, from a sample collected by Russell and Tedder, of 2920 +/- 110 yrs bp (Davenport 1968:33; Lawn 1974:233; Black and Green 1975:3-12). Despite the wide scope of the archaeological investigations associated with Green and Yen's Southeast Solomons Cultural History Project of the 1970s (Green and Cresswell 1976), the Vatuluma Posovi date remained one of the earliest from the Solomon Islands chain.

However it was not only the early date and long occupational sequence that distinguished this site. The suite of artefactual recoveries, although apparently including a range of shell and stone tools and shell ornaments, was devoid of any ceramics despite the cave's proven contemporaneity with the Lapita cultural horizons of sites elsewhere in island Melanesia. Furthermore, the cave walls, within as well as above the deposit, were found to be engraved with numerous designs that represent one of the largest single galleries of rock art anywhere in island Melanesia, and certainly the
only known site in the region with the potential to provide a direct chronological control for in situ engravings.

Without further data from sites in Guadalcanal, and indeed other islands of the central Solomons (especially Malaita, Ngella and Isabel), the Vatuluma Posovi data has provided problems of both internal interpretation and its placement in regional prehistoric sequences. While Green was comfortable with a scenario placing the site as the initial indicator of an aceramic settlement history for the central Solomons (Green 1977), arguments have also been put forward in support of a proposal that the site may have seen esoteric usage not involving domestic occupation and the use of ceramics (Spriggs 1984a).

Although the data from the 1966-1968 excavations have been summarily published (Davenport, Russell and Tedder n.d.) no full analysis of the results was made by the excavators and independent interpretation and evaluation has thus been hampered by a lack of detailed information. Although a synthesis has been attempted (Black and Green 1975:3-9, for a précis of which see appendix 4), as a backdrop for the full publication of the radiocarbon determinations from the site, this was done without access to some important unpublished material or to the reported artefacts (Green pers. comm). Several problems remained outstanding, the most crucial of which was the position of the datum from which the stratigraphical evidence of the thirteen excavation units had been measured and which would allow for both confident matching of the recorded layers across the site and the correlation of the rock art with the radiocarbon date sequence. It was critical also to re-examine the artefact assemblage from the site to assess the comparability of its components with the non-ceramic elements from similarly dated sites elsewhere, and especially those associated with Lapita settlements. The return, by Davenport in the early 1980s, to the Solomon Islands Museum of all the artefacts and the bone material retained from the excavations allowed such a re-examination.

Fieldwork at the site in 1987-1988 sought to complete four main tasks to assist in the re-interpretation of the site. These were:

(a) a detailed survey of the cave to produce a floor plan and site profiles for the accurate plotting of the recorded stratigraphy;
(b) the establishment of the site datum from measurements of basal limestone and other identifiable features;
(c) excavations to determine if any in situ deposits remained in the cave which could provide additional data, checks on artefact densities and corroborating radiocarbon samples for the basal deposits; and
(d) the recording of the rock art and its relationship to the stratigraphy.
The provision of some significant unpublished records, correspondence and photographs (Davenport n.d., Russell n.d and pers. comm., Tedder pers. comm.) have also proven critical to a fuller understanding of the site.

THE SOURCES

As the presentation of the data from the site, and the discussion of it, draws on a number of sources, it is useful here to review them and to give the abbreviations by which they are identified in the text. The major source is the undated publication by Davenport, Russell and Tedder, *Excavations at Fotoruma, Poha River, Guadalcanal, British Solomon Islands Protectorate, December 1966 - August 1968: diary of excavations*, comprising the following records:

(a) a schematic site plan, not to scale, illustrating the disposition of excavation areas A-L and the relative position of the 'Inner Cave', sometimes referred to as 'the pipe'. Dimensions of the cave at pre-excavation ground surface are given, although no site profile is provided. This plan is hereinafter referred to as 'Diary Plan' and is reproduced in figure 9. The original imperial measurements, as for all records which use them, have been converted to the nearest 1cm.

(b) the diary of the excavations, the first part of which, 'Excavations by W. Davenport', gives a resumé of the initial excavations, preceded by a short introduction to the site. It should be noted here that Davenport's 'Left-Back' and 'Center-Back' areas correspond with areas A and D and areas B and E of the Diary Plan respectively. References to Davenport's records are indicated by 'Diary-WHD'. 'Excavations by T. Russell and J.L.O. Tedder' comprises the bulk of the stratigraphical data and is presented as a daily account of their work; this is indicated by prefaces to the entries such as D1, D2 etc. where D1 indicates the first day's excavations. The format employed in the records gives the area(s) to which the details relate and the total depth of deposit removed on that day of excavation; reference must therefore be made to the text for details of stratigraphy within those units. References to the records of Russell and Tedder are indicated by 'Diary-R/T'; 'Diary' refers to both sets of excavation records. Appendix 3 presents a sample page from the Russell and Tedder entries, and a compilation, by excavation area, of the combined records of Davenport, Russell and Tedder.

(c) a list of radiocarbon samples gives both the collectors' sample codes and the sample provenances. All of Davenport's samples, and one of Russell and Tedder's, are shown with the laboratory determinations, referring to the results from Isotopes Inc. The list as given contains a number of errors and an omission, and reference to the Diary entries is required for correction. Thus, sample P3 is
from area K at 185cm (given as area D at 185cm), sample P5 is from area E at 152cm (given as area B from 152cm), sample P6 has been omitted, sample P7 is from the Inner Cave at 213cm or at 213-254cm (given as area C from 213cm), and sample P8 is from the Inner Cave, and not area C, at 295-300cm. A complete listing and review of the radiocarbon samples and age determinations is given in appendix 8.

(d) a one-page 'Summary of Strata' is Russell's interpretation of the site stratigraphy (see appendix 4).

(e) a list of photographs showing excavations in progress and some of the rock art designs refers to negatives held by the Solomon Islands Information Service

(f) the final section, the 'Catalogue of Artifacts, Shell Fragments etc.' (hereinafter the 'Artefact Catalogue') lists recoveries from both the initial and subsequent excavations. The records are grouped into seven series (A1-A6, B1-B52, C1-C72, D1-D29, E1-15, F1-F64 and G1-G44) corresponding roughly to equivalent strata across the site and not to the lettered excavation areas. Each recovery is provenanced, both by area and depth, and a brief description and/or identification is given. As the Catalogue numbers are not cross-referenced with the Diary text it is sometimes difficult to match items mentioned in the excavation records with those listed in the Artefact Catalogue; indeed some artefacts listed in the Diary are certainly not listed in the Artefact Catalogue, and vice versa, nor are they to be found with the artefact collection itself. Canarium nut fragments and anvils mentioned in the Diary text, but not listed in the Artefact Catalogue, could not be located with the site material housed at the Solomon Islands Museum and appear to have been lost. Similarly the majority of the human and animal bone is not included in the Artefact Catalogue listing, but it was available for analysis. However the animal bone was retained as a bulk sample and none is specifically provenanced.

The most important of the unpublished sources are the 'Stratigraphy Work Sheets' (SWS) compiled by Davenport from all excavation records in the Diary and some otherwise unrecorded information, and bear annotations and corrections by Russell. Russell also prepared a document - 'Possible Interpretation of Stratigraphy' - additional to, and somewhat different from, his published 'Summary of Strata'. Russell's unpublished sketch plan (Art Plan) of some of the rock art designs on the rear and left cave walls, is crucial to the stratigraphical reconstructions. Although the sketch is not a complete record of the art, it is the only record that can confidently be used to identify the site datum, as this is shown in relation to identifiable rock art designs. The written records of the Diary and the Stratigraphy Work Sheets are not sufficiently accurate to be able to pinpoint the 1966-1968 datum that was 'established on the left wall' (Diary-WHD).
The catalogue of the molluscan remains, 'Sea Shells and Material Recovered' (called here the 'Molluscs List'), was compiled by K.C. Kennedy (Russell, pers. comm.), and lists shell, coral and sea urchin material from the site. Some indication of provenance is given where available, although this is rarely specific. Unfortunately the bulk of the fresh- and brackish water species are unidentified, due in large part, no doubt, to the lack of adequate reference collections in the Solomon Islands. As with the plant remains, it appears that the molluscan recoveries, apart from those listed in the Artefact Catalogue, have either been lost or were not retained after their identification.

Correspondence between Russell and Davenport, and Russell and Professor Roger Green of Auckland University, together with Davenport's submissions to the University of Pennsylvania and Isotopes Inc. radiocarbon laboratories help clarify some of the published material. These sources are identified as 'Russell, correspondence' and 'Davenport, correspondence'.

The only other major published source is Black and Green's listing of radiocarbon dates from the Solomon Islands and the first attempt at a reconstruction of the site stratigraphy (Black and Green 1975:3-9); it should be stressed again here that neither the reported artefacts nor all the excavation data was available for the purposes of this work. Green also produced, but did not publish, a plan of the cave following a visit to the site in 1970; it is important for the reconstruction of the excavation grid and is reproduced here as figure 10.

Additional published sources for Vatuluma Posovi include a brief report of the major findings by Davenport (1968), and a popular account (Allen n.d.), with many errors but some useful plates.

THE SITE LOCATION

The Poha Valley is, in its lowest reaches, formed of a complex series of old river channels and alluvial terraces of sand and shingle, bordered on both the southeast and northwest sides by grassed ridges of uplifted Plesitocene coral reef which cap the margins of the Saghalu Conglomerates (see plate 1). Some 2km from the coast the valley narrows dramatically where the Poha River has cut through the Mboneghe Limestones forming a steep-sided gorge a little over 0.5km long. On the southeast bank of the river the gorge entrance is marked by an almost vertical cliff, 50m in height, into the base of which the cave is set. The upper cliff has two further small caves but neither exhibits any evidence of human occupation. Some 100m upstream of the site a small dry valley joins the main river from the southeast, its eastern bank defined by an almost
90 degree turn of the main cliff. The valley bed terminates at a sinkhole once used as a water source at times when the the main Poha River flow became seasonally dry, but it is now blocked by washed-in sediments from the steep hillside above. On the northwestern bank of the main Poha River, opposite Vatuluma Posovi, a narrow alluvial terrace houses the small hamlet of Vatuluma which lies at the foot of a smaller limestone scarp marking the end of the ridge upon which is situated the cave site of Vatuluma Ngolu (SG-2-93).

In 1966 the Poha River flowed in a channel immediately outside the cave entrance (see plate 5b); indeed during Russell and Tedder's excavation season it threatened to flood the site. By 1978 the river course had moved some 20 metres to the northwest, and two further course alterations took place after major flood events associated with tropical cyclones Bernie and Namu in 1982 and 1986 respectively. The latter flood was responsible for the deposition of over 30cm of new sediments in the rear of the cave, present in 1987 as a mosaic of cracked blocks of layered dark brown silts and black and yellow sands.

THE SITE: PRE- AND POST-EXCAVATION FEATURES

Prior to Davenport's excavation the floor of the cave was gained only by a steep earthen ramp from the east bank of the Poha River, with the old ground surface being some 6.5m above the bed of the present river course (see plate 5b). The domed ceiling of the rear of the cave and the corbelled roof of the central area 'offered headroom throughout' (Diary-WHD), and reconstructions indicate that this was nowhere less than about 2m. The Diary Plan (figure 9) gives some internal dimensions of the cave 'at datum', with the floor area measuring some 11.70m long from front to rear and 4.60m, 3.20m and 6.70m wide in the rear, mid- and front cave areas respectively. At the start of excavations the inner cave entrance was obscured by the deposits, as was the majority of the rock art designs. A constriction of the cave walls (the 'neck' of some of the records) divided the cave into two roughly equal parts: the rear cave comprising excavation areas A-F and the front cave with areas G-L. The excavations demonstrated that this division was also marked by a centrally located outcrop on the cave floor and a significantly lower basal floor in the rear of the cave. In the original records the terms 'left wall' and 'right wall' are applied as they would be by an observer viewing the cave from its entrance. The 'rear wall' is that bordering areas A to C at the back of the cave; there is no distinct break between the rear wall and the right or left walls. These terms have been retained for the description and discussion of all the site records.

The final occupation of the cave, by a Japanese sniper in 1942-43, had the most devastating effect on the site. The cave and cliff walls are everywhere pitted with
bullet holes and embedded slugs, and mounds of powdered limestone, up to 1.2m deep, against the rear wall and in the middle of the cave (Diary-WHD; Stratigraphy Work Sheets), give an indication of the damage which this shortest of occupations occasioned. The extent of the disturbance to the archaeological deposits caused by the fighting, which reportedly included the use of flamethrowers (H. Manengelela pers. comm.), can be gauged by the recovery of shrapnel at depths of up to 91cm below surface in area E, and at lesser, though still significant depths, elsewhere. This dramatic disturbance to, and re-sorting of, the upper layers of the site stratigraphy are the major cause of difficulty in the reconstruction of the later periods of the site's history and undoubtedly give rise to the anomalous results of some of the radiocarbon determinations which were noted by Green (Black and Green 1975:3-9).

The deposits in the cave prior to excavation almost completely covered the rock art designs on the cave walls. Some were partially visible and their investigation was the initial impetus for excavations at the site (Russell pers. comm.).

Figure 11 illustrates the main features of the cave immediately prior to the 1987-1988 fieldwork season. The 1966-1968 excavations had exposed basal limestone bedrock throughout much of the cave, especially in areas G, H, I, J and K which correspond with an outcropping shelf that slopes from the left wall into the middle of the cave floor. The surface of this shelf is heavily fractured and pitted, except at the front edge of area J where run-off from the cliff wall above has produced a smooth water-worn surface. Between this shelf and the right wall a gully rises to a low crest at the junction of areas F and I. The gully floor is smooth-surfaced, as if it had been exposed for long periods to running water, except for a number of pockets possibly formed by small pebble action in dimples in the limestone surface. Behind the gully crest and the central limestone outcrop, the cave floor slopes down, quite steeply in places, to the lowest floor levels in area C and the Inner Cave. At the entrance to the cave (area L and part of area I) basal limestone was obscured in 1987 by a recent accumulation of silts and mud from river floods. Some scatters of charcoal and bottle glass indicated use of the cave since the 1960s.

The cave wall bordering area J (the left wall) is almost vertical but at the junction of areas J and G forms a steeply sloping surface, with numerous fractures, upon which a number of rock art designs have been cut. The base of the rear cave wall is vertical for between 1 and 2 metres but then slopes more gradually to the cave roof. These sloping surfaces carry the vast majority of the rock art panels. The Inner Cave entrance is capped by an overhanging projection that is formed of one of a series of sloping shelves that rise diagonally across the right wall from the floor of areas F, I and L. Access to the ledges of the cliff face is possible via these shelves, but would have been considerably easier when floor levels were at their maximum height. The cave walls of
areas G, D, A, B, C and F, and to a lesser extent those of J, I, and L, are bisected by a line marking a distinct colour change between the pale buff of the lower surfaces and the dark grey/black of the upper walls. This line indicates the level of the original cave soil surface which was exposed by Davenport, Russell and Tedder through the clearance of the powdered limestone mounds. The old ground surface levels are critical to stratigraphical reconstruction and I plotted their heights at the junction of excavation area boundaries; these are indicated on all the site profiles presented here (see figures 12 - 19).

The cave roof, like the cave floor, may be divided into two roughly equal parts. The roof at the front of the cave has a layered appearance, probably where large slabs of limestone have become detached following the bedding planes (see especially profile 2 in figure 14). There is presently little water seepage visible here, nor is there any significant penetration of root material from the heavily vegetated cliff face. The rear cave roof is of a distinctly different character, being both domed (see profile 2 in figure 14 and profile 3 in figure 15) and largely covered in a black/green algal growth. Water seepage here and at the junction of the right wall with the roof above areas F and I is quite considerable. Similarly the vertical base of the rear wall is constantly damp and supports moderate growths of algae and moss. The domed roof does not exhibit any fracture scars consistent with rockfall or collapse; rock art designs in this part of the cave continue onto the roof surface above areas A and D.

The Inner Cave has severely restricted headroom throughout with fractured walls at the entrance but with a rather smooth floor. The pipe has not been completely excavated and its rear remains blocked by unstable compacted muds and weathered limestone. Unless the pipe leads to further chambers, it seems highly unlikely that any new archaeological deposits might be expected to occur in this area; further excavation would also require sturdy shoring of the crumbling walls at the inner end of the pipe.

THE 1966-1968 EXCAVATIONS: RESULTS AND PROBLEMS OF INTERPRETATION

The original data from the excavations are presented in appendix form (appendices 3 - 5) as a compilation of the various records of Davenport, Russell and Tedder and are not repeated in detail here. Similarly the form of the rock art designs and their relationship to the stratigraphy are discussed elsewhere (see chapter 5). Rather this section considers several matters of relevance to the overall assessment of the Vatuluma Posovi stratigraphy and the records thereof, and which bear upon the problems of reconstructing the site's settlement history.
Techniques and Tools

The excavation methods employed by the original excavators must inevitably give rise to concerns that the paucity of artefactual recoveries, and indeed the nature of the stratigraphical records themselves, are to some extent a result of excavation techniques and sampling strategies. Vatuluma Posovi is, by most standards, a sizeable site and the depth of deposits, including both sterile and cultural layers, is unusual for cave and rockshelter sites in this area. Although there is no specific record of the length of time taken by Davenport over his preliminary work, the Russell and Tedder Diary entries begin at day 3 (D3). It must be presumed therefore that the excavation of area E to 51cm, parts of areas A and D to 152cm and part of area B to 132cm was completed in 2 days. The remaining deposits, comprising in excess of 150m$^3$ of material, were removed by Russell and Tedder and their team of workmen in a total of 14 days.

Excavation was undertaken largely with shovels and picks although trowels were used for the excavation of identified features, especially hearths and fireplaces (Russell pers. comm.). All material, unless otherwise specified in the Diary entries, was dry screened through 1/4 inch (6mm) mesh at the cave entrance. No residues were retained. Given the methods of excavation it is probable that a quantity of smaller material was lost, especially animal bone. However many of the artefact recoveries are of sufficiently small size, and especially the chert chips and shell beads, to indicate that the smaller material was at least sampled.

Although there are no data available on the methods of measurement employed in recording stratigraphical depths, no surveying level seems to have been used, and to judge from photographs of work in progress, a simple hand tape was used for this purpose. The lack of any scaled plans or section drawings of the site and its deposits is especially regrettable.

Although the site was divided into thirteen excavation areas, rarely was work carried out with regard to them, with units of removal often involving two or more contiguous areas. Thus work in areas E and F, for example, seems to have been carried out simultaneously. Two larger excavation units were employed for the front of the cave, comprising areas J, G, and the left halves of H and K and a similarly sized area on the righthand side comprising areas I, L and the remaining portions of H and K. Although Diary records are organised according to areas, whether composite or single, the notational format of the entries creates some ambiguities. Emphasis is placed on strata that produced artefacts or major features - ovens, burials etc. - and the levels for which recoveries were few in number, or which exhibited little other evidence of human activity, are described, if at all, with few details of either the composition of the matrix or its relationship to similar, or dissimilar, levels in adjacent areas. On a larger scale
only the two single page interpretations of site stratigraphy attempt to give an overview of the deposits, and both documents (the 'Summary of Strata' and the 'Possible Interpretation of Stratigraphy') appear to be at variance with the more objective Diary records. In sum therefore the problems of providing stratigraphical reconstructions are not confined to matching different excavation areas but include postulating sequences within each area.

It is evident that the excavation records from the 1966-1968 work give only a broad outline of the occupational sequences. Davenport's records for the 'left-back' and 'center-back' areas give some hints of greater complexity than is evident from those of Russell and Tedder, but reconstructions are restricted, due to the overall nature of the records, to a macro rather than micro scale. Some ambiguities and contradictions cannot be finally resolved and interpretations must remain largely hypothetical, in the absence of corroborating evidence, for a few parts of the cave.

The problem of matching some of the artefact provenances from the Artefact Catalogue with those of the Diary entries has already been noted in the review of information sources (see above). Items listed in the Catalogue appear to have been provenanced, in the main, to depth ranges corresponding with excavation unit depths rather than to specific deposits within them. Sometimes this is clarified in the Diary text, otherwise assumptions have to be made that all recoveries come from occupation deposits within units also comprised of 'sterile' material. The quantification of artefact and shell midden densities for specific deposits cannot therefore be achieved with any accuracy. With an unknown quantity of shell material having been lost, or discarded, and with no detailed information available for the other faunal remains, differences between strata can only be tentatively posited on an absence/presence basis. However the species represented by records such as 'small shells' and 'sea shells' are quite unknown and render even this type of quantification open to some question.

Site Datum

Some comment regarding the site 'datum' used in the 1966-1968 work has already been made (above), but a more detailed examination of the problems associated with this crucial factor in reconstruction is required. Davenport's excavation records are prefaced by a statement describing the datum location (Davenport, Russell and Tedder n.d.:1),

_The rear accumulation of white powdered limestone was cleared away to a level where the soil darkened abruptly. In the powdered overburden were dozens of .45 cal. slugs, bits of_
shrapnel and other evidence of fighting. A datum level was established on the left wall at the beginning of the dark soil.

The location of this datum was not, evidently, physically marked, but coincided with an identifiable rock art design on the cave wall close to the front edge of excavation area D (Russell pers. comm.). It is assumed that Davenport's stratigraphic records are all measured from this level. The records of the second phase of excavations by Russell and Tedder are also recorded in relation to 'datum'; for example (Davenport, Russell and Tedder n.d.:6), in area G/H,

*Occupational level as at JK but at this depth into the cave bottom 82" below datum*

and in areas J,K and L,

*A wall of 37" had been left in case of flooding from Poha river. This was removed to depth of 58" below datum.*

All area depth records of Russell and Tedder's excavations begin at 0", and unless a perfectly level floor area is presumed, cannot relate to the datum established by Davenport. The Stratigraphy Work Sheets are more explicit, noting as prefaces to areas C, F, I, and J that, following the removal of the limestone overburden to the darker soil horizon 'DATUM was established', (Davenport and Russell n.d.). Records for the other areas bounded by the cave walls also suggest that this was the case for areas A, D, G and L. It becomes clear from these records that the 1966-1968 datum established by Davenport does not correspond with all of Russell and Tedder's 0" records, which in fact must refer simply to the pre-war old ground surface. From this it follows that Green's very reasonable assumption that 'all measurements are below a datum established on the west wall' (Black and Green 1975:3) is erroneous and that varying degrees of correction are required to render comparability in measurements between different excavation areas.

Further corroboration is provided by Russell's unpublished sketch of the cave's rock art designs. The plan, at a scale of 1/2" to 1', on squared paper, illustrates some of the clearer designs and their relative position to the floor line at the base of the walls on which they are found. The plan also marks a line on the upper cave wall labelled 'Datum'; this line is obviously not a horizontal one but dips markedly towards the front of the cave in areas G and J. To ascertain whether this 'Datum' line corresponded with the old ground surface marked by the wall discolouration feature still visible in 1988, measurements taken from Russell's plan were checked on site. An anthropomorphic face design on the cave wall in area G (no.4 in figure 35) has its base at approximately 1 foot below 'datum' on the Art Plan; a perpendicular measurement from estimated old
ground surface gave 0.30m. Design no.7 (figure 35) on the cave wall at the junction of areas D and G, interpreted by Russell as representing a hornbill's head and recorded at approximately -24" (61cm), is 70cm below estimated old ground surface (= 'datum'). This gives a less accurate, but still acceptable correlation. In the rear cave area the horizontal "tally marks" (design no.22, figure 6) at the entrance to the Inner Cave are at 213cm below old ground surface; the Art Plan gives approximately -220cm.

Although it might be termed circumstantial, this evidence supported the correlation of 'datum' with, in all areas, the dark soil surface. A photograph indicating a measurement being taken in area C from the mid-point of design no.25 (figure 6), which is bisected by the line of old ground surface, further strengthened this contention.

As the old ground surface level varies and positions from which measurements were made for each area are not available, further survey and checking of the original records on site were undertaken. The topography of the cave floor, with its shelves, outcrops and natural slopes, makes the positive identification of bedrock levels difficult. This is the more so as some 'bedrock' levels noted in the SWS entries are not so identified in the Diary entries, which seem to refer to levels at which excavation was discontinued in sterile deposits. Thus estimates of surface levels calculated from the cave floor can generally not be attempted with any degree of confidence in the result. In two areas, however, some checking is possible.

To investigate the deposits of the Inner Cave entrance, Russell and Tedder dug an exploratory trench across its face. This terminated in a small test pit excavated to a depth of 442cm below 'datum'. Excavations in the 1987-1988 season, in area T3, reopened this pit which showed as a brown silt feature in the white powdered limestone of the cave floor (see figure 20). Measurements from its base to the mid-point of rock art design no.25 gave a highly acceptable correlation to the depth recorded in the Diary (see below, and, for its importance in relation to dating the rock art, chapter 5). Excavations in area T1 in 1987-1988 (see below) provided additional confirmatory evidence of the association between 'datum' and old ground surface.

A complete re-survey of the cave, including seven profiles along the 1966-1968 excavation area dividing lines, was made with a level and graduated staff. Roof heights were recorded by plumbing a tape measure, from the end of a long stick, to levelled points on the cave floor; some error must be expected therefore in the roof heights shown on the profiles. The old ground surface levels were plotted as accurately as possible, although this was affected, in the cave rear, by access difficulties and, in the front of the cave, by the indistinctness of the line itself.
Although the nature of the 1966-1968 'datum' now seems clear, there still remain some insurmountable problems. Davenport seems to have utilised a single datum point, that on the left wall in area D, for the recording of his excavations in areas A, B, D and E. While it is likely that Russell and Tedder used the same point for areas A and D, their specific reference, for areas B and E, may well have been different. The discrepancies between Davenport’s records and those of Russell and Tedder for these areas may in part, or in whole, be due to the use of different 'datum' points; alternatively they may reflect actual differences in stratigraphy between excavation areas. Specific measuring points for the other areas, and especially those with no immediately adjacent wall (areas E, H and K), are unknown. Indeed more than one measuring point per area may have been used, although this seems unlikely except in the front part of the cave where the excavation units divided areas both longitudinally and laterally.

For the purposes of the reconstructions old ground surface levels along profile lines have been taken to represent the adjacent area as a whole. Old ground surface levels for the mid-cave areas have been estimated on the basis of the averages of levels on opposite wall faces. For the purposes of the 1987-1988 survey and excavations a further, independent, datum was established on the crest of the mid-cave outcrop. This point was marked by an inscribed cross and is referred to hereafter as the '88 Datum.

Figures 12 - 19 show the recorded stratigraphy from the 1966-1968 excavations superimposed upon the surveyed profiles. With old ground surface levels differing by up to 43cm above and 92cm below Davenport's left-wall datum point, it is clear that major errors would become apparent if a similar plotting was made using the left-wall point as a unique reference for the entire cave deposits.

The Sterile Rockfall Layers

The Diary records of the excavations make frequent mention of 'rubble', 'sterile rockfall' and 'roof debris'. These bands of material have been cited as major breaks between occupation phases at the site, Davenport (1968:33) reporting that:

*The Poha Valley site was perfectly stratified into a series of superimposed occupation levels, each clearly separated by layers of heavy rock that had fallen from the ceiling.*

This claim for perfect stratigraphy and the implication that there are thus few, if any, stratigraphical problems (cf. Straus 1979:335), needs examination. Green's reconstruction made use of the rockfall layers to separate the occupation deposits into four major phases (Black and Green 1975:3-9; see also appendix 4). Although they are
conveniently different from the 'true' occupation deposits, the original records and some unpublished photographs suggest that the rockfall layers are not entirely sterile, nor are they composed exclusively of rockfall. As they are clearly important elements in the site's stratigraphy, their nature and possible origin are considered here.

The 'rubble', 'sterile rockfall' and 'roof debris' layers are as follows:

Areas A and D: 46-61; 71-117; 122/127-145; 145-193
Areas B and C: 51-84; 127-152; 152-213; 244-295
Area Inner Cave: 102-213
Areas E and F: 0-53; 53-91; 183-216
Areas G and H: 0-53; 91-104; 155-178; 208-231
Area I: 0-23; 38-53; 53-91; 183-7266

Of these deposits only those in bold print are recorded as being wholly devoid of any cultural or midden shell material. Records attributed to Davenport in the SWS, but not found in the Diary texts, indicate that two of these layers are not comprised of rockfall at all. Thus in area A gravel is recorded as occurring between 127 and 152cm, while in area B the 46-117cm deposit is noted as being composed of 'fine earth'. Rockfall layers not specifically noted as being sterile often contain small amounts of shell, especially _Turbo_ sp. opercula, but some of these levels produced significant quantities of shell debris, as well as oven stones and other materials. Although some of these finds are probably derived from occupation layers above the 'rockfall' strata it is equally possible that they represent occasional occupation, or use, of the site as opposed to the more prolonged settlement attested by stone ovens, layers of ash and charcoal and more substantial quantities of shell and bone midden.

Perhaps of equal significance are the records of waterworn pebbles in most of these deposits and, especially in the 38-53cm layer of areas J, K and L, 'large flat stones'. The stone type is not specified, but a photograph from the rear cave area of the wall abutting areas A and D shows a pile of volcanic stones, apparently mostly flattish waterworn blocks 30-40cm in length. The level at which they lie in the photograph would coincide with the 71-117cm 'rockfall' deposit. Although it must be accepted that the majority of stone in the site is limestone, the presence of waterworn pebbles and blocks is also attested, and in the upper layers, must surely represent manuports, and perhaps the deliberate construction of living 'floors' of volcanic stone from the Poha River bed. It is also likely that limestone rock on the cave floor was re-sorted prior to extended occupational phases, and consequently resulted in the redeposition of some artefactual and midden material. This would also seem to include some of the volcanic oven stones; re-use of old _in situ_ oven stones is known from ethnographic data relating
to rockshelter use in purely limestone areas in the Poha catchment, but the ready availability of this commodity 'at the door' would seem to obviate the need for such parsimony at the Posovi cave. For a site seasonally threatened by potentially devastating flood events the retention of rockfall material to raise living floors has obvious advantages.

The levels of rockfall are also germane to the problems of explaining the apparently anomalous C14 determination of 1960 +/- 160 yrs bp for the flood level deposits in areas C and Inner Cave (sample P8). It should be noted that for areas L, I and F sterile rubble lay immediately upon bedrock. The deposition of flood material, or perhaps equally likely the alteration of in situ deposits by flood water after the deposition of material above them, can possibly be explained by the passage of water, including particles of charcoal from outside or inside the cave, through these loose rubble layers along the waterworn channel that lies along the right-hand cave wall. Given the acceptability of the sequence of dates in areas B, C, Inner Cave and E above the P8 sample at the 295-300cm flood level, it would seem that the deposits from which they come have not been affected by water inundation.

The ultimate derivation of the limestone rubble must also be assessed. It has been noted in the site description, above, that the domed ceiling of the rear cave area has not been scarred and that rock art designs continue onto its surface. If, as will be argued in chapter 5, the engraving of most of the rock art designs took place during the early phases of occupation, with little subsequent activity evidenced by superposition of designs or variation in style, then it is difficult to accept any substantial rockfall events in the rear cave area. In area B true occupation layers occupy only 65cm, or about 17%, of the 375cm of deposit. Although not all of the remaining 83% of the material is rockfall per se, it is concentrated in the levels above 213cm and must have been largely deposited after the execution of the rock art. Had its origin been the cave roof above it, the rock art designs there would have been destroyed and some evidence of detachment of flakes or blocks might be expected.

The limestone rubble encountered throughout the site seems more likely to derive from the front-cave roof, and/or from the cliff above; the latter origin is especially probable for areas J, K and L across the cave front. Here the deposits are predominantly located outside the dripline and are unprotected from falls of material from above. If construction of reasonably level 'floors' did in fact precede settlement phases, it might be expected that additional material was sought outside the cave area. This might account for some of the limestone blocks, and as already suggested, all of the volcanic stone material. Furthermore, areas J, K and L are located outside the dripline, and to all intents and purposes open to the elements. During rainfall areas G, H and I are also affected and it seems reasonable to assume that occupation was concentrated towards
the rear of the cave. Thus the somewhat mixed nature of the deposits in the front half of the cave may also be indicative of disturbance caused by a combination of natural events - rockfall, rainfall and periodic flooding - that largely did not affect the upper and more protected levels at the back of the site.

Characterisation

As the entire range of artefactual recoveries is limited and without demonstrable change from one layer to another, the characterisation of occupational phases on the basis of their assemblages as a means of defining similar levels across the site is impossible. Although in some excavation areas a case can be made for slight changes in emphasis in molluscan harvesting preferences, such tentative 'sequences' cannot be transposed to other areas where there is no corroborations of the trend. It would appear that an absence of a record in the Diary text does not necessarily indicate an actual absence within a deposit, as the general references to, for example, 'sea shells' indicates. Stratigraphical reconstruction must depend almost exclusively therefore on relative depth records for the establishment of a sequence; the artefact recoveries may strengthen the case of a claimed association but in no case can they define it.

The Excavations of the 1987-1988 Field Season

As bedrock was exposed throughout much of the cave by the 1966-1968 excavations, options for re-excavation were limited to parts of areas L, I, F, C and the Inner Cave. Deposition of new sediments in the twenty years since the conclusion of Russell and Tedder's work had partially obscured bedrock in places and re-use of the cave as a temporary shelter and as the venue for a boy scouts' camp had also resulted in the construction of new fireplace areas in areas I and L. The status of the site in 1987 is described above in the introductory section of this chapter.

Initial excavations in 1987-1988 were directed at exposing bedrock areas along the waterworn channel to provide basal measurements for stratigraphical reconstructions. Areas T1 and T1A were located at the initial narrowing of the channel, exposing unsuspected and largely undisturbed, in situ deposits at the cave front, further explored in area T1B (figure 11). Area T2 sediments on the ridge crest were less than 20cm deep and composed of banded limestone dust, silt and charcoal, the removal of which revealed waterworn bedrock (see profiles 1a and 1b in figures 12 and 13). A larger area, T3, in the rear cave area and corresponding with area C of the original
excavations, investigated the possibility of further undisturbed deposits. While no cultural levels were revealed, the excavation did provide critical measurements for the identification of the 1966-1968 datum in this area; natural sediment deposition against the right-hand cave wall in this area could be correlated with features in the Diary text and helped to provide an explanation for their role in the alteration of pre-existing cultural layers. The excavations are described in reverse order, from area T3 to area T1B.

EXCAVATION AREA T3

A 2m by 2m square, set so that its left edge corresponded with the original alignment of excavation area C and its right edge lay across the entrance to the Inner Cave, was excavated to bedrock. After clearance of up to 30cm of recently deposited silts and mud, largely derived from a major flood event in 1986, the following features were exposed:

Layer 1 a series of intergrading layers of compacted limestone dust, clays and silts with quantities of small volcanic pebbles, limestone fragments and modern detritus - glass, shrapnel etc.
Layer 2 heavily compacted orange/brown sand and silt at the base of the right wall
Layer 5 against the rear wall compacted, but clean white limestone dust.

In the centre of the square an irregular depression marked the location of Russell and Tedder's exploratory trench which, upon removal of the remaining alluvial material, was defined by the contrast of the brown earth fill with the pale buff of the compacted limestone dust into which it had been cut (figure 20). The fill was removed to the pit base where a levelled reading of 2.14m below '88 Datum was obtained. A rock art design, Russell's 'woman in childbirth' motif (see no.25, figure 36), is indicated on the Art Plan as being bisected by old ground surface. This still shows as the line of colour change on the wall above the Inner Cave entrance. This engraving is 2.29m above '88 Datum, thus giving a depth of 4.43m for the pit base below old ground surface, an almost exact correlation with the Diary record of 4.44m.

Against the right wall of the cave in this area the compacted sand and silt of layer 2 sealed two distinctive sand layers:

Layer 3 a soft orange/black river sand banded by water deposition, edged by but overlying
Layer 4 a cemented sand, which when trowelled broke off in small plates.
Layer 3 had cut through layer 5, the clean limestone dust exposed throughout the square but was separated from it by the crystalline sand of layer 4 (see sections, figure 20). These sand deposits lie immediately upon basal limestone, somewhat waterworn, and stained black with small ?crystalline sand accretions - possibly the 'disseminated charcoal', which it closely resembles, of Russell and Tedder's records for the basal deposits in this area. Both layers 3 and 4 would seem to have been waterlain prior to the main sand/silt of layer 2 and which also owes its origin to alluvial deposition. Their last expression is at the crest of the waterworn channel in area F.

The complete removal of all limestone dust, a coarse structured but soft powder, revealed a natural pit in the underlying limestone basement. Much of this latter was crystalline in nature, resulting presumably from periodic waterlogging and a continued redeposition of calcium carbonate in solution. The Inner Cave deposits of sands, silts and powdered limestone were less deep than in the main area, presumably owing to their removal during the 1966-1968 excavations, but lay directly upon a waterworn limestone floor.

No cultural material was recovered from the undisturbed layers revealed in this excavation, the only recoveries being a small number of fossil shark teeth, derived from the Miocene limestone, in layer 5. The stratigraphic status of a human tooth fragment from the upper level of layer 3 is not clear. The backfill of Russell and Tedder's pit contained some charcoal (tentatively identified as *Canarium indicum* fragments), a *Canarium* nut anvil and small quantities of animal bone and freshwater shell. This was mixed with modern glass and war debris and clearly indicates the backfilling of the pit with spoil from the excavations above.

Although the excavation of T3 did not reveal any new cultural deposits, the check on the basal level of Russell and Tedder's exploratory pit provided a reference for the reconstruction of layers in areas C and Inner Cave. Furthermore the manner of natural deposition of the silts and sands overlying the limestone dust adds weight to the argument, rehearsed above (see discussion of the sealing layers of rockfall), that post-depositional alteration of occupation layers in the rear cave could have taken place after the accumulation of rockfall above them.

THE INNER CAVE

An investigation of the Inner Cave did not reveal any substantial *in situ* deposits. However a partially detached section of the right wall, approximately 1m in from the T3 area boundary, retained a very small remnant of deposit between it and the cave wall.
Less than one bucket of deposit was extracted, at a depth consistent with the presence of the 254-320cm layer recorded by Russell and Tedder. A proximal left scapula of a small falcon, small quantities of unidentifiable terrestrial mammal bone, and molluscs (*Neritina* sp., *Melanoides* sp., cf. *M. aspirans* and a single *Trochus* sp. fragment) were recovered. A single *Placostylus* land snail represents the only land snail recovery from the Inner Cave.

Of greatest interest, however, was a fragment of a thin perforated shell disc, approximately 23mm in diameter and 1.5mm thick, possibly of *Trochus* shell, with a slatey texture and colour; see plate 10.. The central perforation would have measured some 13mm in diameter. The disc was found in association with a small fragmentary gastropod spire, with a high polish, that may have had a very small central perforation; this may however be a natural feature.

EXCAVATION AREA T2

Area T2 was excavated to provide absolute basal limestone levels in areas F and I for the plotting of profiles 1a, 1b and 5. It was not expected that any intact deposits would be located in this area and none were found. Basal limestone exposed in this 1.5m x 1.0m area proved to carry similar black staining (possibly manganese) as that in area T3 below the layer 4 and 5 sand deposits. Generally less than 20cm of recent silts and sands with charcoal and modern material intermixed overlay a number of pockets in the limestone floor, the pockets being filled with brown compact clay.

