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External Forces and Change in Traditional Community-Based Fishery Management Systems in the Asia-Pacific Region

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ABSTRACT In this paper I analyze and exemplify the historical and contemporary external forces that drive change in traditional community-based marine resource management systems in the Asia-Pacific Region. A summary of policy alternatives regarding the future of such systems is presented.

Introduction

In the Asia-Pacific region, as throughout the world, traditional community-based marine resource management systems are increasingly affected by external factors that cause stresses and often lead to radical change in systems, including their demise.¹ There is nothing new about this, except that the intensity of impacts and diversity of their sources has increased in recent decades. Thus contemporary community-based marine resource management systems exist under environmental, social, ecological, political, and demographic circumstances that are often very different from those of even the recent past. Nowadays such systems are swept-up in the overall process of national modernization in the Asia-Pacific Region.

Among the principal, all-pervasive external forces are the legacy of colonialism, contemporary government policy and legal change, the replacement of traditional local authority, demographic change, urbanization, changes in education systems, modernization and economic development, commercialization and commoditization of living aquatic resources, technological change, the policies of external assistance agencies, and national policies for economic sectors other than fisheries (Fig. 1). Such external forces rarely act in isolation, but rather as a mutually reinforcing and potentially destructive complex.²

Somewhat more recent pressures – but not universally so – are the commercialization and monetization of formerly local and mainly subsistence or reciprocal exchange or barter economies, which now link them with external markets. This, in turn, leads to changed perceptions in fishing communities regarding the value of marine products, and often to external factors being internalized by village elites, and so to the breakdown of traditional management systems through the weakening or total collapse of traditional moral authority. Small communities are not immune

from the pressures that drive larger polities and commercial elites, and which undermine the moral imperative of local management systems from within. Regional and global markets also have a direct impact on them: external incentives introduce temptations for individual profit at the expense of local social equity, and thus undermine systems from within by weakening or even destroying their moral and traditional authority. Thus the equitable allocational and distributive effect of existing local institutions should not be romanticized.

Community institutions and management systems are not immutable: they change through time. They are dynamic, adapting to external as well as internal and local experiences and pressures, many of which are not directly related to the fisheries sector. Participants in community-based management systems cannot be assumed *a priori* as being inherently benign resource conservational and socially equitable actors. Hence any policy and program decisions about the present-day and future usefulness of local management systems must be based on a clearheaded and realistic evaluation of the moral authority, motives, interests, and cultural conceptions that underpin and drive them.

Traditional management systems decline under pressures exerted by both internal and external sources, and the latter can trigger the former, such that local phenomena may mask deeper-seated problems afflicting social institutions. Such

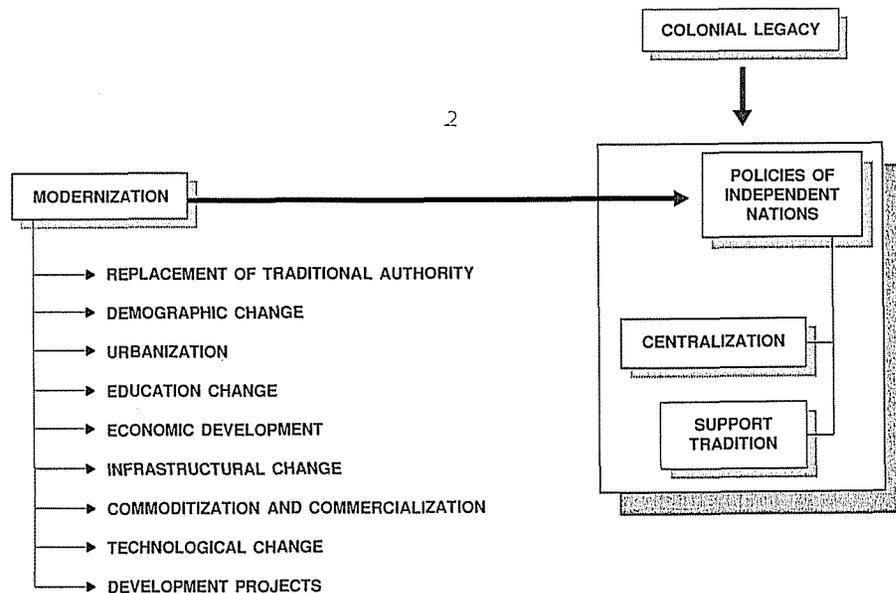


Figure 1. The Principal External Factors causing Change in Traditional Community-based Fisheries Management Systems in the Asia-Pacific Region.

systems are dynamic, historically conditioned and deeply embedded in larger political, economic and social realms. Types of traditional management system vary enormously, so any examination of the external factors that impinge on them must be generalized. Inevitably, there will be many local exceptions.

The Colonial Legacy

The principal impact of the colonial era on traditional community-based resource management systems in the Asia-Pacific Region is a strongly contradictory legal complexity, with the Western-based State law of the now independent nations that essentially regards all waters below the high tide mark as being state property and open of access, at odds with local, indigenous-based customary law, which recognizes some form of marine property right. Worse, it is generally accepted by Westerners and those Western-trained that customary law, which locally legitimizes customary rights to resources, is invalid for upholding legal claims, because it is unwritten, not made by either a sovereign or legally-constituted legislative body, and arises from societies lacking any notion of 'law.'

As a consequence, in the Asia-Pacific Region, the relationship between the customary law that governs, or governed, community-based marine resource management and statutory law is highly varied and extremely complex. Nevertheless, broad historical patterns and resultant contemporary conditions are clear. The impact of British, Dutch, French, German, Japanese, Portuguese, Spanish, and U.S.A. administrations, and the post-colonial continuation by independent nations of the laws introduced and policies pursued by those regimes, has been a major 'external' factor that either by default or deliberately, undermined customary law and community resource rights.

Default was widespread and understandable: it never was the objective of colonial regimes to adapt metropolitan legal systems to indigenous systems and institutions, rather the goal was that the latter should be displaced and native peoples educated to use Western systems and institutions. To have encouraged community-based management systems rooted in local systems of customary law would have been inimical to this objective. Rather, the objective would be attained by either legislating directly against community-based systems, or allowing them to wither and become displaced during a gradual process of modernization and Westernization.

Further, in colonial times as today, the sheer logistical and practical complexity of attempting to incorporate customary rights into a system of legal norms was almost overwhelming. An extraordinarily diverse society like Papua New Guinea, for example, makes it daunting if not impossible to consider formulating appropriate law and policies to embrace the specific customs of some 700 distinct cultural groups into a single system of norms.

Deliberate legislative action to do away with traditional community-based systems was also widespread. The Philippines provides an example. According to early Spanish chroniclers, systems of community-based coastal and riverine fisheries management existed in the Philippines in pre-Hispanic and early-Colonial times, based on independent villages (*barangay*), around Manila and in the Tagalog Region of Luzon Island (Blair and Robertson 1903-1909). But as Spanish colonial rule intensified, the *barangay* was eliminated as an administrative unit and the village sea territory disappeared with it (Lopez 1985).³

Today the coastal or 'municipal fisheries' of the Philippines are operated under an open access regime. As established by *Presidential Decree 704* (also known as the *Fishery Decree of 1975*) 'municipal fisheries' are those that use boats of 3 gt or less, or gears not requiring the use of a boat. 'Municipal fisheries' operate in both inland and marine 'municipal waters,' the latter within 3 nm of the municipal coastline (Santos 1980)⁴.

This situation had its origins in the colonial periods of both Spain and the U.S.A. Under the Spaniards fisheries were for the welfare of the town (municipality) and were an open access resource, although private rights were leased to individuals, particularly for construction of fish weirs ('corrals') (Spoehr 1980). The U.S. administration, by *Act 4003* Sect. 67 (1932), authorized municipalities to grant exclusive fishing rights to concessionaires within municipal waters via public auctions, with the principal intention of generating rent for the municipality.⁵ Where this did not occur, gear was licensed to derive revenue (Santos 1980). However, the Supreme Court ruled that the auction of exclusive rights pertained only to stationary weirs, oyster beds or fry-collection, and that municipalities could not exclude non-resident fishermen who obtained a permit from the Bureau of Fisheries and Aquatic Resources (Kalagayan 1991). But under the *Fishery Decree of 1975*, the licensing authority for municipal waters was given to the municipalities.

