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**FISHERIES MANAGEMENT IN THE PACIFIC:
Tradition and the Challenges of Development in Marovo,
Solomon Islands**

by Edvard Hviding and Graham B.K. Baines

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Preface

The importance of traditional resource management practices and local environmental knowledge for sustainable development has become increasingly clear in recent years. However, a key question is still outstanding: Can traditional resource management systems remain viable in the face of the modernization and commercialization of production systems, the increasing levels of resource exploitation caused by population pressures and integration into market systems, and the changes in social relations which these transitions imply? This paper addresses this question in the context of the fishing communities of Marovo Lagoon, Solomon Islands. It forms part of a larger UNRISD research programme on **Sustainable Development through People's Participation in Resource Management**, which also involves research on traditional management of rangelands, forests and water resources. The programme is being co-ordinated within UNRISD by Jessica Vivian.

The paper opens with a description of the complex and adaptive marine resource management system of Marovo, situating it within the context of other Pacific Island societies. What the authors term "customary marine tenure" is based on a concept of communal property, with rights of resource utilization--although not of individual ownership--based on kinship. Regulations are set by the community as a whole to govern who can extract marine resources from which area of the seabed, for what purpose, and at what time. The rules which are established are enforced through a variety of social and legal mechanisms, and historically have been able to maintain the productivity of the marine resource base by preventing overexploitation of any particular resource at any particular time.

As in most areas where traditional resource management practices have been successful in the past, Marovo is currently seeing changes which are testing the viability of this system. Commercialization has brought with it social and ecological drawbacks, and is also putting some strain on the customary tenure relationships--which were formulated originally to guarantee subsistence needs, and which perform less well in market-oriented production systems. The authors argue, however, that the system is proving adaptable, as local communities learn how to respond to new pressures. Marovo people are successfully addressing the challenge of accommodating commercial development within a customary framework. They are actively involved in the negotiation of rules governing not only their own resource extraction, but also have proved capable of influencing and restricting resource exploitation by outsiders.

Perhaps more importantly, the paper argues that some form of community management based on customary marine tenure is not only viable, but is also the best option for the management of lagoon and near shore marine resources: with the diverse species, rapidly changing stock levels, wide expanses of ocean and mobile fishing fleets of the region, enforcement of a centralized system of fisheries management would be impossible. Because customary fisheries management systems are able to provide for necessary stock rotation, periodic closures of areas to resource extraction and stock monitoring, the authors argue, there is every reason to work with and strengthen such systems. Only the involvement of the community will ensure that the development of marine resources will be undertaken in a sustainable manner.

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consultant on matters of local-level fisheries management for regional agencies such as the Forum Fisheries Agency and the South Pacific Commission, and is presently engaged in a study for ICLARM (International Center for Living Aquatic Resources Management) on social, economic and legal aspects of coastal aquaculture in the Indo-Pacific region.

Graham Baines has spent many years in the Solomon Islands and other Pacific island countries where he has worked both with educational institutions and with government agencies in natural resource management and development planning. His interests now are focused on efforts to strengthen the capacity of traditional community institutions to manage the land and sea resources over which they have customary control. In this connection he is managing for WWF (International) a Solomon Islands community resource conservation project in which Marovo communities are involved.

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Dharam Ghai
Director

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1. Introduction

This paper, a commissioned study under the UNRISD Research Programme on **Sustainable Development Through People's Participation in Resource Management**, examines a case of traditional fisheries-related resource management; a case in which local people, from a basis of traditional, "common property" control over the sea and its resources handle a multitude of development issues. Presenting first some important issues relating to people's role in fisheries management and to the "common property" debate, we then describe a traditional system for management of land and sea resources in a Pacific Islands society--that of Marovo Lagoon, Solomon Islands. Emphasis is given to fisheries resources, with a view to explaining in practical terms how the customary marine tenure system operates under the social, political, economic and ecological circumstances of change arising from development pressures. Against this background, assessments are made of the viability of this traditional fisheries management system under present conditions of centralized political control and of both external and internal pressures for large-scale resource development enterprises.

The authors' Marovo experience, as expressed in this paper, lead them to conclude that effective people's participation is an essential prerequisite for fisheries development and that people's organisations built on local-level social systems, common property resource ownership and traditional fisheries knowledge are an appropriate basis for such participation.

2. People and Fisheries Management

The long-established biological emphasis in fisheries management has meant that the role of fishermen (and, even more so, fisherwomen), has largely been ignored. Yet the people, both those who fish and those who are otherwise involved in a fishery, contribute directly and significantly to the "fisheries systems" themselves. More recent approaches in fisheries ecology clearly recognize this (Larkin, 1978). Among fisheries managers at large, however, including fisheries economists, there has been a tendency to give a rather static role to people, most notably in the form of analysis that takes for granted the eventual destruction of any fishery, as in the so-called "tragedy of the commons" (Hardin, 1968).

According to the "tragedy" model postulated by Hardin, where access to a fishery is free it is not in the interest of any single fishing unit to limit its own effort, as this will only enable others to take more. It is asserted that a further consequence of free access is intense competition among fishermen, over-intensified fishing effort and the eventual destruction of fish stocks. Thus, to prevent overfishing and depletion, it is argued by fisheries managers who subscribe to Hardin's model that limitations on fishing effort must be imposed by outside authority.

However, research carried out by anthropologists, biologists and geographers during the past fifteen years in different parts of the world has documented the widespread existence of local-level, common property-type systems of marine tenure which successfully regulate access to and use of resources, and so function as fisheries management systems (see, e.g., Ruddle and Akimichi, 1984; Cordell, 1989; Ruddle and Johannes, 1990; Johannes, 1978; Gray and Zann, 1989). From their basis in the complex social relationships of local society, fishermen themselves control access to and exploitation of local marine resources. Most types of marine tenure systems are of a traditional, unwritten kind, based on local customary law. A considerable variety of these complex marine tenure systems is found in the Pacific Islands. Some of the recent information on this is to be found in a collection of papers edited by Ruddle and Johannes (1990). Increasingly, the question

is asked whether such systems, which include unwritten regulations on access to fisheries areas and stocks, and the use of an imaginative range of technologies based on precise local knowledge of the behaviour of food species, are a practical basis for achieving sustainable utilisation of fisheries resources. The present case study addresses this through a detailed examination of marine tenure and development issues in Marovo, Solomon Islands (Figure 1).

