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## **GUARDIANS OF MAROVO LAGOON: PRATICE, PLACE, AND POLITICS IN MARITIME MELANESIA**

### **Chapter 5 – On Seas and Reefs: Maritime Knowledge and Practice**

by  
Edvard Hviding

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## Chapter 5

# *On Seas and Reefs: Maritime Knowledge and Practice*

It is the sea—the sea is what makes Marovo different. All kinds of things can be found in the sea here to make life good and to earn some money. You can go to Choiseul, Vella, Ranoga, Simbo, Kolobangara [other islands in the western Solomons] and those places—true, people there have plenty of coconut trees, but they don't have anything like our lagoon! Nothing but open sea and a few reefs along the coasts of those islands. Here in Marovo, people can live well even if they don't own a single coconut tree—they can get money from shells and fish and other things in the sea. In Marovo, you know, we haven't cut down all our bush to plant coconuts, because we don't need that many coconut trees. So—we have good gardens full of food, close to our villages, and the sea here is full of fish. We have many things that people in other places don't have—and that is why we don't suffer much when the copra prices go down! (SENIOR MAN OF CHEA VILLAGE, 1986)

This commentary was made in September 1986, at a time when copra prices had reached disastrously low levels, and stories were coming in from other islands that people could no longer afford to buy even soap. The remarks summarize some key elements of what Marovo people feel constitute the “differentness” of Marovo life from that elsewhere in Solomon Islands, an abundance and diversity of resources or “good things” in the environment that provide ample opportunities for diversified subsistence and cash production, independence from the unreliable copra market, and a general “good life” derived from the high productivity of both gardens and fishing grounds. In short, what is expressed locally is that the uniqueness of the Marovo environment, embodied by the vast lagoon and its fringing coasts, makes for a similar uniqueness in Marovo lifestyle (*kino*). This chapter and the next focus in detail on how the people of Marovo engage with these environments and derive all manner of material and cultural sustenance from them.

### **The Role of the Sea**

In Marovo, sea cannot, overall, be considered entirely separate from land. Land and sea in Marovo are two sides of a symmetrical scheme,

between which there is a steady traffic of material produce and of more symbolic exchange. Marovo *puava* generally consist of both marine and terrestrial territorial components, in various combinations. A Marovo person does not usually hold specific fishing rights or entitlements associated with the sea. Rather, each one holds a multitude of rights and claims in a number of *puava*, entitlements that in various ways include privileges in fishing, gardening, and hunting, among other activities. Land and marine tenure are interrelated parts of one overall system of relationships between and among *butu-butu*, although each subsystem has its specific quality.

### *Sea and Land in Oceania: Complementarity and Separateness*

That the traditional reef-and-lagoon fisheries of Oceania are invariably regulated by customary marine tenure may relate partly to the lack of a cognitive dichotomy between land and sea that characterizes the cultures of this region. In Oceania, both types of environment are usually considered subgroups of the same main category. Fishing grounds are often classified in local languages as something akin to “sea land” (compare, eg, Lingenfelter 1975 for Yap; Akimichi 1978 for Lau, Solomon Islands). This pattern contrasts strikingly with that found in many other regions, where land and sea are cognitively dichotomized and where the use of the two main types of environment is guided by widely different management ideologies or “paradigms,” often “regulated land” versus “unregulated sea.”

Further comparative illustrations may be gleaned from traditional Hawaiian society (Meller and Horwitz 1987) and from many other parts of Polynesia, where land and sea and their resources are classificatory subcategories encompassed by basically similar management mechanisms (Sahlins 1958). Corresponding customary systems of territorially based rights to productive resources imply that the people of a defined area had access to a variety of environments offering most or virtually all important resource types. Each defined group territory, or corporate estate, included zones of both land and sea, usually as a wedge-shaped territory (in Hawai'i termed *ahupua'a*) extending from the central mountain core of the islands through the coastal lowlands into the sea, and outward at least a couple of kilometers from the beach (Sahlins 1958, 14). Main districts as well as sub-districts were divided according to such criteria, following a pattern of “overlapping stewardship” (Sahlins 1958). Each single territorial division thus defined contained hunting areas, forest, dry garden land and irrigated agricultural zones, swamp, beach, reefs, and, often, open-sea fishing grounds. Such tenure systems, building on the principle of access to all important resource zones, have also been documented for Fiji (the *vanua* system, see Thompson 1949; Ravuvu 1983) and from Yap (the *tabinau* system, see Lingenfelter 1975), among

other places. All these cases of integrated land-and-sea “estates” correspond quite closely to the example of the Marovo *puava*. In Marovo, the absence of a sea-land dichotomy, as represented in the *puava* concept, has a parallel in the absence of disengagement between people and environment, to the extent that this relationship is characterized rather by mutualism (see Ingold 1992). This has fundamental implications for daily human practice in using the environment, in a context where a proper meal must include the fruits of both land and sea.

Although the practical domains of sea and land use are complementary, each also has its very special character. For example, the highly mobile and free-ranging character of maritime practice is quite different from the fairly stationary cultivation of garden sites in a rotationally shifting pattern, and even from hunting in the forest, where mobility is limited by the steep and rugged topography and often dense and tangled undergrowth. At sea, long distances can be covered during a day of fishing, especially today with the increasing use of outboard motors. The spatial openness and outward orientation of maritime practice is regarded as a positive quality, and often commented on, by Marovo fishermen, many of whom—especially among the Seventh-Day Adventist coastal people—dislike the damp darkness of the forest, an environment that may not be particularly familiar to them. On the other hand, many women dislike being on the open sea and may often express feelings of insecurity and discomfort during long journeys at sea. Women's maritime practice is characterized by proximity to land, taking place among coastal mangroves, in the inner parts of the lagoon, and on shallow reefs around lagoon islands and on both sides of the barrier islands. This pattern follows the cultural division of “male” and “female” labor and the spatial distribution of these different categories of work.

The wide-ranging spatial mobility of maritime practice, not least men's intensive fishing trips, also implies that the potential and actual frequency of boundary-crossing by individuals or groups is much higher at sea than on land. The most intensely active contemporary intergroup politics of Marovo unfold in the field of marine tenure. In negotiations and conflicts about access to and use of fishing grounds, pearlshell beds, and other reefs, representatives of different *butubutu* (and increasingly, nonlocal parties) meet, interact, and establish, maintain, and transform social relations. People relate in various ways *through* their engagements with the sea and its guardians. Close and continuous observation of the contemporary processes of Marovo politics reveals that the sea—the marine environment and its endowments—is the major political *focus* and *locus*. A strong historical continuity links the largely sea-focused political mobilization of today and the roles played by the sea for past generations as a meeting-place

where sides meet sides and where Marovo people meet “other people.” Likewise, the continuing flux of social relationships and entitlements through processes of complex categorization (chapter 4; compare Lakoff 1987) on the fishing grounds highlights the pivotal role of maritime practice in the larger constitutive processes of what the polysemous concept of “Marovo” is all about.

Continuing from the ethnographic approaches to “maritime Melanesia” outlined in chapter 1, in this chapter and the next I consider people–sea relationships on the levels of general environmental knowledge, fishing and other productive activities, and cultural meanings as embedded especially in iconographical information provided by the seascape. Although this material is presented and analyzed in two specific chapters, my overall aim is to mirror the holistic, integrative views held in Marovo of the relationships between people and environment. A physical precondition for all these levels of relationships is the movement of people in the marine environment, and I begin with a detailed exposition of New Georgian maritime travel and associated domains of knowledge and technology. The following sections also contribute to the rather meager ethnographic corpus on Melanesian seafaring.<sup>1</sup>

### Seafaring and Interisland Relations in the New Georgia Group

The New Georgia Group consists of a fairly compact cluster of high, volcanic islands, arranged like stepping-stones on a northwest to southeast axis. Historically, the minor expanses of open sea between most of the islands have linked, rather than separated, the inhabitants of the different parts of the archipelago. The maritime technology of these people has had, and retains, a more-than-sufficient grasp of the seasonal forces of erratic northwesterly monsoons and persistent southeasterly trade winds. The people of the New Georgia Group were and remain frequent interisland travelers, whether in the large, paddle-propelled, ornamented plank canoes of former times or in today’s brightly painted dugout or fiberglass canoes powered by outboard motors. Further, most travel between the villages of each island (and sometimes even trips to gardens) is carried out with a variety of large and small canoes, and inshore and open-sea fishing is a cornerstone of the daily life of most villagers.

Writings by early European visitors to the New Georgia Group, whether traders, travelers, colonists, missionaries, or the lone ethnographers A M Hocart and W H R Rivers, all underlined the importance of maritime travel within and beyond the New Georgia archipelago.<sup>2</sup> Early observers were alternately fascinated by the superior maritime technology represented by the New Georgia war canoes and

horrified by the far-ranging headhunting expeditions carried out in such canoes by the coastal dwellers of most of these islands. The frequent raids in the mid-to-late nineteenth century, accelerated by the supply of European steel axes and firearms (McKinnon 1975), were part of complex regional systems of warfare, trade, and politics that involved the people of the New Georgia Group in networks ranging far beyond the archipelago to other parts of the Solomon Islands and entailing extensive, continuous spatial mobility. The people of the Roviana and Marovo Lagoons and of Simbo, Vella Lavella, Rendova, and other islands of the group went raiding and trading within the group, and also farther afield, across the ocean to Isabel, Choiseul, the Russell Islands, Savo, Guadalcanal, and more remote destinations (Findlay 1877, 773).

Partly on the basis of such histories, the people of contemporary New Georgia retain kinship links within and beyond the archipelago. On a more immediate, practical level, economic links between the various parts of the New Georgia Group remain strong today because the fragmented nature of the archipelago dictates that infrastructural facilities like district centers and markets for copra and other cash crops are few and dispersed. Similarly, other facilities such as hospitals and airfields are dispersed, with rarely more than one of them per island, and some islands having none. A high level of mobility across the sea characterizes life in the New Georgia islands now as before. The steep, rugged, volcanic topography of the islands largely inhibits ground transport, and air travel, although fairly well developed, is prohibitively expensive. Maritime travel remains all important throughout the New Georgia Group.

#### *Patterns of Maritime Travel*

Marovo people rely heavily on the sea for virtually all purposes of transport and communication. No land paths at all connect most lagoon villages, separated as they are by extensive mangrove swamps. The weather coast areas are an exception; there, the exposure of the seashore to surf and heavy swells severely inhibits canoe launching and travel, and a lack of mangrove swamps allows intervillage travel along coastal footpaths. Maritime travel around Marovo, as elsewhere in the Solomons, has a definite peak period from late November to late January, corresponding with the high level of intervillage and interisland visiting associated with the Christmas and New Year celebrations. Most wage-laborers resident in Honiara and Gizo return to their home village by early December for a month or more of annual holiday, and many weddings are arranged during this period in order to maximize attendance. These activities further increase intercommunity and interisland travel, in which many Methodists of Marovo

go to the Methodist-dominated Roviana, Vonavona, and Gizo areas of western New Georgia, and many Seventh-Day Adventists go to their counterparts in Viru Harbour and farther afield to Ranoga, Vella Lavella, and Kolobangara. Interestingly, this peak period of contemporary travel by Marovo people coincides with the most intensive period of interisland raiding and headhunting of precolonial times. The November–December period is generally the calmest time of the year, more or less in the interval between the *hecha* tradewind and *mohu* monsoon seasons. Then raids to faraway destinations could be most easily executed in the large, single-hulled and paddle-propelled war canoes, without the risk of sudden squalls or strong headwinds. The weather conditions that in former times facilitated headhunting raids now give opportunities for extensive long-distance travel by heavily laden dugout canoes powered by outboard motors. Sometimes, almost entire village populations travel together in a number of canoes to weddings and other celebrations in locations up to two hundred kilometers away. For example, among the largely endogamous Seventh-Day Adventists of Western Province, large-scale mutual visiting in connection with weddings takes place yearly between places as distant as Marovo and Ranoga to the far west.

The more mundane maritime travel that takes place outside this peak period also has definite patterns. The southeasterly tradewinds of the April–October period, blowing most continuously during the middle months of the season, tend to limit long-distance travel and may for weeks on end virtually prohibit sea access to villages on the weather coasts. Most fishing of this season is focused on fishermen’s “home reefs,” the barrier reef areas directly adjacent to their mainland villages, with only short distances between fishing sites. During the “wet” season of more erratic northwesterly monsoons, however, travel—for fishing or visiting—is longer in range, because of the many intermittent spells of fine, calm weather, and because pelagic fish, not least the much-prized skipjack tuna (*makasi*), appear in abundant, predictable schools off the barrier reef, and, for some species, in the lagoon. From November to March, an emphasis on highly mobile trolling techniques encourages fishers to range beyond their home reefs, seeking whatever permission may be required according to kin connections and territorial privileges. Petrol consumption rises considerably, and many canoes can be seen out on the open sea.

In addition to these seasonal patterns, Marovo people’s maritime travels are influenced by a number of monthly, weekly, and daily cycles. Fishing is guided by sophisticated local knowledge of patterns in fish behavior, and fishing activities have definite peaks around new and full moons. The weekly round of activities in all Marovo villages is strongly influenced by church obligations, in particular by the days

of worship and rest. The Seventh-Day Adventists have their most intensive day of fishing on Fridays, obtaining food for the Sabbath, and the early and late hours of the Sabbath itself are characterized by much formal intervillage travel by church functionaries and song groups. A similar pattern applies to the villages of the United and Christian Fellowship Churches, for Saturdays and Sundays. Finally, daily patterns of maritime activities for most villagers are influenced by a general desire to be back home by nightfall. This desire arises not only from fear of spirits that may be abroad in the dark, but as often from the practical consideration that navigating a pitch-dark lagoon may be hazardous. Innumerable shallow reefs pose dangers to outboard motors, particularly during the monsoon season when tides are low at night, and floating debris is a hazard throughout the year. Further, it is nowadays increasingly commented that after dusk, especially when there is no moonlight, there are far too many fast, motorized canoes hurrying home across the lagoon for people in small black paddling canoes to be safe!

#### *Freedom of Maritime Movement*

Customary marine tenure defines the lagoon and barrier reef areas into territories subject to many levels of socially privileged exclusive access. However, local and nonlocal small craft (as well as interisland passenger ships) may pass freely through any part of Marovo, including the passages through the barrier islands and the open sea beyond, as long as intensive fishing is not attempted. The concept of free canoe movement throughout Marovo and New Georgia is sometimes emphasized as a much-appreciated basic right enjoyed by all residents; in political terms it is antithesis to the limitations on intervillage travel and long-term visiting imposed by the British colonial government as one means of enforcing the detested “head tax” system. The only major exception to the principle of free maritime passage applies to foreign yachts, which regularly pass through the lagoon to enjoy the scenery and to buy wood carvings and other handicrafts from villagers. Several of Marovo’s *butubutu* regularly refuse to allow yachts to anchor in their section of the lagoon or to cruise among the outer barrier islands, referring to past experiences where yacht crews have disturbed traditionally sacred reef areas, dived for rare and precious shells, or otherwise shown disrespect to the customary holders of islands, reefs, and sea. Further, despite more than seventy years of strong influence from Protestant Christianity, beliefs in the powers of local malevolent spirits remain firm among many Marovo villagers, who are frequently reluctant to travel through stretches of sea or reef traditionally known to be particularly dangerous to alien voyagers.

In manners analogous to past and present links throughout and

beyond the New Georgia Group, the maintenance of a wide variety of social relations through active participation in interpersonal and intergroup networks is seen as vitally important by Marovo people at most stages in life. This emphasis is not just for the sake of socializing in itself, but also for the importance attached to the proper maintenance of reciprocal obligations entailed by kin ties in supporting claims to and rights in garden lands and fishing grounds beyond each person's home *butubutu*. Accordingly, *ene butubutu* (kindred travel—intervillage trips to visit and spend time with relatives) is a feature of daily life throughout the Marovo area. Of necessity, such travel takes place by canoe (except on weather coasts).

Because the Solomons is one of the relatively few Pacific archipelagoes where village people still build most of their canoes from the woods of their forests, and because little information has been published on the evolution and contemporary manufacture of such craft, a detailed account of this field of maritime technology in Marovo follows.