The Colonial Regime in Fiji

The case of Fiji is extremely interesting in that it provides a documented example of a blatant attempt by local colonial officials to destroy a traditional management system in favor of expatriate entrepreneurs and in defiance of the expressed wishes of the British Crown and the unambiguous orders of the metropolitan government. At the time of cession of Fiji to the British Crown, in 1874, the question of customary resource rights was of major concern to the High Chiefs, most of whom wanted to attach conditions regarding their land and fishing grounds before agreeing to the cession of the country. But they were dissuaded from so doing during the final negotiations by Robinson, the British representative, who explained that Queen Victoria '...was willing to accept the offer of cession...but that conditions attached to it would hamper, and might even prevent, the good government of the country' (Derrick 1946:248). While the High Chiefs agreed with this, it was

apparent that they expected to have their lands and waters returned, in accordance with Victoria's 'generosity and good faith' (Derrick 1946:248).

Detailed instructions regarding the verification and simplification of Fijian land titles of lands to be held in trust for the Fijians were given to the British Governor of Fiji by the Secretary of State for the Colonies.⁶ But since no similar clear statement was forthcoming with respect to the reefs, the chiefs began to question the situation. They sent two letters to Victoria expressing their anxiety that their ownership of the reefs appeared to have passed from them.

In response, Kimberley, then Secretary of State for the Colonies, wrote to Des Voeux, Governor of Fiji, instructing him that he (Kimberley) was commanded by Victoria to inform the chiefs that Des Voeux was to investigate the entire matter, '...and that it is Her Majesty's desire that neither they nor their people should be deprived of any rights which they have enjoyed under their own laws and custom.'⁷ In another dispatch Kimberley further instructed Des Voeux to

...examine into the statements now advanced by the chiefs, and if you are satisfied that these reefs are the recognised property of native communities..., or that they are required for the use and occupation of some Chiefs or tribe, you will take such measures as may be necessary to secure to the rightful owners the possession of their respective reefs and to effect the registration of them under the Ordinance relating to native lands; in the same way as other lands (not covered by water) which are the property of the different mataqali....⁸

If there are any reefs not claimed as the property of any Native Chiefs or Community they will continue to be the property of the Crown together with the other lands which became vested in Her Majesty under the terms of the Deed of Cession.

Thus clearly it was both the policy and the intention of both Victoria and the British Government that, according to customary law, the reefs and fishing grounds have Fijian owners in the same way that their lands did. In November of 1881, Des Voeux conveyed equally unambiguously the contents of those two dispatches during his opening address to the Council of Chiefs, and added that steps would be taken to ensure that the *metaqali* would obtain the reefs that belonged to them.⁹ This removed any doubts that the chiefs might have had.¹⁰

However, neither royal command nor the official British Government policy was ever implemented. There is nothing to demonstrate that anything was ever done to follow-up Des Voeux's opening address statement of November 1881. The Native Lands Commission was unable to devote time and personnel to marine matters. This renegeing on royal wishes and official policy is exemplified by the behavior of Thurston, Acting-Governor, who in 1886 wrote to the Secretary of State for the Colonies that '[i]t has been the habit of natives of this Colony to claim as absolute and exclusive, a proprietary right in the reefs....and in some cases this has led to pretensions that could not be recognised.... It is however inconsistent with the altered conditions of the country that any exclusive rights of the nature indicated can be enjoyed by one class only of Her Majesty's subjects.'¹¹

In 1886, Thurston also opened the bêche-de-mer fishery to non-Fijians, in the interests of the export economy and under strong pressure from the colonists. This was accepted by the chiefs as only a temporary measure, in that only the outer reefs would be thus opened. But in 1887 the new Governor, Mitchell, opened all reefs to bêche-de-mer fishing, in the interests of the economy.¹²

Further, the *Rivers and Streams Ordinance* (1882) was now being interpreted as meaning that the private fishing rights of Fijians in all rivers and streams were abolished and that they now belonged to the Crown.¹³ In addition, colonial officials held the view that there were no longer exclusive tribal fishing grounds.¹⁴

The Colonial Regime in Papua New Guinea

The situation was quite different in what is now Papua New Guinea, and where the contemporary recognition of traditional fishing rights is based on colonial policy under which the indigenous peoples were not divested of their lands, but, on the contrary, were protected and secured by the colonial authorities. Hence, today some 97% of the land area is under customary tenure and customary law. Similarly, colonial sovereignty of marginal seas did not displace traditional community-based marine tenure, including fishing rights, which were statutorily protected early in the colonial era. For example, the *Fisheries Ordinance of 1922 (New Guinea)* provided: 'This ordinance shall not apply to any native fishing in waters in which by native custom he has any right of fishing' [Section 2A]. As a result, in most traditional coastal communities of Papua New Guinea traditional fishing rights still regulate activities. Colonial policy was motivated by the need to ensure a steady supply of marine fish to the coastal population. Further, many fishermen lacked access to alternative resources from which to make a living; their livelihood and incomes depend on the continued recognition of their traditional fishing rights.

In Papua New Guinea, the attitude of the colonial authorities toward community-based marine resource management was quite unlike the case of Fiji or most other colonies in the Asia-Pacific Region. In Papua New Guinea the customary fishing and marine resources rights of indigenous peoples were recognized or protected by the various colonial administrations. In the Territory of Papua, just before establishment of the British Protectorate, in 1884, commercial exploitation of pearl oysters, pearl shells, trochus shells and bêche-de-mer by expatriates had become widespread. In 1891 the administration enacted licensing and other ordinances to regulate these activities. In some areas, like the Trobriand Islands, *The Pearl Shell and Bêche-de-mer Fishery Ordinance of 1894 (Papua)*, was used in 1903 and 1910 to close the fishery to expatriates. However, indigenous peoples, such as the Trobriand Islanders were permitted to exploit these resources commercially (Tom'tavala 1990).

Indigenous peoples' fishing rights in waters adjacent to a landholding were explicitly recognized in 1952. Pursuant to the *Pearl, Pearl-Shell and Bêche-de-mer Ordinance 1911-1932 (Papua)*, a proclamation was made for the 'Protection of

Fishing Rights in Waters Adjacent to Property.' Outsiders ('...any person other than the [land] owner, lessee or occupier') were prohibited from taking pearl oyster shell, trochus shell, or bêche-de-mer within 800 m of the highwater mark on the foreshore and within a sea area bounded by the seaward projection of the lateral boundaries of the landholding. The most important commercial marine fishery products were thereby reserved for the indigenous landowners. Fish, crustacea, oysters, other shellfish, and all forms of marine animal life other than whales were included in 1953.

Government Policy

The situation of traditional community-based marine resource management systems changed but little with national independence. For most parts of the Asia-Pacific Region, the present unsystematic and *ad hoc* statutory framework relating to community-based marine resource management claims is the result of the absence of appropriate policy, which, in turn, is partly a legacy of colonial neglect, a neglect which is logical given the underlying philosophy of colonialism. The lack of appropriate policy is partly a legacy of colonialism, partly a reflection of a preoccupation with other development priorities, and partly, as in the case of Indonesia, in particular, because devolution of power to the local level is an anathema in a vast, sprawling archipelagic nation still concerned with the fundamental task of 'nation-building.'

Regarding Papua New Guinea, for example, Tom'tavala (1990) observes that in early-1990, neither the national government nor the provinces had a policy for traditional marine fishing rights, despite the official admission that conflicts over them are among the most prevalent contemporary disputes. This actually or potentially impedes economic development, leads to social and political instability, and contributes to an increase in criminality, since customary claimants tend to uphold their claims by physical violence without regard either to the national good or to the validity of outsiders' claims. But, as Tom'tavala (1990) observes, physical violence or the threat of it to enforce claims, although customarily sanctioned in many parts of Papua New Guinea, is unacceptable according to modern criminal law. However, unless traditional claims are given some degree of recognition or protection, people will continue to enforce their claims with violence, since they regard their actions as both culturally warranted and sanctioned.

In the Asia-Pacific Region the government policy regarding traditional community-based marine resource management ranges from confusion, as in Kiribati and Fiji, to the incorporation of traditional systems within modern management regimes, as in much of Melanesia, on the one hand, or to the deliberate undermining of traditional systems and their replacement with centralized systems of administration, as in Indonesia, on the other. A centralization policy occurs generally where

a government seeks resource rents for investment in other sectors of the national economy, and/or needs to develop an export sector. In other cases, one of the best examples being Indonesia, such a policy is augmented when government implements a centralization policy owing to a basic need to exert control over far-flung national territory, in pursuit of 'nation-building.'

