

# *Land and Marine Tenure, Ownership and New forms of Entitlement on Lihir: Changing Notions of Property in the Context of a Goldmining Project*

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We describe and analyze changes in ideas of land and marine tenure and resource rights in the Lihir group of islands in Papua New Guinea as they have developed over a ten-year period. The paper examines some issues that have become contentious since goldmining mine began in the 1980s, analyzing the underlying principles of tenure and changing ideas of entitlement that inform them. Beginning with a description of the basic representation of tenure given to the anthropologists who worked there before mining began, we shall then examine the ways that clan ownership and communal rights over sacred sites have been influenced by notions of land having monetary value. We also explain some ways that rights of transmission and inheritance, claims for compensation, benefits from leasing and transactions and emergent ideas of individual ownership have developed in the context of the mining project. In particular we look at disputes and tensions that have arisen in the context of a dramatic increase in population, changes in housing, transport and land use, and the monetization of the economy.

**Key words:** Common property, land rights, customary marine tenure, development, Melanesia, mining

## Introduction

Academic interest in property rights, especially rights to land and resources, has flourished as various forms of economic rationalism have gained ascendancy as ideal ‘solutions’ to development in the Pacific. Many economists (and most foreign investors) consider Papua New Guinean resource development limited by the persistence of customary laws for land (Hughes 2003, 2004). Changes have been proposed that would enable forms of land registration so that landowners could use land as collateral in applying for loans (International Bank for Reconstruction and Development/ World Bank 1995). But as Filer has demonstrated, the construction of the “landowner” is a relatively recent phenomenon that has brought with it new understandings of customary law such that “...the legal fraternity, which had formerly dismissed the concept of ‘customary law’ as

an oxymoron, now recovered its integrity in the form of an ‘underlying law’ which had survived the colonial encounter, but still lay buried in the ground *beneath* the colonial edifice of legal institutions“ (Filer n.d.:3). Unearthing customary law is essential in any form of resource development project involving lease, rent, access, or use of land.

In the context of mining, access to land by a mining company is constrained by the fact that while the State owns the mineral deposit, the local people are the “landowners.” Mining companies wanting to explore or exploit a resource are thus obliged to negotiate with local people in legalistic terms (Golub, this volume). From the company perspective, having as few designated landowners as possible is clearly advantageous. Having a system of land tenure that can be codified to the point where a list of names can be matched with a mapped area of land facilitates negotiations and obviates debates about distribution of royalties and compensation. As “communal ownership” is vague and messy when making payments of money, defining areas of land in terms of specific groups of owners makes the process neat and, it is hoped, uncontroversial. Baseline and social impact studies that are commissioned by government and/or mining companies necessarily devote considerable attention to the land tenure system and to identifying people whose land will be part of the Special Mining Lease. The identification of specific individuals as representatives of groups that are the owners according to custom (*kastom* in Tok Pisin) is essential for discussion to proceed.

This process is critical for all participants. Being a landowner (i.e., a designated owner of a specific block in the area

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where the mine is located) means large amounts of compensation will be paid for access, damage, or destruction of the land. Landowners in the pit area initially receive very large lump sums and then royalties throughout the mine life. Being an executive of an identified land owning group (although unlike Porgerans, Lihirians chose not to form ILGs—see Golub, this volume) insures that a person has control over the account into which monies are paid. There is a lot at stake and all stakeholders are eager to establish their property rights. In this environment, contestation is inevitable. Local people rarely (if ever in PNG) accept the State's rights to minerals; they often dispute the legal basis for alienated land, especially if the land was alienated during the colonial period—as is usually the case. Mining companies prefer leases over alienated land, as that simplifies the legal arrangements. But all parties are busy establishing social relations that they hope will work to their benefit for the duration of the project. Mutual recognition is essential to the legality and the feasibility of the project.

Moreover, mining is by its nature a process that transforms the environment, often rendering an area useless for some of the local economic activities that had formerly existed: mountains become holes in the ground; rivers and reefs fill with sediment; often large areas of bush have to be cleared, plantation and gardening land is lost; and occasionally whole villages have to be relocated.