### Canoes of Marovo: From Sewn Planks to Molded Fiberglass

The canoes of New Georgia are built, as in the rest of the Solomon Islands, on the Malay model, with high prow and stern post. Nothing can exceed the beauty of their lines, and carefulness of build—considering the means at disposal—or their swiftness when properly propelled. They are a most astonishing revelation of scientific art in a people little removed from complete savagery. LIEUTENANT B T SOMERVILLE, "ETHNOGRAPHIC NOTES . . .," 369

Like other early observers, many of whom are quoted in a paper by Woodford (1909), Lieutenant Somerville was struck and much impressed by the New Georgians' advanced canoe-building skills. His remarks clearly apply to the *magoru*, more commonly known in the literature by its Roviana language name *tomoko*, the large ornamented plank canoe of six to seven fathoms' length (11–13 m) and holding some twenty to thirty men, outriggerless and propelled exclusively by paddling, and built and used for interisland raiding and warfare.<sup>3</sup> This canoe type, once built throughout the New Georgia islands and representing the utmost level of achievement in maritime technology, neolithic or otherwise, today survives only in the form of a few scattered specimens in metropolitan museums.

However, the plank-built war canoe still looms large in the consciousness of New Georgia villagers. In an atmosphere of cultural revival, noteworthy in this region of heavy mission influence, several attempts have been made in recent years to build replicas of war

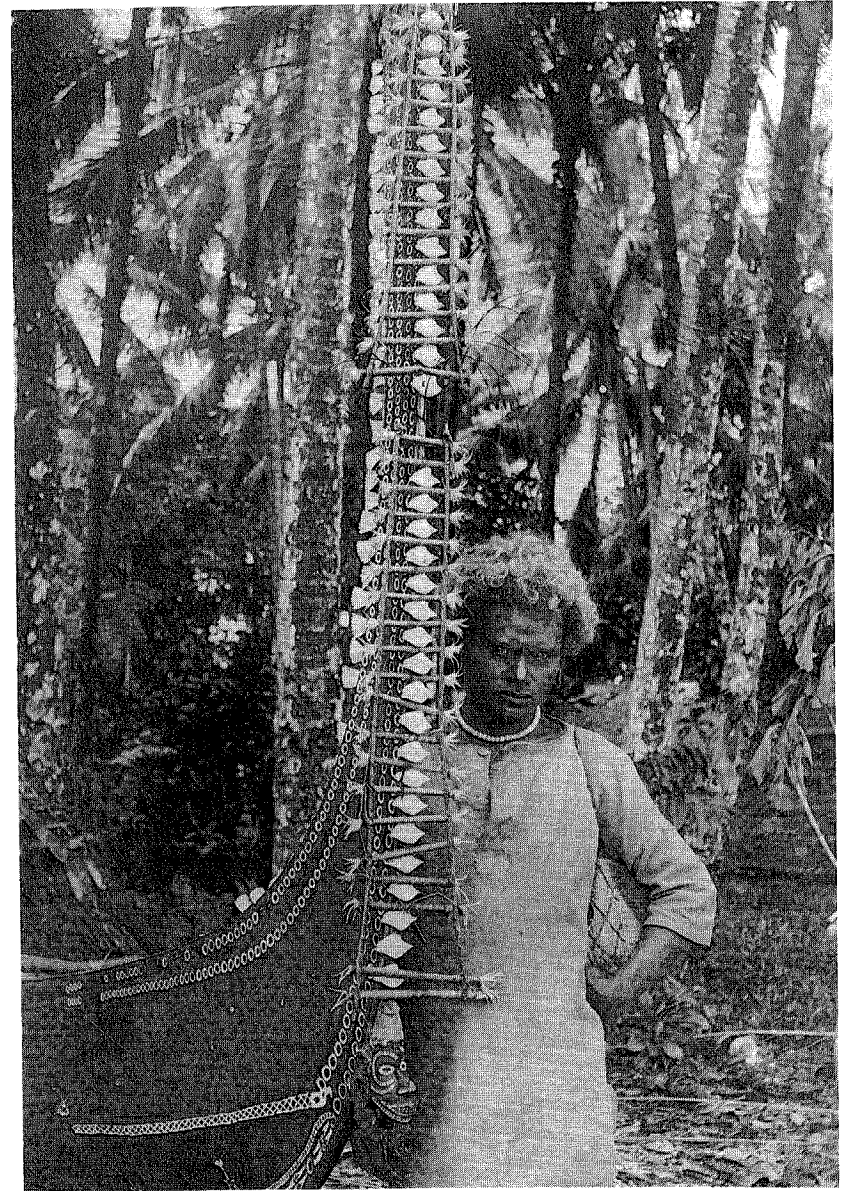


Photo 17 A young man of central Marovo standing by a fully decorated war canoe prow with pearlshell inlay, triangular clamshell ornaments, white cowries, white cockatoo feathers on sticks covered with red twill, and *toto isu* figurehead. Photographed by Lieutenant B T Somerville, c 1893. (*The Royal Anthropological Institute of Great Britain and Ireland, reproduced with permission*)

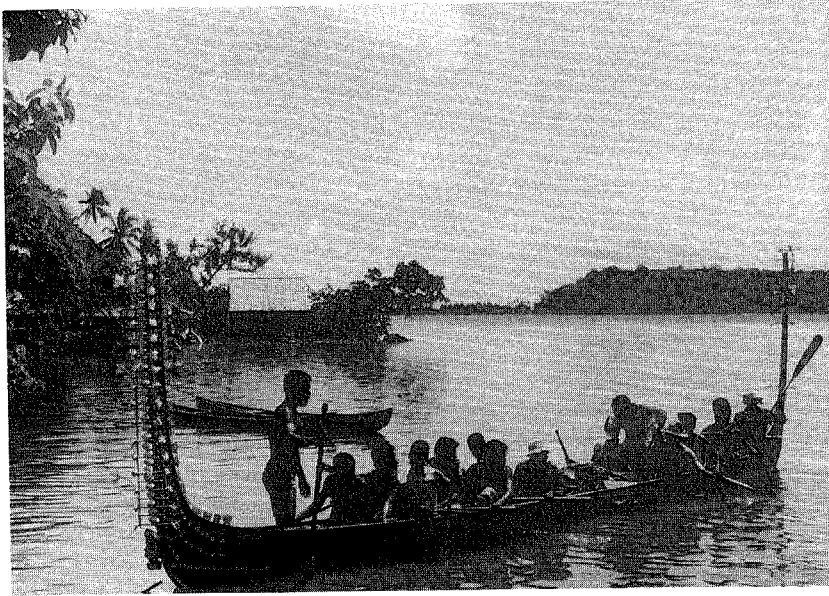


Photo 18 A *magoru* (war canoe) replica of three-quarter size, built under the supervision of Simon Tuni and launched at Chubikopi village in August 1991. Chubikopi, Marovo Island, 1991. (Edward Hviding)

canoes, under the supervision of those few remaining elders who possess the construction skills. Full-sized replicas have been built at Choiseul and Vella Lavella, the former now deposited at the Solomon Islands National Museum, and the latter having been presented at exhibitions in Australia. In Marovo, a three-quarter-scale *magoru* was launched in August 1991 after five years of construction under the guidance of the old master canoe builder Simon Tuni, at Chubikopi village on the old raiders' stronghold and trading center of Marovo Island. The Chubikopi activities were supported by the University of the South Pacific and the Western Province administration, and were defined by these agencies as a "community education project."

To New Georgians of today, the traditional war canoe is an icon of ethnic pride, and the transmission of the skills of war-canoe building has become a powerful symbol of renewed ties with a maritime-based tradition that for seventy years has been suppressed by the steadily more indigenized missions, ostensibly because of its violent and "heathen" aspects. A related source of powerful symbolism today is the war canoe prow ornament called *toto isu* (more commonly known by its Roviana name *nguzunguzu*). These small anthropomorphic images (often with dog-like features) were carved from light wood, stained black, and elaborately inlaid with nautilus shell. They are depicted as



Photo 19 A *toto isu* canoe prow ornament from Marovo Island. Replica made in 1989 from a nineteenth-century original in the possession of Chief Kata R Ragoso, by Basia Dioni of Chea village. (University of Bergen)

holding either a human head (for success in headhunting) or a bird (for navigational aid) in the hands. A *toto isu* was lashed to the bow of every departing New Georgian war canoe to ensure safe passage and success in warfare; its wide open, staring eyes were supposed to ward off any troublesome maritime spirits. Small and large *toto isu* are now made by village carvers from ebony and other exclusive woods for sale to tourists. Like the Western Solomons war canoe, the *toto isu* (or *nguzunguzu*) has become something of a national symbol for Solomon Islands. The war canoe is featured in the national coat-of-arms, and *toto isu* images are found on the one-dollar coin as well as in commercial logos (including those of the national airline and the telecommunications company).

After the end of interisland raiding and headhunting around the turn of the century, New Georgia war canoes rapidly fell into disuse. Some of the last remaining ones were apparently confiscated by the colonial government and ended up in museums,<sup>4</sup> and others ended their days as vehicles of mundane transport. Some ended up as early Methodist missionaries' preferred means of lagoon travel well into the 1920s. From then on, for a while, both the Seventh-Day Adventist and Methodist missions encouraged the building of replica war canoes for use in intervillage canoe races and on festive occasions. Increasingly, however, these were simply large dugouts fitted with tall ornamented prows.

The term *mola*, formerly denoting smaller plank canoes for everyday use, as distinct from the *magoru*, was gradually transformed to its present meaning as a generic term for, simply, "canoe"—nowadays even including fiberglass ones. Dugout canoes do not appear to have

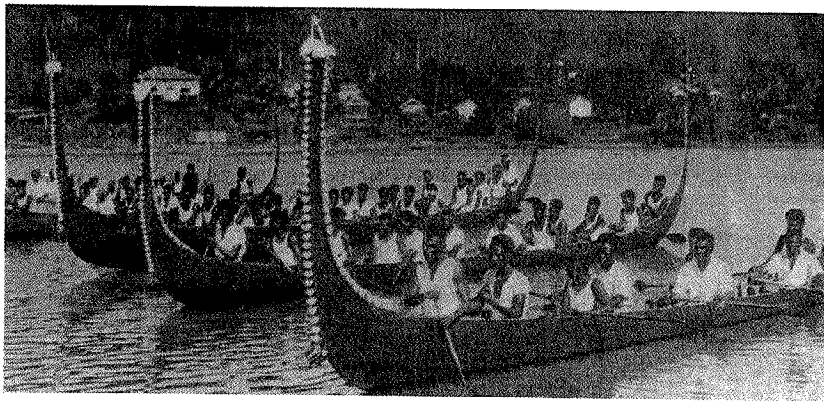


Photo 20 War canoe replicas (dugouts) lined up for racing at a Seventh-Day Adventist celebration. Batuna, east Marovo, late 1930s. (From an old SDA magazine, courtesy of Harold Jimuru)

been part of maritime technology prior to regular contact with Europeans, owing to both the nonavailability of steel tools and the emphasis given to functional design and seaworthiness. However, the traveler Eugen Paravicini reported from his visit to Marovo in the mid-1920s that dugout canoes, then as now termed *chore*, were well established and used more and more commonly for inshore fishing, while the plank-built *mola*, still distinctly named, was used for open-sea travel (Paravicini 1931, 178). Further, Waterhouse's Roviana dictionary (1928), based on fieldwork before 1920, indicates that dugouts (Roviana: *hore*) were common and already then increasingly replacing plank-built *mola*. Referring to the years prior to and immediately after World War II, British District Officer Tom Russell reported that "[t]he *mola* is fast disappearing due to the superiority of technology required in its manufacture and the continual maintenance which is necessary to keep it in seaworthy condition. . . . The dug-out is by far the most popular craft. . . . The war-canoe . . . has all but disappeared from Marovo" (Russell 1948, 312–313).

In 1984–85, the Solomon Islands Statistics Office conducted a survey of "village resources" in, among other areas, Marovo (SIG 1985). The survey showed that, among 985 Marovo households in a total of 93 settlements (of which 56 were proper "villages" with five households or more), there were 1496 canoes. Allowing for some underreporting (almost certain because of the continuous daily use of canoes away from home), and based on a total population estimate calculated from the subsequent 1986 census, there was, roughly speaking, one canoe for every four persons, or nearly two canoes per household.

The survey figures give no breakdown as to type of canoe, but judging from my own quantitative material from representative villages, it can be assumed that around 20 percent of the canoes (at least 300) are large ones of the so-called dinghy type, mostly intended for use with an outboard motor. Most such craft are dugout canoes at least 3.5 to 4 fathoms long (6.4 to 7.3 m) with a squared-off, reinforced stern, and termed *mola gete* (large canoe), *chore gete* (large dugout), or *digi* (from English *dinghy*). Normal-size wooden *digi* carry up to five or six adults, whereas the very largest ones may total 9 fathoms in length (16.5 m) and carry more than twenty adults. Further, judging from quantitative material and subjective impressions, around 10 percent of these *digi* are fiberglass canoes. Some Honiara manufacturers produce several models of such canoes, from 18 to 23 feet long (5.5 to 7 m) and carrying no more than six adults. These typically cost the equivalent of at least two years' unskilled urban worker's wages (around s\$3000, or us\$1000), a substantial investment that usually derives from a civil servant's or urban businessman's obligations to



his village, from a *butubutu's* joint income in terms of baitfishing royalties from the tuna-fishing industry, or from the pooling by a number of villagers of combined savings from the sale of wood carvings, cash crops, or marine shells. In Marovo language, fiberglass canoes are generally referred to by nonindigenous terms, either the directly derived *digi*, or the slightly more adapted term *faeba*, from *fiberglass*. Apart from these nationally manufactured "dinghies," only a very small number of nonlocal craft are found in Marovo, most of them owned by the missions or the small tourist resort in the central lagoon.

The overwhelming portion of canoes in Marovo villages, among them an estimate (based on the 1985 statistics) of at least 1250 paddle craft ranging in size from one to four fathoms (1.8 to 7.3 m) and carrying from one child to six or seven adults are, therefore, locally manufactured dugout canoes. The Marovo term for dugout canoe is *chore*, referring literally to the act of digging out. Almost without exception, these craft are made from the trunk of the *goliti* hardwood tree (*Gmelina moluccana*), used throughout the high islands of Melanesia for canoes and known widely in the Solomons by its Kwara'ae (Malaïta) name *arakoko*. *Goliti* trees grow in lowland disturbed rainforest and are often left standing when these forest areas are cleared for gardens. Such trees are closely guarded possessions, increasingly so nowadays, and each known tree is generally claimed by an individual or a family and left untouched until its owner(s) decide that it is time to use it. Individual trees are usually inherited, often from father to son, and may also be transferred to persons beyond immediate family through purchase or gift or in return for services rendered. Individual *goliti* trees are important items in the continuous reciprocity that underpins bush people's use rights in the fishing grounds of coastal people, who often have little or no tall forest of their own.

When a decision has been made to build a canoe, a suitable tree is felled and the construction of the canoe is begun on the spot, usually in the forest above the garden land. If the tree is particularly large, two canoes may be made simultaneously, with several builders cooperating. Working quickly with axe and heavy adze the builder hollows out the trunk and shapes the outside of the hull. At a certain stage of completion, the roughly shaped hull is then pulled down through the forest and gardens to the nearest seashore. This is a heavy task and a full-day affair that involves the mobilization of a group of male relatives and fellow villagers and a subsequent feast held by the eventual owner or builder-owner of the canoe.

At the seashore, the builder uses smaller adzes to carve the inside and outside of the hull, to make the canoe as thin and light as possible. The canoe is then paddled home to the village of the owner, and

final tests are carried out to see if it floats properly aligned on the water. On larger canoes, or if the hull has been made exceptionally thin, ribs and knees are fashioned from mangrove wood and lashed to protruding points left on the interior sides of the canoe. All cracks and minor faults in the completed hull are then carefully caulked with a putty obtained by grating the nuts of the *tita* tree, and the canoe is left on the shore for a week or two, sheltered from the sun by coconut leaves, to allow the caulking to dry. The building process may take from one week to several months, depending on the intensity of work. Sometimes, a chainsaw is used for the initial rough shaping of the *goliti* log, minimizing the time spent on the initial stages of the work.