Figure 1: The Western Pacific, showing location of Solomon Islands and Marovo
(Map by University of Bergen/Copyright Edvard Hviding 1991)

(Map not available in this version of the report)

3. Marine Tenure and Fisheries Management in the Pacific Islands

Complex and adaptive systems of customary marine tenure (or CMT, cf. Hviding, 1989)¹ are widespread in the Pacific Islands, where marine food resources are fundamental to subsistence. For the majority of Pacific island societies, indigenous forms of resource management cover areas of both land and sea (cf. e.g. Sahlins, 1958). There is growing awareness in the island region of the need to give close consideration to customary marine tenure systems when planning and implementing inshore fisheries development. This is the case, for example, in the independent Melanesian nations of Papua New Guinea, Solomon Islands, Vanuatu and Fiji, whose government policies make explicit provision for “tradition” and “custom” in matters of economic development. Even so, the prevailing mood of many fisheries officials is one of frustration. Charged with responsibility for increasing the rate of exploitation of fish stocks in the absence of good information on stocks and on the environment in which these are nurtured, their task may be made even more difficult by an inability to comprehend the nature and functioning of complex CMT systems.

In the Solomon Islands, some administrative support is given to customary rights in marine resources, even where this is not formally recognized in modern law (Baines, 1985). In a policy paper on resource development, the Western Province of Solomon Islands (of which Marovo is part) takes an explicitly supportive stand, in its stated aim to “recognize and respect customary fishing rights and knowledge and use these as foundations on which to build modern inshore fisheries” (Western Province, 1985). Implicit in such a policy statement is a need for closer examination of CMT systems, few of which have been documented in any detail anywhere in the Pacific islands region. Marovo is one of those few areas from which other Pacific island countries, and other parts of the world, stand to learn much (Hviding, 1988, 1989, 1990, 1991).

¹ Where “customary” refers to a system that emerges from firmly traditional roots and has continuous and meaningful links with the past as it adapts to handling contemporary issues; “marine” refers to the system as dealing with coral reefs, lagoon, coast and open sea and including islands and islets contained in this overall seaspace; and “tenure” refers to a social process of interacting activities concerning control over territory and access to resources. The acronym “CMT” was first used by Hviding in a 1987 writing, subsequently published (Hviding, 1989).

4. Marovo Society

The Marovo Lagoon is essentially a large expanse of inshore sea, most of which is bounded by a raised barrier reef intersected by deep passages connecting the lagoon with the open sea, and skirting the coasts of three high volcanic islands (Figure 2). The area generally spoken of as “Marovo”, also includes the “weather coasts” of Vangunu and Gatokae islands (so called because their shores are not protected by barrier reefs and so are subject to ocean swells), as well as the cliff-coasts of Viru Harbour in southeast New Georgia. Throughout this area a reasonably uniform system of territorial holdings and resource tenure operates. About 9,500 people live in Marovo (a 1991 estimate based on a 1986 official census figure of 7,824 [Solomon Islands Government 1989] and the assumption that the 1976-86 intercensal Marovo population growth rate of a very high 4.1 per cent is being maintained).

Figure 2: The Marovo area, showing settlement patterns as of 1986
(Map by University of Bergen/Copyright Edvard Hviding 1991)

(Map not available in this version of the report)

Although five languages, all closely related (Marovo, Vangunu, Bareke, Hoava and Kusaghe), are spoken in the area, Marovo language is the dominant one, understood and used by the four other language groups in interaction with the Marovo-speaking majority.

Named descent groups, called *butubutu*, each act as a corporate unit controlling a defined area of land and, in many cases, sea and reefs (Hviding, 1990).² Three church denominations are represented, their differing teachings providing a basis for some of the socio-cultural variation between villages. They are the Seventh Day Adventist (SDA) Church, the United Church (Methodist), and the Christian Fellowship Church (CFC). The CFC is an indigenous church fusing the Protestant beliefs of Methodism with traditional beliefs and communalism. Today, all Marovo villages are situated on the coast, and household-based subsistence is focused on shifting agriculture, fishing, and reef gleaning. All households also have varying levels of supplementary cash income from a diversity of sources such as wood-carving, commercial shells, copra, inter-village marketing, and some commercial fishing, as well as remittances from relatives working in the urban sector.

The area as a whole is administered through the Marovo Area Council, which reports to Western Province. The Province is one of eight in the Solomon Islands, which also has a national government based in the capital, Honiara.

² Depending somewhat on the definition of social subdivisions, Marovo society is composed of around 24 named, corporate and estate-controlling *butubutu* (Hviding, 1991). At the time of the latest census (1986), the average number of persons resident in each *butubutu*'s area (i.e., descent group members and in-laws) was around 330, with a range from 759 to 95 persons. The total number of settlements in Marovo comprised 39 villages with a population of more than 50 persons, and 94 smaller settlements or hamlets (see Figure 2).

5. Traditional Resource Management in Marovo

Both land tenure and marine tenure are interrelated components of an overall system of resource management in Marovo. This system has been analysed in detail by Hviding (1988, 1989, 1990), and a brief summary is presented on the following pages. Each *butubutu* controls access to and use of resources in a *puava*, or “territorial estate”. At a general level of meaning, *puava* is the whole territory of a *butubutu*, covering land, reefs and sea, in most cases stretching from the mountainous centre of the main island, down to the mainland seashore and through the lagoon to the outer barrier reefs and to some extent beyond. Each named *puava* is delimited by boundaries in the form of mainland rivers, river estuaries, reef and islands in the lagoon, and passages through the barrier reef. Boundaries are further marked and validated by ancient shrines. These shrines are stone chambers in the mainland forest, on lagoon seashores or on islands in the lagoon and barrier reef, and contain the skulls of named ancestors, together with heirlooms such as sacred clamshell artefacts. At another level of meaning, *puava* is the word for “earth” or “soil”: essentially, cultivable land. This use of the term may be interpreted as implying permanence and sustainability; a life-giving resource which is inexhaustible provided it is managed in the proper way.

