Social Change and Deforestation:
A Case Study of Western Samoa

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Abstract

Deforestation has caught much attention within wider concerns about the global environmental crisis. Though it is often large countries with rich forest resources which have caught most attention globally, forests in Western Samoa are worthy of attention as they have experienced some of the highest per capita rates of loss.

The causes of deforestation reveal an intricate mix of social, cultural, economic and political factors within a specific local context. At the same time, external factors, which exist outside the national borders, also influence on the state of the forest.

Deforestation in Western Samoa is an example of such complex relationships. It is not commercial logging operations which cause deforestation in Western Samoa, and most deforestation is occurring on communal land. Recent studies have claimed that the modification of land tenure system, caused by the influences of Western individualism and the cash economy, induces Samoans to cut down trees. However, this study has found that the main cause of deforestation is the land conversion for agricultural use by villagers who seek increased money income. At the same time, changes in the traditional Samoan society have had significant influences on deforestation. Factors, such as an increasing number of *matai* (chief) and the advent of nuclear families, have interacted to encourage villagers to clear forests.

No society is constant. Forests in Western Samoa have been lost in the continuing friction between traditional and modern values in the society. Conservation of the forest depends on the views and values of Samoans themselves, seen through the lens of their culture, and on the decisions made based on such perceptions and attitudes.

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Lastly, to my parents and Yukari, thank you for your support from so far away. The words below are especially for you:

お父さん、お母さん、ゆかり。いつも私の我がままを
許してくれて ありがとう。感謝しています。治美

Table of Contents

List of Tables, Figures and Plates

List of Tables

List of Figures

List of Plates

Glossary of Samoan Terms

'aiga	Extended family, descent group or kinship in all its dimensions.
'aiga poto poto	A gathering of the main representative members of an *'aiga* in order to decide upon matters of mutual interest.
'aitu	Ghost or spirit.
ali'i	Paramount chief.
aumaga	A society of untitled man.
fa'a lavelave	Public ceremonies, such as funeral, weddings, title bestowal ceremonies. It sometimes means any difficulty from paying school fees to funeral expenses.
fa'a matai	Samoan political system based on *matai*.
fa'a Samoa	Samoan way of life.
fale	Samoan open house. *Fale palagi* is Western style house with walls and windows.
fono	Village council of *matai*.
ie lavalava	Traditional wraparound skirt for both men and women.
palagi	People of European descent.
pule	Authority.
Matai	Chief.
nu'u	Village or polity.
tautua	Service to one's family, village, district and country.

Chapter One :
Introduction

Global Environmental Crisis

During the past three decades, environmental degradation has become one of the major issues of concern to ordinary people as well as to leaders of nations, international agencies and scientists. In *Agenda 21*, the report based on the Earth Summit (the United Nations Conference on Environment and Development, held in Rio de Janeiro in 1992), it is said that 'never before has civilisation faced an array of problems as critical as the ones now faced' (Sitarz 1994:1). We are more exposed to the harmful rays from the sun because of the depletion of the ozone layer. Global warming caused by carbon dioxide (CO_2), methane (CH_4) and other greenhouse gases may bring about changes in climate, in vegetation and in landscape, and human habitation in lowlands may be threatened by rising sea levels. The capacity of nature to assimilate waste is built upon the sensitive balance of the ecosystems. This has been weakened because of decreasing biodiversity, increasing use of chemicals, and worsening pollution of lakes, oceans, and groundwater.

Deforestation

One of the key environmental concerns is deforestation. Especially in the Third World, tropical forest depletion is counted as one of the three great environmental dilemmas, as well as soil erosion and desertification (O'Riordan 1989). Forests provide human beings environmental services, material goods, and spiritual reflection. It is the source of a rich stock of species of flora and fauna, which coexist and interdepend on one another,

creating an intricate ecosystem in the forest environment. Deforestation, which is currently happening at unprecedented rates, is destabilising this complicated ecosystem. This may bring serious and fundamental effects on the global environment.

Importance of the Forest

Forests have various important functions in the ecosystem. Some examples are soil conservation, the regulation of water cycles, maintenance of reservoirs of rich biodiversity, and the exchanges of gases and nutrients (Sitarz 1994:94). Forests also help the atmospheric interaction which stabilises greenhouse gasses and affects rainfall, precipitation patterns and convection currents. Another point is the capacity to cater for the biotic potential (Houghton 1989, Woodwell 1993). Woodwell (1993) suggests that the 'forest might be considered the most highly developed of the terrestrial communities, at least from the standpoint of complexity of structure and the diversity of life and lifeforms' (Woodwell 1993:2-3).

For some nations which are relying for their national budget on extracting natural resources, forests play a significant economic role. For example, timber and wood products are large export earners in Indonesia and Malaysia, supplying US$4.7 billion and US$ 5.2 billion in foreign exchange earnings in 1994 respectively (United Nations 1995).

The importance of forests is more tangible for some people than others. In South and South East Asia alone, an estimated 200 to 300 million people depend on the forest for their livelihood and have developed their culture and social system in association with the forest's ecosystem and its cycle (Colchester 1994). Forests provide these peoples with their basic needs: food (such as crops, vegetables, nuts, fruits, mammals and birds) firewood, materials for building houses and fences, household items, tools, canoes,

boats, medicines and so on. For these people, the forest is not just exploitable resources, but the very condition of their existence.[1]

Size of Forests and Rate of Deforestation

Before looking into the link between forests and people, the scientific and technical limits to measure the exact size of the forests and the extent of deforestation must be made clear. We have a certain image of 'forest', but its definitions vary since structure, composition and density of forests are extremely variable.[2] This diversity causes a wide range of estimations by different researchers as shown in Table 1.1.

Attempts to depict trends and patterns of deforestation always involve uncertainty, ambiguity and conflict. The definition of 'deforestation', like that of 'forest', has not led to universal agreement. Food and Agriculture Organisation (FAO) limits its definition of 'forest' to an area in which the trees are 5m high, and when the crown cover is 40 %. This definition, however, ignores the problem of 'high-grading' of commercial logging (Jacob 1988:10). Rudel and Horowits (1993) state that deforestation occurs 'when loggers clear more than 40 per cent of the trees from a closed, primary forest or when small farms convert forests into fields or pastures' (Rudel and Horowits 1993:5). Such

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1 One example is fully nomadic Penan, one of the indigenous people in Sarawak, Malaysia. They depend entirely on the forest for their existence - hunting wild game with blowpipes, and collecting sago, nuts, berries, herbs, medicines, waxes and other forest products (Park 1992).

2 Some terms used in FAO statistics are defined as follows;

Forest and woodland	Land under natural or planted stands of trees (Land from which forests have been cleared but which will be reforested in the foreseeable future is included in this category)
Closed forest	Land with a forest cover, with tree crowns covering more than 20 per cent of the land area (Land under shifting cultivation is included if it is expected to return to forest in the foreseeable future.)
Open woodland	Land with tree-crown cover of 5-20 per cent of the surface area (Tropic savannah belts are included even if the crown cover exceeds 20 per cent)

Source: Mather 1990

a definition does count land conversion for agroforestry as deforestation. Rietbergen (1994) suggests that whether the land use change is permanent or not is important. Shifting cultivation, in which people use some plots of land in rotation allowing the regeneration of secondary forest, cannot be categorised as deforestation in its strict meaning (Rietbergen 1994).[3]

Table 1.1: Estimates of Global Area of Forest and Woodland

Source	Category		Area (10^6)ha
Zon and Sparhawk (1923)	Forest area		3031
FAO (1946/1937)	Forest		3650
Haden-Guest *et al.* (1956)	Forest		3914
FAO (1963)	Forest land		4126
Persson (1974)	Forest land		4030
	Closed forest		2800
Eyre (1978)	Total forest		6050
Global 2000 (1975)	Closed forest	2563	3763
(Barney, 1980)	Open woodlands	1200	
Matthews (1983)	Forest	3927	5237
	Woodland	1310	
World Resource Institute	Closed forest	2865	4147
(WRI 1986)	Open forest	1282	
	Other wooded land		1081
	Total wooded area		5228
FAO (1987)	Forest and woodland		4087

Source : Mather (1990:59)

Technical aspects add difficulty to this ambiguity. It is easier to measure large-scale forest clearing with remote sensing technology, such as satellite imagery or aerial photographs, and secondary data. However, these ways fall short of telling whether the small strip of forest is cleared for fallowing or other reasons (Rietbergen 1994).

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[3] Rietbergen also suggests that the land use after the forest is cleared is important for the environmental consequences. Prehistoric land conversion from lowland forest into irrigated rice field in South East Asia has significant environmental roles at the present, though it is less in variety in terms of biodiversity (ibid.).

These ambiguities and complexities are often appropriated by the various people, groups and organisations with different interests. As Myers (1989) explains,

> to those principally concerned with traditional values of tropical forest, viz. their stocks of hardwood timber, what counts is the status of stands of commercial interest....To those concerned also with non-timber values such as environmental services, wildlife species, gene pools, and—a key factor with respect to climate-biomass stocks, what counts is the status of entire forest ecosystems (Myers 1989:6).[4]

Bearing these complications, ambiguities, and uncertainties in mind, Mather estimates the total area of forest and woodland based on the data in FAO *Production Yearbooks*. He suggests that it decreased by approximately 2 per cent, or 80 million hectares, which is more than three times the size of Britain, during the period from 1975 to 1985. Table 1.2 shows the overall trend of deforestation worldwide with forests most rapidly disappearing in developing countries (Mather 1990:67).

Table 1.2: Net Changes in Area of Forest and Woodland 1975-85

	area (million hectares)	per cent
World	-82.9	-1.99
Developed world	-12.9	-0.70
Developing world	-70.0	-3.01
Centrally planned economies	+60.7	+5.55
Latin America	-54.1	-5.21
Africa	-29.0	-3.99
Asia	+13.8	+2.51
Europe	+2.0	+1.29
USSR	+38.0	+4.24

Source: Compiled from data in *FAO Production Yearbooks* (Mather 1990:69)

[4] The same author explains that the former looks at '*outright elimination* of forest, that is destruction alone'; the latter focuses on '*significant conversion* of primary forest, that is, destruction plus degradation' (Myers 1992:179).

The Causes of Deforestation and its Impacts

Other than natural disasters, many authors have suggested various causes of deforestation: commercial activities (logging, agriculture, cattle ranching, and mining), large-scale development projects, population growth, and so on (Mather 1990, Myers 1989, Panayotou and Ashton 1992, Park 1992). It is difficult to establish a single clear-cut cause of deforestation since several factors are often intertwined. Deforestation and its causes, as well as consequences, should be analysed within the particular environmental, social, economic and political context of that region. At the same time, external factors existing over regional and national boundaries cannot be overlooked.

Commercial Activities

Commercial activities are often given prominence as causes of deforestation because of their vast scale, serious ecological damages and social consequences. Logging, by its simple purpose of removing trees from the forest, is destructive. Furthermore, its influence is intensified by the opening-up of new roads which pave the way for other users to encroach deeper into the forests (Panayotou and Ashton 1992). Compaction of the soil (Mather 1990) and damage to surrounding trees by heavy equipment (Myers 1992, Repetto 1993) are some of the serious side effects of logging operations. The biological complexity of the forest may never recover if logging continues whether or not it is done selectively or by 'clear fell' (Panayotou and Ashton 1992). As in Bougainville, Papua New Guinea, the magnitude of deforestation and of deformation of the environment by mining causes confrontation in the villages, social upheaval and loss of human lives (Connell 1992). For governments with rich forest resources, especially in the developing world, forest resources are a significant contributor to the national economic development. Drawn by their aspirations for economic growth, many governments are encouraged to clear their forests. In Ecuador, clearing and

encroaching into forests is justified by government declarations that any undisturbed forest is unproductive (Myers 1989:17).

Population Growth

Population growth, especially in the South, is often said to be one of the biggest reasons for deforestation.[5] However, some suggest that population growth *per se* is not the problem. Mather points out that the relationship between population trends and deforestation in Latin America is weaker than in Africa and Asia because of the so-called 'hamburger connection' which refers to the clearing of forests for cattle-ranching to produce cheap beef for export to the North American market (Mather 1990). Moreover, today's environmental destruction is caused by extreme levels of over-consumption in the North.[6] In recent world trade, the United States, European countries and Japan comprise a large proportion of total world imports of forest products (Mather 1990). Thus, rapidly-growing population in the South is not wholly responsible for deforestation.

Traditional Farmers

Traditional farmers, such as shifting cultivators, are blamed for deforestation. According to Lanly, shifting cultivation is identified as the principal cause of deforestation in all three tropical regions, accounting for 70, 50 and 35 per cent respectively in Africa, Asia, and tropical America (quoted in Mather 1990:75). By contrast, several articles say that this traditional agricultural practice is not destructive to the forest, but can help natural forest ecological processes since traditional farmers have a good understanding of the fragile environment they are exploiting (Park 1992, Colchester 1994). This debate

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[5] Allen and Barnes conclude that there is a strong correlation between population growth, expansion of arable land, and contraction of the forest land area in developing countries (quoted in Mather 1990:73).

[6] Many articles point out overconsumption in the North as the main cause of environmental destruction, or at least mention it as problematic (Foster 1994, Sitarz 1994:38-39, Sachs 1992, WCED 1987).

leads to the political dimension of deforestation. Often governments use deforestation caused by shifting cultivators as a pretext to incorporate them into resettlement or rural development programmes. In other situations, small farmers are forced out from their homelands for various reasons, such as 'population pressures, pervasive poverty, maldistribution of established farmlands, lack of agrotechnologies for intensive cultivation, and inadequate rural development', and moved to tropical forests — the only available land for them (Myers 1989:4).[7] Westoby summarises the situation;

> the main instruments of forest destruction are the disinherited of tropical forest countries: peasant farmers, shifting cultivators, rural landless. But they are the agents not the causes. Their pressure on the forest is steadily increasing as a consequence of policies bent on preserving a highly skewed distribution of private property in land and other resources (Westoby 1987:311).