Basal limestone readings gave an average of 1.00m below ’88 Datum, with the old ground surface mark on the adjacent right wall at 2.35m above. Russell and Tedder's records give bedrock as 236cm below 'datum' in area I and at 198cm below in area F. The discrepancy of at least 1m between the levels recorded for area F in 1966-1968 and those from excavation of area T2 can only be explained if the 1966-1968 records were measured to the top of the central boulder/outcrop on the areas E/F boundary.

To provide a profile base coinciding with the natural cave floor the modern accumulations of sediment were stripped away along the profile line between areas T2 and T3; deposits were of comparable depth and content to those in area T2. All modern deposits towards the front of the cave were also removed to reveal bedrock from area T2 to T1A.
EXCAVATION AREAS T1, T1A AND T1B

When an initial 1m x 1m excavation area, T1, unexpectedly revealed the presence of undisturbed occupation levels above basal bedrock, areas T1A and T1B were opened. As the extension to T1 was made immediately following the identification of the in situ deposits the first extension of that area retained the T1 area code. An extension to the rear was labelled T1A, while the more extensive area opened across the cave front was called T1B. The data from these areas is presented below. The location of the approximately 10m² area investigated is shown in (see figure 11).

The relationship between the recorded stratigraphy of the 1966-1968 excavations for area L and the 'new' deposits can be deduced fairly accurately (see figure 23). The bedrock surface in area T1 is some 1.60m below the '88 Datum, and 3.58m below the left-wall datum established by Davenport in area D of the rear cave. The Diary text and SWS give 246cm (97") as the bedrock level in area L, a difference of 1.12m from the surveyed value using the left-wall datum, a further demonstration that all records are not related to that point. Old ground surface in this area, adjudged by reference to an unpublished photograph (# 12/331) showing the pre-excavation floor level and the line of discolouration faintly visible on the right wall, is approximately 2.45m - 2.50m above basal limestone levels in area T1 on that area's rear section line. At this depth bedrock covers over 50% of the initial 1m x 1m area, the remainder being marked by the surface of the layer 3 (L3) deposits. It is apparent from this close agreement of the bedrock measurements that the in situ L3 deposits were immediately sealed by the last recorded layer of the 1966-1968 excavations. Although 'bedrock' is indicated in the SWS for area L, reference to the Diary shows that excavation was in fact 'discontinued' here, suggesting that some deposit, probably thought to be sterile, was left in place. Indeed, with the exception of a number of larger bone and shell recoveries, the majority of small bone, charcoal and chert from T1, T1A and T1B would probably have escaped detection given the excavation methods employed in 1966-1968, especially as the entire deposit is devoid of the larger features, such as stone ovens, that served to identify the upper occupation horizons and prompt their more careful scrutiny.

Prior to excavation the front of the cave in the area of the T1 excavation was covered with 1986 Cyclone Namu silt deposition, and like the rear cave area, this showed as an approximately 20cm thick layer of cracked silt blocks. The interface of this layer with the earlier silts of layers 1 and 2 was well-defined and all 'Namu' deposits were cleared away without investigation. Area T1B was so located that it took in the slight slope marking the cave entrance and the edge of the old Poha River course, a slope probably coinciding with the base of the original cave entrance slope, as it corresponds to the natural slope of the limestone basement of the cave floor. A flood event in 1987 had resulted in another 15-20cm of alluvium being laid upon the 'Namu'
silts at the base of the slope, separated from them by a layer of leaf litter and other flood debris. Against the wall of the cave at the entrance, a small 'outcrop' of limestone marked the rightward extent of the excavation area. This outcrop proved, on excavation of the T1B area, to be a large block that had become detached, or had collapsed forwards, from the outer cave wall after the deposition of the L3 deposits and possibly as late as the post 1966-1968 excavation period. This event had allowed the influx of clean and sterile sands and silts between the boulder and the cave wall. This outcrop, and its associated features, mark the outermost extension of the occupation layers, no doubt due to the protection that it offered to them from flood water action.

Excavations in 1988 were conducted in trowelled 10cm spits, somewhat irregular due to the large limestone blocks contained within the deposit. The entire deposit was wet-screened through 6mm and 2mm mesh. Initial sorting of the sieve recoveries was conducted on site with all residues retained. Although bucket weights were not recorded, the volume of matrix for each spit was calculated from the number of buckets of material removed. Spot levels were taken on each spit surface prior to its removal; thus although a physical section through the deposit, from T1 to T1B, was not maintained (due to the constricted nature of the area itself), the sequence of deposits could be plotted from the levelled points.

The upper deposits of layers 1 and 2 consist largely of layered silts and gravel with quantities of fire-blackened volcanic stone, wood charcoal and shell midden. These have their greatest depth against the right wall and on the rear section line of T1B where the deposits had been banked up around an old tree root, but they extend across the entire area of T1B. Depth of deposit decreases downslope until, at the front edge of the excavation area, they are truncated by the natural silts of riverside alluvium. The presence of modern material throughout these horizons suggests they represent both reuse of the cave since 1968 and remnants of the sieving activities associated with the earlier excavations.

Flood deposition of alluvial material marks layer 1, while layer 2 is characterised by large quantities of oven or hearth stones and, in the mounded deposit against the right wall, quantities of shell midden debris. Layers 1 and 2 were excavated by trowel in area T1, and all deposit screened; once its modern character had been established, the remainder was trowelled away to the level of the layer 3 surface, with screening through 6mm sieve only. The section drawings best indicate the mixed nature of layers 1 and 2 (figures 22 and 23). Layer 2, largely characterised by its brown silty matrix and large quantities of shell, continues below this depth to merge with the clean silts and sands (layer 6) that have infiltrated the gap behind the boulder. The division between layer 2 and layer 3 became less distinct with depth and led to the sub-numbering of the layer 3 deposits to indicate where degrees of contamination from both layers 2 and 6 could not
be precisely defined. It is postulated that the incursion of layer 6 silts by flood water, or indeed normal river flow, against the outer and righthand cave walls, led to the erosion of layer 3 against the cave wall and allowed the deposition of the layer 2 material at some time after the 1966-1968 excavations had been completed. However the status of the layer 2 deposits is open to some question; in the absence of any indication to the contrary, and especially the lack of any clear division between the demonstrably modern material of the upper layer 2 material and that adjacent to the lower levels of the layer 3 deposits, it seems impossible to claim anything but a recent origin for them.

The following major features of the upper layers may be noted:

**Layer 1**

<table>
<thead>
<tr>
<th>Depth</th>
<th>0-6cm</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Matrix</strong></td>
<td>Damp and friable silty soil (colour 7.5YR 4/2; pH 8.5) with small limestone pebbles and chips.</td>
</tr>
</tbody>
</table>

**Recoveries**

| Modern material | Glass, bullets and shrapnel |
| Shell artefacts | A polished perforated shell disc, 16mm in diameter, in area T1, may have seen use as a bead, although the 7mm hole appears to be a naturally formed aperture in a gastropod spire fragment. See plate 10. |
| Stone artefacts | A small ?core of orange/brown chert, from the layer 1/layer 2 interface. No retouch, weight: 9.9 gm. Waterworn and fire-altered pebbles indicating use in *ad hoc* 'oven' or temporary fireplace. |
| Crustacea | Fresh- or saltwater crab or crayfish sp. |
| Bone | Unidentified fragments of reptile and fish bone Human bone fragments from top of boulder |
| Plant remains | *Celtis* sp. seed cases |
Layer 2

**Depth**  
6-35cm (averaging 1.75m below ’88 Datum at surface of L3)

**Matrix**  
Layer of mixed silts, sands and gravel with mound of dark brown silt and volcanic oven stones against right wall. Recent fireplace material, and modern debris - bottle glass, shrapnel etc. Fire-blackened volcanic stones extended to 15cm below surface. Wood charcoal abundantly distributed throughout. Soil colour variable, pH 8.5.

**Recoveries**

- **Modern Material**  
  - Debris, as layer 1

- **Shell artefacts**  
  - Nil

- **Stone artefacts**  
  - Three very small chert chips, less than 1 gm total weight

- **Bone artefacts**  
  - Perforated shark’s tooth. The 2mm diameter hole has been cut from the upper side, with the diameter on the reverse being only 1mm. It is possibly associated with the surface of the L3 deposits so that its specific association is open to some doubt. See plate 10.

- **Molluscs**  
  - As for layer 1 but also including *Terebralia* sp., *Dentalium* sp., *Geloina coaxans*, *Anadara* sp., *Gafrarium* sp., *Cerithium* sp., *Trochus* sp., *Turbo* sp., *Cypraec* sp., *Strombus* sp.

- **Crustacea**  
  - As for layer 1

- **Bone**  
  - Microchiroptera, murid phalange, unidentified fish and reptile (possibly including *Corucia zebrata*)
  - One human incisor tooth crown fragment from area T1B (probably associated with other human skeletal material from layer 3).

- **Charcoal**  
  - *Canarium indicum* carbonised nut shell.

- **Plant remains**  
  - *Celtis* sp. seed cases.

A single spit, of varying depth, served to remove the remnant L2 deposit and reveal the L3 horizon across the T1-T1B area (figure 21) with the exception of the layer 2 material against the cave wall noted above. Recoveries from the L2/L3 level are of uncertain association but include shell of species present in layers 1 and 2 - *Melanooides* spp., *Neritina* spp., *Terebralia* sp., *Strombus* sp., *Cerithidea* sp., *Cypraec* sp., *Trochus* sp., *Turbo* sp., fragments of a number of bivalve species, including members of the Veneridae family and land snails. Bone of *Corucia zebrata* and a small murid, crustacea claw fragments and carbonised fragments of *Canarium* nut shell (?*Canarium indicum*) were also represented.

The layer 3 deposits are the only unequivocally undisturbed sediments of the T1/T1A/T1B area. Upon exposure the L3 horizon was characterised by a marked change in the nature, soil colour and compactness of the sediments. The matrix was
fairly constant throughout, changes being evidenced only by slight differences in soil
colour, increasing dampness, greater stoniness towards the base, and an increase in the
clay content of the gritty orange/brown sediments.

The surface sloped from 1.75m in T1 to an average of 1.83m at the front of T1B
with some firmly embedded and sizeable limestone flakes and rubble (up to 50cm, but
generally 20-30cm maximum dimension); however none of this material was set on
edge and the upper surface of the layer was remarkably even. The compactness of the
layer may have led Russell and Tedder to believe that they had encountered weathered
bedrock.

At the front edge of T1B the limestone blocks had been piled into a rough wall
abutting the basal limestone of area K on the left and the outcrop/boulder lying against
the cave wall at right (figure 21, plate 9b). Layer 3 deposits did not extend beyond this
wall, being replaced by the sterile gritty sands and silt lenses (layers 4 and 7) of the
present alluvial terrace of the east bank of the Poha River. The limestone block wall
has determined the survival height of the deposits that it retains. Against the limestone
shelf of area K the wall reaches its maximum height of 1.72m below datum and thus
virtually level with the upper surface of layer 3 in area T1/T1A. Some collapse of the
wall against the boulder has left the upper course some 10-15cm lower, with a
Corresponding reduction in the height of the layer 3 level behind it and increased depth
of the overlying layer 2 material. The outer face of the wall is battered and would
appear to have been constructed after the formation of most of the material now retained
behind it, with construction perhaps prompted by the erosion of the frontal floor area by
flooding.

The interstices of the limestone walling were filled with layer 3 deposits that had
been partially infiltarted by those of layers 4 and 7 forming the composite, but
essentially intact, deposit of layer 5. The walling retains the layer 3 deposits within a
steeply shelving gully in the basal limestone that is the final expression of the
waterworn channel in areas F, I and L, bordered here by the right-hand cave wall and
the front edge of the large sloping shelf of areas G, H, J and K. As in areas T3 and T2,
the basal bedrock carries black crystalline staining, consistent with periodic water
infiltration.

At a level equal to that where the limestone floor of the cave becomes undercut,
the deposits increase quite considerably in their clay content and hardness and contain
accumulations of weathered limestone pebbles and blocks - layer 10. This coincides
with an absence of any bone or charcoal and only occasional very small fragments of
molluscan shell. Naturally deposited silts, gravels and clays (layer 9) merge with this
horizon beneath the lowest course of the wall, and in and around the waterworn and
deeply grooved natural limestone. The undercutting of the sloping gully at its base formed a small runnel between the bedrock and the layer 10 'natural'. Clean fine sand (layer 8), emanating from behind the boulder and continuing through to the opposite side of the excavation area through the runnel, had filled a natural aperture under the small overhang. That this had occurred recently (i.e. after the detachment of the block from the main cave/cliff wall) was demonstrated by a few very small fragments of bottle glass within the sand.

The layer 3 complex was divided into 3 sub-units for the purposes of excavation, based upon observed differences in texture and possible contamination. Layer 3(I) is the material that appears to have been unaffected by any major resorting or erosion, layer 3(II) lies adjacent to the layer 2 and layer 6 sediments of recent origin and may carry material derived from elsewhere, while layer 3(III), although apparently intact, is something of a buffer between the preceding two areas and confined to the forward area against the rear of the wall adjacent to the boulder.

All of the layer 3 deposits lack, with the exception of the waling, any structural features such as ovens or hearths and no fire-altered stone was recovered from them. Evidence of human occupation was indicated only by shell and bone midden, human skeletal remains, and very small quantities of artefactual material.

The most productive depth of sediment lay between the surface of the layer 3 sediments (in areas T1 and T1B) and 2.75m below '88 datum in area T1B, providing a 1 metre depth of deposit. Two radiocarbon samples, both of carbonised Canarium nut (probably C. indicum), bracket this occupation:

Sample No | PP/POS-C2 (ANU-6734)
--- | ---
Provenance | Area T1, Layer 3(I) at 175-187cm
Age determination | 3940 +/- 140 yrs bp

and,

Sample No | PP/POS-C1 (ANU-6733)
--- | ---
Provenance | Area T1B, Layer 3(III) at 258-274cm
Age determination | 5430 +/- 220 yrs bp.

At one standard deviation these determinations give calibrated date ranges of 4799-4158 BP and 6449-5950 years BP respectively.

As with the later deposits of the Vatuluma Posovi cave, the artefactual material from these earliest levels is restricted. The material from the L3(I), L3(II) and L5 areas is as follows:
Stone artefacts

Two thin chert flakes, both unretouched, from 210-227cm and 239-258cm below '88 Datum, in Layer 3(I) of areas T1B and T1 respectively. Weight of both, 0.30gm.

Two chert chips from layer 5 wall deposit at approximately 200cm below '88 Datum.

Three chert flakes and a single chip from the partially disturbed layer 3(II) area. None show any retouch. The pieces are: i) at 210-227cm, small flake, 1.14gm; ii) in the same level a small flake, 0.50gm and iii) a very small chip; iv) at 239-258cm a larger flake, retaining some cortex, 2.28gm.

Shell artefacts

In area T1, from layer 3(I) at 184cm, at the base of the spit dated by ANU-6734, a single fragment of a *Trochus* arm band, 18mm in length and of triangular cross-section. See plate 10. In area T1B in layer 3(II) 3 pieces of cut *Trochus* of similar form to those from the 1966-1968 excavations identified as fishhook blanks⁴. See plate 10.

Artefacts were entirely absent in the layer 3(III) deposits.

Environmental remains recovered from layers 3 and 5 included molluscan shell, small bone fragments and carbonised plant macrofossils. None of these materials were recovered in sufficient quantity to permit any statistically valid analyses of faunal or floral exploitation patterns to be undertaken. However the following general observations may be made⁵.

Molluscs

The molluscan component of the faunal material assemblage is dominated by species of fresh and brackish water habitats. The greater quantity of the material is of three closely allied species, *Melanoïdes aspirans*, a second species very similar in form, and a third member of the same genus, *Melanoïdes* sp. cf. *demonis*. Lesser numbers of *Cerithium* species, *Terebralia*, *Neritina*, and Veneridae spp. bivalves indicate collection either in the Poha River itself, in backswamps associated with the litoral fringe and in mangrove-fringed estuaries. A very large swamp with luxuriant growth of *Pandanus* and *Terminalia* at Mamara, the small river valley immediately to the west of the Poha River, is known locally as a major source of *Melanoïdes* species (pipindo). A sampling of the marine resources is indicated by a few specimens of *Trochus* sp., *Turbo* sp., *Anadara*, *Gafraarium* and other marine bivalves. Land snails, especially *Placostylus* and *Pupina*, are represented throughout the deposit.

Bone

All bone material, including terrestrial mammals (endemic murids and several members of the bat tribe), reptiles and small quantities of bird and fish, is extremely fragmentary. The generally small size of the bone fragments makes identification to species level impossible except in a few cases. Exploitation
of marine fauna is demonstrated by bones of several fish species from reef and deep water environments. Given the site's proximity to the Poha River it would not be surprising if some of the unidentified fish bone came from freshwater species. Table 3.1 gives simple presence/absence data, by layer, for the faunal material.

Bird bone includes a left distal fragment of a tarsometatarsus of a previously unknown megapode.

A small quantity of human bone was recovered from the layer 3 deposits; this is currently being studied by Dr. A. Thorne at the Australian National University.

Charcoal was present throughout the deposit, although decreasing in frequency with depth and with few concentrations of material. Very little wood charcoal was present, except on the margin of the layer 2 sediments, from which it was probably derived. Although identification of all the fragments has not been possible, the majority appears to be of carbonised *Canarium* nut shell, with a few fragments positively identifiable as *C. indicum*. All material is comprised of very small fragments, with no complete platelets or shells. This contrasts with the later recoveries of *Canarium* in the 1966-1968 excavations when complete, or near-complete, shells were noted (J. Tedder pers. comm.).

The lack of artefactual material, although this is general for the site, and the absence of structural features indicating living floors, coupled with the high density of waste shell and bone, indicates that the front of the cave has seen use as a midden area. It appears likely however that the fragmentary nature of the material, especially the bone and *Canarium* nut shell, is only a hint of the main midden material that may have been dumped at the cave entrance and which the Poha River has long since removed. This is because small bone, shell and nut shell (possibly the rakings from in-cave hearths) lodged in the gaps between limestone blocks on the cave floor seem to make up the bulk of the deposit. The human skeletal material, concentrated in area T1, is partially sealed under the upper limestone blocks of layer 3. No evidence of a burial pit or interment was discernible in the surface of the layer, but its association with later occupation cannot be entirely ruled out. The lack of any cranial material bears a striking resemblance to the nature of all the other human skeletal concentrations within the site and may indicate a considerable antiquity for the ethnographically well documented practice of the use of separate skull repositories.

The demonstration of a significantly earlier occupation phase than was previously known from Vatuluma Posovi is important in its own right. Moreover, the reconstruction of the remainder of the site stratigraphy must now address the possibility
of other evidence of this phase elsewhere in the site and its relationship to the later deposits.

A SETTLEMENT SEQUENCE AND CHRONOLOGY: ANOTHER ATTEMPT

Although the entrance area of Vatuluma Posovi has yielded the earliest dated occupation at the site, it is in areas A - F, including the Inner Cave, that the best sequence of layers and radiocarbon determinations is available. A generally low level of disturbance, in the form of wartime 'resorting', well defined old ground surface levels and the most comprehensive of any of the excavation records combine to establish this area as the 'reference' against which the other deposits of the cave can be judged.

Full records of each level's features and recoveries are given in appendix 3 and only those details required to assist in clarifying or supporting relationships between areas are repeated here. Levels of strata are identified by their recorded depths, in centimetres, below old ground surface prefaced by the letter(s) that indicate the area(s) where they were recorded, thus A/D:41-46, I:38-53 etc. Inner Cave deposits are identified in full, thus Inner Cave:213-254.

Radiocarbon determinations referred to in the text are given as calibrated date ranges in years before present (1950), preceded by their sample code; details of the original determinations, calibration procedures and results are given in appendix 8.

In order to avoid confusion with the previous reconstructions that are available (Black and Green 1975; Davenport, Russell and Tedder n.d.; Russell n.d.) and with numbered layers of the 1987-1988 excavations, the layers of occupation and those that serve to separate them are here divided into 'phases'. These phases do not necessarily correspond to major breaks in cultural continuity but are an indication of periods of occupancy or temporary use of the site.

Phase 1

The earliest indication of settlement at the site is provided by the dated deposits excavated in 1987-1988 at the cave entrance. Here two samples bracket the deposition of small quantities of artefacts - chert flakes and chips, a single Trochus armband fragment and Trochus fishhook blanks - and quantities of bone of terrestrial animals and marine fish and shell midden of predominantly freshwater species, between 6500 and
4000 years ago (PP/POS-C1, ANU-6733: 6449-5950; PP/POS-C2, ANU-6734: 4799-4158). While no equally old levels were indicated by any radiocarbon determinations, the relative position of some deposits in the rear of the cave to a series of layers above them dated to some 3000 years BP. (P1, I-2874: 3259-2892; P7, ANU-5845: 3103-2779), appeared to give further evidence of this earliest phase. A/D:193-274 and B/C:300-376 contain light scatters of freshwater shell, probably *Melanoideis* spp. ('orange-coloured auger shells') and *Neritina* spp. ('river snail'), in a matrix of compacted sand and powdered rockfall. Two hammer stones for the cracking of *Canarium* nuts were also recovered. In Inner Cave:320-376 this deposit is also present as a matrix of river pebbles and small (?volcanic) boulders, compacted limestone and sand. Bivalves and *Melanoideis* shell are present as are four fragments of *Trochus*, two of which are possible fishhook blanks. A small chert fragment is the only other 'artefact' recovery.

Human skeletal remains of a late adolescent male and an adult female were recovered within the Inner Cave at 305-386cm but are probably represent an intrusive burial from the phase 2 levels (see appendix 6).

'Fine particles of charcoal disseminated as through by water' may be a mis-identification of black crystalline sand deposits associated with basal limestone in this area (see excavation area T3, above) or charcoal either associated with this layer or more probably as an intrusive element from the layers above coinciding with the deposition of the black-yellow sand at B/C:376. In A/D these deposits are bisected by the A/B/C, Inner Cave:295-300 flood level and may therefore have suffered some redeposition.

All putative phase 1 material lay on bedrock surfaces, as it does in the cave entrance area, and is probably overlain (the Diary records are not explicit) by sterile deposits of powdered limestone and 'rockfall/limestone rubble. In Area C and the Inner Cave disturbance of the possible phase 1 levels from subsequent flood events and the burial could account for the apparently anomalous date (on purely stratigraphical grounds) of 2820 +/- 120 from a marine shell sample collected by Russell and Tedder and dated in 1988 (PP/POS-C3, ANU-6983: 2729-2349). Conversely it is equally plausible that phase 1 deposits are absent from this area and that this date accurately reflects the age of the layer from which it came. In the absence of more detailed excavation records the status of the earliest levels in the Inner Cave cannot be fully resolved.

Phase 1 occupation does not seem to be evidenced elsewhere in the site, possibly due to its complete erosion in the unprotected front cave area by flood action, with only
remnants being preserved in excavation areas T1, T1A and T1B where the limestone block wall prevented their removal.

The Flood Level

In A/B/C, InnerCave: 295-300, a height conforming to the level of the crest of the waterworn channel in areas L, I and F, a major flood deposit of mud was discernible around the lower wall of the rear cave. This probably indicates a major flood event, consistent with water levels experienced during cyclonic events in 1986, that deposited a band of alluvial silt on the top of the phase 1 deposits, probably some time after occupation had ceased and during which time some natural deposition of limestone dust from the cave roof and rear wall had occurred to a level almost that of the mid-cave channel crest. Because the surface was somewhat lower here the water could not retreat and this led to the deposition of alluvium through slow drying.

The date from a radiocarbon sample in this feature of 1960 +/- 160 (P8, ANU-5846: 2119-1540) is not consistent with its stratigraphic position. Further contamination of this level by waterborne charcoal fragments after the deposition of the upper phase layers is thought to have occurred through either the seepage of water from the upper levels (requiring a truly catastrophic flood event), or more likely through loose rubble on basal limestone in areas L and I to the channel crest in F where an intrusive band of sand against the base of the cave wall has filled a small channel cut by water action through the powdered limestone dust of C:300-376 (see excavation area T3).

The flood level in the Inner Cave is marked by the recovery there of part of a human maxilla, a Trochus armband fragment and a hardened ash layer, 'encrusted as though by water action'. Although this level bisects the Inner Cave: 254-320 layer, the anomalous radiocarbon determination and the proximity of occupation deposits below make the association of this material unclear. A second Trochus armband is recorded from the Inner Cave: 254-320 layer above the flood line, and a similar artefact is also associated with the upper horizon of phase 1 at the cave entrance, so that artefactual similarity alone cannot be used as a measure of original stratigraphical association. The most plausible explanation however is that the material is indeed associated with Inner Cave: 254-320 and that encrustation of the ash in that layer has occurred through the entry of water that also brought in contaminants which affected the radiocarbon sample. The heavy patination of calcium carbonate on the human maxillary fragment (original catalogue no. E15), ramus and basicranium fragments and the left clavicle (ICB: 3, ICB:4 and ICB:5; see appendix 6) would also support periodic waterlogging. The
absence of patination on the other skeletal material, possibly lying at a lower depth, might be explained by the presence of the flood mud only allowing slow seepage of water through it entraping the calcium carbonate in solution en route.

The separation between the upper horizon of the flood deposit and the phase 2 levels is marked by approximately 50cm of rockfall, small boulders and dry dust. This evidently accumulated fairly rapidly, as is the case one assumes with most rockfall layers.

**Phase 2**

A rather more substantial quantity of material marks the phase 2 horizon, although the deposit itself is restricted in area (C:213-244, Inner Cave:213-320) and might best be seen as a prelude to the more extensive and only slightly later phase 3 levels. In area C the deposit is confined to 213-244cm but slopes down into the Inner Cave; the distinction between Inner Cave:213-254 and Inner Cave:254-320 in the Diary records is an arbitrary one and most probably reflects excavation unit depths utilised for the extraction of the material.

The two radiocarbon dates from these deposits are virtually identical in age at 2910 +/- 110 and 2810 +/- 120 (P1, I-2874: 3259-2892; P7, ANU-5845: 3103-2779). Their positions bracket the layer and indicate a fairly short, but intensive usage of the site. It will be argued elsewhere (chapter 5) that this occupation saw the initial execution of rock engravings on the cave walls.

Intrusive rockfall associated with the top of this layer in the Inner Cave is evidently a result of the formation of a short talus slope along the surface of the deposits following abandonment of the site.

The occupation is marked by a dramatic increase both in the quantity of shell midden and the number of species that are represented. A significant number of previously unrecorded or scarce marine species are present, especially *Tridacna gigas*, *Lambis* sp., *Conus* sp., *Cypraea* sp., *Turbo* spp. including *T. argyrostomus* and marine bivalves of the Lucinidae family. Other evidence for marine zone exploitation is provided by a few pieces of staghorn coral, of the type used in the manufacture of lime for betel chewing, and a much worn shark's tooth; the latter possibly deriving from the limestone of the cave wall. Freshwater species also continue to be present, including the *Melanoides* and *Neritina* species noted in phase 1 levels.
Artefactual recoveries include *Trochus* fishhook blanks, a *Trochus* armlet fragment, and a small chert chip. The *Conus* adzes recorded in the Diary texts are adjudged to be merely shell midden material and no evidence of manufacturing or usage could be identified.

Although the artefact assemblage remains poor and not readily distinguishable from the phase 1 material, the increase in marine shell diversity and the appearance of coral fragments might suggest a greater emphasis of the economic base of settlement towards the coastal zone and away from terrestrial and freshwater sources. It cannot be denied, however, that this perceived trend may owe more to differences in sample size than to changes in resource exploitation strategies.

In the remainder of the site initial deposits at comparable levels to the Inner Cave/C:213-254-320 layers, are wholly comprised of rockfall and/or rubble, occasionally with some shell material and oven stone intermixed, as for example in L:185-224. What is more surprising is the apparent absence of the C:213-244 deposit in area B.

**Phase 3**

The first record of any occupational evidence in area B is found at 152cm in the form of 'firestones', a horizon also reported in area C and according with the A/D:145 deposit. These levels all seem to form part of the phase 3 occupation best attested by the dated E:152-183 ash layer and the corresponding 'lowest levels' in F. Other stratigraphically equivalent deposits are G/H:178-208, I:152-183 and J/K/L:185-216.

In area E this phase of occupation is dated by radiocarbon samples from two stone ovens (at 183cm, P6, P-1943: 2783-2744; at 152cm, P5, P-1942: 2752-2548); it will be noted that at the extremities of their date ranges, the ages of samples P6 and P7 just overlap at one standard deviation. Thus although phases 2 and 3 are physically well separated by 'sterile rockfall', the dates suggest nothing more than a relatively minor pause in the site's occupation. In the Area F phase 3 levels a date of 2720 +/- 80 (2516-2320, ANU-6984) was provided from a marine shell sample (PP/POS-C4) recovered in the 1966/68 excavations.

Accompanying occupation debris specifically recorded for this layer in area E is minimal. *Trochus* sp. and *Conus* sp. adzes are claimed in the excavation records, although neither identification stands up to close examination and both must be considered only as waste shell. Elsewhere in the stratigraphically consistent layers the
most important recoveries are two volcanic stone adzes in area G at 178cm and a Canarium nut anvil and hammer stone in the base of the G/H:178-208 deposit. In A/D:145 a single perforated and ground shell bead is the only unequivocal shell artefact from the phase 3 deposits.

However the general Diary records for depths of 122-183cm in area E list a number of items which it seems safe to assume are associated with the phase 3 deposits as the 122-152cm depth would seem to be comprised of broken rock and rockfall with waterworn stones and mudstone. Recoveries listed in the Diary entry serve to increase the phase 3 tally. Trochus sp. fragments include a fishhook blank, but the remainder of the shell material (largely Conus and bivalve lip fragments) is evidently midden despite claims of shell scrapers and a Conus adze. A few small polished fragments of coral were recovered, identified as ear or nose ornaments by Russell on the basis of information supplied by his workmen. A single chert chip was also recovered.

Faunal components of these deposits are fewer in number than in the Phase 2 occupation horizon but continue to demonstrate a relative abundance of marine shell - Conus sp., Turbo argyrostomus, Cypraea sp., ?Spondylus sp. - although 'small ochre coloured auger shells' (almost certainly Melanoides aspirans) are present in J/K/L:185-216 and fresh- or brackish water bivalves are present in the area E material.

The confusing records of a burial in areas D/G extending to 178cm (for details see area records in appendix 3) require mention here. Although recovered from the top of phase 3 deposits they would appear to be related to occupation in phase 4, presumably having been interred from that level.

Phase 4

Phase 4 deposits mark the last largely undisturbed deposits of the site. In the rear of the cave they are formed by two separately identified but contiguous bands of material; in the front cave area single deposits are described. No particular area can be considered as a reference for the phase 4 material. Depth ranges and separations from phase 3 are recorded as follows:

*Areas A/D* 117-122 in D and 122-127 in A mark phase 4, the discrepancy in depths resulting probably from the use of different 'datum' points by Davenport and Russell and Tedder. The separation from phase 3 is a deposit of light brown gravel at 122-145cm

*Areas B/C* have identical depth ranges as areas A/D but separation from phase 3 is noted as comprising rockfall and waterworn pebbles
Areas E/F  Phase 4 deposits at 91-122 in two 'layers' - 91-107 and 107-122 - with separation from phase 3 distinguished by broken rock and roof-fall

Areas G/H  Phase 4 deposits at 104-155 with separation from phase 3 in the form of loose rubble

Area I  deposits as E/F but separation, if any, not specifically recorded

Areas J/K/L  Phase 4 deposits at 155-185 rest immediately on the phase 3 occupation levels but are distinguished by a marked change in sediment from rubble and roof-fall in which the phase 3 material is mixed, to a black humic soil.

Radiocarbon dates for these deposits do not provide neat chronological bracketing. Indeed of the determinations from four samples, only one date appears acceptable. At the cave front a sample was taken from 185cm (i.e. the phase 3/4 interface) in an oven feature centrally located in area K. Two determinations from this sample have been calculated, 720 +/- 40 and 420 +/- 70 (P3, P-1940: 685-667 and P3, ANU-5844: 523-441). These give a weighted average of 667-566 years BP. At the rear of the cave, in area B, two samples were taken, the first by Davenport - WD2, I-2875: 1310-1160 - and the second lower sample was started by Davenport and completed, possibly from a slightly different depth, by Russell and Tedder - WD3, I-2873: 790-670. Despite the correlation between P3 and WD3 it is argued that these two dates are not consistent with the stratigraphical sequence. WD3 is a mixed sample collected from a horizon that had been open to contamination from above, between the end of Davenport's work and the start of Russell and Tedder's. The determination is also later than that of the well stratified position of WD2 above it. The date from sample P3 also appears inconsistent with its stratigraphical position at the phase 3/phase 4 interface. The high humic content of the deposit from which this sample comes makes possible the leaching of contaminants into it, given that the point in area K from which the sample was recovered lies outside the dripline of the cave. The problem of dating appears to be compounded by a date of 2920 +/- 100 (ANU-6985: 2999-2749 obtained from a sample of Geloina coaxans (PP/POS-C5, collected in 1966/68) from Area J between 53cm and 155cm. The measurement of the delta C\textsuperscript{13} values, however, has shown a limestone dilution effect which precludes calibration (cf. Polach 1980); this date must therefore be disregarded (see appendix 8). It seems prudent to accept the WD2 sample date as being the most likely to provide an accurate age indication for phase 4. The alternative explanation, that WD2 is too old and that the deposit is about 500-700, would make phase 4 virtually indistinguishable, on the basis of radiocarbon dates, from the phase 5 deposits which follow it.

Human skeletal remains from positions coinciding with the occupational horizons are recorded from areas D/G, but their association is by no means clear.
The major artefactual recoveries associated with phase 4 are a perforated shell disc and *Trochus* arming fragments in D, three *Trochus* sp. fishhook blanks and a perforated *Spondylus* valve in G/H, chert chips in D, E/F, and J/K/L and a *Canarium* hammerstone in B/C.

Shell waste from *Trochus* sp., *Conus* sp., fresh and brackish water bivalve species and auger shells is little different from the suite of material from lower levels, although the marine component is less varied.

**Phase 5**

The final phase of settlement is again marked by two barely separated bands of occupation material in the rear cave, although in areas J/K/L the division is more distinct. In areas A/D a third narrow band was excavated but was noted as being only a localised deposit by Davenport. Much of this upper layer is heavily disturbed from the fighting that occurred here in 1942/1943. Recorded disturbance occurs at A/D:0-30, B/C:0-30/38, E/F:0-48 (down to 91 in places), G/H:0-53; I:0-48 (down to 91 in places) and J/K/L:0-53. Occupation levels are more substantial at the cave front with J/K/L:58-96 and G/H:53-91, although largely absent in area I. Disturbance in E/F:0-91 has probably led to contamination of the 48-53 level which corresponds to the A/D:46-61 and B/C:30-46 levels.

All of the phase 5 deposits are separated from the preceding occupation levels by mixtures of rock-fall, limestone dust, waterworn pebbles and large flat stones. Within these mixtures human skeletal material is recorded in area C at 102 and on the A/D dividing line at 30-71cm.

Radiocarbon dates from the phase 5 occupation are as mixed as the deposits themselves: 765 +/- 95 (WD1, I-2876: 768-665) in area B at 15-25cm depth, 300 +/- 40 (P2, P-1939: 436-302, check dated by ANU-5843 as 299 - 0) from an oven in H at 61cm and, from an ash layer at 48cm in the heavily disturbed area E, 1030 +/- 40 (P4, P-1941: 971-928).

Phase 5 deposits are consistent with sporadic, and fairly recent, settlement of the site, probably within the last 700 years. Artefact and faunal assemblages differ little in content and type from the earlier material - chert chips, *Trochus* fishhook blanks (J/K/L), and shell midden material of similar species to those in phase 4 are recorded. In many areas these materials are mixed with finds of bottle glass, bullets, shrapnel, buttons and claypipe stems. Of note however is the only specific record of *Phalanger*
orientalis and a single record of pig or dog. Bone of these species is apparently completely absent in the lower levels.

A tabulated scheme of the main occupation phases and the levels by which they are represented is given below to allow for ease of reference to the corresponding entries in appendix 3 and for comparison with the two schemes of Russell and that of Black and Green. While this reconstruction of the stratigraphy identifies five phases, phases 2 and 3 can be seen as essentially contemporary. This differs slightly from Black and Green's scheme, with which additional differences may be noted in the matching of layers from different areas of the site (see appendix 4).

Despite the substantial depth of deposit at the Vatuluma Posovi site, the total depth of actual occupational material is not dissimilar to that recorded from other rockshelter and cave sites in the Poha catchment, which provide comparative material for the assessment of the nature of the Posovi data.
SG-2-1, Vatuluma Posovi: Reconstructed Occupation Phases

Phase 1 6000-4000 BP
Reference deposit: Area L: 244-344 [dated]
Stratigraphically consistent: Areas A/D: 193-274 [probably Phase 2]
Areas B/C: 300-376 [probably Phase 2]
Inner Cave: 320-376 [probably Phase 2]

Phase 2 3000-2900 BP
Reference deposits: Area C: 213-244 [dated]
Inner Cave: 213-320 [dated]
Stratigraphically consistent: None

Phase 3 2700 BP
Reference deposit: Area E: 152-183 [dated]
Area F: 152-183 [dated]
Stratigraphically consistent: Areas A/D: 145
Areas G/H: 178-208
Areas J/K/L: 185-216

Phase 4 c. 1300-1200 BP
Reference deposit: Areas B/C: 117-132 [acceptable date]
Stratigraphically consistent: Areas A/D: 117-127
Areas E/F: 91-122
Areas G/H: 104-155
Area I: 91-122
Areas J/K/L: 155-185

Phase 5 Recent, < 700 yrs BP
Reference deposit Area B/C: 0-46 [dated]
Stratigraphically consistent Area A/D: 0-46
Area E/F: 0-53 (?) [dated]
Area G/H: 53-91 [dated]
Area I: 0-91
Area J/K/L: 0-97
Footnotes

1Dates from the Lapita sites excavated by Green in the Reef/Santa Cruz group and from the Feru rockshelter on Santa Ana, are all contemporaneous, at one standard deviation, with the I-2874 (2920 +/- 110 yrs bp) determination from the Vatuluma Posovi excavations. A list of dates from the Solomon Islands is given by Black and Green (1975); those before about 1800 BP have been reviewed and recalibrated by Spriggs (1990). Revised dates for the Reef/Santa Cruz Lapita sites have been published by Green (1990).

2Chachi and Manengelea (pers. comms.) report several major changes of river alignment in the past twenty years. In the early 1960s the cave entrance was obscured by thick vegetation and large trees. The earliest known photograph of the site (Raucaz 1928:113) also indicates heavy vegetation around the cave entrance. Whether the photograph’s caption, ‘.... head-hunters headquarters’, is based on local information or romantic license is not known.

3One of the first recoveries of Davenport’s excavations was a ‘leather wallet containing pictures of two Oriental children’ (Diary-WHD).

4The identification of these Trochus pieces as fishhook blanks is based upon their similarity to material from Mussau (Kirch 1987:173-174, Kirch et al. 1991:152, Kirch pers. comm.), and ethnographically documented hook types from New Ireland (Beasley 1928:74, 85-86) and Wuvulu and Aua (Hambruch 1908:pl.XIV).