Government policy has often been to replace traditional community-based management systems with open access systems. But some nations and communities have rejected this approach. Such an initiative and response occurred in 1976 in Palau (Johannes 1988), and in Japan during the Meiji era (1867-1912) and again under the post-war US Occupation in Japan (Ruddle 1985, 1987, 1990). Indeed, Johannes (1988) observes of the Pacific Islands that the level of resentment aroused in fishing communities by official attempts to eradicate community-based resource management systems will render such attempts impossible in a democracy. Apart from near urban centers, almost every disappearance of a traditional system in Oceania has resulted from legislation and other actions under undemocratic colonial regimes. Such problems can only become more complex as the demographic change, urbanization, commercialization, and other pressures become more pronounced.

Support of Tradition

In many Pacific Island nations, and especially those in Melanesia but also in parts of Polynesia and Micronesia, despite an absence of clearcut policy and the requisite statutes, the contemporary value and role of traditional community-based coastal-marine resource management systems is recognized. There has also been scattered and somewhat *ad hoc* attempts to implement this recognition. For example, the government of Papua New Guinea seeks to return enforcement to local 'resource owners.' In this, devolution of power to provincial and lower levels is fundamental (Chapau *et al.* 1991). Similarly, based on the *Provincial Government Act* (1981), revisions to the *Fisheries Act* of Solomon Islands seek to transfer inshore fisheries management to the provinces, whereby they will have full jurisdiction over 'Provincial Waters' for 3 nm offshore, and will formulate their own by-laws. In this way it hoped to achieve a better correspondence between provincial management and customary laws (Moore 1987a-g). In Vanuatu all reefs are owned by coastal communities. This is enshrined in the constitution: 'All Land in the Republic belongs to the indigenous custom owners and their descendants' (Art. 71, Chap 12) (Amos 1993). In Fiji the Native Lands Trusts Board is attempting to increase integration of the traditional community-based fisheries management system with State law, by seeking more formal Fijian ownership of proposed Marine Parks. This planned devolution of management responsibility has recently received ministerial support (Adams 1993).

A similar process is underway in parts of Polynesia and Micronesia. For example, in Western Samoa since 1988 an attempt is being made to merge local *matai* council rules into national legislation, thereby strengthening them by official

recognition. So *matai* councils now consult fisheries officers when designing and implementing local rules. The government must cooperate with the *matai*, thus blending the management efforts of the two levels (Pers. comm. U. Fa'asili).

Thus, at least for the tropical Pacific, it is being increasingly accepted that many subsistence fisheries are governed by community-based management systems, and that such systems must be accounted for in evaluating potential development strategies. There a combination of factors make such systems a potentially valuable management alternative (Lewis 1990:72). In an overview of options and prospects for the 1990s by the Forum Fisheries Agency (FFA 1990:362) it was observed that:

For management of [the subsistence] fishery sector, it may...be advantageous to examine traditional or customary marine management. The Pacific Islands have a rich history of traditional management that is up to now only partially documented.... Modern management of this fishery can then be based on traditional or cultural practices, This would then greatly facilitate its acceptance.

Further, the policies of many governments, particularly in Melanesia, as exemplified by Vanuatu (Amos 1993), recognize that traditional systems are an integral part of a matrix that regulates social and political relationships and defines cultural identities and ways of life, rather than being concerned with just fishing rights and the organization of economic activities. Thus in many instances abandonment would entail severe social and cultural repercussions. In recognition of this, although generally not without considerable confusion and complications, in Papua New Guinea, Solomon Islands, and Vanuatu, where traditional marine resource management systems are recognized as a form of customary law, they have been embedded within State law. In those countries it is a tenet of policy that customary law may empower community-based management, as well as being a basis for co-management of local marine resources.

In the context of economic and social change, during which rights to resources increase in value, groups may attempt to obtain codification of their customary rights. This has occurred in Papua New Guinea (Wright 1985, 1990). Whereas formal acceptance by legal and political institutions provides communities with a legally codified basis for control over resources, state supervised codification can destroy much of the adaptive flexibility characteristic of unwritten customary law (Ruddle and Johannes 1985, 1990), since, as in Palau, 'the aura of mystery connected with [unwritten] traditional resource management...was part of its effectiveness' (Johannes 1981). Dilution of the flexibility of traditional systems is clearly not desirable. Hence codification can be both difficult and of questionable usefulness.

In Papua New Guinea, statutory law, as enshrined in the Independence Constitution, pragmatically recognizes the validity of legal obligations conferred by custom.¹⁵ Custom is valid if not inconsistent with Constitutional or other statutory laws, and not repugnant to the general principles of humanity (Tom'tavala 1990).

This was reinforced by Section 5 of the *Customs Recognition Act*, which among other things recognized the customary basis of rights to marine areas and resources. This represents the best attempt by the state to recognize traditional community-based marine claims. However, this appears to have been intended more to resolve conflict, than to uphold claims *per se*, since it refers to recognition and application of customs during civil litigation, whereas it does not explicitly provide for the prescription by custom of rights *in rem* (Tom'tavala 1990). However, that 'the ownership by custom of water or of rights in, over or in connection with the sea or a reef, or in or on the bed of the sea' can be legally proven presupposes the pre-existence of rights to coastal waters and marine resources based on custom. Thus where a local community recognizes rights to marine territory or resources, these rights could be implicitly recognized under the *Customs Recognition Act* for all other purposes.

However, Tom'tavala (1990) concludes that this interpretation, except for principles of common law and equity, could be overridden by the provisions of any other law which prescribes anything to the contrary. He goes on to say, 'However, if there is a dearth of statutory prescription to the contrary, then, rights to maritime territories and marine resources (at least for indigenous people) fall to be regulated by customs as impliedly recognized under section 5 of the *Customs Recognition Act*.'

Further, fishing is also an integral part of many traditional coastal societies. For the Trobriand Islanders, for example, the sea and marine life have immense cultural significance, embracing the whole fabric of their beliefs about their origin, their prowess, their relationships, and their ceremonies. Origin stories tell of the maritime origins of certain lineages, the relationships of others with certain fish species and the acquisition of fish magic by others. The sea was also fundamentally important in the ceremonial, inter-island *kula* trade. And fish were an important symbolic and nutritional trading commodity with inland villages.¹⁶ Thus the recognition of traditional fishing rights is inseparable from the protection of indigenous culture, part of the fifth 'National Goal and Directive Principle,' inscribed the Preamble to the Constitution (1975) (Tom'tavala 1990).

But even the discussion of legislation to register traditional claims can of itself lead to changes or attempted changes in systems. For example, in Solomon Islands in some cases exaggerated claims are made because it is anticipated that at some future time a community's exclusive fishing areas would be registered, hence it would be wise to stake a claim to an enlarged exclusive area. This occurred in Western Province (Ruttley 1987).

Although in some cases this may be just opportunism, in other cases it may be seeking to protect both the inshore exclusive area and an off-shore open access area, from which a community's subsistence is habitually derived. An example of the latter protective anticipatory claim occurred at Dunde Village on Munda island, Western Province. There it was stated that the sea beyond the barrier reef is not

owned by any individual or tribe, but if that area was to be considered as customarily owned, then the fishermen of Dunde Village would claim it, as they use it to catch bonito. Thus they would claim as customary waters those extending to about 6 miles off-shore. In other words, official boundaries would have to be drawn so as to take actual practise into account (Ruttley 1987).

Centralization

The national policy of Indonesia, for example, is that all marine waters are State property, to be managed centrally, through the provincial, regency and village offices of the Directorate General of Fisheries, for the benefit of the entire nation. This is tantamount to legally sanctioning an open access system nationwide, regulated theoretically – since it is practically unenforceable throughout the vast archipelago – only by certain technical considerations regarding gear type, vessel size and mesh limitations.¹⁷

But the centralization philosophy, an integral part of the nation-building effort in Indonesia, is a major reason for the undermining of local management institutions: 'Not only is the Indonesian state generally suspicious of local autonomy, it is actively involved in seeking additional revenues and export earnings' (Bailey and Zerner 1992a:10). The control of and rents extracted from marine resources is one way of achieving these goals. As a result, traditional community-based marine resource management systems are being undermined. In many areas of Indonesia local and fisheries officials uphold the statutory law of free access. This has resulted in physical violence (Zerner 1991a) or disenchantment. For example, on Ambo Island in the Balabalakang Islands of the Makassar Strait, an indigenous royalties system was used for the last 40 years to regulate harvesting. Although having worked well until the mid-1980s, the system is now apparently breaking down, since outsiders have been blatantly disobeying the rules. This has been encouraged by the government policy of open access in fisheries. Further, since the local population administers a management scheme yet turns over 100% of the royalties to the Regency Government, receiving very little in return, they are becoming less vigilant. They bear all the management costs but reap none of the benefits (Zerner n.d.).