Analysis of Deforestation and its Solution

The causes of deforestation show an intricate mix of social, cultural, economic, political, and sometimes human rights issues. Factors responsible for deforestation include commercial activities, poverty, debt, trade, high population growth rates, landlessness, inappropriate policy planning and poor forest practices (Sullivan 1993:159). As the factors vary, so do their degree of influence on deforestation in different regions. Some of the environmental concerns resulting from deforestation are global. However, those people living in the area where environmental destruction is taking place are suffering from its direct results. Thus, it is important to establish the causes and consequences of deforestation from the wider range of perspectives in local contexts.

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[7] Myers calls them 'shifted cultivators' (Myers 1989:7).

World Commission on Environment and Development

There have been a series of international conferences, as well as researches and studies to explain the reasons of deforestation and what needs to be done to prevent the worst scenario taking place. One of the most notable international conferences focused on the environment was the World Commission on Environment and Development and its report, *Our Common Future* (WCED 1987). It is usually commended for raising the environment as a political issue, giving attention to the basic needs for the poor, and increasing awareness of the real world of economics and politics (Adams 1990, Colchester 1994). It finds that one of the causes of deforestation is poverty, saying:

> Those who are poor and hungry will often destroy their immediate environment in order to survive: They will cut down forest; their livestock will overgraze grasslands; they will overuse marginal land; and in growing numbers they will crowd into congested cities (WCED 1987:28).

Since development can bring about poverty alleviation, the emphasis is put on the 'new quality of growth'[8], 'ensuring a sustainable level of population', 'meeting essential needs for jobs, food, energy, water and sanitation', and 'reorienting technology and managing risk' (WCED 1987:49). This puts forward sustainable development, and its famous definition, 'development which meets the needs of the present without compromising the ability of future generations to meet their own needs' (ibid. 43).

Systems of Knowledge

Another approach to deforestation is derived from the often continuity of local and indigenous communities, and is focused on advantages of their

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[8] The new quality of growth includes 'more rapid economic growth in both industrial and developing countries, freer market access for the products of developing countries, lower interest rates, greater technology transfer and significantly larger capital flows, both concessional and commercial' (WCED 1987:89).

natural resource management systems. Here, 'systems of knowledge' analysis is given prominence. Banuri and Marglin (1993) find the cause of environmental destruction, especially deforestation, in different systems of knowledge. Systems of knowledge involve communities of knowledge, such as indigenous and modern. It should be 'systems' of 'knowledge' since any human activity has cognitive content behind it, and both human thought and actions are not random, but are based on 'knowledge'. The difference between indigenous and modern systems of knowledge is explained in terms of embeddedness, contextuality, individualism, mobility and commitment.

Indigenous system of knowledge is embedded in the social, cultural and moral milieu of their particular community. In other words, they are bound to local context, such as time, space, and moral factors. Embeddedness also regulates one's relationship with nature since 'nature' is not an object but 'the very condition of their existence'. People can only exist in their natural world, thus 'mobility' or 'substitution of their living place' can hardly be conceived.

On the other hand, a modern systems of knowledge are marked by the opposite group of facets. Modern scientific knowledge alienates specific factors from particular social, political, cosmological and local contexts and applies them universally. 'I', which is 'a separate entity' from one's social and natural environment, seeks productivity. Labelled as 'progressive', 'advanced' or 'modern', this individualism is encouraged in a 'Western-bred world-view'. Hence, 'I' and 'nature' are separated and analogised as 'thinking subject' and 'passive object'. Modern knowledge places a high value on mobility, and this helps erode people's commitment 'to the environment, as a unique and irreplaceable place' (Banuri and Marglin 1993).

A solution to deforestation presented by the systems of knowledge approach is a strong action by a local community. Conservationist attitudes and

practices are prevailing in a local community originated from the people's way of thinking. This can work as 'an effective antidote to the instrumental ideology of industrial and commercial usage' of forests (ibid. 45). Two other options, individuals and organisations (e.g. the state, corporation, unions, etc.), are undesirable for forest conservation: individuals in the local population are marked with the ideology of 'rugged individualism and utilitarian orientation to the environment' (ibid. 45), and the concept of environment of the government officials, development experts or local elite are much influenced by the modern system of knowledge.

Sustainable Development and Traditional Systems of Knowledge

There are huge discrepancies between the ideas of sustainable development promoted by the World Commission of Environment and Development (WCED) and systems of knowledge analysis. In regard to the relationship between humans and nature, WCED's approach divides human beings and the environment. The concept starts with the poor and meeting their basic needs. The new type of development is necessary to eradicate poverty; the first stage depends more on natural resources base to create technological and organisational capacities, and the second stage focuses on enhancing these capacities depending less on natural resources. Physical environment may have its limits, however there is no limits on technology and social organisation. In other words, technology, social organisation, capital, human and financial capacity should be emphasised in order to eradicate poverty and meet development goals. The more a society develops, the more it becomes of independent from natural environment. In contrast, a traditional system of knowledge sees human beings (or the members of the community) as an integral part of the environment. Savyasaachi (1993) introduces the world of the Hill Maria, a tribal group in India, quoting an elderly member's account;

> The sun, the moon, the air, the trees are signs of my continuity [the continuity of the self is only the way in which continuity of social structure is understood]. Social life will continue as long as these continue to live. I was born a part of the Bhum (the world of Hill Maria). I will die when this Bhum dies. I was born with all others

> in this Bhum; I go with them. That which has created us all will give us food. If there is so much variety and abundance in Bhum, there is no reason for me to worry about food and continuity (quoted in Savyasaachi 1993:64).

Since human social structures and the world of plants and animals have coexisted since the creation of the world, they can never be separated (Savyasaachi 1993).

Another difference between the two ideas is the notion of a community. WCED uses the word 'global commons' which means natural resources world-wide. Since those resources are 'commons', they are managed by a 'community of nation-states'. Thus, the importance of 'community', in the sense of 'local', and community resource management have been belittled (Chatterjee and Finger 1994). On the contrary, 'community' in a traditional system of knowledge analysis means people who share the same social-cultural life and belong to the same local environment. Here the community is a collective life which continues as long as their universe embraces them (Savyasaachi 1993).

Neither of these two ways of looking at environmental degradation or deforestation are free from criticism. First, WCED's view on 'mutuality' of the world economy is too naïve. The real world is rather intertwined and interdependent financially and economically (Adams 1990). Second, the heart of WCED approach inevitably involves global communalism that includes massive redistribution of wealth and power. However, it fails to address 'wholesale changes in institutional alignments', not 'just a comprehensive shift in power' (O'Riordan 1989:93). Lastly, some see it as only a repeat of old growth-oriented recipes for poverty alleviation, which have been unsuccessful in eradicating poverty in the world. Sachs (1992) argues that once the relationship between poverty and environmental concerns such as deforestation or desertification are recognised, 'the poor were quickly

identified as agents of destruction and became the targets of campaigns to promote "environmental consciousness"' (Sachs 1992:29). Through world politics, with the help of capitalism and science, 'the marriage between environment and development' has been established, 'since growth was supposed to remove poverty, the environment could only be protected through a new era of growth' (ibid. 29). Redclift and Woodgate (1994), in a more moderate tone, summarised this point as follows;

> In the North, countries have adopted their own language to describe environmental problems in the South. This language has become "globalised", and has served the purposes of the international agencies which have taken the lead in economic development (Redclift and Woodgate 1994:64)

On the other hand, taking examples from forest people, who are away from the influences of capitalism, 'systems of knowledge' analysis does not seem powerful enough to tackle deforestation. As Colchester says, indigenous societies, cultures and economies are vulnerable to the intrusion of external powers. Consequently, they have been undermined by commodisation of land and forest resources, which many traditionally non-monetised people have found hard to manage (Colchester 1994:77). In the present dominant economic and political power structure of the world, a traditional system of knowledge does not seem to give an appropriate answer for the environmental degradation happening world-wide.

Aim of the Study

In spite of global attention and concern, deforestation has not slowed. The small island nations of the South Pacific, such as Western Samoa, are not an exception. Western Samoa is an island nation with a population of about 165,000. Having few natural resources, it is heavily dependent on the neighbouring big economies, such as New Zealand, foreign aids, and remittances from nationals living and working overseas. It is this

geographical distance from and economic closeness to the outside world which has made Samoan society as it is today. Though Samoans are said to well conserve their own way of life, *fa'a* Samoa, it is no longer free from the influences of different cultures, values and ideas based on capitalist values, which has caused the transformation of the society.

The forests in Samoa have been sustained for more than 3,000 years after being inhabited by human beings. However, they have been gradually depleted since the last century, and the recent depletion rate is one of the worst in the tropical countries. Past studies report that this is because of villagers' voluntary clearing of the forest to claim individual land with the modification of the traditional land tenure system according to influences by Western individualism and the introduction of a cash economy (O'Meara 1987, 1990, Ward 1995). This study starts from the following question; why do Samoan people destroy the forest which is one of the crucial components of their life-supporting environment? The aim of this study is to explore how Samoan society, which is in transition as a result of influences both from within the culture and outside, alters the state of the forests. This study focuses only on communal land, which covers 81 per cent of the total land area of Samoa, in which most deforestation is happening.

Structure of the Thesis

Figure One on page 15 depicts the structure of this thesis. This chapter has explained the global state of the environment and the world's forests. It has discussed the complexities, ambiguities, and intricacy surrounding deforestation from a global perspective. The next two chapters provide a general background of Western Samoa. Social, cultural, and economic characteristics of traditional Samoa are explained in Chapter Two. Historical changes in land use and state of the forests in Western Samoa are described in Chapter Three. In Chapter Four, the relationship between social change and

deforestation is analysed, and the suggested causes of deforestation are examined. The possibility of forest conservation is discussed in Chapter Five. Chapter Six is the concluding chapter. Two theories, sustainable development by WCED and systems of knowledge, introduced in this chapter are raised again and tested to see if they can explain the situation, analyse causes and provide solutions for deforestation in Western Samoa.

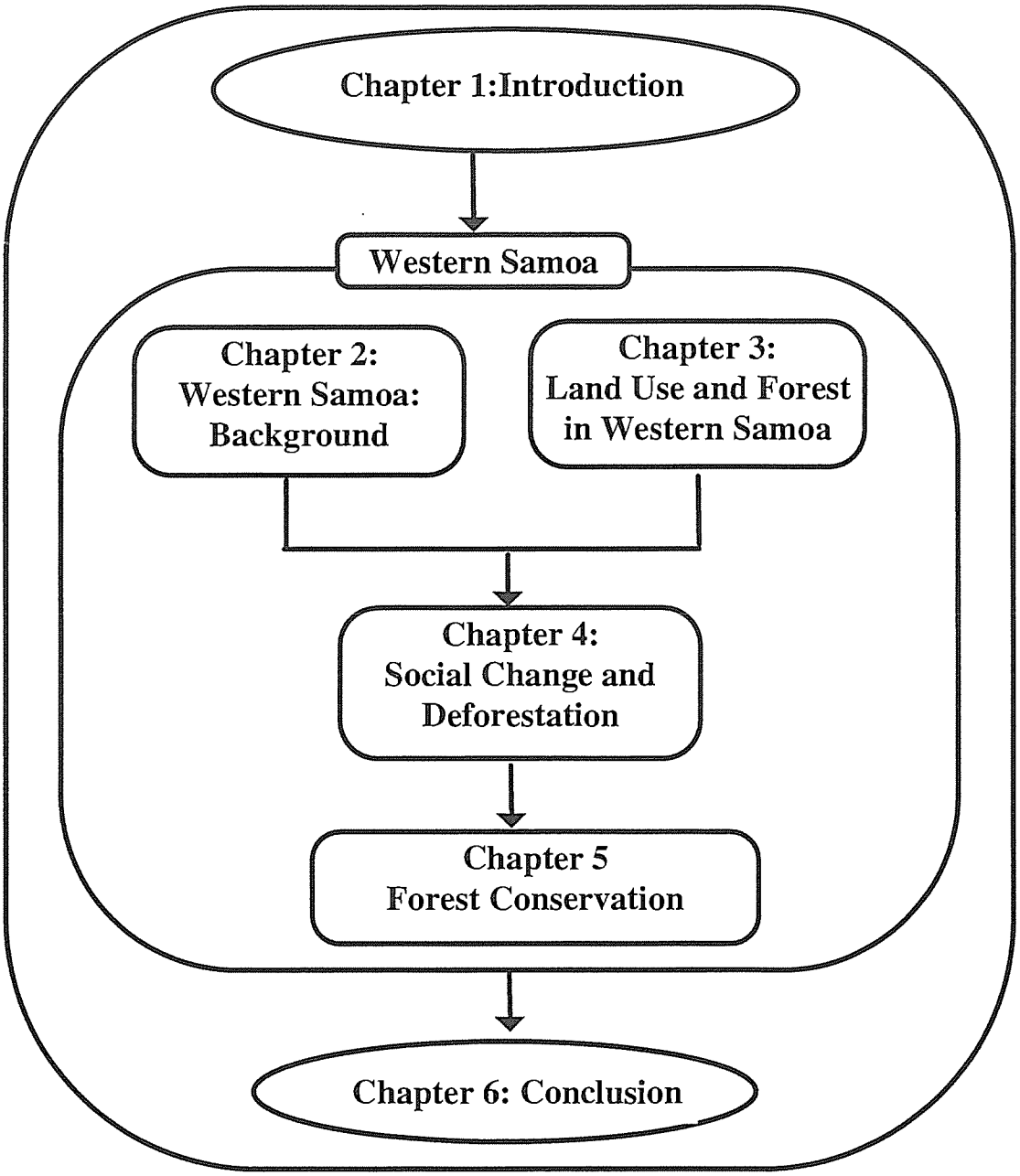

Figure 1.1: Structure of the Thesis

Chapter Two:

Western Samoa: Background

Introduction

Following on from the examination of the global view of deforestation in Chapter One, it is possible to shift to a national level analysis of deforestation. The focus of the study is the Pacific Island state of Western Samoa. Early Europeans arriving in Samoa recorded that the dense forest reached from the mountain to the coasts, and people tamed birds which were very common on the islands (Sesega and Park 1993). Today, studies reveal that Western Samoa is facing a serious deforestation problem.

