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Chapter 2

Landscape, land use, and political transformation in southern Melanesia

Matthew Spriggs

The southern islands of Vanuatu (formerly the New Hebrides) form the administrative district of Tafea, an acronym referring to the five inhabited islands of the area – Tanna, Aneityum, Futuna, Erromango and Aniwa (fig. 2.1). They are currently under investigation by *The Southern Vanuatu Culture History Project* which follows on from research conducted by the author on the island of Aneityum in 1978 and 1979. Prior to that research little archaeological work had been conducted in southern Vanuatu.[1]

The languages of the three main islands of Tafea (Aneityum, Tanna and Erromango) form a distinct Southern Vanuatu subgroup of Oceanic Austronesian (Lynch 1978), while the inhabitants of the two small islands of Futuna and Aniwa speak a Samoic Outlier language of the Polynesian subgroup (Clark 1978). Prior to the adoption of this intrusive language within the last millennium it can be presumed that the languages of these two islands were related to the Southern Vanuatu subgroup. At European contact in the late eighteenth and early nineteenth centuries the islands of Tafea were linked by a regional exchange system with considerably more contact between them than any one island had with places outside the group.

Settlement of Tafea (indeed of all of Vanuatu) probably first took place about 3500 bp during the 'Lapita expansion' of population from the Bismarck Archipelago area and out across the southwestern Pacific as far as Tonga and Samoa (Spriggs 1984). Since Lapita colonization the cultures of the region have changed and diverged and it is the explanation of these transformations which the current project seeks to investigate. The environments of the several islands of Tafea offered different challenges and opportunities to their human settlers because of contrasts in geology, soils, and water resources. After discussing these, I shall focus on Aneityum as a detailed case study. This island is the only part of Tafea where a rudimentary prehistoric sequence has yet been established, based mainly on evidence of geomorphological and land use changes. In order to assess these changes, a reconstruction is given of Aneityumese society at European contact (circa 1830). This is followed by a discussion of the interplay of land use changes and suggested changes in socio-political structure.

The wider project will consider the Tafea 'regional system' as a whole. Similarities and differences between the several islands can be brought out by a study of the 'endpoints' provided by European contact history. These endpoints are the result of differential socio-political transformation from a presumed single founding culture, processes whose archaeological investigation has only just begun. As a first step in this direction a tentative reconstruction of Tannese social structure is offered for comparison with Aneityum. Historical and archaeological investigation of the other islands of Tafea are too little advanced for further comparison at this stage,

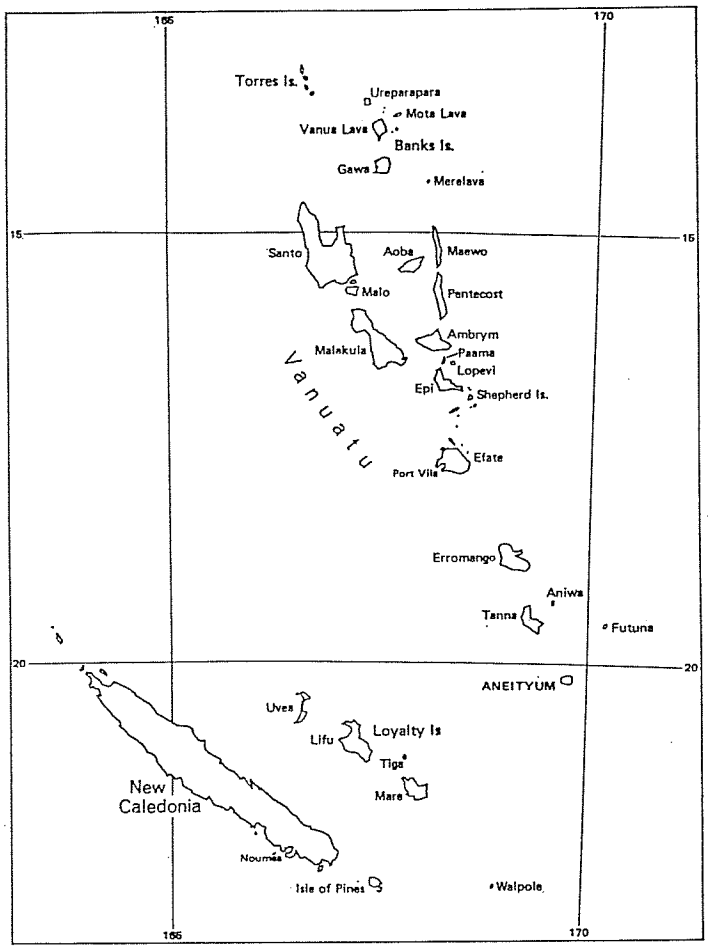


Fig. 2.1. Map of Vanuatu and New Caledonia.

but analysis will be extended to them in the future. The present study should thus be seen as a preliminary statement of Southern Melanesian social dynamics, certainly not as the last word.

Island environments of Tafea

The islands stretch from 18°37′ S to 20°16′ S with a mean difference in temperature between Aneityum and Erromango of only 1°C. This far south of the equator there is some seasonality of climate, with a wetter, hotter period from January to March and a drier, cooler period from July to October. Three climatic zones can be recognized on all islands except the low island of Aniwa: windward, perihumid and leeward (Quantin 1979, 2–3).

Below 500 m on the windward slopes exposed to the south and east, mean annual rainfall is between 2000 and 3000 mm (2290 mm for Anelcauhat on Aneityum, 2822 mm for Potnarevin on Erromanga). The second zone, the perihumid, is found generally above 500 m. It is more constantly humid, being close to saturation most of the time. The ridge crests are high enough to induce orographic rainfall and Quantin (1979) suggests that rainfall in this zone is probably above 4000 mm annually and the temperature cooler by 2–3°C. As the highest point of Aniwa is only 42 m this zone is not present on that island. The western slopes and particularly the northwest of the islands have a leeward climate with mean annual rainfall of 1600–1800 mm (1643 mm for Lenakel on Tanna, 1740 mm for Noumpon on Erromango) and a more marked seasonality. Tafea is in a belt of frequent tropical storms and hurricanes, generally between December and March. Hurricanes tend to affect the north coasts of islands more severely.

Many of the watercourses of Aneityum and the southern mountainous areas of Tanna are deeply dissected and perennial, although only those of Aneityum appear to have produced significant alluvial plains. On leeward Aneityum, however, between Uche on the south coast and the Aname river on the north coast only two rivers are perennial. In the limestone areas of Tanna surface water quickly drains and many of the rivers cease running during prolonged spells of dry weather. On Erromango there is a predominantly radial pattern of drainage but when rivers reach the limestone fringe they are often diverted and as a result they become bottle-necked with only one coastal outlet serving large networks of tributaries. This limestone fringe constricts the buildup of alluvium at river mouths and creates a 'flushing' effect in periods of high rainfall when areas of coastal alluvium are often eroded in floods. Futuna has near vertical slopes and run-off is rapid. On this island perennial water occurs only as seepages at the contact between the limestones and the underlying volcanics. Aniwa has running water only after heavy rain (Carney and McFarlane 1979, 1; Colley and Ash 1971, 12).

Climate and geology together influence the soils and vegetation of the islands. Aneityum is a high island formed from two coalesced Pleistocene volcanoes. It is 160 km^2 in area and its highest peak is at 852 m. There is one small area of late Pleistocene or Holocene raised reef and quite extensive areas of recent alluvium in part overlying reefal materials laid down at or near present sea level. The soils reflect this simple geology, but climatic zonation and human influence have complicated the picture. Eighty-eight per cent of the soils are strongly leached ferrallitic soils (ferralsols and cambisols) of poor to moderate fertility while the other main soil type (about 9% of the area) is that of the alluvial soils, the most fertile on the island.