The *puava* concept, as used for the territorial estate of a *butubutu*, implies that land and inshore seas and reefs are seen as interdependent parts of a spatial continuum. As is common in Pacific Islands cultures, in Marovo there is no strong dichotomy between dry land and areas covered by water; these are both seen as essential parts of one general entity of space and resources.³ This lack of dichotomy is reflected in the customary tenure system, through which many *butubutu* of Marovo control a *puava* that includes considerable areas of sea and reefs as well as land.

A person obtains rights in a *puava* first and foremost through inherited *butubutu* membership. The system of descent in Marovo is a cognatic one, involving bilateral inheritance principles, where a person receives *butubutu* membership and rights in corresponding *puava* from mother’s and father’s side. The cognatic system creates a wide set of formal *butubutu* memberships for everyone; so, his or her set of potentially usable rights will usually cover a number of *puava*. However, the extent to which potential rights are actually used and recognized depends on additional factors, mainly a person’s place of residence. An individual will have stronger rights in that ancestral *puava* where he or she lives or has grown up.

Cognatic descent and bilateral inheritance produce complex systems of overlapping social relationships. In a society like Marovo, each individual has a unique set of kin relations with groups and other individuals. This has consequences for the flexibility and adaptability of inter-group resource management, since each person has a number of options open to him or her regarding where, when and how to utilize natural resources. Also, bilateral systems of primary and secondary rights in resources have some capacity to handle demographic pressure. For example, people growing up in a community experiencing population increase, with consequent scarcity of land or fishing grounds, may have options to move to other communities with more abundant resource holdings. Such is the case in Marovo, and also in a wide range of societies across seaboard Melanesia and Polynesia, where cognatic descent prevails to a large degree. Therefore, the dynamics of such systems, especially as seen from the point of view of individual resource users, deserve closer examination (see Hviding, 1988, *passim*).

³ Other well-documented examples of integrated land-sea estates include the Hawaiian *ahupua’a* (Meller and Horwitz, 1987), the Yap *tabinau* (Lingenfelter, 1975), the Fijian *vanua* (Ravuvu, 1983) and, beyond the island Pacific, the estate of the Yolngu aborigines of North Australia (Davis, 1984).

Also basic to resource tenure in Marovo are the twin concepts of *nginira* and *hinoho*, which refer to two main types of rights in a *puava*. *Nginira* translates as “strength”, and in effect means the power to “speak about the *puava* on behalf of the *butubutu*”, to “keep” or manage the land, fishing grounds and sacred sites and make decisions on the access to, allocation and use of resources. *Nginira* rights are held by those with “strong” membership in a *butubutu*, most of which are permanent residents of the *puava* in question. Hereditary chiefs or “managers”, termed *bangara*, hold the *nginira* on behalf of the group and make decisions jointly with the elders and other influential persons. *Hinoho*, which translates as “property” or “wealth”, is the entitlement to use land for planting and owning what is planted. In-laws hold *hinoho* rights only, whereas resident *butubutu* members have *hinoho* rights as an extension of their own or their parents’ *nginira*.

6. Customary Marine Tenure

Marine tenure in Marovo, tied to ancestral title and integrated with land tenure, involves much more than “fishing rights”. It is a tenure system which involves the *butubutu* as a management unit with exclusive rights to control access to resources and to regulate their harvesting. As for land tenure, individuals obtain rights through *butubutu* membership or affiliation. There is a clear distinction between rights or “power” to “speak about” fishing grounds and seaspace (that is, to participate in decisions on resource use policies and access to fishing areas), and rights to **use** fishing grounds. Those *butubutu* whose *puava* include reef and lagoon each control a marine complex which includes islands, coral reefs, seagrass beds, estuaries, and the seabed from which these emerge. Within the boundaries of the marine portion of a *puava* all living and non-living resources are owned by the *butubutu* as a collective, not by individuals. Sacred sites associated with pre-Christian tradition are important markers of ownership.

It is important to recognize that reef and lagoon rights are unevenly distributed among *butubutu* and among village communities. Those descent groups which have an historical “origin” as coastal dwellers have reefs and sea as the main component of their holdings. In contrast, *butubutu* which were bush dwellers in pre-Christian times now hold large areas of forest, but little of the sea. Even so, these groups have been able to negotiate extensive use rights in the fishing grounds of other *butubutu*. Further, there are instances where descent groups of coastal and bush origins have in recent times merged and the resulting new *butubutu* now hold large areas of both land and sea.⁴ These examples of negotiated rights and of merged *butubutu* illustrate the adaptive nature of Marovo society and its land-sea tenure system.

The landward limits of marine *puava* are the seashores and mangrove swamps of the main islands. Seawards, they extend to include the outer, ocean-facing submerged reefs and the deep-water slopes of the barrier islands (Marovo people’s most important fishing grounds), with a more diffuse exclusiveness as one moves out into the open sea. The “weather coast” people, lacking a lagoon, are particularly concerned with claims to open sea, one *butubutu* even claiming customary title to an active submarine volcano some 30 kilometres off-shore. Lateral marine boundaries usually begin from the estuaries of rivers which serve as land boundaries. From there, they run out across the lagoon towards the barrier islands and to some prominent feature in or on the reef or, as is usually the case in Marovo, a passage between two barrier island reefs leading to the open sea. In most cases, the boundary does not extend from coast to reef in a straight line, veering instead

⁴ Of the 24 corporate *butubutu* mentioned above, ten are regarded as “bush” groups, seven as coastal or “salt-water” groups, and seven as groups of mixed coastal/bush type. Their holdings vary accordingly, with some coastal groups holding virtually no land at all on the main islands (Hviding, 1991).

between points marked by small islands, deep-water channels and other important features of the lagoon seascape. Surface guides to the location of marine boundaries include water-colour, wave patterns, and turbulent flow over submerged reefs. Though often not discernible to outsiders' eyes, the location and surface manifestations of the marine boundaries of Marovo are an integral part of the everyday practical knowledge of fishermen. It is vital that they should know when the outer limits of their own "home" fishing grounds are reached and what limitations other groups' boundaries place on access and resource use.