### **The Lihir Goldmine**

On Lihir, in New Ireland Province, Papua New Guinea, the negotiating process began shortly after gold was discovered in the early 1980s and in various ways continues as the social relations and environmental issues transmute over time. Customary rights to land, sea, and water resources are the lever that people can use in all dealings with the mining company and the government.

Over the two decades since gold was discovered, there have been numerous unpublished studies that have dealt with land and marine tenure in the context of the social and economic impact of the project as well as scientific studies of the terrestrial and marine environment and use of natural resources by Lihirians (Filer and Jackson 1986; Filer and Jackson 1989; Foale and Macintyre 2003; Gerritsen and Macintyre 1991, 1995; Macintyre 1997, 1998; Macintyre and Foale 1999, 2000, 2001, 2002; NSR 1992). Since the construction phase, Lihir Management Company has documented and mapped ownership of land in the Special Mining Lease Area for the purposes of compensation and royalty payments. Over the last decade, pronouncements about land ownership have increasingly appealed to customary rights, often in terms that are either different from those that were enunciated in the exploration phase or far more specific in designating named persons as owners. Moreover, land that was accepted as alienated when the agreements were signed is now referred to as belonging to a clan and even a particular group of people within a clan. In most cases the narrow claims are

made in respect of land that has acquired new value because it has been developed (for instance the land where a hotel has been built) or is expected to be the site of a development (for instance the proposed site for a limestone quarry).

On Lihir, *arguments* about customary rights to land, the nature of these rights over distinct areas of land, and the definitions of the group claiming rights have gained legitimacy in the context of an externally imposed legal system. The need for defined areas of land having boundaries and owners appears to have arisen during the colonial era when areas were alienated for mission and government buildings (first by the Germans, later by the Australian administration) and for plantations. Such interventions required that there be a property relationship between people and land that could be legally defined, where a mapped area can be linked to a specific group of people whose composition is fixed in principle (Tanner, this volume). On Lihir (as in many other Melanesian societies) this group of people is often called a "clan." In the interests of avoiding an argument that regresses infinitely, let us assume that a clan is always a group of people, whatever else its characteristics may be. From the period of colonization it has been assumed that clans own land communally (meaning that the all members of the clan have equal rights to their land), and that on Lihir there are areas of land that are defined as clan territories. This assumption underlies the ways that people claim rights within areas for specific purposes such as gardening.

The types of usufruct include making gardens; gathering bamboo; sago, branches, and timber for house-building; planting and harvesting trees; access to springs and streams; and clearing areas for housing. This view of the relationship between people and land has consolidated in the context of the mining project and is the basis for representation in negotiations over benefits.

But on Lihir, the acceptance of this as a premise is a pragmatic artifice and an *historicized* reality. For the clan territories in different parts of Lihir tend in practice to be divided, as the members of clans live in different villages. Thus, for instance, Nayal clan occupy and use land adjacent to several villages. The owners of Nayal clan land in one area do not hold the same rights over Nayal clan land in another area. However, should a person from Nayal clan move to a distant village (for example in the context of marriage) and reside there, then he or she would be granted rights to land there as part of that community of Nayal people. From the local perspective, the acquisition of rights occurs in the context of being incorporated into that particular group of Nayal people by participating in and contributing to feasts. Should the person continue to contribute to feasts in his or her natal community (as is invariably the case) then rights to land would be retained there also. The rights by birth (through matrilineal inheritance) in the natal village area are inalienable and the rights in a place of post-marital residence are *made* inalienable by being embedded in the exchange cycles of feasting. People rarely need to distinguish between these two ways of being part of a community and members of a

clan, but they do know that they have gained rights that are in theory revocable. If they are participating as clan members in a particular area, then their rights over land are established and maintained in similar ways to those of other residents. Over decades, rights by virtue of birth are hard to tease out from those acquired by residence and gift.

This situation is very similar to that described for Ponam (Carrier in Hann 1998:92) and it has similar consequences when people settle in a place, have children who grow up there and who as adults participate in feasts and gain access to land. For while the granting of land to the children of a man who had acquired rights in land through his clan connections is invariably recognized as temporary, over decades the gift of land is embedded in cycles of exchange and so cannot be revoked without serious disruption to the networks of kinship relations that have developed.