Tanna is considerably larger, 572 km^2 with its highest point at 1084 m. Again it is basically volcanic in origin, although the vulcanism of the southeast is considerably more recent, continuing today with the continuously active cone of Yasur volcano. Ash enrichment of soils on the island is important in maintaining their fertility. Along the west coast is a strip of recent raised reef, backed by older Pleistocene reef which is also found in many river valleys. In the northern part of the island are found extensive older raised limestones and Pliocene volcanics. From near the northernmost point of

the island along the east coast to just north of Waesisi is a coastal fringe of raised beach deposits, with alluvium in the larger river valleys. The interior of the northern two-thirds of Tanna presents a relatively flat plateau while the southern third gives a much more dissected appearance. The soils of Tanna are predominantly andosols (65% of land area) of variable fertility. Most important of these is a type of mollic andosol found on the central plateau and lower windward slopes which is very fertile and covers nearly 26% of the land area. Eutric lithosols cover a further 25% of land area and are very infertile (Quantin 1979, 51–2).

Erromango (902 km^2) has a Plio-Pleistocene volcanic core with peaks up to 886 m. Much of the island is fringed by a series of raised limestone terraces up to 300 m in altitude and representing a third of the total area of the island. Along the east coast of the island some of this raised reef was uplifted in the later Holocene period. Areas of alluvium occur at the mouths of some of the major rivers, particularly in the Cook Bay area. As on Aneityum the majority of the soils are ferrallitic (78%), with eutric lithosols covering a further 12% of the area and alluvial soils only 3% (Quantin 1979).

Although Futuna is only 11 km^2, its high central plateau has an average altitude of 500–600 m. Seventy per cent of its surface area is limestone, overlying Pliocene volcanics. There is a coastal fringe of recent raised reef. Nearly 45% of its soils are useless eutric lithosols, with a further 39% of ferrallitic soils varying in fertility, and other, minor limestone-derived soil types making up the rest of the island. Aniwa is even smaller (8 km^2) and in contrast is a low island, 42 m maximum altitude. Apart from the tuff deposits on its central plateau it is a raised reef island. Ferrallitic soils (cambisols) have developed on the tuffs (nearly 53% of the area) while the other soil types all derive from reefal deposits.

Quantin (1979, 53–4) has rated the soils of these islands for agricultural potential from most fertile (type 1) to little or no potential (type 5). Although he is rating for modern potential rather than taking account of traditional agricultural methods his work serves as a useful guide in comparing traditional agricultural production of the islands (table 2.1). There has been considerable human influence on the vegetation and soils of these islands. This will be examined in detail below in relation to the Aneityum case study where human impact affected not only vegetation but also led to an increase in land area through erosion and deposition.

The Aneityum case study – a transformed environment: humans and hurricanes

The vegetation over nearly the whole of Aneityum (fig. 2.2) immediately before human colonization was probably dense forest except in some swampy areas (Schmid, 1975, 335; Hope and Spriggs 1982). By the time of European contact, however, the island presented a very different appearance:

> As you coast along in a boat you observe three belts or zones, in many places pretty well defined, which we may name the alluvial or arable, the sterile, and the woody. The first lies along the shore, is flat, and consists of a dark, rich soil. As it furnishes a great proportion of the food, most of the natives are found on it. Here flourish luxuriantly the Cocoa-nut and bread-fruit trees, with taro, bananas, sugarcane etc. The second or sterile is of larger extent, and can be best seen. In some places there is no vegetation, nothing but red earth. On the most of it, you find grass, ferns, and a few stunted trees . . . . The woody belt occupies the summit and centre of the island. (Copeland 1860, 346)

The 'red earth' refers to the eroded ferrallitic soils of the slopes. Clearance of the original forest for gardening or other purposes would have had different results in the wetter south and east than it would in the drier north and west. In the windward zone a more woody regrowth is usual after burning, and forest regeneration takes place quite rapidly (Quantin 1979, 9). The leeward zone constitutes a more stressful environment and burning of the forest here would have tended to give rise to a succession of more open vegetation types. Forest regeneration in this zone would have been much slower and could have been easily interrupted by further burning.

The burning off of forest for cultivation would have resulted in the formation of savanna vegetation. When not

Table 2.1. *Quality of soils in Tafea (After Quantin 1979)*

Quality	Erromango		Tanna		Aneityum		Futuna		Aniwa	
	Area (km^2)	%	Area (km^2)	%	Area (km^2)	%	Area (km^2)	%	Area (km^2)	%
1	104	11.5	219	38.3	7.5	4.7	1.5	13.6	4.2	52.5
2	102	11.3	94	16.4	6.4	4.0	0.9	8.2	1.8	22.5
3	297	33.0	44	7.7	28.0	17.5	3.7	33.6	–	–
4	247	27.4	69	12.1	91.6	57.2	–	–	–	–
5	152	16.8	146	25.5	26.5	16.6	4.9	44.6	2.0	25.0
Total	902		572		160		11		8	

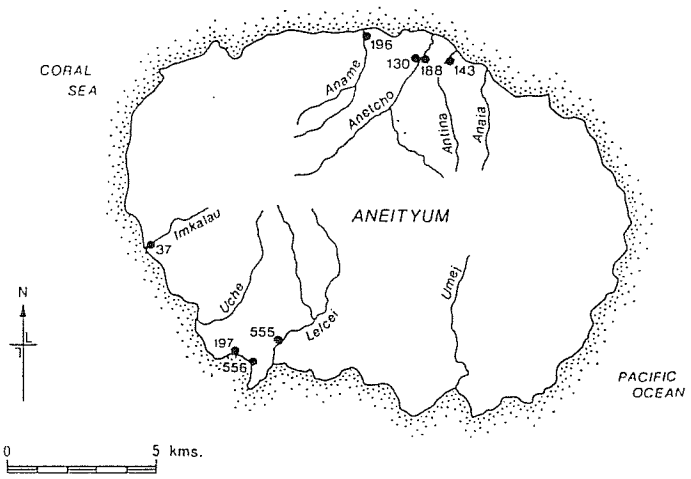


Fig. 2.2. Map of Aneityum, with sites mentioned in the text.

regularly burned this would tend to be replaced by forest once again. Under repeated burning, however, *maquis* scrub would develop, with open, unvegetated areas subject to erosion. Extensive degraded pyrophytic savanna areas are found as well in the north and west of Tanna and Erromango, and even on the northern side of Futuna. Vegetation consists of *Miscanthus*, *Chrysopogon*, and *Imperata* grasses.

Once serious degradation of the vegetation and soils had begun, the economic value of such areas to the inhabitants would have decreased. Fire control may have become less strict when burning off garden areas in the valley bottoms, thus allowing fires to burn freely upslope to the ridges. A further major factor inhibiting forest regeneration after initial burning would have been the devastating hurricanes which affect the region. The northern and western sides of the island bear the brunt of the wind and rain, as attested by historical reports. It is precisely in these areas that the most eroded landscapes are found.

The extremely high runoff associated with hurricanes and other periods of exceptional rainfall would have led to greatly accelerated erosional processes and the strong winds would have damaged regenerating vegetation. On land recently cleared by fire for agricultural or other purposes, or in areas of open anthropogenic vegetation created by regular burning, rates of erosion would have been much higher during hurricanes than in forested areas. The interplay between human interference with the vegetation and natural catastrophic events can be clearly seen at work in this situation. Once serious erosion had begun, the process would have been cumulative and with removal of soil occurring at much faster rates than that at which weathering of the substrata could renew it, the soils could never recover. Erosion certainly occurred in the wetter windward side of Aneityum but to a lesser extent. Between 1848 and 1918 at least thirty-three hurricanes affected Aneityum. The occasional strong earthquake could also cause slope instability.

Deposition of the products of erosion has created the extensive alluvial plains at the mouths and along the valleys of the three main rivers on the island (the Lelcei, Umej and Anetcho rivers) and also at the mouths of many of the smaller streams. These plains are at their most extensive in the north where the Anetcho and several smaller rivers empty into a lagoon protected by an extensive fringing reef. The largest alluvial plains occur below the most eroded slopes, on the coast most affected by hurricanes.

The rivers cutting through these plains reveal in their bank sections traces of past agricultural systems in the form of stone walls and plot boundaries and stone-lined drains, up to 2 m beneath the present ground surface. Deep soil profiles are often revealed in the river banks and former topsoil layers can be traced extending along the river sections sometimes for hundreds of metres – up to four such horizons can often be distinguished, each buried by alluvial material deposited in flash floods associated with major storms in the past. In some places up to 300 m from the current coastline, coral reef platforms are revealed in the river bed at or very close to present sea levels and are considered to be mid–late Holocene in age.