5Identifications of faunal and floral material were made by Dr. T. Flannery (terrestrial mammals), Dr. P. Colman (molluscs), and Professor D.E. Yen (plant remains). The bird bone remains (identified by Corrie Williams and G. F. van Tets) are discussed with those from SG-2-93, Vatuluma Ngolu at the end of chapter 4.
Chapter 4

UPHILL AND UPSTREAM: NEW ROCKSHELTER AND CAVE EXCAVATIONS IN THE POHA RIVER CATCHMENT

INTRODUCTION

Despite some success in reconstructing the stratigraphy of the Vatuluma Posovi site, the lack of detailed records for any but the basal layers at the cave entrance excavated in 1987-88 render difficult the characterisation of the cultural horizons there. In particular, the absence of any diagnostic differences in the very limited artefactual assemblage from the site places greater emphasis on other kinds of evidence for establishing the nature of change in the culture history that now has a proven time depth of approximately 6000 years. Clearly also the fragmentary data from a single site and the postulation that the density of rock engravings are good grounds for suggesting that the site is potentially atypical in the local scene (cf. Spriggs 1984a:208) required further excavation of both similar and dissimilar sites in order to assess whether the Vatuluma Posovi site was anomalous or representative of prehistoric settlement in northwest Guadalcanal.

In an unpublished conference paper Keesing (Keesing 1980) noted the absence of any archaeological data from sites in the Solomon Islands other than those situated close to the coast. Although he suggested that the Vatuluma Posovi assemblages were indicative of a contrast with coastal settlements, the site can scarcely be considered as an inland one. Indeed at the time of its first occupation, when relative sea levels may have been approximately a metre higher than at present and possibly prior to an uplift event (F. Taylor pers. comm), the site would have been considerably more marine in aspect than its current position would suggest. Thus the single open settlement site of Naiavila in Santa Cruz (Black and Green 1975:40-42; Yen 1976) represented the only truly inland site to have been excavated in the Solomons. Furthermore it is pertinent to note that the Vatuluma Posovi work of the 1960s and the excavations at Kanofe’s cave and the Feru rockshelters of Santa Ana by Davenport and Green (Davenport 1968, 1972; Black and Green 1975:28-35), have provided the only archaeological evidence from the Solomon Islands south of Bougainville that is derived from cave locations. Radiocarbon dates from the Feru II shelter have demonstrated a 3000 year old initial occupation associated with ceramics, shell discs, armring fragments and grinding
stones. The excavation of further sites in the northwest Guadalcanal area, offers the potential for a wider discussion of the implications of the Vatuluma Posovi materials at a local level, but cannot compensate for the dearth of similarly dated cave or rockshelter sites elsewhere in the Solomons. Rukia's recent work in the Nggela group to the north of Guadalcanal offers some hope of increasing the geographical spread of excavated sites but as yet the cave sites there are undated (Rukia 1989).

With the Mboneghe limestone belt outcropping both close to the northern coast and up to some 12km inland and hosting a number of caves and rockshelters, the Poha catchment provided an opportunity to excavate a number of sites with a view to providing additional data for comparison with the Vatuluma Posovi cultural assemblages. In particular, the apparently aceramic nature of prehistoric settlement in northwest Guadalcanal, the absence of exotic lithic tools (especially obsidians) and the generally meagre range and density of all artefacts at the Posovi site warranted further investigation. Although this artefactual paucity could be argued to be a product of the excavation methods employed in the 1966-68 excavations and/or the esoteric nature of site usage, and is certainly generally atypical of contemporaneous assemblages from sites elsewhere in the Solomons archipelago (cf. the Lapita sites of the Reef/Santa Cruz island group to the southeast), it was clear that the excavated site sample needed to be considerably enlarged.

As the Poha valley rockshelter sites occupy a range of different environmental and altitudinal zones and as such sites generally provide good preservation conditions for environmental remains, the area's archaeological resources also possessed the potential for the recovery of information that could demonstrate the differences between coastal and inland settlements, in terms of resource exploitation patterns, cultural affiliation and/or chronologies. The recoveries from the excavations at the Vatuluma Posovi site, both in the 1960s and the 1980s, made clear that at other sites excavation strategies which were aimed at maximising the recovery of faunal materials and plant macrofossils would be important. This was because the possible absence of artefactual denominators for the characterisation of cultural horizons might depend more on trends in subsistence economy rather than in gross changes in material culture.

THE EXCAVATION PROGRAMME

As the initial surveys in the Poha and Vura valley systems had identified 13 rockshelter and cave sites a test-pitting programme was conducted with a view to establishing their archaeological potential.
From general observations and indications from surface topography it was apparent that 5 of this group (SG-2-6 Vatuluma Sesengo, SG-2-90 Mbulumbaka, SG-2-92 Vatuluma Mbititauna, SG-2-101 Mbanambo and SG-2-102 Kovitsi) were unlikely to possess deposits that warranted excavation. The remaining nine sites were tested, of which two were subsequently studied in more detail; access restrictions prevented additional work at the site of Mbusurahinitasi (SG-2-79) although the test pit suggested that such was desirable. The selection of the sites to be tested was based on the need to obtain a sample from a range of environmental contexts - ridge slopes, valley bottom, upland forest, lowland forest and grassland margins - and an assessment of the likelihood of the sites having seen periods of occupation. This latter assessment took into account surface features, site size and location, especially proximity to water sources and trackways, and whether sites were known to have been used as either temporary or permanent settlements. The sites chosen were:

(1) SG-2-73 Vatukoko'o: a rockshelter of rather small proportions, but known as a temporary hunting camp, and located in upland forest some 10km from the coast. The site lies immediately adjacent to the major Vatukolaa-Lungga Plateau trackway which once served as one of the 5 main trans-island paths.

(2) SG-2-78 Vatulumana: a large shelter site, adjacent to the same trackway as site SG-2-73, and with surface evidence of use as at least a temporary settlement - hearths, palm frond sleeping mats. The lowland forest by which the site is surrounded shows evidence of disturbance through gardening activities and unusual concentrations of some economic plants.

(3) SG-2-79 Mbusurahinitasi: an unpromising-looking site with a very restricted area protected by an overhanging boulder but known as a temporary hunting camp and with associated oral histories of use and a site name perhaps indicative of shell midden deposits.

(4) SG-2-91 Vatuluma Pombo: a small shelter site on the western ridges of the Poha Valley in similar lowland forest to that at the two preceding sites. It is known as an old settlement/camp area.

(5) SG-2-49 Vatuluma Hai Mbau: an overhanging boulder in the upper Poha Valley lying on a terrace above the Poha River. It is known as a temporary hunting camp and is located some 200m downstream from the 'lost' rock art site of Mulenggela in the Njarini area.
(6) SG-2-108 Hauvatu III: similarly located to the previous site in its environmental and altitudinal setting but lying in the Vura valley and with a reported history of settlement pre-dating that at the adjacent open settlement site of Hauvatu II.

(7) SG-2-93 Vatulumana Ngolou: a large cave 1km west of Vatulumana Posovi set on the margin of the north coast Themeda grasslands and with ample surface evidence of occupation, including engraved rock art and scatters of umu oven stone and molluscan shell. An open 1m x 1m test pit, excavated by Tom Russell and Lindsay Wall in 1972 (Russell 1972, correspondence), indicated 4 major layers within the deposits and although Russell reported that no artefacts were recovered, charcoal and shell were present.

(8) SG-2-94 Vatulumana Tavuro: a large cave 0.8km to the west of SG-2-93 with an undisturbed floor area, stone-lined ovens, Canarium nut anvils, a surface inhumation burial and a small quantity of Turbo sp. shell at the cave rear. The lack of any oral history for site usage suggested that occupation there might have some antiquity. The site lies adjacent both to major grassland ridges and a major trackway linking the Poha and Mboneghe valleys.

Methods

Test pits of either 1.0m x 0.50m or 0.5m x 0.5m were excavated by trowelled spits, generally of 5cm depth, within the natural stratigraphy of the deposit. All sediments were sieved through 6mm and 2mm mesh, with the residues being sorted on site. This rather detailed approach to the excavation of the test pits was based on the assumption that artefacts would be few in number and that assessments of the potential of site deposits would be based as much on the environmental remains therein which would require a detailed preliminary investigation for their recognition. Following the removal of all artefactual material, shell, bone and charcoal the remaining residue was discarded on site. As all the supplies and excavation and camping equipment had to be carried to each location, facilities for the accurate analysis of recoveries at site were impossible to provide. Consequently all shell, bone and plant materials were retained for analysis, with only modern materials of very recent origin (for example glass and metal fragments) being discarded at site. Where conditions permitted, wet sieving was used to improve the visibility of the smaller carbonised plant remains and chert fragments. Charcoal samples for dating were collected during excavation either from in situ contexts or as recoveries from sieving; a complete listing of dates from the rockshelter and cave sites, including calibrated ranges, is given in appendix 8.
For the larger excavations at SG-2-93 Vatuluma Ngolu and SG-2-94 Vatuluma Tavuro soil acidity levels were measured with an Inoculo Laboratories pH testing kit and soil colours were recorded in the Munsell notation. Very low natural light levels, especially at the two large cave sites, required the use of pressure lamps for illumination, thereby causing some distortion of natural colour and making difficult the identification of finds in situ. Light levels at rockshelter sites were enhanced by using foil reflectors, especially for photographic purposes.

Temporary datums were established at each site, from which all depth measurements of stratigraphic features and layers were recorded. Excavation plans, usually of each spit surface, and all sections were drawn at a scale of 1:25, or at 1:10 for detailed recording. For sites where only test pits were excavated, site plans, where drawn, were constructed from measurements offset from a single baseline. At the large caves of Vatuluma Ngolu and Vatuluma Tavuro detailed site plans and profiles were drawn at 1:100. Photographic records in colour and monochrome were made of site features and locations, plans and sections. Standardised recording forms designed by Ian Johnson (Johnson and Jones 1985:32) were employed for recording details of individual excavation units, although deposit volumes were measured in cubic metres, rather than by weight, by calculations from a count of the number of buckets of sediment excavated. More detailed records, where required, were maintained in site notebooks and on the site plans.

THE ROCKSHELTER SITES: EXCAVATION RESULTS

SG-2-73, Vatukoko'o

The large conglomerate boulder at SG-2-73 lies just below the crest of the ridge from which the site gets its name, at a point where a subsidiary ridge trends northeast to Mavitu (SG-2-77). The top of the boulder is thus level with the Vatukoko'o ridge crest but on its northeastern side its base lies some 6m lower, where there is a narrow, level and sheltered platform some 6.0m long and 2.5m wide. A line of large blocks 1.0m - 2.0m long and up to 0.75m in width lies across the outer edge of the platform and above a 37° slope.

TEST PIT TP/VK-1

A 0.5m x 0.5m test pit (TP/VK-1) excavated at the base of the boulder revealed a maximum depth of deposit of 40cm in three layers, as follows:
**Layer 1**

*Depth* 0-5cm.

*Matrix* Loose friable brown soil with many rootlets, representing the upper humus layer.

**Layer 2**

*Depth* 5-12cm.

*Matrix* Darker brown, more compact soil than layer 1, becoming stonier and more clayey from 8/9cm. In the northeast corner of the square a thin lens of ash and charcoal flecks.

**Layer 3**

*Depth* 12-40cm.

*Matrix* Similar to layer 2 but heavy clay with soft stone chips from bedrock weathering: a large block of this revealed across half of the square at this depth. Some minute charcoal flecks in the upper 10cm of this strata.

Recoveries from these layers were restricted to small pieces of wood charcoal and a small number of highly fragmented, and thus unidentifiable, burnt bones from layers 1 and 2. Land snail fauna (*Papuina* sp. and *Pupina* sp.) were restricted to the upper two layers. Charcoal flecking was discernible to a depth of approximately 20cm but the lower half of the deposit was sterile of charcoal, bone and land snail fauna.

Though there is known usage of this site as a temporary hunting camp, the deposits do not indicate anything but sporadic and small-scale use, despite the apparently advantageous location for hunters from Poha Valley communities and an absence of any rockshelters further to the south on the Lungga Plateau hunting grounds. Given the small size of the usable area of the platform, it is quite likely that regular use of the site as a hunting camp would act against the build-up of any depth of cultural debris. The practice of sweeping out of rockshelter floors prior to usage (see also SG-2-78 below) may be a significant factor in the generally shallow depth of deposits at all Poha Valley shelter sites, especially where these are fronted by steep slopes which provide convenient disposal areas for midden refuse.

A number of large boulders at the base of the ridge slope below the site are subject to periodic water run-off from the ridge above and although some protection is offered by them, they are not recorded as ever having been used and there are no surface or sub-surface (based on a 25cm x 25cm trowel test) indications of any occupation.
SG-2-78 Vatulumana

The rockshelter of Vatulumana is formed by a 10m high limestone outcrop on the southeast side of the ridge that marks the eastern boundary of the Poha River catchment. Situated some 7km from the coast, it lies adjacent to the same trackway that passes Vatukoko'o (SG-2-73, above) and has immediate access to a permanent water supply. The floor of the shelter slopes gently down from west-south-west to east-north-east and has a maximum width of some 4.50m. As the cliff overhangs only in its upper section headroom generally exceeds 3.0m throughout and the dripline gives a maximum of 4.0m width of floor area protected from rainfall. Two floor areas are recognisable, an upper floor at the south-western end being both smaller and much stonier than a larger, essentially stone-free area that extends from the centre to the north-eastern extremity of the cliff. Here a small 2.0m x 2.0m x 2.5m high niche set into the limestone wall has no deposits on its floor. The lower floor area is both dry and dusty, with remains of recent hearths and scatters of ash and charcoal. The back wall is free of algae, contrasting with the upper area where water seepage is pronounced and the drip line provides a greatly reduced dry floor area. At the front edge of the site a pronounced berm lies above fairly steep and sparsely vegetated slopes that descend to a small Pandanus and Heliconia-fringed stream. The Heliconia and a variety of edible greens (?)Araliaceae) are considered to be indicative of old horticultural areas (P. Chachi pers. comm.).

The frontal berm seems to have been produced by the sweeping of loose rubbish - hearth debris, domestic refuse, discarded sleeping mats etc. - from the floor area towards the top of the slope. The site had served as a camping area during both field survey and test-pitting phases of the fieldwork and on both occasions local fieldworkers had prepared the sleeping area by vigorous sweeping. The main reason for this activity, other than simple cleanliness, was to remove loose rubbish that might harbour centipedes and/or scorpions. The immediate result is obviously a massive reduction in the quantity of cultural material from the surface layers and its redeposition at the front of the site and/or onto the slopes below. Any materials that remain on the cave floor are therefore not only a small percentage of the original deposit but tend to represent the smaller-sized fraction of it and have themselves been subject to redeposition, albeit at a smaller scale. If the berm feature is thus a product of re-deposition, it had the potential to demonstrate the extent and type of materials likely to have been lost from the dry floor area. A test pit (TP/VA-2) was therefore located across it to test that hypothesis. Initially a 0.5m x 0.5m test pit (TP/VA-1) was excavated in the dry floor area and revealed five stratigraphical layers.
TEST PIT TP/VA-1

LAYER 1

Depth 0-5cm
Matrix Loose grey ash and soil with wood charcoal fragments.

Recoveries

Mollusca land snails of *Papuina* sp. and *Pupina* sp. with fragments of *Placostylus* sp.

Bone *Phalanger orientalis* (vertebrae); *Sus scrofa* (patella); small reptile. Total weight: 4.3gm; density: 344gm/m³.

LAYER 2

Depth 5-15/17cm, spits 2-4.
Matrix Compact grey ashy soil with pure white ash banding and charcoal fragments. At its base the soil matrix was a darker brown/orange indicating fire heat alteration of the underlying layer 3 sediments.

Recoveries

Shell artefacts single white perforated shell bead (cf. 'shell money'), 4mm diam., 1mm thick with 1mm diam. perforation drilled from one side only.

Stone artefacts 6 small pieces of chert including one almost black chunk, 0.7gm, a second orange/brown, 0.6gm and four very small chips, all 0.2gm or less, one retaining a small amount of cortex.

Mollusca small quantity of *Melanoides spirans* and *Melanoides* sp. cf. *damonis*, Veneridae fragments and a small piece possibly of *Trochus*. Land snails of *Placostylus* sp., *Papuina* sp. and *Trocomorpha* sp.

Bone *Phalanger orientalis* (mandible, vertebrae, canine teeth, femur head); large reptile cf. *Varanus indicus*. Total weight: 41.1gm; density: 1370gm/m³.

Plants seed case of *Celtis* sp.
Charcoal carbonised fragments of *Canarium* sp.

LAYER 3

Depth 15/17-19/30cm, spits 5-6.
Matrix Orange/brown friable soil becoming increasingly hard and compact with depth. Clay and moisture content also increasing with depth. A few small wood charcoal fragments from the top of spit 5, producing C14 sample PP/VAT- C1 (ANU-6739) of 111.14 +/- 1.62 %M.
Recoveries

*Stone artefacts* 3 unworked chert flakes, two of rather poor material (0.8gm and 0.3gm) and one of a fine orange chert (0.3gm).

*Mollusca* *Melanoides aspirans, Melanoides* sp. #1 and small fragments of *Turbo* sp.

*Bone* mostly too small for identification but including a single fish spine. Total weight 2.8gm; density: 22gm/m$^3$.

**Layer 4**

*Depth* 19/30-28/37cm.

*Matrix* Broken limestone blocks (up to 30cm) in an orange clay matrix, probably representing a rockfall episode. Not continuous across the test pit, resulting in layer 3 sealing layer 5 directly in places.

Recoveries

Nil

**Layer 5**

*Depth* 28/37-74cm.

*Matrix* Sterile damp compact orange clay with some limestone pebbles sealing apparently solid basal limestone.

Recoveries

Nil.

TEST PIT TP/VA-2

The test pit located on the berm feature, 2.5m distant from TP/VA-1, was excavated to a maximum depth of 55cm, although only the upper 25cm produced any cultural material. Differences in soil moisture across the square are attributable to its position straddling the dripline. Three stratigraphic layers were recognisable:

**Layer 1**

*Depth* 0-8cm, spits 1-2.

*Matrix* Friable and damp black gritty soil with small clay pockets and ash flecking. A few small fragments of wood charcoal.
Recoveries

Mollusca
fragments of *Placostylus* sp. land snail only.

Bone
*Phalanger orientalis* (tooth). Total weight: 1.6gm; density: 80gm/m³.

Charcoal
some possible *Canarium* sp. fragments, all carbonised.

Layer 2

Depth
8-25/32cm, spits 3-8.

Matrix
Brownish black gritty and clayey soil with limestone chips (<5cm) and some ash and charcoal flecking, basally sloping into cave. Homogeneous throughout depth of layer.

Recoveries

Shell artefacts
fragment, 14mm long, of a shell (*?Trochus*) armring, fire-scorched. Diameters difficult to measure but approximately 75mm externally, 65mm internally, thickness 4.5mm. Recovered from the basal spit (8). See Plate 10.

Stone artefacts
two chert flakes, both unworked. One, 6.8gm, pink with white marbling, the second pinkish with whitish inclusions, cf. cherts from the Tetekanj limestones in east Guadalcanal (see Plate 12; also cf. Hackman 1980:19-20, pl.4), 0.9gm. See Plate 10.

Mollusca
mostly fragments of *Melanoides asperans* but including small pieces of *tue* (Veneridae, probably *Geloina coxans*) and a marine gastropod fragment, possibly *Turbo* sp.

Bone
present but none diagnostic. Total weight: 2.4gm; density: 48gm/m³.

Charcoal
fragments of pincers of fresh- or saltwater crab or crayfish. a few small fragments of *?Canarium* sp.

Layer 3

Depth
25/32-55cm, spits 9-11.

Matrix
Heavy sterile orange clay with some limestone pebbles at 45cm. No charcoal flecking.

Recoveries

Nil.

Despite outward appearances the rockshelter of Vatulumana seems not to have been a favoured site for prolonged settlement in the past. This is evidenced not only by the shallow nature of the cultural deposit but also by the absence of any volcanic oven stone, the latter suggesting that the ash and charcoal deposits are the result of temporary hearths. Even if allowance is made for the loss of cultural material through post-
depositional processes, the quantity and density of material at this site are low and the single occupational layer gives little scope for investigations of cultural change. The modern date from the single charcoal sample, taken at a depth of 25cm in TP/VA-1, is anomalous for such a stratigraphic position and suggests significant disturbance of the upper deposit. While it is obviously impossible therefore to estimate a date for the initial usage of this site, it seems that chert has not been much used as a tool material in living memory of Poha Valley residents, while the date from the nearby site of Mbusurahinitasi (see below) is indicative of human activity of considerable antiquity in this area. Furthermore, the small fragment of a shell armring, possibly of *Trochus*, is paralleled elsewhere in the Poha Valley sites only in the earliest deposits at Vatuluma Tavuro (see below) and prior to about 2500 years ago in the site of Vatuluma Posovi (see chapter 3). Although *Tridacna* armrings (*kato*) are well known in the ethnographic material culture of Guadalcanal, *Trochus* rings have not apparently been recorded and may indeed be an indicator of early settlement. From its position in the basal spit of the test pit this artefact may represent a hint of an early deposit no longer *in situ*.

The nature of layer 2 in TP/VA-2, especially the discontinuous nature of the ash and charcoal flecking, although suggestive of the dumping of material from the dry floor area, did not produce any greater indication of research potential. It is noteworthy however that some of the molluscan remains had evidently been brought in from some distance. This applies not only to the marine shell but also to the fragments of *Melanoïdes* sp. (probably *M. aspirans*) for which the nearest source would be the brackish water swamps backing the narrow north coast plain.

The small quantity of bone, totalling only 4gm in weight, from TP/VA-2, a similarly poor shell component, 20gm in all, and the homogeneity of the deposit suggest that further excavation of such midden deposits in forest environments would yield little result. The test pit within the cave area, although producing similar quantities of shell, is obviously better suited to the preservation of bone, with over 48gm recovered. However, as the majority of this was from a presumably recent deposition, further excavations at this site were not undertaken.

**SG-2-79 Mbusurahinitasi**

The small limestone outcrop of Mbusurahinitasi, nowhere in excess of 5m in height and providing less than a 2m width of dry floor area at its base, is evidently part of the same formation that provides the shelter site of Vatulumanu (SG-2-78, above). The site has no obvious locational advantages over that site, but oral histories suggested the presence of marine shell deposits possibly indicative of midden. The site faces
southeast, in which direction, at a distance of some 30m, is an intermittent stream system. A 0.5m x 0.5m test pit was located in the driest part of the shelter floor area and revealed a surprising depth of deposit.

**Layer 1**

*Depth* 0-5cm.

*Matrix* Surface layer of light brown/grey gritty soil with limestone dust and a few wood charcoal fragments.

**Recoveries**

*Mollusca* fragments of land snail, including *Papuina* sp. and *Trocomorpha* sp.

*Bone* single fragment of reptile bone, no identification possible.

**Layer 2**

*Depth* 5-40cm, spits 2-9.

*Matrix* Compact brown clayey soil, slightly gritty, with ash and charcoal flecking, becoming damper and more slabby from a depth of 10-15cm. Dry sieving through 2mm mesh impossible for deposit below 20cm.

**Recoveries**

*Mollusca* exclusively land snail fauna, including fragments of *Papuina* sp., *Pupina* sp. and *Placostylus* sp.

*Bone* present but highly fragmented, allowing no identifications. A single fragment of crab or crayfish pincer.

*Charcoal* some small fragments of carbonised *Canarium* sp. nut shell.

**Layer 3**

*Depth* 40-60cm, spits 10-11.

*Matrix* Similar to layer 2 matrix but noticeably grittier and separated from it by a thin spread of limestone pebbles. At 50cm a 4cm thick lens of orange clay covered approximately half of the test pit area. At the base of spit 11 abundant charcoal flecks, small particles of ash, and burnt soil and limestone fragments. Charcoal from spit 11 gave C14 sample PP/BUS-C1 (ANU-6740) of 1490 +/- 100 yrs bp.

**Recoveries**

*Stone artefacts* a single volcanic oven stone at 60cm.

*Mollusca* land snail fauna as in preceding layers; two fragments of marine shell at 50-55cm, *Turbo* sp., but of very small size.

*Bone* present but fragmentary and no identifications possible.
Layer 4

Depth  60-80cm, spits 12-13.
Matrix  Thick and heavy orange/brown clay with large limestone block. No observable charcoal flecking.

Recoveries

Mollusca  single fragments of *Turbo* sp. and *Anadara antiquata* probably derive from the interface with layer 3. Land snail fauna represented by *Placostylus* sp. and very large *Trocomorpha* sp.

TP/BUS-1 produced the greatest depth of deposit of any of the cave and rockshelter test pits, although this is probably due to regular in-wash of sediment from the ridge slopes above the site, perhaps associated with horticultural activities including the clearance of forest cover. Indeed, the homogeneous character of the layer 2 sediments, and the regular distribution of land snail fauna throughout them, supports such an origin for the clayey, but still humic, deposits. Sporadic use of the shelter site is evidenced during this period by charcoal flecking, which includes *Canarium* sp. fragments and a very small quantity of bone. The complete absence of edible mollusca in these deposits is surprising, but indicative of irregular and short-term site usage.

The layer 3 deposits are of a different character, with cultural debris in greater concentration, and with oven stone and imported marine mollusca perhaps suggesting longer and more intensive use of the area. The continued absence of freshwater mollusca is noteworthy. This is possibly due to poor preservation of thin-walled shell, although land snail shell does not seem to be so affected. An alternative explanation might be sought in the use of freshwater mollusc shells for the production of lime for betel chewing. Freshwater *Neritina* species are particularly favoured for lime-making by the people of the Guadalcanal interior. The difference in character of the underlying orange clay, with land snail fauna only in its upper margin and the presence of large limestone blocks, suggests little sediment deposition deriving from activities on the ridge slopes prior to the occupation that began at 1500-1300 BP.

The presence of marine shell other than as fossils from the Mboneghe limestone formations lends credence to local traditions of scatters of such shell once extant at this site. The absence of any major midden concentration might be accounted for by its disposal in an adjacent, and heavily silted, sinkhole. Although the occupation horizons are not particularly rich in either artefactual or environmental materials, further investigation of this site and testing of other limestone outcrops in the area, were proposed. Local factors relating to site access unfortunately precluded such plans.
SG-2-91 Vatuluma Pombo

The rock shelter site of Vatuluma Pombo is very similar in its environmental setting to the preceding two sites but is located on ridge slopes on the western flank of the Poha catchment. A gently sloping platform, some 7.5m long and 4.5m wide, lies at the base of a limestone outcrop in excess of 5m in height. The wall of the outcrop has a number of small 'pits' at head height, possibly for holding the rafters of a temporary roof structure. At the northwestern limit of the floor area a large spread of oven stone, 1.5m in diameter, hints at regular usage of the site. Contiguous with this stone spread on its southeastern edge is a low platform 3.0m x 1.5m and 0.3m above the surrounding floor. During the initial site survey a single unworked chert chip and a two Turbo shells were collected from the shelter floor surface. As the rock shelter is known as a favoured area for feral pigs, which sleep along the wall base, the test pit TP/VP-1, 0.75m x 0.5m, was located a metre from the wall on the small raised platform.

**Layer 1**

<table>
<thead>
<tr>
<th><strong>Depth</strong></th>
<th>0-10cm.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Matrix</strong></td>
<td>Loose pebbles in a charcoal-flecked black humic soil matrix.</td>
</tr>
</tbody>
</table>

**Recoveries**

- **Stone artefacts**: a single pink/orange chert chip, 0.1gm.
- **Mollusca**: Turbo sp. (opercula only) and fragment of ?Veneridae. Land snails of Papuina sp., Trocomorpha sp. and Placostylus sp.
- **Bone**: a quantity of burnt bone of Sus scrofa, Phalanger orientalis (canine teeth), Uromys sp. and small frogs. Fish spines and vertebrae may represent freshwater species, possibly including the eel Anguilla marmorata. Total weight: 24.6gm; density: 656 gm/m³.
- **Charcoal**: a few fragments and one partial platelet of carbonised Canarium sp. (probably C. indicum) nut shell.

**Layer 2**

<table>
<thead>
<tr>
<th><strong>Depth</strong></th>
<th>10-17cm, spits 2-3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Matrix</strong></td>
<td>Ashy dark soil with lenses of charcoal and white ash on a compact orange/brown fire-altered soil base.</td>
</tr>
</tbody>
</table>

**Recoveries**

- **Stone artefacts**: two small pieces of unworked chert, one pale brown (1.3gm) and the second pink (0.7gm), and a small sliver, 0.1gm
a perforated stone bead with diameters of 27mm (external) and 7mm (internal), varying in thickness from 10.5mm to 7.5mm, and weighing 3.5gm. See Plate 10.

**Mollusca**
*Melanoides aspirans, Melanoides* sp. (#1), *Pythia* sp., and a Veneridae sp. fragment.

**Bone**
burnt fragments of *Phalanger orientalis* (canine tooth), *?Sus scrofa* and small bird. One piece probably of human bone. Total weight: 17.1gm; density: 650 gm/m³.

**Plants**
a few very small fragments of *?Canarium* sp.

**Miscellaneous**
a single piece of coral.

### Layer 3

**Depth**
17-25cm, spits 4-5.

**Matrix**
Orange/brown soil with small (5-15cm) limestone blocks, generally of a gritty texture and rather friable.

### Recoveries

**Stone artefacts**
a single unworked orange/brown chert flake (0.5gm).

**Mollusca**
*Melanoides aspirans, Melanoides* sp. #1, *Turbo* sp. fragment.

**Bone**
present but small size precluding identification. Total weight: 1.8gm; density 60 gm/m³.

**Plants**
small fragments of *?Canarium* sp.

### Layer 4

**Depth**
25-70cm, spits 6-7.

**Matrix**
Layer 3 seals a 30cm band of broken limestone which in turn overlies large limestone blocks in an orange clay matrix (weathered bedrock).

### Recoveries

Nil.

No radiocarbon dates were obtained from this site and the somewhat undistinctive character of the cultural material fits with the suite of finds from other rockshelter sites of varying ages (cf. for example SG-2-78 Vatulumana and SG-2-79 Mbusurahinitasi). The stone bead from layer 2 is, however, a unique artefact in the entirety of northwest Guadalcanal assemblages and no beads of this type are known ethnographically. The lack of oven stone within the archaeological deposits and a low density of midden refuse do not indicate any prolonged settlement, although the importation of both brackish water shell, marine coral and chert is worthy of note. The quantities of these materials, however, are not sufficiently large to postulate either the regular exploitation
of coastal environments or the existence of established trade networks. Both *Melanoides* and marine shell are used for the manufacture of lime for betel chewing, as is of course marine coral, and could account for the presence of both the small quantity of shell (16gm inclusive of land snail) and the coral at this site.

The small size of the *Canarium* fragments does not conform to a pattern of heavy exploitation, such as is demonstrated elsewhere (cf. for example SG-2-49 Vatuluma Hai Mbau, SG-2-94 Vatuluma Tavuro), and is thus consistent with the record from the sites discussed above. In sum there is nothing in the site’s archaeological record to demonstrate anything but sporadic and short duration occupation.

**SG-2-49 Vatuluma Hai Mbau**

Vatuluma Hai Mbau is the only rockshelter site that lies on the main Poha Valley floor. Located some 10km inland from the Poha River mouth, the shelter is formed by a large conglomerate boulder some 6m in height, overhanging so as to provide a dry floor area some 4.5m x 2.0m (see figure 24). The boulder is located on a flat terrace approximately 8m above the main river bed on its west bank, at the base of a fairly gentle ridge slope. Water run-off from that area is evidently a common event and has formed two small gullies on either side of the boulder.

The terrace has extensive stands of *chimiu* (*Heliconia* sp.) although the area directly in front of the shelter is devoid of any large vegetation. Other plants are typical of riverside habitats and include a number of edible greens including the ferns *tumbu* and *mbanihelu* and the *mobo* tree fern (*Cycathea* sp.). No specimens of either *Canarium indicum* or *Canarium salomonense* were noted in the immediate vicinity, although both occur on the ridges to the east and west. Local informants noted, however, that *Canarium* are scarce further to the south and southwest of this area.

The only surface feature of this well-known hunting camp is a log-edged *umu* oven of very recent construction.

A 1m x 1.25m test pit (TP/VHB-1) was excavated at the foot of the boulder. Deteriorating weather conditions led to the abandonment of 2mm mesh sieving, but wet sieving of all deposit through 6mm mesh was completed. Apart from a somewhat arbitrarily defined surface layer, the deposit above weathered bedrock was essentially undifferentiated.
**Layer 1**

**Depth** 0-5cm.

**Matrix** Orange/brown compact soil (10YR 3/4, pH 7.0) with many small pebbles, especially against the wall of the boulder; no indications of disturbance.

**Recoveries**

**Mollusca** partial *Placostylus* sp. land snail.

**Bone** a single burnt fragment, no identification possible.

**Plants** *Canarium* sp. fragments (see Tables 4.1 and 4.29 for details of all *Canarium* recoveries from TP/VHB-1).

**Layer 2**

**Depth** 5-40cm, spits 2-5.

**Matrix** Very compact, damp orange/brown soil (10YR 3/4, pH 7.0), with small limestone grits and a few small stones becoming slightly lighter in colour in spit 2 at about 20cm depth. At 35cm a 40 x 20cm spread of volcanic stones, all less than 10cm diameter, and partially obscured by the section line, may represent the edge of an *umu* oven feature (see fig. 24b). In the north-east corner a darker patch of soil apparently marks an area of high humus content. In spit 5 the deposit becomes stonier.

**Recoveries**

**Stone artefacts** a total of 20 pieces of chert (see Tables 4.2-4.4). One 4gm piece, at 5-15cm, of an orange and grey banded chert, has unifacial retouch producing a small scaper-like tool 28mm x 21mm x 6mm thick (see Plate 10). The remainder of the material is comprised of unretouched small flakes and chips.

**Mollusca** a single *Balancocchlis glans* (*sisikoivo*) shell from 15cm depth, fragments of *Placostylus* sp., *Papuina* sp. and *Trocomorpha* sp. throughout the deposit.

**Bone** a few burnt and very small fragments, all unidentifiable.

**Charcoal** *Canarium* sp. throughout (see Tables 4.1 and 4.29).

**Layer 2, F1**

**Depth** 40-75cm.

**Matrix** Cut into layer 3 a depression, bordered on one side by a large volcanic block, with charcoal as pieces and as staining and a quantity of *Canarium* fragments. The matrix is essentially a darker continuation of the layer 2 deposits.

**Recoveries**

**Stone artefacts** 5 small chert chips, none with retouch.
Charcoal  a significant concentration of *Canarium* sp. (see Table 4.1 and 4.29). A radiocarbon determination of 330 +/- 80 yrs bp. was obtained from a sample (PP/VHB-C1, ANU-6994) of carbonised *Canarium* sp. nutshell from Layer2/F1.

**Layer 3**

**Depth**  >75cm.

**Matrix**  An orange/brown soil matrix with broken and weathered stones up to 10cm in size.

**Recoveries**

Nil.

*Note:* Layer 3, assumed to represent sterile natural, has the appearance of a weathered bedrock. However, excavation ceased at the layer 2/layer 3 interface due to highly adverse weather conditions and flooding of the excavation area.

Several features of the Vatuluma Hai Mbau excavation results serve to distinguish this site from all other rockshelter deposits excavated in the Poha and Vura valleys. The nature of the deposit, being free of any obvious occupational horizons indicated by ash and charcoal hearth layers and with an almost total absence of edible mollusc species and faunal bone, suggests that activities at this site were not primarily associated with prolonged settlement. The artefactual component of the recoveries is restricted to items of chert, with the single scraper and fine chip debitage suggesting some manufacture of stone tools. It is, however, the density and relatively large size of the *Canarium* sp. remains that is the most remarkable feature of this site (see Tables 4.1 and 4.29). It seems unlikely that its temporary use during, for example, hunting forays would result in such a suite of materials being deposited, especially as shell and bone are so rare despite the proximity of abundant sources of freshwater molluscs (especially various species of *Neritina*) and suitable hunting territory. Similarly, it is unlikely that itinerant users would have utilised *Canarium* to the virtual exclusion of any other food item. Evidently the rockshelter at Vatuluma Hai Mbau served the rather specific function in the past of *Canarium* nut processing, with perhaps some small scale manufacture of chert tools.

The main concentrations of chert and *Canarium* coincide at 10-25cm and in the basal Layer 2/F1 at 40-75cm; the temporal separation between these horizons is not known, but the undifferentiated nature of the sediments suggests a fairly even build-up of material.
SG-2-108 Hauvatu III

In order to provide some indication of the degree to which Poha Valley sites were representative of northwest Guadalcanal inland rockshelters, a single test pit (TP/HV-1), 1.3m x 0.5m, was excavated at the rockshelter site of Hauvatu III in the Vura Valley. The site lies adjacent to a small stream gully on the western side of the first major ridge system west of the Poha River catchment and 5km from the coast.

The test pit was centrally located within the 15m x 2m floor area and abutted the shelter wall. The deposits were removed as single units of stratigraphic layers rather than by arbitrary spits within layers. Four main occupation events could be discerned in the stratigraphy, although their temporal separation may not be very great. Neither the finds or the single date serve to distinguish this site from the general pattern established in the Poha Valley sites.

At the surface a 3cm band soft grey ash (layer 1) overlay, throughout most of the pit, a compacted orange clay 15cm thick (layer 4), with charcoal flecking, probably representing a fire-altered natural soil, and midden debris. Against the shelter wall a compacted ash and charcoal layer (layer 2) occupied a 10cm deep depression in the orange clay, cutting a more consolidated ash, charcoal and oven stone deposit (layer 3) below it which extended to 26cm. A single stake hole cut from the surface of the layer 4 clay extended to 18cm below surface. Sealed by both the clay and the ash and charcoal deposits is a dark, blackish soil 7cm thick (layer 5), noticeably more stony, and with clay nodules, towards the front of the site. The stone includes both fire-cracked limestone and volcanics, the latter up to 18cm in size. This soil layer is defined in its upper margin by black banding and white ash. The basal layer (6) of the site is comprised of an orange/brown ashy soil, with clay elements, grading into a more compact clay and weathered limestone at 60cm.

Recoveries from both upper and lower occupations were not markedly different in character, although chert flakes and chips were restricted to layers 1 and 4. These comprised a chip and two flakes (2.3gm and 2.6gm), all of the same pale brown material, in layer 1, an unretouched chunk (11.8gm) and small flake (0.7gm) of a brown chert from layer 4, and two fire-altered conjoining flakes (totalling 0.4gm) from the base of the same deposit. Molluscan shell of Neritina sp., Melanoides aspirans and Melanoides sp., cf. damonis, numbers of Pythia scarabeus and a quantity of land snail fauna, mainly Papuina sp., Placostylus sp. and Trocomorpha sp. were common to all layers. A single fragment of a Venerid species was recovered from the basal layer.
Bone recoveries from all layers show an emphasis on arboreal animals and Muridae, although the latter are restricted to the upper layers 1 to 4 and bone quantities are small, thus:

Layer 1  
\textit{Uromys} sp., \textit{Phalanger orientalis}, frog. Total weight: 2.7gm; density: 138gm/m$^3$.

Layer 2  

Layer 3  
\textit{Phalanger orientalis}, \textit{Corucia zebrata} and cranial elements of a large reptile. Total weight: 5.1gm; density: 510gm/m$^3$.