The marine boundaries of Marovo pose few constraints for travel, the exceptions being certain sites on the barrier reef islands where a spiritual "presence", malevolent to outsiders, deters those who do not have traditional rights in the area concerned. However, to fish within the *puava* requires that if one does not have traditional rights then permission must be asked of the controlling *butubutu*. For subsistence fishing, such permission is almost always given. There is rarely any difference of opinion in Marovo about which marine area belongs to which *butubutu*, and it is unusual for anyone to question the location of boundaries. The practical difficulties encountered in the exercise of one's traditional rights is, however, an issue. In other words, questions regarding who should be allowed to enter which areas to harvest which resources at what times and, most importantly, which of those fishermen may sell his catch for individual profit, remain important.

7. Gaining Access to Fishing Grounds

In their perception of the relative exclusiveness of boundaries, and when handling questions of access in the course of daily fishing activities, individual fishermen tend to interpret their personal sets of kinship connections in a way that allows them access to the widest possible range of fishing grounds. Often, a fisherman's interpretation of which areas he has access to, and why this is so, is in close correspondence with the views held by the reef managers in question. In other cases, though, disagreement and even confrontation may occur when these respective views differ, and people holding an area feel that an "outsider" has interpreted his kinship links with them too ambitiously. Direct interaction between the fisherman and those empowered to decide on access may not be required, indirect communication of views serving to resolve the issue. Sometimes, however, it is necessary for the fisherman to negotiate an understanding with representatives of reef-holding groups. This matter of interpretation is a key feature of fishing throughout the Marovo Lagoon (Hviding, 1990).

Below is an example (adapted from Hviding, unpublished field notes) of the process through which a Marovo fisherman interprets and argues for his legitimate access to fishing throughout the main body of the lagoon, involving the marine *puava* of five different *butubutu*. This man, let us call him N, is in his thirties, a very active and knowledgeable fisherman who spends most of his working days at sea. Possessing his own outboard motor and fibreglass canoe, he is an example of a new generation of fishermen which seeks to extend its operations and so has given much thought to the justification of access to as many fishing areas as possible.

Butubutu/puava

N's stated justification for access to fishing grounds

"A"

'The chief of "A" is the brother of the chief of "B", so why should I not go fishing there?'

- “B” ‘My wife is of this *butubutu*, and the chief of “B” has granted me use rights throughout this *puava*.’
- “C” ‘These people are one with my own people. At the time of my father’s mother’s mother’s father, they lived together where we live today, and my father’s mother’s brother, in charge of affairs in “D” is also an important man for the people of “C”. They should not refuse entry if I want to fish or dive for shells on their reefs’.
- “D” ‘I live here. This is the place of my father’s *butubutu*, and it is where I spent most of my childhood. My father is the master fisherman of “D” and has the power [*nginira*] to speak about the sea. In time, I am likely to inherit this privilege from him. Like my brothers and sisters, I can do what I want here in this *puava*.’
- “E” ‘My mother is from this place. She married my father and moved to “D”, but they continued to spend much time with her people, and when I was younger, I often went to live with these people for some time. I cannot speak about their reefs, but I can do what I want there.’

In his daily fishing efforts, N has largely undisputed access to the four areas of “B”, “C”, “D”, and “E”: To “C”, “D”, and “E” through “blood” relationships and kinship obligations; and to “B” through the recognized right of in-laws to use resources held by spouse’s *butubutu* (he has asked for and received general permission from the chief of “B”).

In these four areas he carries out fishing, mainly trolling and underwater spearfishing, for subsistence and small-scale marketing, as well as diving for commercial pearlshells. As for the latter activity, N’s entitlement to do so in “C” is sometimes disputed by some of the spokesmen of this group, who claim that the ancient kinship and co-residence links between “C” and “D” are not strong enough to warrant intensive commercial exploitation of “C” reefs by people of “D”. At one point, during a brief period of exceptionally intensive commercial fishing, N was almost forced to leave area “A” when he went trolling there for fish to sell to a nearby tourist resort. Following typical procedure among chiefs in contemporary Marovo, the chief of “A” sent a letter to N (with copy to the chief of “B”), stating clearly that the rights of “B’s” in-laws did not extend as far as including commercial harvesting of resources in “A”, although no one would object to N taking fish for his own family’s daily food needs.

Such exchanges of letters, as well as more direct verbal communications, form part of the local-level enforcement of a multitude of CMT regulations. When people not so entitled are observed to enter certain fishing grounds, use certain restricted fishing methods or exploit protected species, a response usually follows from the guardians of the area or resource in question (see Hviding, 1990). In addition to receiving communications of a more or less heavily rhetorical nature, habitual trespassers are often subjected to wider social pressures aimed at bringing personal shame upon them. This is a serious measure in Marovo society, where there is generally a strong wish to avoid open conflict and public criticism. In some instances, chiefs demand compensation from offenders, in the form of cash or of the resource “stolen”. And in certain serious cases, most notably dynamite-fishing, offenders may even be reported to the local police, resulting in court

cases and heavy fines. The most serious measure applied towards really notorious poachers and trespassers is a form of social excommunication through which the offended group effectively revokes the poacher's status as a kinsman. This punishment may be meted out on a joint basis by several groups and may have grave consequences for Marovo individuals, who typically rely on a multitude of primary, secondary and tertiary use rights in land and sea resources through wideranging kinship privileges.

8. Multiple Dimensions of Marine Tenure

As indicated by the complicated examples of contested definitions shown above, there is no such thing as a universal regulation in Marovo CMT, applicable in the same manner to all fishing-related situations. On the contrary, the enforcement of boundaries varies according to a number of interrelated factors. There is much more to Marovo's CMT system than the territorial dimension.

For example, different types of economic motivation and varying intensities of effort in fishing form another dimension in boundary negotiation. Stricter regulations on access may be enforced on commercial fishing, as we see from the case example above. Intensity of effort fluctuates not only according to whether the orientation is towards subsistence or cash income, but also in relation to the number of people participating in a fishing trip. Thus, even if fishing is carried out purely for subsistence purposes, customary reef managers require that outsiders coming in a group should pay respect to the fact that others control the fishing grounds used.