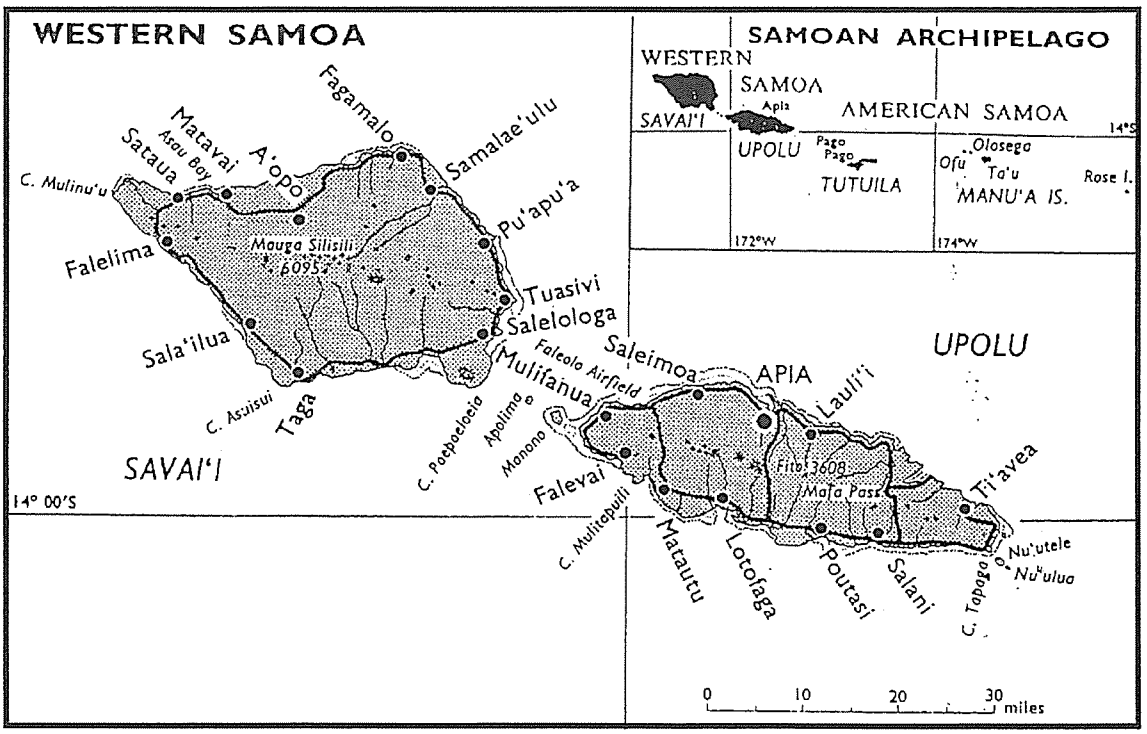

Figure 2.1: Map of Western Samoa.

In light of the aim of this thesis, it is important to describe general characteristics of the nation. This chapter begins with a brief description of

the capital, Apia, and rural villages. The methodology to be adopted and geographical, social, and economic background of Western Samoa will be explained.

Apia and Rural Villages

Western Samoa's capital, Apia, situated on the northern coast of Upolu is the centre of political and economic activities. It is also the window to the outside world, with the bulk of foreign products arriving at the port. The centre of Apia is developed along Beach Road, with one side open to the sea and the other lined by decrepit one- or two-storey western style buildings, plus some newer buildings and more under construction. The Government administration building and the Central Bank, which are about ten storeys high, stand out among the buildings. Another tall structure on Beach Road is a white Catholic church — the Catholic Church is said to be the largest land owner in the town. About 95 per cent of the populated area on Upolu has electricity generated by both hydro and diesel power. On the streets a recently increasing number of cars — mostly imported battered second-hand cars (sometimes without windscreens), cause traffic congestion, especially on rainy days and Saturday mornings. Samoan men stroll on the sidewalk wearing T-shirts and short trousers or *ie lavalava* which is a traditional wraparound skirt. Women wear long skirts or *ie lavalava*, though younger girls wear shorts and expose their shoulders — which is not acceptable according to Samoan tradition. The presence of *palagi* (people of European origin and their descendants) and other foreign people, engaging mainly in businesses or working for international agencies, is striking considering the small population and the remoteness of the country. Most basic commodities can be bought in two main supermarkets in the centre of town and from the small shops scattered around Apia, though there is shortage of imported or industrial commodities from time to time.

Plate 1: Morning Scene in Apia

Most rural villages contrast with Apia sharply, and differences are greater in villages on Savai'i than those on Upolu. It takes about five hours to drive around Savai'i using the main coastal road which encircles the island. There are not very many cars in Savai'i. When people walking on the road hear an approaching car they warn the children, screaming, 'A car!'. Several small Samoan *fale* (Samoan open house) are built for anybody to wait for buses, take a rest and have a small conversation. Concrete-based large *fale*, which provide places for the village council meetings and for the other occasions for the whole community, are located between the villagers' residential *fale*. My research was mostly done in Samalaeulu village on northeast of Savai'i. The village is situated about 2 kilometres inland from the coast, and was settled after the eruption of Mt. Matavanu in 1905. The population of the village in 1991 was 788. Electricity, generated by diesel, arrived in the village in April 1995. Just recently two telephones have been installed, one in the village

clinic and another in the pastor's house. Villagers are more conservative than people in Apia. For example, women are not allowed to wear short trousers in public. There are three shops in the village which cater for people's basic needs, however, villagers have to travel either Salelologa, the biggest town on Savai'i, or Apia to buy various things such as fresh vegetables, clothes, shoes, books and so on.

Plate 2: Village Scene -- Small Samoan *Fale.*

Methodology

Information about the social, cultural, political, and economic background of Western Samoa has been gathered from secondary sources. A five-week period of field work was undertaken from early March to mid-April, 1997, which marks at the end of the rainy season in Western Samoa. The research involved informal interviews with people at international agencies and government officers in Apia. A survey which includes in-depth interview of

35 villagers, distribution and use of forests, and count of residential and community houses was done during my stay in the research village.[9]

Plate 3: A typical Residential Samoan *Fale*.
Several smaller *fale* for cooking, storing, and bathing are located in the backyard.

There are some limitation to this research, the biggest of which was language. Three dimensions to the language barriers should be made clear: English is not my first language, my Samoan is limited to daily greetings, and good interpreters were not available. Hence, interview targets were mainly English speakers or those with English speaking family members of whatever level of competence. For this reason, sensitive and subtle nuances in meanings could have been lost. However, I believe the gist of the interviews was caught with the help of facial expression and body language. This was made easier by being in a village environment. Another point to note is the degree of representativeness of the sample. In the main research village, Samalaeulu,

[9] A list of interviewees is shown in Personal Communications.

my host was the pastor of the Congregational Church, to which majority of the villagers belong. The interviewees were mainly heads of household to whom I was introduced by the pastor. In the interests of establishing and continuing a congenial relationship with the pastor's family, I declined to interview members of other denominations in the village. Lastly, as previous researchers found, the frequent use of affirmative answer should be spelled out. This often comes from the good intention of the speakers to please the interviewers (Hardie-Boys 1994).

Small Islands in the South Pacific

Western Samoa lies in the Southern Pacific Ocean about 2,400 km north of New Zealand and 3,700 km southwest of Hawaii. The climate is tropical with mean temperatures between 23 ^{o}C and 30 ^{o}C. The total land area is 2,842 km^2, and is comprised of two relatively big islands, Upolu and Savai'i, 1,114 km^2 and 1,709 km^2 respectively, and seven adjacent small islands. Upolu, where the capital Apia is located, is smaller and more densely populated than Savai'i. Both Upolu and Savai'i are dominated by a rugged mountainous interior which gives way to gentle slopes to the coasts. The islands are geologically young, formed by the extrusion of magma through cracks or rifts in the Pacific Plate as it moves over 'hot spots' in the Earth's mantle (Clarke and Thaman 1993:6). Savai'i, younger than Upolu, is considered to be volcanically active, and black lava from the 1905 eruption has flowed from Mt. Vatavanu into the sea at the northeast side of the island.

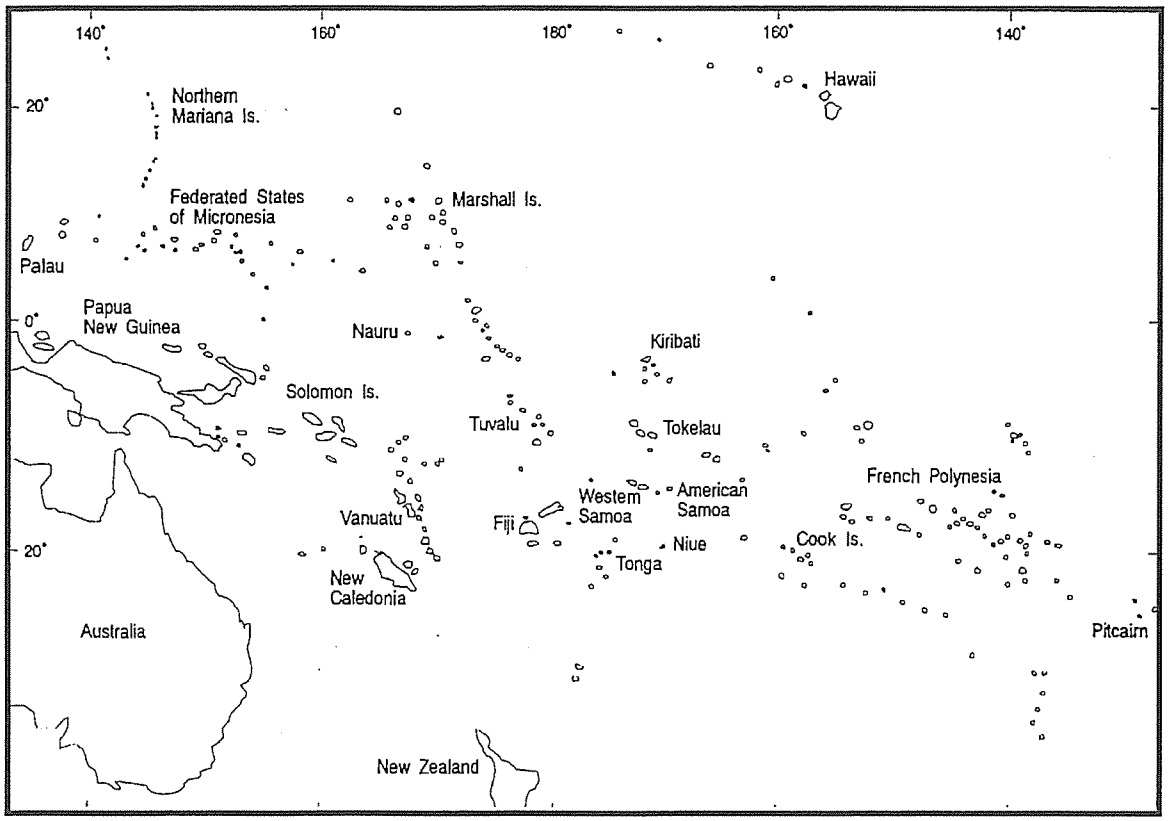

Figure 2.2: Location Map of Western Samoa.

Traditional Social Structure : *Fa'a Matai* as a Base of *Fa'a Samoa*

A population of 165,000 Polynesian Samoans live on these islands. It is safe to say that the most important social system in Western Samoa is that of the *matai* (chief) system which is called *fa'a matai.*[10] *Fa'a matai* is a social, political and economic value system in Samoa based on social institutions such as *'aiga* (extended family), *nu'u* (village), and *fono* (village council of *matai*) (Meleisea 1992), and it is 'the foundation of the *fa'a* Samoa' (Samoan way of life)

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10 Grattan (1948) explains the importance of a *matai*'s performance as a head of *'aiga* as follows:

> All outward expressions of the respect and esteem in which a family may be held both by the village and the district of the whole of Samoa, may properly be directed to the *matai*. He is, so to speak, the trustee of the good name of the family and the fountain-head to which all ceremonial recognition of the status of his family is due. He is responsible for the proper maintenance of the dignity of his family and the adequate performance of their social obligations (Grattan 1948:12).

(O'Meara 1990:128). *Matai* control the allocation and use of the *'aiga*'s resources, including land, family labour, and distribution of the produce from the *'aiga*'s gardens, trees and fishing activities. Traditionally *pule* (authority) on resources is assigned to the *matai* title that the *'aiga* holds. A *matai*, as an individual, does not have either ownership or *pule*. *Pule* and the *matai* title reside in each *'aiga* perpetually, not in a *matai* as a person (O'Meara 1995). The relative ranking and hierarchical status of different *matai* titles were 'determined almost exclusively by the status of the title itself' (Holmes 1971:91), not by an individual's status or rank by virtue of descent.

Western Samoa's smallest social unit is called an *'aiga*. An *'Aiga* consists of 'anyone who could trace descent through either male or female links to the group's founder, and who participated actively in the family's affairs' (O'Meara 1995:110). In return for use and residence on the *'aiga*'s land, other *'aiga* members render *tautua*, service, to the *matai* (Thomas 1984:139). A *matai*'s *pule* over the *'aiga*'s resources and *'aiga* members *tautua* for their *matai* are the two important elements for the *'aiga* to be functioned (O'Meara 1990). *Matai* also join physical works as leaders with *aumaga* (untitled men), except for the highest ranking *ali'i* (paramount chief). There are subgroups within an *'aiga* called *faletama* (houses of the child), which have been formed by the offspring of the original title holder. For example, if the first title holder had two sons and a daughter, there would be three *faletama* in an *'aiga*. Most people keep their membership of four *'aiga* through their grandparents with different degree of participation in each *'aiga*'s activities. As a result, 'a Samoan can trace a kinship relationship to a dozen or more *matai* in his or her own or other villages' (Holmes 1971:92). However, people are usually involved actively in only one *'aiga*.