Analysis of these sections and other geomorphological evidence allow us to establish a three phase model for human–environmental interaction on the island (see also Spriggs 1981, chapter 5). A brief summary is given below (see fig. 2.2 for locations of sites discussed in the text):

1. *Human arrival and initial sedimentation*

When the sea reached its present level at about 6000 bp, stream downcutting would have been halted and the valley floors would have begun to silt up, leading to marshy valley bottoms with the streams meandering through them subject to frequent changes of course in response to heavy rainfall. A natural succession in the valley bottoms over time, caused by siltation of the valleys and some attendant progradation of the coastline, would be from marsh to meadow and eventually to forest. Thus when people arrived on the island, at about 2890 ± 60 bp (ANU-2421B), many of the valley floors may have been too swampy to be cultivated easily, as well as being prone to flooding. In addition, the coastlines at the valley mouths may have been in some cases a kilometre or more inland of their present location. The early inhabitants may have concentrated agricultural activities on the hillsides near the coast in order to utilize both marine and terrestrial resources with the minimum of effort. The sequence from the coastal Anauwau swamp (Site AT556) suggests clearance of the adjacent hillsides and accelerated erosion beginning at initial settlement (fig. 2.3; cf. Hope and Spriggs 1982).

It seems plausible that some areas of swamp were used for growing taro, perhaps with small canal-fed irrigation systems in upstream valley floor areas. Many of the largest areas of swamp, however, those on the coastal flatlands against the hillside or immediately adjacent to the beach, have developed above Holocene reef deposits and may have come

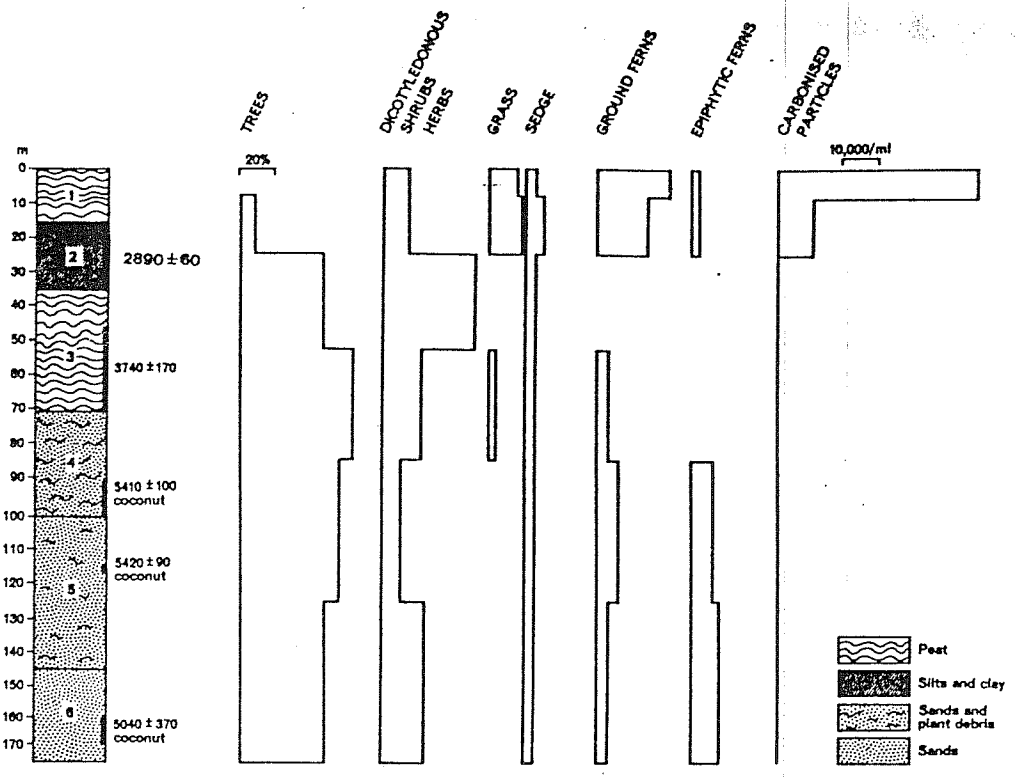


Fig. 2.3. Summary pollen diagram from Anauwau Swamp, Trench 1.

into existence only in the last few hundred years as coastal progradation was accelerated. Previous to this, many of them would have only been small seepages at the base of coastal cliffs or small springs on the beach.

At Imkalau (AT37) there is evidence of initial sedimentation on the valley floor during the period 2180 ± 80 bp (ANU-2188), and then a break in alluvial deposition of nearly 1000 years. This may reflect serious degradation of the hillslope garden areas soon after initial occupation and subsequent abandonment of the area because of its now marginal agricultural value. Changed circumstances a thousand years later, possibly representing population expansion or other forms of pressure on resources, led to the re-occupation of the area perhaps initially with a focus on offshore reef resources. In the Lelcei valley (AT555) in-filling was underway by about 1720 ± 150 bp (ANU-2367) with gardening on the slopes of a volcanic promontory on the east side of Anelcauhat bay leading to erosion and the creation of a colluvial apron at the base of the promontory some time before 1830 ± 70 bp (Beta-7676).

2. *The move on to the valley flats*

Erosion caused by the combined effects of people and the elements was not totally deleterious in effect. It is true that it stripped the hillsides near the coast of much of their soil and vegetation and rendered them useless for gardening, but these hillside soils would have been of low fertility and needed extensive terracing to fit them for any sustained form of cultivation. On the other hand, the alluvial soils created in the valley bottoms and coastal plains are the most fertile on the island. They are deep and well-drained and, unlike the case of some of the extremely narrow valleys elsewhere on the island, sunlight hours at the wide valley mouths and on the coastal plains are optimal for crop growth, with a cropping time shorter than further up the valleys. Similar processes of alluviation also occurred in all the other smaller valleys of the island.

On the north coast, where much more massive erosion has occurred, the evidence for human interference with the landscape is generally more deeply buried, and basal dates from river sections at best relate only to the last 1000 years or so. At Aname (AT196) there is evidence for substantial valley in-filling and progradation of the shoreline since about 570 ± 90 bp (ANU-2360) and 2.5 m of alluvium has been deposited over large areas of the Aname floodplain since that time. In the Anetcho valley such in-filling had already begun to occur by 1000 BP. In the Antina valley the datable sequences do not go back so far, but the major phases of valley in-filling there have certainly occurred within the same time scale. At Aname (AT196, RS2) there is evidence for burning in the catchment by about 1650 ± 290 bp (ANU-2361) but no evidence for accumulation of alluvium on the valley floor at that time, when the shore at this point was some 300 m inland of its present location.

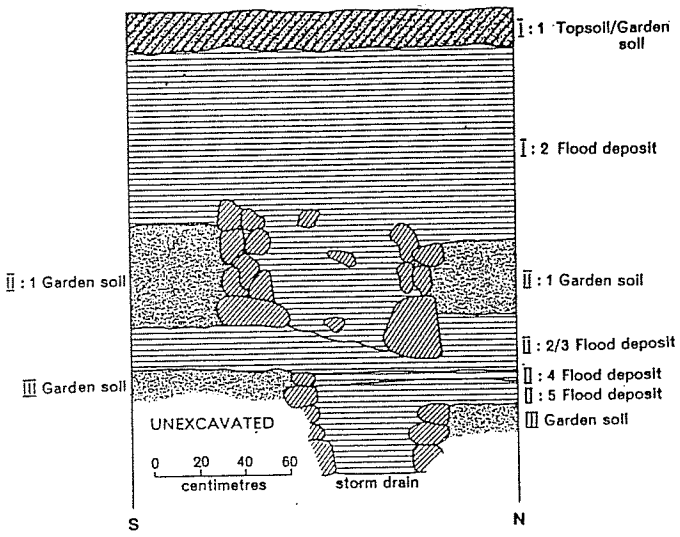


Fig. 2.4. Section of Site AT 130, Anetcho River floodplain, with buried agricultural drainage channels.