In Majene Regency, Sulawesi, the local traditional regulation of first-comer's rights to a spot for a *roppong* FAD has been overturned by the courts. Zerner (1989a) describes one case where the crew of a first-comer's *roppong* severed the lines of an intruder raft, and dispatched it to sea. The owner and crew of the first-comer raft '...were found guilty of intentional, wilful destruction of another person's property and fined under civil tort claims for damages caused by the loss of the *roppong*' (Zerner 1989:12). The Majene court invalidated the traditional practise as a custom that must be nullified and abolished. The court considered the practises as obstructing national development and would provide an opportunity for individuals to play judge and so threaten national stability. This decision both reinforced the national tendency toward open access in fisheries and deflated confidence in

local rules and management procedures. It signalled the centralization of fisheries management and an increase in transaction costs.

External Replacement of Traditional Local Authority

The decline of traditional marine resource management systems can often be traced to the decline of traditional political systems and their conscious replacement by Western political systems during the colonial era. In the Cook Islands, for example, regular contacts with Westerners began in 1821, with the activities of the London Missionary Society. This entailed the destruction of traditional religion, and thus part of the basis for traditional authority, and imposition of a British legal and administrative code adapted to missionary concepts. In 1888 the Cook Islands became a British Protectorate, and in 1901 were annexed to New Zealand. Colonial administration was centered on the Resident Commissioner in Rarotonga, supported by Resident Agents on the larger outer islands. The early Cook Islands Parliament became a Legislative Assembly in 1946, and elected Island Councils were established later. This all functioned to undermine traditional power holders (*ariki*), and so too a fundamental component of the traditional resource management (Sims 1990).

In Palau, traditional social organization has been undermined by modernization. The greatest blow to the integrity of the kin group has been the vesting of property ownership in the individual, and the individual accrual of wealth. As a consequence chiefly authority is now minimal, and the economic and political functions of the chiefs have become vestigial (McCutcheon 1980).

In Tokelau, as is typical throughout the region, monetization has eroded the respect and hence authority of the Council of Elders because they are now salaried and have ventured into non-traditional areas, like budgeting. It also has enabled islanders to pay relatively painless cash fines for transgressing fishing regulations (Tolosa *et al.* 1991).

But, in complete contrast are those cases where communities have coopted external pressures to bring about changes in traditional authority that they desire. For example, traditional fishing rights on Lukunor Atoll, in the Central Caroline Islands of the Federated States of Micronesia, lapsed during the German administration. After 1945 the U.S. administration attempted to restore the trapping and fishing areas to their former owners. This was unpopular, since during the last generation, and especially during WW II, the community had become accustomed to open access. Hitherto, only 12 people had controlled the reef area, of whom three were closely related to the chief. The chief wanted to restore the traditional regime, purportedly for conservation reasons. Further the chief's clan identified with the reef areas and disliked seeing them abused by overfishing. However, the other inhabitants resented the idea of having to ask permission each time they wanted to

fish, and did not wish to see the reef monopolized by the chief's clan, as in former times. So the other inhabitants petitioned the Civil Affairs Office, in Chuuk, which supported them by rescinding the restoration order (Tolerton and Rausch 1949).

Demographic Change

Demographic change, be it natural growth, in-migration or population decline from various causes, is an all-pervasive factor throughout the Asia-Pacific Region. In those countries and regions where human populations are expanding geographically and increasing in numbers, an increased demand for fish and marine products is generated, which, combined with the penetration of a cash economy, creates new opportunities to sell surpluses. The impact of this phenomenon on fishing communities is exacerbated by the adoption of new technologies to increase harvests to provide a regularly marketable surplus, and the host of social changes that this brings about.

In-migration, in particular, exerts a major impact on traditional community-based systems. Similarly, excessive out-migration or population decline for other reasons can undermine systems. In some locations where there are no longer enough people to merit maintenance of a system, neighboring communities may decide to merge their territories, as occurred in Okinawa Prefecture, Japan (Akimichi and Ruddle 1984).

In the Cook Islands localized population decline contributed to the demise of traditional management systems (Sims 1990). There, demographic dislocation caused by diseases introduced by Westerners decimated local populations. The population of Rarotonga, for example, declined from some 6,000 or 7,000 in pre-contact times to about 1,800 in 1867 (Crocombe 1964). The pattern was similar on the outer islands. In the northern Cook Islands the dislocation was exacerbated by the depredations of Peruvian slave traders. On Penrhyn Island, the worst case, at one time only 88 people remained, mostly children and the elderly, resulting in abandonment of two villages at the southern end of the lagoon (Maude 1982). The missionaries encouraged resettlement in new villages, and on each island the main village grew from in-migration, such that, for example, by 1895, over 30% of Rarotongans were in-migrants (Crocombe 1964). Such drastic changes ensured the decline of traditional society and institutions. Both the moral authority underpinning and practical regulations governing marine resource management systems were thereby diminished, and this weakening was reinforced by demographic upheaval.

Urbanization

The heavy influx of in-migrants, such as occurs under urbanization, is a major factor causing the breakdown of systems, and against which it is impracticable to defend them. Kiribati provides an example. In that nation in-migration occurs to any significant extent only on Tarawa Island, the capital area. Tarawa fishing rights holders have complained that in-migrants, without first seeking permission, freely exploit their shellfish beds, which, by custom (*i.e.*, before the beginning of British administration and the subsequent in-migration), had been for their use only. The government has not sustained the customary owners, arguing that since the lagoon and its resources belong to the State, every citizen is entitled to harvest the resources (Teiwaki 1988).

Similarly, in Palau community-based marine resource management has also been overwhelmed by in-migrants to Koror Municipality, the seat of the District Center. They now outnumber traditional residents, such that it is impossible to either determine or define traditional fishermen (Johannes 1988). Elsewhere, where lineages are the corporate group owning a marine area, in-migrants will automatically possess either primary or secondary rights to fishing if they are from the appropriate lineage.

The breakdown of community-based management systems in the vicinity of urban centers is both inevitable and probably desirable, if it is not to interfere with the rational development of the coastal zone, as in Japan (Ruddle 1987).

In Palau, fish has also been commoditized as a result of urbanization, since people no longer have the time to go fishing but still want to eat fresh fish, hence they purchase it in the local market. Fishermen also make money by selling their catch to hotels, restaurants, foreign project administrators and foreign contract workers (McCutcheon 1980).

Since young adults move to town for career reasons, the ratio of fish providers to fish consumers has sunk to critically low levels in Palau. In the context of technological change this has had an impact on marine resource management patterns, since new fishing techniques offer more efficient and faster catching.

But urbanization and associated demographic change that it causes in areas of out-migration can lead indirectly to the strengthening of traditional systems. For example, in parts of the Solomon Islands there has been a change in the method of record keeping regarding the boundaries and rights to customary fishing areas. Whereas formerly this information was handed down orally, in some areas this is now being supplemented by written records made by the educated young people. At Tatamba Village, in Isabel Province, the young people are keeping a record of genealogies and rights so as to not be disinherited themselves when working away from the home areas, in other employment. They regard it as almost certain that detailed local knowledge will diminish among future generations, and that they could be disinherited by prolonged absence were such written records not kept (Ruttley 1987).

Changes in Education Systems

The introduction of Western-based educational curricula and formal schooling to the Asia-Pacific Region has had a massive impact on the local knowledge that underpins traditional community-based management. The elite, many of whom have been educated in major urban centers, and sometimes overseas, frequently has a greatly diminished respect for traditional systems, which are thus now generally neglected and also commonly disparaged by rapidly modernizing traditional communities.

Traditional fishing skills have declined with economic and educational changes. In Tokelau, for example, this is manifested in increased pressure on easy-to-catch species, like parrotfish (Scaridae), and a concomitant deduction of pressure on stocks such as giant maori wrasse or eel, the catching of which requires either special knowledge or intense physical effort (Toloa *et al.* 1991).