In the traditional system, a *matai* named the successor of the title in a will before his/her death[11]. If this is absent, an *'aiga poto poto* — a meeting of the major members of corporate *'aiga* — selects the next *matai.* Theoretically, any member of the *'aiga* is legitimately a candidate. However, often either an elder son or younger brother of the former *matai* succeeds to the title (O'Meara 1995). One of the changes on *fa'a matai* is the creation and split of titles which has substantially influenced the system.[12] It has started to occur as early as the 1920s (Marsack 1958). The splitting and creation of titles happens in such occasions as avoidance or reconciliation of strife between *matai* candidates (Shore 1982, O'Meara 1990), or proof of the rightful owner of a certain *matai* title over other *'aiga* after the announcement by the Land and Titles Court (Palemia pers.comm. 29 March, 1997). In these cases, the *'aiga*'s resources, particularly lands, are also split among the new title holders (Holmes 1971:92).

Two to five hundreds *'aiga* form a *nu'u* which is often translated into 'village'. Meleisea suggests that *nu'u* is more like a polity since 'it was a territory which was collectively owned and controlled by a number of bilateral, corporate descent groups' (Meleisea 1992:13). The *Matai* in a village form a village council called a *fono,* where critical matters or any problems of the village are discussed and solved. Each *nu'u* has its own rules and regulations that usually do not allow outside interference in village affairs.

In traditional Samoa, the *'aiga* needed strong leadership and numerical power since warfare between villages were common. Consequently, the *matai* used to hold great power. Stair recorded in 1897 that 'no matter how tyrannical' he

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[11] Though both women and men can be a *matai,* men outnumber women in holdings of *matai* titles. At the last general election before universal suffrage was introduced in 1990, the number of female *matai* was 709 which was only 3.6 percent of the total number of *matai,* 19,938 (Aiono 1992:136).

[12] This phenomenon is recorded by Grattan (1948) and in court records, Mulinu'u and Tuasivi (O'Meara 1990).

is, *'aiga* members could not disobey his words (quoted in O'Meara 1995:111). However, a *matai* is not a holder of unlimited power. The *fono* has overriding power over a *matai* (Holmes 1971, O'Meara 1990), and *matai* registration books record cases of relinquishment of titles and objection to the successors of titles.

Christianity

Though the first missionary came to Samoa only one and a half centuries ago, Christianity has been well integrated into the Samoan society and has become a part of *fa'a* Samoa. The preamble of *The Constitution Of The Independent State Of Western Samoa* states that 'Western Samoa should be an Independent State based on Christian principles and Samoan customs and traditions' (quoted in Meleisea 1992:53).

John Williams of the London Missionary Society arrived in Sapapalii, Savai'i in 1830. After that, conversion to Christianity occurred rapidly and with relative ease. Some the reasons for this were the 'competition among the highest ranking chiefs for a new source of power' (Meleisea 1987:13), the pragmatic view of *matai* encountering Western material wealth, and the absence of either a powerful priesthood or institutionalised religion (West 1961). Samoan people incorporated foreign missionaries into the existing Samoan social structure by giving them a certain place in the society. Pastors were regarded as a 'new kind of sacred chief' (Meleisea 1992:22) and were well taken care of by the villagers, being provided with a fine house and offered services and food. In today's Samoa, Church and pastor, as well as *fono*, are a 'fundamental and irreducible source of authority' (Shore 1982:107).

Churches have an important role in the villages socially, culturally, and economically. Every Sunday morning, the whole *'aiga* goes to church dressed smartly, and afterwards eats lunch which has been prepared early in the morning in traditional way. These Sunday activities are not only religious

rituals, but also play an important role in socialisation and confirmation of *'aiga* members' ties. The function of churches as an educational institution cannot be neglected. Educational discipline is stronger in Protestant than Catholic, and younger children have to attend Sunday School and daily Pastor's School. During my stay in the pastor's house in Samalaeulu, younger children came to the *fale* at the back of the pastor's house every day after school to learn writing and reading skills. Shore describes how education provided by pastors covers 'basic manners, speech styles, proper sitting posture, and reading and writing skills' (Shore 1982:106). This teaching and the necessity of reading the Bible may contribute to the high literacy rate of 99 percent of Samoans. Moreover, continuous instructional teaching at the church school and church choir practices since early childhood, together with the strict discipline of *fa'a matai,* have a heavy influence on the tendency of Samoans to conform to the social norm.

The Church occupies a substantial part of the village economy. As confirmed by much literature and many people, the most beautiful building in a village is the church, followed by a pastor's house. People never want to hide their love and devotion to God. They seem to believe that physical contributions, including money and services, are an important part of expressing their faith. In the church services I attended, the names of *matai* who made donations to the pastor's family and the amount given were announced. This is done every fortnight and the total amount donated reaches about WS$ 700 to 800 each time[13] (Vaifale Akisa pers.comm. 10 April, 1997). Though it is not so common, Shore also documents a village-organised trip for thirty *matai* and untitled men to New Zealand to raise money for a new church building. The target amount to be raised while they were in New Zealand was NZ$ 600 per person (Shore 1982:47)[14].

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[13] Equivalent to NZ$ 437.00 to NZ$ 500.00 using conversion rate NZ$ 1=WS$ 1.60.

[14] In addition to the contribution, the people who joined this trip had to pay back their own airfare which had been borrowed from a bank. Each person could keep the excess earnings for personal and family use (ibid. 47).

A Caring Sharing Society

Many Samoan people speak proudly of the virtue of Samoan society, which is based on caring and sharing. Strong community and family ties provide some social services, such as child rearing and support of the unemployed. Samoans commonly state that 'people never go hungry in Samoa'. People can go into other houses in the same *'aiga*, or to neighbours who have close daily communication, and ask for food. I learnt this first-hand during my stay. One day, people where I stayed collected and roasted cocoa for cocoa rice in their cook house. They brought roasted cocoa to the neighbouring *'aiga* which belongs to the same Church, and cooked and ate dinner together with them. Children living nearby play together, and children often eat and sleep in a neighbour's house.

Though this kind of mutual help and close communication is common, Samoans also recognise it to be problematic in terms of the household economy. For example, a section in the year ten home economics textbook, entitled 'How can we save money when buying foods?', recommends buying food in small quantities since 'if a family's relatives know there is plenty of food in the house, they may come and eat it' (Department of Education n.d.:108). Thus, Samoans have certain mixed feeling towards the traditional virtues of a sharing and caring society and yet protection of their material wealth.

Gift giving is another characteristic of Samoa. On occasions such as title bestowal, weddings, and funerals especially for *matai*, or at ceremonies to mark the completion of a new church, the whole village co-operates on the preparation of the place, food, and arrangement of accommodation for visitors. *'Aiga* members who are living away usually come home for these

occasions. Villagers give fine mats, food, cash and other things for the host family, as well as offering services. Visitors never come empty-handed; they bring all sorts of gifts. In return, hosts show their hospitality by taking care of visitors and giving gifts when they leave. On large formal occasions called *fa'a lavelave*, the exchange of gifts is done in a traditional and formal ceremony. O'Meara suggests that gift giving is regarded in order 'to establish or maintain social relationships and to express their feeling' (O'Meara 1990:194), not as payment for an offer of accommodation, nor charitable donation to the hosts — for both would denigrate the good will of the hosts. These Samoan characteristics are expressed in one Samoan proverb; *'E tupu mea avea, ae le tupu mea teu pea'*. which means that if you give something, it will come back in greater amount; if you keep something to yourself, it does not grow.

Economic Development and *Fa'a* Samoa

Fa'a Samoa has been regarded as an obstacle to economic development. Many articles view environmental factors — small size, geographical isolation from other larger economies, and resource limitation — as hindrances to economic progress (Crocombe 1989, Fairbairn 1993a). The Australian International Development Assistance Bureau (AIDAB) has grouped Pacific Island countries into four major categories. Western Samoa is in category three: the subsistence affluence model. This group is described as having enough natural resources to sustain more than minimum subsistence, but possibly not to reach the desired level (quoted in Luteru 1994:20-21). Whatever the desired level according to AIDAB is, the economic performance is far from the Samoan Government's aspiration.

Agriculture is the main industry. It accounts for 40 per cent of GDP and about 80 per cent of the total export earnings which were US$ 8 million in

1990 (United Nations 1995:901). However, agriculture still has a subsistence base. The Census of Agriculture in 1989 showed that 72 per cent of households were active in agriculture. This was made up of 47 per cent of 'mainly home consumption' and 19 per cent of 'home consumption only' (Fairbairn 1993b:9). Agriculture is greatly affected by international commodity prices and by natural disasters. For example, banana and cocoa production collapsed because of crop disease and a decline in the markets in the mid 1960s. In 1993, production of taro, which is the most preferred food crop for Samoans, was devastated by the outbreak of leaf blight.

A small number of foreign-capital manufacturing factories started operating in Western Samoa in the mid-1990s, and contributed to large export earnings and employment in Apia. Yet, the secondary sector's performance is not very impressive. The *Seventh Development Plan* of the Samoan Government mentioned that some resource-based plants have closed down mainly because of unstable supplies of raw material (Government of Western Samoa 1991:41).

This unpromising manufacturing activities, together with the lowest salaries in Oceania (WS$1.125/hr)[15], have caused large out-migration. Over 110,000 Samoans live outside Samoa: 60,000 in New Zealand and 50,000 in the United States. Their remittances, as well as international assistance and loans, are the main sources of income for Western Samoa's national budget (UNDP 1996:58). In 1989, for example, Western Samoa received WS$ 86.6 million from remittances, which places Samoa among the countries with the highest dependence on remittances (Ahlburg 1991).

The strong communal tradition has been viewed as a hindrance to the economic development of Samoa for a long time. Schoeffel (1994) introduces the view held by Europeans in the late nineteenth century: 'under such a (Samoan) system the industrious would get no reward for their industry, but

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15 Equivalent to NZ$ 0.7 using conversion rate NZ$ 1=WS$ 1.60.

have the fruits of their labour taken by the lazy' (Schoeffel 1994:35). By the middle of the century, little had changed with regards to this view, as expressed in a statement of Farrell and Ward (1962):

> Tradition dies hard in Samoa. The many aspects of the Samoan way of life are vigorously and steadfastly protected. Nowhere else in the Pacific is innovation so resolutely resisted, and in few other territories is the cult of custom so deeply revered (Farrell and Ward 1962:232-33).

Furthermore, it is claimed that village labour and capital are used inefficiently in the production system. Fairbairn (1991) argues that customary obligations like *fa'a lavelave* exhaust villagers' time, effort, and resources so much that there is not enough surplus for investment or agricultural productions (Fairbairn 1991).

Summary

The Samoan way of life, *fa'a* Samoa, is characterised by a traditional social structure based on *fa'a matai.* Traditionally, it is the *matai* title, not an individual title holder, in which *pule* resides. A *Matai,* as a title holder, controls all the resources of the *'aiga* to which the title belong. All the *'aiga* members work under the leadership of a *matai.* A *Matai* in a *nu'u* form the *fono* which is the ultimate decision making body of all village affairs. A strong sense of community and *'aiga* leads to mutual help and co-operation, which is expressed as a 'sharing and caring community'. Today, these traditional traits and a strong belief in Christianity form the basis of Samoan society. These characteristics, however, have been seen as an obstacle for economic development for some time by a number of observers.

Traditional Samoan society has been developed on the environment of the Samoan islands in the South Pacific. Human beings inevitably exploit the surrounding natural resources, and Samoans are not an exception. In their

3,000 years of history, Samoans have been closely interacting with their environment. In the next chapter, the current state of the environment of Samoa, especially its forests, will be examined.

Chapter Three:
Land Use and Forest in Western Samoa

Introduction

Prior to European contact, the Samoan people had been living on these forest-covered islands in a broadly sustainable way for about 3,000 years, utilising forest and sea products as well as modifying the environment. Park *et al* (1992) explain that many common plants seen in Samoa the present are exotic and the ecosystem itself cannot be called 'natural' due to human modification (Park *et al* 1992).

In this chapter, the manner of interaction by Samoans with their islands environment will be described. The rate of deforestation in Samoa and its causes will also be introduced, followed by the recent argument on the relationship between land use and the traditional land tenure system.

Island Environment of Western Samoa

Carew-Reid (1989) explains that an island environment is a refined natural system with a delicate balance maintained between its various parts. As have seen before, when the first European to set foot in Samoa over 200 years ago, the islands were covered with vast forests. However, human activities and natural disasters have disturbed the finely-tuned ecosystems of Samoan islands. Cameron wrote in 1962 that 'the coastal forest which once existed has disappeared from more than three-quarters of the total extent of the coast line of Western Samoa. It has been replaced by coconut, breadfruit, villages and roads' (Cameron 1962:64). About 30 years after Cameron's observation, the lowland forest has almost disappeared on Upolu except for in the national

Samoan custom and usage' (quoted in Schmidt 1994:172). Article 102 further prohibits alienation of customary lands;

> It shall not be lawful or competent for any person to make any alienation or disposition of customary land, whether by way of sale, mortgage or otherwise howsoever, nor shall customary land or any interest therein be capable of being taken in execution or be assets for the payment of the debts of any person on his decease or insolvency (quoted in Aiono 1992:129).

General Pattern of Land Use

Communally owned village land has a distinctive and general pattern of use because of the slow invasion of human habitat into the inland area. Holmes (1971) introduces Keesing's observation of land use in the early 1930s, which he claimed was 'still valid' in his time. Keesing's categories are:

(1) Village house lots: villagers' dwelling houses, cook houses, and guest houses were located in this area with clear indications of boundaries of *'aiga* by marked trees or rocks. Breadfruit, coconut and papaya trees and some vegetables were planted adjacent to houses.