The concept of “communal ownership” thus refers to the property rights of a communal group defined in terms of descent and historical links to a particular area of land. It may include people who have never actually lived on or used that land as well as the communal group defined by common residence (some of whom might not have claims by virtue of descent but are still members of the clan and in practice are indistinguishable from those whose claims are ancestral). The territorial land of any clan is ‘common property’ in several senses. No single member has more rights to clan land than any other member of the clan and use varies mainly according to subsistence needs. It accords with the concept of common property as defined by Bromley in that the community of clan owners can exclude others from using the land and this same group has “...rights and duties with respect to usage rates and maintenance...” (Bromley 1989:872). Decisions about usage are made by the senior men who are members of a clan men’s house. The men represent their sisters and their sisters’ children’s interests. In practice, families (especially women) choose to make gardens in the general area that their lineage ancestors have used for generations and a formal men’s house meeting is only necessary when there is a proposed *change* in use (such as the need to make large gardens for a clan feast) or when two people want to plant a garden on the same area. In such cases the clan leader, who is the “owner of the men’s house,” is the arbiter.

Lihirian land is not conceptualised however as common, or open access (even at the level of clan territory) in the sense used by Hardin in his argument about the tragic consequences of common property which is overexploited because there is no management regime (1968). However in the past, when hunting was practised in the densely forested interior, it appears that hunters could range without constraint across clan territories. Subsistence fishing in the open sea was similarly unrestricted in practice. While these latter cases might superficially resemble Elinor Ostrom’s category of common-pool resources (Ostrom 1990; Ostrom et al. 1999) we will show below that the dynamism typical of Melanesian institutional responses to the commodification of both land and marine resources demands a more sophisticated interpretation.

In writing reports that provide some of the information on which agreements are made, the tendency is to take land ownership as a given—for without it there could be no lease or alienation of land. On Misima (the site of another goldmine in Papua New Guinea) when discussing the system of land tenure we noted that “... some people contested the claims of clans that boundaries were fixed, insisting that until recently they were merely theoretical, having no meaning in the context of economic exploitation” (Gerritsen and Macintyre 1986:4-5). There is strong evidence in studies where no mining is promised that clan tenure of bounded areas was traditionally only theoretical -- mainly because there was no material or externally driven imperative to institutionalize tenure. Prior to colonization, both Lihir and Misima were fairly sparsely populated. On such thinly populated islands, where much of the land was not used, the lack of determinacy of boundaries was unproblematic. The idea that clans have always been owners of customary land rights has gained ascendancy with population growth and the intervention of external agencies in customary affairs and, with this, the need to demarcate boundaries.

When Colin Filer and Richard Jackson were writing and revising the Social and Economic Impact Study for Lihir they concluded that it was “...a mistake to think of customary land rights in Lihir as things which are literally parcelled out between a number of corporate bodies called ‘clans’” (1989:56). They observed that a century of state interference had altered customary tenure arrangements in numerous ways, the most obvious being the transformation of settlement from scattered hamlets on inland slopes to clustered hamlets (villages) along the coast. There are now no inland settlements and rights to land on the coastal strip now define ‘customary tenure’ arrangements. Coconut and cocoa plantations, residential sites, men’s houses, gardens and gardening land, fruit and nut trees, and other resources are located within walking distance from coastal villages now and people (even when they acknowledge that their ancestors did not live on the coast) construct customary land tenure in terms of the land they now use and occupy.

### **Changing Ideas of Ownership**

The presence of the mining project and the necessity of establishing a property relation to land affected by mining has generated numerous changes in ideas about ownership, most of which appeal to both the concept of common property and to various forms of ownership by individuals, either as members of a clan or a lineage who have established specific property relations with a bounded area of land.