The first direct evidence for the use of the valley mouths and plains for agriculture and habitation, as opposed to the indirect evidence their sediments contain of burning activities in the catchment, comes from within the last 1000 years. On the Lelcei floodplain (AT555) an earth oven was revealed in the river bank dating to 540 ± 75 bp (ANU-2368) and slightly downstream stone walls associated with agriculture have been found in the same horizon. At Imkalau (AT37) a settlement on the valley bottom with probable agricultural associations was occupied at about 1000–700 bp (ANU-1064, 1069, 2242) and dry land gardening was certainly underway by about 440 ± 80 bp (ANU-2241). In the north there is no direct evidence of use of the Aname valley floor until after about 300 ± 170 bp (ANU-2363)(Site AT196), whereas in the Anetcho valley an earth oven dates occupation at AT188 to 1020 ± 120 bp (ANU-2356). This occurred during rapid accumulation of alluvium on the valley floor, and structural evidence associated with agriculture does not appear until some metres higher in the section. No direct dates have been obtained from the garden soils associated with the parallel storm drains found both on the Anetcho (AT130; see fig. 2.4) and Antina (AT143) Rivers, but a date in the order of 1000 bp seems likely on stratigraphic grounds. Fluvial deposits covering these storm drains could have been laid down several hundred years later.

3. *Agricultural intensification on the valley floors*

In all cases where clear evidence is available, with the exception of the Aname floodplain, the initial use of the valley floors appears to have been for habitation and dry land gardening. At Anetcho and Antina, the initial labor investment in storm drains to prevent flooding and perhaps lower the water table may have been considerable. The process, however, was generally one of *extensification*, the use for the first time as gardens of the previously swampy and flood-prone valley flats. This may have been forced by over-exploitation of hillside swiddens near the coast. As alluvium accumulated, the valley floors would have become raised further above the base water table and flooding would have been less frequent.

On the same Aname floodplain, where massive alluviation has occurred since 500–600 bp, the initial form of gardening for which we have evidence is irrigation. There is evidence from the dating of the underlying alluvium to suggest that the irrigation system can only have been constructed since 300–400 bp. The AT196 system occurs at the end of the longest canal on the island (AT177), so this particular inter-district canal may be no more than a few hundred years old. The floodplains of the Anetcho and Antina rivers also present surface remains of large-scale irrigation systems, again often at the end of long inter-district canals. The evidence of the river sections, assumed to reflect deposition patterns over wide areas of the valley floors, would suggest that the large-scale systems represent a late intensification of agricultural production within the last few hundred years. Being surface features, such systems are hard to date, but the very fact that they are surface features would suggest a comparatively recent time period.

They were already of some antiquity, however, when the missionaries arrived. Copeland (1860, 346) wrote that the canals, 'according to the old opinions of natives, are the work of superhuman agents'. In his 1882 Dictionary, Inglis noted that:

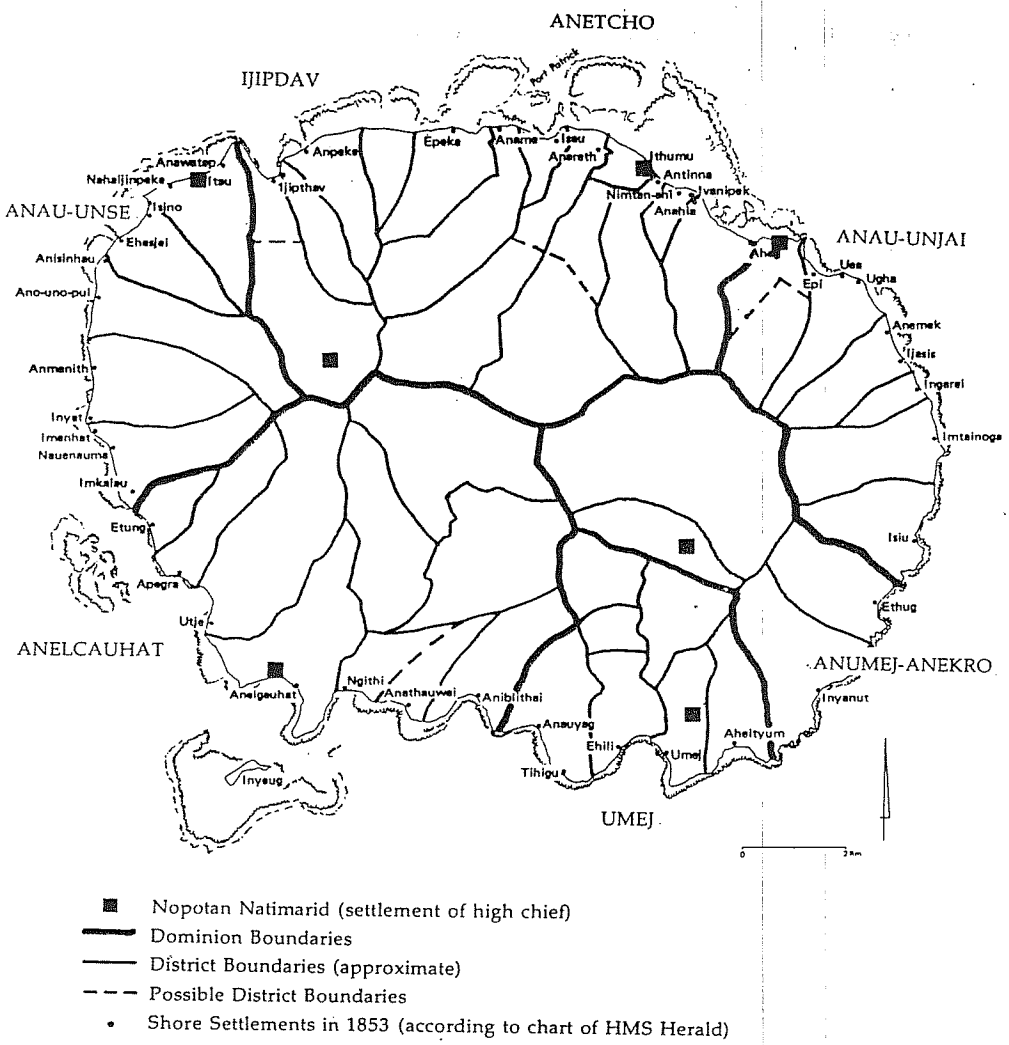
> if you ask the natives who made these old canals for irrigation, they tell you they do not know; they suppose that they were made by the *natmasses*, that is, the gods, or, in other words, the spirits of their forefathers, which, of course means their forefathers themselves. (1882, xxiii)

Some of the larger canals are named after birds or freshwater crayfish which are supposed either to have built them or shown the people how to do so. A date of construction at least a few generations before the arrival of the missionaries would seem to be necessary for their origin to have become enshrined in myth and their human architects forgotten. However, the ultimate extension of irrigation on to the flattest areas of the plains may have occurred only immediately before European contact. The difficulties of maintaining a sufficient head of water on the flat plains were solved by leading the canals along the top of earthen embankments (*natawai*), some of which were over three metres high and hundreds of metres long, before letting the water down on to the flattest areas which could not otherwise be irrigated.

Before considering the effects of 3000 years of landscape change on economic and social structure we need to establish an ethnohistoric baseline, the socio-political organization of Aneityum at European contact.

The ethnohistoric baseline: Aneityum in 1830

Our sources for this period are written and oral history and archaeology. Many of the written sources date from the



■ Nopotan Natimarid (settlement of high chief)
Dominion Boundaries
District Boundaries (approximate)
Possible District Boundaries
• Shore Settlements in 1853 (according to chart of HMS Herald)

Fig. 2.5. Dominion and district boundaries on Aneityum in the early contact period.

missionization period from 1848 onwards and so care in interpretation is warranted. This problem is addressed elsewhere and a detailed list of sources given in Spriggs (1981, chapters 3 and 4; 1985).

At contact the island was divided into seven dominions (or 'chiefdoms'), each further divided into a number of districts between fifty and sixty in number (fig. 2.5). Each dominion, called in Aneityumese *nelcau* or 'canoe', had at its head a high chief (*natimarid*) with a number of petty or district chiefs (*natimi alupas*) subservient to him. All early accounts agree as to the presence on the island of patrilineal hereditary chieftainship. It is often stressed in the missionary accounts that the 'civil' role of chiefs was inextricably bound up with their 'sacred' role. Chiefly power was based, as in many small-scale chiefdoms (cf. Godelier 1977, 201–2; 1978, 767), on ritual rather than physically coercive powers – power of sorcery against enemies, power over the elements to control success in agriculture and fishing, and so on.