Dugouts are manufactured in every Marovo village, most often by the men of a household in need of a new canoe. The same applies to paddles, usually made from the plank buttress roots of forest trees such as *vasara*. There are also a number of specialized canoe-builders around Marovo, who spend much of their time on the manufacture of dugouts and paddles of various sizes. These craftsmen often work according to individual orders where time of completion and conditions of payment have been agreed. Or, a craftsman may simply build one or several canoes according to his own preference and to the availability of trees, then sell the finished product locally to whoever is willing to pay the price. As of 1992 the prices asked for new dugout canoes typically followed a norm of s1\$40–\$60 per fathom hull length, large craft costing relatively more than small. For example, a small paddling canoe might cost around \$80, while a medium-sized *digi* of 4 to 5 fathoms can rarely be obtained for less than \$400–\$500.

Canoes of all types, whether owned individually, by a family, or by a wider group, are frequently borrowed by people in need of a larger craft for a single trip. When canoes are borrowed for fishing, it is considered proper to provide a small share of the catch to the owner, or even, in the case of fishing that leads to marketing of the catch, to pay the owner a dollar or two. When canoes are borrowed for nonfishing purposes, a nominal fee may be paid in cash or in kind, or, more commonly, the act of borrowing is simply regarded as an element of ongoing reciprocity in relations of kinship or friendship. Within the highly capital-intensive realm of motorized travel—of fiberglass canoes, outboard motors, and petrol—economic practice and symbolic relations take on a sharper character. The prestige unit of modern maritime technology in the Solomons consists of a fiberglass canoe and a powerful outboard engine. Such a unit represents a capital investment exceeding s1\$7000 and involves running expenses of more than \$5 per gallon of petrol.<sup>5</sup> A typical full-day fishing or visiting trip costs at least \$25 in petrol alone.



Photo 21 Pulling a roughly shaped dugout canoe down from the forest building site through garden swiddens and out to the sea. Podokana hills, southeast New Georgia, 1986. (Edvard Hviding)



Photo 22 Completing two small dugout canoes at the village shore. Chea, Marovo Island, 1986. (Edvard Hviding)

When used by people other than the owner(s), motorized canoes are not borrowed, but rented. Little money may be charged for a wooden dinghy, but for a fiberglass canoe the fee may be \$5 per day, in addition to the normal daily fee of at least \$5 for the engine. Much more is charged in the slowly increasing number of instances when tourists charter a motorized canoe (with pilot or guide) on a single-day basis. Clearly, a notion of return on heavy cash investments runs strongly among present-day canoe-and-engine owners, although this may be more relaxed in circumstances where the engine, the canoe, or both are communally owned. In several recent instances, a village community has decided, through its traditional council of elders and other influential persons, to purchase an engine as the joint property of the community, available for a nominal fee (to cover maintenance costs) to all villagers.

The large motorized dugout canoes of today bear parallels to the old war canoes, not least in their role as markers of local identity in regional contexts. Motorized canoes dominate group travel, their size makes them suitable for open-sea and interisland journeys, and, since there are few such craft in each village, the largest or most seaworthy of them is often identified with the community as such. Most large motorized canoes of Marovo are individually named and well known throughout the area, as were the *magoru* war canoes, which often bore

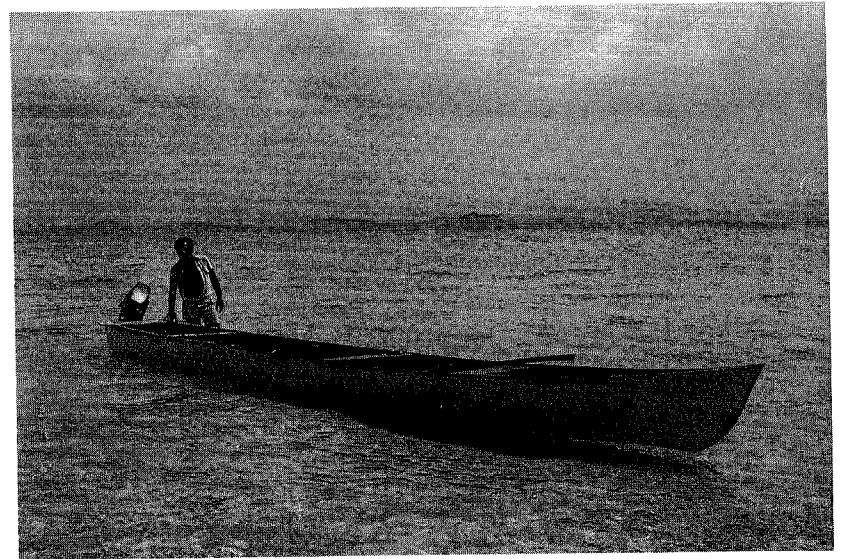


Photo 23 Modern dugout canoe with 15 horsepower Yamaha outboard motor, on the inner shallows of the Marovo barrier reef, 1987. (Edvard Hviding)

strongly assertive names referring to heroism, invincibility, speed, or seaworthiness. Today, when a motorized dinghy passes by or approaches, people watching it from a distance generally speak of it as “the people of village so-and-so,” referring to the canoe as representing that specific community. In a nonlocal context, regional identity is also signaled by the style and shape of the large dugouts. Often, when such craft travel beyond their home island to other parts of the New Georgia Group, their place of origin is readily identified by characteristics of build, colors, and the like. For example, the weather coast people of Gatokae and Rendova are known for the very large, high and heavy hulls of their ocean-going canoes, whereas the people of the Roviana and Vonavona Lagoons west of Marovo are known for their brightly painted canoes, whose light and sleek hulls are built up with twin planks running the entire length of the canoe and forming a gunwale.

The increasingly numerous fiberglass canoes do not often display such singular markers of local identity, or even individual names. And, being considerably smaller than the largest dugouts, they do not play such an important role in interisland group travel. Having superior stability and sheltered cargo stowage, but limited passenger capacity, fiberglass canoes are primarily working tools for intensive and heavy fishing (such as open-sea tuna trolling or shark fishing) and for fast ocean travel with only a few persons. Local-level government officers have such canoes at their disposal for touring the villages of their area. Like their dugout counterparts, however, fiberglass canoes are inextricably coupled with that main prestige object of recent times—the large, 15–25 horsepower outboard engine, invariably of the latest Japanese “Heavy Duty” model. Marovo people strongly prefer Yamaha and Tohatsu, and lately also Suzuki, engines, and consider non-Japanese products such as Johnson, Evinrude, and Mercury inferior, unreliable, and “weak.”<sup>6</sup> Like the old war canoes, the fiberglass canoes and engines are definite objects of prestige in their own right, because the expense of buying one places them beyond the reach of most villagers.

Large motorized canoes are frequently handled by their pilots with tough, determined, and often “macho”-like attitudes,<sup>7</sup> generating concern among people who paddle small canoes on the lagoon after dark. A number of collisions in recent years (though, surprisingly, none with a fatal outcome) have prompted many owners of motorized canoes to paint the gunwales and upper sides of their craft white or in other light colors, “so that those who paddle can see us approaching and get out of the way,” as some of them say. A historical parallel to such brusque ways of acknowledging weaker parties’ vulnerability to and fear of onrushing danger can be drawn to the very

high, ornamented prows of the New Georgia war canoes, whereby the approaching war party could be identified as the prow appeared on the horizon. The high prows are nowadays said (somewhat jokingly) to have functioned as an announcement of impending doom to the unfortunate shore dwellers of other islands. It was held that, with assistance obtained from formidable war spirits and a warriors’ oracle (*ligomo*), the New Georgia headhunters would always be able to find their victims, even those who did their best to hide from the approaching raiding party.

### Coping with the Sea: Safety, Navigation, and Canoe Handling

Though often seeming like a benign and beautiful environment, the seas of Marovo are regarded with respect by those who live from and travel on them. However, given the scale and multitude of maritime activities carried out daily around Marovo and the number of people involved in them, the marine environment can by no means be considered a particularly dangerous world, and seafarers, young and old, are generally confident in handling most types of trouble.

Aspects of the environment that are perceived as hazardous to seafarers, weather forces in particular, are not generally regarded as even potentially fatal. Of the deaths at sea that were recalled, most were caused by shark attacks during underwater spearfishing. Fewer than five such fatal accidents have occurred since the 1960s, and, considering the abundance of sharks (*kiso*) in Marovo and the number of people diving every day, this cannot be said to represent a great level of danger. Much more of a danger than sharks have ever been was Marovo’s population of estuarine crocodiles (*vua*). Until their decimation through hunting, these fearsome creatures (now nearly extinct in most parts of Marovo) had for centuries killed and eaten people quite regularly, in mangroves, lagoon, and at the barrier islands.<sup>8</sup>

Among other dangers of seafaring, two instances are recalled, one of them recent, where lone paddlers on the lagoon were struck and killed by lightning. In a few other cases, people have simply disappeared when fishing on their own, their bodies never found. These incidents have most often been attributed to shark attack, or alternatively to suicide, which is a most uncommon occurrence in Marovo.

Drowning without additional causes does not feature in the Marovo repertoire of fatal accidents at sea. It is taken for granted that everybody, including all children but the very smallest, is an able swimmer; only one recent instance is remembered where the capsizing of a canoe resulted in anyone’s drowning (the victim was, characteristically, “a man from elsewhere,” and a shark attack was thought

likely). Falling into the sea is not in itself considered a particularly dangerous mishap by Marovo people, who commonly jump into the lagoon waters to warm up when rain and wind make a fishing trip a cold experience. The only safety rule pertaining to swimming is that no one should swim in the deep, open sea; nor should people swim or dive in the deeper waters of the lagoon without having a canoe close by. Both these rules serve to minimize the risk of shark attack, because the sharks of the open ocean are considered "wild," aggressive, and of another type altogether than the generally predictable lagoon and reef sharks (to which, moreover, many of Marovo's coastal people stand in totemic relationships). However, even lagoon and reef sharks may on occasion become daring and aggressive if a person is seen by them to be alone without a canoe to escape into. Most types of shark are not regarded as much of a danger as long as they are met in a context where their behavior can be predicted; their unpredictability, in the circumstances mentioned here, poses the danger.

Contrary to many popular stereotypes about "calm, quiet lagoons," the Marovo Lagoon is nothing of the sort. Its wide expanse of inshore waters is more often than not disturbed by choppy waves, sharp and foaming and very closely spaced. Marovo seafarers comment on the striking difference between the "angry" lagoon waves and the much taller but much more gentle ocean swells, saying that the lagoon waves are confined by the barrier reefs and therefore have no room to stretch out. Every now and then a large or small canoe capsizes during the frequent squalls of the monsoon season, even inside the lagoon, and particularly when hit simultaneously by big waves and strong undertows. The large open spaces of the central and eastern lagoon, as well as the deep passages into the open sea, are especially dreaded during such conditions. In and around passages through the barrier reef and along the outer reef edges, colliding currents and whirlpools sometimes create dangerous conditions, and the open weather coast areas are sometimes avoided altogether by canoe travelers, except for experienced men from the weather coast villages themselves. However, even such expert seafarers may experience the capsizing of a canoe. Because such mishaps may lead to the loss of cargo, of a valuable canoe, and of an exceedingly valuable outboard motor, most seafarers do their utmost to maximize safety and avoid potentially dangerous seas.

In practical navigation, maximizing safety means using one's knowledge of waves, currents, and other environmental forces to obtain as smooth a passage as possible. It also means knowing how to use a repertoire of practical magic directed toward specific phenomena such as dangerous waves, oncoming squalls and small tornadoes, and thunder and lightning. To the seafarers of Marovo, opportunities

and constraints posed by the maritime environment are perceived also with reference to people's abilities to interfere with the weather. The mark of an expert pilot is invariably said to be that he handles the canoe and engine in a such a manner as to provide not only a safe, but also a comfortable passage. Though never attaining the dignified position and composed behavior described for navigators elsewhere in Oceania (see, eg, Gladwin 1970), expert canoe pilots of present-day Marovo command considerable respect in their own community and beyond. When navigating a large dugout between Marovo and other islands in the New Georgia Group, they are frequently responsible for the safety and well-being of several families including small children, or, for example, of a precious cargo of copra that must be kept dry across long expanses of rough open sea all the way to the buying facility at Noro in Roviana. Knowing the paths (*huana*) of maritime travel entails not only knowledge of sequences of land and sea marks along specific routes, but also knowledge of the predictable and unpredictable challenges posed by the marine environment along the path. An affirmative answer to the query, *Mua huana hoi?* (Is this a path of yours?), which is not infrequently posed under difficult circumstances by passengers, implies possession of any combination of knowledge of mazes of reefs, open-sea navigational markers, patterns of currents and waves, and, in general, what lies ahead.

The use of stars as a navigational aid, well documented from other parts of the Pacific and also from the eastern Solomons (Lewis 1972), was a vital component of the practical skills possessed by travelers of headhunting times. Today this knowledge is only vaguely remembered by a small handful of old Marovo men, none of whom have much firsthand experience of stellar navigation.<sup>9</sup> Certain other techniques for open-sea navigation and land-finding persist among the experienced interisland pilots of present-day Marovo. People of the northern lagoon sometimes travel by motorized canoe across some one hundred kilometers of open sea to Choiseul and, on these occasions, make use of cloud patterns and reflections in the sky, not just to determine the general direction, but also, further assisted by gradually emerging mountain features on the horizon, to reach land at a chosen destination. Such techniques are not least important when returning to Marovo with the intention of reaching one's "home" entrance through the barrier reef. Similarly, people of central Marovo have on a few recent occasions traveled to Isabel, also a distance of at least a hundred kilometers, making use of the same techniques. The weather coast people of Gatokae remain intrepid open-sea travelers, and every now and then large motorized canoes from there go all the way to Honiara, 230 kilometers from Gatokae. These travelers are greatly helped by the uninhabited island of

Borokua, lying like a marker along the route to the Russell Islands group, from which there is but a short open-sea trip across to Guadalcanal. Carrying enough petrol, usually in the form of one 44-gallon drum, and keeping the engine running, are the main concerns of these modern navigators. Navigation and land-finding was more of a challenge for their ancestors, who traveled at lower speed and would sometimes have to spend the night in the middle of the ocean on their way to distant raiding fields and trading partners.

Some experienced Marovo seafarers, especially among the weather coast people, possess detailed knowledge about rhythms and sequences of wave patterns, so that the launching or landing of a canoe can be safely carried out even in a heavy surf by counting waves and exploiting predictable calm intervals between waves and breakers. Additionally, the magic practice known as *va bule* (to calm [the sea]) is not infrequently used by some groups of weather coast people to intervene with the forces of breakers for a brief moment, enough to launch a canoe. In rough-weather travel along outer reefs or weather coasts, it is important to know how to predict currents, swells, and breakers, and to keep well clear of the reef rims and rocky shores. When traveling on the lagoon under adverse conditions, experienced navigators use their knowledge of how islands, islets, and shallow reefs deflect wave patterns and create calmer stretches of sea. A habit of “jumping” from island to island within the lagoon, thereby minimizing exposure to the prevailing southeasterly or northwesterly winds and associated currents, is a common trick of rough-weather lagoon travel, not just in motorized craft, but also in small paddling canoes. When paddling under calm conditions, people also use their knowledge of currents. Men, women, and children are often adept at locating their canoe in the middle of one of several tidal currents that move in pairs along the lagoon parallel to the mainland and barrier reef, thereby not only avoiding countercurrents, but obtaining added speed by moving with the current.

### Knowledge of the Submerged Environment

For the people of Marovo, the marine environment and its inhabitants are not hidden under the surface of the sea. Rather, their knowledge of the submerged environment, the reefs and deep sea, its topography and climatic forces, and of the lives of fishes and other living organisms there, is at least as detailed and astute as their knowledge about rainforest and gardens. The significant difference is that the most interesting and useful organisms of the sea move about a lot and have to be followed and intercepted.

Although submerged in varying depths of water over reef, the envi-

ronments of fishing grounds are widely known, to the point where fishing entails “seeing,” literally or metaphorically, what goes on underneath the surface of the sea. Such vision is promoted not least by the frequency with which Marovo people themselves enter the underwater environment while fishing. Marovo people at work fishing on the barrier reefs engage with fish not simply in the capacity of hunter with prey, but in relationships that are more fundamentally social and characterized by interaction involving, according to the Marovo view, conscious agency and much predictable action from both parties.