Marovo fishermen often go to sea in a group: two, three or more of them in one or several canoes. For example, when a village community prepares a feast or other form of ceremonial gathering requiring an abundance of food, groups of fishermen may leave that village for a day's intensive fishing, often ranging beyond their own home reefs. When a fishing group intends to go to a fishing ground of another *butubutu* an attempt is commonly made to include in the canoe crew at least one person with strong kinship links to that other *butubutu*. Often, a male in-law of another *butubutu* who resides in his wife's village is asked to fill this role. This is a way of legitimating vis-à-vis others, and to the group members themselves, the fact that entry permission has not formally been asked. To bring along a fellow fisherman with recognized, strong blood ties to the *butubutu* in possession of those other reefs is in fact a "moral safeguard", and the "outsiders" forming the remainder of the crew draw on this fisherman's "power to speak about" his own group's prime fishing grounds to gain entry to fishing grounds that might otherwise be less accessible to them.

Rules and regulations for the use of different fishing technologies, and the capture of different species are another important dimension of CMT in Marovo. The use of explosives, whether by insiders or outsiders, is the only technique that is prohibited throughout Marovo by all reef-holding groups.⁵ Among other examples, some *butubutu* prohibit the use of nylon gill nets, or the leaves of poisonous plants, or of underwater spearguns, in their area. Some restrictions apply solely to outsiders.

Marovo *butubutu* do not allow outsiders to take resources which clearly are destined for sale--such as trochus shell and other commercial shells, or the so-called "precious corals" sought by the jewellery trade. Other species that may be subject to restrictions of varying duration include sea

⁵ This is an example where customary prohibition and national fisheries legislation converge. However, enforcement of the latter, formal, law prohibiting the use of explosives would not be possible in Marovo's 700 km² of reef and lagoon without the community support arising from *butubutu* policy, and surveillance and enforcement by Marovo people themselves.

turtles, crayfish, giant clams, and certain important food fishes in stationary spawning aggregations, as well as the large freshwater eels that are a highly valued food source for the “weather coast” people. These restrictions on fishing grounds, technologies and species vary considerably in different parts of Marovo, among different *butubutu*, and through time (Hviding, 1989). Finally, a type of traditional taboo, covering extensive tracts of barrier reef and involving the prohibition of all fishing, and even travel in the area, may still be imposed for a period of months so as to provide an opportunity for fish to aggregate undisturbed. This taboo is timed to assure the *butubutu* concerned of a substantial catch for the feasting associated with a major community event.

9. Gender, Age and Power in Resource Management

From the description so far it may appear that fishing and fisheries management in Marovo are in the hands mainly of the chiefs and other elderly men of the *butubutu*, an interpretation consistent with a generalized picture which has emerged from writings on Pacific Islands societies (cf. Schoeffel, 1985) This is true to a degree. Even so, it should be observed that while men spend a much greater amount of time fishing than do women, in Marovo neither fishing nor gardening is the exclusive domain of either gender. Women frequently fish, though usually closer to the village and with less complicated technology than men use. Reef-gleaning for shellfish and other invertebrates is a very important activity and women are the masters of both knowledge and activity in this sphere (Hviding, 1988). During periods of rough weather, when men’s fishing is suspended, women, with the children (of both sexes) who often accompany them, harvest from mangrove and nearby reef areas the major portion of the protein of household diets.⁶

This intensive use of shallow coastal waters by women and children has more significance for the important issues of marine tenure than is at first apparent. It is women who often voice the strongest concerns over potential or actual sediment pollution of sea areas arising from logging or mineral prospecting and exploration on adjacent land. At the *butubutu* level, therefore, in the discourse leading to decision-making, Marovo women often play a major role in focusing attention on the future well-being of coastal habitats, giving support to a growing concern about proposals by government agencies and by private enterprise for large scale exploitation of Marovo resources. Any decline in the quality, mean size or abundance of food fish is quickly commented on by the women, whose sense of such changes is perhaps heightened by what they learn through gutting and cleaning fish catches brought ashore by the men. When women perceive a future shortage of a valued food fish they are not reluctant to voice their concerns to the male decision-makers and to suggest that control measures be introduced.

Although the “power to speak about” reefs, sea and resources is formally vested in those elders who are each *butubutu*’s spokesmen, their decisions are enforced by men in their twenties and thirties, who are the most active and far-ranging fishermen of contemporary Marovo. Since these younger men are more often out on the fishing grounds they are better informed about shifts in resource availability and environmental change, and most likely to detect any trespassers. So, any direct confrontation over marine resources usually is handled by men of this age class, the community elders subsequently taking up trespassing cases through traditional procedures of consultation.

⁶ At least in villages following Methodist or CFC teachings. The doctrines of the SDA church prohibit the consumption of shellfish, crustaceans and other invertebrates, and so these villagers have to be content with vegetable protein, or with canned tuna, when no finfish is available.

However, some younger fishermen have recently expressed dissatisfaction with the way in which the elders handle matters arising from economic development proposals, arguing that their elders too readily succumb to the blandishments (known locally as “sweet talk”) of the proponents of large scale commercial activities which involve deforestation and soil erosion--major threats to the quality of the marine *puava* and the sustainability of *butubutu* fisheries resources. Their grievances are reflected, too, in a widespread resentment of the activities of commercial catcher boats which are a constant presence in the lagoon during the March to December skipjack tuna season. Tuna are taken in the open sea, with baitfish netted in the lagoon. Even though approval for baitfishing has been given by most *butubutu* leaders, many *butubutu* members are troubled by inequities in the distribution of cash “royalties” within the *butubutu*. This is a constant source of dispute.

Decisions relating to the frequency and intensity of resource use emerge from conclusions reached by both women and men. The nominal role of (older, male) traditional leaders in formulating fisheries resource management policy and rules, and in enforcing these is, in practice, strongly influenced by women and by younger men.⁷

10. Traditional Environmental Knowledge and Its Role in Fisheries Management

An extensive body of environmental knowledge underpins the impressive array of Marovo fishing methods. Decisions about fishing are made on the basis of this knowledge, (which suggests where fishermen ought to go), while taking account of the constraints imposed by marine tenure regulations (which indicate which fishing grounds and fishing technologies they may legitimately use) (Hviding, 1990).