There are various ways in which chiefs were distinguished from commoners. Only chiefs could regularly participate in *kava* drinking, and cannibalism was also their special prerogative. Polygamy was practiced principally among the chiefs, with three wives being the maximum number noted by the missionaries. Chiefs had some say (with family heads) in arranging marriages, and they themselves tended to intermarry with other chiefly families to extend alliances. Only *natimarid* had the right to be carried on men's shoulders in 'baskets' on ceremonial occasions and their person was considered sacred. There were various ceremonies on the accession of a chief and each chief had an area of sacred ground where rituals were performed. *Natimarid* were most clearly differentiated from all others at their death. The usual method of disposal of the dead was burial at sea, but the *natimarid* were buried in their houses with their heads exposed. Food offerings were placed before the corpse until the head could be separated from the body and then the skull was placed on a pole as an object of worship.

The basic settlement unit was the district under a *natimi alupas*, with households dispersed among the gardens. These districts usually consisted of a single catchment from the central chain of mountain ridges to the shore, forming wedge-shaped territories incorporating a range of environments from reef flat to cloud forest at several hundred metres above sea level. These districts, between 51 and 55 in number, have clear parallels with Hawai'ian *ahupua'a* as described by Earle (1978), which covered a similar range of environments (see also Hommon, this volume). However, not all *ahupua'a* correspond to Earle's 'ideal type' wedge segments, and nor do all Aneityumese districts. Radiating ridges from the central mountains of the island account for the boundaries in most cases (23–5 cases) but streams or rivers sometimes form boundaries (though rarely at points where irrigation supply canal take-offs are situated), while in other cases a coast–inland dichotomy in deeper valleys has been created by dividing up tributary catchments as districts (8 cases) or so designating valley segments away from the shoreline. Some shore districts with a wide expanse of coastal plain appear to have been created following no clear natural boundaries at all. Possibly they simply represent divisions of land into areas of equal population and/or equal resources in a uniform environment (4–6 cases).

Dominion boundaries are recorded on a map (fig. 2.6) prepared by missionary Geddie (probably in 1849) and in written and oral sources, although current land and political disputes make exact locations problematic. 'Border' districts may have shifted allegiance from time to time but the basic pattern recorded in 1849 was almost certainly a precontact one.

The agricultural system consisted then (as it does today) of both dryland and irrigated gardens, with taro (*Colocasia esculenta*) as the main staple grown in taro swamps (*inhenou*), and in canal-fed furrow irrigated gardens (*incauwai*), as well as by a range of dryland swidden techniques (Spriggs 1981, chapter 3).

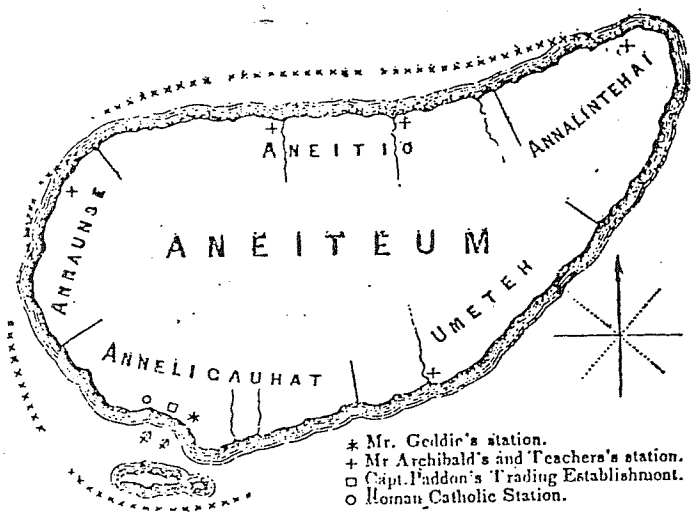


Fig. 2.6. Geddie's 1849 map of Aneityum showing chiefdom boundaries and mission outstations.

The district inhabitants of non-chiefly status should not be considered homogeneous. The drudgery of women's lives is recorded in detail in oral and written sources. Much of the garden work, collecting of marine foods and cooking was done by them. When Geddie and Inglis took the first census in 1854 they noted a marked imbalance in numbers between the sexes which was attributed to greater infanticide of female children and the strangling of women upon the death of their husband or sometimes other close relatives.

A rule of endogamy restricted marriage usually to within the dominion, and perhaps more ideally within the district or contiguous districts. Chiefly marriage links were wider, however. Sister exchange was the preferred form according to informants, and there was no operation of bridewealth. If marriage was contracted outside the district a woman had to be obtained in return sooner or later. Sexual antagonism and violence against women leading to their death or subsequent suicide were frequently recorded by the missionaries. Such socially sanctioned violence against women elsewhere in Melanesia has been interpreted as coercion to extract obedience and in particular increased labor inputs into agricultural tasks (cf. Modjeska 1977, 252–8 for a discussion of sexual antagonism among the Duna of the Southern Highlands, PNG).

Agricultural production limits were effectively set by the amount of work women could be pressured into doing, but their numbers were limited by infanticide and strangulation of widows, monopolized by the polygamy of chiefs and elders, and rationed by these same men who allocated them as wives. At one level such limiting practices can be seen as operating as a social control over the behaviour of younger men, with obedience being demanded in return for a wife (cf. Terray 1972). As Geddie noted, the imbalance of the sexes meant that 'no less than 600 men are doomed to a life of hopeless celibacy' (1855, 125). Women were thus (to men) a scarce and extremely valuable exchange object controlled by chiefs and family heads. I do not pretend that this is a full explanation for the sexual oppression of women on the island: women were of course the producers of the producers, and selective infanticide, although probably not strangling of widows, may have served as a population limiting or stabilising mechanism (McArthur 1974, 65–8, chapter 5).

Continuously fluid and shifting alliances seem to have been the pattern of relations between dominions. Pressure on resources does not appear to have been the reason for warfare, territorial conquest was not the aim, and few men appear to have been killed in these engagements. The idea that traditional warfare was in some sense a ritualized form of competitive exchange, as put forward by Adams (1984, 12) to explain warfare on Tanna, may well be valid for Aneityum.

It is in the practice of feasting (so strongly condemned by the missionaries) that Aneityumese social structure and the position of chiefs is most clear. The central role of chiefs was in the giving and receiving of feasts (*nakaro*) involving the appropriation of surplus food production in their own dominions or districts and redistribution across dominion or district boundaries. In this way no one ate their own surplus. There were elements both of reciprocity, maintaining relations with potentially hostile groups, and of social competition. A chief's relative status was shown by the quantity of food collected and this was limited by the quantity he could appropriate from his own subjects. One way of concentrating food supplies for the feasts was the imposition of a taboo of up to six months on certain foods leading up to it, backed up by fear of angering the chief as possessor of malevolent powers, and of angering the spirits (*natmas*) in general. On occasion more directly coercive sanctions were employed to enforce taboos.

This fear was tempered by an ideology of giving. Within the district status would be achieved by the individual who produced the greatest quantity of food, successfully propitiating both chief and *natmas*. The chief carried this desire for status to the inter-district arena, where an impressive display of food showed that his garden magic was more powerful, therefore his propitiation of the *natmas* more successful, and his control over agricultural production more effective than that of his rivals.

That the social rather than nutritive aspects of feasting need to be stressed is clear from the fact that much of the collected and already cooked food that was exchanged was allowed to rot, the *quantity* of food collected rather than the food itself being important. Many foods were presented at feasts but taro was always the essential ingredient, a crop which once harvested lasts only a matter of days. The competitive element in these feasts would have led to a cycle of escalation of gifts and ever more lavish countergifts. This spiral was controlled only by the limits of agricultural productivity. One of the limits to this was the area of productive land, depending on available technology, another was climate, and the third was the labor available for agricultural production.