### *Is Fish Behavior Chaotic?*

To Marovo people, events in the marine environment are dynamic, but not unpredictable. People’s interaction with the creatures of the sea on which they base their livelihood is certainly not based on what one recent commentator on the pitfalls of modern fisheries management has called “fractal regions of space-time forever obscured from our gaze by an impenetrable, non-linear chaos” (Finlayson 1991, 94). A number of recent critiques of “scientific” fisheries management have referred to currently popular chaos theory (eg, Gleick 1987), which argues that “the dynamics of systems can unfold in non-random but unpredictable fashion” (Smith 1990, 6). They postulate that the cognitive models of fishery resources held by the “users,”—North Atlantic fishermen, in most cases argued—tend to conform to chaos theory, as do fish populations. This model stands opposed to the orthodox linear systemic models perpetuated by most fisheries scientists and managers (Smith 1990; Finlayson 1991; Wilson and Kleban 1992).

Although this debate cannot be furthered here, the point, for Marovo at least, is that according to indigenous views, the fish populations of reef, lagoon, and open sea do not behave chaotically. Rather, they engage in fairly predictable interactions with people, who know which fish will be where at what time. However, these indigenous views do not necessarily conform to orthodox ecosystem models, or to deeper ontological postulates about a nature–culture dichotomy. In line with Keesing’s argument (1970) against early ethnoscience, that labeling and taxonomic classification should be considered not as fundamental constituents of cultural knowledge but as “emergent phenomena to be explained in terms of more fundamental constituents and processes” (Keesing 1987b, 380), the examination of Marovo “ethno-ichthyology” that follows takes a processual rather than a classificatory approach. Marovo people’s relationships with fish and the more fundamental ontological presuppositions underlying people–environment interactions are examined, while tax-

onomy (documented in detail in Hviding 1990b, 1995a) is touched on more briefly.

### *The Evolution and Transmission of "Traditional Knowledge"*

Marovo people's knowledge and understanding of their marine environment constitutes a complex body of knowledge that has evolved through generations and continues to do so. Although it may validly be placed under the currently popular rubric of "traditional ecological knowledge," in this case "traditional" does not imply "static" in any sense. Knowledge is made "traditional" by its firm roots in the past, with a specific origin in indigenous culture and local ecology. Continuity is a cornerstone of any "traditional" system of knowledge. However, flexibility and dynamics together constitute another such cornerstone (see Borofsky 1987). Traditional knowledge tends to be unwritten and based not only on what each generation learns from the elders, but also on what that generation is able to add to the elders' knowledge. For example, it is reasonable to believe that current Marovo knowledge of fish behavior is more extensive than that of thirty years ago, even though a number of old fishing methods have largely fallen into disuse. In recent decades, the increased emphasis on diving with spearguns (using goggles that allow less distorted underwater vision) has permitted encountering, stalking, and observing fish in their own habitat to an extent not feasible before (Johannes [1981, 16] has described a similar development for underwater spearfishing in Palau).

Likewise, formal education of various kinds is now influencing indigenous Marovo notions about the environment. Simple ecological and biological models are taught in schools at different levels, as well as having been communicated at several workshops carried out during 1985–1988 as part of the Marovo Lagoon Resource Management Project, a research-and-education effort initiated by the Marovo Area Council, supported by the provincial and national governments, and involving a number of foreign researchers including myself (see csc 1986; Baines and Hviding 1992, 1993). These "modern" influences do not necessarily make the environmental knowledge of today less "traditional"; rather, they tend to be incorporated into a long-standing ontological and epistemological framework without which they would not be meaningful. Though aspects of past generations' knowledge are inevitably replaced by new items deriving from the present generation's experience, the epistemological core of the system remains intact and concerns knowledge based on observation and experience, made by generations of Marovo people in the Marovo environment. Current Marovo knowledge of the environment retains its firmly indigenous character by being based on both

continuity and flexibility, and the distinction between "traditional" and "modern" or "contemporary" knowledge and practice becomes somewhat arbitrary (see Keesing and Jolly 1992 for a more general remark along these lines for Melanesian "tradition").

The information presented here is not only important in its own right, for demonstrating the scope and level of local understandings of the environment, but it is also vital to the discussion of marine tenure in chapter 7, because knowing where, when, and how to fish is a major basis of the daily decisions made by Marovo villagers regarding their use of different fishing grounds. The level of detail in the knowledge of Marovo's marine environment possessed by today's active fishers (both male and female and including younger persons) is a consequence not least of the persisting importance of subsistence fishing. In Marovo, tinned fish has not yet become as important as in many other Pacific societies. Whoever wants seafood for household use must still go to the fishing grounds and therefore has to know where and when to find fish, shellfish, crustaceans, and turtles. Acquiring such knowledge through joint practice, as is the normal way of transmission of environmental knowledge in Marovo, remains highly meaningful and demonstrative of the validity of knowledge, as long as the resources concerned remain relatively abundant in terms of diversity and stocks.

### **Predicting the Whereabouts of Fish: Encounters in Times and Places**

Marovo fishermen probably eat or otherwise use a greater variety of species of marine animals than 99% of the world's fishermen. Their knowledge of sea animals is therefore very impressive. (JOHANNES AND HVIDING 1987)

This assessment, made by the leading marine biologist R E Johannes in a report based on joint fieldwork with me, gives an idea of the relative scope of the knowledge possessed by Marovo people regarding the marine environment and the living things therein. Virtually no single Marovo fisher is able to possess the "complete tradition" relating to fishing. Various parts of Marovo Lagoon and segments of Marovo people have different orientations in material practice, and every village or *butubutu* includes a number of highly skilled people, each of whom possesses a certain type of fishing expertise. Accordingly, the material presented here is based on information provided by a large number of villagers throughout the area.

Fishing-related knowledge is processually linked with similar knowl-

edge regarding the terrestrial environment, and with knowledge about climate and seasons. The times of certain fish to be fat (*deana*, a much sought-after attribute of food), to be generally abundant, or, most important, to aggregate in a certain spot for spawning or feeding, are marked with reference to moon, tides, and currents, and also to certain visual signs on land, notably flowering, ripening of fruit, shedding of leaves, and other seasonal changes in the vegetation in the rainforest of the mainland or the coastal forest. For example, the seasonal reddening (and shedding) of the leaves of the coastal *talise* tree, roughly coinciding with the premonsoon calms, is an indicator that triggerfish (*makoto*) have fat (and equally red) livers, migrate to certain known locations to spawn, and eagerly go for the crab bait in the *kura* basketwork traps. The main component of Marovo people's fishing-related knowledge concerns patterns of behavior of fish and other marine animals and the prediction of these patterns. Fish are known to behave differently in different places at different times, and combining such types of information is the foundation of successful fishing.<sup>10</sup> Marovo knowledge of fish behavior is based on personal observation of species encountered on the fishing ground, and has been accumulated through generations, each new generation verifying aspects of the previous knowledge through its own experiences and adding to it in the process. Active fishers often comment about certain items of fishing knowledge, saying that "my father told me about this, and I believed him—but I had to see it for myself before I could really trust it. So I went out to the barrier reef and found out, and now I have faith in this."

Whereas much of this knowledge deals with habitual aggregations of important food species, many striking details of more general fish behavior are known, including predatory, symbiotic, and parasitic relationships between different species. Special behavioral characteristics are often embodied in Marovo fish names. Marovo fish taxonomy has a structure that differs considerably from Linnaean or western scientific taxonomy (see Hviding 1995a). For instance, a number of Marovo fish taxa are highly general "lump" categories that cover a considerable number of Linnaean species under one name. The term *kepe* (etymology uncertain) covers, without further specification, all (in western terms) "butterflyfish" and "coralfish," as well as any number of similar small, colorful reef fish with high and flat bodies. On the other hand, one Linnaean species may be subdivided in Marovo into a great number of named subtypes. One example is the skipjack tuna or *makasi*, which in Marovo has more than a dozen specific names that refer to growth stages, colorings, and more. Important food species are often finely subdivided in such a manner, in three-to-four-level taxonomic structures, while insignificant fishes,

such as the small reef species just mentioned, are more commonly "lumped." This does not imply that Marovo fishers do not generally and readily distinguish between similar looking fish species: They have names for at least four hundred Marovo "species," and experienced people can easily single out and identify by name closely related fishes that differ only very subtly in color or general appearance. For example, at least twelve types of medium-sized parrotfish (no generic term in Marovo) are classified and named, as well as more than seventeen "trevallies" (Carangids; *marā*) and at least twenty "groupers" (Serranids; *pajara*). Although there are many cases of correspondence between Marovo and Linnaean taxa, such correspondence is far from general; it is not always possible to equate a Marovo fish name with one specific Linnaean name, or vice versa.

A finely subdivided taxonomy also applies to the spatial context of fish behavior in Marovo. Numerous terms define topographical and other features of the marine environment, from the mangrove areas and shores of the main islands, through the lagoon with its numerous reef types, to the barrier reef. A particularly large and diverse number of terms for topographical features is applied to the barrier reef, where several dozen reef zones, prominent features, and bottom types are defined, relating to different habitats of the marine fauna. This detailed classification reflects the role of the barrier reef as the most intensively used fishing area, where fishers often enter the domain of the fish.

Fish behavior also unfolds in time. In Marovo, each day of the lunar month has a specific name, and predictable fish behavior is pinpointed according to this lunar calendar as well as to seasonal variations in tidal patterns, winds, and currents. Many fishes and other marine and coastal animals form large aggregations in known locations during certain months and moon phases. Within every marine *puava* are several such "prime spots" where highly predictable aggregations of important food species occur. Knowledge of the spatial and temporal parameters pertaining to such spots is often subject to eager attempts at personal acquisition, and may be closely guarded by the people who have found a predictable "prime spot" themselves or have been told about it by their elders. But in general, most sites and times of large and important fish aggregations are truly public knowledge, even beyond the primary members of the *butubutu* controlling the reef area in question. There is little overall secrecy in the domain of fishing-related knowledge, and fishers quite freely exchange information on specific occurrences and their more general patterning. Transmission of fishing knowledge is almost entirely informal. Young people learn by going to the reefs with older people, who will usually give detailed, on-the-spot answers to valid queries from novices.

During fieldwork in 1986–87, I received information from fishermen on the specific sites and timings of predictable aggregations, for spawning or feeding purposes, of forty-five Marovo taxa of food fish. Most of these aggregations occur on a limited number of days around new or full moon at certain times of the year, some fishes having more extended aggregation periods. Predictable aggregations are marked not only with reference to where and on what days of the lunar month they occur, but also more exactly as to time of day and any changes in location throughout the day. Experienced fishers know where a particular highly esteemed food fish will aggregate on a given day, and fishing becomes a predictable affair in which specific species are targeted (see Johannes 1980 on Palau). A spatial fishing pattern of cyclical, throughout-the-month and round-the-year rotation among fishing grounds emerges. Information given by knowledgeable fishers in the village before a fishing trip usually turns out to be a highly accurate description of the conditions encountered on the fishing grounds. Here is an example of a “lecture” given by an old man to a man in his thirties, who did not know much about this particular fish but wanted to “try it out.” (The name of the fishing ground has been changed to avoid unintended disclosure of exact knowledge about this potentially vulnerable fish aggregation.)

You will find big *sina* [a sea-bream, *Lutjanus rivulatus*] coming together in large numbers in Lupa Passage every year in October to December, starting on the night of the full moon and for the three following nights. On the fourth night after the full moon, you will not find many *sina*. There are particularly large numbers on the second and third nights after full moon, taking your bait very eagerly in the dark interval after the sun has set and before the moon rises. Before the moon has come up, you must go to the reef dropoff facing the lagoon on the far side of the channel and set your line there in two to three fathoms of water. When the moon has risen and the moonlight is bright, the *sina* move to the shallow sandy bottom in the middle of the passage, and so must you. They will go on biting until the moon is high. For a short time just before sunrise, they will often start biting again. Use a size 5 or 6 hook and at least 40-pound line, and maybe even a short steel wire leader. *Sina* have sharp teeth. For bait, use any piece of fish, but preferably one with strong skin. And—you know—watch out for the *ghohi* [barracuda] which also stays around in passages at full moon this time of the year. Don’t dangle your bait around at the surface, or else the *ghohi* will come and break your line! Anyway, you don’t have to remember all this about the right time. When you feel the sandflies really eating you up at the shore, and there is no moon to be seen, you know that it is the right time for *sina*. Sandflies and *sina* “heap up” at the same time, you see!

Similar advice can be obtained from expert fishers for at least forty-four other fish species, and probably many more.

Apart from such personalized advice, songs and proverbs embody information required to predict and locate important times and places for catching fish and other living things of coast and sea. The following little song is well known among children in the Keru and Tamaneke region of north Marovo, and describes important specific parameters for catching the *kakarita* (mud crab):

*valuvalu tinamu tamamu pa Hobalito*  
*tata vura mae ia soa ini pa Hibohibo*  
*tata opo ia kakarita pa Kakatana*  
*valuvalu tinamu tamamu pa Hobalito*

paddle you[r]-mother, you[r]-father at Hobalito  
 the full moon is about to rise at Hibohibo  
 the mud crab is about to sprawl in the mud at Kakatana  
 paddle you[r]-mother, you[r]-father at Hobalito

The song was composed in the mid-1980s on the spot, at Hobalito, by Liba, an eight-year-old boy from the barrier island village of Keru. Hobalito is a mainland shore with a small coconut plantation, where Liba, his mother, and a second woman rested at night after going out in the mangroves to catch mud crabs. Liba picked up an exceptionally large crab whose claws and legs had all been twisted off, except the two flat hind legs or “paddles” that enable it to “swim.” This is normal practice when catching these fearsome creatures, whose claws may cut off a finger. The “paddles” are retained as handles for picking up the crab and turning it in the fire. The boy Liba sang his new song as he lifted up the still-living crab. The first and last lines, though regarded by adults as somewhat incorrect grammatically, constitute a comment to this huge crab, which is now reduced to futile paddling in the air, that it must be the “mother and father of all *kakarita*.” The second line comments that the full moon is about to rise over Hibohibo, a passage through the barrier islands visible from Hobalito. From the shore at Hobalito, the full moon always rises over Hibohibo during the time of the year when low tide at night and early morning facilitates the capture of mud crabs, as stated in the third line. Kakatana is a mangrove area with plenty of shells and crabs, especially mud crabs, which are particularly easy to catch during nights of full moon and low tide, when they sprawl passively in the exposed mud among mangrove roots and cannot escape into the sea because the tide is out.

Liba’s little song, which has become part of the standard repertoire of children’s songs in and beyond his home area, is a succinct rendering of the main parameters in the capture of mud crabs. Quite simply, when the full moon rises over Hibohibo, mud crabs sprawl in large numbers at Kakatana and, subject to proper caution, can just be



picked up. Even for those who rarely or never visit Hobalito or Kakatana, the song contains important information, though less exact and specific, linking the night of the full moon with easy capture of mud crabs.

Specific place names of reef and coast also yield information on parameters of predictable fish capture, particularly to people already possessing a certain amount of basic knowledge. All around Marovo, certain reef patches, coral boulders, and other topographical features of the barrier reef are named after fish or other animals that aggregate in that spot predictably and regularly. For instance, Kopi Hirapa, a place in the barrier reef of eastern Marovo, means “the reef-pool of the *hirapa* fish,” with the implicit metacommunication, for those initiated, “where the *hirapa* fish aggregate during the September–November period, in the seven days between first quarter and full moon plus on the very last day of the lunar month, at the time of the day when the tide is on its way in.” Not only fish, but also invertebrates like shells, crabs, and *bêche-de-mer* have their special time (*kolokolo*) for aggregating in known places (*vasidi*). The main body of knowledge about shells and other invertebrates applies to nearshore mangrove environments and is held by women (and children, as with the song just examined), but the male domain of commercial shell-diving also has its system of time-space “coordinates”—paired sets consisting of known *kolokolo* and *vasidi* and activated through metonymy by means of marine place names like Mati Bikoho (Shallow Reef of Trochus). Similarly, predictability in the seasonal capture of large marine turtles nesting on the remote Hele Islands, off the Vangunu weather coast, is ensured through a highly elaborate system of examining eggs from nests in order to count the intervals of time between nestings and to establish and monitor spatial patterns in nesting cycles.