(2) Plantation lots: these were situated behind and around the village lots. Coconut, breadfruit, banana and taro were seen along with heavy bushes. Ownership of plantations was very clear and leasing of land often happened in this area.

(3) Family Reserve Sections: Often covered with dense secondary forest, these areas were seen on the higher slopes of the mountains, and mainly used as shifting cultivation areas for taro. Most villagers knew the ownership and boundaries of these lands.

(4) Village Lands: Village lands included lands spread along the upper slopes with potential agricultural use, the mountains, or reef and sea frontages. Ownership in this area was not assigned to any *'aiga* specifically, and individuals who clear in this section could claim the land. Large taro

planting areas operated by *'aumaga* (untitled men) were sometimes seen here.

(5) District Lands: These areas were often located high on the mountains and were only used for occasional hunting. (Holmes 1971:94-96).

As explained, the gradual inland progress of Samoans resulted in an elongated-shape of most villages. These different land uses categorised by Keesing are often seen in a somewhat linear fashion: village house lots at the front facing the sea and other lots proceeding further inland. There are not clear boundaries to indicate the different uses of land. Each village is situated in different geographical settings which confine the land use. For example, one of the villages in Paulson's study does not have free village land for compatible and ambitious men to clear any more (Paulson 1992a).

Deforestation in Western Samoa

Forest conversion into agricultural and other uses has been progressing as Samoan habitation shifts further into the inland area. The report by South Pacific Regional Environment Programme (SPREP) (1997) examines changes in forest area from 1954 to 1990 using various sources shown in Table 3.1.

Table 3.1: Percentage of Land Area Under Forest, 1954-1990[16]

	c.1954	*1978*	c.1987	*1990*
Upolu	65	*43*	43	*25*
Savai'i	79	*61*	63	*50*
Total	74	*54*	55	*40*

Source: SPREP (1997:21).

Figure 3.1 and 3.2 illustrate the rate of deforestation. Since the definition of 'forest' differs slightly with these sources, direct comparison is not possible. Nonetheless, a general trend of deforestation is clear, especially in Upolu. Martel (1996) estimates loss of 3,000 hectares of forest per year, which is 'one of the worst rates of forest depletion in the humid tropic world per land capita' (Martel 1996:6). Another study shows the annual forest clearance rate was 4,000 hectares per year during the past few years (South Pacific Forestry Development Programme 1995:13). Indigenous forest covers 36 percent of total land area, and if the present rate of deforestation continues, it will lead to the complete disappearance of the remaining indigenous forest within 6 to 7 years (ibid. 14).

[16] In 1954 and 1987 data, 'forest' is defined as an area with a closed canopy of forest trees, whether or not it is primary forest or secondary regrowth re-established after agricultural, logging or other clearing. This definition does not take into account whether or not the area has merchantable timber or not (Ward 1995:78-79). Reflecting the Forestry Division's interest, however, the figures of 1978 and 1990 apply 'a strict forest classification of forest based on merchantable forest areas dominated by particular tree species' (SPREP 1997:19), which does not include second-growth cover.

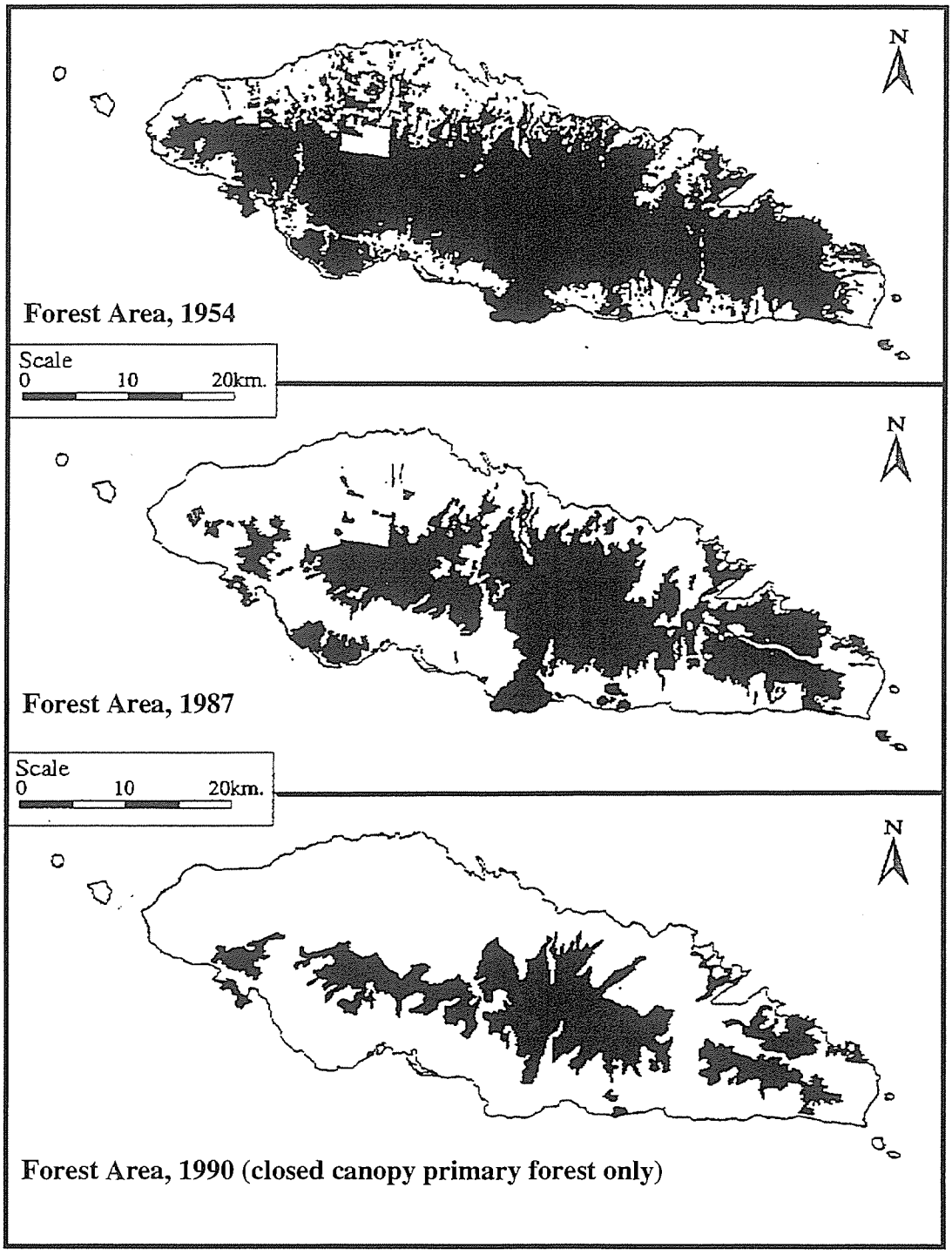

Figure 3.1: Forest Depletion, Upolu (1954-1990)
Source : from R.G. Ward reproduced in Hardie-Boys (1994:60).

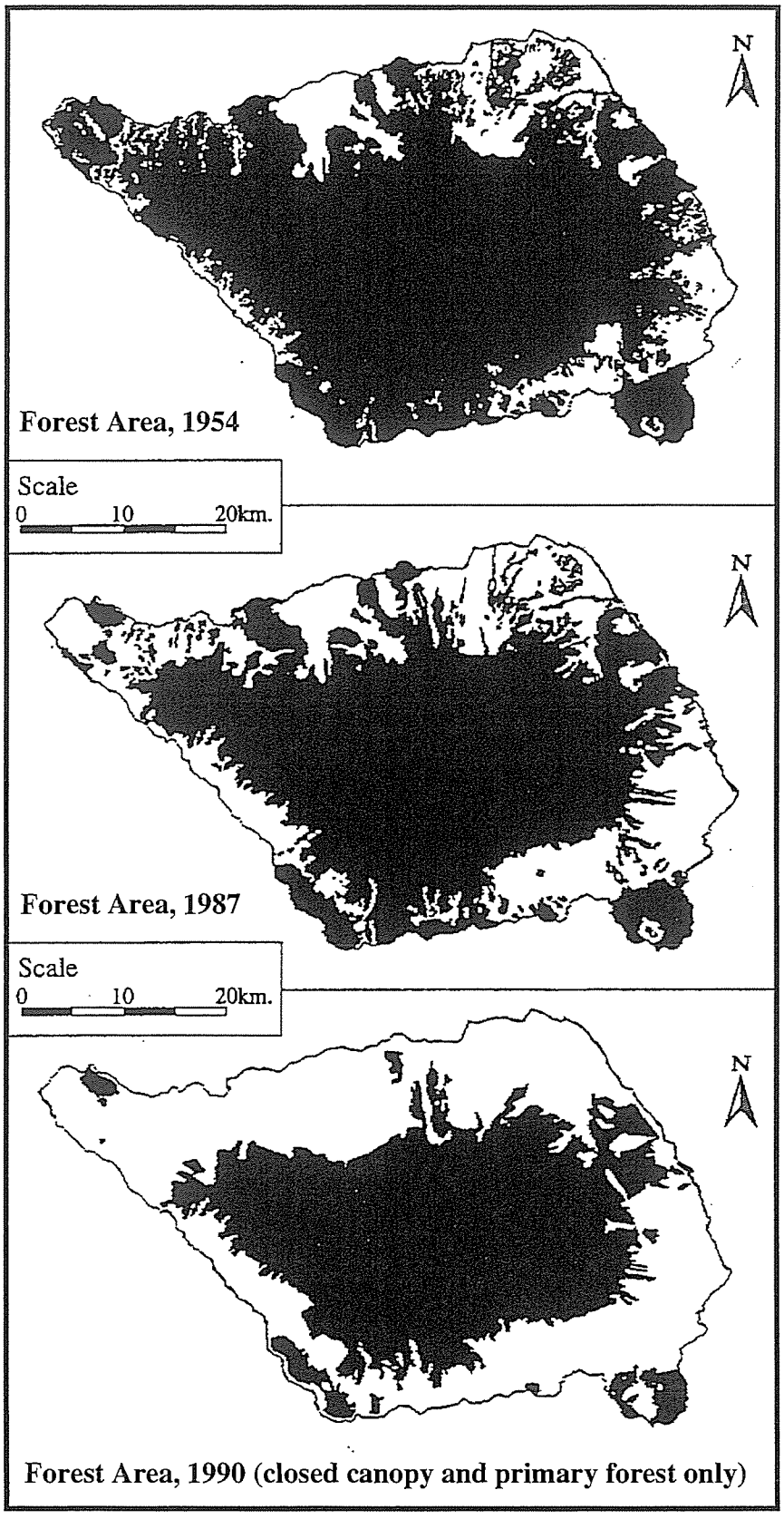

Figure 3.2: Forest Depletion, Savai'i (1954-1990)
Source : from R.G. Ward reproduced in Hardie-Boys (1994:60).

It is unquestionable that deforestation affects the ecosystem of Samoa. Western Samoa's ecosystems are more important in their uniqueness and distinctiveness than in their diversity in species. The lowland zone, easily accessible by humans, is of high value since here 'the great majority of the country's 750 species of vascular plants, 33 land bird species, eight land snails, seven lizards and one snake, are found' (Sesega and Park 1993:72). The South Pacific Commission points out safe and adequate water supplies as the most pressing concern in Western Samoa (South Pacific Commission 1992:8). This problem is compounded by deforestation which diminishes the water holding capacity of soil, damaging a number of watershed areas (South Pacific Forestry Development Programme 1995).

Natural forces sometimes devastate islands environment. Recent history has recorded four large cyclones in 1936, 1966, 1990, and 1991, which damaged the forests both directly and indirectly when people started working the reconstruction of houses and buildings. Apart from natural causes, four causes of deforestation are suggested: logging of indigenous forest, population increase, land expansion for agriculture, and modified implications of the land tenure system (Martel 1996). Each of these will be examined in the next section.

Logging Operation

Large scale commercial exploitation of forest resources has not taken place in Western Samoa since 'the natural forests of Samoa are poor in both quantity and quality of timber' (Marshall and Thompson 1950:7). According to Cameron (1962), the main uses of forests in the 1960s were as sawn timber, for construction and joinery, as round timber for erection of *fale*, and for fuel and miscellaneous other purposes (Cameron 1962:69-70). Marshall and Thompson have recorded that logging operations by the New Zealand Reparation Estates and by a private miller (Marshall and Thompson 1950:55).

At present five Samoan logging companies are operating, three on Savai'i and two on Upolu. Those companies are reluctant to invest any more on logging operations. When the sawlogs of the area under licence finish, the companies will have to rely on imported timber (Martel 1996). As a result, supply for the domestic market, which is their main target, fell 25 percent short in 1992. Though the study of Martel and Fyfe estimates that the remaining native forest available for sawmilling purposes will be fully depleted by between 1990 and 2007 (quoted in Sesega 1990:66), commercial logging operations are not solely responsible for deforestation. At present, it only accounts for only 20 per cent of the remaining forests (Government of Western Samoa 1993 quoted in Hardie-Boys 1994:59).[17]

Population Growth

The Samoan population has been steadily increasing since the census in 1921 as shown in Table 3.2. Many Samoans I spoke with considered that population growth is one of the causes of deforestation. Given the fact that Samoans engage in subsistence agriculture, a growing population adds pressure for the expansion of agricultural land. Paulson's study of five villages in Samoa shows a correlation between increased area of agricultural land and population growth. However, the same study found that the *per caput* cleared-land area increased between 1954 and 1986 (Paulson 1992a) Thus, further explanation for deforestation beside population growth is necessary (Ward 1995).

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[17] Another study shows that between 1977 and 1992 logging was responsible for 10 per cent of forest clearance in the non-merchantable forest and 40 per cent in the merchantable forest on Savai'i (Martel 1996).