The third factor is perhaps the most crucial. Given the major role played by women in agricultural production it is clear that the appropriation of surplus depended on the labor inputs of women, and so increased demands on production represented increased demands on women's labor. Thus Mrs Geddie complained that when feasts were imminent the women had to fatten the pigs in addition to their usual tasks and her women's school had to be broken up. The crucial factor in limiting the 'inflationary' tendencies of competitive feasting was the extent to which women could be pressured to work harder. Modjeska (1977) has discussed a similar situation in Highland New Guinea where in many cases the limits to agricultural intensification (for instance in Kapauku) are set by the extent to which women's labor hours can be increased. Thus as Modjeska notes (1977, 226), the social relations of production governing the division of labor rather than any factor of population, technology or environment set the limits to intensification in many Melanesian societies.

Links between dominions were extended to other islands. Certain dominions had links to the nearby islands of Futuna and Aniwa and to particular parts of Tanna. These links involved intermarriage, exchange and reciprocal feasting. Thus Anelcauhat had links with Port Resolution on Tanna, Anau-unse with Anuikaraka twelve miles south from Port Resolution, while Anetcho was linked to both Futuna (or at least a part of that island) and Aniwa. If a visiting canoe missed anchorage and landed in a different dominion its crew would be killed and eaten, a fate which befell a company of Aniwans who were shipwrecked at Anau-unjai in about 1820 en route for Anetcho, and a mixed party of Aneityumese and Tannese who were forced to put ashore in a hostile area of Tanna in 1852.

Archaeological settlement pattern

An archaeological reconnaissance of the whole island, and a detailed settlement pattern study of four of the seven dominions (Anau-unse, Ijipdav, Anetcho and Anau-unjai) were undertaken to examine the archaeological manifestations of this later prehistoric/early historic pattern.

Archaeologically the dominion or chiefdom level of political organization is shown most clearly by the long canal irrigation systems, some crossing major watersheds and over four kilometres in length. The significance of such substantial engineering works does not lie, however, in the required labor input for these necessitating a chief or equivalent as manager of such enterprises. It lies in there being that area of land under the political control of one unit, of there being in this case a supra-district polity. Initial labor input and labor organization would not have required the mobilization of large work teams above the level available in a single district or contiguous districts served by these canals. There are many examples in the ethnographic literature of social groups without 'chiefly' managers building and maintaining irrigation systems equivalent to or larger than those on Aneityum. In fact none of the irrigation systems in the Pacific is of such scale as to demand centralized direction in construction or maintenance, so the more extreme versions of the 'hydraulic hypothesis' of Karl Wittfogel (1957) and others must be rejected (cf. Earle 1978 for a detailed examination of Wittfogel's ideas in the light of research in the Hawai'ian Islands). The chief as overseer or manager is clearly *not* a necessary precondition for the existence of such systems.

Long canals are, however, vulnerable to any interference, and so political control above the district level was necessary to ensure the continuation of water supply. In the period for which we first have documentary evidence on Aneityum, such supra-district organization was provided by the dominions.

These canals never cross dominion boundaries as we know them from this period. Such supra-district organization might have been possible on a purely reciprocal basis between politically independent districts, but would have been a more tenuous arrangement. On the north coast of Aneityum between the Aname and Anaia rivers flood plain irrigation systems cover some 69 ha fed by eleven canals. Four of these canals, feeding approximately 58 ha or 85% of the total area, cross district boundaries. If water supply had been cut off to some of these lowland districts or to valleys (such as Uea and Igarei) which relied heavily on extra irrigation water from adjacent districts, their economies would have collapsed.

It is thus not surprising that the core of every dominion was a large permanent river or series of rivers. If we calculate the percentage of wetland (as opposed to rain-fed) garden area in use per year for the four northern dominions (combining Ijipdav and Anetcho, whose boundary is unclear) at about 1830 we find 5% for Anau-unse (the driest dominion, on the leeward end of the island), 20% for Ijipdav-Anetcho, and 31% for Anau-unjai. The higher yields from the irrigated gardens meant that somewhere in the order of 10% of total root crop production was supplied by irrigated gardens in Anau-unse, 27% in Ijipdav-Anetcho and 40% in Anau-unjai (details of the calculations are given in Spriggs 1981, chapter 4). It must be noted that these figures assume a year in which rainfall was adequate for good crop growth in the rain-fed sector. In drier years a higher percentage of total production would have come from the more reliable irrigated gardens. The irrigation systems form a permanent infrastructure of canals and sloped stone-faced terraces which could be brought back into use at any time. Such a permanent infrastructure leads to a greater tie to land, giving reason to remain in a particular locale. There is a potential for privatization of land ownership where such infrastructures exist, and a tendency towards this may have been occurring on Aneityum at European contact.

Sites recorded in the archaeological survey usually form discrete clusters in the valley bottoms and lower slopes of major catchments, extending inland but very rarely to above the 300 m contour. Above this were found occasional taro swamps, some dry gardens on flat areas but only very exceptionally any house sites. Only one canal take-off (AT177) occurred above 300 m altitude and this is the longest supply canal on the island. Connecting some of these settlement/agricultural clusters are long canals such as AT177 which cross major watersheds between valleys. Apart from such canals the ridges between valleys are usually devoid of sites, thus clearly delimiting the areas of many of the districts. House sites represented by low stone-faced platforms are found dispersed among the gardens of the districts. On occasion up to four or five house platforms occur in clusters, and one or two clusters appear to have low banks and ditches around them. Although Geddie refers to 'villages', the pattern is best described as dispersed settlement. Associated with each district were one or more *intiptag*. These were (and are) usually open spaces adjacent to large (particularly banyan) trees where the men drank *kava* at night. Although former *intiptag* sites are often known to informants, archaeologically they have no clear traces. In cases where a building was associated with them, it is indistinguishable from an ordinary house site.

The settlement and burial places of high chiefs (*nopotan natimarid*) are generally remembered. At Idumu the *nopotan natimarid* of Anetcho is surrounded by a bank and ditch. At Anelcauhat one such site (Unumej, AT197) adjacent to the present *natimarid*'s compound has been affected by recent gardening operations and at least two burial sites disturbed. One was recovered by the villagers in the mid-1970s, and the other partially disturbed burial was excavated by the author in 1983. Both burials contained a male and female with quantities of red ochre, necklaces of drilled pig teeth, large *Tridacna* and whale tooth (?) beads and *Conus* rings, all said to be part of a *natimarid*'s insignia. The burial excavated in 1983 contained parts of other individuals whose association with the primary inhumation is unclear.

A basic assumption has been made in assessing the significance of the site survey that all agricultural systems which are not known to informants to have been built in the period after missionization were in use (either as planted areas or in short-term fallow) at European contact. Using a 'welfare' approach to carrying capacity developed by the geographer Bayliss-Smith (1978, 1980), estimates of the 1830 population can be made (see Spriggs 1981, chapter 4, for detailed methodology). In 1854 the missionaries conducted a census and found that there were about 3800 people on the island. It is known however that in the 1830s and 1840s there were two epidemics which occasioned considerable mortality. Some early writers estimated the precontact population at somewhere between 9000 and 20,000. The settlement pattern study indicated an 1830 population of between 4600 and 5800 people, a density of 29–36 persons per square kilometre.

Agricultural intensification and political transformation on Aneityum

Convincing linguistic reconstructions allow us to suggest that the original settlers of this area were agriculturalists with a chiefly system of social organization (Pawley 1982; Pawley and Green 1973). Indeed one of the Proto-Oceanic reconstructions of a term for chief **qalapa(s)* is apparently cognate with Aneityumese *natimi alupas* (Pawley 1982, 42). At European contact in 1830 Aneityum had two ranks of chiefs, whose prestige was based on their ability to mobilize surplus production for competitive feasts.

The potential for agricultural intensification is the potential to increase surplus production to meet the demands of the socio-political system. As Godelier (1977, 110–11) has pointed out:

> If modern anthropology has confirmed the argument that the relationship between the development of productive forces and the development of social

inequalities is not mechanical, it has on the whole shown that social competition in class societies provides the major incentive to surplus production and, in the long term, leads indirectly to progress in productive forces.