In brief, Marovo people’s knowledge of the marine environment, being behavior and capture oriented, and focusing on predictable cycles in the availability of fish, invertebrates, and other living things of sea, reefs, and mangroves, guides practice to produce regular temporal and spatial activity patterns. Further superimposed on environmental knowledge are contemporary opportunities and constraints offered by fluctuating market prices for commercial species, especially shells. Every Saturday night, a “World Market Report” is broadcast on the national radio, quoting current prices offered in Honiara for all kinds of cash crops and marine products. For those who depend on the sea for their cash income, as do many men of Marovo’s coastal *butubutu*, this is one of the most popular radio programs of the week. On early Sunday mornings in Marovo, groups of divers from Seventh-Day Adventist villages characteristically set out

for the reefs of barrier and lagoon to seek whatever shell is presently most in demand on the world commodity market. They combine this contemporary market awareness with their traditional knowledge of those environmental factors, such as tides and currents, that influence the availability of and physical access to specific stocks, and with the regulations on access enforced by the groups that control the reefs on which the best stocks of commercial shells are found.

### The Social Lives of Fish and People

The absence of a number of so-called universalist assumptions from the Marovo ontology—of a simple nature–culture dichotomy (eg, Lévi-Strauss 1966), of clear boundaries between wild and domesticated domains, and of absolute disjunction between the “societies” of humans and other animals—has fundamental implications for the present discussion. An understanding of Marovo knowledge of the marine environment, and human practice in that environment, requires a consideration of the social attributes of nonhuman creatures.

#### *The Wild and the Tame*

In describing and dealing with the environment, the people of Marovo have a wide repertoire of anthropomorphizing the lives of other organisms. Starting with land and forest, plants thrive, grow, reproduce, and eventually die. For the shifting agriculturalists of Marovo, the garden is somewhat analogous to a human body: It must be nurtured and cared for, to ensure growth and overall well-being and to avoid undue return to unproductive, “dry” fallow. Plants, terrestrial animals, and fish are often met in their wild (*piru*) state, but people may in many cases be able to actively tame or domesticate (*va manavasia*) them. Plants are transformed from the state of *piru* to that of *manavasa* (tame, cultivated, domesticated) through planting and cultivation under the controlled circumstances of the garden, animals and birds through being taken into the human household, and fish through being left undisturbed by humans for a few months. The transformation from wild to tame is, however, not irreversible, because domesticated or tame animals or plants may readily revert to being wild if not properly cared for by humans. Thus the *piru*–*manavasa* continuum is processual and unstable, containing diffuse degrees of transformation in both directions.

On another level, the state of *piru* is opposed to *tetei* (knowing) and thereby defines ignorance. Humans, particularly children, are subject to transformations analogous to those of plants, animals, and fish. The nonsocialized state of infants is categorized as *piru* (wild),

but through learning they become, not tame (*manawasa*), but knowledgeable (*tetei*). Such transformations also apply to adult novices who are *piru* (ignorant) about specific fields of practical knowledge, whether a bush man who is being taught how to fish, a young girl who is being taught how to weave baskets and mats, or an anthropologist who is gaining knowledge on how to behave properly. Leaving the state of *piru*, whether for humans, animals, fish, or plants, implies entering a realm of knowledgeable control by humans. Once “non-wild,” a person can be held accountable for acts committed, an animal becomes a house pet that is fed by its human family, a school of fish does not run away from approaching fishers, and a plant grows in the garden with other cultivars and produces crops according to the treatment it receives. In this sense, transforming wild beings infuses them with certain human attributes such as preference, and also produces a relation of dependence between such creatures and their (human) custodians.

#### *Social Interaction with Fish*

Although the topic of feral pigs may loom large in discourse among the relatively few who hunt regularly for them in the forest, fish occupy a focal place in discourse among a majority of Marovo men, at least. Whether on the beach, in the village, or in the canoe at sea, fishermen spend long hours discussing their general and specific experiences with fish, how fish tend to behave at present, and whether this corresponds to expected behavior. In such discourse fish are often spoken of in a highly anthropomorphized manner, as intentional individual beings, and as behaviorally and morphologically distinct “gangs” and groups with internal solidarity. There are even examples of different fish species helping each other, whether in finding food or escaping from humans and other predators.

Marovo people’s ways of engaging with the environment of sea and reefs hinge on the premise that persons through their fishing practices relate to fish (and other marine organisms in the Marovo category of *ihana*) in a fundamentally social manner. Fish capture is primarily an outcome of a series of events involving both the fishing person and the fish as social agents and actors. Like people, fish belong to groups, in manners both behavioral (that is, the social life within a fish aggregation) and classificatory (in the sense that fishes regarded as “similar” are talked about as belonging to one and the same “path,” “cluster,” or “tree”). Fish, turtles, and dugong are spoken of not just as living things, but as thinking ones. The more significant a given fish is to people in terms of food, the higher its thinking capacity (*binalabala*) may be, and the more thought and effort must be expended by the fisher to capture it. In this sense, sharks,



Photo 24 Social interaction under the sea: Two divers with a speared triggerfish. Karikana Passage, central Marovo, 1987. (*Edvard Hviding*)

which are not eaten but which relate closely to people in other ways, occupy a special place among fishes. Fish learn easily from experience and quickly learn to keep away from locations that are dangerous for them. Reef areas subject to heavy underwater spearfishing may after a while become depopulated of resident reef fish. Much of the Marovo model of overfishing is tied to such notions about fish gaining experience from repeated human predation and moving elsewhere in search of peace and quiet.

Fishing, thus, is basically a form of direct social interaction between human being and fish. The experienced angler, sitting in a canoe often far above the murky depths where preferred fishes dwell, may communicate with the fish through a special repertoire of provocative language called *haroharo* (invocation).<sup>11</sup> *Haroharo* is most often used by adult men engaged in the capture of large fish through deep-water handlining or trolling near the barrier reef, and contains standardized, progressively rude communications designed to insult the fish, arouse its aggressiveness, and exhort it to bite at the baited hook. These “invocations” tend to have a fairly standardized structure, but are otherwise subject to the individual inclinations of fishers and to different contexts of fishing. *Haroharo* are regarded as belonging to the cultural heritage of the coastal people, but are sometimes also used by bush people when fishing. Certain well-remembered *haroharo* approach the status of standard “texts” and have become so through their association with certain renowned fishermen. To illustrate the nature of these communications, an example is given here of *haroharo* used when trolling for large, predatory pelagic fish along the outer edge of the barrier reef. The text is a fairly standardized *haroharo* of long standing, today “kept” by Harold Jimuru, a middle-aged active fisherman of Marovo Island. An English approximation follows the Marovo text.

*ghohi tani no, tangiri tani no, ba mara tani no ba, batubatu tani no, balubahu tani no, batutudu tani, balibalighutu tani no ba,*

*paku livo meamu ke hoi ni?  
chikuchikunu vari kukurui ke hoi ni?  
choa hua hoi nena! ba  
icho taria hoi nena! ba  
nadoro taria hoi nena! ba*

*ae la hoi machu pa Gorugoru Kemu,  
Gorugoru Matiu, Rarusu Dekudekuru tani?  
raja hoi na machu mada vari heru choga hada ba!*

barracuda right here, Spanish mackerel right here, or, trevally right here, giant trevally right here, rainbow runner right here, big-headed trevally here, or blue trevally right here,

is your mouth gap-toothed, you, here?  
is your tail split in two, you, here?  
choke [on the bait], you! or  
hang and fast wrestle [with the hook], yes, you!  
stretch for and grab [the bait], yes, you!

where have you gone, man of the long submerged barrier reef of Kemu, of the long submerged barrier reef of Matiu, of the outer barrier reef shore of Dekudekuru, here? fight [the baited hook], you, man, and let us be carried diving [into the sea]!

The invocation consists of three distinct sections. In the first, the fisherman initiates a social relation by calling by name certain large predatory fishes found on the fishing grounds in question and being the main targets of the fishing method used. The three nonschooling types of large trevally (*Caranx* spp) that are called here are known as “loners” that cruise the barrier reef edge relentlessly during daytime and belong to the most highly esteemed food fish of Marovo’s coastal people. This initial section is supposed to arouse the attention of specific, sought-after predatory fish presumed to be already present at the site. The second section attempts to fill the relation with activating content, ideally leading to reciprocal action between fisherman and fish: The fisherman shouts grave insults presumed to arouse anger in the fishes just called, to make them rise to the bait. These large predatory fish are explicitly treated as analogous to adult men. If applied among persons, the references to missing teeth and physical disability are likely to provoke intense anger from any able-bodied man, particularly because the very mention of teeth is in itself highly disrespectful (in Marovo, the teeth of a grown man should properly be referred to as *idaka* [stones]). These introductory insults are supposed to lead to reciprocal action from the fish in the form of immediate attack, during which the predator fish will greedily grab and fight the baited hook—without being able to free itself once attached. The fish is hooked and captured simply through the act of responding aggressively to the verbal abuse showered on it by the fisherman. If no fish responds immediately, however, the fisherman proceeds to the third section of the *haroharo*. Being less species-specific but explicitly gender-specific, the fisherman here calls for any large predatory fish to be found in named locations traversed. The form of address used is distinctly man-to-man, through the use of *machu*, which in Marovo defines a “single-sex” male relation between persons not closely acquainted. Not having responded to the initial calls and subsequent insults, the “fellows of the long submerged barrier reef of Kemu (etc)” are presumed to have gone somewhere else, either into the depths or farther along the reef. The *haroharo* closes with an ulti-

mate challenge: if the [male] fish does [decide to] bite the hook, his male adversary (the fisherman) is prepared to follow him into his own habitat, the sea itself, if that should be necessary to ensure final capture.

The underwater spearfisherman has another repertoire of “tricks” for manipulating reciprocal relations with his target fishes (and, sometimes, turtles). The main objective is to make the fish come close enough to be shot. This involves having no more than, say, five meters between fisherman and fish, because a normal speargun is 1.8 to 2 meters long and equipped with a spear shaft and connecting rope of equivalent length. To accomplish a catch, the underwater spearfisherman may alternatively use ambush tactics by sneaking up on an unsuspecting fish or lying hidden in wait for it, or he may exploit the curiosity and sociality of fishes by uttering grunting sounds, emitting bubbles, or beckoning with one hand or even with the speargun itself. The specific “trick” used depends on the type of fish and its perceived disposition (eg, whether it is spawning, feeding, or just “hanging around”) and on environmental conditions dictated either by underwater topography or by changing circumstances like water clarity, wave intensity, and the presence of other fish. It is assumed that the relationship between diver and fish is one of reciprocal interaction during which the two parties attempt to outwit each other, often from equal levels of shrewdness. In Marovo terms, a good underwater spearfisherman is one who is able to “think underwater,” in other words, to adjust immediately to the often rapidly changing opportunities offered during one dive. The behavior and motives of a target fish have to be continuously interpreted, and should one opportunity fail, others might turn up.

To illustrate, I quote from an account of one dive, given by an expert underwater spearfisherman relaxing after having returned from a day of diving for fish and pearlshell at the barrier reef. When asked whether he intended to go fishing the next day, he replied, “Oh no, I’m weak now. We were at sea the whole day today, diving for pearlshell. But there’s a lot of fish up there, at the barrier reef of the Telina people! All those big ones just hang around there and wait for you.” A bystander then asked the diver whether it was he who had shot a particularly large fish carried ashore from the canoe on its return to the village, prompting this reply:

Yes, that was mine. I shot that fish—but I didn’t intend to when I first dived down then. I was going down to shoot a turtle, but then this big *mara* [trevally] just came along, so I shot that instead. It was like this: I saw the turtle way down there [off the outer reef edge]. I was going down and it was coming up. So I decided to go for it. I dived down and looked at the turtle as it was swimming up. Not straight toward me, but

to the side a bit—it didn’t see me. Now, I was hiding, holding onto a stone down there and waiting for the turtle to come up close enough. It came up a bit more, but then it went into a hole—it found something there, a crab or something. So I said to myself, “What now?” and waited. But that turtle didn’t leave the hole. I saw the two hind legs sticking out and moving about. “What now, friend?” I thought, but that fellow [*machu*, the turtle] didn’t look as if he wanted to come out so I could shoot him. But he hadn’t seen me, because I was still hiding behind that stone just above where he was. Right then I saw something moving in from the left—a big *mara* coming. So I turned the gun around and—like that—shot that fish by surprise. I guess we were both surprised! But you know, it is quite a bad place for sharks up there, so two or three of them came right at me at once. But it was my *mara*, not theirs, so I just pulled my fish toward me and then I went up into my canoe. No turtle this time, but a fine *mara*. That was the story.

This account embodies a number of characteristic features of this domain of all-male fishing. This story about a single dive is told in a very matter-of-fact manner, not bragging much at all. As soon as I started participating in Marovo fishing, I was struck by the conspicuous lack of “tall stories” in discourse among Marovo fishermen, who emphasize that when telling stories about fishing trips, they recount what “actually happened,” and nothing much more. The concept of “luck,” so often emphasized as a key dimension in “fishing cultures,” enters into Marovo fishermen’s discourse rarely, if at all. Basically, disregarding certain concepts of secrecy and of magical intervention, fishing in Marovo is about possessing adequate knowledge about fish and the marine environment, and about using that knowledge first to encounter the fish, then to communicate with it, and finally to outwit it. No one who is not knowledgeable (*tetei*) can expect to be efficacious (*mana*) in fishing. It is regarded as impossible for a person ignorant of the practical knowledge of the work (*tinavete*) of fishing to obtain any form of spiritually derived efficacy (*tinamanae*). This emphasis on practical knowledge (*inatei*) does not imply, however, that there is a one-sided correlation between it and eventual fish catches. Anyone who returns empty-handed from a fishing trip is said to be in a state of *puhi* (being nonefficacious) with specific reference to fishing, and this may happen to most people, even those who are regarded as experts. Only a very few have a reputation for never being *puhi*. The important point about *puhi* is that there is always a more or less tangible reason for it. The people in question may be ignorant or wild (*piru*), or they may have possessed knowledge but not used it sufficiently well. Alternatively, the weather may have been bad, or certain spiritual presences may have been offended either through trespass or through disrespectful behavior. However, the major rea-

son for little or no fish being caught is often stated in terms of the fish failing to fulfill their part of the social relation; they may have been of a generally bad disposition, not wanting to bite, not being hungry, or they may have gone somewhere else.

The close relationships between people and fish take on a special character in underwater spearfishing. Experienced divers do not feel that they are in a hurry when “down there,” and they are able to remain astutely observant while staying submerged for what must by any standard be long periods, often at depths up to ten meters or more. Furthermore, all is told as if it had happened ashore, for example with the fisherman just sitting in waiting behind a stone; that the fisherman holds his breath while diving, during which time extensive series of events unfold, does not really emerge from the narrative. Neither does it occur immediately to the listener that all these series of observations, reasoning, deduction, and decision-making are accomplished extremely quickly. To the experienced Marovo diver, one dive appears as a long period with plenty of time to observe, decide, and act. Further, fish and other living things encountered may relate to the diver in several successive ways; in the course of the dive just described, the turtle is transformed from an unknown prey to an active, gendered social partner in interaction, a “fellow being.” That other agents, namely sharks, enter the arena, is an inevitable occurrence for divers at the Marovo barrier reef, and is handled in a matter-of-fact way. More is said about sharks later.

The successful Marovo fisherman is one who is able to initiate and engage in reciprocal interaction with his prey, and moreover is able to interpret that interaction as it unfolds, with the eventual aim of outwitting the fish. The only alternative is to take the fish by outright surprise, a strategy that requires a combination of shrewd planning and constant alertness. Different fish species are regarded as being more and less well endowed in terms of conscious mind (*binalabala*). There are extremely stupid fish that can be attracted by the wave of a hand, and there are others that are virtually impossible to capture even by ambush. Particularly cunning individuals of a certain species are also sometimes identified, and many stories are told about specific individual fish that were encountered in the same location by scores of divers for long periods of time until finally someone was shrewd enough to be able to shoot them.