Layer 4  

Layer 5  
\textit{Corucia zebrata}. Total weight: 0.3gm; density: 7gm/m$^3$.

Layer 6  
\textit{Phalanger orientalis} and \textit{Corucia zebrata}. Total weight: 1.1gm; density: 1gm/m$^3$.

Crustacean remains in the form of pincer fragments of freshwater or marine crab and crayfish species were present in all levels.

Charcoal flecking is present throughout the site and a sample, PP/HAU-C1 (ANU-6993), from the basal layer gave a C14 determination of 390 +/- 120 yrs bp.

The character of the faunal remains is better defined than in most Poha Valley shelter sites, but this is predominantly a result of preservation rather than the exploitation of a wider range, of species. Molluscan remains indicate collection in both coastal strand and fresh/brackish water environments; indeed local informants regard \textit{Melanoideas} cf. \textit{damonis} as a marine shell. \textit{Varanus indicus} in the Solomons exhibits a marked preference for coastal habitats (McCoy 1980:53) and its presence here may mark coastal trips aimed at a variety of taxa, while the arboreal Murid and \textit{Corucia} bone indicate a complementary exploitation of undisturbed forest habitat.

The contemporaneity of the basal deposits with those of SG-2-49 Vatuluma Hai Mbau serves to reinforce the atypical character of the deposits at that site. Although it must be admitted that none of the shelter sites of either valley system, with the exception of Vatulumana (SG-2-78), offers any great scope for permanent settlements it appears that the usage of rockshelters, as opposed to the true cave sites, involved a wider range of activities than as bases for hunting camps. None of the rockshelter sites exhibit anything but temporary, short-term use, but at those where human occupation has been demonstrated, resources from other environmental zones, such as marine or brackish water shell, cherts and volcanic oven stones, are always present.
THE CAVE SITES: EXCAVATION RESULTS

SG-2-93 Vatuluma Ngolu

Despite its size, the cave of Vatuluma Ngolu is concealed from view until the entrance is gained. This results partly from thick secondary vegetation outside the cave but as much to the local topography. Like Vatuluma Tavuro (SG-2-94), the cave is not set in a major cliff or outcrop but is merely a wide gash in the hillslope with headroom at the entrance as low as 2m. Above the gash the steep ridge slope is covered in thick shrubs and low trees but some 20m distant gives out onto Themeda grasslands. A distinct mound across the entire width of the cave entrance is comprised both of limestone blocks and sediments derived from the ridge above. From the crest of this mound the cave floor slopes steeply down a soft earth and talus slope broken only on the northern side where the cave roof drops vertically to form a back wall and a narrow, 12m x 3m, level platform. On the southern side of the cave the talus slope continues past huge limestone blocks to a narrow, waterworn pipe that gives vertical access to a series of lower chambers, and eventually an underground stream (M. McCoy pers. comm.). The wall that blocks the level platform is actually a very low roof line with a very small gap, less than 0.4m high at its maximum, between it and the floor. Below, the roof line rises again to form a small and inaccessible chamber with highly restricted headroom and choked with debris from the upper part of the cave. A third chamber, with headroom less than 2m, can be gained by crawling through an entrance off the main talus slope, but its floor is covered in thick bat guano and no cultural material deriving from the level platform area was noted. A plan and profile of the upper cave area is given in figure 5.25.

The ceiling of the upper part of the cave has numerous stalactite formations, evidencing considerable water percolation through the thin limestone roof. One of these stalactites, lying against the back wall and above the level platform, carries a number of engraved designs. A heavily waterworn boulder in the main talus slope has very faint traces of what might also be a heavily eroded engraving.

The only areas of the cave suitable for the formation of any archaeological deposit are the level platform and the small niche to the north of the entrance. In addition to the evidence of Russell's 1m square test pit, located directly beneath the engraved stalactite, occupation of the cave is indicated by limited scatters of shell, including Turbo, and a few small chert chips and small flakes on the surface of the mound at the cave entrance.

A cleaning of part of the section of Russell's test pit, TP/RSQ (Roe's notation), revealed 95cm of deposit lying on limestone bedrock and in four main layers (see figure 5.26a). A 10cm thick band of loose ashy soils and charcoal (layer 1a: grey ash, layer
1b: white ash) seals a charcoal-flecked and stony orange clay, 25cm thick, with small lenses of more concentrated charcoal (layer 2). From 35cm to 50cm a thick band of greasy black/orange clay with limestone inclusions (layer 3) forms a distinct break between layer 2 and and a similar stony clay deposit that continues to bedrock and contains small charcoal flecks and shell fragments (layer 4). From the loose soil in the pit a number of unstratified finds were recovered, including 6 very small chert chips (all 0.1gm or less) and a larger, 2.2gm, orange chert flake with minimal 'nibbled' unifacial retouch. Fragments of Canarium sp. nutshell and a small quantity of molluscan shell of two species, Turbo sp. and Melanoides cf. damonis were also present. Burnt pieces of bone were generally too small for identification but possible include Pteropus sp. teeth.

Two further test pits were excavated at the cave, one, (TP/VN-1, 0.5m x 0.5m) in the dry floor of the small niche and the second, atop the entrance mound (TP/VN-2, 1m x 0.5m) and approximately 2m outside the dripline of the cave roof. A larger excavation area, T1, 1m x 3m, was sited on the level platform 0.6m north of TP/RSQ.

TEST PIT TP/VN-1

The two layers of this test pit were devoid of any cultural materials, human activity being demonstrated only by the remains of a hearth indicated by a loose grey/brown soil with ash and comminuted charcoal at 20cm below surface. In the remainder of the square a crumbly grey/brown cave soil (0-5cm) overlies an exceedingly hard-packed orange clay (layer 2) excavated to a maximum depth of 50cm. Dry-sieving of the upper layer 2 clays was impossible and the absence of any accessible water source in the area precluded attempts at wet sieving this deposit.

TEST PIT TP/VN-2

The excavation of the larger test pit produced cultural material to a depth of 25cm (chert chips, volcanic oven stone, and highly fragmented bone and charcoal, including possible Canarium sp.), with a soil profile extending to a maximum depth of 80cm onto a sterile clay intermixed with weathered limestone. The upper layer (1), is a black humic soil of even 20cm thickness with charcoal throughout and evidence of burning in the form of fire-altered soil and stone. Recoveries were restricted to oven stone, both whole and shattered, fragmentary bone and molluscan shell (some evidently land snail fauna), and 9 chert chips and flakes. The later are generally small, with 6 flakes all less than 0.5gm, but there is one large, and partially burnt, triangular flake 49mm x 41mm x
10mm thick (14.9gm) of low grade material. Two conjoining flakes form a small bladelet, with no secondary retouch, 26mm x 1mm x 5mm thick (1.1gm); approximately 75% of the upper surface retains its cortex.

From 20-40cm the deposit is formed of a slabby and greasy brown clay with some small limestone pieces and oven stone, and minute charcoal flecks throughout. It contrasts strongly with the underlying lighter brown clays of layer 3, which are partly defined by a total absence of any land snail fragments and which extend to a depth of 70cm in one corner in a 25cm deep depression. Elsewhere in the test pit layer 3 seals a thick orange clay with weathered limestone blocks and fragments (layer 4); in the depression this is separated from layer 3 by a 10cm thick band of brown somewhat clayey soil with charcoal smears, somewhat similar in character to layer 3 of TP/RSQ.

EXCAVATION AREA T1

Area T1 was positioned so as to provide for the sampling of the layers visible in TP/RSQ and to extend the sample area both to the cave wall and the entrance slope (see figure 25). As might be expected, a generally similar stratigraphy was revealed (figures 26 and 27), except that the area against the cave wall, and extending through into the lower chamber, had evidently been used for the disposal of occupation refuse. The stratigraphy was as summarised below; details of the cherts are given in Tables 4.5-4.7, of all molluscan recoveries in Tables 4.8-4.14, and of charcoal in Table 4.15.

LAYER I

**Depth**

0-5cm

**Matrix**

Very loose surface deposit on level platform surface extending some 1.5m out from the rear wall, comprised of ash, charcoal and fine dust and evidently heavily scuffed. Against the rear wall a pile of volcanic oven stone.

**Recoveries**

*Stone artefacts*

3 small chert chips, none with any retouch, one fire-cracked; numerous complete and fractured volcanic oven stones. see Table 4.8

*Sus scrofa* (incisor); *Canis familiaris* (maxillary, dentary fragment); *Phalanger orientalis* (teeth); *Uromys* sp., either *U. imperator* or *U. rex* (calcaneum); very large murid (pre-maxilla); *Pteropus* sp. (wing bone); Microchiroptera, probably *Hipposiderus* sp(p). (wing bones); *?Chelonidae* (?)plastron
fragment); *Corucia zebrata* (vertebrae); small unidentified reptile. Total weight: 19.6gm; density 272.2 gm/m³. Crustacea (pincer fragments).

see Table 4.15

**Layer 2**

**Depth** 0-5/7cm.

**Matrix** Surface layer at base of cave entrance slope, merging with layer 1 deposit. Dry and friable pellet-like cave soil with abundant limestone pebbles and disseminated ash.

**Recoveries**

**Stone artefacts** 3 small chert chips, one of low-grade material, the other two finer, one black and one pink, a larger, triangular orange/brown flake with well-defined bulb of percussion but no retouch, 25mm x 18mm x 6mm (1.5gm).

see Table 4.9

**Mollusca** *Phalanger orientalis* (femur head); *Rattus exulans* (femur and humerus); Microchiroptera; Skinkidae (mandible); large frog, probably *Discadeles guppyi*; small bone fragments cf. fish or small reptile. Total weight: 3.2gm; density: 25.4gm/m³. Crustacea (pincer fragments).

**Bone**

**Plants** *Celtis* sp. seed cases.

**Charcoal** see Table 4.15.

**Layer 1A, 1B, 1C**

**Depth** 5-20cm on platform, extending to 55cm against back wall.

**Matrix** The divisions between 1, 1A, 1B and 1C are arbitrary and based on location and depth. The entire layer 1-1C deposits are comprised of ash, charcoal and dry cave soil becoming increasingly compacted with depth but with no clear breaks. Thus 1A occupies the level platform area with the 1B and 1C deposits lying against the wall and bounded on the upper side by a large limestone block. Layer 1B extends to a depth of 25cm and 1C to the maximum depth of the excavation against the wall (55cm) and through into the lower chamber. A sample of wood charcoal (PP/NGO-C3, ANU-6996) from the base of layer 1C gave a radiocarbon determination of 600 +/- 140 yrs. bp.

**Recoveries**

**Stone artefacts** 2 unworked small chert flakes from L1A (0.6gm and 0.4gm), 2 similar flakes (1.4gm and 1.0gm) and 4 small chips from L1B, and two small chips from L1C. abundant volcanic oven stone.

**Mollusca** see Tables 4.8 and 4.16.
**Bone**

from L1A: *Phalanger orientalis* (femur head); *Uromys rex* (upper incisor); *Rattus exulans* (humerus); *Corucia zebra* (vertebra); ?Skinkidae; Gekkonidae (cranium). Total weight: 4.4gm; density: 44.4gm/m³.

from L1B: ?*Phalanger orientalis*; *Corucia zebra* (vertebra); ?*Varanus indicus*, Microchiroptera. Total weight: 9.4gm; density: 74.6gm/m³.

from L1C: *Sus scrofa; Phalanger orientalis; Rattus exulans; Uromys* sp. cf. *rex*; Megapodiidae (upper mandible, extinct form); fish; *Corucia zebra; Varanus indicus* (mandible, vertebrae and limb elements). Total weight: 21.5gm; density: 199.1gm/m³.

Crustacea (pincer fragments).

**Plants**

*Cellis* sp. seeds; in 1B: 'wild' *Canarium* sp. seed.

**Layer 3**

**Depth** 20-30/35cm.

**Matrix** A layer of compact, charcoal-bearing, dark brown clayey soil, decreasing to a thickness of less than 10cm at the base of the cave entrance slope on the north side of the trench. On the south side it directly seals layer 4 (figure 27). At the base of this layer and lying directly on layer 3A (which in places is not well distinguished from 3) is an oven or hearth (F1) with a limestone base. Here the underlying clay has been discoloured to a deep orange/brown by heat. A wood charcoal sample from the F1 feature (PP/NGO-C2, ANU-6995) gave a determination of 99.3% +/- 1%M or 55 +/- 80 bp..

**Recoveries**

**Mollusca** see Table 4.10.

**Bone**

large Murid, either *Uromys imperator* or *Uromys rex* (cervical vertebra) associated with F1 hearth. Total weight: 4.0gm; density: 111.1gm/m³.

Crustacea (pincer fragments).

**Charcoal** see Table 4.15.

**Layer 3A**

**Depth** 30/35-55/105cm.

**Matrix** Layer 3 merges, in some places imperceptibly, into layer 3A, a heavier more compact clay than the sediment that seals it. The matrix contains small pebbles and larger pieces of limestone. The deposit is deepest against the northern section of the pit. A discontinuous band of charcoal-stained clay (cf. layer 3 of TP/RSQ) occurs in the northern half of the pit at about 60cm and slopes towards the cave wall. A C¹⁴ sample of wood charcoal fragments from this band (PP/NGO-C1, ANU-6738) gave a result of 2220 +/- 170 yrs. bp. Due to the nature of the sediments sieving was difficult and
the number of recoveries, especially of smaller bone pieces and chert fragments, may partly be due to this problem.

Recoveries

*Stone artefacts*  
a few small shattered pieces of volcanic oven stone in the lower half of the deposit.

*Mollusca*  
see Table 4.11.

*Bone*  
no identifiable specimens due to the fragmentary nature of material. Total weight: 1.8gm; density: 5.9gm/m³. Crustacea (small pincer fragments).

*Charcoal*  
a 5mm x 4mm fragment of carbonised *Cocos nucifera*; see also Table 4.15.

Layer 4

*Depth*  
105-125cm.

*Matrix*  
A very compact and stony orange clay resting, at the northern edge of the excavation, on almost level bedrock. On the cave entrance slope the interface between layers 3A and 4 is marked by an accumulation of weathered limestone in the L4 matrix. With the exception of a small quantity of wood charcoal at the interface with L3A and *Placostylus* land snails (see Tables 4.12 and 4.15 respectively), the deposit was devoid of any cultural or environmental remains.

In contrast to both Vatuluma Posovi (SG-2-1) to the east and Vatuluma Tavuro (SG-2-94) to the west, the deposits at Vatuluma Ngolu yielded not only a small quantity but also a low density of artefactual and environmental remains. The few charcoal fragments in layer 4, evidently (from the number of *Placostylus* land snails) an old ground surface, is an inconclusive demonstration of human occupation. This is especially so in the absence of any other occupational debris. The first positive indication of human use of the area, at around 2350-2050 BP, is shown by a small quantity of material in layer 3A and more forcefully by the charcoal-stained, in-washed clays. In this excavation these deposits were less marked than in layer 3 of TP/RSQ, apparently due to the shielding effect of the small outcrop that marks the eastern end of the trench. Thus the first major indication of a human presence derives from activities outside the cave, it is argued, demonstrate forest clearance and associated burning on the ridge slopes above the cave entrance. The absence of chert and *Canarium*, the relatively low density of molluscan shell (some 36% is from species of Veneridae, the heavy shell weight of which may have skewed the density indices of Table 4.11) and the minimal amount of bone are all suggestive of sporadic usage of the site both during and after a time of rapid environmental change.
The quantity of midden material in the upper layers of the site (1A, 1B, 1C and less so in layer 3) while indicative of more intensive occupation, or more frequent use of the site, is, however, from a mixed deposit, the stratigraphical integrity of which appears to have been compromised by the redeposition of material from the level platform through into the lower chamber, and later against the wall. While the date from the limestone-based hearth in layer 3 (ANU-6995, 99.3 +/- 1.0% Modern) appears anomalous, calibration indicates a date range of between 264 BP and the present, with a 74% probability that it lies between about 140 BP and the present. Although the use of limestone as a hearth (? oven) base suggests temporary use, its construction might have been preceded by the removal of midden accumulations, represented by layer 1C, resulting in an apparent inversion of the stratigraphy. This is strengthened by the observation that the aperture through to the lower chamber would have been larger and allowed for the dumping of such removed material, at a time when the upper part of the layer 3 clayey soils had not yet been deposited. The spread of layer 3 appears to have been limited by the large limestone block that defines the eastern edge of the L1C deposits. The relationship between these layers is by no means clear; the exceedingly restricted space between the cave roof and the lower L1C/L3 interface forced the cessation of excavation before this relationship could be satisfactorily determined. In the absence of any clear break between the L1C midden and the subsurface accumulations of ash, charcoal, shell and bone (L1A and L1B), the recoveries from L1, L1A, L1B and L1C have been combined in the tabulations of artefactual and environmental recoveries. Although this is clearly an unsatisfactory lumping, any analysis based on arbitrary levels would be no more acceptable. As the L1C deposit has provided a date of about 700-500 BP (ANU-6996), and is possibly temporally distinct from the L1, L1A and L1B levels, the chert, shell and charcoal finds from that area are also given separately (see Table 4.16a, b and c).

The conclusions that may be drawn from analysis of the Vatuluma Ngolu assemblages must of necessity be tentative without corroboration from other sites in the area. The very small size of the samples - 17 chert flakes, some 200gm of shell and 65gm of bone - cannot guarantee that any trends that are recognised are a true reflection of reality. Thus the absence of a particular taxon is not necessarily significant, especially in a site where sediment features rather than artefact assemblages or environmental remains create the major stratigraphical breaks. As only the upper layers (L1 and L2) yielded a quantity of material indicative of some stability of settlement, it is to be expected that the character of the horizons will be different as the activities that produced them would have been of a different nature.

The artefact range from Vatuluma Ngolu is small and restricted to volcanic manuports and cherts. Volcanic stone for use in oven cooking is scattered across the surface of the site and occurs plentifully in the upper L1 group of deposits. In a location dominated by the Miocene Mboneghe limestone formation these clearly represent
manuports, the nearest source location being the Poha River bed 1km to the east. The hearth base in layer 3 is formed of limestone, a poor material for earth oven cooking as it has poor heat retention capabilities and shatters easily. Ethnographic information suggests that limestone is used only for temporary hearths and ovens and where volcanic stone is not immediately available \(^1\). The limestone hearth feature thus a temporary use of the site, perhaps even a single event. It also suggests that previous occupation had not resulted in any quantity of volcanic stone, which could have been reused, being brought into the cave unless sediment deposition had obscured any such cache. The quantity of volcanic oven stone in the upper layers and on the surface however suggests prolonged settlement, or several periods of temporary occupation, and a number of importing events.

The chert flakes, including some small chips indicative of the manufacture or retouching of lithic tools, are also concentrated in the upper deposits (see Tables 4.5, 4.6 and 4.7), but the low number from layers 3 and 3A may partially reflect differences in recovery by dry sieving of clay as opposed to ashy soil. With no obvious settlement of the site comparable to that in the upper layers, the density indices for Vatuluma Ngolu are not significant indicators of stone tool usage, trends in manufacturing or importation of material from elsewhere. Indeed the increase in chert in the later deposits is reversed at Vatuluma Tavuro.

Both shell and bone recoveries were poor in any but the surface layers. The general trend in the shell sample, if such can be postulated, shows both an increase in diversity (the number of species present) and an increase in the marine shell component between layers 3 and 1 (Table 4.13). The number of edible taxa being exploited doubles from layer 3 to layer 1 including a fourfold increase in the marine species present. Fresh and brackish water species densities remain fairly static, dropping by some 30gm/m\(^3\), while marine shell densities increase from 19 to 107gm/m\(^3\).

The vertebrate fauna sample is clearly too small for detailed analysis of any significance. While there is little change between layer 3 and layer 1, the components are of interest in their own right. A diverse range of taxa is represented in the collection and of special note are the numbers of large murids endemic to Guadalcanal, whose present range is restricted to undisturbed forest. The bone assemblage here is similar to that of Hauvatu III (SG-2-108), with species from a number of environmental zones and two domestic animals, the pig and the dog, rare or absent in other sites. The marine reptile bone represents the only evidence of exploitation of marine vertebrates in all sites other than a small number of fish from Vatuluma Posovi (SG-2-1). In layer 1C the upper mandible of an extinct megapode (Van Tets pers. comm.), larger in size than *Megapodius freycinet* found commonly throughout the Solomons, gives a further
pointer to human impact upon the fauna to that indicated by a similar find and another extinct taxon (a form of *Centropus*) at Vatuluma Posovi.

Plant macrofossils (Table 4.15) are not well represented in the Vatuluma Ngolu site, although *Canarium indicum* nutshell fragments are present in both layers 1 and 3, the latter also providing a very small fragment of *Cocos nucifera*. The paucity of *Canarium* remains and the absence of anvils or hammer stones which would demonstrate some regularity of processing, adds further weight to the interpretation of this site as, in the main, a temporary camp.

Despite the lack of direct evidence for early human settlement at Vatuluma Ngolu, the environmental indications of large-scale forest clearance just before 2200 BP from sedimentary evidence within the cave, the presence of engraved rock art, present elsewhere at earlier dates (see chapter 5) and the character of later utilisation of the site provide data for the reconstruction of the cultural and environmental history of northwest Guadalcanal.

SG-2-94 Vatuluma Tavuro

The entrance to the cave of Vatuluma Tavuro is concealed from view in a similar way to that of the preceding site. The mouth of the cave, although 15m in width, is only 3m high (plate 13a) and slightly set back into the naturally terraced limestone that forms the geological substrate, one such step of which, 1m in height, lies 10m in front of the cave. The site is presently surrounded by rather open forest but only 100m to the northwest this gives way to *Themeda* grassland ridges that ascend from the north coast. The stream of Tanavura to the southeast provides a water source unaffected by seasonality in rainfall, although flows are reduced in the dry season. The stream name (literally 'towards Vura') relates to the trackway that passes in front of the cave entrance and proceeds northwesterly to the Mbongehe valley and finally to the Vura valley.

The site, although well-known to local residents, does not feature in any of their oral histories, although some very recent usage is indicated by cow bones scattered at the entrance (and deriving probably rather directly, and almost certainly in a clandestine way, from the Mamara abattoir in the Poha Valley). This low use rate may account for the generally undisturbed character of the floor sediments and a number of well preserved surface features (figure 28).

The cave is 17m wide at its maximum (in the rear area) and 21m from front entrance to rear wall and may be divided into three areas. The first of these
encompasses the level area immediately outside the cave entrance which extends just inside the dripline to an accumulation of limestone blocks and boulders that lie across the top of a quite steep slope of loose earth and scree (area 2) leading down into the third area, the level earth and limestone floor of the rear cave. Associated with the front cave area (area 1), both outside and immediately inside the dripline, are a number of limestone-kerbed ovens and hearths with volcanic stone bases. Those outside the cave area are less well preserved than the others, but all are similar in size, a metre in diameter. Small accumulations of fire-cracked volcanic pebbles adjacent to the ovens at the top of the talus slope are of a size and type consistent with their use as covering stones in oven rather than hearth cooking (P. Chachi pers. comm.). Against the north wall of the cave a level platform formed by a bench in the limestone carries two small concentrations of Canarium nut anvils; similar pits are also located adjacent to one of the ovens and on a large boulder outside the cave entrance. On the vertical face of the platform against the north wall a small panel of engraved art, scarcely visible under normal lighting, has been rather heavily waterworn and in places overlain by redeposited calcium carbonate ('flowstone'). Evidence of quite heavy water percolation is evidenced in the upper parts of the cave (area 1 and parts of area 2), not only by significant deposits of flowstone but also by the stalactite development in its roof area.

The talus slope (area 2) that descends into the rear of the cave, some 5m below the level of the entrance, is devoid of any man-made structures, but oven stone derived from area 1 is lightly spread over the surface and in greater accumulations against the south wall. At the top of the slope the cave earth is, in places, covered with a 1-2cm thick plating of flowstone. At the base of the slope and coincidental with a change in roof line (figure 29) that also serves to divide the cave into 'wet' and 'dry' areas based on evidence of water seepage though it, the floor levels out (area 3). Here the surface is covered with only a thin surface deposit of loose soil showing no signs of scuffing or disturbance, although a few small (2-3cm diameter) holes in the floor surface indicate where water drips have come through from the limestone roof. Headroom throughout the cave is nowhere restricted, being 4m or more in both areas 1 and 3 and 2.5m at its lowest point midway down the talus slope of area 2.

The floor of the cave against the walls is littered with both small and large limestone blocks and occasionally fire-cracked volcanic stone; at the cave rear the earthen floor of area 3, some 9m x 9m, is edged by outcropping limestone. At the junction of the earth floor area and the base of the talus slope on the northern side of the cave, a 1m diameter ring of limestone blocks with a base of limestone pebbles contains a human burial of which only the long bones remain. Despite the lack of knowledge of any burials at this site, landowners were reluctant for the bones to be disturbed and no work was undertaken in its immediate vicinity for this reason.
In area 3 a number of surface finds were made, including a few Turbo shells, a fragment of a polished volcanic stone abrader or whetstone and, against the south wall, a clamshell kato armring fragment\(^2\) (see Plate 10). This latter item has a 'D' section with the upper and lower surfaces parallel to one another and measures 76mm in external and 60mm in internal diameter, with a 9mm thickness.

A datum was established in the rear of the cave from which all excavation depths were measured with a Dumpy level. A baseline was established running from the rear cave wall to a point 11m beyond the dripline. From this line a 1m grid was set out by triangulation and the site profile measured and drawn. Squares of the grid were identified by a letter and number combination; thus excavation area T1 encompasses squares J14, J15, K14 and K15 and area T2 squares L20 and half of L19.

A 1m x 0.5m test pit in the level cave floor of area 3 demonstrated a well stratified series of four main layers; this area was later extended to a 2m x 2m excavation area (T1). A second pit (T2) was excavated against the south wall of area 3 at the base of the talus slope, revealing 4 disturbed deposits. As area T1 provided the best series of occupation horizons and was essentially an undisturbed deposit throughout, it is described in more detail than T2, and the tabulations of excavated materials refer only to finds from that excavation.

Area T1 was excavated in 7 spits of approximately 5cm each and following the observed stratigraphy. All sediments excavated were sieved, with 50% being wet screened, the water being piped to the cave via a bamboo conduit (tosito) from the Tanavura stream; both wet and dry sieving used 6mm and 2mm mesh sizes. Sieve residues were sorted on site, recoveries bagged, and samples of the finer fractions were retained with the remainder discarded. Excavations in both T1 and T2 were conducted under artificial lighting.

The stratigraphy and recoveries from area T1 are described below (figures 30 and 31); details of the cherts, molluscan shell recoveries and carbonised plant remains are given in Tables 4.17-4.19, 4.20-4.25 and 4.26 respectively. The density figures for molluscs are calculated from shell weights exclusive of the original test pit finds, as part of the shell component from that excavation was lost during transport from the site.
EXCAVATION AREA T1

LAYER 1

**Depth** 0-2cm.

**Matrix** A thin layer of ashy soil, dust and a few limestone pebbles with abundant charcoal. A somewhat arbitrary layer but scuffed to some degree and distinguished from the underlying deposit by the latter’s more compact nature. Colour 10YR 4/1; pH 8.5.

**Recoveries**

**Shell artefacts** a preform of a shell bead, drilled (from both sides) but unpolished, with the toothed edges of the bivalve rim from which it is made still visible. The preform has a triangular shape with rounded apices and measures 8mm x 7mm x 1.5mm thick. The central perforation measures 1.55mm in diameter. See Plate 10.

a 32mm long armband fragment of clamshell (*Tridacna*), rather worn and with patches of an orange surface patina. The ring is 12mm thick with a flattened oval cross-section. When complete, the diameters would have measured 118mm (external) and 90mm (internal). See Plate 10.

**Stone artefacts** 2 small chert chips, both 0.1gm and reddish brown in colour.

**Mollusca** see Table 4.20

**Bone** ? *Sus scrofa* or ? *Homo sapiens* (based on bone structure and thickness); *Canis familiaris* (tooth root); Skinkidae (mandible); large frog, probably *Discadeles guppyi*. Total weight: 12.5gm; density 144gm/m³.

Crustacea (numerous pincer fragments).

**Plants** *Celtis* sp. seed case.

**Charcoal** see Table 4.26.

**Miscellaneous** a single piece of staghorn coral, 20mm long.
a single shard of bottle glass.

LAYER 2

**Depth** 2-9cm, but to 13cm in corner G, spits 2-3.

**Matrix** A very compact deposit, mainly of grey/white ash on an orange/brown (5YR 5/4) fire-altered soil (pH 8.5). A few small volcanic stones but none unequivocally oven stone. Abundant charcoal. Disturbance in the form of a single tree root crossing squares K15 and J15 and into J14. In spit 3 and cut into the underlying layer 3 from a depth of 7cm below surface, an oval pit, 20cm x 15cm and 6cm deep, was packed with whitish ash and a dense concentration of *Canarium indicum* nutshell (see figure 31, plate 2b). The pit was surrounded by patches of white ash, burnt soil and scatters of charcoal and additional *Canarium* shell. In corner G the base of layer 2
drops into a further depression, possibly a hearth feature but not defined by any stone kerbing.

**Recoveries**

**Shell artefacts**

two small perforated white shell beads (cf. 'shell money'), (1) 4mm diameter, 1mm thick, 1mm offset perforation drilled from one side only; (2) 4mm diameter, 1.5mm thick, 1mm offset perforation drilled from both sides. See Plate 10.

**Stone artefacts**

17 chert pieces, comprising 9 chips of fine debitage all reddish brown in colour and 0.1gm in weight; 7 slightly larger flakes and chips, none worked, of which two retain a small area of cortex, 6 of similar material to the debitage chips and 1 of a coarser grey stone; 1 larger flake, unworked, of a fine brown chert with shattered surface (see Plate 11).

**Mollusca**

see Table 4.21

**Bone**

large *Uromys* sp.; small murid (incisor); *?Homo sapiens* (possible cranium fragment); fish (spines); *Varanus indicus* (tooth); snake (vertebrae). Total weight: 15.3gm; density 24gm/m³.

**Plants**

*Celtis* sp. seed cases.

**Charcoal**

see Table 4.26. Some of the *Canarium indicum* fragments have small surface spikes. A C¹⁴ sample (PP/TAV-C4, ANU-6990) of wood charcoal and carbonised *Canarium* nutshell from the base of layer 2 gave a result of 970 +/- 110 yrs bp.

**Miscellaneous**

28 staghorn coral pieces, totalling 126gm. One of the pieces, 17mm long and with a 6mm diameter, is either water-rolled or polished (cf. similar pieces from SG-2-1, Vatuluma Posovi).

**Layer 3**

**Depth**

9-23cm.

**Matrix**

A hard, slabby and gritty banded clay (7.5YR 4/2, pH 8.5), rather damp and greasy, with minute charcoal flecks throughout. On trowelling the clay broke into slabs and blocks along well defined horizontal planes, consistent with its deposition by water action. In square J15 two types of disturbance were noted: (1) a series of small holes, each about 5cm in diameter, with a small group of three holes having small limestone pebbles on their edges (see figure 31), possibly stake holes associated with the hearth pit in layer 2, and (2) an animal burrow (F2) extending diagonally across the square from a point adjacent to point H on the section line at the L3/L4 interface. Slightly dipping, but not penetrating layer 4 in square J15, the burrow terminates in a small chamber (see figure 31). At the end of this burrow a large chert blade was discovered (plate 11); although it seems unlikely to have derived from layer 2 above, its stratigraphical position is in some doubt. In much of square K14 layer 3 rests directly on basal limestone.
Recoveries

*Stone artefacts*  
18 chert pieces of which 3 are small chips (of grey and reddish brown colour), 9 are flakes of which one is a fine yellow chert and the remainder coarser grey or beige stone, and 5 are larger flakes ranging from 2.3gm to 12.0gm. Of the larger flakes two are of a coarse mottled grey chert (see Plate 11). Three of the pieces retain very small amounts of cortex; none shows any retouch. The largest flake (see Plate 11) was found in the fill of F2, and, as noted above, is stratigraphically insecure. The 75.4gm flake, with some minor unifacial retouch on one edge, has a triangular cross-section and measures 70mm in length and 20mm in thickness. In form it resembles an unfinished adze, the 'butt' being 38.5mm wide and the 'blade' 56mm wide. Black deposits on both surfaces tested positive for the presence of mammalian blood (T. Loy pers. comm.).

*Mollusca*  
See Table 4.22.

*Bone*  
Snake (vertebrae). Total weight: 1.4gm; density 1gm/m$^3$.

*Plants*  
*Celtis* sp. seed cases.

*Charcoal*  
See Table 4.26. One nutshell fragment probably of *Canarium salomonense*. A date of 820 +/- 180 yrs bp was obtained from a wood charcoal and carbonised *Canarium* nutshell sample (PP/TAV-C3, ANU-6989) from the base of layer 3.

*Miscellaneous*  
a single fragment of coral.

**Layer 4**

*Depth*  
23-50cm.

*Matrix*  
A loose, friable and fine brown cave soil (5YR 3/3, pH 8.5), rather ashy, with volcanic oven stone fragments. Directly seals basal limestone over the the entire excavation area where limestone was not already exposed.

Recoveries

*Shell artefacts*  
*Trochus* armring fragment, 13mm long and 5mm thick, with upper and lower faces of its 'D' cross-section parallel. Diameters would have measured 75mm (external) and 62mm (internal). See Plate 10.

*Stone artefacts*  
31 chert pieces, comprising 3 small unworked flakes of a fine light brown material, the remainder chips and large flakes of a coarse, somewhat sandy-textured chert, grey or light brown in colour with mottling and banding. Two of these latter pieces might be considered as blade tools: (1) with a steep back, 45mm x 29mm x 15mm thick; and (2) 48mm x 30mm x 5mm thick (see Plate 11).

*Mollusca*  
See Table 4.23.

*Bone*  
?*Rattus* sp. (lower incisor, possibly of *Uromys porculus*);  
*Uromys imperator* (right mandible and incisor);  
*Uromys rex* (lower and upper incisors); large murid or *Phalanger orientalis*.  

(bone structure indications only); *Corucia zebrata* (maxillary fragment); *Varanus indicus* (mandible); Skinkidae (mandible); large snake (vertebrae). Total weight: 22.3gm; density 38gm/m³

*Celtis* sp. seed cases.

see Table 4.26. Two radiocarbon determinations were obtained for samples from the basal spit of layer 4: PP/TAV-C1 (ANU-6737) of wood charcoal of 3400 +/- 130 yrs bp. and PP/TAV-C2 (ANU-6988) of wood charcoal and carbonised *Canarium* nutshell of 3810 +/- 70 yrs bp.

**LAYER 5**

**Depth**  50- >200cm.

**Matrix**  In square K14 apparently limestone bedrock but in K15 and J15 limestone boulders. The surface in J14 is rather pebbly. Boulders, up to 1.5m in size, were removed to a depth of 2m in square J15 without reaching bedrock.

**Recoveries**

**Mollusca**  a few *Melanoides aspirans* shells in the interstices but evidently derived from layer 4.

**EXCAVATION AREA T2**

The smaller excavation area T2 was excavated according to the stratigraphy rather than by regular spits, partly because of the disturbance of the deposits by features seen on the removal of layer 1, the surface accumulation of ashy dust and talus debris. Despite the absence of such well defined horizons as were present in area T1, the data from this 1m x 1.75m area against the cave's southern wall accords well with the sequence provided by the larger excavation area.

**LAYER 1**

**Matrix**  A deposit of very loose ashy soil and dust up to 10cm thick in places but generally only 5cm deep, with broken volcanic oven stones and larger blocks of limestone.

**Recoveries**

**Stone artefacts**  a single chert flake of a fine reddish brown material with no retouch (0.4gm).
Mollusca

some 65gm of shell of 9 food species (including *Melanoides* spp., *Neritina* sp., *Turbo* sp., *Thiara* sp., *Pythia scarabeus* and a single *Lambis lambis*, a species not represented in area T1. Land snail fauna was also present.

Bone

restricted to small fragments and representing *Homo sapiens*, *Phalanger orientalis* (vertebra and molar tooth), a murid (cranium base) and a reptile (vertebrae); the latter were unburnt and may represent a natural deposition. Total weight: 13.9gm. Crustacea (pincer fragments).

Plants

*Celtis* sp. seed cases.

Charcoal

*Canarium* sp. nutshell throughout.

**Layer 2/F1**

Matrix

A more compact version of layer 1 spread rather evenly across most of the area, but up to 75cm from the cave wall and particularly against it, still loose and with many limestone blocks and pebbles (L3). Basally, in the northern quarter of the area, this deposit lies on a compact orange/brown soil, F1, apparently fire-altered and presumably representing a hearth or oven floor (cf. base of layer 2 in area T1). Elsewhere this base is absent, the loose deposits directly sealing layer 4.

Recoveries

**Shell artefacts**

a single creamy chert chip (0.4gm) from F1.

**Mollusca**

50gm of shell from layer 2 of similar species content to layer 1, with the addition of single valves of *Periglypta puerpera* and a *Barbatia* species. In F1 an additional 43gm of shell including 23gm of *Turbo* sp., the remainder fresh or brackish water species (cf. layer 2 in area T1).

**Bone**

in layer 2 *Homo sapiens*, a mandible of *Rattus exulans*, *Varanus indicus* (vertebrae), Skinkidae (dentary fragment), *Rattus* or *Phalanger orientalis* vertebrae, and vertebrae, ribs and jaw of a venomous snake, possibly a natural deposition. In F1 a single snake vertebra. Total weight, excluding human bone: 12 - 22.2gm, F1 - 8.7gm.

**Plants**

*Celtis* sp. seed cases.

**Charcoal**

*Canarium* fragments. From a sample of wood charcoal from F1 (PP/TAV-C6, ANU-6992) a radiocarbon date of 850 +/- 110 yrs bp. was obtained.

**Miscellaneous**

a single coral fragment (L2).

**Feature 2**

Matrix

from the surface of layer 2 (possibly layer 1) an irregular pit, poorly defined except as a darker stain in section (see Plate 13b), with a matrix essentially of layer 2 material and a basal spread of small pebbles. It contained a large
quantity of human bone, interred as a fragmentary skeleton, with many loose teeth scattered throughout its depth (to 30cm).

**Recoveries**

*Stone artefacts* a single orange/brown chert chip (0.3gm).

*Mollusca* 11gm of *Melanoides* spp., *Neritina* sp. and land snail fauna.

*Bone* partial human skeleton.

**Layer 3**

*Matrix* A deposit of loose ash, large and small limestone blocks, volcanic oven stone and abundant charcoal that occupied the southern half of the excavation area where the density of the talus (and ?rockfall) had not allowed for the use of the area as a hearth. The deposits continues throughout the jumbled blocks against the wall and into an aperture created where the wall base slopes away from the large blocks. This layer merges into layer 2 and is only distinguished by its much looser character and evidently disturbed nature.

**Recoveries**

*Stone artefacts* an oval volcanic oven stone, 88mm long with a diameter of 70mm and weighing 385gm, re-used as a hammer stone, presumably for *Canarium* nut processing; see Plate 11.

*Mollusca* 35gm of shell, with *Turbo* sp., *Barbitia* sp., *?Trochus* sp. and the usual range of fresh and brackish water species.