Some examples serve to illustrate the complexity and diversity of Marovo people’s traditional fisheries knowledge.⁸ There are more than 60 different named fishing methods, most of which have variations which constitute sub-categories. The local classification of fish habitats includes more than 40 terms for distinct reef features, water depths and bottom types. Marovo people classify fish into nearly 400 fish types (with variants to a number of these also being recognized). The migration paths of crabs and crayfish, too, are known. There are gender differences in traditional knowledge. Men, for instance, pride themselves in understanding fish spawning behaviour to the extent that, for many food species, they can accurately predict its occurrence. Women hold extensive knowledge of daily, lunar and seasonal rhythms in the abundance and distribution of molluscs and crustaceans.

Throughout the lunar month and over the course of the year, variations of wind, rainfall, tide and ocean currents, open up an ever changing array of fishing opportunities. In this way a great variety of sites in the lagoon and among the coral reefs is exploited by a large number of techniques. The application of traditional knowledge of these environmental variables, and their many permutations, to fishing practice has the consequence of rotating fishing grounds and stocks within the *puava*--something which serves to limit overfishing and reduce the potential for habitat disturbance which might result from the repeated physical contact of gear and anchors, and

⁷ Marovo society has some reputation in other parts of Solomon Islands for equality between the sexes, and is said to be “a good place for women”. Further, Marovo women sometimes comment that, in comparison with men from certain other islands, their own men are “helpful”.

⁸ See Hviding, 1988 (Ch. 4,5) for a more comprehensive description of the environmental knowledge and fishing methods of Marovo.

trampling or overturning detached reef boulders. The practical, behaviour-oriented, and observation-based nature of Marovo people's knowledge of the marine environment, focusing as it does on the fluctuating and changing abundance of important food species, is relevant to fisheries management also in the sense that it provides an admirable basis for the monitoring of fish stocks (see Johannes, 1980; and, for an example from Marovo, Johannes, 1989).⁹

Local knowledge of the environment in Marovo also includes a reasonable level of awareness of ecological interactions between land and sea. This emerges in the course of discussions of marine pollution arising from land-based activities such as logging and mineral prospecting.

11. Challenges from the Wider World

It has earlier been shown that Marovo society's system of customary marine tenure has a capacity to adapt to changing circumstances. Being a system which is closely integrated with the wider society of which it is part, it now functions partly as a social device for handling the intruding external world of economic and political development. Yet the scale and pace of modern development are such that the system is being stressed. The integrity of CMT systems is at risk from shifts towards the commercialisation of fisheries resources. The traditional CMT system focuses on subsistence needs and is based on corporate ownership. Experience in the Solomon Islands suggests that commercial ventures based on customary corporate involvement are not often successful. Nuclear families or other sub-units of *butubutu* seem to be a more appropriate basis for commercial activities. This inevitably gives rise to questions about the *butubutu* "common good". What benefits should accrue from commercial exploitation of common property resources to those who have customary rights but who do not exercise them in commercial terms? Some observations and suggestions arising from the Marovo experience with payments made by outsiders for harvests of tuna baitfish from *butubutu* fishing areas have been made by Baines (1989).

Risks arising from commercialisation of Marovo fisheries resources are both social and ecological in nature. Where *butubutu* leaders to whom resource rents such as tuna baitfish payments are made fail to share these proceeds or to direct them to activities which benefit the *butubutu* as a whole, social inequity results. Social risks arise not only from selfish representatives who fail to follow traditional procedures of distribution of benefits. Tradition itself could give rise to social inequity since, of all who have rights to fish in a particular area only a core group holds the *nginira* rights of group ownership. It is argued by some that tradition requires that resource rents should benefit only those with *nginira* rights.

Ecological risks attendant upon commercialisation arise from the prospect of resource depletion and of habitat degradation. Depletion of stocks produces uneven social impacts in the subsistence sector. Those few possessing powered water transport can access more distant fishing grounds and so avoid the frustrations of dealing with depleted nearshore stocks. Yet those who do not have such equipment tend to be those whose customary resource rights are limited. With little or no land, for instance, they have not been able to accumulate cash savings from copra production in order to purchase outboard motors. The Western Province Development Strategy (Western Province, 1985) recognized this problem and declared that, among other things, "For the proper

⁹ Because our work in Marovo documenting this knowledge involves the application of "western" skills in a participatory manner with members of traditional indigenous communities, particular care has been taken with the approach used. This approach is explained more fully in Baines and Hviding, 1990.

development of fisheries resources Province intends to ... make sure that sufficient fisheries resources will be available for the food supply of the village(s) associated with that fishing area". The "Strategy", which essentially is policy, provides for the assessment of subsistence needs first, any commercial development to be based on stocks surplus to subsistence needs. However, neither the Province nor the national government has moved to implement this ideal.

Habitat degradation is a reality in Marovo. It is not yet extensive, though disturbing trends have become evident. Commercialisation ashore has led to removal of mangroves alongside coconut plantations. Any reduction in mangrove cover inevitably erodes the fisheries resource base. In the lagoon, commercialisation of the small anchovy-type fish which are harvested for use in an off-shore pole-and-line skipjack tuna industry has given rise to oil pollution of its precious waters. The presence of tuna catcher boats in the lagoon gives rise to a different kind of commercial pressure on the social and ecological integrity of Marovo.

The tuna industry has generated much controversy in Marovo. The lagoon is divided into a number of bait grounds whose "owners" receive payments ("royalties") on a per night, per vessel basis calculated according to data kept by each catcher boat (Evans & Nichols 1986). Quarrels within the *butubutu* over the distribution of royalty payments are common. The "owner", as defined by the tuna industry, is the individual who is the traditional leader of the *butubutu* which owns the area in which the bait ground is located. The industry is known to have made mistakes in correctly identifying these individuals. In some areas there is also conflict between *butubutu* over the "ownership" of different bait grounds.¹⁰

Marovo people have long voiced concern about the ecological consequences of baitfishing. Their fear is that the baitfish are a food source for other species which Marovo people seek as food fish. The nature of the relationship between stocks of bait fish and food fish has posed difficult questions for fisheries biologists (Evans & Nichols, 1986). The matter has been addressed by a comprehensive research programme on tuna baitfish (see Blaber & Copland, 1990). A major conclusion of these studies was that the removal of baitfish has no significant consequences for the stocks on which village fisheries depend (Blaber et. al., 1990). Though this should reassure the people of Marovo, their fears and objections to baitfishing persist.