Owing largely to disparagement, the practical usefulness of local knowledge is now neither properly acknowledged nor used to assist the design of development projects or management systems. The tendency to disparage local knowledge is not new, although the reasons for disparagement have changed. For example, in New Caledonia the processes of discrediting the 'superstitions of primitive peoples' has been going on for generations among European colonists, administrators, educators, and missionaries (Dahl 1989). There, at the beginning of the 20th century, Lambert (1900) refused to record all the '...superstitious ceremonies related to fishing. It is sufficient to say: pity our poor natives, may we appreciate and encourage the apostolic work, which is alone capable of dispelling such darkness.' Although such an attitude culminated with Western colonialism and social science of the nineteenth century (Warren 1989), it was firmly rooted in the works of historians and natural scientists of the seventeenth and eighteenth centuries (Slikkerveer 1989).

Interrelated economic, ideological, and institutional factors still combined to perpetuate the marginalization and neglect of local knowledge and, therefore, of participatory approaches to development and management. The principal among these factors are:

(1) The 'bias of elite professionalism' as a result of which local knowledge lacks legitimacy in mainstream thought, that regards objective Western science as superior. Western and Western-trained scientists generally reject local knowledge which they either cannot or will not understand, which does not fit into their formal models, and which challenges conventional theories. Local knowledge is still widely belittled, at best, and projects that attempt to make use of it are frequently viewed as unscientific and therefore unacceptable. Such attitudes remain deeply embedded both in individuals and institutions, such that persons wishing to pursue unconventional projects and research often face ridicule, and, occasionally, job-loss;

(2) Related is the belief that empirical methodologies in laboratory settings are the only correct procedure. This 'top-down' approach aims at uplifting rural societies via standardized technological transfer. Such an approach is upheld and promoted by the organization and incentive structure of research institutions and professors, and the extension services that implement their findings. Former weaknesses in participatory development reinforced the conventional skepticism of individual scientists, institutions and donor agencies. This was compounded by the difficulty of showing, using conventional criteria, quantifiable results to demonstrate 'success' and cost-effectiveness in participatory approaches. Innovative approaches are thereby dissuaded;

(3) The private sector invariably reinforces that approach, since its continuing profits are predicated on the transfer of technology; and

(4) Promotion of local knowledge and participatory development is viewed by some central governments as organizing the rural poor, and therefore subversive.

The denigration of local knowledge as backward, inefficient, inferior, and founded on myth and ignorance has recently begun to change, having been confronted with evidence from numerous studies that local knowledge often has rational bases: many such practises are logical, sophisticated and often still-evolving adaptations to risk, based on generations of empirical experience and arranged according to principles, philosophies and institutions that are radically different from those prevailing in Western scientific circles, and hence all-but incomprehensible to them. As a backlash to decades of denigration, there has been a tendency by some researchers to idealize, romanticize and attribute superior capacities to indigenous communities. This also is unhelpful, misleading and inappropriate.

Efforts have begun to counteract the tacit negation of local knowledge by neglect. Tokelau (among other places in the Pacific) provides an example. There an attempt was made to document local ecological knowledge of fisheries, and to introduce courses on it, taught by the Elders, in primary and secondary schools (Tolosa *et al.* 1991). However, since this was opposed by the Westernized elite, who perceived the Western curriculum to be superior, and who would have lost status by having formally uneducated fishermen teach classes, the local education was transferred to a less-recognized institution, which later became defunct. The elite, many of whom were educated in New Zealand, have a greatly diminished respect for the traditional system, the wrath of which they can escape by leaving Tokelau again.

To counteract these tendencies, some islanders believe in a need to restore the authority of the Council of Elders, either by restricting it to its traditional roles or by having a Tokelauan with a background in fisheries biology act as an adviser to the Council, as well as by establishing more effective punitive measures for both traditional and modern offenses. There is a recognized need to integrate more fully biological information from stock assessment studies with local knowledge, to

modify the age at which traditional education begins, so as to ensure the transmission of knowledge prior to the departure of youngsters for formal education overseas, together with a need to convince the Westernized elite of the value of local knowledge. The value of local knowledge is undisputed by the residents, as is the need to adapt the traditional framework to the contemporary world, as well as to establish mechanisms for blending biological information with local knowledge (Tolosa *et al.* 1991).

Modernization and Economic Development

This is an all-pervasive factor that includes developments within the fisheries capture and culture sectors, infra-structural change, and developments in other economic sectors. Only a few examples are provided below.

Modernization also inevitably causes attitudinal change and alterations in lifestyle. One common change is in food habits. In the Cook Islands, for example, further undermining and a diminished valuation of inshore fisheries followed a reduced reliance on fishing, because of the development of animal husbandry and wider availability of imported animal proteins. Thus support for the management of lagoon and reef resources, and particularly for access limitations, declined (Sims 1990). Similarly, in Palau, the perception of the value of resources has changed because the dietary importance of fish has been undermined by store-bought canned fish and other protein foods. Wage labor now means that the money is available to purchase such foods (McCutcheon 1980).

Infrastructural Changes and Development in other Economic Sectors

Although remaining legally recognized, community-based marine resource rights may be usurped by such activities as foreshore reclamation, dredging and tourist resort development, since such infrastructural changes usually have deleterious impacts on coastal-marine ecosystems and habitats. Agricultural developments and change, lumbering activities, and the development of pond and coastal aquaculture may all have deleterious downstream impacts via sedimentation and organic and inorganic pollutants on fishery habitats, and thus on the management systems that control them.

The discharge of waste water and sewage, as well as lighting and general noise from tourist resort complexes, for example, may modify the fish migration and aggregation patterns, such that the value of fishing rights is greatly diminished.

In Fiji, since 1974, the loss or damage to fishing rights by tourism development has been compensated monetarily. There, whenever an application is made for a Foreshore Lease, a Hearing is called at which the developer must explain his plans in the presence of fisheries rights-holders, and the latter give evidence about the anticipated impact of the proposed development on their rights. Evidence is also presented by fisheries and sometimes other specialists. An independent arbitrator

evaluates the evidence and then fixes a level of compensation based on expected negative impacts. The developer is required to pay the costs of the Hearing (Baines n.d.). Fiji is the only Pacific Island nation where such a system has been established, although in Solomon Islands traditional rights holders must be consulted about projects that may affect their rights.

Throughout the Asia-Pacific Region, the construction of physical infrastructure like causeways and seawalls, without culverts for water passage, has disrupted marine ecology by blocking fish migration paths, and so damaging the fishery. This has compounded the issue of traditional rights to foreshore resources other than fish.

In Kiribati, for example, marine sand, mud, coral, and gravel belonged traditionally to the owner of the adjacent land. It was regarded as sinful to abstract these from a foreshore area that did not belong to the family. This could be done, however, if permission was requested, and there was a moral obligation to allow reciprocal access to both paternal and maternal relatives. Free access without compensation was permitted for community projects. But this changed with the imposition of British administration, since all such deposits below the high water mark were then vested in the Crown, and former owners were then obliged to pay a license fee for abstraction (Teiwaki 1988).

Resources are still abstracted for infrastructural works, with no compensation to traditional owners. This has caused considerable protest in Tarawa. Private, non-commercial users may still obtain materials freely, by seeking permission from the landowners (Teiwaki 1988).

*The Tuna Baitfisheries: The Impact of the Industrial Fisheries Sector*¹⁸

In the South Pacific perhaps the single most important and widespread inshore fisheries problem involving traditional community-based fisheries management systems occurs where tenured waters are also used by industrial fisheries to obtain live bait for the pole-and-line tuna industry. Since tuna is undoubtedly the most important renewable natural resource in the region, and an essential source of export earnings, this has become a high level policy issue.

The issue illustrates admirably the types of modern external pressures that impinge on traditional marine claims, as well as the difficulties that governments have in contending with the resultant conflicts. An invariable consequence has been a negative official attitude toward traditional fisheries management systems. The issue also highlights the problems that face national governments in setting development priorities and deciding on the role(s) of the fisheries sector within them, and illustrates a principal intra-sectoral problem within Asian-Pacific fisheries, the conflict between small-scale, inshore fisheries and industrial fleets. The issue is examined here with reference to the claims of customary rights holders in Fiji.