*Bone* no identifiable elements, save for a fragment of human bone. Crustacea pincer fragments throughout.

*Charcoal* *Canarium* nutshell.

**Layer 4**

*Matrix* Sealed by L3 and abutting the large blocks that choked the southern half of the excavation area, a 20-25cm thick layer of slabby orange/brown clay, with charcoal flecks throughout.

**Recoveries**

*Mollusca* 16gm of fresh and brackish water species, including one Veneridae fragment.

*Bone* 2 reptile vertebrae (0.5gm). Crustacea (pincer fragments).

*Charcoal* *Canarium* sp. nutshell fragments. A sample of wood charcoal and *Canarium* nutshell (PP/TAV-C5, ANU-6991) from the layer 4/layer 5 interface gave a radiocarbon determination of 2380 +/- 250 yrs bp.
Layer 5

Matrix

A mass of large and jumbled blocks covering the entire excavation area and against which the layer 4 deposits abut in the northern half of the area. The layer 4 clays seal a basement of these blocks, except against the cave wall where the layer 3 deposits become a sterile mixture of smaller limestone fragments and a damp, but still loose, cave earth. The deposition of basal clay in this area appears to have been impeded by the large limestone blocks. Excavation ceased when the removal of the blocks became impossible due to their size and weight.

Recoveries

Nil.

The areas excavated at the Vatuluma Tavuro site demonstrated a similar stratigraphy across the site, the layers each in agreement as regards character of the sediments and their contents and the radiocarbon determinations obtained for them. The basal occupation layer (L4) of area T1 was not, however, represented in area T2, although this might be concealed by the large limestone blocks of that area. Two major occupation horizons are demonstrated by the stratigraphy; the earlier by T1, layer 4 and the later by T1, layer 2 and T2, layer 2/F1 and probably L3. Sporadic use up to the fairly recent past is indicated by the surface layers in both areas, the burial (F2) in layer 2/F1 of T2, the surface burial feature at the talus slope edge and the stone-kerbed ovens and hearths at the cave entrance.

The main occupation horizons are separated in area T1 by the layer 3 clays, which are largely devoid of shell and bone, and which are represented in area T2 by layer 4, a similarly depauperate deposit. The nature of these clays suggests heavy inwash of sediment from the slopes above the cave.

The earlier occupation is dated by two radiocarbon determinations (ANU-6737 and ANU-6988) on each side of 4000 BP barely overlapping in their range at 2 sigma. In area T1 the date provided by ANU-6989 is stratigraphically inconsistent with ANU-6991 from the base of the clay deposit in area T2. As ANU-6990 is indistinguishable from ANU-6989 at 1 standard deviation the reason for the anomaly may well be the introduction of contaminants associated with the animal burrow in the area from which the sample came. The date of 2750-2150 BP provided by ANU-6991 is comparable to that for a similar clay deposit at Vatuluma Ngolu and seems more acceptable on those grounds.
The upper occupation horizon in both areas is comparable in age, determined in area T1 by ANU-6990 at about 1000-750 BP and in area T2 by ANU-6992 at 900-700BP; these two dates show considerable overlap in their ranges at 1 sigma. Although in both areas the surface layer is evidently similar in character to the layer 2 deposits, its looser nature and the glass fragment in area T1 indicate a small amount of recent disturbance and recent use. Local residents, however, professed no knowledge of the use of the site, save as an infrequently used hunting shelter.

Although artefacts were by no means plentiful in the Vatuluma Tavuro excavations, they do allow for some discussion, especially in relation to other rockshelter and cave sites of the Poha Valley catchment.

The shell artefacts from area T1 include three armring pieces, with a fourth as a surface find. From the earliest occupation a Trochus ring fragment is securely dated by ANU-6988 at 4400-4100 BP and thus corroborates the age of a similar fragment in the Vatuluma Posovi site (SG-2-1; see chapter 3) in a deposit dated at 4800-4150 BP (ANU-6734), though at the Posovi site Trochus armring fragments are found in the later deposits also. In the upper L1 occupation of area T1 a larger armring fragment of Tridacna dating to within the last 1000 years and a similar fragment as a surface find against the south wall of the cave are of a type known as kato, widely used as a female body ornament in many areas of Guadalcanal to the present day. Other ethographically known artefacts are the two small white beads, identical in form to that from SG-2-78, Vatulumana, which, threaded on stings, form a widespread shell 'currency' used throughout the central Solomons with known centres of production in west Malaita and the Arosi area of northern Makira (San Cristobal). The presence of a bead pre-form, however, suggests the local manufacture of such items and supports a commonly made assertion by Guadalcanal people that formerly shell currency did not originate from Malaita but from local sources, especially the Aola area. In Marau, the home of an emigre 'Are'Are group from west Malaita, shell currency bead manufacture is also attested by shell bead smoothing stones, a common surface find (Roe n.d.).

Patterns of chert distribution (Tables 4.17-4.19) in T1 suggest both a decrease in chert usage (Table 4.17) and a change in chert types between layer 3/4 and the later occupation of layer 2. Similarly, there is a general reduction in the size of individual chert pieces, with 76% of those in layer 2 being less than 0.5gm in weight, as against 26% in layer 4 (see Table 4.19). The chert material in upper layer 2, both of T1 and T2, is almost wholly comprised of small chips and flakes of a fine, glassy textured stone of a variety of colours. In layers 3 and 4 of area T1 such material is scarce and restricted to a small number of chips. The generally much larger material from these deposits is of a coarser grained, sandy textured stone, varying little in colour but usually grey or light brown with small inclusions and banding. This makes the material similar to the porphyroid cherts from the Mbirao Volcanics formation of eastern Guadalcanal
described by Hackman (1980:18-20, plate 4), the Malaitan 'zoned nodules' (Hughes 1971), a single piece from Vatulumana (SG-2-78) as well as a nodule recovered from the islands of Marau Sound⁴ (see Plate 12). This contrast in the character of the chert material is marked, and although this need not reflect a different source for the chert itself (D. Ellis pers. comm.), it does at the least suggest a change in cultural preference between the two phases of occupation.

Few of the chert pieces can be classed as formal artefacts (cf. the Vatuluma Posoví material) and retouch is rarely encountered. The presence of cortex on some fragments and chips of fine debitage argues for the in situ manufacture, or reworking, of stone tools. the larger flakes from layer 3 of area T1 generally have rather straight, fine edges consistent with their use as hand-held blades. The large, and stratigraphically insecure, adze-like chert artefact from F2 in area T1 has evidently been used as a butchering tool as demonstrated by the presence of mammalian blood residues; similar, but untested, deposits on some of the other flakes may indicate a similar usage for them also.

The environmental remains from Vatuluma Tavuro further serve to characterise the distinction between the upper and lower cultural horizons hinted at by the artefactual recoveries. Shell midden is present in both area T1 and T2, although its density is significantly reduced in the clay layers of both excavations (L3 of T1 and L4 of T2). This reduction, together with a similar decrease in bone and plant macrofossils, is indicative of a very sporadic use of the cave. Indeed, permanent occupation seems to have ceased from about 2750-2150 BP at the beginning of a hiatus lasting until reoccupation between 1000 and 700 BP. The species content and their relative frequencies in the two main occupation phases demonstrate a concentration on brackish and freshwater species, notably the *Melanoides* group (see Tables 4.20-4.25). In the earlier occupation over 80% of the shell, by weight, and 57% of the shell species represented, originate from freshwater or brackish water environments. The species, including Veneridae bivalves absent from the upper occupation horizon, are indicative of the presence of both mangrove estuaries and brackish swamps. By the time of the second occupation the mangrove bivalves have disappeared and have been replaced, to some extent, by a larger quantity of marine gastropods. Thus the total marine component of shell increases from 3% to 12% of total weight between layers 4 and 2, while the fresh and brackish water species decline from 82% to 56%, coincident with a 50% fall in diversity.

These trends suggest significant change in coastal environments over the approximately 4000 year history of the use of the Vatuluma Tavuro site. Such change is also suggested by the results of the pollen coring programme at Riuaniu (see appendix 1). At the time of initial occupation it would appear, from the shell evidence,
that mangrove-fringed estuaries and shoreline dominated the coastal scene. At this time offshore conditions did not support large numbers of marine reef gastropods but were conducive to the presence of mud-and sand-dwelling bivalves. By the time of the second occupation coastal conditions had apparently changed, with a significant reduction, perhaps even obliteration, of the mangrove swamps indicated by the total absence of mangrove bivalves, as a result of rapid sedimentation and a consequent build-up of a major beach ridge. This may have been exaggerated by uplift events (F. Taylor, pers. comm.) and the stabilisation of the 6000 BP sea level maximum. Brackish water species continued to thrive in the backswamps that formed against the beach ridge, as at the *Terminalia* and *Pandanus* swamp at Mamara less than 2km west of the Poha River mouth and almost directly below the Vatuluma Tavuro site. The beach ridge build-up and the slowing of sedimentation rates appear to have allowed the recolonisation of the area by corals and reef mollusca, especially the gastropods *Turbo* and *Trochus*.

The increased sedimentation postulated above has its counterpart at the Vatuluma Tavuro site, and indeed at Vatuluma Ngolu, in a band of essentially sterile, inwashed clays demonstrative of forest clearance on a large scale, to which the *Themeda* grasslands adjacent to both sites bear witness. Other indications of forest clearance are provided by the almost complete absence of the strictly arboreal *Trocomorpha* and *Papuina* landsnails, and reductions in the densities of *Placostylus* and *Partula* in the late occupation phases at Vatuluma Tavuro; land snail faunas tend to be richest in limestone areas retaining soil and leaf litter cover (Peake 1968: 329). This period of clearance, associated with intensive agricultural activity on the ridges and ridge slopes, has little associated cultural material evident in any of the three cave sites of the northern Mboneghe limestone fringe. Thus at Vatuluma Posovi the radiocarbon dates indicate a lapse in occupation between about 2500 BP and 900 BP (although some use is attested at about 1200 BP) and the later occupation at Vatuluma Ngolu is preceded by the inwash of sediments from about 2350-2050 BP, with occasional prior usage demonstrated by, *inter alia*, the presence of Venerid bivalves. At the Vatuluma Tavuro site, dates of 2750-2150 BP in area T2 at the base of the clays and of between about 900 and 750 BP for the occupation above them bracket the clearance phase.

Other evidence of environmental change and manipulation is provided by the bone and plant materials. In the earlier occupation the faunal material indicates an emphasis on the predation of the species restricted to largely undisturbed forest, especially the large endemic murids of the *Uromys* genus. In the later phase reduction in forest habitat is indicated by the complete absence of these taxa and a general diminution in the importance of terrestrial vertebrates as a food source. Bone recoveries from Vatuluma Ngolu and the rockshelter sites with occupations of a similar age (Vatulumana, SG-2-78, Vatuluma Pombo, SG-2-91 and Hauvatu III, SG-2-108; see
Tables 4.27 and 4.28) suggest that by the time of the second phase of use of Vatuluma Tavuro, pig, dog, Phalanger (not unequivocally identified in pre-1000 BP contexts) and Rattus exulans had become well established, and possibly in the case of pig and dog were a factor in the reduction of the range of the Uromys rats. Evidently, however, these species were still common in the undisturbed and possibly unpopulated areas of the inland forest (cf. the bone material from SG-2-91 for example).

Canarium nutshell is found throughout the deposits, although its quantity and importance are demonstrably greater in the later occupation (see Table 4.26). In the basal levels Canarium indicum, one of two edible Canarium species in Guadalcanal (the other being the 'wild' Canarium salomonense), was not positively identified, although nutshell of the genus was present in small quantities. In the later occupation phase Canarium indicum had assumed great importance, suggesting the development of an arboricultural component in the economy of the area, similar to that demonstrated in the Santa Cruz islands by Yen (1974; 1976:66; 1982:288-291). The nutshell, especially from F1 in layer 2 of T1, exhibits a significant variety in size and shape of nuts, as though the produce of many trees (Yen pers. comm.). Furthermore, the presence of nut-cracking anvils in the cave and a hammer stone from the later occupation in area T2 may indicate the regular processing of Canarium. This emphasis on what is now a major crop of the Guadalcanal subsistence economy is also reflected in the density and size of the Canarium finds at Vatuluma Hai Mbau (see Table 4.29), but not so clearly at Vatuluma Ngolu. The spiky character of some of the nutshell in F1 of area T1 is suggestive of storage prior to processing. Local informants who still use Canarium storage racks in their houses note that after some time the shells exhibit just such a surface texture.

The tree crop suite at this site is restricted in terms of direct evidence to Canarium indicum and Canarium salomonense, the latter based on a single identification from layer 3 of area T1. Indirect evidence for the presence and use of betel nut (Areca catechu) is given, however, in the form of the large quantity of marine coral in layer 2, probably for the manufacture of lime. Lime is known ethnographically from other areas of the Solomons, especially the western islands, to have been used also as a hair-bleaching agent, although such use is not apparently recorded from Guadalcanal. It is, however, an essential part of much sorcery and traditional medicine.

The final date of abandonment of the cave as a settlement site is not clear. The lack of any oral history suggests that at least 100-150 years have elapsed since it was regularly used. The burial in area T2 and the surface burial are evidently not associated with the occupational phases of the layer 2 deposits and perhaps indicate the use of the cave as a mbeku area (cf. SG-2-90, Mbulumbaka), especially as cranial fragments seem to be absent.
A TENTATIVE SEQUENCE FOR THE POHA VALLEY SITES

The rockshelter and cave sites of the Poha River catchment and the Hauvatu site in the Vura area provide a range of evidence that may be used in the creation of a chronological sequence for human activity in the northwest Guadalcanal forests and coasts. This evidence includes both cultural material, in the form of a limited range of artefacts and a varying density of midden debris, and indicators of environmental change and adaptation. Changes in environmental conditions, particularly the clearance of forest for horticultural activity, with consequent changes in coastal resources due to increased sedimentation rates and also through natural processes of uplift and shoreline progradation, are suggestive of a massive human impact from about 2750-2150 BP. The re-use of cave sites on the southern fringe of the present Themeda grassland ridges and the initial use of rockshelters in the inland forest areas are indicated from about 1500 BP to 1000 BP. By this time the economic base had been widened and included pig husbandry and the cultivation of tree crops with a continuing exploitation of natural shell and the remaining vertebrate fauna. The latter, probably due to habitat loss, had either been forced into undisturbed forest at higher altitudes, or had been reduced in numbers.

Faunal extinctions are demonstrated in the archaeological record by evidence of three previously unknown bird species, a large megapode, a large Cuculid (cf. Centropus) and a large parrot (cf. Probosciger in size). Unfortunately most of this evidence comes from insecure or unknown contexts so that dating the demise of these forms is problematical\(^5\). The megapode, however, is represented at two sites: at Vatuluma Posovi in layer 3(II) of excavation area T1B and thus dated between 6450 and 4150 BP, and at the Vatuluma Ngolu site in the layer 1C deposits of area T1 dated by ANU-6996 at 700-500 BP. From the megapode evidence it would appear that at least some of the extinctions were not abrupt impacts caused by direct exploitation but rather long processes associated with habitat alteration and/or destruction. As such they would fit Diamond's "sitzkrieg" model of slow attrition rather than a "blitzkrieg" of overhunting (Diamond 1989:169-170). This would be especially true if the apparently late entry of the dog to inland Guadalcanal is confirmed by further data; the recent collapse of the endemic murid populations of the island is almost certainly associated with a recent increase in the feral dog and cat populations and a consequent widening of their range up to the high altitudes of Mount Popomanaseu (Flannery 1987, 1991).

Evidence for the period between about 2200 BP and 1000 BP, the latter date also coincident with the cessation of major burning events in the north Guadalcanal Plains pollen record (see appendix 1), is largely lacking in the rockshelter and cave sites. The move back to the resources of the forest fringe appears to be a response to further
environmental changes caused by agriculture, and especially soil fertility depletion in environments degrading to grassland.

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Footnotes

1Much care is taken with the choice of appropriate stone for the construction of domestic ovens. Favoured stone types are named and are selected for their heat-retention capabilities and low incidences of heat fracturing. Size and shape are also important factors in the choice of stones for immersion-cooking - i.e. the boiling of foods in wooden bowls (popo). Some Poha Valley residents opined that the best oven stones were obtained from a source near Mbambanakira on the south-west coast of Guadalcanal and that they had been an item of exchange before World War II. Oven stones are seldom discarded during settlement relocations. This accounts for the general lack of such material as surface scatters at old settlement sites in the Poha Valley catchment.

2In the Star Harbour region of Makira, armrings of Trochus, rather than Tridacna, are known as fato (Mead 1973:36, fig.9c), the cognate of the Guadalcanal kato.

3See for example Hogbin’s photograph of women at Aola on the northeast coast of Guadalcanal (Hogbin 1937, plate Vb).

4The Marau nodule, when found, retained its entire cortex, the internal banding being visible only after splitting. Local residents in Marau, familiar with the glassier cherts known to have been imported from west Malaita, did not recognise the nodule as nandi, the vernacular term for cherts and flints. The only known use to which such nodules had been put was as magic stones in garden shrines (D. Pororasi pers. comm.).

5The recoveries are: (1) Megapodius sp., size intermediate between Progura (Rich and Van Tets 1985, Van Tets 1974) and modern Megapodius freycineti; (a) maxilla from SG-2-93 Vatuluma Ngolu, area T1, layer 1C, (b) left distal fragment of a tarsometatarsus from SG-2-1, Vatuluma Posovi, area T1B, layer 3 II (2) Centropus sp., material from 1966-1968 excavations at SG-2-1 Vatuluma Posovi, contexts unknown; elements: pelvis, synsacrum, humerus, left and right humeri, proximal femur, proximal end of right tarsometatarsus (3) Psittaciform, size of Probosciger aterrimus, distal right proximal rail from SG-2-1, Vatuluma Posovi, area T1 layer 2.
Chapter 5

PICTURES IN THE LANDSCAPE: THE ROCK ART SITES

INTRODUCTION

The portable artefact assemblages from the cave and rockshelter sites of the Poha and Vura valleys have been shown to be restricted in both kind and density. All three cave sites on the northern fringe of the Mbonghe limestone (SG-2-1, Vatuluma Posovi, SG-2-93, Vatuluma Ngolu and SG-2-94, Vatuluma Tavuro) however possess an artefact type also found in other parts of the north-west Guadalcanal landscape - engraved rock art. At the Vatuluma Posovi site engraved art designs on the cave walls arguably represent the most numerous of any artefact type at the site. For this reason alone the consideration of the art there and its relationships to that at other sites was warranted, but the original context of the designs added a temporal dimension not available (as yet) at other sites in island Melanesia. Prior to the excavations of Davenport, Russell and Tedder very few designs were visible (Chachi pers. comm., Russell pers. comm.); this is contrary to an assertion that all of the designs were covered by the archaeological deposits (Chick and Chick 1978:np).

Although apparently widely distributed throughout the Solomon Islands archipelago, the rock art sites of the area are poorly known. The 1987-1988 fieldwork, therefore, involved not only the study of the Vatuluma Posovi engravings but also the search for and documentation of other art sites in north-west Guadalcanal. This resulted in a total of fifteen rock art sites being recorded in detail (figure 32). Three of these sites (SG-2-1 Vatuluma Posovi, SG-2-36B Matana Nuhu IIA and SG-1-405 Vatumare, Hoilava) had previously been reported (Allen n.d.:117-121, Davenport, Russell and Tedder nd., Black and Green 1975:3-12, Chick and Chick 1978, Specht 1979:73, 80) but none had been fully published.

The documentation of the rock art sites provided data for the comparison of the Guadalcanal engraved art corpus with other sites in Island Melanesia, and for the preliminary analysis of the distribution and context of the sites within the landscape, and the placement of engravings within individual sites. A detailed comparative examination of the Guadalcanal rock art designs must await more complete data on the reported sites from the Lambi Bay and Avu Avu areas.
RECORDING AND TERMINOLOGY

Specht's review of rock art in the western Pacific (Specht 1979) stressed the problems affecting such an undertaking in the region. Drawing attention to the problems of terminology, he noted the confusing use of terms such as 'petroglyph', 'petrograph' and 'pictograph'. Following Specht (1979:59) I adopt here the general term of 'rock art' and also his definition of it, viz.

....all markings of presumed human origin on natural or prepared rock surfaces, except where it can be demonstrated that the markings are a by-product of a manufacturing activity unrelated to any designs at the site.

In the description and discussion of the Guadalcanal art corpus the terms 'motif' and 'design' are used in a similar manner as that employed by Ballard (1988a:146). 'Design' is taken to mean a representational whole, or 'picture', comprised of one or more 'motifs'. Perhaps this is best illustrated by example. Canoe designs are a common element of the Guadalcanal engravings (figures 38, 39, 40, 42, 43, 44, 45, 46 and 49). In some sites these designs become more complex through the addition of other designs, as in the case of the Sarevo I site (SG-2-151A) where a canoe design and a crescentic design have been combined to form a representational whole - a 'canoe plus crescent' design (figure 39, plate 16b). The components of this design (the canoe and the crescent) can now be said to be motifs. The use of this terminology allows for the separation of similar components of pictures that can be recognised in different sites, and the analysis of the distribution of motifs as well as of whole designs.

Rueing the inadequacy of the published accounts of rock art sites in the literature, Specht (1979:58f) noted,

Few authors have provided a full and detailed report of a site, describing its precise location, its geological context, the disposition and contents of the designs, or even the techniques used to produce the art.

A standardised procedure was adopted for the current recording of the Guadalcanal sites. All designs (with the exception of some of the Vatuluma Posovi engravings) were traced onto clear plastic sheeting with annotations indicating natural features such as cracks, fissures and holes, direction of slope of the rock surface and site name and number. Complementary notes regarding each site's location and description, the aspect of rock surfaces with engravings, the degree of weathering of the designs, groove depths, and rock type were made utilising a standard form. Site location
sketches were drawn as a visual record of the relationship of the rock art to its immediate environment.

The recording of the designs, especially those on rock surfaces heavily affected by weathering and water flow, was problematical. As many of the sites are located in heavily forested, steep-sided valleys, the directional lighting of early morning and late afternoon sun was unavailable for the examination of indistinct designs. In order to record the designs as fully as possible all known sites were inspected at night under both weak and strong artificial light; searches for new sites were also made using this method. The results of this technique justified its employment, with the discovery of three new engraved boulders (SG-2-152 Matana Komasaghi IC, SG-2-99B Matana Daula II and SG-2-36A Matana Nuhu IB) and, at known sites, a number of designs so faint or heavily eroded as to be invisible under normal direct sunlight. The visibility of some faint designs was significantly improved also; for example, the form of one of the complex canoe designs at the Sarevo site (figure 33). At the Vatumare, Hoilava site (SG-1-405), a design initially identified as a crescent proved to be a bird design when viewed under directional lighting (see figure 33). Designs discovered or defined by this method were lightly chalked to facilitate tracing under normal light; following tracing the chalk was completely removed.

The engravings at Vatuluma Posovi (SG-2-1, figures 35 and 36, plates 14, 15a and 15b) presented more significant problems of recording. Due to the fractured and pitted character of the limestone into which they are cut, defining the extent and nature of individual designs is extremely difficult. From the entrance to the cave the designs appear to be clearly executed and their form distinct. Closer examination reveals groove widths of up to 60mm and commonly depths of 50mm. In the most extreme example (fig. 35, no. 9, plate 15a) the 'eyes' of the face design are recessed by 65mm from the cave wall surface. Problems of definition are exacerbated by the inaccessibility of many of the designs, the highest of which is some 5m above present floor level. Designs at the rear of the cave are on a sloping wall (plate 14) and invisible from the floor directly beneath; access is possible by ladder but the dangers of damaging the rock surface, and thus the engravings themselves, render some parts of the wall impossible to accurately record by direct tracing. For this reason only a selection of the more accessible designs were recorded; complete recording of the Vatuluma Posovi art will require the techniques of photogrammetry.
SITE LIST AND DESCRIPTIONS

The following site descriptions give a resumé of the details of the 15 sites fully recorded and notes on a further six sites reported from various reliable sources but not visited (figure 32).

Unless otherwise stated all designs have been produced by a pecking technique.

SG-2-1, Vatulumu Posovi

Altitude: 20m
Figures: 34-36, plates 14, 15a, 15b


The engravings at this site represent what is probably the largest single gallery of rock art known in the Solomons. Engravings occur on all of the cave walls with the exception of the interior of the Inner Cave leading off the rear chamber. Vertically the designs are also well distributed, from a barred oval design on the rear cave roof, to a face design (figure 35, no. 9, plate 15a) 45cm above the basal limestone cave floor on the northern wall of the cave. Designs are positioned on vertical, sloping, flat and overhung surfaces, the latter including the overhang above the entrance to the Inner Cave. There are traces of at least two engraved designs, now heavily eroded, on the cliff face in which the cave is located. The designs are however concentrated on the rear wall of the cave (see plate 14).

The difficulty of defining the designs has already been noted and no accurate count of their total number has been made for this reason. Figures 35 and 36 show a selection of the designs present. Of particular note are the anthropomorphic face designs (figure 35, nos 4, 6, 9, and 18, plates 15a and 15b) not replicated elsewhere in the Guadalcanal corpus. Other designs in the Guadalcanal corpus unique to Vatulumu Posovi include fish (figure 36, no. 24), the frigate bird (figure 35, no. 15), lobed and bisected ovals (figure 35, nos. 1 and 2), horizontal ladders (figure 35, no. 17) and enclosed nets (figure 35, no. 10). Of all the designs recorded at this site only a possible canoe design (over which the frigate bird is superimposed) (figure 35, no.16), a rayed concentric (figure 35, no. 12), and a simple zigzag design appear to be paralleled in the remainder of the Guadalcanal sites.
Since excavation many of the engravings have suffered from weathering and the growth of algae. This situation and the nature of the rock surfaces makes identification of engraving techniques difficult. The majority appear to be pecked; the *frigate bird* design however is certainly the result of abrading as the grooves are noticeably smooth-sided and of 'v' shaped section.

Unfortunately, although the engravings were noted, only a somewhat inaccurate sketch plan of them was produced in 1966-1968 (Russell n.d.). This 'Art Plan', however, is critical to the re-interpretation of the engravings as it indicates the relationship of several identifiable designs with the excavators' "datum".

There are no oral traditions associated with the engravings at this site.

**SG-2-93, Vatuluma Ngolu**

*Altitude:* 200m  
*Figure:* 37  
*References:* Roe 1992b

The upper cave roof of Vatuluma Ngolu is hung with stalactites, one of which carries a number of geometric designs (see figure 26 for an indication of its position). These take the form of finely executed zigzag and adjacent branched line designs and seem to be the result of abrading.

There are no oral traditions associated with the designs.

**SG-2-94, Vatuluma Tavuro**

*Altitude:* 200m  
*Figure:* 37  
*References:* Roe 1992b

A large boulder on the west side of the upper cave area carries two somewhat amorphous and indistinct designs. Water weathering and the deposition of calcium carbonate in solution (flowstone) has obscured parts of the design.

The cave is known as a temporary hunting camp but there are no oral traditions associated with the rock art.
SG-2-150, Tanaosi

**Altitude:** 120m  
**Figure:** 37  
**References:** Roe 1987:9, figure 1(B); Roe 1992b.

This is the first of a number of rock art sites on igneous river boulders in the upper Poha Valley, and is situated approximately 1km upstream of where boulders first occur in the river bed. Located on the sloping crest of a small boulder are three designs comprising one complete enveloped cross (plate 16a), one eroded one and a single jelly-fish. The boulder, at 2m x 2m x 1m high, is the smallest of a group on the east bank of a small islet in mid-stream, at a point where the Ngalihanjoha tributary joins the Poha River on the west bank. Three faces of the boulder are unutilised, a fourth is obscured by an adjacent boulder. The designs are only visible from a point immediately adjacent to the boulder, all three having groove depths of less than 2mm.

The site name, literally 'at the pitpit [osi, Saccharum edule]', is taken from that of an adjacent land area and is not specific to the art site.

SG-2-151A & B, Sarevo I and II

**Altitude:** 130m  
**Figures:** 38 and 39  
**References:** Roe 1987:8-9, figure 1(A), 1(D); Roe 1992b

Sarevo I is a very large boulder, 7m x 4.5m x 2m high, on the east bank of the Poha River some 100m downstream from the Matana Komasaghi I boulders (see below, site SG-2-152) and some 30m downstream from a constriction in the river formed by a diorite outcrop. The west bank rises in a steep scarp opposite the site whilst a less steep ridge slope lies behind it to the east. The top of the boulder carries a number of generally faint designs (figure 38), the encircled cross being the only one with groove depths in excess of 2mm; all were first noted under artificial illumination. The other designs are positioned on the vertical faces of the boulder, except on its eastern side. The crescent designs on the boulder top (figure 38) and downstream face (figure 39), and the crescent motif of the complex canoe design (figure 39, plate 16b), have pounded interior surfaces.

Some 60m upstream, on the eastern edge of present water flow, a 3m x 2m x 1.75m high boulder carries a single, much worn, cross design (figure 38); this faces the eastern bank but is clearly visible from downstream. This boulder should possibly be
included with the SG-2-152 complex but local informants gave it the same name as the Sarevo I boulder. Four faces of the stone, including the top, are not utilised.

SG-2-152, Matana Komasaghi IA, IB, IC, and ID

*Altitude:* 130m  
*Figures:* 39 and 40  
*References:* Roe 1992b

The Matana Komasaghi rock art complex is situated at the mouth of a small stream from which the site takes its name and which issues into the main Poha River on the east bank. The designs are found on a group of large boulders as follows:

**IA:** 4m x 2.5m x 3.5m high, on east bank. Of five available faces only the sloping top of the boulder is utilised, the designs facing upstream. This boulder was until recently covered by vegetation (P. Chachi pers. comm.). Although the groove depths are only slightly greater than 2mm deep, the designs are reasonably clear.

**IB:** 2m x 2.5m x 3m high, adjacent, on upstream side of stone IA. Of the six available faces only the slightly sloping face overlooking the main river and opposite stone ID has been utilised. The serpentine design is water-worn and apparently poorly executed.

**IC:** 5m x 2.5m x 2m high, at the foot of boulder IA and in the main river course, the slightly sloping downstream face carries three *canoe* designs, all extremely faint and not visible under normal light. Four faces are apparently unused, but the boulder is so heavily water-worn that some designs may have been completely destroyed by erosion.

**ID:** 4m x 2m x 2.5m high on the west bank perched on a diorite outcrop. The boulder is directly opposite stones IA, IB and IC. The 1.85m long *canoe* is the largest such design in the corpus. Three of the seven faces, those facing upstream and to the west bank, and the boulder top, carry no designs.

The site name derives from *matana* meaning 'eye', a euphemism for what, in English translation, would be termed the 'mouth' of a river or tributary; *ko* translates as water or river and *masaghi* as fever. Hence 'the mouth of the fever river'.
SG-2-153, Matana Komasaghi II

Altitude: 135m  
Figure: 40  
References: Roe 1987:8-9, figure 1(F); Roe 1992b

Situated on the west bank of the Poha River 150m upstream from SG-2-152, on the west bank of a small loop in the river. The smooth, sloping face of the 7m x 3m x 2.5m high boulder fronts on to the river and is the only one of the five faces utilised. The finely executed design has been produced, perhaps surprisingly, by delicate pecking. The boulder lies at the edge of a narrow terrace behind which the ground rises steeply.

SG-2-99A, Matana Daula I

Altitude: 145m  
Figures: 41-44  
References: Roe 1992b

Positioned on a small shingle bank in midstream some 80m downstream from the confluence of the Poha and Daula rivers, this is one of two sites carrying a significant number of complex designs. The boulder measures 3m x 3m x 2m high. The upstream face is obscured by jumbled blocks and flood deposited shingle.

Close examination of the grooves of the canoe designs on face 2 (figure 42) revealed that the pecked depressions forming the designs have a regular 4mm diameter.

Steep slopes flank the river on both banks, although a narrow, flood-prone terrace is present on the east bank.

The site name derives from daula, a frigate bird; the Daula is a small tributary of the main Poha River.

SG-2-99B, Matana Daula II

Altitude: 145m  
Figure: 40  
References: Roe 1992b
On the east bank opposite Matana Daula I a 3.5m x 2.5m x 2m high boulder carries a single design on the sloping face away from the river. A shallow groove below the design is water-worn and may or may not be the result of human agency. Four faces of the boulder are not utilised.

**SG-2-36A, Matana Nuhu IA and IB**

*Altitude:* 155m  
*Figure:* 44  
*References:* Roe 1992b

Two igneous boulders, IA at 5.5m x 3m x 1.5m high, IB at 2.5m x 2m x 1.5m high, lie adjacent to each other on the west bank of the Poha River some 40m downstream of the mouth of the Nuhu tributary. Of four available faces on boulder IA, only two are utilised. Designs facing onto the river are particularly faint but one of the two is a simple *canoe*. Facing downstream are a more complex *canoe* and a curved line. The three *canoe* designs on boulder IB front onto the river on the only face of the boulder utilised, the other three not carrying any designs.

The site name refers the site’s location adjacent to a small tributary of the main Poha River; *nuhu* translates as 'sand'.

**SG-2-36B, Matana Nuhu IIA and IIB**

*Altitude:* 155m  
*Figures:* 45 and 46  
*References:* Chick and Chick, 1978: un-numbered plate; Roe 1992b

These two boulders lie on the east bank of the Poha River at its junction with the Nuhu tributary. Boulder IIB is a small, 1.8m x 1.2m x 0.30m high stone with a single simple *canoe* design on its flat top.

The large boulder (IIA), 3m x 4m x 3m high, carries the most complex, and some of the most deeply engraved, designs in the Poha rock art sites. A total of seven faces are available of which five are utilised, including the undercut one below face 1. The designs are generally well defined with groove depths of between 3 and 11mm.

The designs of the steeply sloping face 1 are of interest as their alignment is vertical when viewed from the river; no other site has the motifs arranged in this way and it is possible that the stone may have moved from its original position, or perhaps more likely, that the artist engraved the designs from a point to the right of the stone.
(when viewed from the river). Nevertheless this arrangement does not obscure any of the designs and all, with the exception of those on top of the boulder (face 4), are clearly visible from the river. A crescent with pounded interior and conjoining line, possibly a canoe motif (figure 46), is the only design facing upstream.

The ridge behind the site rises steeply from a diorite outcrop. On the opposite, west, bank a 50m wide terrace lies at the base of a steep ridge slope. The old village site of Matana Nuhu is situated some 75m upstream on the east bank.

SG-1-401, Kolevu I

Altitude: 30m
Figure: 47
References: Roe 1989:208; Roe 1992b

This small boulder in the SG-1-400 Kolevu III irrigated taro pond-field system is one of two boulders there that carry designs. Measuring some 1.4m x 0.60m x 0.45m high, the boulder is one of numerous pyroclastic andesite stones and boulders scattered over the valley floor. This stone lies on the east bank of a now dry river bed which at one time formed part of the taro pond-field system. The only design, somewhat amorphous in form but possibly an anthropomorphic figure, faces up the valley. The small cupule depressions within the design may represent Canarium nut anvils, of which the stone carries a number. The entire design is heavily weathered, the grooves nowhere exceeding 2mm in depth.

There are no oral traditions associated with the rock art, nor indeed with the pond-field system in which it lies.

SG-1-402, Kolevu II

Altitude: 30m
Figure: 47
References: Roe 1989:208; Roe 1992b

The second boulder in the taro pond-field system is a triangular pyroclastic block, 1.3m x 1.3m x 1.4m x 0.90m high, situated in a similar setting to Kolevu I. It is one of a large group of boulders, although the only one of the group with rock art. Two of the other blocks do however have stone-cut mortars for Canarium nut processing. The designs on the main, upstream, face are distinct, the upper design possibly being a derivative of the canoe designs common in the Poha River sites. On the vertical face fronting the old river bed traces of a further design are discernible but the engraving is
heavily weathered. On the arête between the two faces is a well defined geometric design. The positions of this site and of SG-1-401 (above) in relation to the taro pondfields are shown in figure 53.

SG-1-404, Ngaliporo

*Altitude:* 80m  
*Figure:* 48  
*References:* Roe 1989: 208; Roe 1992b

A large pyroclastic boulder on a raised terrace on the west bank of the intermittently dry bed of the Ngaliporo river, approximately 100m from the top end of the taro pond-field system. The boulder, 3.5m x 2m x 1.25m high, has designs on the downstream face and numerous *Canarium* anvils on its crest. At present the site lies in the middle of a sweet potato garden and has open views down the Ngaliporo/Kolevu valley to the sea and the Russell Islands group.

No oral traditions are available for this site; indeed it was unknown to most local residents despite its highly visible location. The site name is not specific to the art site. It is derived from *ngali*, a generic term for *Canarium* nut species, and *poro*, a *Pandanus* leaf umbrella. Hence the 'umbrella of *Canariums*', probably referring to the dense groves of these trees once extant in this valley.

SG-1-403, Bealoki

*Altitude:* 300m  
*Figure:* 47  
*References:* Roe 1987:8,10, figure 2(A); Roe 1992b

A triangular pyroclastic boulder, 0.90m x 1m x 0.90m high, with a well defined concentric circle design on the vertical face looking south-southeast towards the summit of Mount Popoki. The boulder lies in a commanding position on the ridge-top above the platformed settlement site of Tuvu II (SG-1-432). The location gives unrestricted views towards the north Guadalcanal plain, and the islands of Savo and the Russells. Steep scarps to the north descend to the Ghambughasi valley, the site of another irrigated taro pond-field system.

The boulder is immediately adjacent to a stone-faced house platform, although no history of the settlement or rock art is known. The Bealoki area is associated with the culture heroes Tali and Belakiki.
SG-1-405, Vatumare, Hoilava

*Altitude:* 90m
*Figure:* 49
*References:* Chick and Chick 1978: un-numbered plate; Roe 1987:8,10, figure 2(A); Roe 1992b

This site is the only rock art site in the presently known Guadalcanal corpus that has a specific name; the remainder take their name from adjacent land areas or the caves in which they are located. Vatumare literally translates as 'stone picture', derived from *vatu*, stone and *mare* a term that can be translated as picture, an engraved design, or nowadays as writing. The meaning of the river name, Hoilava, is not known.

This large boulder lies in midstream some 8 km from the coast and is well known to local residents. Measuring some 4m x 2.5m x 2m high, the boulder has designs on three of its four faces. The majority of the designs are on the upstream face (face 1). The downstream face (face 2) carries two designs, and face 3 a single bird design slightly above normal water flow levels. Both faces 1 and 2 are steeply sloping with aspects of 90 and 270 degrees respectively.

The designs are generally clear, the two encircled rayed circle designs being particularly deeply cut with grooves of 10mm. The designs on the lower part of face 1 are less clear, presumably because of water erosion of the rock surface.

Oral traditions connect this site with two brothers responsible for the killing of a particularly unpleasant 'giant' (or *mumu*), Ngironduli, whose murderous exploits led to the abandonment of the area in favour of more peaceable surroundings in the Russell Islands. The two brothers are said to have used the stone for resting, 'observing the sun by day and the moon by night'. As I have noted above the "crescent moon", cited by local informants as the work of the two brothers, is actually a worn *bird* design. There appear to be no oral traditions concerning any but the 'sun' and 'moon' designs (F. Longgachikai, pers. comm.) although local custom dictates that the upper surfaces of the stone be kept dry; failure to observe this tradition will reputedly lead to flash floods.