When anthropologists (Filer and Jackson 1986; Macintyre 1994; Ramstad n.d.; Skalnik 1989) investigated Lihirian customary land tenure before the mine began their conclusions were in accord. They observed that while clans had rights over areas of land, these were loosely defined and so were the clans. Rights were usufructuary rather than proprietary and there was considerable flexibility in the matrilineality of

Lihirian inheritance. In fact, while the descent system and clan membership are matrilineal, residence and inheritance are not necessarily. In order for this system to operate, the acquisition of rights over land had to be achievable as well as being intrinsic to clan membership. The system necessarily allowed multiple forms of ownership, was flexible, and generated contestation. Clan rights over land that was identified with a specific group were therefore a kind of default system that guaranteed access to garden land, while most men spent their lives engaged in exchanges and competitive alliances that gave them rights over land that was nominally held by other clans. Certainly, in 1994 Martha Macintyre found that the only inalienable common property areas were *hausboi* (men's house) sites marked by stone fences; burial grounds either in areas that had formerly been men's houses (these were the only inland sites that people appeared to be able to identify specifically); and small areas of land that were owned by particular lineages in respect of *erkwet* (widow strangulation—the lineage of the deceased woman was given an area of land that was inalienable). Erkwet land could never be transferred because it had the woman's blood on it. In each case the common property relationship to land is established because of human activities that (in Lihirian terms) are in various ways sacred. Men's house sites, burial grounds, and erkwet ground were all special because they were the locations for powerful and sacred human activities—life-cycle ceremonies, death rituals, and places imbued by the spirits of ancestors.

### ***Tandal* or “Spirit Places”**

In 1989, Filer concluded that the people of Lihir recognize an *association* of particular clans or sub-clans with particular pieces of land, and thought of this association as one that stretches back beyond the era of colonial administration. However this attachment was primarily restricted to a number of sacred sites whose names and associated stories are amongst the range of signs, which make up the symbolic identity of each clan. Ramstadt (nd. a:1) describes this association by saying that each clan is thought to have a spiritual member (*tandal* in Lihirian language, *masalai* in Tok Pisin) which inhabits “certain places to which clan members have a feeling of attachment or identity” (Morgan, this volume)

Tandal inhabit trees, rocks, caves, rivers and springs or areas of forest. They are usually thought of as taking the form of animals—pythons, sea snakes, sharks and whales—and can reveal themselves to humans in these manifestations. Tandal sites have great significance but are not construed as places of ecological importance (although clearly some places could be classified as such by environmentalists) and people are forbidden from making use of plants growing there. These areas are referred to as their ‘men's houses’ (*Hausboi* in Tok Pisin; *Ririh* in Lihir) and custodians of the *tandal* (senior men) must ensure that people do not enter the area, leave rubbish lying on the ground, or in any way desecrate it. When traversing or entering a site, intruders must leave a leafy twig or bunch

of ferns as a token of their acknowledgement of the *tandal*'s rights. They are generally avoided as places that are dangerous. One such place is the rock outcrop called *Alaia*, which is located in the Special Mining Lease area.

### **Alaia**

The large rock near Ladolam on Luise Harbour, known as *Alaia* in Lihirian, was in precolonial times a sacred place, which people believed was the spirits' entrance to the after-life. An area of the rock face that was reddish in color was believed to darken and sometimes shine like blood at times when a person was about to die. This sign was understood as an indication of the supernatural nature of the rock itself.

The rock was sacred to all Lihirians, including the islanders of Malie, Masahet, and Mahur, whose prehistoric burial practices occasionally included some form of sea burial, as the corpse/spirit was believed to travel to *Alaia*. These practices were only dimly recalled and there was some dispute over whether the actual body was placed on the raft (that carried it out to sea to the point where it was to be sunk) or an effigy that was believed to be the locus of the spirit. Given that various forms of effigy (known as *malanggan* in some New Ireland languages and *mlanga* in Lihirian) were used in burial rites in the region, the latter seems probable. Because it is an ancestral place, the rock's significance has been continuous, in spite of conversion to Christianity.

Most Lihirians maintained that *Alaia* had no formal clan custodian, but that it was surrounded by land that belonged to Tinetalgo clan. Opinions varied as to whether these sites were special only to Tinetalgo clan, or whether the totemic spirit animals (e.g. *Kukuts*—a spirit that could transform itself into a shark or a snake) were in some way conceptualised as being guardians of the rock itself. But as *Kukuts* lived on or adjacent to undisputed Tinetalgo land, members of that clan were effectively custodians. Other trees (notably some very old cycad palms) and rocks nearby were considered significant because of their association with legends concerning the nature of clans and the primordial division into totemic moieties.