It is this competition and this progress which are detailed in the sequence from Aneityum. Thus we see a change in land use over time from dryland to more productive irrigated agriculture (cf. Spriggs 1985), and further intensification of particular irrigation techniques. Cropping of swampland gardens can be indefinitely extended by continually renewing the leaf mulch and turning over the soil, and yields can be increased in furrow irrigation by tillage. Tillage and deep mulching appear to have been used in dryland gardening as well. A presumably unintentional consequence of gardening on the steep hillsides was the massive erosion which appears to have begun almost immediately after initial settlement. This led to the creation of the extensive alluvial plains generally used first for dryland gardening and then for irrigation within the last few hundred years prior to European contact.

Much of the irrigated land fed by the long inter-district canals of the north coast was not in existence at settlement. It is within Anetcho dominion that the expansion of agriculture allowed by landscape change is most evident. Whole shore districts such as Itad, Anared and Anetcho Ecsina may have only become habitable at all within the last few hundred years, previously being swampy and flood-prone or even under the sea. As noted earlier, the boundaries of these districts do not follow clear natural features and give the appearance of having been purposefully divided up as equal areas of new productive land. It is in these districts that much of the irrigated land of Anetcho dominion is found, and it is perhaps significant that the *nopotan natimarid*, the headquarters of the Anetcho *natimarid*, occurs in one of these 'new' districts. Smaller areas of recent alluvium are found in all dominions and are everywhere highly significant within the agricultural system.

The growth of chiefly power and the expansion of irrigation on the island went hand in hand. As a chief's prestige grew he would become more able to command labor to expand the conditions of agricultural production by the building of new canals and the extension of irrigation systems to the flatter areas of the coastal plains. It was the chief's power to appropriate surplus production for feasts in order to maintain his prestige which required the expansion of the irrigation systems. An expansion in one district or dominion would necessitate expansion in the others to match food presentations, taro for taro, up to the limits of the productive capacity of the island. Irrigation is clearly an attractive path to intensify production in such expanding chiefdoms (cf. Spriggs 1985).

It is hard to imagine that the social system at European contact, based as it was on the sustained production of large agricultural surpluses, could have existed on anything like the same scale even five hundred years previously. Human interference with natural environmental processes had led, not to ecological disaster, but to a greatly expanded potential for agricultural intensification and social stratification.

First thoughts on Tanna

As already noted, there were exchange relations between particular districts on Tanna and on Aneityum and some intermarriage took place. Two Aneityumese products were much in demand on Tanna – red ochre and hawks' feathers. Red ochre was used as decorative body paint on Tanna and the feathers of the Australian goshawk (*Accipiter fasciatus*) were used 'for making plumes with which to adorn the heads of the Tannese chiefs' (Inglis 1890, 136). As Inglis noted, this hawk was not present on Tanna (cf. Medway and Marshall 1975, 455). *Kava* and pigs, both important in ritual life, were given in return. Tannese (and Aniwans and Futunese) also sailed to certain of the dominions on Aneityum to take part in feasts and dances which presumably were reciprocated on Tanna. Many early accounts noted the similarity in dress, hair styles, decoration and house and canoe types between the two islands, and the 'roads' (*swatu*) between *nakamal* (An: *intiptag*), the men's meeting places, which mediated relations between districts on Tanna (Bonnemaison 1979, 309–14; Brunton 1979, 99–101), certainly extended to Aneityum. I suspect they operated *within* Aneityum as well but there is no clear statement of this in the sources.

On Tanna there is no equivalent to the *natimarid* (high chief) or his dominion and 'chiefs' are usually *yeremwanu* (*yremera*, *yerumanu*, *yeremere*), equivalent in some ways to the *natimi alupas* (district chief) of Aneityum. The traditional power of *yeremwanu* on Tanna is now difficult to establish. The right to wear a large feather headdress (*kweriya*) is the most distinctive feature of the rank. Secondary roles such as that of crop magician, or the right to cannibalism appear to have contributed more to a person's power than the *yeremwanu* title (Adams 1984, 14–15), a point also made for Aneityum in relation to high chiefs and district chiefs. The feather headdress (to which the hawk feathers of Aneityum were presumably attached) was worn at the *nakwiari* or *nekoviaar*, 'the most prestigious and spectacular ceremonial exchange' (Brunton 1979, 100). Just as on Aneityum the *nakaro* (presumably a cognate term) was intimately connected with and initiated by the chiefs, so the *nakwiari*, its equivalent on Tanna, and other feasts and exchanges there, took place at the instigation of 'a local aristocracy whose highest ranked members, called *Yremera*, formed a network of alliances round the whole island' (Bonnemaison 1979, 309; translation by Spriggs).

Brunton's informants (1979, 100) claimed that *yeremwanu* had certain privileges such as not being required to work in the fields and access to a greater number of wives than other men. Another hereditary title on Tanna was the *yeninikо* (*yani niko*, *ieni entete*, *yani en dete*), the 'war chief' or 'talking chief' (Adams 1984, 15–18; Bonnemaison 1979, 311; Brunton 1979, 100). In warfare he was the local leader while the role of the *yeremwanu* was very limited, but generally the *yeninikо* was his subordinate and to some extent his assistant (Brunton 1979). While pointing out that it is probably an idealised view, Brunton (1979, 101) notes that:

> Some informants claim that traditionally, sorcery (*netik*) was under the complete control of *yeremere* and *yeniniko* and was used to ensure compliance with their will.

This again is reminiscent of Aneityum, but many *natimarid* and *natimi alupas* privileges were not noted on Tanna. Thus *kava* drinking was a regular habit of all adult men on Tanna and while the right to cannibalism was restricted and inheritable, it was not a right many *yeremwanu* or *yeniniko* possessed. The degree of veneration of a *natimarid* during life as well as after death is not found associated with any rank on Tanna. As on Aneityum, however:

> Soon after birth girls would be set aside for a definite [marriage] alliance, often between lineages of the same tribe but sometimes between different tribes. The match was not related to land distribution so much as to the establishment and maintenance of political alliances . . . the acceptance of a bride entailed the obligation on the receiving line to provide a bride, and on the donor line to receive one, in the future. (Adams 1984, 10)

Brunton describes the marriage pattern as sister exchange between cross-cousins (1979, 97). A 'tribe' in the sense used above was a collection of hamlets sharing a common territorial name (Adams 1984, 7), corresponding to the district level of organisation on Aneityum. Interestingly enough these districts, about 115 in number, are called 'canoes' (*niko*) as are the largest independent territorial units on Aneityum, the dominions (*nelcau*). Bonnemaison (1983, 4–5) states that each *niko* consists of one or several clans and is organised around a network of strongholds and magic places according to natural topographic features such as catchments or clearly marked-off sections of plateau. Boundaries, as on Aneityum are generally ridge crests or deeply embanked creeks. Bonnemaison sees the canoe terminology as being a folk memory of the original voyage of colonization and the *yeni niko* (literally 'spokesman of the canoe') as being the closest to what is understood elsewhere as 'chief' (1983, 11).

Exchange feasts between *niko* such as the *nakwiari* were as important on Tanna as on Aneityum, featuring the familiar elements of reciprocity and competition. Adams has stressed the principle of reciprocal exchange as essential to an understanding of Tannese social structure (1984, 8–10).

Comparisons between *yeremwanu* and *natimi alupas*, 'tribe' and 'district', can only get us so far, however. The *natimi alupas* operated within a hierarchical framework of which they were the second level, and no equivalent higher level of political integration operated on Tanna.

Brunton among others has characterised Tannese society as atomistic, creating a precarious balance between individual autonomy and interdependence (1979, 102). This balance is maintained by an almost inflexible, all-embracing network of relations between individuals and groups preventing them from forging new links or abandoning old ones. The possibilities for change lie in the hierarchical system of titles but, as Brunton points out, this system 'is unable to mobilise sufficient power to constrain the autonomy of adult males' (1979, 102). He reflects that:

> Had there been effective foci of social power on Tanna sufficient to curb individual autonomy and provide some guaranteed range of internal peace, interaction and exchange may have been able to operate more smoothly. But there are few, if any, resources which could be monopolized to the extent necessary to provide the basis for such foci. (1979, 101)

The problem may well have been the limited possibilities for agricultural intensification on the island, in terms of both technology and labor. Given the topography and water resources of Tanna, irrigation systems for year-round production of taro could not have developed. Where rivers of permanent flow do occur on Tanna they are generally in deep gorges and unsuitable as irrigation sources. In addition, relative to its size, Tanna has a very limited area of alluvial plains, the prime locations where irrigation might be expected. The poorly developed fringing reef does not form the barrier against coastal erosion which allows the development of such plains.