No further engraved boulders are at present known from this river valley. Searches for additional sites in this area were limited and other sites might be expected to be located with further survey.
Reported Sites

Seven further sites have been reported from Guadalcanal. Their approximate locations are shown in figure 32. Reliable sources have provided the following information:

R1 Tiaro I: a ridge-top boulder in the Tiaro Bay area, some 3 km south of the mouth of the Hoilava River. Designs are said to include four concentric circles, at least one of which is rayed (cf. designs at Ngaliporo, figure 48) and a second is similar but with the rays enclosed by an outer ring (K. Veomate, pers. comm.).

R2 Tiaro II: a cave site in the same general area as R1, with a number of designs possibly including a canoe design. Modern graffiti obscures some of the designs (K. Veomate, pers. comm.).

R3 Mulenggela; Njarini: an engraved boulder in the upper Poha Valley, some 2.5 km upstream from Matana Nuhu II (SG-2-36B), the exact location of which was known only to an infirm resident of Chiri village\(^3\). Despite extensive searches this site could not be relocated, and no details of the designs there are available (P. Chachi, H. Manengelea, pers. comms.). The name of the site can be freely translated as 'the people of Nggela came here'.

R4 Kohove: a much worn river boulder in the Kohove river carries what appears to be a single canoe design (R. Cannarella, pers. comm.).

R5 and R6 Avu Avu I and II: two boulders in the Avu Avu area on the southeast coast of Guadalcanal, one a ridge-top site, have designs of unknown form (C. McQueen pers. comm.). The designs are said to have been executed by visitors from the Arosi district of northwest San Cristobal (E. Alebua pers. comm.), an area with a significant number of rock art sites (Fox 1924c:293, Green n.d., Miller 1979:106), including at least one painted site (Fox 1924a:222).

A further site may exist in the Paripao district of east-central Guadalcanal. A somewhat ambiguous reference to a flat rock with "figures" near Bualala village (Paravicini 1931:89) has yet to be clarified by field investigation; its position is not indicated, therefore, in figure 32.
DATING

The dating of rock art is a notoriously difficult exercise (see for example Bellwood 1979:275, Schaafsma 1985:241-244, Specht 1979:73-74). The inability to ascribe a chronological place for rock art in the prehistory of island Melanesia may well be the major factor accounting for the peripheral position that rock art studies have taken in this region. Only in very few cases are oral traditions available for rock art sites in Melanesia and where they are these are often obviously either apocryphal (as at Vatumare, Hoilava), are local interpretations of designs that have no specific traditions associated with them, or relate to art very recently created. In Guadalcanal none of the recorded sites can be considered to have associated traditions with a time depth equal to that of the age of the art itself. Indeed in several cases prominent sites were unknown to local residents, or were obviously of little cultural value to them.

The cave site of Vatuluma Posovi is the only known site in Melanesia where in situ rock art designs have been located in sub-surface dateable contexts. Garanger reported an engraved panel recovered during excavations at the Feles Cave site (EF 106-1) on Lelepa Island in Vanuatu (Garanger 1972:43-44); however, the associated date of 910 +/- 85 bp. provides only a terminus ante quem for the art as the panel lies in a secondary position. The excavations at Vatuluma Posovi conducted in 1966-68 did not involve any real attempt to relate the cultural deposits to the rupestral art. The 1987-88 re-survey and re-excavation of this site, an examination and critical review of the unpublished records from the 1966-68 excavations, and the dates from the series of C¹⁴ samples (Black and Green 1975:10-12, Davenport n.d., Lawn 1974:233; appendix 8) from the occupation layers obscuring the engravings, now allows for the consideration of the age of some of the designs at the site.

Reconstructing a sequence for the cave as a context for the C¹⁴ dates from the 1966-1968 excavations, Green was able to give only a general indication of the age of the engravings (Black and Green 1975:7), placing their execution somewhere before 1310 years bp. Chick and Chick (1978) were more conservative and suggested a date somewhere between 1400 BC and 1200 AD!

The major problems in reconstructing the relationship of the art to the dated deposits revolved around the position of the datum from which the depth of the deposits and the C¹⁴ samples was measured. The problem of the datum used in 1966 - 1968 has already been discussed (chapter 3) and especially the fact that the datum was neither physically marked nor accurately recorded in the excavation records and that more than one datum had been used. Although some parts of the cave remain problematical, it is fortunate that the lowest engravings (figure 36, nos. 21-24, plate 9a) coincide with that
area of the cave for which the reconstruction is demonstrably accurate and from which the best sequence of dates was recovered (figure 34).

On the rear wall of the cave a horizontal motif consisting of a line with tally marks forms part of design including an enclosed cross (figure 36, nos. 21 and 22). Slightly below is a curvilinear design (figure 36, no. 23) including a roundel with central depression whilst to the right a much worn, and poorly executed fish design (figure 36, no. 24) is cut into the wall adjacent to the entrance to the Inner Cave. On the cave wall above, an anthropomorphic (?) form (figure 36 no. 25) is recorded on Russell’s ‘Art Plan’ as having been bisected by the old ground surface; this is also indicated by a change in wall colouration. Measuring from this point to the basal layer reached during the original excavation directly beneath provides a highly acceptable correlation to the site record; the error being less than 4cm (see figure 20 for the location of the 1966-1968 pit and profile 3 in figure 15 for its relationship to the recorded stratigraphy and old ground surface). The relative position of the C\(^{14}\) dates to the lowest engraved designs could therefore be calculated.

The sequence of C\(^{14}\) dates from the rear of the cave is shown diagrammatically in figure 34. The submission of two samples considered too small for dating in 1968 confirmed the acceptability of sample P1 (I-2874, dated at 2920 +/- 110 years bp). Sample P7 (ANU 5845) yielded a date of 2810 +/- 120 years bp. Sample P8 (ANU 5846), at only 1960 +/- 160 years bp, and at a lower depth than P1 and P7, appeared problematical, but re-excavation demonstrated that the sample had come from an intrusive water-deposited sand - the flood line recorded by the original excavators. The anomalous result could be disregarded, especially as the six other dates above represent an acceptable sequence. The calibration of the basal dates using the CALIB (Version 2.0) programme and the 10 year atmospheric option (Stuiver and Reimer 1986), gives the following results:

**I-2874 (P1):** 2920 +/- 110 years bp.
Age range (@ 1 sigma): 3259 - 2892 BP, intercepts at 3073, 3062, 3057.

**ANU 5845 (P7):** 2810 +/- 120 years bp.
Age range (@ 1 sigma): 3103 - 2779 years BP, intercepts at 2934, 2904, 2893.

Sample P1 was recovered from a cultural deposit that marks the lowest dated occupation of Area C in the rear cave. The sample was collected from 84" (2.10m) below 'datum' (i.e. old ground surface) in a layer extending to 100" (2.50m) below 'datum'. The relationship between these levels and the engravings is shown in figure 36. As these 84"-100" deposits largely cover the lowest designs, the engravings must have been made prior to about 2800 BP, at a time when the adjacent rock surfaces were still
uncovered. The problems associated with dating the lowest cultural material in this area of the site have been discussed in chapter 3 and are not repeated here. It should be noted, however, that the basal levels of the Inner Cave need not necessarily be much earlier than the 84-100" layer, as the sterile material separating this layer from the lowest is largely comprised of rock fall and must have accumulated rapidly. The two C¹⁴ samples excavated in 1987-1988 at the front of the cave have dated the earliest occupation of the cave between about 6450 and 4150 BP (ANU-6733, ANU-6734). There is no direct relationship between these early dates and the engraved art, but it must be acknowledged that it is possible that the art significantly predates the horizon dated by I-2874 and ANU-5845. This appears to be unlikely on the basis of the state of preservation of the engravings however. Since 1966-198 the engravings have eroded considerably and had they been exposed to the elements between their execution during the earliest settlement phase and the time when deposits had covered them, it would be unlikely that they could have remained in such a well-defined condition.

Although archaeologically a direct relationship between dated occupation layers and engraved rock art can only be demonstrated at one site, it might be suggested that stylistic comparisons between the motif suite at Vatuluma Posovi and those at other sites would allow for the extension of that relationship to other areas; previously estimates of rock art ages have been based of necessity largely on stylistic criteria alone (see for example Bellwood 1973:275, Golson 1974:582-586). In a 1992 paper I noted (Roe 1992b:113) that the duration of the rock engraving tradition was unknown, although the general lack of oral traditions associated with rock art sites, not only in Guadalcanal but throughout Melanesia, suggests that its demise preceded the period of constant European contact. This claim now needs reconsideration in the light of new and 're-discovered' evidence from Vanuatu. At the Malap rock art site on Erromango engraved designs of European ships have recently been described (Roe 1992a:24, figure 24); these can date no earlier than the visit of Cook to Potnarvin in 1774 (Beaglehole 1961:447). Further examples of engraved designs of European ships are also known from Ambrym (Speiser 1923:plate 107, no.2, reproduced in Speiser 1990) and Maewo (Regenvanu 1992:11)⁴. In all three cases the ship designs are associated with motifs that are represented at other art sites within Vanuatu and elsewhere in Melanesia. This new data demonstrates that engraving is a long-lived art tradition but at the same time presents new difficulties in assigning dates to sites based on stylistic comparison.

PICTURES IN THE LANDSCAPE

Some initial observations may be made regarding the context of the Guadalcanal sites. The gazetteer lists 15 engraved boulders in the Poha River valley, divided
somewhat arbitrarily into seven sites. For the purposes of this section of the paper each boulder is considered as an entity in its own right. If we include the remainder of the engraved boulders recorded, taking R1 as part of the corpus, a total of 21 boulders is represented. Of these, two are ridge-top sites, both carrying similar, perhaps identical, designs. The remaining 18 lie either within, or immediately adjacent to, water courses. The three other sites in the corpus are all within limestone cave environments, one in a river valley and two on ridge slopes; both of the latter are immediately adjacent to *Themeda australis* grasslands of anthropogenic origin. All three cave sites demonstrate human occupation, and two have been used for the purposes of burial.

As the Poha valley was the most adequately surveyed of the 1987-1988 study areas, I shall concentrate here on the context of the sites in that area. A detailed survey of the Hoilava River catchment has not been attempted but the presence of two reported sites (GU-R1 and GU-R2) in that area suggests that more rock art sites are likely to be found. Assessing the significance of the position of the Hoilava (SG-1-405) site is thus premature. Similarly, the Kolevu, Ngaliporo and Bealoki sites are left aside at this juncture. All four sites were discovered fortuitously during investigations of prehistoric agricultural sites and no intensive programme for the location of additional sites was undertaken.

Of the 15 boulders in the upper Poha Valley only four are located more than 50m from a confluence of the main river with one of its tributaries, and none of these boulders (Sarevo I, Matana Komasaghi II and Matana Daula I and II) are more than 100m from a confluence. In the 4.5 km stretch of the main river where smooth-surfaced boulders are located, only two major confluences do not have rock art. At both of these locations the river is bounded by diorite outcrops, apparently unsuitable for engraving due to their blocky structure. From a point some 0.5 km upstream from Matana Nuhu IIB the river bed becomes boulder-free for approximately 1.5 km. Where the river again becomes stony, the blocks are generally small (less than 1m across) and a large proportion are apparently conglomerates; these again are unsuitable for the production of engravings. Only in the upper reaches do suitable surfaces again become available and it is in this area that the lost Mulenggela site (R3) is located, at the confluence of the Njarini and Poha rivers (H. Manengelea pers. comm.). Although searches for engraved designs were made in all areas where suitable surfaces are available, no indications of other sites were located; this includes investigations along the Nuhu and Komasaghi tributaries and examinations of the few boulders that occur away from the main river course.

The Poha Valley is steep-sided and quite rugged. Traditional settlement patterns favoured ridge-top locations, partly for reasons of defensibility but also for the lack of suitable sites in the narrow valley unaffected by seasonal flooding. Similarly major
trackways and access routes within the area follow ridge-tops, descending to river valleys only when no suitable high (and dry) path is available. Access routes from the west to east (and of course *vice versa*) inevitably cross the main Poha River, but such is the steepness of the valley sides that only a small number of trans-valley routes are employed, usually where spurs from the main ridge give access to the valley floor. It is here that the majority of tributaries occur, that is between spurs of the main ridge. In the section of river where the rock art sites are located the only trans-valley trackways and access routes to the main river occur at the confluences where engraved boulders are located. Thus at the Tanaosi site the trackway from Tapinanja descends from the west and continues, after a brief section along the river and thus past the Sarevo boulders, up the ridge at Matana Komasaghi to the settlement sites of Tamavu and Manivo. Similar trackways descend to the river at Matana Daula and Matana Nuhu. Although there are obvious problems in associating the distribution of present-day trackways with rock art sites of unknown age (there being no chronological control for any but the Vatuluma Posovi site) and of no cultural significance to the present population, the correlation is striking. It should however be noted that the tracks are virtually the only access routes available and are likely to have been used for as long as people have been traversing the valley.

With the exception of the Matana Daula II stone, none of the Poha engraved boulders carry designs which are not visible from the river course. Even where designs are located on the tops of boulders, only one site (Tanaosi) does not also have designs on the sides of the boulder. The position of the boulders and the placement of the designs upon the stones make the sites highly visible. It seems unlikely that the sites were inaccessible to any member of the community, especially as the river is the source of freshwater shellfish (an important item of diet), the collection of which was traditionally a task undertaken by women. This may be stretching ethnographic data too far but the lack of concealment of the sites would seem to preclude their association with ritual involving sexual segregation. This is not necessarily true of the cave sites, especially Vatuluma Posovi, where the lack of correspondence between the engravings there and in the open sites has already been noted. Thus this may be due to differences in site usage and purpose rather than differences in stylistic or cultural affiliation.

**COMPARISONS**

The following comparisons of the Guadalcanal rock art designs with those in other areas of island Melanesia must be regarded as a preliminary analysis; more detailed recording work by the Guadalcanal Cultural Centre is in progress and will improve the data available for future work. The validity of the inferences that may be
drawn from such analysis at this stage must also be assessed in the light of the material presently available. Frimigacci and Monnin's exemplary study of the New Caledonian sites (Frimigacci and Monnin 1979, Monnin 1986) is unfortunately not matched in other areas. In particular the Solomon Islands and islands of the Bismarck Archipelago are poorly represented in the rock art literature. For the Solomons group only the sites from Simbo (Miller 1979:47) and some from Vella Lavella (G. Baines pers. comm.) can be considered as having been adequately recorded.

With a detailed comparative analysis dependant upon the results of work still in progress and yet to be undertaken, only some general observations of the relationships with other rock art sites of the region can be attempted. In so doing the painted sites in mainland Papua New Guinea and island Melanesia will be left aside, despite the obvious similarities of some painted designs to those in engraved sites (see for example, de Almeida 1967:plate 1, Ballard 1988a, 1992 and Williams 1931).

Furthermore a comprehensive motif catalogue for the Guadalcanal sites is not attempted here; the provisional listing given in table 5.1 is based upon a sub-set of 176 motifs identified in the Poha valley and north-west cape sites, including the Vatamare, Hoilava boulder. It does not include the preliminary data available from the Tiaro Bay and Avu Avu areas. Excluding clearly incomplete designs, including those too eroded to confidently describe, the currently known Guadalcanal corpus consists of some 209 motifs. These may be divided into two main classes, figurative (87 motifs representing 42% of the total) and non-figurative (122 motifs representing 58% of the total). The commonest figurative motifs are the canoes, including both simple and complex forms, which, with 68 examples, represent some 33 per cent of the total number of all motifs and 78 per cent of the figurative elements. No other motif category exceeds eight per cent of the total, with 13 of 34 provisional categories represented by only single examples. However only three motifs do not seem to be paralleled in sites elsewhere in island Melanesia.

Despite some correspondence of the Guadalcanal motif suite with that from Simbo in the western Solomon Islands (Miller 1979:47, figs 2:6, 2:7, 2:8, 2:9) the differences are more noticeable than the similarities. Of a total of some 41 motifs present on Simbo only nine are comparable to the Guadalcanal material. Significant differences are in the lack of spiral and scrolled motifs, in the Guadalcanal sites, and the very different form of the anthropomorphic figure at the Tombulu site (Miller 1979:figure 2:8, no. 3). Similarly the Vella Lavella sites of Supato (Chick and Chick 1978) and Rikilando (G. Baines pers. comm.) demonstrate some parallels - simple serpentine forms and rows of dots at the former and a canoe and fish at the latter - but the predominance of spiralled forms and dissimilar anthropomorphs registers significant differences with the Guadalcanal motifs. Further parallels for Guadalcanal motifs are to
be found on an engraved boulder in the volcanic crater of Vangunu, in the western Solomons, (R. Cannarell pers. comm.) with a canoe form, and a simple anthropomorphic figure closely resembling the smaller anthropomorph at the Vatmare, Hoilava (SG-1-405) site. Unfortunately many of the Solomon Islands sites are only verbally described and comparisons with the many sites so recorded, for example, in San Cristobal (Makira) (Fox 1924a, 1924b, 1924c) are currently impossible.

Of the 30 categories of motifs used by Frimigacci and Monnin (1980) for the analysis of the New Caledonian material, 50 per cent are represented in Guadalcanal. Although the abundance of canoe designs reported in this paper is hardly matched by the three examples from New Caledonia, many designs are common to both areas, such as the enveloped cross, rows of dots, the various forms of concentrics and rayed circles, barred lines and zig-zags. It should also be noted that the spiral and scrolled motif suite partially represented in the Simbo and Vella Lavella material, and more fully in the Goodenough Bay sites of Papua New Guinea (Egloff 1970) is represented in New Caledonia as well. The concentric circle and enveloped cross motifs at the Goodenough Bay sites are also represented in the Guadalcanal material.

The same general picture emerges from a consideration of the Vanuatu sites reported by Spriggs and Mumford (1989). Whilst some designs are shared with Guadalcanal - footprints, rows of dots, zigzags, fish, rayed circles and encircled crosses - in the Vanuatu material there is an absence of canoe designs, jellyfish, and directly comparable anthropomorphic figures. Conversely the Guadalcanal motif suite has not a single turtle design and a total lack of spiral forms and tailed concentrics.

Footprint, enveloped cross and anthropomorphic face designs are shared with the Likding site in New Hanover (Bühler 1946-49:262) and concentric circles and anthropomorphic figures similar to the Vatmare, Hoilava examples are to be found in the Tabar (New Ireland) sites discussed by Gunn (1986). However many of the designs represented in the sites of the Bismarck Archipelago are absent from the Guadalcanal sites, especially those based on scrolled and spiral formats.

Thus although some motifs are common to many sites throughout the southern part of Island Melanesia, regional preferences, or emphases, can be readily distinguished. Enough commonality exists to suggest a regional tradition but with more or less pronounced local variation. Further comparison will serve to more fully define these variations and to test whether they are indeed significant. It is hardly necessary to underline the need for more data, especially from the Bismarck Archipelago and the Solomon Islands. The sites described here represent a relatively small sample from one area of a single island, but there are clear indications that rock art sites are a quite common feature of the archaeological landscape.
The apparently low number of unique rock art designs (i.e. designs known from only a single site) in the Island Melanesia corpus suggests little free expression in design composition. Although most rock art execution does not seem to be structured in the same manner as, for example, do the designs on Lapita pottery (cf. Mead et al. 1975, Siorat 1990), the motifs are restricted in number and consistent in form. It seems clear that the motifs are, in large part, a sub-set of a series of putatively Austronesian symbols (see below), the forms of which are governed by rules of execution. The only instances of rock art taking the form of repetitive motifs are when they are executed on essentially finite surfaces such as the carved stone pillars from Bougainville, Buka and Nissan (see appendix 7). In these cases the medium upon which the engravings appear apparently enforces rules of composition as well as of execution.

The demonstration of at least a 2800 year age of the engraved designs at Vatuluma Posovi gives, for the first time in Melanesia, a direct date for the rock art of the region. This now creates some scope for the examination of the rock art design and motif corpus as part of a wider group of prehistoric art styles, including decorated ceramics. Furthermore it also gives some support to the putative association of rock art, or its designs, with Austronesian-speaking groups, including the bearers of the Lapita cultural tradition, in Island Melanesia. Ballard (1992) has demonstrated a convincing link between the distribution of painted rock art sites and Austronesian speaking groups in an area from eastern Indonesia to Bougainville. Many of the designs in the painted art corpus which he discusses (cf. Ballard 1988) are shared with the engraved art tradition of which the Guadalcanal sites are a part. His postulation of a date for the painted tradition of between 4000 BP and 2000 BP, based upon the first arrival of Austronesian speakers in the Admiralties and on the south Papuan coast (Ballard 1992:98 citing Kennedy 1981 and Allen 1984b:430), fits well with the dates from Vatuluma Posovi. In the Solomons a similar relationship between rock art and Austronesian speakers exists. The major exception is the sites from Vella Lavella in the western Solomons, although oral traditions from there (Baines pers. comm.) suggest that the non-Austronesian population of the island may be relatively recent arrivals.

**CANOE CONNECTIONS**

Further evidence of an association between rock art motifs and Austronesian language groups (and ultimately a south-east Asian connection) is provided by the evidence of the canoe designs. Forge (1973, 1979) has warned of the inherent problems associated with attempts to identify the subject of art motifs and to define the 'meaning' of art. While these problems must be acknowledged it is reasonable to assume that the canoe designs of the Guadalcanal sites do indeed represent canoes.
I have noted above that the canoe designs are the commonest motif of the corpus and are represented by both simple and complex forms. All of the canoes exhibit high prows, often both fore and aft, and are therefore comparable to ethnographically known forms from the central and western Solomons (Woodford 1909) and especially those from Isabel, Nggela and the Roviana area of New Georgia. There are also some similarities to the bonito canoes of south-east San Cristobal, Santa Ana and Santa Catalina. (Mead 1973). The more complex canoe forms show evidence of internal features; these are usually small vertical strokes from the hull interior but also include mast-like forms (see figures 38, 39 and 40). In this respect they recall the 'ship-of-the-dead' motifs of Admiralty Islands art forms discussed by Badner (1974) and Golson (1974) in their considerations of Dong-Son influence in Melanesia; the distribution of these motifs has also been discussed by Spiegel (1971). Golson (1974:582-583) also noted in the Goodenough Bay area of New Guinea the occurrence of incised motifs on shells which gave 'strong support for the existence in the New Guinea area of the Dong-Son ship-of-the-dead'. These motifs, based on scrolled and spiral formats, are also found in the rock art of that area (Egloff 1970), and, as noted above, are similar in form to motifs described on Vella Lavella and Simbo in the western Solomons. The specifics of the relationship of Dong-Son motifs to the art styles of Melanesia, and especially those of the Admiralties and Lapita pottery motifs, is still a matter of some debate and uncertainty (Newton 1988).

The identification of some, if not all, of the canoe designs as ship-of-the-dead motifs is made more plausible by a consideration of some ethnographic data from the central Solomons. The island of Marapa in the Marau Sound area at the eastern extremity of Guadalcanal is considered by the people of Guadalcanal, San Cristobal, Nggela and parts of west Malaita to be the home of the spirits of the dead (eg. Bernays 1909:31, Fox 1924c:362, Fox and Drew 1915:161, Ivens 1934:48). In Guadalcanal this belief includes the existence of a road of the dead beginning in west Guadalcanal and taking in on its route a number of locations where the spirits divest themselves of their worldly goods and human characteristics. The 'Are'Are people of west Malaita also consider Marapa as the home of their deceased and their dead precede their journey there by burial in canoes laid in the branches of mangrove trees (de Coppet 1981). Of particular interest is the data recorded by Ivens (1934:48) for Nggela where spirits go to Marapa either directly or 'overland after landing from a "ship of the dead" on the coast of Guadalcanal'. Whether the north-west Guadalcanal canoe motifs are related to the Nggela tradition must remain a matter for conjecture, but the similarity of the canoe forms to known Dong-Son and Admiralty Islands art forms, the specific Nggela tradition and the name of the GU-R3 site (see above) is strongly suggestive.

Other inter-island linkages are suggested by two other motif forms. These depend also on the acceptance of identifications of particular designs. At the Vatumare,
Hoilava site the upstream face of the boulder carries an oval design with transverse bars enclosing rows of dots (figure 49, plate 17a). This appears to be a representation of a *tako* shield, the rows of dots representing shell rings with which they were sometimes adorned (cf Brenchley 1873:281, Park 1986:24, Waite 1979:239, plate 158). Shields of this type are known to have been manufactured on Guadalcanal and were traded to Nggela and the western Solomons. The *jelly-fish* design represented at the Tanaosi, Matana Daula I and Matana Nuhu IIA sites, finds its closest parallel in the art of the western Solomons. An identical motif, but in a painted medium, is known from a mortuary shrine on Vella Lavella (Thompson 1921:unnumbered plate). In form the motif resembles perforated shell plaques that were incorporated into *serenbule* sticks used in mortuary rituals and as grave ornaments (Waite 1979:235 plate 148, Wall and Kuschel 1975:plate 2).

Gunn (1986:466) has noted that, in the light of the widespread distribution of rock art designs in the Melanesian area, the transmission of these designs from one area to another must have been made in other media. It is clear that designs on rock surfaces in island Melanesia are not restricted to that medium and are but a part of a much broader tradition of art; a tradition that has maintained the integrity of its designs/symbols over a vast geographical area and through at least 3,000 years of settlement. One design, the enveloped cross, perhaps demonstrates this better than any other, for it is not only found in rock engravings, but also, *inter alia*, on a Lapita pottery sherd from Nenumbo in the Reef Islands of the Santa Cruz group (Donovan 1973:130, Green 1973:335), in tattoo patterns from Yule island in Papua New Guinea (Anon 1972:54) on recent wooden carvings from New Caledonia (Luquet 1926:13, figure 8) and on reggae concert posters in Vanuatu (pers. obs.). There is need for caution, however, in generating simple models of stylistic affiliation and artistic continuity based on somewhat restricted data sets and subjective judgements of degrees of relatedness (cf. Green 1979a). Furthermore, the development of the hypothesis linking engraved and painted rock art styles with the spread of Austronesian languages will also need to address the apparently limited correspondence with the motifs of art sites in Remote Oceania - such as those of Fiji (Hill 1956, Palmer and Clunie 1970), and Samoa (Kikuchi 1964).

Despite these cautionary notes, the Guadalcanal data is important in a regional context in its provision of a date for the beginnings of the rock art tradition in the central Solomons and its ability to suggest cultural linkages to a broader 'Austronesian' artistic/symbolic tradition that has at least a limited overlap with the art of the bearers of the Lapita culture. For the purposes of constructing a culture history, the dating of the art at Vatuluma Posovi and, by extension, the art of the Vatuluma Tavuro and Vatuluma Ngolu cave sites, makes available a new artefact type for the characterisation of the prehistoric sequences of Guadalcanal.
Footnotes

1 Over 90 rock art sites have been noted in the Solomons archipelago, although few have been fully documented. An annotated site list and bibliography is given in Appendix 7.

2 Where design/motif names are given in bold italic print this indicates that the name is merely a descriptive label and does not necessarily imply an identification or interpretation of the subject matter. Where designs/motifs can be described by the use of shape descriptions or geometrical terms these are used, and given in normal print.

3 Despite his blindness, Habriel Manengelea was a major source of data on site locations and oral traditions of the Poha valley. He died in October 1989.

4 Painted designs of European ships have also been recorded in Melanesian rock art sites, eg. at Cap Bocage in New Caledonia (Frimigacci and Monnin n.d.).
Chapter 6

HAMLETS OF THE HAMOSA AND CATOIRA'S CHACARAS:
INVESTIGATIONS OF OPEN SETTLEMENTS AND
AGRICULTURAL SITES

INTRODUCTION

In a review of settlement pattern studies in Oceania, Green noted that settlement and spatial archaeological studies in Melanesia were 'making little progress' largely because they had been secondary objectives of other studies (Green 1984:63-64). In this respect the present study also suffers, as the investigations of settlement patterns were part of a broader enquiry. Furthermore, in attempting to investigate settlement patterns and their temporal changes in the north-west Guadalcanal area two problems of data retrieval were encountered. The first of these was site visibility, particularly in forest areas. The artefactual and environmental evidence of the cave and rockshelter sites discussed in chapters 3 and 4, include relatively few durable components (freshwater shell midden, small animal bone, plant macrofossils) and lack materials, with the exception of cherts, that are readily visible in open settlement sites. The finding of a number of historic period sites in the site surveys depended almost exclusively upon informants' knowledge of locations and not upon visible features or surface accumulations or scatters of artefacts. The absence of any ceramics and well-defined middens removed two of the foremost markers by which prehistoric sites in Island Melanesia have been identified.

With the exception of the coastal site at the Visale Roman Catholic Mission, previously unknown settlement sites were identified in two zones of the north-west cape area,

(a) the Themeda-covered ridge crests and slopes, and
(b) the valley floors.

Sites in the first zone were identified by the presence of stone structures of two kinds (single course walls and quadrangular earth platforms with kerbed edges), or by stone-free or frontally-kerbed platforms cut into hill-slopes; these are often just below the ridge crests. Artefact scatters were generally restricted to scatters of chert chips and
small undiagnostic flakes and no middens associated with these settlements were identified. In the valley bottom zone, evidence of settlements was provided by chert scatters and more or less well preserved stone structures; midden accumulations were again absent.

The second problem was one of stratigraphy and chronology. The sites of the Themeda grasslands (hamosa) did not retain any deposit worthy of excavation, as erosion had in most cases completely removed the topsoil horizons leaving most of the stone structures on pedestals of substrate. It became clear that studies of the settlements of north-west Guadalcanal would need to recognise that stratigraphy was likely to be horizontal rather than vertical, and that no site was likely to provide a sequence of dates or occupations that could lead to the formation of a coherent phasing of settlements. Instead limited excavations and data from surveys, especially the spatial relationship between settlement sites and other archaeological features (particularly agricultural systems) would have to be utilised to infer a sequence rather than absolutely demonstrate one.

A series of sites in the north-west cape area presented the opportunity to investigate directly the agricultural practices that had prompted, or were derived from those that had prompted, the abandonment of the caves and rockshelters at between just before 2000BP and which are evidenced there by the sterile deposits of inwashed clays associated with forest clearance. The association of open village and hamlet sites in the north-west cape area with locations in open grasslands, whose establishment is now well documented (see appendix 1), gives some indication of the form of settlement with which the move away from the forest fringe was associated. Initially, however, attention was focused upon the open settlements of the forest areas of the Poha Valley.

THE OPEN SITES

Open Settlement Sites of the Inland Forests

The site surveys discussed in chapter 2 and detailed in appendix 2 were at their most comprehensive in the forested areas of the Poha and Vura valleys. Here a number of open and predominantly recent settlement sites were recorded. These appear to be of two main kinds:

(a) large village sites, often with recognisable structures (stone-walled platforms, mbeku bone repositories, shrines or ngginggilu type burials) and associations of economic trees. These usually include small stands of Canarium indicum and
associated anvils (tinge) and hammer stones (kundale). Most of these sites have associated oral histories of multiple occupations and seem to have served as foci for groups who regularly moved around the landscape on well-defined routes as part of a system of regular migration movements that served to retain rights over particular land areas and/or was tied to the cycle of swidden fallowing. Similar village relocations and more detailed investigations of the processes involved are documented for Guadalcanal's Weather Coast (Bennett 1974, Chapman 1976, 1987, Chapman and Pirie 1974) and the north-west cape (Bathgate 1985).

(b) smaller hamlets, usually with few if any permanent structures, save for occasional ngginggiliu type burials. These appear to be satellites of the larger villages and several have similar histories of multiple occupations.

The small hamlets associated specifically with garden areas (cf. Bathgate 1985:85) are essentially invisible unless forest regrowth is at a stage where old cultivation areas can still be identified and garden hamlet locations postulated. Such is their ephemeral nature that local informants knew of no old sites of this type.

Two old settlement areas located on the upper western ridges of the Poha Valley were considered to have the best excavation potential of any sites of the large village class in the Poha River catchment. Both sites have identifiable features, are both located in fairly open forest and have known histories of multiple settlement phases; the age of the first of these phases is unknown but might be as much as 200 years. It seemed plausible, therefore, that these known histories, and the 'circular migrations' (cf. Chapman 1976, 1987, Chapman and Prothero 1985) with which they are associated, might extend back beyond oral memory and that excavation had some chance of recovering data for the definition and dating of open settlement use in this area.

Koilomate (SG-2-5) occupies a flat ridge crest location and its surface features include stone-kerbed house platforms and small stone mounds identified as umu ovens. These latter features are concentrated on the northern side of the site above a steep slope that falls away to the Vatumua Sesengoi rockshelter and are therefore consistent with oral traditions that suggest domestic food preparation was undertaken at the rear of houses and adjacent to suitable midden dumping areas - in this case the steep ridge slopes to the north.

A 1m x 1.5m test pit (TP/K0-1) excavated across one of the umu features failed to recover any artefacts, chert flake or chips, middlen materials or any quantity of charcoal. Indeed the removal of the surface deposits of oven stone, humic soil and root mat revealed the surface of a natural heavy red clay upon which the stones of the umu were lying in association with fragments of fire-cracked stones (cf. Miller 1980:456 for similar 'stratigraphies' in old villages in Malaita). These were identified by local
informants as njelu, the basal stones of umu ovens. Surprisingly charcoal was restricted to a few minute fragments insufficient for a C14 dating sample. Excavation of the red clays revealed a transition to a more orange and completely sterile clay at 0.5m depth.

The second site, Samabaghakiki (SG-2-9; see figure 8), has a series of house platforms set slightly below the ridge crest; one of these was known to have been the site of a luma, or single men's' house, and was better defined that the other house areas. The luma lies just below a pair of peo shrines, one each for the two major lineages of the area, and some 20m from an area known to have been used as a mbeku bone repository. Unfortunately the semi-sacred nature of the luma precluded excavation within its bounds and a small test pit (0.5m x 0.5m, TP/SK-1) was therefore dug in the adjacent house platform. A similar sequence to that at Koilomate was revealed - here a brown clay, with minute charcoal flecks close to the surface, merging into a thick and sterile orange clay at about 20cm depth - and likewise devoid of any cultural material. A series of small shovel pits revealed that this sterile stratigraphy was common throughout the platform.

The disappointing results from the test-pitting of these two sites were not altogether unexpected and highlighted some of the problems associated with the investigation of open sites set in inland locations with forest cover. Despite visible and identifiable surface features the test pits suggest that the recovery of archaeological information from such sites, in the absence of well-defined midden areas, will be restricted to the recovery of data on structures. This in itself will require open excavation on a large scale. Searches of the ridge slopes at both Koilomate and Sambaghakiki, and at other sites, failed to locate any indication of midden deposits. This included investigations at the village of Chiri where midden areas are known and still used. There appear to be several reasons for this absence. The greater part of midden deposition of inland settlements must have been organic in character and middens therefore lack the substantial deposits of marine shell associated with much coastal settlement in Melanesia. The heavier rainfall and higher rates of humus accumulation in interior areas soon obscures any trace of such deposits. Shells of freshwater molluscs, an important feature of diet for inland communities, might be expected to replace their marine equivalents of the coastal belt in such deposits. Ethnographic evidence from the Poha Valley, however, suggests that molluscan shell is reserved for lime production used in betel nut (Areca catechu) chewing.

Hamlets of the *Hamosa*

I have noted above that the open sites of the *hamosa* grasslands of the north-west cape can be classified by the two forms of the stone structures that serve to identify their presence. These different structural forms are further distinguishable by the slightly different topographical positions that they occupy; the settlement sites of the valley floors, which I argue are recent, are discussed later in this chapter.

The first group of sites, those with single course walling and/or kerbed quadrangular platforms set on ridge crests are generally smaller in area (platforms rarely exceed two in number) and are less well preserved than those of the second group. They are particularly well represented on the lower ridge crests bordering the Reilonga and Kolevu III agricultural systems; for example SG-1-412 Reilonga III, SG-1-419 Kolevu VIII and SG-1-423 Kolevu XII. Some of these sites are also associated with small low stone cairns, of unknown function, up to 1.5m in diameter and 0.5m in height. Associated cultural materials are restricted to low density scatters of exotic chert, *Canarium* anvils and, in some sites, a few scattered marine shells - usually *Turbo, Tridacna* and *Trochus*.

The second group of sites, those constructed of terraced platforms set into ridge slopes (cf. SG-2-9 Sambaghakiki above), are significantly larger in size, exhibit a wider range of features and are more clearly defined within the landscape. In the Kolevu/Reilonga area they are often sited close to those of the first group (eg. SG-1-421 Reilonga V and SG-1-422 Kolevu X). The best example of this site type, however, is Tuvu II (SG-1-432), sited adjacent to the Bealoki rock art site (SG-1-403); its terraced platforms are clearly visible from the present coastal road to the east of the present village of Tuvu (see figure 7). Described from west to east the site has the following major features:

(a) adjacent to the rock art boulder of Bealoki, a 5m x 7m stone-edged platform, facing the south-west, with a 3m stretch of single course 'walling' joining its eastern corner; a single, undiagnostic chert flake and a small adze (plate 18) of an andesitic rock type (possibly a local source) were recovered from the platform's surface. The 19.6gm adze measures 42.5mm in length, 26mm at its maximum width (22.5mm at the blade) and 11mm thick; it has a slightly flattened lenticular cross-section. Its more oval shape and apparently different rock type distinguishes it from the Vatuluma Posovi material (plate 8) and the two examples (plate 18) from the Visale R.C. Mission (see below). Two 'platforms' some 20m down slope are natural rotational slump features;
(b) 35m eastwards along the ridge, a second platform with a collapsed revetment wall measures some 12m x 3m wide, with its axis aligned to that of the ridge slope;

(c) immediately east of platform 2 lies a scatter of chert flakes, all unretouched, and a few freshwater shells (*Neritina* sp.);

(d) platform 3, slightly below the ridge crest and measuring 15m x 3m, is located immediately above a constriction in the ridge, formed by the development of a steep-sided gully to the south, and marked by massive andesite boulders pitted with numerous *Canarium* nut anvils;

(e) a natural 'step' in the ridge enhanced by a single line of blocks across the slope (2.50m in length) forms platform 4. A large boulder at the platform's edge has been utilised as a sharpening stone, evidenced by a number of shallow grooves across its face. Two chert flakes were noted on the platform surface;

(f) below the 'step' are two contiguous platforms, the lower revetment wall of platform 6 forming the rear scarp of platform 5. Platform 6 is unique in the site for the presence of an area of cobbled paving, some 2m x 1m in extent. Pavings of this type are known from historic settlements and mark the dwellings of *taovia* 'big-men'⁴. The platforms are each some 20 metres in length and 4 metres in width;

(g) a smaller platform, 12m x 3m, lies some 15 metres down slope from 5 and 6 on the northern edge of a steep gully;

(h) some 15 metres east of platforms 5 and 6 two further contiguous platforms (8 and 9) are located just below the ridge crest. The upper platform (16m x 3m) is slightly offset from the lower (24m x 5m), and has a scatter of volcanic oven stone on its surface;

(i) a 24m x 6m platform located 15m down slope from platforms 8 and 9, with its lower revetment wall partially built of large andesitic boulders;

(j) a 3 metre square cairn on the ridge crest behind platforms 8 and 9 is capped by a large flat slab. Local informants know this feature as a *peo* named Tsereu but noted that it was not associated with the old settlement; a *Cassis* shell and several pig mandibles lie on the cairn top. Adjacent boulders have *Canarium* nut anvils on their upper surfaces;

(k) a tenth platform, 20m x 4m, lies below the ridge crest, and just a few metres from a point where the main ridge descends steeply eastwards to site SG-1-433 Tuvu III (see plate 22a).
The two settlement site types described here parallel in many ways a similar typology of open sites in the inland forests of the Poha Valley, i.e. large nucleated settlements with smaller 'satellite' hamlets. The most significant difference between the inland and coastal ridge sites lies in their relative positions. In the inland forests, ridge-top hamlets and platformed villages do not occur in close proximity to each other. In the grasslands of the north-west cape the reverse is true, especially in the Reilonga and Kolevu valleys. This suggests that the two site forms were not contemporary. Some support for this hypothesis is indicated by apparent differences in the density of surface chert scatters and a greater variety of structural forms in the platformed sites. The absence of any direct dating for these sites makes their interpretation difficult, but a little more can be inferred from a consideration of the data available from the other classes of open site in this area and some pertinent ethnographic records.