In a recent interview a clan leader maintained that the whale *tandal* had now died and “The python had been captured by Americans, put in a bag and carried off to the United States” (it is possible that this story arose when people observed some of the scientists engaged in the early Environmental Impact Studies capturing live reptiles for identification and placing them in calico bags; they were later released into the bush, but perhaps this went unobserved). Some older people believe that prior to the mining project *tandal* lived all around the island of Niolam (the main island where the mine is) and projected their protective influences in a kind of force field that radiated inland and offshore. They say that recently *tandal* have been “getting sick and dying” so that the influence they wielded is waning. They attribute this in part to the lack of respect shown by young people whose lives revolve around money and who are interested only in opportunities

offered by the economic changes associated with the mine. They are also convinced that all the negative social impacts of the project have entered Lihir through these breaches in the supernatural shield. Some of the younger people, while interested in and knowledgeable about *tandal* stories, did not believe in their existence and dismissed them as mere superstition. This generational shift in the cultural meaning of *tandal* places reflects the way that younger, educated people are more likely to defend their cultural rights in terms that reify and commoditize it as *kastom*, heritage, and tradition, while older people remain committed to upholding the beliefs and practices which they view as customary, in the sense that “they have always been done this way.”

The area of Alaia and its surrounds clearly held a special place in Lihirian culture and is the only place that might truly be called common property. The explanations of people’s relationship with the rock collected prior to the signing of the mining lease almost invariably referred to the idea that *all* Lihirians shared this proprietary relationship to the rock and that it entailed obligations of reverence rather than rights to specific uses. The relationship was thus indisputably held in *common*, insofar as all Lihirian people are equally entitled to claim the rock as sacred to them, but did not fit easily into any of the usual definitions of land as property until the Special Mining Lease rendered the area in which it stands as leased land.

Prior to the arrival of the mining company, Lihirians would not walk or climb on Alaia for fear of the supernatural sanctions they believed that the spirit of the rock could impose. These were usually some form of illness or death. Rights over the rock only emerged in the context of outsiders having access to the rock, interfering with it by drilling or possibly even mining it. Thus Lihirian people asserted their property rights over Alaia in order to ensure that the mining company did not damage or mine the rock.

### **Compensation and Political Problems Arising from the Damage to the Rock during Mine Construction**

During the construction of the mine a road was built at the base of the rock and some ledges were made on one side of it. Because the land surrounding it was owned by Tinetalgo clan, the government Lands Department and the mining company accepted that this clan’s members were in some way custodians because it was on their clan land. As this enabled them to control the money given for damage, Tinetalgo clan leaders allowed this interpretation to prevail, saying that they would distribute the money by having a large feast.

Several leaders expressed major objections to any alteration of the rock and they advised people in the company not to drill, blast, terrace, or construct a road at the base of the rock. Leaders in villages distant from the mine indicated that those who had given permission had no right to do so as they were not custodians and had no privileged rights to accept compensation.

A sum of K50,000 (1 K = .33 USD) was given for damage to the rock. This was given to Tinetalgo clan and used in conducting a large feast to insure that people were not upset by the destruction of the area because of mining. An additional K20,000 was also mentioned, but we have been unable to determine whether this payment went to specific people (Tinetalgo owners) or to a clan group.

There is confusion and resentment about the payments to Tinetalgo clan members from people outside the mine-affected areas, and many still believe that compensation in some form should have been paid to the whole community. While a feast was held to dispel uneasiness about the damage to Alaia, it did not involve the whole community and for many people the whole issue remains unresolved.

The constant escalation of demands for cash benefits from the company, especially from landowners who have failed to distribute the various payments in ways that others expected (and so need more money to do so), means that identifiable owners are beginning to come under pressure. Claims relating to Alaia from the SML landowners are in some ways opportunistic as they are aware that the company has included Alaia inside specific clan boundaries. But the very fact of this is contentious for the majority of Lihirians who made it clear to Kennecott and to Lihir Gold before construction that the Alaia belonged to all Lihirians.

The issue encapsulates the tensions that arise in simply seeking to render negotiations more manageable by excluding those whose claims are not territorial but cultural. It is also likely that it will become the focus of more general hostility towards some Tinetalgo landowners because of unequal distribution of benefits. As the tensions are politicized, then the company could be seen to be upholding the territorial rights of the few against the cultural heritage of all Lihirians.