On Tanna, however, there is fertile land for dry land agriculture, particularly in more leeward areas. Thus instead of taro it was the seasonal dry land yam crop on which attention was focussed. As a dry land crop, yam needed no appeal to resources beyond the immediate planting area and so no supra-district polity was necessary to allow the intensification of its production. The irrigation systems of Aneityum represented capital works which could be continually re-used and added to piecemeal. The yam mounds of Tanna, on the other hand, had to be remade before each planting and similar advantages did not accrue. While on Aneityum land use in many areas could be intensified from dry land untilled cropping, to tilled cropping, to canal-fed irrigation, with increasing yields obtainable per hectare, the productive limits of Tannese gardening systems were narrower. In a published review of my Ph.D. thesis, Bonnemaison (1981, 128) points out that intensification on Tanna was not a question of quantity but of quality and in particular of length of yam. Long, specially grown yams were an important part of ritual exchange. This is certainly true but 'ordinary' yams still had to be produced for feasts as well as the ritually exchanged yams and so quantity was also important.

A final limit to productivity could have been hours of labor. Following a typical southern Melanesian ideology and division of labor, yam gardening on Tanna was traditionally largely a male task (cf. Barrau 1965, 336–9). Women help remove weeds and clear the plot prior to making the yam mounds and also weed and harvest the crop. Men do the heavy clearing, construct the yam mounds and trellises on which they train the yam vines, plant the yam tops and also harvest the crop (L. Lindstrom, personal communication). Thus male labor may have set the limits to intensification rather than female labor. Given the autonomy of adult males as noted above, there were clear limits to the accumulation

of surplus. An effective focus of social power on Tanna could therefore not be established with the social relations of production which existed and yam as the main crop.

Very little archaeological research has been conducted on Tanna and we have neither a good idea of the cultural sequence nor yet of traditional settlement pattern. The kind of massive humanly induced landscape change recorded for Aneityum has not occurred on Tanna, although the degraded 'white grass' vegetation of parts of the north and west of the island testifies to considerable alteration of at least the vegetation. The island is densely settled and appears not to have suffered as much from the massive depopulation which occurred on the other southern islands with European contact. The current population (1979 census) is 15,593, a density of just over 27 persons per square kilometre. Early 'guesstimates' gave figures of 15–20,000 people (26–35 per square kilometre) which may in fact not have been too wide of the mark.

Conclusions

Aneityumese social structure could be viewed as a transformation of the Tannese pattern with power and authority increasingly concentrated in the hands of a few and a stress on vertical social relationships. Influence on social structure of both islands from the nearby Polynesian outliers needs to be considered here. Lindstrom (1981b, 134, 140–1) has suggested for Tanna that the notion of talking and sacred chiefs may have diffused from Aniwa and/or Futuna in the last few hundred years with Polynesian settlement of those islands. Certainly Polynesian spiritual figures such as Mauitikitiki and Tangaroa feature in traditional stories all over Tafea, and Polynesian loan words occur in the languages. Lindstrom suggests that 'this new knowledge was used as is knowledge today – the men closest to the source became brokers and teachers and thus increase their political status'. But only initially. If chiefship were established this way in the area, the pre-existing social relations and economic structures of Aneityum and Tanna would explain why the idea 'stuck' in Aneityum but failed to take hold effectively on Tanna. Seeing chiefs in action on neighboring islands was not sufficient where permanent means of monopolizing power were not available.

While the outward trappings of chiefly rank on Aneityum and Tanna may owe a lot to Polynesian models, the basis for political power was indigenous. Indeed, instead of seeing Aneityum as an evolutionary transformation of a Tannese-style system it is possible to view Tanna as a 'devolution' in political power from a formerly more hierarchical system. Friedman's (1981, 1982) model for explaining the apparent diversity of Oceanic socio-political systems is pertinent here. The linguistic reconstruction of early Oceanic Austronesian social organization as hierarchical has already been alluded to. Friedman uses the linguistic reconstructions to suggest a 'prestige-good economy' as the basic building block of ancestral Oceanic society. Chiefly power was based on the monopolization of wealth items necessary for social transactions (marriage, etc.) which were obtained by long-distance exchange, a monopoly which could be maintained only under conditions of trade scarcity. New Caledonian chiefly systems may well be of this kind and an exchange cycle between the main island of New Caledonia, the Isle of Pines, and the Loyalty Islands where shell valuables were exchanged against greenstone objects appears to have been important in stabilizing the system (Guiart 1963). This exchange system appears to have previously included Tafea. Tanna and Aneityum are visible from the Loyalty Islands and greenstone pendants clearly of New Caledonian origin were valuable personal wealth in Tafea at European contact (Cook [Beaglehole] 1969, 505; Golovnin n.d.; cf. Aubert de la Rue 1938). The supply appears to have already dried up by contact, however, representing a contraction of the exchange system. Trade density in general within Aneityum and between Aneityum and the neighboring islands appears to have been quite low at contact. If we follow Friedman's scenario, collapse of trade and loss of access to imported valuables would have meant no clear monopoly basis for power. Competition would have led to a stress on feasting with attendant intensification of production, intensified warfare and a stress on the religious sanctity of chiefs. This system Friedman calls 'theocratic feudalism' and it does bear a striking resemblance to the situation on Aneityum at contact.

Tanna is certainly more centrally placed with respect to external exchange than Aneityum and may have experienced an *increase* in trade density, probably pre-contact but certainly accelerated with the coming of the Europeans when Tanna became the major provisioning centre in the area for European vessels (as Aneityum did not produce many storable yams for sale to ships, it was largely ignored in the early contact period). Increasing trade density led to a breakdown of the monopoly hierarchy into competition between smaller groups as access to external goods became easier for all. A variant of the 'big man system' thus came to operate either shortly before or shortly after European contact.[2] Chiefly titles therefore may have been declining in importance on Tanna rather than being recent 'diffusions' from Polynesia which failed to take hold, whereas on Aneityum the basis for chiefship had shifted but chiefly status was maintained. In this model, both systems were transformations of an earlier ancestral 'prestige-good system' rather than being an evolutionary continuum with Tanna as a 'less-developed' version of Aneityum.

Future archaeological work in Tafea will seek to test these different models of political transformation while integrating the histories of the other Tafea islands to give a truly regional picture. What is already clear, however, is that the explanation of social dynamics in southern Melanesia will not come from invoking simple causes such as population pressure, adaptation, or environmental determinism. As the comparison of Aneityum and Tanna shows, the answers surely lie in the dialectic between social relations and ecological ones and the way in which this was worked out over three millennia of Tafea prehistory.[3]

Notes

1 In 1963–4 Mary and Richard Shutler conducted site survey and test excavations on Aneityum, Futuna, Aniwa, Tanna and Erromango, for which only a summary is published (Shutler and Shutler 1966; see also Shutler 1970, Shutler and Shutler 1975). Les Groube did further survey and excavation on Aneityum and Erromango in 1972 (Groube 1975, n.d.), and his work on Aneityum was expanded by Norma McArthur (1974, 1978).

Detailed ethnographic fieldwork has been undertaken on Tanna by several foreign researchers (Bastin 1981; Brunton 1979, 1981, Guiart 1956; Lindstrom 1981a, 1981b) while at present further research and recording of oral traditions in Tafea District are being carried out by local anthropologists, the fieldworkers of the Vanuatu Cultural Centre. The languages of the area and their history are being investigated by Professor John Lynch of the University of Papua New Guinea and there has been other research on languages by earlier linguists and missionaries (see in particular Lynch 1978; also Capell 1960; Tryon 1976).

2 This sequence may explain certain historic period and contemporary features of Tannese society as discussed by Lindstrom (1984). He sees control of esoteric and political knowledge as being more important on Tanna than control of material wealth, a situation which in part at least could be linked to high trade density where wealth is not easily monopolized.

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