The Visale R. C. Mission Coastal Settlement Site

The Visale R.C. Mission is sited at the tip of Guadalcanal's north-west cape and occupies a slightly undulating terrace above Leosa Bay (figure 50). The steeply sloping beach deposits here are formed almost exclusively of broken coral and shell debris, evidence of the high-energy wave formations responsible for their deposition. The area lies open to the force of the winds from the north-west and is particularly prone to damage from cyclonic storm surges. These have from time to time inflicted major damage to the Mission itself (Anon 1939) and have been responsible for the reworking of the deposits of the terrace upon which it sits.

In 1986 the excavation of foundation trenches for a new building at the Mission revealed the presence of a number of extended inhumations and scatters of cultural material. The burials, according to local informants, pre-date the establishment of the Mission, and its associated cemetery of Christian grave forms, in 1904 (Raucaz 1928:144). As the known settlements around the mission were initially founded by inland populations moving down to the coast shortly before or immediately after the arrival of the first resident Catholic missionaries (Paravicini 1931:47), it seemed plausible that the burials and/or the cultural material might represent evidence of considerably earlier occupation of the narrow coastal plain.

The artefact scatters and burials provided the only archaeological evidence for coastal settlement that was located in the 1987-1989 fieldwork. Loosely associated with the burials, or the deposits into which they had been interred, were a number of shell currency beads, chips and small flakes of chert, wood and Canarium charcoal, quantities of shell debris and volcanic oven stone. From the excavated spoil material of
the foundation trenches a small bone pin, probably a nose or ear ornament was recovered (see Plate 18). The pin, 33.5mm long and 2.5mm in diameter, is decorated with incised grooves at each end; between the grooves are a series of very faint, oblique incisions.

Searches of the surrounding areas revealed further scatters of chert chips and small flakes, some retaining cortex but none apparently retouched, and a single stone adze (see Plate 18). The 37gm adze is of a fine-grained basalt (cf. the adzes from SG-2-1 Vatuluma Posovi; see chapter 3, appendix 5 and Plate 8), 51mm in length, 34.4mm wide at the blade and 14mm thick. Above the cutting edge the surface of the tool has been ground and polished to form a second bevel; the edges have been similarly treated to give a flattened lenticular section.

The foundation trenches had been excavated to a depth of between 80cm and 90cm and had revealed a stratigraphy of two main components: a deposit of coral debris in compacted sand some 75cm to 85cm thick overlying a clean yellow/beige sand horizon containing only small coral chips and volcanic pebbles.

To investigate the nature and age of the settlement two areas within the Mission compound were chosen for excavation\(^5\). Both locations exhibited surface scatters of chert chips and were devoid of any obvious disturbance such as land crab burrows. Excavations were undertaken by trowelled spits following the natural stratigraphy. All material was wet-sieved through 6mm and 2mm mesh on site with residues being bagged for later sorting. The following information is given in tabulated form: chert density indices (Tables 6.1 and 6.2), molluscan shell recoveries from TP/VIS-1 (Tables 6.3 - 6.5), shell sample weights for TP/VIS-1 (Table 6.6) and faunal bone recoveries from TP/VIS-1 and TP/VIS-2 (Tables 6.7 and 6.8).

The location of the site on an old beach terrace provided problems of shell midden analysis because of the 'background' of natural shell deposition. Shell recoveries were initially sorted to remove waterworn or rolled pieces that were assumed not to represent midden material. This resulted in some quantities of shell being discarded from the sample analysed (see Table 6.6). As there was no well-defined midden deposit \textit{per se}, the results of the analysis should be treated with some caution and used as a general guide only. Molluscan shell recoveries from TP/VIS-2 were not subjected to the same analysis as those from TP/VIS-1 due to the loss of some material in transit from the site and uncertainty about the exact provenance of some shell samples recovered from sieving operations.

Bone recoveries from both areas were very few in number and generally restricted to small unidentifiable fragments. Identifiable components were almost all teeth of \textit{Sus}
*scrofa* indicating that only the more robust bone material has survived; no detailed analysis of this material was either possible nor warranted, and Tables 6.7 and 6.8 thus give simple presence/absence data only.

**TEST PIT TP/VIS-1**

A 1m x 1m test pit was sited on the crest of the raised terrace some 40m from the beach at 2.6m above sea level and five metres south of the foundation trenches in which the burials had been found. Excavations were conducted in 12 spits to sterile deposits at a depth of 1.7m. The definition of the four stratigraphical layers was based chiefly upon differences in degrees of compactness of the deposits.

**Layer 1**

<table>
<thead>
<tr>
<th>Depth</th>
<th>0-40cm.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matrix</td>
<td>Loose and dry deposit of coral fragments, shell and small volcanic pebbles. At 20cm a concentration of volcanic oven stones with fragments of charcoal (probably of <em>Canarium</em> sp. shell) intermixed but no indications of a hearth structure. In the west section a posthole, defined by its white coral chip fill contrasting with the dark grey of the layer 1 material, had been cut from this depth and extended 15cm into layer 2. The entire deposit much less compact than layer 2 below and apparently reworked (by cyclonic flooding?).</td>
</tr>
</tbody>
</table>

**Recoveries**

**Shell artefacts**

- Fragment of *Tridacna* armring, 'D' section, diameters: 75mm internal, 88mm external, 11.5mm thick. See Plate 18.
- Fragment of *Tridacna* armring, oval section, diameters: 75mm internal, 85mm external, 6.5mm thick. See Plate 18.
- 5 shell currency discs between 6mm and 7.5mm in diameter, 2mm–2.5mm thick and with central perforations 1.5mm–2mm in diameter. See Plate 18.
- Preform of a shell currency disc, 9mm in diameter, 2mm central perforation. See Plate 18.

**Stone artefacts**

- Adze of fine-grained greenish basalt, 37.9gm. Length 58.5mm, maximum width (at blade) 30mm, thickness 15mm. Lenticular section. See Plate 18.
- ? ; pump drill bit of light yellow glassy chert. Bifacial nibbled retouch, broken point. Length 19mm, width at end 14.5mm, width at tip 5mm, thickness 5mm. See Plate 18.
- Unifacially retouched flake of fine dark brown chert resembling miniature quadrangular adze. Length 22mm, width at 'blade' 14mm, thickness 5.5mm. See Plate 18.
125 small flakes and debitage chips of chert, all fine glassy material, orange to reddish-brown in colour, 18 retaining some cortex. See Table 6.1.

**Mollusca**  
see Table 6.3.

**Bone**  
_Sus scrofa_, spines and vertebrae of marine fish and a single bone of _Discadeles guppyi_. See Table 6.7.

**Charcoal**  
Present as flecks and small chips apparently of _Canarium_ sp. nut shell.

**Layer 2**

**Depth**  
40-120cm.

**Matrix**  
As layer 1 but more compact and less sandy. At the base of this layer less coral debris and plentiful small pieces (<5cm diameter) of pumice. Volcanic oven stone throughout.

**Recoveries**

**Shell artefacts**  
single shell currency disc, 6mm diameter with 2mm perforation.

**Stone artefacts**  
42 small flakes and debitage chips of fine glassy cherts, 8 with some cortex remaining. No formal artefacts. See Table 6.1.

**Mollusca**  
see Table 6.4.

**Bone**  
_Sus scrofa_ only. See Table 6.7.

**Charcoal**  
small fragments of _Canarium_ and wood charcoal throughout. A sample of wood and _Canarium_ charcoal (PP/VIS-C3, ANU-6997) from a depth of 0.5m gave a radiocarbon determination of 98.4 +/- 1.1% modern (= 130 +/- 90 bp; 290-0 BP).

**Layer 3**

**Depth**  
120-135cm.

**Matrix**  
Ash and charcoal lens on a base of small gritty pebbles. Oven stone throughout.

**Recoveries**

**Shell artefacts**  
nil.

**Stone artefacts**  
a single debitage chip of fine chert. See Table 6.1.  
_Canarium_ hammer stone.

**Mollusca**  
see Table 6.5.

**Bone**  
_Sus scrofa_ and unidentified fish. See Table 6.7.

**Charcoal**  
small fragments of _Canarium_ and wood charcoal throughout. A sample of wood and _Canarium_ charcoal (PP/VIS-C2, ANU-6736) from a depth of 120cm gave a radiocarbon determination of 1500 +/- 70 bp (1504-1318 BP).
Layer 4

Depth 135-170cm.
Matrix Very loose coral debris similar to present beach deposits of Leosa Bay grading into clean yellowish-white sand.

Recoveries

Shell artefacts nil.
Stone artefacts nil.
Mollusca waterworn shell fragments.
Bone at 160cm Sus scrofa and possible human bone fragments. Associated with the bone a small quantity of wood charcoal. A sample (PP/VIS-C1, ANU-6735) gave a radiocarbon determination of 99.0 +/- 3.0% modern (= 80 +/- 250 bp; 430-0 BP).
Charcoal

Test Pit TP/VIS-2

A second area (TP/VIS-2, 1m x 2m) was opened about 10m to the east of TP/VIS-1 in a shallow swale behind the terrace crest, and at the edge of a kitchen garden. Here the cultural deposits were less deep (0.5m-0.6m, excavated in 7 spits) more heavily disturbed, and produced smaller quantities of artefacts than TP/VIS-1, but the test pit did provide evidence for structures.

Layer 1

Depth 0-10cm
Matrix Surface deposit of humus and root mat intermixed with coral and sand. A very mixed deposit with modern debris throughout - clay pipe stems, trade beads, glass, metal, shotgun cartridge cases etc.

Recoveries

Shell artefacts 8 shell currency discs between 4mm and 6mm in diameter, 1mm-3mm thick and with central perforations 1.5mm-2mm in diameter.
Stone artefacts 51 small flakes and chips of chert. No formal artefacts. See Table 6.2.
Bone
Charcoal wood charcoal fragments throughout.
Layer 2

**Depth** 10-45cm

**Matrix** Loose, friable dark soil matrix with fragments of coral and small pebbles. On southern section line four large stones mark the base of an oven pit probably inset from the surface. Elsewhere oven stone occurring throughout the deposit but not in any concentrations.

**Recoveries**

**Shell artefacts** 10 shell currency discs between 4mm and 6mm in diameter, 1mm-2.5mm thick and with central perforations 1.5mm-2mm in diameter. See Plate 18. perforated and polished shell fragment, ? pendant. 9.5mm x 9.5mm, 3mm thick with a 2mm perforation. From upper fill of F5. See Plate 18.

**Stone artefacts** perforated *Conus* disk, 13mm in diameter, with 4mm perforation. From upper fill of F5. See Plate 18.

**Mollusca** 278 chert chips and small flakes of chert, mostly fine debitage. See Table 6.2.

**Bone** as layer 1 with following additions - marine gastropods: *Terebralia* spp., *Chicoreus*, *Thiara*, *Nerita plicata*; marine bivalves: *Spondylus*, *Periglypta puerpera*.

**Charcoal** drilled dog tooth. See Plate 18.

human bone fragments.

wood and *Canarium* charcoal dispersed throughout.

Layer 3

**Depth** 45-70+cm

**Matrix** Sandy beach deposit with some coral debris. Below 70cm this is sterile but in the upper 0.25m there is a small amount of cultural material. This is perhaps a remnant deposit that survived the truncation of this layer (see feature notes below).

**Recoveries**

**Shell artefacts** single shell currency disc, 4.5mm diameter with a 1.5mm perforation.

**Stone artefacts** 14 small chert chips.

**Mollusca** as layer 2 but with addition of *Melanoides aspirans*.

**Bone** *Sus scrofa*, unidentifiable fish.

human bone fragments.

**Charcoal** small fragments of *Canarium* and wood charcoal throughout. A sample of *Canarium* charcoal (PP/VIS-C4, ANU-6998) from a depth of 70cm gave a radiocarbon determination of 1290 +/- 150 bp (1330-1060 BP).
Structural features

Cut into layer 3 are a series of features which are interpreted as posthole and stakehole features (see figure 51). With the exception of F8, fills are of layer 2 material. The features are as follows:

F2: diameter 17cm, depth 0.1m. Posthole.
F3: diameter 30cm, depth 0.25m. Posthole.
F4: diameter 6cm, depth 8cm. Stakehole?
F5: keyhole shaped pit, probably a posthole and postpipe, 38cm deep and 0.5m in diameter.
F6: cf. F5, 24cm deep, 0.4m wide.
F7: diameter (on section line) 30cm, depth 20cm. Posthole.
F8: depression, diameter 33cm, depth 27cm. Ill-defined. Fill of brownish sand and small pebbles.
F9: diameter 3cm, depth 23cm. Small posthole.
F10: shallow depression, diameter 0.25m, depth 0.1m.
F11: shallow depression, diameter 0.25m, depth 5cm.
F12: shallow depression, diameter 20cm, depth 5cm.

None of these features shows in section extending into layer 2. Their rather shallow depth and uniform fill suggests the removal of any structures and the truncation of the layer 3 surface before the deposit of the layer 2 material.

The Visale R.C. Mission site presents several problems of interpretation. Much of the site has been subjected to quite heavy disturbance both through natural agency and, on the evidence of the truncated features in TP/VIS-2, also through deliberate alteration of the environment. Taphonomic factors have apparently affected the survival of bone material; the absence of any concentrated midden deposits has exacerbated this problem and also rendered difficult any reliable analysis of the shell materials. Any inferences drawn from the Visale data must therefore be somewhat tentative.

The radiocarbon dates from the excavations require some comment. PP/VIS-C2 (ANU-6736) and PP/VIS-C4 (ANU-6998), recovered from similar stratigraphic positions gave results that just overlap at one standard deviation and date initial settlement on a sand and coral beach area. The result from PP/VIS-C1 (ANU-6735) is obviously anomalous. The error is most likely due to the deposition of charcoal from above via an unrecognised source of disturbance such as a land crab burrow. That ANU-6736 and ANU-6998 both returned acceptable dates seems to present little problem in rejecting the ANU-6735 result. The date from the sample taken from the upper part of layer 2 in TP/VIS-1 (PP/POS-C3, ANU-6997) is consistent with its position. In defining the later prehistoric sequences for north-west Guadalcanal however, additional samples from less disturbed contexts are obviously required. The dates from these excavations suggest a two phase occupation sequence, the first
beginning at some time after 1500 BP, and a much later occupation following abandonment or sporadic use, probably postdating 300 BP (ANU-6997).

The environmental data does not lend itself to discussions of the nature of the subsistence base of settlement at this site, nor therefore to any changes to it through time. The shell material, as might expected from a coastal location, demonstrates a heavy reliance on marine species and especially the gastropods *Turbo, Cyprea* and, to a lesser extent *Trochus*. Utilisation of bivalves remains fairly constant throughout the sequence and represents about 10% by weight of utilised shell in layers 2 and 3 and 12% in the most recent horizon. The favoured species of the Poha Valley rockshelter sites (especially species of *Melanoideas* and brackish-water bivalves of the Veneridae family) are present but evidently relatively unimportant. This possibly reflects a lack of suitable habitat in the immediate vicinity for their collection.

Little can be said about the bone material save that indigenous species, with the exception of the marine fishes, are almost entirely absent. The importance of the limited bone material lies in its demonstration of the presence of pig from about 1500-1300 BP. This contrasts strongly with the evidence from the cave and rockshelter sites where it occurs only in the later levels. Dog is only present in the later horizons at Visale where it is indicated by a drilled tooth. The dog may be a very late introduction to Guadalcanal as there is no mention of it in the Spanish records of 1568.

Although *Canarium* sp. nutshell was recovered from all occupation layers of the site, this took the form of small fragments insufficient in size to permit identification to species level. Taphonomic factors similar to those affecting interpretation of the bone material preclude any useful analysis regarding *Canarium* cultivation or utilisation.

The artefactual material from the site consists of shell valuables - currency discs throughout, perforated beads and pendants, and, in the later occupation layer in TP/VIS-C1, *Tridacna* armrings; drilled teeth are also present. The production of shell currency on site is suggested by disc preforms and a putative bit from a pump drill utilised in ethnographically documented and modern contexts for the fashioning of perforations (Paravicini 1942-45, Woodford 1908). Alternatively many of the discs may have been imported from the production centres of Malaita either directly, or via Nggela which was linked to north-west Guadalcanal through exchange systems of which food and canoes seem to have been the main products.

A Malaitan source for some of the currency discs is made more likely from a consideration of the stone material. Chert use at the site, including the fabrication of artefacts, is obviously considerable, especially in the later occupation phase. All of this material is from an exotic source and has been imported either as flakes or larger chunks, many of the pieces retaining amounts of cortex. There are no flakes or debitage
chips that can be attributed to the only known Guadalcanal chert source in the Mbirao mountains, leaving the closest source for the Visale cherts in west Malaita. The excavated and surface-collected adzes from the Visale site are typical of ethnoarchaeologically known Guadalcanal material (cf. Wall 1974) and are also comparable in stone type and form to the two examples from Vatuluma Posovi. Production centres for fine-grained basalt adzes of this type are known from the south coast of Guadalcanal, especially in the Avu Avu area; products from this source have also been recorded in Lapita sites of the Reef/Santa Cruz group (Green 1978:30, Moore with Hackman 1978:15).

The portable artefacts are quite typical of later prehistoric sites elsewhere in the Solomon Islands and would not be out of place, for example in the suite of materials from Su'ena on Uki (Green 1976b) or Star Harbour on San Cristobal (Green 1976a). Green's comments regarding the Su'ena assemblages (Green 1976b:191) apply equally well to the Visale ones, for, as he says 'a high degree of general continuity [is reflected] between the most recent and the oldest items' and 'there are close parallels with ethnographic items known from many parts of the region'.

Before presenting a discussion of the evidence for the late prehistoric and historic settlements of the valley floors, I turn here to the major agricultural sites that were located and examined.

THE AGRICULTURAL SITES

In his reviews of Solomon Islands agricultural systems Yen (1974b:40, 1976a:60) drew attention to the account of Catoira (Amherst and Thomson 1901:306) indicating the previous employment in Guadalcanal of more intensive agricultural practices than the rather uniform swidden systems now in general use. On their return from an expedition 'to the west' of their anchorage point at Point Cruz (Honiara), presumably on foot but conceivably at first by boat, the Spaniards

.... saw many villages upon the hills, and many plantations (chacaras) of food on the slopes, arranged very well so that they could irrigate them, which they did. It was well laid out; and by each cleft there was a stream of water. The place whence the water came is full of trees.

Yen was unable to locate any trace of such systems in his surveys in the Honiara area and noted the possible deleterious effects that wartime activities might have had on the survival of any remaining features (Yen 1976a:63). Like Yen, enquiries of local
informants in 1987-1988 failed to yield any knowledge of intensive irrigated systems in the Honiara, Poha valley or Vura valley areas. The fortuitous observation from the air by Graham Baines of shadow marks in the vicinity of Visale (plate 19) led to the discovery of seven irrigated pondfield systems in the north-west cape region (see figure 7).

Irrigated systems for the cultivation of *Colocasia* taro have been recorded on the islands of Kolombangara and New Georgia in the western Solomons (Brookfield 1971:118, Chikamori 1967:30, Miller 1979, Tedder and Barrus 1976, Yen 1976a:69-70); a small number of these systems are still in use (Anon 1991, Roe 1978). Yen's small excavation on one of the systems of the Ndughore River in Kolombangara produced a C14 date of 230 +/- 90 bp (Black and Green 1975:19, Yen 1974b:40) from 'charcoal deposited in what was judged as close to the early level of agricultural occupation'.

Spriggs' intensive studies of irrigated taro systems in Vanuatu, and particularly on the island of Aneityum (Spriggs 1981, 1982a, 1982b, 1984b, 1985, 1986, 1992a) provide the most comprehensive data for any of the Melanesian islands. Spriggs (1984b:124) identifies two factors which prompt the practice of irrigation, firstly 'in areas with a marked dry season, irrigation creates conditions allowing the growth of water-demanding crops' and secondly, in areas of sufficient rainfall 'irrigation is used both as a safeguard against occasional drought and, more importantly, to promote higher yields'. In the Visale area a combination of both of these factors may be at work. The marked seasonal rainfall regime results in extended dry periods (see table 2.1) and thus climatic conditions may well have been the major raison d'etre for the construction of the irrigation systems. In the even drier area of the north Guadalcanal plains informants credited the dominance of yam and sweet potato cultivation to climatic conditions; taro simply could not be grown in this area using the normal dry-land techniques of the inland villages of the Pariapao and Malango districts. Observers of the subsistence crops of the north-west cape note only yam as a major crop (Bathgate 1973, 1975, 1985:85, Paravicini 1931:3); indeed the only use to which the irrigated pondfield systems are now put is the dryland cultivation of *Dioscorea alata*. In the Poha Valley, an area with a similar rainfall pattern, water stress of the type known at Visale involving dry water courses for much of the year, has only recently been experienced. This appears to have coincided with large scale clearance of forest areas in the lower valley for the cultivation of market gardens. Prior to these events *Colocasia* taro was regularly grown throughout the valley. There is circumstantial evidence therefore that low rainfall combined with forest cover loss necessitates irrigation for taro cultivation; where tree cover is not lost soil moisture is retained in sufficient amounts as to allow for dryland cultivation.
There is some indication from oral traditions that surpluses of food, particularly yams, were once grown as commodities of trade and exchange between north-central Guadalcanal and Nggela. Shell currency and valuables were also exchanged by Malaita people for food in north-east Guadalcanal (Codrington 1891:294). In the north-west Guadalcanal area similar exchange relationships (chabiri) existed with pigs being exchanged for Nggela canoes (Bathgate 1985:86); local residents also noted that yams formed part of such exchanges. Food exchanges between coastal and inland communities and competitive feasts hosted by taovia ('big-men') in their pursuit of social prestige are also documented. Although there is no specific documentation of the use of taro in the exchange systems of north-west Guadalcanal, the capacity of irrigated systems to produce high yields (cf. Spriggs 1984b:126) and the large areas given over to these systems in the Visale area provide circumstantial evidence of the production of surpluses for trade and exchange and/or for social prestige.

All of the systems lie in alluvial-filled valleys between Tuvu and Mamarei and their distribution thus coincides with the Nggae language group area and, perhaps more significantly, a topographic region dominated by a radial drainage pattern of short rivers flowing in wide valley floors. Of the seven systems recorded (SG-1-436 Vila I, SG-1-437 Chovuna, SG-1-438 Veravaolu, SG-1-439 Leosa, SG-1-408 Lenggaruna, SG-1-409 Reilonga I and SG-1-400 Kolevu II; see figure 7 for their location and extent) only the Vila I system also has ridge-slope terracing of the kind described by Catoira (see plate 20a). The systems all appear to be constructed along similar lines: contiguous series of ponded fields defined usually by stone walled banks averaging about a metre in height. With the exception of the Ghambughasi system all of the streams and water courses that must once have fed the pondfields are now dry.

Two areas were chosen for detailed investigation - several areas of the Kolevu III system and the northerly bank of the Lenggaruna pondfields. The investigations sought to recover details of the systems' construction and to obtain radiocarbon samples for the dating of the initial cultivation horizons. It was hoped also to investigate the reasons for the demise of irrigation in this area during the period of European contact.

SG-1-400, Kolevu III

The Kolevu system is located in a flat-bottomed, but fairly steeply sloping, valley (figure 52). To the north a flat-topped ridge, supporting only Themeda australis grassland, and exhibiting ample evidence of soil loss through rotational slumping, separates the Kolevu system from a second and much larger system in the Reilonga Valley; this latter has been almost totally obscured in its upper reaches by at least 4
massive slumps from the ridges above (Peter Hopson pers. comm.). To the south the Kolevu terraces have their boundary at the river from which the site takes its name and which lies at the foot of a steep-sided wooded ridge. The boulder-strewn stream is heavily incised (see profile 3 in figure 57) and water flow is intermittent, although constant water flow is remembered by older residents of the area.

The dominant vegetation of the valley floor is Themeda grassland, with secondary regrowth species, especially Hibiscus tiliaceus, along the southern and eastern margins of the terrace system. That the valley has seen intensive agricultural use in the recent past is evidenced by the abundance of economic plants in the area - banana, mango, betel nut (Areca catechu) citrus trees, Malay apple (Eugenia sp.), pineapple, sweet potato, coconut, and Dioscorea yams.

The extant features of the system lie over a distance in excess of 600 metres, and for much of that distance the system is between 100m and 200m in width, giving an area available for cultivation of approximately 9ha. Using an average of the yield figures for irrigated taro in Maewo (Vanuatu) (Spriggs 1984b:126), gives a production potential in excess of 400 t/yr assuming that all pondfields were in use. Yields from a similar area under dryland cultivation with optimum rainfall would be of the order 135 t/yr. Although these figures are hypothetical estimates they underscore the capacity of irrigated systems for substantial production in relatively small areas.

There are some indications that formerly the pondfields extended further to the west, but modern coconut plantations have apparently destroyed the majority of the surface features. To the east the upper end of the system is obscured by dense secondary growth, but the walling continues for another 70m to an open garden area at the foot of steep slopes to the north and above the Ngaliporo river to the south; this area is not indicated on the site plan (figure 52). A site datum was established on the most easterly visible feature of the system and all heights shown on the profiles are given in metres below this datum. The profiles, plotted using a Dumpy level, show a total vertical fall of 58m from datum to the end of profile 3, with average gradients of 7% for both profiles 1 and 2.

The structural remains of the Kolevu system (figure 53) comprise a complex of walled terraces, in three main series, forming a pattern of contiguous ponded fields. The central series of pondfields follows the course of an old stream bed (see profile 1 in figure 53 and plate 19) whilst those to the north and south follow artificial, or human-enhanced, terraces (profile 2 in figure 53 shows the lower part of the northern series). Both the northern and southern series are at a higher elevation than the central series. Apart from a fairly restricted area in the upper part of the system where there is a
jumble of pyroclastic andesite boulders, the entire valley floor is taken up with cultivation areas.

The pondfield walling varies in character, with the large boulders of the southern ponds being replaced by smaller stones in the northern and western parts of the valley. Where stone size decreases, wall width generally increases and the cross-slope walling tends to be slighter than the longitudinal walls separating the three pondfield series. Stone size in the central series of fields is generally much larger than in the ones that flank it. These differences in character are not shown in figure 53 due to problems of scale.

With the exception of the smallest pond (10m x 5m in dimensions), all the field areas contain well-defined stone mounds, varying from 0.30 to 4.00m in diameter and 0.30 to 3.00m in height (see plate 20b); apart from one longitudinal mound (12.5m x 2m) in the upper part of the system all of these features are roughly circular in plan (figure 55).

Following the mapping of the surface features (by tape, Abney level and compass) three excavation areas were chosen within the Kolevu system. A series of soil pits were also dug to characterise the soils both within and outside the site area.

AREA T1

A 9m x 2m excavation located in the upper part of the system, was the largest of the areas investigated. The trench, across a lateral wall separating two pondfields of the upper system (figures 53 and 55, for profiles see figure 56), was set so as to bisect two of the small stone mounds. The excavation enabled, therefore, an examination of the pondfield soils and walling, and the opportunity to assess the nature and function of the stone mound features; similar mounds in irrigated systems in Futuna, western Polynesia, are known to have been used for the cultivation of sugarcane and banana (Kirch 1975:133, 1976: plate 1 opp. p.36).

The stratigraphy of area T1 was the most complex of any of the excavated areas and the relationship between some of the observed horizons was not satisfactorily resolved; this was especially the case in the lower pondfield area (LPA) where the deposits were less thick than in the upper area (UPA) and had obviously been subjected to some water scouring and possibly also to some later disturbance from recent yam cultivation. A significant obstacle to the recognition of the soil horizons was posed by the problem of defining colour changes and textures. The excavation area was
subjected to full sun from early morning through to late afternoon with the result that
deposit surfaces dried very rapidly. Two methods were used in attempts to combat this;
whenever possible the deposits were covered with plastic sheeting to retain moisture,
and a portable water spray was used, particularly prior to photographic recording, to
dampen the soils to highlight their colour and texture variations. Neither method was
entirely satisfactory as improvements to visibility were short-lived.

As the recovery of dating material was a priority, the excavation was conducted in
trowelled spits following the natural stratigraphy, so as to maximise the recovery of any
charcoal that might have been either sealed beneath the pondfield walling or retained
within the cultivation soils. Samples of the cultivation soils were sieved through 6mm
mesh screens with sub-samples being sieved also through 2mm mesh. The sieving was
conducted in order to recover any small freshwater mollusca that might be present in the
pondfield soils. The results were entirely negative.

As the stratigraphical description involves a number of features and layers, these
are tabulated (table 6.9) to allow ease of reference to the section drawings (figure 57).
Except as indicated, Munsell soil colour notations are not available for the soils of this
area; pH values were consistently 6.0 throughout the sequence.

The T1 excavations demonstrated that the site had two main cultivation phases.
The pondfield wall (feature 1, F1) that separates UPA from LPA at surface is a slight
construction of small andesitic stones that barely extends through the Themeda root mat
and loose soil to the cultivation horizon of layer 2 beneath. Indeed to label it a wall is
slightly misleading as it merely forms a capping to the pondfield bank crest. The
surface layers in UPA seal two very similar soil horizons (layers 2 and 3) that are
differentiated only by texture, slight colour difference and marginally more stone in the
lower of the two. Layer 2 (the later cultivation horizon) is a loose friable and entirely
stone-free soil; the F1 wall is set upon, but does not bound this deposit. The layer 3
soils below which represent the earlier cultivation phase are found in a slightly altered
form also in LPA, but they are bounded by the remains of a second, buried wall (F4).
In the centre of the trench this wall had evidently collapsed downslope allowing some
of the soil which it had retained to spill through into UPA. The F4 wall was a relatively
more substantial structure than F1 and was set into a brown/yellow sand sealed
throughout UPA by the layer 2 horizon. These sands were also present in LPA in small
patches and pockets and, as layer 5, as a small mound of material underlying stone
mound 807 (F2). That there had been a hiatus between the breach in the F4 wall, which
does not appear to have been a catastrophic event, is indicated by the recovery on the
surface of the sand below F4 of mud wasp cells (cf. Harrison 1966); these were also
present on the layer 5 soils of the mound base.
The layer 4 sands mark the base of the cultivation soils. They are distinguished by the presence of 'flame structure' caused by the failure of the sand to uphold the weight of the soils above when wet (Cheatle pers. comm.). From the surface of the sands in UPA where they were still retained by the remnants of the F4 wall sufficient charcoal was present to allow for the collection of a C14 sample. The charcoal comprises very small flecks, possibly including fragments of Canarium nutshell. The sample (PP/KOL-C1, ANU-6730) gave a result of 490 +/- 130 bp which calibrates to a range between 644 and 460 BP and is associated with the initial cultivation phase.

The layer 4 sands are separated from the basal alluvial gravels and boulders by the silty soils of layer 6 which are common throughout the T1 area.

The investigation of the structure of the two mounds (F2 and F3) bisected by the excavation area produced conflicting evidence. It can be seen from the section diagrams that the stones of mound 809 (F2) rest upon the thin cultivation soils of layer 3a and are contained entirely within the layer 1 surface soils and root mat. Conversely mound 807 (F2) exhibits a distinct structure. This comprises a small mound of the yellow/brown sand (L5) constructed on the silty layer 6 soils and is capped by a looser version (L3B) of the lower cultivation horizon retained by the F4 wall in UPA. The construction of this mound, therefore, must be associated with the first phase of pondfield construction. Unfortunately no charcoal was present in the sands to enable a date to be obtained. Within the mound were two dark stains (F5 and F6) of irregular shape, suggestive of root shadows.

AREA T2 (SOIL PIT 2)

Excavation area T2 was located within a second pondfield of the northern series (figure 53 and profile 2 in figure 54). A 1.5m x 1m pit was dug with shovels to obtain a soil profile from the middle of the system. A simple stratigraphy of three layers was obtained:

Profile:  
0-10cm  Thin topsoil with grass roots. pH 6.0, 7.5 YR 2/0.  
10-45cm  Black stone-free loose soil, pH 6.0, 2.5Y 2/0.  
45-85cm+ Alluvial torrent gravels and yellow/orange silts. Many stones (>20cm) with large boulders up to 50cm in size. pH 6.5, 2.5Y 4/4.

There was no evidence in this profile for more than one period of use of the site, with the only cultivation horizon resting immediately upon the torrent gravels noted in area T1. The black soil horizon is directly comparable to the layer 2 horizon in area T1.
AREA T3

The last identifiable pondfield at the western end of the Kolevu system was the location for excavation area T3 (figure 53, figures 57-58, profile in figure 59b). This area also provided evidence for two phases of use in the discovery of buried walls below the upper cultivation horizon. Descriptions of the stratigraphical units are presented in table 6.10. and section drawings are found in figure 60. Like the previous two areas the cultivation soil (layer 1) revealed by the removal of the surface deposits, was a stone-free black soil in which the stones of mound 955 were partially contained. This sealed, in area EFGH (see plan in figure 58 for square nomenclature) a thick slabby clay (layer 3) either directly, or indirectly over thin lenses of fine gravels (layer 2). These two deposits (layers 2 and 3), the clays in places with ironpan development, lay over a spread of massive stones forming a substantial wall (F2) set on a brown, rather stony silt (layer 7) that was continuous across the entire excavation area. In the interstices of the stones was a sandy silt (layer 6) with small pebbles and stones. In the annexe to the main excavation area (ABCD) a single line of stones (F3) abuts the F2 wall. The clay capping is lacking any iron pan development but the stones are set upon the same horizon as the stones and boulders of F2. The smaller F2 wall is post-dated by a layer of silts (layer 4) and the black soil horizon of layer 2.

A charcoal sample from the basal layer 7 in ABCD (PP/KOL-C1, ANU-6732) yielded a modern result. The reasons for this are not clear. The sample was comprised of a collection of very small flecks of charcoal and it is possible layer 8 sandy silts still allow water flow and the transport of small fragments of material from elsewhere.

The stratigraphy of the T3 area is complex and requires further excavation to elucidate the form of the buried wall complex. The lower half of the stratigraphic sequence, with its various deposits of clays, silts, sands and gravels, contrasts strongly with the homogeneous black soil that lies above it; this is more remarkable in that the black soil is precisely comparable to the soils of areas T1 and T2.

AREA T4 AND SOIL PIT H1

The survey and mapping of the Kolevu system failed to locate any evidence for the means by which water was introduced to the pondfields. A small gully running along the northern fringe at the base of the steep ridge slope holds water after rainfall but is otherwise dry, and its meandering course in and out of the fields did not appear to have the character of an irrigation canal. Two areas at the base of the northern slopes were excavated to test for the presence of water delivery ditches. Area T4 was located
at the eastern end of the system (figure 52) and soil pit H2, excavated largely by shovel, was set adjacent to the pondfields investigated by excavation T1 (figures 52, 54 and profile 1 of figure 55).

The following layers and features were observed in area T4 (figure 60):

**Layer 1**
0-4cm. Leaf litter, root mat, friable and crumbly soil intermixed.

**Feature 1**
Stones (25-35cm in size) of wall 1m in width and set on surface of layer 2, extending through layer 1 to surface. Smaller stone infill.

**Layer 2**
4-30cm. Black, virtually stone-free soil. Seals layer 3. pH 6.0, 7.5YR 2/0.

**Layer 3**
30-45cm+. Hard and compact stony yellow clay. pH 7.0, 10YR 4/4.

In soil pit H1 (figure 56) the following stratigraphy was recorded:

**Profile:**
0-15cm Topsoil, gritty and humic below *Themeda australis* root mat. pH 6.5, 7.5YR 2/0.

15-90cm Compact, stony black soil, with stone alignment parallel to present boundary wall of system at 75-85cm. pH 6.0, 10YR 2/1.

90-130cm+ Sticky and wet yellowish clay. pH 7.0, 5YR 2/0.

Neither area produced any evidence of the kind that was sought. Both areas did demonstrate, beyond the boundary wall of the system, the presence of black soils of the type encountered within the system. In T4 this horizon was noticeably more compact and stony. In the soil pit the black soil horizon compared with the layer 2 deposits of area T1 and contained within it a buried wall. This may have been a revetment for the rear of the boundary wall of the pondfields. An alternative explanation is that the margins of the pondfield were also used for the cultivation of crops not requiring water and that the wall served to retain suitable soils at the foot of the ridge for this purpose.

The inability to locate the water supply devices of the Kolevu system hinders the interpretation of the site. I have noted above the height differentials between the central series of ponds and those to the north and south. By whatever means the system was fed with water at least two inlets were required, one to feed the northern and central pond series and another to service the southern series, or *vice versa*, it being possible to channel water from both north and south into the central series but not, obviously in reverse. Two possibilities for water supply can be postulated.
The first is that ditches were utilised but post-depositional processes have infilled and obscured them. If any such channels did exist they must have been led off the upper Ngaliporo, perhaps as much as a kilometre from the system, to compensate for the 5.5m difference between the pondfield surface and the river bottom at the upper extremity of the system. This height difference may well have been exaggerated by recent down-cutting with a change in the river regime from constant to intermittent flow. The evidence from area T4, soil pit H2 and surveys targeting such features in the Ngaliporo valley, would suggest that this is not the case.

The second possibility is that water was fed into the system through a network of bamboo conduits (chocho). Large stands of bamboo in the upper Kolevu river and an old land area there known as Chocho, seem to support this proposition. Parallels for its employment in relation to irrigated agriculture comes, inter alia, from Fiji (Watling 1984:128) and Vanuatu (Deacon 1934:177). A rough indication of the capacity to deliver water in this way comes from measurements taken at the bamboo conduit used to bring water to the Vatuluma Tavuro cave (for wet-sieving) in 1987-1988. Drawing water from a small stream, a single bamboo conduit, 5cm diameter with the water running 1.5cm deep, delivered 12 ltr per minute or 17280 ltr per day.

SOIL PITS H2 AND H3

The excavations at Kolevu were concluded with two soil pits on the northern ridge slopes (figure 52). Pit H2 revealed, as expected, a heavily denuded slope with a thin stony 'topsoil' and Themeda root mat layer sealing light brown and compact clays.