However, the reciprocal relations established and engaged in by people and fish can be influenced to people’s advantage by means of manipulative techniques not available to the fish—personal magic and ancestral assistance. From Simbo in the far western New Georgia Group, Hocart (1935, 1937) described a repertoire of “charms” and “oracles” used for such purposes in all manners of fishing. Notwith-

standing the reputation of these people to “know little about fishing” (1937, 33), Hocart described them as performing a variety of rituals to enlist the support of ancestral spirits and fishing “deities,” to be efficacious (*mana*) in net fishing, angling, spearing, turtle hunting, and, most important, pole-and-line tuna-fishing. Many aspects of Hocart’s account show a high degree of correspondence with descriptions of fishing rituals by Marovo elders, regarding sea spirits, specific charms, and ancestral help. Most of this is no longer carried out in its pre-Christian form, but beliefs in the power of various spiritual influences in fishing remain strong. Before diving, many Marovo fishermen of today tend to say a prayer that usually takes the form of asking God for protection against dangers and for power to be efficacious (again, *mana* or alternatively *tinamanae* [blessing, or literally “*mana*-ization”]) in fishing itself. In their verbal form, such prayers may be similar to the pre-Christian Simbo fishing “charms” quoted by Hocart (1937, 41). Further, among certain coastal groups of Marovo, young and old fishermen alike maintain beliefs in the power of specific *Cordyline* shrubs planted by renowned fishermen of former generations. A leaf or two from one of these plants may still be slipped into the mesh of a modern monofilament gill net in order to secure the *tinamanae* of a fishing expedition. Finally, certain people called “master fishermen” (*tinoni susua chinaba*, literally “leading man in fishing”) still command the highly practical (but spiritually derived) power to calm down a large school of fish caught in a net so that the catch may be safely lifted into a canoe. This is regarded as a critical moment in net fishing and fish drives, and if the fish are not calmed down by the master fisherman’s diving under the net and swimming among them, they may run wild and escape, or even damage the net. The ability to calm down trapped fish was more crucial when less solid bark-fiber nets were used, but wild schools of surgeonfish are still capable of using the razor-sharp knives on their tails to cut holes in a nylon monofilament net and thereby triumph over people. This peculiar power (*minana*) held by certain senior fishermen enables them to swim and stand among densely milling surgeonfish without being cut by the tail-knives, and is truly regarded as a blessing (*tinamanae*) derived from ancestral master fishermen.

Spiritual assistance, whether given by God or by ancestral fishermen, remains a key to fishermen gaining advantage over the fish. On a less explicit level, and Christianity notwithstanding, Marovo fishers are widely considered to possess and actively use various forms of personalized fishing magic. Although subject to much discussion among people who feel they have been unjustly deprived of good fish catches, the practice of such magic is carried out secretly. It has two major forms, both of which are associated mainly with individual angling as

most often practiced from small dugout canoes. The first involves charming the bait in such a way as to make the fish prefer yours and ignore that of others who are angling from their own canoes in your vicinity. This technique is called *vina roro* (creation of desire) and is basically similar to the homonymous love magic applied in sexual relations. Particularly noteworthy in this regard is that while the verb “to fish” in Marovo is *chaba*, “to marry” is *vari chaba* (the same verb with a reciprocal causative prefix added). This opens up a wide field of possible metaphorical (or analogic) linkages between the domains of fishing and marriage.<sup>12</sup>

The other major type of personalized fishing magic in Marovo is *barakale* (literally, “[to] fence [a, or to one’s] side”), which involves gaining control over an aggregation of fish encountered on the fishing ground, to the extent that the fish will move along with your canoe wherever you go, beyond the reach of other anglers. *Barakale* may also be used to draw a fish school encountered in other people’s waters into one’s own fishing territory. Whereas *vina roro* is firmly contingent on charming the bait itself, *barakale* contains less tangible causative links and involves any combination of acts such as moving the paddle in a certain way, dropping a special *Cordyline* leaf into the sea, or even briefly placing a foot in the water beside the canoe.

Marovo people thus use a number of magical means to influence their relationships with fish, and their relationships to other people with regard to fish. In the more direct social relationships between people and fish, the division of the fishing grounds into discrete sections by marine boundaries associates the fish of an area with the people of that area. Briefly, the fish of one’s home reefs are much better known by people, and consequently easier to capture, than are the fish of more distant reefs. Also, fish of one’s home reefs may be more easily “tamed” by being left alone for a while through taboos imposed on fishing and travel on and near a certain reef. On the wild–tame (*piru*–*manavasa*) continuum, the ultimate result of successful “taming” of fish is that they become ignorant of the dangers posed to them by approaching fishers. For fish, the ultimate state of being *manavasa* corresponds to what for people would imply being ignorant (*piru*)! One must know the fish and their environment very thoroughly to accomplish such “taming,” which is invariably supervised and monitored by the master fisherman of a *butubutu*. The only exceptions to this rule are remote reefs rarely visited by any fishers at all; in such places the fish may be *piru* and entirely without fear when approached by canoes or even by divers.

In the relationships between human groups and the fish of the reefs and seas held by the different groups, there is a fundamental element of reciprocity in Marovo fishing, through which certain fish

species are respected, held in reverence, and looked after particularly well by certain groups, which will in return obtain large catches of that species on certain occasions. Most often, this involves a specific fish being regarded as the sacred fish (*ihana hope*) of a specific *butubutu*. Though not entailing any strict “totemic” prohibition on people eating the fish in question, such close relationships may entail ritual avoidance (except for those special occasions when the taboo is lifted and the fish is caught in large numbers) and prescriptions that only certain techniques be used for capturing the fish. The result is that the fish will let itself be captured easily when it forms predictable large aggregations at a certain time and place. Conversely, disrespectful behavior toward the fish from the “owning” *butubutu* will lead the fish not to return “next time” the taboo is lifted. In Marovo, a number of fish stand in such relationships to certain coastal *butubutu*. The most well known example of such “sacred fish” from the wider New Georgia area is that of the *hirapa* fish in the Vonavona Lagoon, where this fish may be captured only with large nets under supervision by a master fisherman (shooting *hirapa* with spearguns would be gravely insulting), and only at a certain time. Further, the fishery of *hirapa* in Vonavona is strictly controlled by the people of one *butubutu* only. Living mainly in a large village directly adjacent to the *hirapa* fishing grounds, this group has customary tenure over the shallow sandy reefs where the fish aggregates. On a general level, and representing a more Solomons-wide pattern, the skipjack tuna (*makasi*) has a sacred status to virtually all groups of Marovo, and the coastal *butubutu* with a long history of *valu* (traditional pole-and-line fishing for tuna) maintain detailed sets of rules and regulations specifying approaches to, and behavior toward, the *makasi* at all stages of fishing and subsequent handling of catches. Proper interaction with the *makasi* is held to ensure predictable catches, and there are strong continuities from the old customs of “taming” skipjack schools by feeding them to present-day rules of respect for *makasi* during motorized trolling.

All the interactional reciprocity of people and fish reaches its highest level in people’s relationships with sharks. Sharks are not fished or eaten by most people in Marovo, who speak with disgust of the Gilbertese immigrant groups who consume quantities of shark meat. However, sharks are the only things in the sea (except for the somewhat anomalous crocodile) that eat people (other potentially dangerous predators of the sea, such as barracuda, do not “eat,” but only “bite” people, according to Marovo categorizations). Although sharks, generically termed *kiso*, are largely seen as belonging to the overall category of *ihana* (fish and other swimming things with a conscious mind), they are also emphasized as something unique. Comments

like “That was not a fish, but a shark!” (*Kani ihana, mana kiso mena!*) may be heard in accounts of fishing trips, referring to instances where “something” has taken the bait and broken even the strongest fishing line. For a number of Marovo’s coastal *butubutu*, the shark is a totem. These people are obliged to show respect to the shark; they cannot mention its name when at sea in a canoe (even if a shark is sighted, it is spoken of as “something”), and they must under no circumstance kill or eat sharks. However, it is recognized this cannot prevent a greedy shark from grabbing a baited hook intended for barracudas, if it should be so inclined. Should a shark be caught accidentally, every attempt must be made to release it from the hook, but if a fisherman in the end has to kill it, he is obliged to bury it in the sand ashore at the nearest barrier island, in secrecy.<sup>13</sup> In return, the people who have the shark as totem are protected against shark attacks.

This is a reassuring privilege for people who dive incessantly in what is probably one of the world’s more shark-infested areas. People who belong to these groups eagerly observe that none of their relatives or ancestors have ever been attacked by sharks. Information on fatal shark attacks in Marovo since around 1950 supports their observations: Of the four or five Marovo men who have been killed by sharks during underwater spearfishing in recent decades, all were from *butubutu* that do not have a totemic relationship to sharks; in most cases they were from bush groups whose members have been fishing for only a few generations. However, this does not mean that those who hold the sharks in reverence never have to confront them: What totemism affords, apparently, is protection against unexpected fatal attacks, and against “wild” sharks (those not of the home reefs) in general. As indicated by the dive account quoted earlier, underwater spearfishermen regularly have to stave off aggressive “overtures” from reef sharks intent on snatching speared fish. Every year, one or two spearfishermen, including members of *butubutu* with shark totems, receive nonfatal shark bites during such underwater skirmishes. However, it is invariably pointed out that in such cases the shark has been irritated by a disrespectful diver. Older fishermen generally say that sharks are like dogs, in the sense that they quickly sense ambiguity and fear in humans and are most dangerous to people who are afraid of them.

### “Ethno-ichthyology” and “Ecosystems”

Marovo people’s “ethno-ichthyology,” as their knowledge of fish-in-the-environment may be called narrowly, does not contain, or derive from, “ecological models” along the lines of the western concept of “ecosystem.” Environmental implications of various types of resource

use are not always perceived by Marovo people as going very far, and target species are not seen as integral parts of a general marine ecosystem corresponding to the definitions within oceanography and coral reef ecology. In addition, many decades of strong Christian influence have promoted the idea that God holds His hand over everything, including life in the sea.<sup>14</sup> God is likewise relied on by a fair number of Marovo people to be a guiding hand in the lives of fish and reefs, although certain pre-Christian spirits of fishing and reefs continue to hold sway in some measure. People’s own role in promoting or preventing the depletion of fish, turtles, shells, crabs, and more is downplayed because the animals of the sea are seen as having their own agency as well as being subject to certain divine powers.

Although ideas of general “ecosystems” may be absent from Marovo environmental knowledge, various forms of linkages that would be termed “ecological” in the western sense are often well understood. Depletion of a resource, seen as growing scarcity or as decreasing mean size of a species, is readily commented on, and it is lamented if a formerly good fishing ground or shellfish bed has been “swept clean.” Depletion is regarded by some people as more or less inevitable, though certainly “not a good thing,” yet the idea of a rest period for stocks to build up remains a part of the traditional resource management practices enforced by *bangara* and master fishermen. Some fishing methods are perceived as destructive to the marine environment and disruptive to the lives of fish—particularly dynamite fishing. The problem about dynamiting, many experienced fishermen say, is not only that it kills all fish, both large and small, that are there at the moment of explosion, but the explosions also tend to destroy and kill the “living” coral rocks that are the home of the fish, and therefore there will seldom be “good fishing” again in a reef area that has been “bombed.”

In present-day Marovo these local environmental understandings extend to an appreciation of possible consequences of large-scale logging, mining, or commercial fishing. The logging operations carried out by transnational companies in north New Georgia (discontinued in 1986) and Viru, and recently on the government-held land of southeast Vangunu, have produced much local rhetoric about the importance of preserving one’s forest lands for the gardens of future generations, rather than letting “companies” cut the trees and expose the soil to the ravages of sun and rain. These arguments have been influenced only to a very limited degree by western “environmentalists,” a considerable assortment of whom have visited Marovo since the 1970s. An increased awareness of the problem of sedimentation, with its possible consequences for lagoon fishing grounds, has also evolved from these operations and the ensuing debate. Proposed

mining operations in the mountains of east and central Vangunu provoked reactions in 1989 and later, mainly from the coastal groups of the lagoon, who fear river transportation of sediments into their lagoon and onto the fishing grounds on which both coastal and bush groups rely for their food and for much of their cash income. Seasoned fishermen with an extensive knowledge of currents in the lagoon and around the barrier reef use their knowledge to predict consequences of mainland mining, and these firmly indigenous arguments are augmented by some fellow villagers who have visited Bougainville, Papua New Guinea, and seen marine sedimentation resulting from the (now discontinued) mining operations there.

Catcher-boats of the part-nationally owned tuna industry (Meltzoff and LiPuma 1983) have been fishing for bait in Marovo Lagoon since the late 1970s, and many *butubutu* leaders and fishermen are opposed to these activities. Their arguments against baitfishing build on what they reckon to be the “universal facts” of small fish being eaten by bigger fish, which in turn are caught and eaten by people. If too much baitfish is taken by the tuna boats, they say, then there will not be enough food for the bigger fish, which will either die or run away to areas where baitfishing is not carried out. The interactions between baitfish stocks and other reef and lagoon fish populations are complex matters, not well known even by marine biologists (Evans and Nichols 1986), and a major research project has recently been completed in the neighboring Roviana Lagoon to investigate these processes (Blaber, Milton, and Rawlinson 1990). Interestingly, whether “scientifically true” or not, the Marovo arguments against baitfishing quoted here are put forth in terms readily compatible with a western ecosystem model.

### The Work of the Sea: Fishing in Marovo

In the field of maritime practice, the ideas about environmental regularities and the lives of fish are transformed into activity. To make the most of the opportunities offered by well-known regular occurrences throughout the various types of fishing grounds, a diverse variety of fishing and gathering techniques are available to Marovo people. A large number of mainly traditional techniques (though invariably applying nonlocal, modern equipment such as steel hooks, monofilament line, and nylon gill nets) are used from small craft, mostly locally made dugout canoes, although outboard motors and larger dugout or fiberglass canoes are increasingly available. On the whole, subsistence fishing by Marovo people seems to be quite productive. Analysis of catch-and-effort data (collected by me in 1986–87) from a sample of 150 fishing trips carried out by fishermen of

Chea village over a twelve-month period, for subsistence purposes only, gives a conservatively estimated mean output in whole fish of 2.7 kilograms per man-hour. Allowing for some inaccuracy in estimation, this output is twice as high as that reported from the outlying atoll of Ontong Java by Bayliss-Smith (1990). The figure not only confirms Marovo people’s reputation throughout the Solomons for being expert fishers, but also indicates both relative resource abundance and a high degree of adaptation between technology and environment.

Fish catches are mostly consumed by the fisher’s family, with surpluses distributed among relatives. In addition, the tithe obligations imposed by the Seventh-Day Adventist Church (and, increasingly by the United Church Methodists) require at least one-tenth of any fish catch to be given to the church. This mandatory offering takes the form of either “feeding the pastor”—giving fresh fish directly to resident church employees who rarely fish themselves—or selling the fish and offering the money as a special tithe. Small-scale marketing of fish is increasing, particularly as more outboard motors are purchased, adding fuel expenses to the investments made in fishing trips. In addition to fishing, where the main production is carried out by men, women’s gathering of shellfish and crabs is a major contribution to the diet in United and Christian Fellowship Church villages.

The wide variety of fishing methods used in Marovo are adapted to the habitats and behavior of a similarly wide variety of intimately known target species. Expert fishermen often state that “every day has its type of fishing,” a proverb that demonstrates that fishermen’s complex knowledge of the marine environment and its inhabitants guides fishing efforts toward different species and fishing grounds at different times of the day, month, and year. Some fishing methods have a fairly general scope, aiming at many types of fish. Others are more specialized, being geared to the capture of perhaps just one particular species. Certain fishing methods of Marovo are of ancient origin, whereas others are more recent introductions and use equipment of partly or wholly external manufacture. The interplay between knowledge and methods is not one-sided, insofar as some introduced methods have served to increase the scope of knowledge. One example is underwater spearfishing, introduced after World War II, with the advent of rubber-propelled spearguns made partly from wartime materials. Diving and actively stalking the fish underwater have made fishermen intimately familiar with the behavior patterns of individual fish and have led to deepened knowledge of the sharks that are an ever-present nuisance for underwater spearfishermen.

The following classification of fishing methods is based mainly on Marovo fishers’ own categories. The main criteria for classification are the tools used and the nature of the activity, while dimensions



such as fish habitat, timing, and target species are applied to subcategories of each main method. Following this local approach, I do not distinguish between fully “traditional” methods and more recent introductions. For example, the category of “stupefactants” includes traditional uses of plant poisons as well as dynamite fishing. Marovo fishers are interested in the workings of a certain method on the target species, rather than in its origin, although most fishing methods are defined as either “of before,” that is, of local origin, or “from elsewhere.” Marovo fishing methods may be grouped into nine main categories, with the number of named subcategories in parentheses: hook and line (21); gathering by hand (10); underwater spearguns (9); nets (8); hand spears (5); traps (4); stupefactants (4); fish drives (3); bow and arrow (3); plus bait collection (6 named subcategories), a prerequisite to hook-and-line fishing.