Since baitfishing to supply pole-and-line skipjack tuna boats began in Fiji in 1975, relationships between customary fishing rights holders in areas where bait is

caught and the tuna industry have been problematical. The principal problem is that, according to a strict interpretation of the *Fisheries Act (1948)*, baitfishing requires permits from customary fishing rights owners, because it is '...fishing by way of trade or business.' Only a tenuous understanding, based on State ownership of the seabed superseding any fishing rights issues, has allowed baitfishing to operate. It would be extremely cumbersome were each bait boat required to conform to the letter of the *Fisheries Act* and obtain annual permits for numerous baitfish areas. Further, cash demands to demonstrate 'goodwill' (*sevusevu*) would be substantial, and valuable time would be lost waiting for approval from each community, since there are 411 registered rights holding groups, a great many of whose areas might be worked during a season, depending on the migrations of the baitfish or tuna schools. It would be impracticable to organize in excess of 100 annual baiting licences for each vessel. That plus 'goodwill' payments would financially devastate the pole-and-line fishery.

The main grievance is that of formal permission to use the traditional rights areas. All other commercial fishermen must first obtain a letter of consent from the rights holders, then a permit from the Commissioner, before obtaining a licence from the Fisheries Division. But since baitfish are not sold, there has always been a tacit understanding that baitfishing is not a commercial activity, so licences and formal permits are not needed.¹⁹ But this is a mere legal nicety.

Increasingly, Fijian public opinion (as elsewhere in the South Pacific) perceives that baitfishing has a deleterious impact on inshore fisheries. It is now widely thought that reef fish have become scarce as a result, and that practise should be prohibited. But research in Fiji in the early-1980s, supported by that from Kiribati, Papua New Guinea and Solomon Islands, demonstrates that at present levels baitfishing is deleterious neither to baitfish stocks nor inshore fisheries (Ruddle n.d.). On the contrary, the target species are abundant, small, fast-growing, and characterized by a high population turnover rate and high natural mortality. Since baitfishing has been conducted in Fijian waters with no reduction in yields for almost two decades, it is probable that the stocks could withstand a much higher fishing pressure. Most of the species caught for bait are sought neither by the traditional fisheries nor the commercial sector. Further, they are not juveniles of commercially important reef-species. They are not reef-associated species, but mostly cardinals, anchovies and related small pelagics, mobile fish that aggregate within the lagoon either for spawning or feeding. Total stocks are therefore much larger than the schools inside the lagoons.

The total national bait catch is small, averaging about 70 t/yr, with a maximum of 145 t (1981), and the estimated total national commercial and subsistence reef fish catch of 20,000 t (1990). Trophic analyses suggest that even at a harvest rate of 145 t/yr, baitfishing would cause less than 0.2% reduction in the estimated 20,000 t reef fish catch. Thus fears that the activity will cause 'breaks in the food-chain' and a consequent decline in commercial and subsistence fisheries are unjustified.

The principal national economic and policy consideration is that tuna-canning makes a major contribution to the Fijian economy. Pole-and-line fishing supplies all of the 3,000-6,000 t/yr of skipjack tuna caught by the 11 vessels operating in Fijian waters and canned in Fiji. It comprises about 33% of the raw material for the F\$50 million of canned tuna exported in 1990.²⁰ This technology requires a regular supply of livebait. Skipjack tuna is the most abundant and resilient deep sea resource in the Fijian EEZ, where it has an estimated MSY of some 15,000 t, and of which at present about 5,000 t/yr is taken by pole-and-liners.²¹

But the industry is increasingly threatened by international competition and commodity price declines. Overseas markets have been retained because of the acknowledged high quality of Fijian tuna, and, more importantly, because the product is entirely from pole-and-line caught fish, from which there is no net-damage or crushing as associated with other gear, and because pole-and-lining is 'ecologically benign' in that it is mostly species-specific and kills no marine mammals.²²

Were baitfishing either restricted or made uneconomical, it would have serious repercussions for the Fijian economy, since without it there would be no skipjack tuna industry. Pole-and-lining is absolutely dependent on baitfish, and it has been acknowledged that there are no economically viable alternative technologies suitable for Fijian waters, in addition to the ecological insensitivity of purse-seining and gill-netting. Further, of social and domestic political importance is that Fiji is the only Pacific Island nation with an entirely locally-owned tuna fishing and canning industry. Denied access to domestically caught skipjack, the cannery would be forced to rely either entirely on imported tuna or on chartering foreign fishing vessels to fish in Fijian waters. Both would increase costs. But more important is likely major marketing problems, since now Fijian canned tuna enjoys duty-free access to the EEC, under the terms of the Lomé III agreement, because it is supplied mainly by vessels fishing in ACP state territorial waters.²³ Were imported skipjack to be substituted, Fijian exports would be liable for a 20% import duty. At this time, the EEC trade concession (offered by no other market) gives Fiji a competitive edge over its main competitors in Thailand and Southeast Asia, despite their lower labor and operating costs. Thus the uncertain status of baitfishing severely dampens investment in the domestic tuna fleet. Also of major domestic political importance is that the industry employs around 1,000 people, all of whom, apart from a few administrative staff, are indigenous Fijians. Curtailment of this industry would thus be a severe social and economic blow.

Commercialization and Commoditization of Fisheries

A universal pressure on traditional community-based marine resource management systems arises from the emergence of local, national and international markets for

newly valuable marine products. Essentially, commercialization attaches a new value to products that leads to changes in the local perception of their value, as well as to technological alteration in the mode of their production, and encourages intensified exploitation of stocks. A major factor in this process throughout the Asia-Pacific Region has been the monetization of local economies, combined with wage employment in the modern sector that limits the time an individual has available for subsistence fishing. This contributes to the undermining of traditional management systems by enabling consumers to purchase fish from a diminishing pool of full-time fishermen. Thus local demand represents a structural change in local economies that increasingly demands the breaking of traditional rules against fishing for sale.

In Indonesia this is particularly evident for trochus, spiny lobster and sea cucumber, among other species. Whereas commonly – but not always – this creates opportunities for local small-scale fishermen, it often leads to a loss of local control over resources. It further generally leads to overexploitation and resource depletion, as well as to an erosion of local equity-based systems of resource allocation.

For example, the principal external pressure on the *sasi*, a traditional community-based management system of Maluku Province, Eastern Indonesia, studied by Zerner (1991b) has been commercialization of resources, particularly of the trochus fishery. Until the 1960s *sasi* systems governed subsistence fin- and shellfish resources. But since then emergence of a new market for trochus has affected the *sasi* system through Maluku Province. Pressures have come from both local government officials and independent entrepreneurs, who have sought to obtain fishing rights from local communities and families. In some instances government officials have enforced statutory law over *sasi* rights, and have overridden tradition by stressing the development needs of the greater society. Elsewhere, local government has hired outsiders to harvest the trochus, depriving locals of both income and employment (Zerner 1991b).

In the Aru and Kei islands of southeastern Maluku, entrepreneurs have obtained rights within community fishing areas, by advancing loans to individual families, who pledge either their rights or the territory itself as collateral. Families paid-off their debts by transferring their rights to the entrepreneurs. In some cases, local control over resources has thus been lost entirely (Bailey and Zerner 1992a).

Overharvesting and rapid depletion of the trochus resource has been one major consequence of the erosion of traditional management. Under *sasi* management, trochus fisheries were closed for 3-5 years. Now they are harvested annually. As a result, as in the case of Saparua Island, harvests have declined from 3-4 t/yr to 0.8 t/yr (Bailey and Zerner 1992a, 1992b).

However, this breakdown can also be attributed in part to the internal loss of moral authority, since in some cases villages themselves, motivated by rapidly rising consumer expectations, have encouraged this commercial exploitation. Eventually the

whole management system becomes undermined, since it is no longer in any fisherman's interest to control his levels of harvest.

Perversely, the very success of traditional community-based fishery management systems can also lead to their breakdown. Sri Lanka provides a striking example. Historically, coastal fishing communities in Sri Lanka were closed to outsiders, and labor for crews was recruited from within the community. Under such conditions, rates of economic return to capital and labor far exceed their respective opportunity costs. This results in high rates of capital formation with the closed community and easy access to bank loans for modernization of gear and boats. If effort is not controlled, under such circumstances eventually a labor shortage will arise. This will force the community to gradually admit increasing numbers of outside labor to crew the enlarged fleet, thus accelerating the opening to outsiders of the formerly closed community. As this process gathers momentum, returns to capital and labor will eventually equal their opportunity costs. Signs of this were beginning to emerge in the early 1980s in the villages of Thoduwawa and Mattakotuwella, on the west coast of Sri Lanka (Fernando *et al.* 1985). This process was also observed earlier in the beach-seining community of Mawelle (Alexander 1977, 1982).