Yet Marovo communities' concern about the presence of tuna catcher boats in their lagoon ranges beyond this ecological issue. Tuna catcher boats speed through narrow passages close to shore, generating large bow waves which swamp or smash canoes, erode shorelines and threaten the safety of children playing in the normally placid waters of the lagoon. They also discard oily water and other wastes, polluting the lagoon. Sexual liaisons between tuna boat crews and Marovo women also are resented, and not least because they sometimes involve Japanese. There are occasional clashes between Marovo men and tuna boat crews.

Community concern reached a head in 1991. Those community representatives participating in the fourth Marovo Lagoon Resource Management Workshop voted to "strongly recommend" the closure of Marovo Lagoon to baitfishing. This initiative threatened to severely limit access to bait grounds for catcher boats, since the "owners" of several areas so far open to baitfishing moved to withdraw their agreements with the tuna industry. Though few bait ground agreements were actually terminated, the possible scenario of a closed lagoon caused widespread concern among government and tuna company officials. The industry is a major contributor to the nation's foreign

¹⁰ We stated earlier that there rarely are differences between *butubutu* over the location of CMT boundaries. The baitfish boundary disputes arise from the fact that the boundaries used by the tuna industry to define baitgrounds, while based on customary boundaries, do not exactly correspond.

exchange earnings, and receives strong government support. Indeed, the national government holds 51 per cent of the shares in one of the two tuna companies. The significance of the Marovo stand against baitfishing is heightened by the fact that some 60 per cent of tuna baitfish taken throughout the country is from Marovo Lagoon. There have since been negotiations between the industry and bait ground owners throughout the country. New “royalty” rates have been set and there are indications that the industry may be making serious attempts to curb catcher boat speeding and other transgressions. Among other things, this result serves to illustrate the potential of local-level Marovo community influence on the national economy.

From the Marovo experience it is obvious that fisheries management needs to be considered in relation to a range of social and environmental matters not ordinarily considered to be fisheries-related. It is also readily apparent that fisheries management in these circumstances cannot succeed without the meaningful involvement of the people. A case in point is a fisheries project launched in Marovo in 1987 by expatriate leaders of the SDA church (Hviding 1988). During initial discussions, representatives of *butubutu* which control the involved reef-lagoon areas, although normally strongly loyal to the church, demanded a key role in project formulation. They also insisted that management issues should not be a concern of the fisheries project workers: that the scope of the project be limited to processing, storage, transport and marketing. Even though the intention of the project proponents to assume a management role may have been ecologically justified it was quite unacceptable in sociopolitical terms. Had management of fish stocks been assumed by project personnel this would have been interpreted as undermining the customary right of *butubutu*. Instead, new sets of CMT regulations adapted to these new circumstances of intensified commercial fishing by villagers were prepared by *butubutu* leaders.

Tourists are attracted to the beauties of Marovo Lagoon. One small Australian-owned dive resort and a couple of tiny local guest houses made of traditional materials cater to them. There is regular tourist yacht traffic, also. This aspect of commercialisation, too, has generated adaptive responses. Marovo people are concerned that dive tourists may steal rare shells and precious coral and profit from their sale. Local people maintain that tourism operators and yacht tourists have not paid proper respect to customary chiefs, and they view uninvited yachts in their waters as trespassers, particularly in distant barrier reef areas considered to be sacred (Hviding, 1988, 1991). Prohibitions have been made by some *butubutu* on matters such as commercial diving and anchoring of yachts. It is, however, proving difficult to enforce such restrictions on ephemeral visitors.

In Marovo, the indigenous concept of *puava* - the ecological integration of terrestrial and marine ecosystems - coupled with a view of the economic complementarity of land and sea resources, is a cornerstone of the local people’s view of the world. This sort of thinking now features in the new international agenda for sustainable development. Will Pacific island societies such as that of Marovo be given credit for their achievements, and opportunities to build on CMT systems for fisheries development - or will “experts” in sustainable development be sent to impose yet another model of development conceived in circumstances not relevant to the area of application?

The maintenance of customary marine tenure systems is not incompatible with contemporary development. On the contrary, since CMT systems such as that of Marovo provide for stock rotation, periodic reef closures, community involvement, group control, stock monitoring, ecological knowledge and understanding, and owners involved as managers there is every reason to work with and strengthen them, rather than attempt to enforce a costly and inevitably less effective centralized system of fisheries management. Johannes (1978) put forward a good case for local

control via Pacific islands CMT systems. Fisheries development agents have been very slow to recognize the considerable benefits of this approach.

Marovo people are addressing the challenge of accommodating commercial development within a customary framework. Yet there is as yet little sign among development officials, national or international, of any real enthusiasm for this kind of adaptive response. Nor do they attempt to study and understand the social and ecological complexities of the circumstances of fisheries management in areas such as Marovo Lagoon. However, the Fisheries Division of the Solomon Islands Government is presently carrying out a long-term revision of the national fisheries policy that shows some willingness to accommodate local-level resource management. For example, devolution of power gives each of the country's provinces full nominal jurisdiction over inshore fishing grounds. It is also the intention to have provincial-level fisheries management matched more closely to local customary law, since government legislation does not provide for customary rights in land and marine resources to be overridden. Under the revised policy, new provincial fisheries by-laws are to be enacted through processes influenced by local chiefs or CMT managers, and some recent examples of turtle-fishing bans show such an interaction between all three levels of Province, Area Council, and traditional chiefs (Hviding and Ruddle, 1991).

These advances have been welcomed. However, the challenges to be faced in achieving effective management in the changed circumstances of today must not be underestimated. Internal and external stresses on CMT systems are a matter of concern. They can be eased through more effort to understand the ways in which CMT systems adapt, by documenting traditional fisheries management knowledge and, where appropriate, by contributing additional ecological and management knowledge and information.