Soil Pit H3 (figures 52 and 58) was located on the crest of a mound of slumped material covering part of the pondfield system walls on its northern side and to the west of excavation area T1. This excavation revealed evidence for a much earlier phase of agriculture employed in the north-west cape area. The stratigraphy was as follows:

**Profile:**

<table>
<thead>
<tr>
<th>Depth (cm)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-18cm</td>
<td>Topsoil, stony and compact below Themeda australis root mat. pH 6.0, 2.5Y 2/0.</td>
</tr>
<tr>
<td>18-60cm</td>
<td>Orange, stony clay of slump material. pH 6.0, 10YR 5/4.</td>
</tr>
<tr>
<td>60-100cm</td>
<td>Old soil horizon, light brown, gritty texture. pH 6.5, 10YR 3/1.</td>
</tr>
<tr>
<td>100-145cm</td>
<td>Yellow/orange clay, stones. Surface with abundant wood charcoal a sample of which (PP/KOL-C3, ANU-</td>
</tr>
</tbody>
</table>
6732) gave a radiocarbon determination of 2800 +/- 140 bp (3109-2769 BP).

The very early date obtained from the charcoal of the interface of the buried soil and the basal clays, provides additional evidence for the timing of forest clearance. Although the date is rather earlier than the evidence from the palynological work of Haberle (appendix 1) and the testimony of the Poha Valley cave sites (chapter 4) it would not be unreasonable to suppose that clearance took place at different times in different localities.

SG-1-408, Lenggarauna

The Visale R.C. Mission site (SG-1-407) is flanked by two villages, Vutulaka to the east and Lenggarauna to the west, both of which are built on the remains of irrigated pondfield systems (SG-1-439, Leosa and SG-1-408, Lenggarauna respectively). On the basis of site location alone there were reasonable grounds to postulate a link between the agricultural systems and the pre-Mission settlement investigated in the excavation of test pits TP/VIS-1 and TP/VIS-2.

The final northward expression of the Lenggarauna pondfield system is a more or less well preserved bank south of the hamlet from which the system takes its name. The bank is evidently eroded and apparently completely lacking in any stone material. It lies 110m to the south of high water mark with its crest at 2m above sea level and some 20cm above the level of the pondfield surface. To the east, at a distance of 120m is a small stream, the Komanugha, the mouth of which is seasonally blocked by a sand and coral ridge. The stream forms the western boundary of the Lenggarauna system. The eastern boundary of the system is a substantial earth bank, up to 1.5m in height, which also flanks the playing fields of the Visale R.C. Mission. The hamlet of Lenggarauna is sited on a raised beach terrace of corals and sands with no evidence of any appreciable soil development.

TEST PIT TP/LE-1

A test pit (TP/LE-1) giving a section from the bank crest into the pondfield soils was excavated by shovel and revealed a simple and well-defined stratigraphy of two main layers (see figure 52), as follows:

*Layer 1* 0-60/72cm. Black, virtually stone-free soil, undifferentiated. pH 7.5, 5YR 2/1.
Layer 2a  60/72-78/90cm. Clean yellow sand with coral fragments and a small quantity of shell. A sample of *Turbo* shell (PP/LEN-C1, ANU-6986) from the layer 1/layer 2 interface gave a radiocarbon determination of 2060 +/- 60 bp (1696-1540 BP).

Layer 2b  90-100cm. As layer 2a but orange staining on the coral and shell fragments.

Layer 2c  100-115+cm. As layer 2a but greyer sand, some small pebbles.

Samples of both layers were wet-sieved but no artefacts or charcoal were recovered and no molluscan remains were present in the black soil of layer 1. From the surface of the coral of layer 2 a single human bone (phalange) was recovered.

The marine shell date (PP/LEN-C1, ANU-6986) of 1696-1540 overlaps at two sigma with the date for the lower occupation at the Visale R. C. Mission site provided by ANU-6736. The undifferentiated nature of the layer 1 soil suggests its rapid build-up following the construction of the bank which retains it and separates it from the soil-free coral debris of the beach terrace to the north. The date provides a *terminus post quem* for the establishment of this part of the Lenggarauna system suggesting that the construction of the pondfield occurred at a period contemporary with the first settlement at the Visale Mission site.

The cultivation soil of the Lenggarauna system is directly comparable in colour, friability and texture to those of the various excavation areas within the Kolevuvu system. The stone-free nature of the soil, in an area where andesitic stones and boulders are ubiquitous features of the landscape, appears unnatural. It seems highly likely that labour inputs into the construction of the North-west Cape systems were concerned not only with wall and terrace building but also with the 'manufacture' of suitable soils for cultivation. The function of the stone mounds at Kolevuvu would thus be largely as field clearance structures and any role that they may have played in the cultivation of other crops may have been simply a useful 'spin-off'.

**Dating**

The dating of irrigated agricultural systems in the Pacific has met with mixed success (Spriggs 1985:416). The general paucity of suitable dating material in excavations of agricultural sites, and the necessarily tentative nature of dating sites by association with other types of sites thought to contemporaneous on the grounds of spatial relationships, are problems that are difficult to resolve. Of the three radiocarbon samples from the Kolevuvu system submitted for dating, one returned an unacceptable date (ANU-6731) and one had insufficient carbon for a determination to be made
(ANU-6987). The remaining date, ANU-6730, must be considered with the same caution with which any uncorroborated date must be treated. A *terminus post quem* is provided by the dated beach layer from the lower part of Lenggarauna. Until further work can be undertaken, any fully acceptable statement regarding the age of these systems will be impossible.

Determining the causes of the demise of irrigation and when it may have happened can be approached with more certainty. A hypothesis that environmental factors, such as a significant uplift event causing stream incision and thus affecting water availability, had to be discounted in the absence of any evidence for such an event in the late prehistoric period (see chapter 2 and appendix 1). The massive social disruption of this part of Guadalcanal that occurred in the mid to late nineteenth century as a response to increased headhunting (see chapter 2), does however offer a plausible reason. The mass movements of people away from the coast would have reduced the necessary labour inputs to maintain the systems; indeed they may have removed the necessity for the systems themselves. As coastal re-occupation did not occur until the late nineteenth or the early twentieth century this provides a sufficient time gap for the loss of knowledge regarding the systems and their operation.

**Canarium**

Of particular interest is the presence of stands of *Canarium indicum*, a species of protein-rich nut exceedingly important in Melanesian horticultural traditions. That the present stands were once more extensive in this area is demonstrated by both oral history and the name of the river, the Ngaliporo (literally 'the Canarium umbrella'), which would have provided the water source for the irrigation of the terraces. A very large number of the stones in the pondfield walls, and many of the boulders scattered throughout the system are pitted with depressions 2-3cm in diameter, the result of their having been used as anvils for the cracking of *Canarium* nuts\(^7\). Some of the boulders also carry larger depressions, up to 20cm in diameter and 0.1m in depth, probably used for the pounding of *Canarium* kernels into a paste for immediate use or for long term storage in bamboo tubes about household fireplaces.

**Recent Settlement Sites of the Valley Floors**

The open settlement sites of the valley bottoms, investigated only in the Kolevu valley, are the only such sites in the north-west cape area for which occupation histories
are known. I have noted in relation to the Visale site and in the discussion of the reasons for the abandonment of the pondfield systems, that the known settlements of this region all date from the historic period. Their occupation follows the hiatus in coastal settlement occasioned by an increase in the incidence of headhunting raids in the nineteenth century; these had all but ceased by 1900 following the establishment of the British Solomon Islands Protectorate in 1893 (Woodford 1909:510, 1922, cf. Zelenietz 1977).

The surface features of the SG-1-406 Lapeti site are typical of this group: stone walls and cairns, *Canarium* anvils, well-defined *umu* ovens and scatters of oven stones and marine shell, particularly *Trochus*. To the south-east of the site are a number of pyroclastic boulders with *Canarium* anvils and mortars. The mortars range in size from small depressions 5cm in diameter and 2cm deep to larger examples up to 30cm in diameter and 20cm deep. The relationship of the platformed sites of the *hamosa* grasslands with similar mortars suggests that these examples pre-date the Lapeti site. Although some re-use of them may have occurred, local informants were ignorant of their purpose. Surface scatters of artefacts include both indigenous items and articles of European manufacture. The former include relatively high concentrations of chert flakes and chips and a single shell gouge or scraper (length 41mm, width at 'blade' 23.5mm, thickness 8.5mm, weight 8gm) probably of *Lambis* (plate 18). This is a unique artefact in the presently known Guadalcanal corpus but is closely paralleled by the 'hermnette gouges' recovered by Garanger from surface contexts in the Tongoa sites of central Vanuatu (Garanger 1972: figure 292, numbers 16 and 17). European items include clay pipe stems and bowls, steel trade axes ('tomahawks'), a knife blade and sherds of china plates and cups. A 1m x 2m test pit in the centre of the site investigated the sub-surface deposits. With the exception of a few small chert chips and carbonised *Canarium* fragments in the upper 20cm of sandy, brown soil and a pit or posthole feature cut from just below present ground surface, the deposits were sterile and sealed at least 1.5m of alluvial sands, silts and gravels. No samples were submitted for radiocarbon dating.

Two further late phase settlements, SG-1-416 and SG-1-415 are located in the Kolevu valley (see figure 53). SG-1-416 lies to the to the south of the Kolevu river and has surface accumulations of marine shell (again mainly *Trochus*) and smaller quantities of chert. SG-1-415 has similar features together with scatters of oven stone and lengths of walling. The site lies within the bounds of the Kolevu II pondfield system and is marked by a small grove of coconut palms (see plate 19). A fine example of a stone barkcloth beater or *kindi* (plate 4) was found on the surface. Precisely comparable beaters were noted and collected by Paravicini in the late 1920s from Kakambona village near the mouth of the Poha River (Bühler 1946/49:258); a further
example has been recorded from a 'prehistoric mound' in San Cristobal (McCarthy 1949:plate IX).

**A Tentative Sequence for the North-west Cape**

Bathgate (1985:87) has described, for groups inhabiting the inland areas of the north-west cape, the fundamental relationship between settlement type and agriculture where the

*.... transfer of residence occurred with the abandonment of old and the construction of new hamlets (pipiverana), .... mainly because of the system of shifting cultivation. Once the land was cleared of forest, thin soils and rapid leaching meant that garden production declined sharply after the first year of cultivation.*

The annual need to secure new yam cultivation areas led to a situation in which inland groups

*would establish as many as three or four settlements within a single generation.*

The large platformed settlements of the ridge slopes signal a less migratory population. Indeed these sites, with their elaborate structures and large area, suggest essentially static and sizeable populations (cf. the Spanish accounts of population and village sizes, chapter 2), who had achieved a means to avoid regular relocations. An obvious conclusion is that the platformed settlements are associated with permanent irrigated agriculture in the valley floors. The presence of unusually dense concentrations of *Canarium* anvils (including small portable anvils for domestic use - see plate 4) and stone-cut mortars within and adjacent to these sites, and throughout the valley floors (plate 22b), suggests a complementary and intensive arboricultural component in the economy that may almost be described as plantation tree-cropping. This accords well with Yen's hypothesis for the the intensification of *Canarium* cultivation associated with selection for large nut size (Yen 1985:319).

As the smaller and less complex hamlets of the ridge crests have no known histories, there is good reason to suppose that they do not post-date the platformed settlements and irrigated pondfields and are allied instead with earlier systems of dryland agriculture on the hill slopes. There may also have been similar and contemporary settlement in the valley bottoms. Any archaeological trace of such
occupations is likely to have been obscured by processes of alluvial and colluvial sediment deposition that began with the forest clearance phases for swidden cultivation with which the settlements were associated, and which are dated at Kolevu III at about 3100-750 BP (ANU-6732).

The change in agricultural production from dryland to irrigated cultivation was almost certainly not universally adopted. Using the recent Poha Valley experience as a model, the loss of forest cover and the erosion of soils from the hillslopes may have exacerbated the natural water stress associated with low rainfall to such an extent that only three responses were possible. The first was a movement inland to new dryland garden areas and forest resources. The second option was a lateral movement along the coast to as yet uncleared forest; there is no archaeological data available to test this possibility but such movements would obviously be dependant upon 'virgin' land being available. The final option was a reorganisation of production using irrigated systems on the newly formed soils of the valleys. It seems likely, given the preponderance of yam cultivation in the area today, that different groups chose different responses. This demographic dislocation, prompted by the failure of hillslope agriculture through soil loss, may well have been the catalyst for the beginnings of the bush/saltwater complementary opposition principle outlined in chapter 2. This may have started as early as 1500 BP, on the evidence of the Visale and Lenggarana sites. A date of 1300-1000 BP would accord well with the renewed use of the caves and rockshelters of the forest fringe in the Poha valley and the first evidence of further movements into the hinterland that is provided by the inland shelter sites.

The coastal site at the Visale R. C. Mission, on the basis of its clear spatial relationship to the Leosa and Lenggarana pondfield systems, and the broadly contemporary dates from its first occupation and the pre-cultivation level at Lenggarana, appears also to be contemporary with the use of intensive agricultural systems. There is some indication, from the shell currency beads and increasing amounts of chert through time, that these 'saltwater' people of the coastal communities were beginning to act as middlemen in trade and exchange (almost certainly with Malaita), in a manner comparable to the role played by the 'Are'Are people of Marau in east Guadalcanal (Bennett 1981:183, Mead 1977:157). The greater density of cherts in the platformed sites of the ridge slopes, compared to the earlier ridge-top settlements and late settlement sites of the inland forests, suggests that the inhabitants of these villages had easier, or more regular access to the commodities of the trade network.

This system continued into the first period of European contact and was only disrupted when the head-hunting 'explosion' forced a retreat to the inland areas and a re-adoption of swidden agriculture. This enforced absence may have allowed for some regrowth of forest in the valleys that once held the pondfields. Coastal settlements
seem not to have been re-established in any number prior to the end of the nineteenth century, and the eventual return to the coast was not accompanied by a readoption of irrigation. Instead a complex of yam cultivation and tree-cropping systems was continued where possible, but inland areas continued to be used through the employment of small temporary shelters within the garden areas (Bathgate 1985:85, Paravicini 1931: plate 2). From this time onwards the indigenous social and economic systems were changing rapidly in response to the new forces associated with constant European contact - plantation agriculture, the labour trade, cash cropping, missionisation and British colonial government.

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**Footnotes**

1It should be noted here that the site surveys in the Poha and Vura valleys found surface chertes at inland sites to be very rare. In the Poha Valley only two chert flakes were recovered from open settlement sites - one each at SG-2-48, Manivo and SG-2-15, Horotogha.

2Local information on the use of *luma* suggests that rubbish accumulating within the house was irregularly cleared away. There is therefore some potential for recovering midden material from within such structures.

3The manufacture of lime (*poe*) involves the construction of pyres of split bamboo within which layers of *Neritina* shells are laid. The pyres are lit from the top, to assure a slow, even burn. After firing, the burnt shells are removed, crumbled into green bamboo tubes and further roasted in a 'curing' process. The shells, which are stored in coconut leaf baskets, are those left from family meals. Lime processing is usually undertaken at a distance from settlements, it being easier to carry shell to suitable stands of bamboo rather than *vice versa*. This technique of lime manufacture removes substantial quantities, if not all, of the potential shell midden from inland settlement sites.

4Catoira's account of 1568 notes a similarly distinguished house (Amherst and Thomson 1901:318),

> ...they went to a large village ... in which in which there were more than one hundred and fifty huts, and more than seven hundred fighting men, and a house belonging to the tauriqi, most sumptuously fitted up.

5The choice of locations was limited by the understandable desire of the Mission staff that excavations did not damage the ornamental garden areas nor interfere with the daily life of the Mission and school.

6A number of grinding stones are reported from Pichahila near Avu Avu. The village name derives from *picha*, to polish or smooth, and *hila* the vernacular term for a stone adze. There are no chert or shell adzes from Guadalcanal in the extensive collections of the Solomon Islands Museum, nor do any appear to have been recorded in the ethnographic literature.

7An experiment conducted on an andesite block in the Kolevu Valley attempted to give a rough idea of the length of time it would take to form an anvil cupule. The processing of 60 *Canarium* nuts on a fresh rock surface produced a depression 3.5mm deep. Measurements of cupule depths on a small sample of anvils near excavation area T1 in the Kolevu III pondfield system showed cupules to average 14mm in depth. The total number of cupules on the boulders of the Kolevu system was not counted!

8A surface collection over the central 50m² of the site recovered 175 chert pieces weighing 190.6gm (density: 3.8gm/m²; average weight of flakes 1.1gm).
Chapter 7

PREHISTORY WITHOUT POTS: TOWARDS A PREHISTORY OF GUADALCANAL

SITE SEQUENCES AND MATERIAL CULTURE

The 1966-1968 excavations at Vatuluma Posovi, which involved the almost complete removal of the 4m of archaeological deposits, produced a series of radiocarbon dates for an occupation sequence beginning at about 3000 BP and continuing through to the Second World War. The discovery and examination in 1987-1988 of the small area of undisturbed sediments at the front of the cave has now extended this sequence back to about 6000 BP. This work, together with a re-examination of the original finds and excavation records, including some crucial unpublished information (Russell n.d.), a detailed survey of the cave and 9 new radiocarbon determinations, has allowed the reconstruction of the site’s stratigraphy. The occupation of this site can be divided into 5 phases:

Phase 1  An occupation layer evidenced only by the remnant deposit at the front of the cave and bracketed by two C14 dates, ANU-6733, 5430 +/- 220 bp (calibrated range at 1 sigma 6449-5950 BP) and ANU-6734, 3940 +/- 140 bp (calibrated range at 1 sigma 4799-4158 BP).

Phase 2  An occupation layer present throughout the cave, best dated in the cave rear by a series of C14 dates from the original excavations, including I-2874, 2920 +/- 110 bp (calibrated range at 1 sigma 3259-2892 BP).

Phase 3  Occupation debris separated from Phase 2 by a minor stratigraphical hiatus, dated by P-1942, 2550 +/- 60 bp (calibrated range at 1 sigma 2752-2548 BP).

Phase 4  Occupation debris, best defined in the cave rear, and dated by I-2875 at 1310 +/- 100 bp (calibrated range at 1 sigma 1310-1160 BP).

Phase 5  A highly mixed and disturbed deposit dating probably from about 700 BP onwards, on the basis of I-2876 at 765 +/- 95 bp (calibrated range at 1 sigma 768-665 BP).
There is no indication from the Vatuluma Posovi artefact assemblage of any significant difference in material culture between the earliest occupation and that which follows it. Thus, cherts, armrings of *Trochus*, and cut pieces of *Trochus* interpreted as fishhook blanks are present in phases 1, 2, 3 and 4. Additions to the catalogue beginning in phases 2 and 3 are shell beads, stone adzes of lenticular cross-section and *Canarium* nut anvils.

The most common artefacts from the site, the engraved designs on the cave walls, are dated to at least 2800 BP by their demonstrated association with the phase 2 layers which provided the I-2874 date (Roe 1992). Although they could conceivably be associated with the phase 1 occupation, their state of preservation following excavation in 1966-1968 and their subsequent deterioration suggest that they were not uncovered for any considerable length of time before the build-up of the deposits which covered them. There are no strict chronological links with the other rock art sites of the north-west Guadalcanal area (where all the art is undated), but there are designs from two other dated sites. At one of these, Vatuluma Ngolu, there is no human presence yet demonstrated prior to about 2200 BP. The degree to which the Vatuluma Posovi art and that at the other sites is related will require further comparative material, but the motif analysis shows some dissimilarities as well as correspondences. All of the other sites demonstrate affiliations with a very widespread engraved rock art tradition in island Melanesia.

Excavations in 1987-1988 at two additional caves and a series of rockshelters in the Poha Valley produced further evidence for the definition of the Guadalcanal cultural sequences. The cave site of Vatuluma Tavuro is presently surrounded by open forest but lies adjacent to the *Themeda* grasslands that ascend the ridges above the north coast. Excavation revealed four main phases:

**Phase 1**  
An occupation horizon with a basal date of 3810 +/- 70 (ANU-6988, calibrated range at 1 sigma of 4402-4091 BP)

**Phase 2**  
Waterlain clays, with the only cultural material being chert; the deposition of these sediments begins at about 2300 BP (indicated by ANU-6991, 2380 +/- 250 bp, with a calibrated range at 1 sigma of 2759-2129 BP)

**Phase 3**  
A second occupation horizon dated by ANU-6990 at 970 +/- 110 bp (calibrated range at 1 sigma of 980-770 BP).

**Phase 4**  
A rather disturbed upper occupation layer, beginning at about 750 BP (ANU-6992 at 850 +/- 110 bp, calibrated range at 1 sigma of 920-680 BP).
As at Vatuluma Posovi, the number of artefacts recovered from the excavations was small. A *Trochus* armring fragment in the phase 1 deposit represents the only shell artefact from that occupation. The phase 3 shell artefact inventory is comprised of *Tridacna* rings and small shell beads of a type commonly used ethnographically as 'currency'; *Trochus* armrings are absent. One of the beads is a preform, suggesting manufacture of such items in this area.

Stone tools are restricted to chert chips and flakes throughout the sequence and *Canarium* nut anvils in the phase 3 levels. Although the chert recoveries include few formal artefacts, there is a discernible change in the material between the two earliest phases and phase 3, shown by decreases in the amount of chert present and the size of individual pieces. There is also a change in the character of the cherts. The bulk of the earlier material is a rather coarse, sandy-textured stone, grey or light brown in colour with mottling and banding. This makes it of a type consistent with a source on Guadalcanal, being comparable to the porphyroid cherts from the Mbirao Volcanics formations of eastern Guadalcanal described by Hackman (1980:18-20, plate 4); similar cherts are also known from Malaita (Hughes 1971). The later chert material is a finer, glassier stone, usually orange/brown in colour, and of a type known from ethnographic data to have been imported from a west Malaita source via the Marau Sound area of east Guadalcanal.

Excavations at a further cave site, Vatuluma Ngolu, also located on the *Themeda* grassland slopes above Guadalcanal's north coast, failed to recover any evidence of sustained human occupation prior to about 2200 BP. The lowest level at this site comprises almost sterile orange clays with a small amount of wood charcoal and *Placostylus* land snails. This was separated from an upper occupation level (where chert chips and volcanic oven stones were the only artefacts recovered) by a well-defined band of charcoal stained clay, similar to the phase 2 deposits of Vatuluma Tavuro. Charcoal from this clay deposit gave a date of 2220 +/- 170 bp (ANU-6738, calibrated range at 1 sigma of 2359-2039 BP).

Investigations at a number of rockshelters in the Poha Valley catchment (Vatulumana, Mbusurahinitasi, Vatukoko'o, and Vatuluma Hai Mbau) and a single shelter (Hauvatu II) in the Vura Valley to the west, revealed no deposits dated earlier than about 1350 BP and generally gave ages less than 400 BP. Artefact recoveries were again restricted in number and add no new elements to the Guadalcanal inventory.

Searches for a suite of open sites to complement the archaeological record of the caves and rockshelters were largely unsuccessful. Intensive plantation agriculture and the enormously destructive activities associated with the World War II period have served to virtually eradicate any archaeological landscape that might once have existed
in the northwest Guadalcanal area. Thus only a single site could be located that was worthy of excavation; this was located within the bounds of the Visale Roman Catholic Mission at the extreme northwest tip of the island. Although the upper horizons of two test pits here had been heavily disturbed, approximately 1.3m of apparently intact deposit remained. The initial charcoal and ash-rich occupation layer (sealing a sterile beach sand) dates from about 1400 BP (ANU-6736, 1500 +/- 70 bp, giving a calibrated range at 1 sigma of 1504-1318 BP). Artefact recoveries were, like the rockshelter and cave site finds, few in number and variety, with small pieces of the finer cherts and a number of shell currency beads predominating. A single stone adze, comparable in form to the Vatuluma Posovi examples, was recovered from a rather insecure stratigraphic position close to the surface of the excavation and within the disturbed layers.

Test pits at known inland settlement sites in the Poha valley (Koilomate and Sambaghakiki), with well-defined surface features, failed to recover any sub-surface evidence for occupation. A number of settlement sites were identified in the Themeda grasslands of the north-west cape which occupy positions either on ridge crests or ridge slopes and which were usually marked by house platforms, stone alignments and chert scatters. Heavy soil erosion in these areas has stripped away any archaeological deposits that might once have existed and no excavation was attempted. A putative sequence for these sites suggests that small ridge-top settlements associated with dryland agriculture on ridge-slopes pre-date large platformed settlements on ridge-slopes associated with intensive irrigated systems. The historic period settlements are confined to the valley floors and coastal plain.

ENVIRONMENTAL EVIDENCE

Although the cave and rockshelter excavations produced such a limited range of artefacts, exhibiting little evidence of real change through the sequences, the environmental material is quite eloquent in its expression of human activity in the Guadalcanal landscape.

Important baseline data on landscape and vegetation history is provided by Haberle's two pollen cores from the Mela and Laukutu swamps on the massive north Guadalcanal alluvial plain, and from a single core taken in a Terminalia and Pandanus swamp at Ruaniu on the northwest coast (appendix 1). From his analysis of the Mela and Laukutu cores, Haberle concluded that, while disturbance of the vegetation by natural events such as cyclones, earthquakes and volcanic ash falls had occurred at intervals throughout the sequences, 'human activity has also been an important factor in
determining the present vegetation patterns on Guadalcanal at least throughout the last 3,300 years', that is from the start of the pollen record in the swamps of the alluvial plains. In particular he notes that 'the grasslands of the northern plains of Guadalcanal form a fire-climax vegetation community and are maintained by continued firing by humans. Grasslands and fires were already an integral part of the landscape by 3300 bp'. Human impact on the environment intensifies with 'increased clearance and burning activity ... after 2100 bp'. A late phase of forest regeneration is indicated at around 1200 BP and continues to about 500 BP. The Ruaniu pollen core, analysed in less detail than the Mela and Laukutu cores, provided weaker evidence for human impact upon the environment, although the in-filling of a mangrove-fringed estuary at the site may have been accelerated through clearance activities on the hillslopes. The core does demonstrate, however, a dramatic change in the coastal ecosystem, with a shoreline dominated by Rhizophora mangroves being replaced by freshwater swamps behind a fairly substantial beach ridge. The consequent reduction of sediment deposition into the marine environment that must have accompanied these changes presumably allowed for the development, or perhaps re-development, of coral reefs and their associated faunas.

The initial occupation layer at Vatuluma Tavuro contains evidence for the exploitation of relatively undisturbed and undeveloped forest and the collection of molluscan foods from fresh and brackish water environments. The bone material is largely restricted to primary forest taxa and especially the endemic Uromys rats and the arboreal skink, Corucia zebrata. Plant macrofossils are restricted to small fragments of Canarium nutshell (not identifiable to species level); the absence of anvils for nut processing has already been remarked. Of the molluscan shell, 80% by weight and 57% of the species represented originate from rivers, swamps or mangrove-fringed estuaries. The comparably aged deposit from Vatuluma Posovi seems to indicate a similar economy at that site, especially the emphasis on freshwater molluscs.

In the outline of the occupation sequences from all three cave sites (Posovi, Tavuro and Ngolu) distinct hiatuses in occupation are evident. At Vatuluma Posovi (for which detailed records of sediments, bone, shell and plant macrofossils are not available) this occurs between about 2700 BP and 1300 BP. In the other two cave sites the breaks in the sequence are defined by bands of charcoal-rich and slabby clays; at Vatuluma Ngolu these clays date from about 2200 BP and at Vatuluma Tavuro from 2300 BP. The latter two dates correlate remarkably well with the evidence from the pollen columns for a period of increased clearance activity from about 2200 BP onwards. Earlier evidence for vegetation clearance is given by a date of 2800 +/- 140 bp (ANU-6732, range at 1 sigma of 3109-2769 BP) from a buried soil horizon containing abundant wood charcoal adjacent to the Kolevu taro pond-field system near Visale. This may represent a localized event, however, with the major episodes
occurring several hundred years later. It seems clear that large-scale landscape alteration is associated with extensive dryland agricultural practices, presumably undertaken by a population inhabiting open village sites on the ridge crests.

The post-clearance phases in the cave sites are distinguished from the earlier ones in a number of ways. In the bone material there is a reduction in the numbers of taxa associated with undisturbed forest environments (especially the virtual elimination of *Uromys* rats), and a number of new elements very late in the sequence, particularly *Rattus exulans*, *Phalanger orientalis*, and dog. Pig is represented at the Visale open settlement site from the time of initial occupation at about 1400 BP. The inland rockshelters, which see their initial use in this period, have bone faunas comparable to those from the earlier phases of the cave sites. This suggests that a sustained human presence in these environmental zones is either a new phenomenon at this time or that previous activity was at a low level.

The manipulation of the forest flora is demonstrated at a number of sites by an increased diversity in the *Canarium* nut remains. At Vatuluma Tavuro *Canarium* remains, and particularly *C. indicum*, are more substantial in the late occupation phases both in quantity and in the size and shape of individual nuts. This is consistent with them being the produce of many trees and suggests there had been a development of an arboricultural element in the economy during the forest clearance phase. Similar accents on tree crops are described by Yen (1974a, 1976a:66, 1982a:288-291) for the Santa Cruz group in the southeastern Solomons and by Kirch for the Mussau islands (Kirch 1989). This development of arboriculture is strengthened by the *Canarium* evidence from the inland rockshelter site of Vatuluma Hai Mbau, and by nut anvils in the Vatuluma Posovi and Vatuluma Tavuro cave sites. Open settlements of the Visale area are also associated with remarkable concentrations of boulders with *Canarium* anvils and mortars, as though large-scale processing of nuts was being undertaken. The continued importance of *Canarium* in the agricultural economy is also demonstrated by ethnographic data and the high incidence of the vernacular term for *Canarium indicum*, *ngali*, in Guadalcanal place names.

Changes in molluscan shell use are again best demonstrated at Vatuluma Tavuro. Thus, in the upper occupational layer mangrove bivalves disappear completely, and although fresh and brackish water species from riverine and swamp environments are still dominant, there is an increase in the quantity of marine shell. This increased availability and use of marine shell species appears to be more marked at the Vatuluma Posovi site but the lack of detailed records again precludes its absolute demonstration. These trends are consistent with the changes in coastal conditions indicated by the pollen evidence from the Ruaniu swamp.
The re-use of the cave sites following the forest clearance episode, the first use of inland rockshelters and the initial occupation at the Visale Roman Catholic Mission site are all broadly contemporary. This is attested by dates of around 1300-1100 BP at Vatuluma Posovi (I-2875) and Vatuluma Tavuro (ANU-6990, overlapping I-2875 at the 2 sigma range), 1500-1300 BP at the inland rockshelter of Mbusurahinitasi (ANU-6740, 1490 +/- 100 bp) and about 1400 BP at Visale (ANU-6736). I have already noted the pollen core evidence for forest regeneration at about this time.

A PREHISTORIC SEQUENCE FOR NORTH-WEST GUADALCANAL

In summary, the data from Guadalcanal give the first direct evidence for human occupation of the central Solomons prior to the arrival elsewhere in the Solomons archipelago of the bearers of the Lapita cultural tradition. I suggest that three main phases of human activity can be recognised in the north-west Guadalcanal evidence. I have elected to name these phases with Nginia language terms for the environmental zones in which they take place or which result from the actions of humans within them.

I The Hoana Phase (6400 - 2200 BP)

The earliest date available for this phase comes from the Vatuluma Posovi cave although initial human occupation of Guadalcanal may be substantially older. The phase is currently dated between 6400 BP and 2200 BP and is characterised, in the material culture, by the use of a probably local chert source for stone tool production and the presence of *Trochus* armrings and fishhooks. The environmental materials indicate some use of *Canarium* nut, possibly the ‘wild’ *Canarium salomonense*, the hunting of forest taxa and the collection of molluscs from mainly fresh and brackish water environments. There is no evidence of rockshelter occupation in the inland forest areas at this time and the pollen record indicates that human impacts on the environment are of a low level.

Within this phase, at about 3000 BP, there is a change in the sources of the chert, the first appearance of shell beads and fully polished stone adzes, the latter unknown in Island Melanesia before Lapita times, and the execution of the Vatuluma Posovi rock art. Is this, perhaps, an echo of changes known to be occurring both north and south of the Solomons and associated with the advent of Lapita?

The phase name derives from the term for primary or undisturbed forest.
II  The Hamosa Phase (2200 - 1500 BP)

A major phase of human impact on the environment is indicated at about 2200 BP. In the period between 2200 BP and 1500 BP direct evidence for the location of human settlement and the material culture employed by its inhabitants is lacking. It seems likely however that the small open settlements of the ridge crests, unknown in oral histories, date from this time, as part of a pattern of swidden agriculture on coastal hillslopes. Increased rates of sedimentation in the swamps of the north Guadalcanal plain and coast from 2200 BP onwards are caused by erosion of soils from cleared hillslopes. Human impact on the environment is severe and results ultimately in the establishment of extensive Themeda australis grasslands, the hamosa, from which this phase takes its name. The massive forest clearance might be best described as 'pioneer agriculture' as its intensity is clearly of a different order than that which preceded it. On the basis of the elements in the succeeding period, this phase probably saw the introduction of the pig, and possibly also the possum (Phalanger orientalis), and the reduction of indigenous taxa.

III  The Moru Phase (1500 BP - 150 BP)

The process of land degradation on hillslopes ultimately resulted in a partial failure of the sustainability of the agricultural systems and there were a number of responses to this crisis. Cave and rockshelter use resumes close to the coast, while inland forest areas see their first substantial human occupation. This takes the form of small hamlets and nucleated villages accompanied by swidden agriculture and intensive arboriculture. In the Visale area sediment deposition in valley bottoms allows for the development of intensive irrigated agricultural systems. The data for coastal settlement remains sparse, but at Visale such settlement is probably associated with the intensive agricultural systems and is also oriented towards trade and exchange with other islands of the central Solomons. This enforced diversification of the economic base ultimately develops into the ethnographically documented distinction between 'bush' and 'saltwater' peoples and suggests that communities in different environmental zones are developing distinctive and probably complementary resource utilisation strategies. Within the last 500 years there is evidence for a renewed assault on the forest but of a less substantial kind than previously. There is no evidence to show any major break in cultural continuity between the beginning of this phase and the social and economic systems known from ethnographic data and the historical records, especially those of the Spanish explorers. Moru, meaning garden regrowth vegetation, indicates the new but less harsh, impacts of human agency associated with swidden agriculture in the inland forests.
The increase in the incidence of head-hunting in the mid-nineteenth century irrevocably disrupts the purely indigenous sequence and serves as a prelude to the more long-lasting changes that are precipitated by sustained European contact and especially the establishment of the Christian missions and the British Solomon Islands Protectorate around the turn of the century.

CONCLUSIONS AND MORE QUESTIONS

The Guadalcanal data pose as many problems as they answer. One of the most important of these is how to articulate the cultural sequences now described from the central Solomons with a regional prehistory dominated by studies of the Lapita cultural tradition. Although field surveys may not be wholly reliable in their ability to demonstrate the absence of particular site types, extensive fieldwork in all of the islands of the central Solomons (Miller 1979; Miller and Roe 1982) have failed to discover to date any evidence of Lapita occupation; a claim for finds of Lapita ceramics in Malaita (Childs 1986) has never been confirmed.

Clearly the complete absence of ceramics and obsidian do not suggest that the central Solomons was a full partner in the long-range Lapita exchange network (Ambrose and Green 1972, Kirch 1988). There are, however, demonstrated links with the Santa Cruz group where Lapita assemblages include cherts from the Ulawa/Malaita area (Sheppard and Pavlish 1992), stone artefacts possibly from Guadalcanal (Green 1976e:259-260) and pottery tempers from Nggela (Dickinson and Shutter 1979:1694-1695), the island group to the north of Guadalcanal where Rukia has recently investigated aceramic rockshelter sequences (Rukia 1989). Now that it has been conclusively shown that the Lapita cultural tradition is moving through and/or into an already populated landscape in the central Solomons, other, non-Lapita, exchange networks might reasonably be assumed to exist. Indeed the early chert material from Vatuluma Tavuro already demonstrates local movement of stone within Guadalcanal at 4000 BP. If such a network was later extended to include areas with Lapita occupation, as appears to be the case, with ceramics not being one of its commodities, then the archaeological signature would not be dissimilar to the evidence we now possess.

Spriggs' 1984 review of the Lapita cultural complex claimed that the Vatuluma Posovi artefact assemblage 'would fit easily with what we might expect to find at a Lapita site' (Spriggs 1984a:208). While this claim remains valid, his implication that the assemblage is typical of those restricted to Lapita period sites and those that follow them is no longer tenable. *Trochus* armrings and probable fishhooks date from the earliest occupations in Guadalcanal and thus owe nothing to a Lapita pedigree.
The essential continuity of artefact types throughout the Guadalcanal sequence makes difficult, if not impossible, the identification of cultural horizons solely from their material culture components. Furthermore, low densities of a restricted durable artefact assemblage result in a poor surface visibility of early sites in the landscape except where they are defined within rockshelters or caves. This contrasts sharply with sites endowed with ceramics and 'richer' artefact catalogues. A fundamental problem in investigating non-Lapita sites is found simply in the difficulty of locating them.

Attempts to fit the Vatuluma Posovi data from the 1966-68 excavations into a Lapitoid cultural tradition (Spriggs 1984a:218), especially given the absence of any ceramics, appears to be based partly on an assumption that Lapita is present in the central Solomons but remains to be discovered (cf. Green 1979b:51). It now seems equally plausible, from the revised data from the Vatuluma Posovi site and the results of the aforementioned surveys, that there is no Lapita in the central Solomons. Whether or not the present distribution of Lapita sites is indeed a real one, and not solely an artefact of insufficient survey and excavation, two considerations still have to be addressed. The first of these is that a major part of the prehistory of Island Melanesia is unknown and remains to be properly investigated and characterised. From the Guadalcanal experience this will require due attention being paid to evidence of human interaction with, and impact upon the landscape. The second is that the Lapita cultural complex in the northern and central parts of Island Melanesia may well occupy a geographically and culturally peripheral position rather than the central one it has been given to date, with its apparent pre-eminence possibly itself an artefact of survey. In any further investigations of the prehistory of the central Solomons for instance, it might be prudent if the approaches used did not assume, either implicitly or explicitly, any direct affiliation with the Lapita cultural tradition unless this can be demonstrated by archaeological evidence; this will obviously require a great deal more data than we currently possess. To take such an approach will not diminish the importance of the extraordinary phenomena that is Lapita, but it will properly acknowledge that other, less visible, cultural traditions are equally worthy of the same kinds of detailed enquiries with which Lapita has been investigated.

The main contributions that this thesis has made to an understanding of the prehistory of Island Melanesia are fourfold. Of primary importance is the establishment of a key cultural sequence not only for an area that previously lacked one, but which is demonstrably different from anything else in Island Melanesia. In the investigation of this sequence the thesis enquiry has rescued the important site of Vatuluma Posovi from obscurity by a sustained effort to locate and re-interpret all the material from the 1966-1968 excavations, and through new work to demonstrate a previously unknown and unsuspected occupation. The third contribution has been the re-discovery of the irrigated taro pondfield systems that were only recorded previously from the Spanish accounts of 1568 and which were otherwise unknown from the ethnographic literature.
Finally, the distribution of a known tradition of engraved rock art has been extended by the record of a new corpus of sites and a plausible date has been established for the execution of art which may be a part of that tradition. This makes the Vatuluma Posovi rock art virtually the only dated art of its kind in Melanesia and also the earliest. Perhaps the final contributions of the thesis are to show that the prehistory of Island Melanesia is more complex than has often been assumed, and to suggest how much more work needs to be done to elucidate it.
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