But the commercialization and commoditization of fisheries can also lead to opposite outcomes: it can lead either to the reinforcement accompanied by adaptation of existing systems. It can lead also to the emplacement of a system where one has not existed.

Thus in the Cook Islands only the commercial pearl-shell fishery was valued highly enough to maintain support for the traditional system. There, commercial incentive with the development of the pearl-shell fisheries provided the rationale to retain traditional management systems on Penrhyn and Manihiki islands, where this industry became established. These developments had led to adaptive changes of traditional systems, as the perceived value of access to areas of lagoon was retained or enhanced by the establishment of commercial fisheries (Sims 1990).

The colonial authorities attempts in the 1920s to eradicate the traditional management systems under the *Cook Islands Act* were resisted by the residents of Manihiki. And the Penrhyn islanders retained their traditional control over pearl-shell grounds well after the Act was passed (Sims 1990). Nowadays the pearl-shell fisheries on both islands are managed under an open access system, although families still know 'their' areas of lagoon, and recent developments have been made with reference to these claims (Sims 1990).

In the Maluku Islands of Eastern Indonesia commercialization of fish resources led to the application of a management system hitherto used for terrestrial resources to marine resources. This *sasi* system, in one form or another, is known from Dutch colonial records to have been in existence since the 1830s. But there have occurred significant changes over time. Prior to the late-1960s *sasi* was hardly applied to the marine environment, but rather the commercial regulation of terrestrial products.

For example, of 109 rules, only five related to the marine environment in the 1870 book of regulations for Porto Village (Zerner 1991b).

The general rule for the marine environment was that only local villagers had access rights to village waters. There were further rules governing species, gear and timing of fishing. But since the 1950s and 1960s an external market in trochus and other shellfish has driven changes within the *sasi* system of marine resource management. At that time, scores of cash-poor villages and village governments seized the opportunity to profit from this new market by re-structuring the *sasi* system by issuing new regulations. The most fundamental of these was the issuance by village governments of their regulations to village sea space and their right to a percentage of the income generated from it. Thus the management system was transformed from one of free access to village residents when resources had no commercial value to one in which the local village government regulated activities in response to local market demands (Zerner 1991b). Thus external markets shaped internal property rights. In tandem with this, it was specified that the income from the resource was to be used for community benefit and not for individual profit.

In Nolloth Village, on Sapuara Island, as throughout most of Central Maluku, from 1968 until 1989 the new *sasi* system was based on the auction of trochus harvest rights to external trading companies. Since January 1, 1990 the village government has tightened its grip of the trochus resources by issuing written regulations that severely limited the traditional rights of villagers to marine resources, and aimed solely at the protection and monitoring of trochus and several other resident benthos (Zerner 1991b). In this process the precedent that the Dutch had used to channel the supply of agricultural and other terrestrial produce to the market in a steady and reliable stream was simply transposed to the marine realm when resources became commercially valuable. This is the main resource from which local governments derive their income.

Some lagoon fisheries for prawn and mullet in Tamil Nadu State of southern India are regulated by community-based traditional management systems known as *padu* (lit. 'fishing site') (Mathew 1991). This is a village organization based on caste and gender. Entrance is limited to male villagers of the *periya pattanavar* caste, if the Village Council confers eligibility on him. Eligibility depends on a candidate's skill level and acceptability to the village. The *padu* is a traditional system of rotating access to a fishery whereby eligible fishing groups take their turn at specified fishing activities on an allotted fishing ground. In India this system is used by the marine beach seine fishermen of Tamil Nadu and the lagoon fishermen of Pulicat Lake. Although this is claimed as an ancient management system in Pulicat Lake, rights have been strongly asserted only since the early-1970s, with the development of an export market for prawns.

In Pulicat Lake the *padu* system is applied to just three small fishing grounds, with a total area of 4.2 km², near the mouth of the lagoon bar. These three units are

(ii) Since they are not encompassed by traditional gear categories, which are controlled by specific traditional rules, modern gear types are effectively exempt from traditional controls, and there is generally a time-lag before rules are either adapted or made to include new types;

(iii) Whereas some new gear, like gillnets or spears, may fall partly within a traditional category, and so be subject to some control, the degree of that traditional control is no longer appropriate to the catching efficiency of the new gear; and

(iv) Traditional techniques for monitoring compliance with rights and rules have been rendered obsolete by new vessels and gear types: Poachers can now flee using powerful motorized boats, flashlight spearfishing at night is an unobtrusive technique that can be practised surreptitiously, and modern gillnets can be left unattended and require fewer handlers than the older types.

In the Cook Islands, prior to Western contact, fishing gear was handmade from locally available materials, a factor which determined both fishing techniques used and fishing pressure exerted. But the introduction of Western gear increased fishing power and catches, and permitted adoption of new techniques. The main subsistence fishing techniques used nowadays are all based on introductions. This led to increased exploitation of pelagic stocks, thereby diminishing the perceived value of lagoon and reef resources, and further eroding the rationale for the traditional management systems, already undermined by cultural and demographic disruptions (Sims 1990) (*vide supra*).

Commercialization of a resource also leads to technological change that, in turn, has an impact on traditional systems. Whereas formerly the isolation of Tokelau caused marine resources to be used exclusively to satisfy local needs, improvement in transportation links with Western Samoa has made possible overseas marketing. The export demand for giant clam (*Tridacna* sp.), in particular, has led to overharvesting and a marked decline in the resource, which was exacerbated by the introduction of diving goggles, gill nets and spearguns, which increased harvesting efficiency and so added pressure to the resource (Tolosa *et al.* 1991).

Development and Management Projects

The efforts of international assistance agencies to promote fisheries development are commonly misdirected, despite laudable intellectual efforts, considerable staff commitment, and tremendous financial expenditures. For example, efforts to assist small-scale fishermen are not infrequently based on capital-intensive approaches, such as purse seining, trawling, and the like, which distort local economies, since often only the wealthy few benefit. They often therefore have a negative impact on the livelihood and welfare of most fishing families and members of fishing communities.

Three groups of participants, with widely differing values and perceptions, are usually involved in fisheries development and management: (1) international assistance agencies, the programs of which have often emphasized capital-intensive, production-oriented technological solutions to national and local problems; (2) national policy-makers and planners, who are frequently Western-trained and who thus share these same 'technology fix' values, reinforced by national economic imperatives to boost export earnings and encumbered by the need to cater to wealthy local vested interests; and (3) members of local fishing communities, the 'target populations,' who, for the most part, neither trust the members of the first two groups nor share many of their values. Thus, small-scale fisheries development has been characteristically a top-down process characterized by attempts to impose external values on fishing communities (Bailey *et al.* 1986).

Development planners often fail to recognize that small-scale fisheries constitute complex cultural systems that have evolved from a long-standing and complex interplay of local resources, physical environments, social organization, value system, and information (Alexander 1975; Cycon 1986; Firth 1966; Panayotou 1982, among others). Thus individual fishery systems are complex adaptive strategies based on a depth of traditional social behavior and knowledge concerning local natural resources. Clearly, then, small-scale fisheries development projects by no means begin with either a clean slate, although even a cursory examination of the plans for most development projects reveals that planners obviously believe that they do (Emmerson 1975, 1980).

The new technologies and management systems promoted by persons working in fisheries development and management are also usually freighted with alien values, especially those concerning preferred social organization, distribution of benefits, and division of labor. As a consequence, when a new technology is introduced, economic concerns tend to displace, probably inevitably, other social values among fishermen, as they now require more cash than hitherto to repay credit for such expensive items as nylon nets, engines, fuel, and, perhaps, new boats. All innovation is, of course, not inherently bad, since existing fishery systems represent the temporary end result of this on-going process. Problems arise when innovation is attempted without reference to existing systems operated by target populations.

The types of negative impacts that are likely to arise from such a process have been documented around the world. Traditional management systems and associated regulations are commonly disrupted by the introduction of expensive gear types, such as nylon nets, that are beyond the financial capacity of small-scale fishermen, who then often become low paid laborers for businessmen who can afford the new gear. Because of their inability to save from their low salaries to purchase nets, the small-scale fishermen often eventually lose their resource rights.