12. Sustainable Development: People's Initiatives for the Future

The people of Vangunu's "weather coast" have a reputation for their unified and determined stance against large-scale exploitation of their land and sea resources. This reputation was established in 1963 when officials of the then British administration of the Solomon Islands attempted to persuade Vangunu landowners to pass over their land to the government in exchange for money. Representatives of landowners of both eastern and western parts of the island were called together to meet with officials and negotiate. The "weather coast" *butubutu* were represented by the forceful spokesman David Livingstone Kavusu. It was his brief to oppose any attempt by outsiders to take control of the customary land of western Vangunu, and this he did. However, Administration officials were convinced that theirs was a just cause, that the objective of establishing a national forest estate on Vangunu was worthy, and that subsequent logging and reforestation operations would benefit those whose customary land had been given to the cause. Steps were taken towards the purchase of the whole of the island except for small areas then occupied by villages or subsistence gardens, together with some adjacent areas deemed necessary for future subsistence gardening. The legally required steps towards land acquisition involved the posting of notices with calls for written submissions from any objectors. Such a procedure was alien to Vangunu islanders. It was not until after the closing date for objections had passed that the "weather coast" representative became aware that his defence of his people's land had been overridden by the formal written procedures subsequently brought into play.

The story of how David Livingstone Kavusu took on the might of the administration, refusing to accept that his "out of time" objection had no legal standing, has now become part of Marovo folklore. Overcoming the then prevailing mood of Solomon Islander submission to

government authority he courageously took the battle of the “weather coast” people right to the top-to the Resident Commissioner, and won.

The memory of this battle to save the lands of western Vangunu sustains the determination of its landowning groups to do things their own way. It also helps to explain their deep suspicion of large scale development initiatives and the difficulties which they place before any visiting officials who are perceived by the community to represent the interests of logging and mineral prospecting. The people of western Vangunu have, in effect, been holding out in favour of what is now known as sustainable resource development. It was during a 1986 Marovo Community Workshop, organized as part of a Marovo Lagoon Resource Management Project which had had its origins in Marovo Area Council concerns about the future, that they seized on the idea of establishing an association structured to deal with this long-term objective of sustainability. Drawing on ideas and support from “the Marovo Project”, many meetings were held, hopes expressed and fears raised.

Traditional leaders now accept the idea of their traditional decision making role being given a stronger footing through an advisory group of younger *butubutu* members with more formal education and wider experience of development matters. They have grouped their six *butubutu* under the banner of the “Kavakasama Association” and prepared an innovative constitution. Amongst other things, this makes it clear that the Association does not seek to take over customary landholdings, which remain with the Association’s constituent *butubutu*.

Elsewhere in Marovo the Vahole community, members of the Christian Fellowship Church, have also established an Association along such lines. One feature of the CFC is a strong ethic of communalism. In terms of economic development this is expressed in the extensive community coconut plantation which sweeps inland up the slopes behind Tamaneke village. This emphasis on communalism, coupled with the farsighted thinking of one of the community’s representatives in the political sphere outside (Marovo Area Council, and Western Province Assembly) and the strong sense of independence of the Vahole people as a whole has led to their reorganizing themselves for resource management in the fast changing circumstances of today. The Vahole Association has been a reality for some ten years. It was formalized in 1987 and the role of its decision-making body, the Vahole Chiefs’ Committee, is complemented by an advisory group similar to that of the Kavakasama Association.

Several other groups in Marovo are in the process of establishing new organizations of this kind. These innovative developments in community organisation for resource management are a most encouraging sign for the future of fisheries management in the Pacific islands region. The significance of these associations of *butubutu* for prospects of sustainable development in the Pacific islands has been recognized by the World Wide Fund for Nature (WWF), which is now working with the Vahole and Kavakasama Associations and with similar groups elsewhere in the Solomon Islands. Under the theme “community resource conservation”, WWF is addressing the call of customary landholder groups for assistance in managing their resources. WWF’s objective in this respect is to improve prospects for conservation in the Pacific islands by assisting indigenous community groups to utilize their resources in a sustainable way and to maintain biological diversity and ecological processes. This type of work, then, aims to help indigenous Solomon Islander societies to follow the non-centralist, locally autonomous course of development which they themselves choose (Baines, 1991).

Like a number of other developments described in this paper, such as the establishment of the church-based fisheries project, the present efforts by WWF have also been modified by Marovo people’s strong insistence on self-determination and local participation in every stage of “project

formulation”. For example, one of the Associations assisted by WWF has requested that more of the “community resource conservation” funds should be directly allocated to independent activities not involving WWF representatives, like meetings organized around traditional hierarchical structures rather than around the more egalitarian, “participation-by-all” approach favoured by community-oriented NGOs. Such initiatives express a pervasive wish to keep the planning of resource management firmly in local hands, involving outsiders only where this is judged absolutely necessary.

The Marovo approach as described here is characterized, then, by a refusal to give up autonomous decision-making power in resource management issues, by an insistence that introduced resource management initiatives must be closely adapted to local-level needs and aspirations, and by a conviction that traditional political mechanisms and environmental knowledge in most cases form a sufficiently solid basis for reaching informed decisions. It is typical that requests for outside assistance have mainly covered such areas as resource stock assessments, documentation of resource bases and their uses, and infrastructural support to enable local groupings carry their message further into the channels of national government.

Thus, the case of Marovo, embracing a complex variety of issues involving land and sea resources, illustrates how people’s participation in all stages of formulation and implementation is a prerequisite of locally-appropriate, sustainable development. Fisheries and marine resource development is a particularly striking case, where local people organized around communally-held resource assemblages insist on an integrated approach that also involves activities and contexts not directly related to fisheries. In the context of scattered archipelagoes, winding coastlines and highly insufficient government infrastructure, the costs of maintaining centralized surveillance and management of fisheries are prohibitive. CMT systems like the one operating in Marovo, building not just on local autonomy and self-reliance, but also on highly detailed knowledge of the coastal-marine environment and daily monitoring of resource bases, offer potentials for appropriate “self-regulation” of fishing effort, and for direct local-level resolution of resource use conflicts. Traditional resource managers like those of Marovo thus favour decentralized resource management, participatory planning and a non-sectorized approach to rural development.

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