More than seventy named and distinct fishing methods exist in these ten main categories, and the number is much higher if further classification is made, based on subcategories of methods that are species-specific and adapted to narrowly defined micro-environments. Certain methods, mainly those requiring group effort (eg, nets and fish drives) or strenuous individual effort (eg, underwater spearfishing on outer reefs), are classified as “big fishing” (*chinaba gete*), whereas more inconspicuous methods (eg, shallow-water handlining and gathering by hand, both of which are often also termed “women’s” or even “children’s” work) are “small fishing” (*chinaba kiki*). *Chinaba*, the term for fishing in general, is a noun form of *chaba* (to fish, and, as pointed out earlier, “to marry”), whereas the concept *kalena chinaba* (the side of fishing) embraces “all that has to do with fishing.” Each of the main categories of fishing methods is now described.

#### *Hook and Line*

Hook-and-line fishing is the most widely used category of fishing in contemporary Marovo. It does not require much equipment apart from some line, a few hooks, and access to a small dugout canoe. Modest catches may be taken individually by almost anyone, in a fairly short time, and close to the village. This is the type of fishing most often pursued by women on a low-key, day-to-day basis, in contrast to men’s sometimes more intermittent, lunar-based efforts, which are geared to large, prestigious catches of prime species from selected, often remote, locations.

A wide variety of methods, for use in a wide range of fish habitats during day and night, falls within this category, which has expanded greatly with increased availability of steel hooks and nylon line of all dimensions. The most important traditional method was surely pole-and-line fishing for tuna, using composite pearlshell and turtleshell

lures, and carried out by teams on the open sea. This has now been replaced by trolling for tuna with outboard motors, using a variety of homemade and purchased lures with steel hooks. Trolling, involving one or two men in a motorized canoe (often the outboard motor owner with a younger male relative as helper), is carried out on the open sea for tuna, as well as for trevallies, barracuda, and Spanish mackerel along the outer dropoffs and lagoon shores of the barrier reef, and in the deeper areas of the open lagoon. In the 1980s, fishing for shark outside the barrier reef became increasingly popular, owing to the high prices offered in Honiara for dried shark fins. This is usually done by two or three men in a fairly large and stable canoe, with very heavy modern tackle, including a large plastic float. “Smaller” varieties of pole-and-line fishing are still carried out in special locations on relatively shallow reefs, using shorter bamboo rods, light tackle, and baited hooks to catch a variety of smaller and medium-sized fish. However, this type of fishing is now more often pursued without a bamboo rod, by simply throwing out the hook from a canoe drifting or anchored on shallow reefs.

Many different types of drop-line fishing, with baited hook and sinker, are used by the people of every Marovo village. Both men and women go out on the lagoon to fish with hook and line, most often on their own in small canoes, with the men generally venturing far-

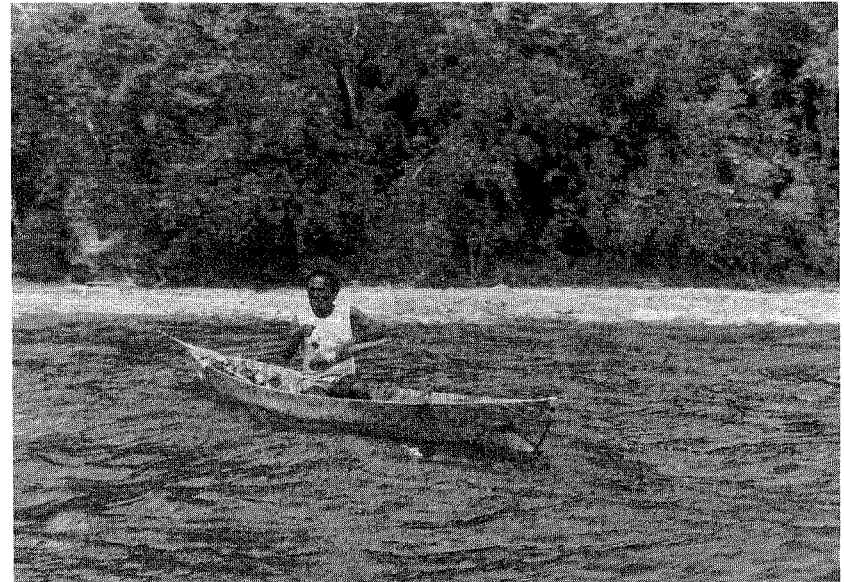


Photo 25 Deep-water handlining from a small dugout canoe, outside the barrier islands. Lumalihe, central Marovo, 1987. (Edvard Hviding)

ther away from the village on trips of longer duration. Drop-lining is carried out in deeper waters, within the lagoon as well as in barrier reef passages and at the dropoff. Larger species such as emperors, snappers, groupers, and barracuda are common targets in drop-line fishing, in addition to all kinds of medium-sized reef fish. In stationary hook-and-line fishing, whether on shallow or deeper reefs, locating the right spot is of key importance. Many fishers have “their own” spots where certain emperors (*mihu*) or snappers (*ihana orava*) are found at certain times of the lunar month. Such spots are often kept secret by those who initially discovered them. Experienced drop-line fishers have extensive knowledge of currents in the lagoon and through passages.

#### *Gathering by Hand*

Most of these activities involve intensive collection, carried out mainly by women, of an exceptionally large variety of mollusks (bivalves and gastropods) from mangroves, fringing reefs off lagoon islands, and barrier reef flats.<sup>15</sup> Coastal land crabs (*kahu*), mud crabs, and coconut crabs are collected in large numbers throughout the year (with certain seasonal peaks) on the beaches of barrier islands, lagoon islands, and mainland, and from mangroves. This, too, is done mainly by women, and many men even express fear of the formidable claws of mud crabs and coconut crabs and say that these dangerous creatures are handled better by women’s nimble fingers. While only the United Church and Christian Fellowship Church people of Marovo collect shells and crabs for food, women and children of all villages are specialists in the art of *kerukeru* (groping in holes), which involves catching fish that hide in holes on the reef flat as the tide recedes, using nothing but the hand, skill, and cunning. Many kinds of reef fish, including small triggerfish (*kubuku*, whose erect dorsal spines are lowered by means of a well-known trick) are sought out and pulled from their holes. *Kerukeru* is carried out mainly on the reef flats of the barrier reef, during the season of low tides in the daytime. This is also the best time for gathering giant clams (*ose*, *hohobulu*, *veruveru*, *chavi*) and a large variety of other reef invertebrates, mainly mollusks, from the barrier reef flats. More widely throughout the year, the mud bivalve *deo*, the other mollusk mainstay in household diets, is collected intensively by women from the mainland mangroves. Recently some women, particularly in the Christian Fellowship Church villages of the northern lagoon, have also participated actively in the collection of *bêche-de-mer* (sea slugs) along mainland and barrier island shores at night, from canoes fitted with pressure lanterns, and increasingly using hand spears.

The major gathering activity carried out by men relates to a range

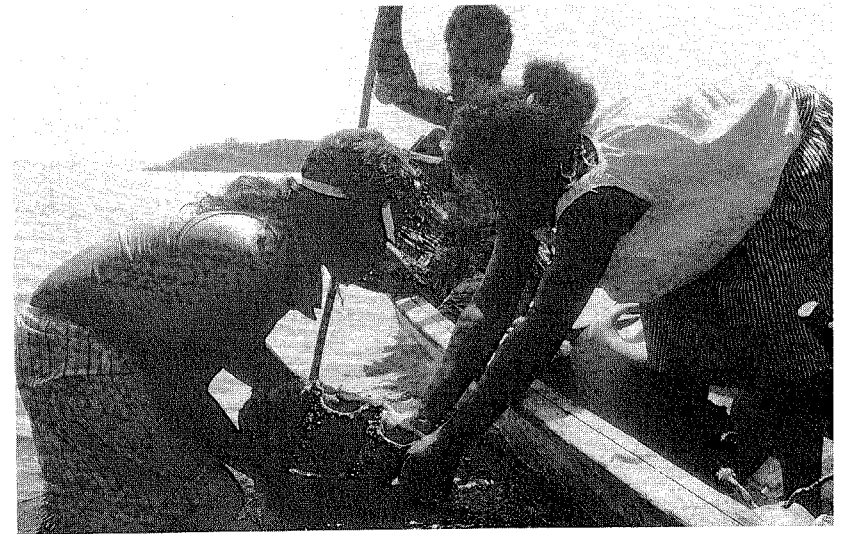


Photo 26 Two women lift a giant clam (*Tridacna gigas*) into a canoe. Vahole, northern Marovo Lagoon, 1991. (Edward Hviding)

of commercial shells and *bêche-de-mer*, usually through diving at shallow-to-medium-depth reefs at the barrier. During the season of low tides at night, men who are out fishing anyway may, on moonless nights, walk along the exposed reef flats, carrying a coconut leaf torch and a bushknife, and often obtaining good catches of small reef fish left in small pools of water.

#### *Underwater Spearguns*

Together with hook-and-line methods, the use of underwater spearguns is the most common fishing method of contemporary Marovo. Spearguns are made locally with materials from diverse sources, such as stainless steel from wartime aircraft wrecks, rubber from truck tires, woven nylon rope, and local hardwoods. The spear, invariably made from wartime telephone wire dug up on Guadalcanal (particularly on the grounds of the Seventh-Day Adventist secondary school at Betikama near Honiara), is rubber propelled and often has an ingenious, hinged stainless-steel tip. Long guns of two to three meters, with an additional fathom of rope attached to the spear, are used in daytime diving at the steep outer reef dropoff (*tabikale*, a focal fishing ground category), whereas short guns, one meter or so long, are used for daytime and nighttime diving (with waterproof flashlights) on more shallow reefs. Very small guns are used to catch freshwater fish in the large rivers on the Vangunu weather coast. Nearly all diving for spearfishing purposes (as well as for commercial shells) is accom-



Photo 27 Underwater spearfishing on the outer barrier reef ledge (*tabikale*) Matenana Passage, central Marovo, 1987. (Edvard Hviding)



Photo 28 Diver under water with a coral trout speared from a stationary spawning aggregation in a barrier island passage. Central Marovo, 1987. (Edvard Hviding)

plished with simple diving goggles, larger face masks still being very rare in Marovo.

Underwater spearfishing is carried out exclusively by men, is regarded as “hard work” (not least by the divers themselves), and requires considerable personal knowledge of fish behavior and aggregations and of lunar and tidal cycles. During the day, underwater spearfishing is done by individuals or more commonly by small groups of men, who go out to the barrier reef in the early morning and stay there for most of the day. They dive at a number of known “good” locations along the dropoff and in passages, generally seeking particular fish species. Highly valued food fish, such as trevallies, groupers, and surgeonfish (and even barracuda, for the brave) are sought out, stalked, and shot, whereas less esteemed types such as parrotfish are taken only when fishing is “bad.” Night-diving with short spearguns is popular among many men but disliked by others as a somewhat eerie enterprise. The ease with which many types of reef fish can be speared at night attracts a lot of fishermen, however, and it is regarded as much simpler to obtain large catches at night than during daytime. Usually, one or two divers, with a third to take care of the canoe, go out to the barrier reef on nights with little moonlight and dive in shallower areas, often near the inner part of passages, to shoot types of fish that tend to be more or less asleep during the darkest hours. Parrotfish, triggerfish, and surgeonfish constitute the majority of nighttime catches, which often exceed what the divers and their households can consume and are distributed more widely on return to the village after midnight. In recent years, increased concern has been expressed among some groups in Marovo that underwater spearfishing, particularly at night, takes too great a toll on reef fish stocks. Limitations on the use of spearguns have been introduced by some *butubutu*.

#### Nets

Fishing with nets made from bark rope was of major importance in precolonial times and continued until well into the 1960s, when small nylon gill nets, maintenance free and increasingly affordable, replaced the traditional nets. Traditional net-fishing was a large group effort, initiated and supervised by master fishermen. Modern use of gill nets is more casual and is carried out by just a few men or by family-based groups of men, women, and children. Traditional net-fishing aimed at large catches of specific highly esteemed species such as surgeonfish (*tarasi*), mullet (*lipa*), and even green turtle, whereas today’s efforts are more all-embracing and yield varying catches of most kinds of reef fish. Net fishing remains tied to tidal and lunar cycles, and the

locations—many of which have been used through generations—are chosen each time according to accumulated knowledge. Most villages possess a few “net men,” but not everyone is a net-fisherman in terms of ability to supervise, and net fishing is seldom carried out efficiently if it is not led by an experienced “net man.” The net is usually stretched out in a semicircle on shallow reefs (often between two canoes), some people holding the net while the rest swim toward it, pounding the sea and driving fish into the mesh.

The people of north Marovo are the acknowledged regional specialists in the dedicated netting of mullet schools in rivers and estuaries. This type of fishing is considerably more prestigious than the “everyday” gillnetting of reef fish. A few people also retain a knowledge of the ancient art of turtle-netting and do this from time to time (nowadays with gill nets) in preparation for feasts. On the weather coast of Gatokae, where the surf often severely limits fishing, a special type of traditional scoop net (*tangasa*) is used. Crevices in the reef rim are pounded with a stick and the fleeing fish caught in the small hand-held net. Hundreds of small reef fish may be taken by one man during a half-day of fishing along the rocky shore.

#### *Hand Spears*

Wooden hand spears, nowadays with points made from iron or steel, are brought along on most fishing trips in Marovo. They are handy for securing large, hooked fish at the surface, and for spearing the odd mud crab spotted along a mangrove shore. There are also many dedicated spearfishermen in Marovo who use a variety of hand-held spears skillfully for a number of specific purposes. Heavy single-pronged spears, sometimes with a bamboo float, are used to catch turtles and dugong in the lagoon and in barrier reef passages, or to spear large fish such as the bumphead parrotfish (*topa*) along the outermost reef rims of the barrier islands. Lighter multipronged spears are thrown at mullets and trevallies along the barrier reef or mainland shores, and at larger parrotfish along the rocky reef rims on the ocean side of the barrier reef and the mainland weather coasts. Spears are usually thrown from dugout canoes in which the fisherman paddles standing up and with the spear ready, but spearfishermen may also walk along outer reef rims. One specialized form of spearfishing involves stalking fish like groupers, barracuda, or stingrays (*tape*, which are not used as food but are a favorite bait in shark-fishing) in the mangroves of the seashore with a short, single-pronged spear. Another has *bêche-de-mer* as its target, and is frequently carried out over shallow reefs at night (by both men and women), from relatively large canoes equipped with pressure lanterns.

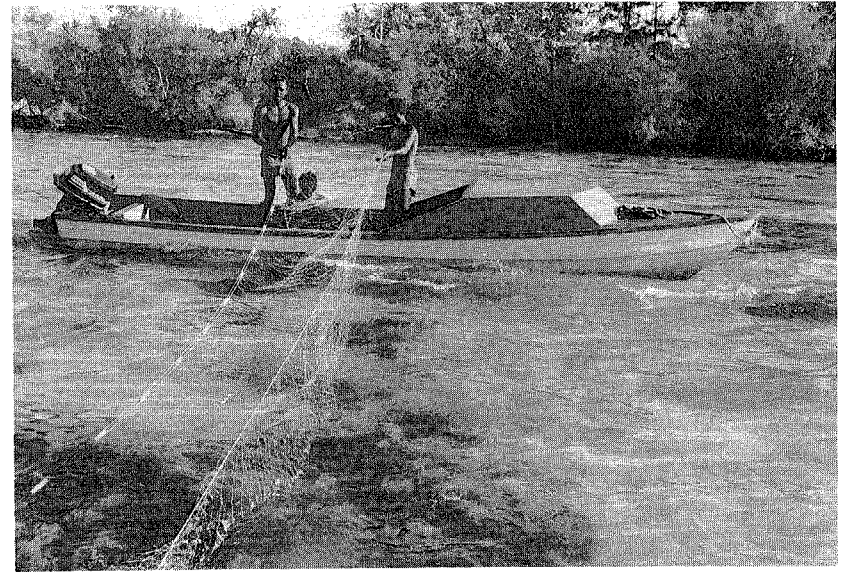


Photo 29 Net-fishing in a barrier island passage by a group of men, who stretch a nylon gill net between two motorized canoes. Charopoana, central Marovo, 1987. (Edvard Hviding)



Photo 30 Net-fishing on the outer barrier reef flat: Driving a school of fish into the net. Karikana Passage, central Marovo, 1987. (Edvard Hviding)

### Traps

The main type of fishing trap used in Marovo is the *kura*, a small basket-shaped trap woven from cane (see Russell 1948 for a closer description). It is baited and set with a line at medium depths in barrier reef passages to catch certain species of large triggerfish (*makoto lilio*, *makoto nonoa*). When the fisherman feels the fish nibbling at the bait, he tugs sharply at the line, thereby closing the basket, which is pulled to the surface with the fish inside. Though declining in popularity, the *kura* is still used today in a small number of villages when the time is right, that is, before the emergence of the new moon in certain months, particularly October and November. It is used mainly by middle-aged and elderly men who go out to their favorite spot on their own. A small thorn trap similar to the type described from New Ireland by Bell (1947) was formerly used in Marovo, but is no longer made. Stone weirs, built in the barrier reef or at mainland village shores to trap fish as the tide recedes, were in use in Marovo up to the late 1960s, but are not used any more, and only their remains can be seen today.