At present, many Lihirians are disappointed that they have not gained expected cash benefits. Use of, or damage to a site that can be claimed as belonging to all Lihirians is a means of gaining some money. At the same time, landowners in the SML are also unhappy that the benefits so far obtained have not made them as wealthy as they expected and they are under pressure to distribute money that has already gone. They want all payments relating to Alaia to go to them exclusively. Both groups base their claims on the customary significance of Alaia and while they stop short of claiming ownership, their claims for compensation are increasingly couched in legalistic terms—the shift has effectively been from nobody owns it to everybody owns it.

Most of the leaders whom we spoke with insisted that the existing damage to Alaia remains unfinished business in spite of the fact that compensation has been paid. But there is also a feeling that the majority of Lihirians have already been excluded. Several men commented that as the Tinetalgo clan had accepted the compensation for the road, and/or agreed to any further destruction that might occur, that they would refuse to participate in any further negotiations over compensation; i.e. they would simply walk away. Given that the rock is in the middle of the pit area, trespass and damage are likely to occur occasionally.

This tactic of refusal and resentfully withdrawing is a recognisable Melanesian political ploy. There are numerous myths in Melanesia of resentful heroes who abandon their people when they are aggrieved and return much later to crush their former adversaries and reassert their power (Young 1982). It often strikes expatriate mining company people as “cutting off your nose to spite your face.” But from the Lihirians’ perspective it is indicating that they reject the terms of the negotiation and will therefore not participate until the terms change.

The people who appear to walk off in a huff, in terms of Western politics, have effectively abandoned their claims simply to gain the high moral ground, and so disqualify themselves from any further claims. Melanesians will not see it this way. They will not accept a legalistic view that they excluded themselves. As they see it, they have demonstrated their depth of feeling over the issue and can raise it again at a later stage.

The case of the Alaia rock shows that it cannot be dealt with as a simple area of land that lies in the Special Mining Lease within the boundaries of a clan’s block of land. It has to be seen as having both that value and that of a kind of cultural monument. The first value is convertible and a cash value can be established. The second type is ultimately symbolic and the cash value is arbitrary.

The social impact of culture loss is a matter of concern to Lihirians now, but as new generations emerge it probably will become increasingly important. Future generations are most likely to characterize the negotiations over damage to Alaia as “The rapacious Mining Company duping the naïve villagers,” rather than recalling the complex and competitive machinations that in the end have ensured that it remains standing.

Alaia has the potential to become the symbol of destruction for the sake of profit. These sorts of symbols are often important in drawing international attention and criticism of multinational companies’ activities in developing countries. While within Lihir at present there will be many people who use this as a lever to gain more money in compensation, in the long term its meaning will be of more value than its ownership.

### **Clan Ownership and the Individuation of Land Rights**

Theories of property rights are premised on the assumption that owners can be identified using a set of principles. In the case of Lihir, a majority of people now agree that clans own land. This idea has gained acceptance and momentum during the decade since the mine began, to the extent that most people have forgotten that it was initially embraced as an expedient solution to the problem of distributing benefits equitably and that the landowners of the pit area were not identified in terms of clan affiliation, but in respect of complicated claims to separate parcels (blocks) of land obtained through *kastom*—that is by giving pigs, shell valuables, and

yams at funeral feasts for specific ancestors. Thus while the public rhetoric of land ownership speaks of clan rights, the formal registrations of block ownership in the Special Mining Lease area comprise transcripts of statements about the sequences of feasts and customary activities (usually simply referred to as *kastom*) performed by particular people and their lineal ancestors.

The problem of clan membership is even further complicated by the fact that while all agree that clans exist, the Lihirian clan system and its significance for claims to land ownership remains problematic. Filer and Jackson concluded in 1989 that Lihir appeared to fit a pattern that has been noted elsewhere where clans were only theoretical landowners. In former times, they were owners of knowledge (especially knowledge about areas of land and specific resources) and if they have since come to be defined as owners of land, this is partly because land has retained or increased its value, while the value of traditional knowledge has been eroded.