Table 3.2: Population Growth in Western Samoa

Year	Total Population	Average Annual Growth Rate (%)[18]
1911	38084	
1917	37331	-0.3
1921	36422	-0.6
1926	40231	2.1
1936	55946	7.8
1945	68197	4.4
1951	84909	4.9
1956	97327	2.9
1961	114427	3.5
1966	131377	3.0
1971	146267	2.7
1976	151983	0.8
1981	156341	0.6
1986	157158	0.1
1991	161298	0.5

Source: Department of Statistics (1992).

Agricultural Production

Many studies show that agricultural use of land is responsible for forest clearing in Western Samoa. Paulson's (1992a) study found that total and per capita land for agricultural use has increased in the past 35 years (Paulson 1992a). Expansion of agricultural land has been driven by subsistence crop production for a growing population, the expansion of cash crops production and facilities such as vehicles and access roads.

Crops for both domestic and foreign markets have changed over time. Land area for cash crops showed rapid expansion during the Second World War. Farrell and Ward recorded that between 1954 and 1956, commercial production of banana and cocoa had occupied much of the land area which had once been used for banana and taro production for home consumption.

[18] This figure was calculated from total population.

The taro zone was gradually shifting into forests at higher elevations (Farrell and Ward 1962). After the collapse of banana prices in the mid-1960s, taro production for cash income started to increase. Being the most preferred food of Samoans, taro exports have grown as the number of Samoans resident overseas has increased. As well as for other crops, taro grows better on the newly cleared forest, which gives a big impetus for forest clearance. This is supported by Paulson's study which showed that recent deforestation in all five villages were for the production of taro (Paulson 1994).[19]

As the main cash crop changes, so does land use. Farrell and Ward (1962) have three categories for village land use: the coconut zone, mixed-crop zone, and taro zone. Coconut, breadfruits, *ta'amu* and taro were seen in the coconut zone closer to the village area. Further into this zone are coconuts, cocoa and banana. The mixed-crop zone fragmented into cocoa and banana, taro and banana, and under-fallow patches. The taro zone lies between the mixed crop zone and the primary forest where taro and *ta'amu* are planted (Farrell and Ward 1962:203-204). This land use system has now changed to having two zones. The mixed crops zone of cocoa and banana has become a coconut planted area with old cocoa. Coconut are planted extensively because it is less labour-required and safe investment. The taro zone has expanded and has now become a main focus of agricultural activity (Paulson 1992a). Martel further suggests that substantial change in land use may take place after the outbreak of taro blight in 1993 (Martel 1996).

Roads have been a stimulus for forest clearing. In order to encourage more agricultural production, an access roads programme. Started in 1976, this programme aims to construct extension roads from the coastal main roads to inland plantations in each village. Each village is paid yearly in return for

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[19] Paulson also suggests that roaming pigs damage young seedlings when crops are planted in village residential sites. This may be one of the factors for forest clearance in higher elevation (Paulson 1992a).

maintenance of the roads so that vehicles can reach the entrance of the village plantations (Sapolu pers.comm. 7 April, 1997).

Another change is seen in shifting cultivation practices. Samoans have long been conducting shifting cultivation in which several plots of land are used in turn to maintain the relatively high fertility of the land. However, villagers often plant coconut on abandoned land after harvesting taro and other cash crops. Land under the coconut is usually not used, whereas taro production continues at the expense of newly cleared forests. Denevan called it 'terminal shifting cultivation' (quoted in Paulson 1994), which encourages deforestation in Western Samoa.

Modified Implications of Land Tenure System

As explained, more than 81 percent of the land is owned in accordance with the traditional land tenure system. These communal lands belonging to *nu'u* (village) are assigned to an *'aiga*. *Pule* (authority) over the land resides in the *matai* even though an untitled person can use a piece of land. A person, whether titled or untitled, can expand his or her agricultural land by simply clearing unattended forest and planting any types of trees or crops, with the *'aiga* still retaining the ownership of the land.

However, this traditional rule of ownership and the authority on land use has been perceived and used differently by villagers (Holmes 1971, O'Meara 1990, 1995). O'Meara explains four principles of the land tenure system and different interpretations by villagers under the traditional system and the new system, as shown in Table 3.3.

Table 3.3: Principles of the Land Tenure System and Interpretation by Villagers

Principles	Traditional system	New system
1. Land belongs to the person who clears and plants.	Land belonged to the entire *'aiga* to which the person who cleared the land belonged.	Land belongs only to the *individual* who physically clears and plants on the land.
2. A person may gain authority over land that he cleared previously, but only when he also acquires a *matai* title.	Land the person clears remains under the authority of the *matai* he/she is currently serving until he/she acquires a title of his own.	Control of the land passes to the person as an individual by virtue of acquiring any *matai* title. Land is not vested in the title itself.
3. It is not possible to take the land of another without cause.	An *'aiga* formerly invoked this rule to defend their land against competing claims by other *'aiga*.	This rule is invoked to protect private cash-crop lands against claims by other members of the *'aiga*.
4. A *Matai* have final authority over virtually all matters affecting their family and their family lands.	Samoans still seem to abide by this principle. (Untitled men cannot legitimately claim authority over land.)	

(O'Meara 1990:147-148)

The change in principle one indicates a transfer of the land ownership from the *'aiga* to the individual. The change in principle two implies that a piece of land which belongs to the *matai* title now belongs to an individual regardless of whether he or she is a *matai* or not. This can be influenced by the increased number of the *matai* title. The modification in principle three suggests that the cooperation among the *'aiga* as an extended family working together under the leadership of one *matai* has been weakened. Thus, villagers' interpretation of the traditional principles has resulted in a new tenure system which shows an adaptation of a more individualistic approach to holding of land. Ward

(1995) and O'Meara (1987, 1995) argue this modification of the traditional land tenure system is a consequence of more individualistic economic behaviour of Samoans who are influence by a cash economy and Western individualism.

O'Meara distinguishes lands owned through the traditional system and those owned through the new system as 'old tenure' and 'new tenure': the latter is now dominant in most areas of the country (O'Meara 1987). As early as the 1920s, villagers have accepted that a new principle of inheritance is valid (ibid.). The land under 'new tenure' is not returned to the *'aiga* but passed on to the owners' own children upon his or her death. Ward observes that lands under 'new tenure' are intruding into inland areas at the expense of the forests. On the contrary, lands under 'old tenure' located closer to village residential lots and the coast are less intensively used and sometimes are abandoned. (Ward 1995) Sapolu (1990) argues that the present serious deforestation is caused by the land tenure system which allows indiscriminate forest clearing by villagers for the purpose of claiming land. He also accused the irresponsible villagers' attitudes, calling them 'land grabbing' (Sapolu 1990:67).

Summary

As small islands, Western Samoa is vulnerable to rapid changes both from natural disasters and human activities. Since their first habitation on the islands over 3,000 years ago, Samoans have been interacting with limited island environments creating their unique village settlements and patterns of land use.

Because of human activities, forests have been depleting gradually, with the rates of deforestation increasing rapidly in recent years. Unlike countries with large forest resources, recent deforestation in Western Samoa is caused by mainly agricultural purposes and land claiming by individual villagers,

not by commercial logging operations. In the next chapter, voluntary forest clearing by villagers will be looked at closely. What makes Samoans clear the forests? Is it really the influence of individualism and a cash economy which drives Samoans to destroy their life supporting environment?

Chapter Four:
Social Change and Deforestation

Introduction

Though Samoa is often said to preserve its tradition relatively well compared to other Pacific nations, changes can be seen in some aspects of the society. Previous chapters have examined traditional traits of Western Samoa and some of the changes which have occurred since European contact about one and a half centuries ago. The forests of Samoa have been depleted rapidly in recent years because of changes in agricultural practices and the modification of the traditional land tenure system whereby individuals have begun to claim land. A number of studies attribute these changes to the influence of a cash economy and individualism.

During my field research in Samoa, I asked about 30 Samoans, including 10 *matai,* whether they have heard of people who had cleared the forest specifically for the purpose of claiming land. Surprisingly, only two answered 'yes', one of whom was very critical about peoples' 'selfish' attitudes which did not exist in the past. The other people said that they saw — and some actually 'have done' — forest clearing for production of taro. After the outbreak of taro leaf blight in 1993, however, villagers tend to produce taro on the land closer to the village residential areas on a smaller scale.[20] People understand that virtually no new forest clearing is taking place because of leaf blight.

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[20] People state two reasons: a larger scale taro planting is more prone to the leaf blight, and planting closer to houses makes it easier to check and pick the infected leaves.

Which is true, the past studies that emphasise land claiming by individuals as a primary cause of deforestation or the observation of villagers who attribute forest clearing to people wanting to grow taro? To what degree is forest clearing for land claiming responsible for deforestation? Are there any other factors encouraging the villagers to clear forest? How much does a cash economy and individualism influence villagers' activities? This chapter will address these questions in the context of Samoan society and recent serious deforestation as discussed in the previous chapters.

Forest Clearing for Agriculture and Claiming Land

A nation-wide survey has not been conducted to obtain information on why villagers clear the forests. However, the report by South Pacific Regional Environment Programme (SPREP) gives us some idea of the reasons for forest clearing by villagers, though it cannot be directly applied to the whole of Samoa. The results of the survey are shown in Table 4.1.

Table 4.1: Major Reasons Why Villagers Clear Forests

	Percentage of all respondent who have cleared forest	
Reasons:	Lotofaga	Vailoa
1. Increase income	33 %	21 %
2. Increase food production for a growing family	33 %	50 %
3. Forests have fertile soils	17 %	8 %
4. Claim land for children	17 %	21 %

Source: SPREP (1997:56).

About 80 per cent of the respondents in both villages selected the first three reasons which indicate that forests were cleared for agricultural use. This results imply that the main cause of the forest clearing is conversion of land for agricultural use. Moreover, only 7 per cent of people in Vailoa and no one in Lotofaga were clearing forests when the survey was conducted in 1994, after the outbreak of taro leaf blight. This suggests that converting land for

agricultural use is the primary cause of deforestation (SPREP 1997:57). These results might correspond in the view of the villagers to whom I talk : they might perceive claiming land to be only a consequence of land conversion for agriculture.

Plate 4: Taro Production Area
(Taro is planted in a much smaller scale than before.)

Though claiming land for children might seen likely to be a secondary cause, about one fifth of respondents pointed it out as the reason of tree cutting. It is necessary to examine further the factors that influence villagers' actions. Is it the invasion of a cash economy and individualism from the outside world that has led to deforestation in Samoa?

Western Individualism and Samoan Individualism

In much of the literature it is claimed that the unique communal characteristics of *fa'a* Samoa have been insidiously diluted by a cash economy and individualism. Lewthwaite (1962) noticed the apparent presence of the

cash economy in Western Samoa after the Second World War. More and more family groups sought to acquire capital to engage in commercial agriculture. Today, many contributions to village affairs and church donations are made mainly in the form of money, instead of handicrafts and services. Even though wage labour is poorly paid, 'villagers neglect their plantations and flock to the wage jobs' (O'Meara 1990:6). Remittances from the migrant population are another source of money in rural villages. This income allows villagers higher levels of expenditure on industrial and imported commodities. Furthermore, remittances have created a gap among *'aiga* with and without migrant-members, consequently sowing aspirations for money in people's minds (Fairbairn-Dunlop 1993).

However, Samoan individualism seems different from that of the West, which is based on the pursuit of accumulation of personal wealth. There are differences in the way that money is used in Samoan villages in comparison to the purely individualistic goals of the West. In Samoan villages, money is mainly used for necessities, such as food, clothing, education for children or younger brothers and sisters, donations for village functions and churches, and other things including *fa'a lavelave*. I asked several *matai* how they use the relatively large amounts of money they have in hand. All can list necessary expenditure instantly. However, many had to stop after these things and consider a while to think of the next item. Clearly their priority is protection of their *'aiga*, not personal material satisfaction.[21] The SPREP report also confirms this point. In their survey 100 per cent of the respondents in one village answered that they spent the income derived from selling crops on either food supplies, schooling, or church (ibid. 52). Most remittances are used to help family members at home. As Va'a (1993) puts it: 'Kinship is the alpha and omega of social life. Collectivism rather than individualism is the

[21] One *matai* in his 30s who is a school teacher and has petty business answered a 'new car'.

ideal. Capitalism is a new ideology with which Samoans are still trying to grapple and to come to terms with' (Va'a 1993:350).

An example of Samoans' refusal to adopt a 'pure' or Western form of individualism was an incident involving a murder in Lona village on Upolu in 1993. A man with a *matai* title in his 40s who had spent 20 years in New Zealand and accumulated personal wealth returned to Samoa. He opened a village store, owned a bus and a jeep, and enjoyed a high material standard of living compared to other villagers. Though he was expected to contribute to village affairs as a rich *matai*, he sometimes refused to do so. Moreover, he played for and helped cricket players from a rival village, which led to increased hatred against him. The village *fono* in Lona decided to burn his property, and two younger untitled men shot him dead in front of his wife and children by the order of senior *matai*. His crime was that 'he refused to contribute to his village affairs, resisted council decisions, and played cricket and transported players for another village (Pacific Islands Monthly November,1993:4). Such actions would be completely acceptable in Western 'individualism'. Yet, in Samoan villages, decisions on the use of personal wealth and property have to be made bearing in mind both the strong Samoan communal values and Western values of individualism.

Change in the Nature of *Fa'a Matai*

Fa'a matai has gone through major changes in the last two centuries. Two major elements have dramatically changed the nature of *matai*. First is the encounter with Christianity. As has introduced in Chapter Two, one of the reasons why *matai* accepted Christian teaching was that it would enhance their source of power. Ironically, the egalitarian principles of Christian teaching worked to weaken the *matai*'s 'sacred powers which had been

attributed to them and which were largely the source of the political authority of these chiefs' (Meleisea 1987:13).[22]

A second and more critical change came in the mid-1960s to 1970s, when the number of *matai* started increasing because of the 'wholesale of *matai* titles' for political reasons. After independence in 1962 and until universal suffrage was legislated in 1990, the right to vote (and stand as a candidate) in the election of district representatives to Parliament was limited by law to registered *matai* only. Soon, many candidates (they themselves were *matai*) started bestowing *matai* titles, either by creating new titles or by splitting existing ones, for their electoral advantage. As a result, the number of *matai* has grown rapidly in the last three decades.[23] This phenomenon was also seen in Samalaeulu in the 1970s through to the 1980s (Table 4.2). At present, there is only one untitled aged man, and he does not want to be a *matai*.