### Stupefactants

Several plant poisons are used in Marovo reef fishing. Most commonly used are the leaves of a climber (*buna*, *Derris* sp), but sections of that plant's stem (termed *buna riro*) are also used sometimes. A highly poisonous *Derris* climber called *buna Niugini*, brought from New Guinea by mission school students, is also known, but its use has been discontinued because it was felt to be dangerous not only to fish, but even to humans should they get the juices from the stem in their eyes. *Buna* leaves are pounded to a pulp, some sand added to the mixture, and clumps of it put into holes in larger reef stones into which fish have been seen running away. After a few minutes, stunned fish float up and can be grabbed or speared. Concern has been expressed that the poison kills fish indiscriminately, and that numbers of very small fish are killed and wasted. During the 1980s, several *butubutu* introduced restrictions on the use of *buna rokoroko* (leaf *buna*) on their reefs, by their own people as well as by outsiders. Dynamiting is included in the Marovo category of fishing methods that "stun" fish, and is termed *buna vaka* (*buna* from [European] ships). According to Somerville (1897a) this style of fishing, as well as the human injuries inevitably associated with it, was already present in the area in 1894. Having a long history in Marovo, fishing with dynamite is now strictly tabooed by the customary regulations of every *butubutu*, in addition to being prohibited by government law. Despite prohibitions and a number of accidents resulting in serious injuries and a few deaths,

fish is still dynamited from time to time, mainly by people from "bush" *butubutu* without reefholdings of their own. This technique is used along the sheltered lagoon shores of barrier islands, particularly for moving schools of mullet and for stationary surface aggregations of smaller reef fish, especially the little snapper *koasa*.

### Fish Drives

Three types of fish drive, using a long "scare line" to encircle and herd fish together on a reef flat, are used in Marovo: *kuarao*, *balava*, and *ara*. The *kuarao* involves a long rope of several hundred meters, made by joining lengths of the *ara* climber that grows in the barrier island forests. A proper *kuarao* effort involves many of the people in a village, often fifty persons or more, including men, women, youth, and even children (the latter two categories are kept under strict control by the master fisherman, because *kuarao* fishing requires discipline and even silence to keep the fish from running away). When properly supervised, a well-prepared *kuarao* (also entailing prescribed taboo periods for the fishing ground in question) is an important ritual event on the village and *butubutu* level. The rope is laid out to encircle a section of submerged barrier reef flat, and the circle is gradually drawn tighter as dozens of people swim with the line and drag it across the reef. Toward the end, the circle is small, maybe just ten meters across, and the fish inside it are herded into a circular fence constructed from coral rocks, where they are stunned with poison leaf and then speared or taken out by hand. A contemporary version of the *kuarao* involves the final use of a nylon net instead of the traditional rock fence, but is otherwise similar. *Kuarao*, though more significant before, is still used in a number of Marovo villages, predominantly from June to September because of tidal patterns. Catches of a thousand fish or more are not uncommon when *kuarao* fishing is supervised by a knowledgeable man. Cases are on record where part of a very large catch was released because it was regarded as surplus to local needs. *Kuarao* is usually carried out to provide food for a large feast.

A similar type of fish drive, the *balava*, has also been used in Marovo, but less frequently. It involves a scare line made by weaving coconut fronds around a long rope of *adoso* or "loya" cane, but is otherwise similar to the *kuarao*. It is not indigenous to Marovo but is said to have been introduced in the 1930s by Marovo people who had visited New Guinea. It involves so much preparation that its use has not become widespread, although a *balava* line can be used over and over again, in contrast to the *kuarao* line, which must be discarded after use. I have participated in one *balava* effort during my stays in Marovo and have not heard about any other attempts.

The *ara* is a smaller operation similar to the *kuarao*. This method is used to encircle schools of parrotfish sighted on the reef flat and is usually chosen if a gill net is unavailable or where the bottom is so jagged that a net would get stuck. Like the *kuarao*, it uses a scareline made from the same vine (after which it is named), but much shorter. *Ara* is dependent on opportunity and requires considerable skill, possessed by relatively few fishermen today, but is still used from time to time with good results.

#### *Bow and Arrow*

The use of a bow (up to 1.5 meters long) made from inner black palm wood and long bamboo arrows is an old fishing method specially adapted to the environments of river, estuary, and mangrove. Accordingly, it has been confined to certain parts of Marovo where these environments dominate. Bow-and-arrow fishing was the main method of the bush dwellers of precolonial Marovo, as evident from many a tale about life in the old days. This type of fishing is still pursued in some villages in Nono Lagoon and in north New Georgia, with mullet as the main target now as before. A highly sophisticated body of "hunting" knowledge is bound up with the use of bow and arrow to shoot mullet and other estuarine species in water that is frequently muddy and opaque, and in which the only visible target is the tiny surface wave made by swimming fish.

#### *Bait Collection*

*Pita mujiki* (collecting bait) is a necessary prerequisite for hook-and-line fishing. Very often, children do it to help older siblings or parents who intend to go fishing. With a variety of means, including minute hooks and lines, grabbing by hand, stunning or cutting with bushknives, and many more, many types of bait are obtained, such as anchovies (*kevo*), small squid (*kusokusolo*), hermit crabs (*koba*) and *kahu* land crabs, or simply the infinite variety of small fish that hang around village wharves. Basketfuls of bait can be obtained with amazing speed.

#### *Changing Patterns in the Distribution of Fishing Techniques*

The types of fishing described here are not distributed uniformly throughout Marovo. For one thing, the environmental characteristics of different areas promote the techniques most suitable for harvesting the organisms typical of each area. Second, certain historical processes have contributed to the unequal distribution of certain fishing methods even within the same areas. People from the Seventh-Day Adventist villages use spearguns and diving overwhelmingly, whereas those from the Methodist villages have a strong emphasis on hook-



Photo 31 Two young women fishing for small bait (*kevo*). Chea, Marovo Island, 1987. (Edvard Hviding)

and-line methods. Spearguns were introduced to Marovo after World War II, mainly by some Seventh-Day Adventist mission employees who had been in contact with coastal people in New Guinea, where spearguns were already widely used. Returning to Marovo, they brought with them some prototype spearguns. This piece of equipment has since been further refined locally, but its distribution within Marovo seems to have proceeded along lines of close interaction among groups of people adhering to the same church.

The range of fishing methods regularly used in contemporary Marovo is somewhat less diverse now than before. Specialized techniques such as traps, bow and arrow, and kite-fishing with spider-web lure for *chamuhu* or garfish,<sup>16</sup> have been used less and less since the 1960s. Various types of fishing with hook and line and spearguns, with gill nets coming third, now constitute the focus of Marovo fishing technology, together with gathering and gleaning from reefs and mangroves. Nevertheless, of the basic number of around seventy named fishing methods, the majority were still more or less commonly in use during the time of my initial fieldwork in 1986–87, a pattern that has persisted since. The diversity of target species available in the marine environment still seems to promote a similar diversity in harvesting techniques.

In line with the increased concentration on a more limited

number of efficient harvesting techniques, emphasis has shifted from group-oriented fishing efforts (fish drives, large net efforts) to individually oriented techniques. With the aid of a speargun or an outboard motor, one man can now go diving or trolling alone and return with a good catch, some of which may be sold for cash through informal marketing even in his own village. In *valusa*, traditional pole-and-line fishing for skipjack tuna, a fishing group of seven men (two of whom were fishing, the rest paddling) might return home with a catch of thirty large tuna, more than two hundred kilograms of fresh fish for prescribed distribution among all residents in the locality from which the *valusa* canoe and its crew came. A similar catch may sometimes be taken today by just one man, with a petrol expense of perhaps S\$20, a sum that must be covered by selling part of the catch to fellow villagers.<sup>17</sup>

### Paths of Fishing: Regularized Sequences in Time and Space

Often several fishing methods may be used, and several types of micro-environment exploited, during a single fishing trip. According to the time of the year and the phase of the moon, fairly regular sequences of fishing grounds tend to be visited. Depending somewhat on conditions of wind and rain, these sequences repeat themselves cyclically insofar as similar strategies will be followed from month to month each year. As a brief example, I present one full-day fishing trip by two men of Chea village in June 1987, on the "home reefs" of that community. The description is adapted from field notes taken during conversation with the fishermen immediately after the trip.

Braven and Vula left early, paddling out to the barrier reef in Vula's canoe before seven o'clock, after spending some time with light hook-and-line tackle at the village wharf, taking anchovy and small squid for bait. Arriving at the barrier islands before the tide had started to go out, they went quickly to the rocky area on the lagoon-facing reef slope at Petu, where *tarasi* (surgeonfish) usually spend the night in groups in the days around the full moon. Diving with their long spearguns in about two fathoms of water, they speared some large, still "sleepy" *tarasi*. As the tide started to go out and flow out over the submerged barrier reef, it was time to fish with baited hooks for *heheuku* (a small red snapper), over the outer reef gullies off Vaenihope, into which this fish usually retreats with the tide.

By midday it was low tide, and most fish had retreated to deeper waters beyond the reach of the diver. While Vula went ashore at Vaenihope, lighting a fire to smoke the *tarasi*, Braven paddled out to the reef dropoff at Patu Suvulu, to try deepwater handlining for *dovano*, a large fish found at full moon on the deep reef slope. Having caught one, he went ashore to join Vula resting in the shade of the coconut trees.

As the scorching midday sun started to move down a bit, they decided to look for some blacklip pearlshell over near Kemu Island, while the tide was still low and the five-to-six fathoms deep blacklip reefs were still fairly accessible. They paddled up to Kemu, bringing their fish catch, covered by coconut leaves. As they were diving for pearlshell the tide started to come in again, and they went out to the ocean-side reef dropoff at Vaenimoturu Island, where Vula has a special place for spearing barracuda around full moon. Underwater spearfishing for barracuda is not a sport that just anyone would attempt. Vula is experienced at it, and when he found the predicted milling aggregation of barracuda, in four fathoms of water off the steep reef-slope between Vaenimoturu and the small islet of Patu Vio, he dived down and soon had speared three of them, including one so large that it almost swam off with the speargun. Braven anchored the canoe and dived down himself, spearing one barracuda. They decided against going farther up to the Lumalihe Passage, where large *tilo* (dog-tooth tuna) are to be found. The reason was not so much that Lumalihe is in the waters of the Repi people, to whom neither of the two men is closely related, but rather that the days around full moon are known as the time when sharks (which are abundant at Lumalihe) are particularly aggressive. Instead, satisfied with the day's catch, which included even some fine commercial pearlshell, they left the barrier reef and returned home well before sunset.

During this particular fishing trip, fairly typical of effort and catch on a full-day trip by experienced fishermen, six different types of fishing ground (one at the village shore and five at the barrier reef) were exploited by means of several different methods of hook-and-line and underwater spearfishing (as well as "bare-handed" diving for pearlshell). Successive reefs and islands were visited, and fishing was attempted (largely successfully) according to the fishermen's knowledge about which fish species were likely to be found where at what time of the day.

Any specific sequence of fishing activities, carried out by particular people on a particular day, is termed *inene* ([a] walk). Certain *inene* are carried out regularly and repeatedly by the fishermen of one group, and may in due course become recognized as *huana* (path). *Inene*, then, refers to the spatial sequences of individual fishing trips, whereas *huana* refers to standardized, well-known time-space sequences of good fishing spots. These sequences are, in a sense, maps from which to plan the *inene* of any specific day. For example, the *inene* just described largely follows one of several recognized *huana* of that time of the year and during full moon. Vula and Braven are both experienced fishermen, who will not merely wander around aimlessly at the barrier reef. Rather, their knowledge of the time-space coordinates of fishing leads them to persistently seek out

known places (*vasidi*) where particular species are known to have their time (*kolo-kolo*) to aggregate.

The sequential pattern followed by Vula and Braven from morning to late afternoon is an adjustment to the tidal cycles of the day. During full and new moons, the difference between low and high tides is at its greatest, providing special opportunities. Fish come high up along the reef slope and dropoff during the extreme high tide, and pearlshell reefs are particularly accessible during the extreme low tide. With some individual variation, this particular *inene* is often followed by fishermen of Chea village. It is one of several known *huana* followed at the barrier reef during the April–September season of *hecha* (southeast tradewind) and *mati rane* (daytime low tide). Most fishing paths of the *hecha* season tend to be centered on the lagoon- and ocean-facing reefs of the barrier reef itself, with short distances between fishing sites, and very often including some diving for commercial shells. In the *hecha* season fishermen are likely to “go along the barrier reefs” (*ene pa toba*), following recognized paths that connect well-known good fishing spots, and encountering a dense maze of named sites of both historical and productive significance. Fishing in the *hecha* season tends to concentrate heavily on the fisherman’s home reefs. This is also the time when women (and children) go most frequently to the barrier, in search of clams, other mollusks, and smaller fish on reef flats.

Fishing in the October–March season of *mohu* (northwest monsoon) and *mati ipu* (nighttime low tide) follows different patterns. High tides during the day largely inhibit reef gleaning by women and children, except for modest activities in and near coastal mangroves. However, this is the season for “big fishing” carried out by adult men, often in groups. It is the time for pelagic fish like trevallies, Spanish mackerel, and tuna to appear in surface shoals in the lagoon, on the open sea, and along the outer reef dropoff. The arrival and emergence of pelagic shoals follow cyclical time-space patterns well known to Marovo fishermen, just like the patterns of reef fish. In the *mohu* season, fishermen are likely to “go in the lagoon” (*ene pa kogu*), “go along the outer reefs” (*ene pa rarusu toba*), or “go on the open sea” (*ene pa kolo*). Trolling techniques, today often motorized, are commonly used. The recognized paths followed by fishermen during the *mohu* season are much more wide-ranging than those of the *hecha* season. Canoe crews often travel relatively far beyond their home reefs and in the process encounter several marine boundaries. As they do, fishermen may also encounter the limits of their own environmental-productive and historical knowledge, entering areas of reef and sea where they know few place names and perhaps no fishing paths.

Marovo people know fishing paths (*huana*) and are able to carry

out successful fishing trips (*inene chaba*) mainly in their primary *puava*, the area in which they normally reside as members of the resident *butubutu* core. Knowing the paths of an area of reefs and sea enables people to use the resources of that area successfully, but this knowledge also contributes strongly to the authority needed to control the area, the “power to speak about” the *butubutu*’s holdings. The sequences of time-space coordinates that constitute paths of fishing in an area are known most intimately by those who have power over that area, and a shared knowledge of paths underpins shared identity as members of a side (*kale*), particularly for the coastal groups who control very little land. However, the paths of fishing in an area may also be fairly well known by other groups, either neighboring coastal people who have joint-use privileges, or bush people who have long-standing use rights and who fish regularly. Political power and cultural identity are clearly tied to more than just the “fishing paths” of productive knowledge. Marovo people also recognize another type of path in the seascape, consisting of reminders or signs (*vinahilahila*) of what I call here “historical knowledge.”

Such paths, associated firmly with the coastal groups, are the topic of the next chapter. For Marovo people, the marine environments of lagoon, barrier reef, and ocean not only form a cornerstone of material production and spatial mobility but also play a crucial role in mediating history and in the formation and maintenance of group identity. The sea is a *locus* of history, and a *nexus* of social relationships near and far. Fishing and maritime travel through near and remote seas involve repeated and sequential encounters with places whose names and associations invoke history and cultural identity.