Ill-planned development of fisheries has ripple effects that extend beyond the immediate fishing community. In Java, Indonesia, for instance, to meet their increased financial commitments to pay for new gear and boats, fishermen needed

increased cash incomes, which in turn changed traditional values regarding the distribution of fish catches. Formerly, the poor had been allowed access to a minor fraction of the catch by doing odd-jobs or by petty pilfering, and fish were marketed through local small traders, who served neighboring communities. But the need to maximize earnings led to a shift to large merchants who supplied urban centers, to the disallowing of pilfering, and to the ending of odd-jobs. The result was that essential sources of protein and employment were lost in the villages, and villagers in surrounding areas lost their fish supply (Collier *et al.* 1979). This is also demonstrated at the regional and national levels for Thailand (Panayotou 1980) and elsewhere (Smith 1981b; Panayotou 1982), where it is considered that solutions to the socio-economic problems of the small-scale fisheries sector lie in the larger economy, and that these fisheries constitute a major survival means for the multitudes of otherwise unemployed.

In the Asia-Pacific Region, the bulk of international funding has been used to expand and improve the commercial fishing sector, whereas relatively little had been earmarked for small-scale fisheries. This has often led to the impoverishment of small-scale fishing communities, especially when the commercial fleets intrude illegally into inshore waters, with resultant and not uncommonly severe conflict, particularly with commercial trawling (such as that which resulted in the 'trawler ban' in Indonesia) (Bailey 1984, 1986; Bailey *et al.* 1987).

Since fisheries development and management programs for the Third World are dominated by Western economists and biologists, and their locally-based, Western-trained former students, it is not surprising that programs are permeated by inappropriate notions (Ruddle n.d; Ruddle *et al.* 1992). This approach is well-illustrated by most programs of international assistance agencies (FAO 1979; Lucas and Loftus 1982; Cycon 1986), the main aims of which have been the economically efficient exploitation of fishery stocks, based on an expansion of effort through capital investment, higher technology in capture and marketing, improved Western-style management, and the organization of marketing.

Concluding Remarks

Despite the enormous pressures now being exerted on traditional community-based marine resource management systems through the Asia-Pacific region, some systems will have a future usefulness, both nationally and locally. But equally there will be valid grounds for either diluting, modifying or abolishing outright other. Deciding which alternative course to follow will certainly depend on national priorities. But it should also be based on national fisheries management capacities. In virtually all cases, however, the future of community-based marine resources management lies in a form of co-management with some higher level of government.

Essentially there are three basic alternative policy approaches regarding community-based fisheries management, particularly with respect to its relationship to on the development of fisheries and other economic sectors.

(1) *The ad hoc approach*: Essentially this implies that no clearcut policy is established and legislated for, and that each problem is resolved as it arises, based on its merits in terms of the relative costs and benefits to nation, region and local community. This has the advantage of political acceptability, since no changes are required, and traditional sentiments and rights are reinforced. The disadvantages are that traditional rights holders incur no obligations, such that development of other sectors will be difficult at best and impossible at worst. Further, because this process is *ad hoc*, solutions to problems will be piecemeal, and no guidelines would emerge for the legal interpretation of traditional fishing rights and their articulation with national development priorities. It is therefore at best a stopgap approach, since it is obviously unsatisfactory in the long term;

(2) *Legislation to dilute traditional systems*: This approach requires legislative action to curtail and strictly define the powers of traditional rights holders and to modify traditional management systems to enable the use of certain traditional fisheries rights areas for other economic activities, including commercial fisheries. Under certain conditions, systems would be abolished entirely.

The advantages of this approach are that it allows both commercial fisheries and other economic sectors to develop rapidly, clarifies the issues, and defines the modern rights of traditional rights holders. The disadvantages are that the approach is often politically difficult and numerous implementation problems would arise. In many cases, the losses of rent, administrative costs and problems and possible social unrest would outweigh the economic and other benefits derived. Further, once systems were either abolished or severely eroded, they would be difficult if not impossible to re-introduce at some later date, should the need arise; and

(3) *Legislation to reinforce but specify the scope and power of traditional rights*: The advantages of this are a recognition of historical and present situations and, possibly, the promotion of resource conservation. That this approach would make conventional development difficult may often not be bad, although many would regard it as a disadvantage. But the reduction of the powers of the Central Government while placing responsibility on the rights holders would likely be construed as a disadvantage by vested interests. However, this could be overcome by reinforcing the scope of traditional systems within a concurrently legislated framework of co-management.

Selecting an alternative is not easy; there are no quick and simple solutions to the problem. The question of traditional fishing rights is one of the most interesting and vexing practical, political and philosophical problems confronting fisheries management in the Asia-Pacific Region. If the present situation is maintained and rights reinforced, fisheries development will have to take place within the context of exclusive properties, which is the historical pattern of the Pacific. In each nation

a full debate on the issue is required at village, provincial and national levels, and national governments should thoroughly appraise the provincial governments and the villages of their rights. Before any action is taken, however, it is imperative that the nature of existing fishing rights systems be documented nationwide, particularly those that have been or are being exercised.

Thus, the future of traditional community-based marine resource management systems over much of the Asia-Pacific region, is uncertain. It rests on the establishment of a consensus regarding national development goals, priorities and processes.

Notes

1. It is important to note in this context that what is often labelled 'traditional' may not be especially old-established. Following Neitschmann (1989), I use the term 'traditional' in a self-referentially identifying sense, and not to connote something necessarily deeply embedded in any local history. 'Tradition' or 'custom,' then, is a practise rather than a principle (Croccombe 1989).

2. For a case study of such a synergy of external pressures on traditional management systems in the Cook Islands, see Sims (1990).

3. They were, however, re-introduced during the Marcos era.

4. The 'municipal fisheries' of the Philippines are approximately equivalent to the artisanal, small-scale or traditional fisheries of other tropical countries. In the Philippines all other fisheries are termed 'commercial fisheries.'

5. Milkfish (*Chanos chanos*) fry concessions are an especially important source of municipal funds. In a survey of 35 fry grounds, milkfish concession fees represented an average of 13% of municipal income (Smith 1981a), and in the Western Visayan Province of Antique 21% of the income of the 15 municipalities is derived from such concessions. Several municipalities obtained almost half their income in this way. In small coastal municipalities this income is used to pay the salaries of municipal officials and the allowances of the Municipal Council (Smith and Panayotou 1987).

6. Despatch No. 1, 4 March 1875.

7. Despatch No. 69, 2 June 1881.

8. Despatch No. 71, 2 June 1881.

9. A *mataqali* is 'an agnatically related social unit – usually a lineage of the larger clan' (*yavusa*) (Ravuvu 1983:119).

10. Proceedings of the Council of Chiefs held at Nailaga, Ba, November 1881, p. 32.

11. Despatch No. 24, 17 February 1886.

12. Despatch No. 87, 13 June 1887.

13. Colonial Secretary's Office 3114/1891.

14. Colonial Secretary's Office 1304/1893.

15. The Constitution of Papua New Guinea defines custom as: '[T]he customs and usages of indigenous inhabitants of the country existing in relation to the matter in question at the time when and the place in relation to which the matter arises, regardless of whether or not the custom or usage has existed from time immemorial.'

16. The exchange of fish for yams and other garden produce between the inland and coastal villages of the Trobriand islands was a legally enforceable reciprocal relationship which Malinowski (1935) used to demonstrate the validity of customary laws in Trobriand society.

17. This is in striking contrast to the Basic Agrarian Law, which does recognize and uphold community-based rights and customary law for agriculturalists.

18. I am indebted to Dr. T. Adams, formerly Acting Director of Fisheries, Government of Fiji, for a discussion of the baitfishing issue in that country, on which this section is largely based.

19. Early in the development of the industry, the Government ruled under Section 5(3)(b) of the *Fisheries Act* that baitfishing did not require a licence.

20. The balance was from imports of skipjack from Solomon Islands and albacore tuna caught in Fijian waters by chartered Taiwanese vessels.

21. Effort is limited by the economics of the pole-and-line fishery, and by the need for vessels to return each evening for livebait.

22. This latter point has become extremely important in world markets.

23. Tuna imported by Fiji for canning from Solomon Islands or Papua New Guinea would probably be subject to an EEC import duty of 20%, because it was caught by foreign vessels outside the territorial waters of those countries.

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