Table 4.2: Number of Newly Registered *Matai* in Samalaeulu

Year	Number of newly registered *matai*
-1960	14
1961-1965	9
1966-1970	10
1971-1975	24
1976-1980	28
1981-1985	49
1986-1990	29
1991-1995	14
1996-	6

Source: Counted from *Matai* Registration Book in the Land and Titles Court
Note: The population in Samalaeulu in 1991 was 788.

[22] Lawson (1996) argues that the *matai* system is basically more democratic in nature than its appearance. In theory all members of the *'aiga* have a potential to be a *matai*, or at least can express their opinions in case of succession of titles in the selection process of *matai*. This process also contributes to a relatively egalitarian society, in which there are no chiefly or commoner classes (Lawson 1996).

[23] As explained in Chapter Two, splitting and sharing of *matai* titles have been seen since 1920s.

Table 4.3 shows the changes in the number of *matai* in relation to the Samoan population over the years. The number of electors registered in the 1988 election was 19,938. Since only registered *matai* could vote before universal suffrage was introduced in 1990, this figure represents the number of *matai*. Between 1973 and 1990, the total population has increased by only 5.5 per cent. Whereas, the number of *matai* between 1973 and 1988 has increased by 129.4 per cent. The most important point is, as Grattan (1948) states, that the number of *matai* only increases with the creation of new titles and title splitting (Grattan 1948).

Table 4.3: Population and Number of *Matai* in Western Samoa

Year	1921	1945	1973	1988	1990
Total Population	32,953	62,422	151,500		159,862
Number of *matai*	2,654	3,497	8,690	19,938	
Average untitled person per *matai*	11.4	16.9	16.4	*7.0*	

Sources: 1921 and 1945 Grattan (1948:155). 1973: Powles (1973:8). 1988:Aiono (1992:136). 1990: Department of Statistics (1992).

Note: Average untitled person per *matai* are calculated from total population and number of *matai*. The figure in 1988 is italicised because the total population in 1990 is used to obtain an estimation.

At present, 75 per cent of all eligible men (a person has to be twenty-one years or older to be registered as a *matai*) are *matai* in rural areas, though not all of the registered *matai* live in their home villages (O'Meara 1990).

The Consequences of the Proliferation of Matai Titles

The proliferation of *matai* titles affects *fa'a* Samoa and land use in several ways. First, there are an increasing number of land disputes which the Land and Titles Court has to handle due to the splitting and sharing of *matai* titles.[24] The number of disputes is 'countless', and the consequence is that large areas of land remain under uncertain ownership (Meleisea 1992). This implies

[24] 73.8 per cent of the disputes handled in the Land and Titles Court are related to *pule* (authority) of land (Schmidt 1994:173).

smaller areas of land are available for agriculture and other uses. Second, a *matai* title is devalued when several people hold the same title (ibid.).[25] For example, 29 people hold the title Vaifale and 11 people hold the title Tevaga in Samalaeulu. The third consequence is a weakening relationship between *matai* and *'aiga* members. The *matai* system is based on two principles, *tautua* (service) of *'aiga* members to the *matai* and the *matai*'s *pule* (authority) over the *'aiga*'s property. When a smaller number of *'aiga* members perform *tautua* for the *matai*, a disruption of *tautua* and *pule* results. The concern of old villagers is expressed by O'Meara in a family discussion on splitting and bestowing a *matai* title from a father to his two sons: '"Who will remain to serve their *matai* when all the young men have become *matai*?"' (O'Meara 1990:153). The second and third points have significant meanings on the land tenure system; they have laid the foundation for the changes in the land tenure system. It used to be that only a *matai* had control of land (principle two of Table 3.3), However, the proliferation and relative decline of the power of *matai* have made this principle meaningless (O'Meara 1990).

The last and most significant effect of the increased number of *matai* in on the size of the social unit, the *'aiga*. Being a *matai* necessarily means having control of the *'aiga*'s property, including land. If both a father and son are *matai*, they usually have different household units, have control over separate resources, and live separately, though their *fale* are often close to each other. Each decides how the cash income from plantations, remittances and employment of *'aiga* members is used; how their land is used; what crops should be planted; and so on, for his own immediate family. Thus, the

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[25] Aiono denies this point, saying

> the proliferation of *matai* is not degrading the *fa'a matai*....Those overseas experts and Samoan leaders who have stressed the degradation of the *fa'a matai* due to the creation of many *matai* have rarely experienced, have never lived, have not practised the *fa'a matai* in their *'aiga* or *nu'u* and seem to have ignored the democratic features of greater numbers involved in the casting of votes, which the proliferation of *matai* does provide on the very surface of the socio-political phenomenon (Aiono 1992:130-131).

traditional extended family, *'aiga*, has become a 'nuclear family', though co-operation as an extended family is still seen in less degrees.

O'Meara argues that the modification of the traditional land tenure system has happened for two reasons: first, villagers' desire to have control over the yield from cash cropping, and second, social and economic security, such as modern houses, for old age (O'Meara 1995). The socio-economic rationale for an *'aiga*, 'which may have consisted of several multiple and extended families, working together under the direction of a single *matai* to feed, house, and clothe themselves, and to provide a surplus for meeting social obligations and prestige expenditures', has diminished because of individual cash incomes through waged jobs and remittances (ibid.). This has led to a weakened co-operative quality of Samoan society, which again encourages more self-reliant concepts in Samoans. An increase in the number of nuclear families as a result of proliferation of *matai* titles also dilutes the communal characteristics of traditional Samoa. Living separately naturally weakens the communication, co-operation and closeness among once-extended families. The rationale for an extended family has already diminished. Now the increase in the number of *matai* has brought about the advent of nuclear families and independent households, which affects many aspects of Samoan society including land use in rural Samoa.

Though the use and holdings of land have changed significantly because of the proliferation of *matai* titles, the final decision on how the land is used is still in the hands of village *fono*. On the 25th of February 1997, an untitled man was tied down and almost burnt by the village *matai* over a dispute about land use in Samalaeulu. The man, aged 33, had leased the land of his father, who is a *matai* and living in New Zealand, to the Mormon church, and allowed it to construct a Mormon church on the land. Having two established churches, Catholic and Congregational, the village *fono* did not want another church and decided to deport him from the village. The man's rejection of the

decision of the *fono* infuriated the villagers, and resulted in this incident. The village pastor told me: 'The man has made a big mistake. Though he thinks that he leases his father's land to the Mormon church, the reality is that the village leases the land to his father' (Palemia pers.comm. 25 March, 1997). This incident shows that individuals must comply with the collective value of a village.

Impact of Migration and Cash Economy

It has been shown above that the initially gradual and more recently rapid increase in the number of *matai* has influenced land use. In this section other elements which affect land use, namely migration and cash economy, will be examined through a case study. One woman in her fifties in Samalaeulu is living in a house lot with her youngest son and daughter, out of six children. Her father is living in Apia, and her husband is working in New Zealand. Her three eldest surviving children are all living in Apia. Being a responsible person in the *'aiga*, she looks after three *matai* titles which belong to the village: her father's, her husband's, and her brother-in-law's (her brother-in-law and his family are also living away from the village.) She is working as a school teacher, but her salary is not enough to fulfil the obligation for three *matai* titles. Since most of the competent men who can do hard work in plantation are away, her harvest from the plantation is used mainly for home consumption and for donations to the pastor's family. She told me:

> My salary from school work is WS$ 286 per fortnight[26], of which about WS$ 240 are deducted for some taxes, communal fees and payment for loans. Payment for electricity and water is WS$ 10 per month and WS$ 48 per 6 months, so they are all right. But I cannot donate for church from my salary. I rung my husband to send money just last week (Ana pers.comm. 31 March, 1997).

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[26] Equivalent to NZ$ 178.75 using conversion rate NZ$ 1=WS$ 1.60.

Before her reliable and hard working son died, she could earn more than WS$ 1,000 from the plantation every month. Today, however, she hardly plants or harvests any crops to generate cash income on the plantation lands which belong to the three *matai* titles.

Her case is a good example of labour shortage in the agricultural sector in villages and of the higher dependence ratio due to emigration. The cash needed is supplemented by remittances from the migrant relatives. Land under the control of *matai* titles is not intensively used, rather it is left unplanted as regrowth of bush and trees take place. This case illustrates migration and access to remittances may help the regeneration of cleared forest.

However, remittances and other cash income can also increase the rate of deforestation. Cash income through waged jobs and remittances have enabled villagers to obtain tools and other materials and hire labour for clearing more land and increasing production from their land. Macpherson (1988) mentions two examples, chainsaws and herbicide, of how remittances have allowed villagers to increase the area of land cleared and production (Macpherson 1988).

Summary

Deforestation in Samoa is mainly caused by land conversion for agricultural use. As Martel says: 'Samoans think that forest clearing is killing two birds with one stone — planting taro and owning land. Now taro cannot be produced: they have no reason to clear forest' (Martel pers.comm. 12 March, 1997). At the same time, changes in Samoan society have made a significant impact on the forest. The most significant factor of all is the proliferation of *matai* titles, which is rooted in the Samoans' appropriation of their own political system. The emergence of nuclear families, as well as more

individual cash incomes, helps to weaken the traditional communalism in Western Samoa. Other elements such as remittances and migration are intricately related to each other and work both positively and negatively for deforestation. These changing conditions have been closely linked with deforestation in recent years. The influences of Western capitalism and individualism have certainly been seen in Samoan society, however, they are not the only causes of deforestation. *Fa'a* Samoa, influenced by external foreign values, is constantly altering in accordance with changing social, cultural, economic and political conditions: this significantly affects the environment in Samoa.

Traditional socio-cultural traits unique to Samoa and changes to those, both from within and without have complex effects on the given situation of each village. In the next chapter, another important factor to conservation of forest, the view of the villagers and the Government toward their environment will be examined. Are villagers and the Government pledged to conserve their forests?

Chapter Five:
Forest Conservation

Introduction

As has been shown in the previous chapters, social changes such as the emergence of nuclear families, increasing numbers of *matai*, and changes in agricultural practices as well as to the land tenure system have all contributed to cause deforestation in Western Samoa. Since newly cleared land is favoured for growing taro, people have expanded their agricultural land into the forests, neglecting the long-established agricultural land under 'old tenure'. This practice is by no means sustainable (Paulson 1992a, Ward 1995). A slight change of factors, such as a population increase or another large scale cyclone may leave serious damages to forests which have already been greatly depleted.

The Samoan environment is the long-established result of interaction between people and the island ecosystem. Samoans have developed their own social system, *fa'a* Samoa, in their unique physical environment. From an ecological viewpoint, unsustainable land expansion practised by Samoans cannot be continued. Is there any way to modify the unsustainable practices of villagers? What is the motivation for Samoans today to prevent further deforestation and to continue the sustainable interaction with the environment that their ancestors have maintained for more than 3000 years?

Importance of the Forest for Villagers

Use Value

Voluntary clearing of forest area by villagers significantly affects the state of the forests in Western Samoa. Therefore, it is crucial to examine villagers'

recognition of the forests. Having used the fringes of the forest more than the forest itself, Samoans do not recognise its importance as much as some indigenous peoples who have been living in and completely relying on forests. Even over thirty-five years ago, Cameron (1962) observed villagers thought little of the forest compared to in former times:

> Today almost fifty per cent of the population of Western Samoa live in villages which have no immediately-adjacent area of primary forest. The forest has ceased to be the integral part of the daily life it is in villages which still have tall forest closely surrounding them. Even in these latter villages, however, the dependence on the forest for food is now negligible, while the medicinal properties of leaves, fruits and bark extracts are not exploited to the extent they were even thirty years ago (Cameron 1962:73).

The study of Paulson (1992a) confirms this result. Though villagers still obtain medicines, timber, and materials for tools, crafts and building from the forest, its most important role is as stand-by expansion area for agricultural use (Paulson 1992a). During this research in Samalaeulu, many villagers could not remember when they last went to the forest. If they did, the purposes were for hunting or for clearing bushes to demarcate the boundary with the neighbouring village, and not for collecting medicine or building and crafts materials. The SPREP report also reveals that only 10 percent of useful tree species are found in the rainforest: the rest can be obtained on household lots, village or plantation land (SPREP 1997:59). The survey also finds that most of the people thought that the necessary commodities for day to day living are obtained by cash, and that forests are 'of little value today' (ibid. 62)[27]. Another finding is that the distance of the village from the forests caused the villagers to incorrectly comprehend the size of the village forest. In a village on Upolu, Lotofaga, 51 per cent of respondents answered that

[27] Only 5 per cent of males in one village disagreed with the statement: saying 'Forests are of little value today since we can buy everything we need in the shops and at the market' (SPREP 1997:62).

their village forest had increased in size[28] whereas it had decreased by 73 ha per year over the same period.[29] These results suggest that villagers have little to do with the forest today, and relatively fast regrowth gives misleading impressions (ibid. 59). Faced with significantly high deforestation rates in Samoa, this misconception may be a significant hindrance to forest conservation.

Intrinsic Value

Before the advent of Christianity, Samoans believed that a certain class of high ranking chiefs were given some kind of supernatural power by the sacred spirits of ancestors called *'aitu*. According to Buzacott's account in 1836, these *'aitu* 'were commonly incarnate in some bird, fish, reptile, or insect' (quoted in Freeman 1983:176). However, *'aitu* themselves do not relate to a specific place in the forests or to the forest as a whole. Moreover, as explained in the previous chapter, the sacred power of high ranking chiefs and the memory of *'aitu* have been diluted by the encounter with Western beliefs, materialism and modern technology. No one I spoke with mentioned the existence of spirits in the forests during my research.[30]

In contrast to this diminished ancestral belief is the rise of scientific teaching on the importance of forests by modern education and training. Several young villagers whom I met mentioned that forests are important since 'if people cut down trees, it leads to water shortage, soil erosion, less oxygen, and climate change. Birds and animals will be extinct since they loose places to live in the forests. We learnt these things in social science at Year 11'

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[28] The reply of 40 per cent of villagers to this question was that the forest had become smaller (SPREP 1997:59).

[29] The area deforested over the period 1954 to 1994 is 32 per cent of the total village land of Lotofaga (SPREP 1997:45).

[30] One mentioned a ghost, *sale polu lua*, living in a certain place in the forest which children do not dare to approach. Another mentioned a monster that resides in the forest, which is no more than folklore.

(pers.comm. 27 March, 1997). People attending a training course organised by the Forestry Division in Apia also referred to the importance of the water catch capability of forests. However, conservation awareness through scientific evidence is very much based on Western values which are alien to Western Samoa (Hardie-Boys 1994), and such awareness may take several generations to instil. Moreover, its effectiveness in changing villagers' attitudes is questionable in the absence of apparent and serious soil erosion and of villagers' concern for loss of biodiversity (Paulson 1994).

A New Solution?

Another change in perception of the forest has emerged in several villages. At the moment two villages have covenants with First World environmental conservation NGOs and private donors on conserving forests from logging or other commercial operations for a long period. In return, villagers receive funds for village development, for example school construction. This type of environment conservation with the help of Western conservation ethics has been thought of as an innovative solution to deforestation and for promotion of awareness of conservation. However, this has perhaps turned out to give some negative results. Zurick reports that villagers have come to value forests as a 'commodity' from which to obtain cash, rather than as a life-sustaining ecosystem which bring 'long-term environmental (and economic) benefits' (Zurick in press quoted in Paulson 1994:330).

Environmental Conservation by the Government

Until recently, environmental conservation has been subordinate to the pursuit of economic development. The Samoan Government's *Sixth Development Plan* published in 1987 disparages ecological balance and environmental conservation since they 'impede the pace of growth and development' (quoted in Park 1991:40), and states that 'bringing all or most virgin lands into agricultural use' can realise more extensive and efficient land

use (quoted in Sesega 1990). As the pressure from global and Pacific conservation movements has become stronger,[31] the Government has begun to include environmental concerns in their vision. The *Seventh Development Plan* (1991), covering 1992 to 1994, recognises deforestation as 'the principal environmental problem' and mentions its adverse effect on the environment, such as 'the loss of soil fertility, the loss of the soil itself, and the loss of habitat for indigenous flora and fauna' (Government of Western Samoa 1991:44). However, conservation still seems to be secondary to economic growth, as its development objectives aim to achieve 'a GDP growth rate which consistently exceeds the population growth rate' 'through sustainable development; that is, without net consumption of capital including those capital assets which take the form of natural endowment' (ibid. 35-36).

Plate 5: Forest Division in Maota, Savai'i

[31] As the Government has signed the Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (the SPREP Convention), they need to identify its conservation areas (Park *et al* 1992).

Apart from economic growth, forest conservation involves other sensitive issues. First is the land tenure system. Tackling environmental problems, namely deforestation, inevitably involves the land use and land tenure system. The government institution responsible for natural conservation is the Division of Environment and Conservation (DEC) of the Department of Lands, Surveys and Environment (DLSE) (South Pacific Forestry Development Programme 1995:14).[32] However, its control is limited to government land. Given the fact that more than 81 per cent of the land in Samoa is categorised as customary owned, and most of deforested areas fall in this area, the Government and DEC have little control over the forest conservation. The Government acquisition of large areas for conservation is unrealistic given all the negotiations and compensation required for the affected villages. It also has been made difficult because of people's apprehension and caution rooted in early Western settlers' land acquisition (Reti 1979).

Since land is one of a few important resources, especially in rural Samoa, and because the land tenure system is rooted in *fa'a matai*, bringing the land tenure issue into public debate is contentious. Public acknowledgement, including by both *fono* and members of parliament, of individual land holding is too threatening for those who have gained power under the present *fa'a matai* (Ward 1995).[33] In fact, the *Seventh Development Plan* (1991) mentions 'the expanded use of the custom by which an *'aiga* gains indefinite use of an area of land which it has cleared', and calls for immediate legislation on land tenure, including customary land (Government of Western Samoa 1991).

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[32] Its mission is to 'help the Government and the people of Western Samoa to maintain and improve their environment, and to enhance their capacity to provide a present and future resource base to support the needs and maintain the quality of life of its people (quoted in Ministry of Foreign Affairs and Trade 1994:4).

[33] Though Ward uses the phrase 'individualistic acquisition of resources' (Ward 1995:92), 'individual land holding' is used since the former does not agree with the finding of this research.

However, the focus is mainly on the Apia urban area, and no detailed plans for land use, especially in rural areas, have been mentioned. On the contrary, increased numbers of nuclear families and *matai* may give villagers a new foundation for their course of action: forest clearing to control a plot of land is done as a right attributed to *matai* for the benefits of the whole nuclear family.

The second issue is village diversity and strong control by *fono*. The pastor in Samalaeulu, when explaining the social system, customs, traditions and village affairs and situations, always emphasised that his account is applicable for his village only. Samalaeulu is not an extraordinary village. What he means is that each village in Western Samoa has developed distinctive characteristics which have been girded by 'the customary land tenure system and the often ancient boundaries between villages' (Park *et al* 1992:I-8). The diversity of villages and their strong autonomy under *fono* have been strengthened by the legislature of the Village *Fono* Act 1990. This Act 'bolstered the authority of the *fono* by recognising in formal law a wide range of traditional powers, sanctions and punishment' (Lawson 1996:156).[34]

The variance between villages relates to the methodological issues which Macpherson (1988) points out. Aggregated data from all the villages may give a general trend for Western Samoa. However, it does not necessarily illustrate national patterns, and its average does not indicate a 'typical Samoan village'. An example of village land availability shows this point clearly. There is no more forest area available for agricultural land expansion in Fusi village on the southern east coast of Savai'i (Paulson 1992a). On the other hand, in Samalaeulu people say proudly that 'there are still plenty of lands in this village.'

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[34] This legislation is regarded as one of the two 'compensatory measures' for the introduction of universal suffrage which could undermine the authority of *fono* and *matai*. Lawson (1996) states as follows:

> The introduction of universal suffrage represents a real danger to *fa'a matai* because it is essentially contrary to the principles on which *fa'a matai* is based, namely, the unquestioned political authority of *matai* (ibid. 158).

As each village differs, so do the villagers. Facing a situation where a decision should be made, villagers respond differently, taking account of things like availability of natural and human resources, geographical setting, material limitations, their ambitions in future, compliance to the village norm, and an appropriate attitude which is expected by the others in accordance with the person's rank and status in a specific village milieu.

Difficulties in finding the solution to national-level problems reside here. While cross-village co-operation is essential to prevent further deforestation, working together across the village is difficult in Western Samoa. It is easy to understand that each village may take a different attitude towards a common national problem.

Summary: Motivation for Conservation of the Forest

The above mentioned factors — specifically a decrease in the importance of forests, difficulty in promoting conservation awareness, the sensitivity of the land tenure issue, the diversity of villages and their strong autonomy, and various reactions by the villagers on decision-making occasions — make prevention of deforestation an arduous process in Western Samoa. Considering the Government's aspiration for more economic growth and the decreased value placed on forests by villagers, a strong motivation for forest conservation is necessary.

In seeking a conservation ethos, Hardie-Boys (1994) proposes inclusion of the cultural dimension into the conservation idea as an alternative to the 'people first' development policy which, in the long run, may put the environment under threat. Park *et al* also suggest that the Samoan culture itself is 'the best reason for protecting the last traces of Samoa's indigenous ecosystems' (Park

et al 1992:I-1). The essence of this suggestion is expressed by a prominent woman *matai*; 'When forests are gone, our culture is gone' (Jackson pers.comm. 24 March, 1997). Since Samoan culture has been developed in such a unique island environment over thousands of years, their subsistence lifestyles, still widely in evidence in rural Samoa, cannot exist without conserving the environment. For forest conservation, the Samoan characteristics of 'strong community cohesion and social responsibility', which are a part of *fa'a* Samoa, could be keys to finding alternatives to the unsustainable practices (Paulson 1994).

Chapter Six:
Conclusion

Social Change and Deforestation in Western Samoa

This thesis is built upon past studies on deforestation in Western Samoan and enhances the arguments with findings by more recent surveys and the by field research presented here. Past studies argue that recent changes in Samoan society, as people are influenced by Western individualism and the advent of a cash economy, have caused Samoans to take more individualistic attitudes. The traditional land tenure system is such that a person who clears unoccupied forest can use the land, though the ownership of land remains in the *'aiga* to which he or she belongs. This rule has been modified to enable villagers to claim the ownership of the land and pass it on to their children. This causes deforestation since the land which is available for individual ownership claims is covered with forest. Though individual land holdings are widely recognised, the scale of deforestation for the purpose of land claiming is not known.

Recent surveys and the field research conducted for this thesis have found that villagers recognise that land claiming is not as important a cause of deforestation as is land conversion for agricultural use. Deforestation is primarily caused by the clearing of forest for agricultural land, especially for taro which grows much better on newly cleared land. Taro is an important cash crop as well as the most preferred staple food for many Samoans. The outbreak of taro leaf blight in 1993 has contributed to a slow down in the rate of deforestation. However, the pressure on the forest is still present as many villagers seek an opportunity to gain cash income from taro planting.

As Meleisea (1992) and O'Meara (1990) state, Samoans have the ability to modify their culture when facing outside influences and changing conditions. One example is the manner in which Samoans integrated Christianity into *fa'a* Samoa, Samoan way of life, and used it to legitimate already-established Samoan institutions (Meleisea 1992:23). The influence of a cash economy and Western individualism have been felt in Western Samoa for a long time, and they have been partly assimilated into Samoan culture. In the process, *fa'a* Samoa has been modified to suit changing social, cultural, political, and economic conditions, and has turned itself into the *fa'a* Samoa of today.

It is this ability of Samoans to adapt themselves and their culture that is critical to the degree of deforestation; it is not simply the influences of Western capitalism and individualism. Examples such as increasing number of *matai*, the shrinking size of an *'aiga*, modification of land tenure coinciding with stubborn adherence to the land under 'old tenure', and preservation of *pule* (authority) of *matai* and *fono* have been discussed. These factors combined work intricately as stimuli for deforestation. In other words, forests in Samoa are being depleted because of the friction between the modification and preservation of tradition as a consequence of changes in society and in peoples' values.

Sustainable Development or Systems of Knowledge:
How Can Samoan Forests be Saved?

As has been introduced in Chapter One, the form of sustainable development promoted by the World Commission on Environment and Development (WCED) presents a new quality of economic growth and focuses on the alleviation poverty to prevent environmental destruction. In Samoa, the traditional caring and sharing society does not allow a person to be without shelter, food, or water as long as they live in rural villages. Although Samoan

standards of living are very different from those of the industrialised countries as measured by conventional economic indicators, 'poverty' is not an appropriate word to use in Samoa. Furthermore, it is crucial how the principles of sustainable development are applied in the context of Western Samoa. Many development projects have failed in the past because they 'forced indigenous people to divert their energies from the *positive* pursuit of indigenously defined social change, to the *negative* goal of resisting cultural, political, and economic domination by the West' (Banuri 1990:66). If initiatives towards sustainable development ignore the fact that 'some world cultures also have their own social and economic goals' as Western economic thinking often does (Va'a 1993:350), the concept of sustainable development will follow the same roads as previous unsuccessful attempts at development. Thus, the WCED's proposed strategy for sustainable development would seem to be difficult to implement in the Western Samoan situation.

Nor does a systems of knowledge approach seem likely to provide the answer for Western Samoa. Land control is in the hands of the villagers. Each village is a social and political administrative unit which does not allow even governmental intervention. However, the smallness of the islands and the convenience of air travel to neighbouring American Samoa or to New Zealand encourage peoples' mobility both within and outside the country. Samoans who have experienced urban life in Apia or overseas tend to lose their rural and traditional values. Traditional communal values, though still strong in rural Samoa, have been greatly diluted. The material and spiritual importance of the forests has been largely removed from the daily life of Samoans. As a result, the commitment to protect the forests has been weakened.

At the same time, the systems of knowledge analysis cannot be totally rejected since it is wrong to assume that the culture is static. Countering the negative view of tradition, Marglin states 'Traditional does not mean fixed and

unchanging. Tradition is actively constructed and dynamic....The issue is the preservation of a *space* for a relatively autonomous transformation of indigenous cultures, not the preservation of cultures as static systems' (Marglin 1990:15-16). *Fa'a* Samoa exemplifies how a culture constantly transforms itself 'in order to survive in the modern world' (Park 1994:133). Samoans have changed the state of the forests and the environment over the course of their history. In the future, their culture may provide solutions for conservation of the forests. Hence, the 'Samoan' system of knowledge has an eminent role to play.

Humphrey and Buttel (1982) state, 'people have the capacity to conceptualise and see the world though the lens of culture' (Humphrey and Buttel 1982:3). Samoans see their island environment through their lens of culture; *fa'a* Samoa. *Fa'a* Samoa has constantly and slowly adapted itself in accordance with the changes in its surrounding conditions. Park *et al* say 'most of Samoan's future is going to depend on how Samoans use and abuse their land' (Park *et al* 1992:I-4-5). The future of the forests in Samoa will depend upon views seen through the lens of the constantly changing *fa'a* Samoa, and upon the decisions the Samoan make based upon this.

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