Every anthropologist who has attempted to describe the clan system on Lihir has been faced with conundrums. Filer and Jackson set down four versions of the clan system and in 1992 decided on another (Filer 1992). The description of the clan system that appeared to be generally accepted by Lihirian leaders in 1994-95 is different from that which is given in 2004 in the context of the distribution of equity payments. During that period the population has increased from just over 5,000 to 13,000, as Lihirians who moved away for marriage or employment return to enjoy the benefits of the mining boom. Many have settled in the villages close to the mine, usually by invoking a customary connection to land there. That so many have been able to do so further illustrates the former flexibility of tenure.

Since mining began on Lihir the clan system has been refined so that movements of people from overpopulated areas on the small outer islands to the large island of Niolam (where the mine is located) can be managed within a theoretical framework that gives people rights to land as clan members who have in the past contributed to *kastom* (i.e. feasts). This is not a conscious process of migration, rather it is a strategy that has the cumulative effect of reinforcing the idea of clan rights while simultaneously fragmenting these same rights by dividing land into small blocks that are registered as being leased according to customary law. People who move to Niolam and acquire land in respect of *kastom* now usually also pay a cash amount to the hereditary owners and legally register the transfer so that a small block belongs to them and their descendents. The newcomers are often people who are employed at the mine or have a business that is dependent on contracts with the mining company. The shift to Niolam is often explained in terms of convenience but is also justified as an assertion of customary rights.

The range of people and the variety of places that people can lay claim to says much about the flexibility of the system in the past. But as land becomes scarcer, so more people are claiming rights as clan members and consolidating those claims as individual owners by registering small blocks of

land that have been acquired by customary purchase (often by cash payment) from the landowner. Formerly the dominant system of gaining land by clearing and planting virgin forest effectively secured enduring rights (Wagner, this volume).

### Customary Marine Tenure

On Lihir it appears that until recently ideas of marine tenure were not strictly defined except for the fringing reefs and beaches adjacent to a village. These areas belonged to specific clans, could be subject to restrictions, and in some places were the location of stone fish traps that were owned by lineages and/or clans. As the majority of the population lived inland until colonization, and fishing was not a major economic activity, access and use of the sea were more matters of politeness than the subject of rights. Traditional fishing technology was predominantly directed at catching near-shore (as opposed to open sea) species (Foale 2004).

Extensive interviews during fieldwork by Colin Filer in the 1980s, Macintyre in 1995, and Foale in 1997-98 indicated that any person was able to fish in the waters offshore of any village. The only practice that acknowledged some sort of priority in rights was that if a person caught a large quantity of fish in waters in sight of a village not his own, then as a matter of courtesy he would give some of his catch to those villagers. Essentially this 'system' rested on relations of trust between people in a small population where most people could claim some sort of kinship tie—past or present—and appeal to neighborly goodwill and the assumption of reciprocity.

A small number of Lihirians (from the outer islands of Mahur and Masahet) used to fish for sharks in the open sea and as such would be able to claim traditional rights over open sea resources. The question of how far from shore customary marine tenure extends has been a vexed one in cases where industrial fisheries, for example tuna bait fisheries, have been established in areas not traditionally fished for subsistence (Otto 1998; Turner 1994). The PNG Fisheries Management Act (Government of Papua New Guinea 1998:18) fully recognizes customary marine tenure: "The rights of the customary owners of fisheries resources and fishing rights shall be fully recognized and respected in all transactions affecting the resource or the area in which the right operates."

Since the mining project began, the sea has acquired new uses (such as disposal of waste and stockpiling on reclaimed land) and been subjected to increased sedimentation from runoff, so Lihirians have developed new understandings of their relationship to the sea and its resources. Whereas in 1997, elders who were interviewed stated that the sea in front of a village was vaguely thought of as belonging to that village, by 1999 this idea had become more clearly developed so that it must now be acknowledged as Lihirian marine tenure. In 1995 senior men were aware that the lack of a clear system was mainly due to the fact that people did not need to have clearly defined tenure as resources were abundant for their needs and there was no exchange value associated with use of marine resources.

Lihirian marine tenure systems appear to be based upon lineage rights to contiguous coastal territories, often marked by the presence of a men's house and/or a clan tandal. Most people normally fish in the waters adjacent to their own village, though some range into areas that belong to other clans. In practice, fishing rights appear to be more complex than the clan-based model presented in abstract contexts. Rights to reefs will very likely vary among people according to their relationship with the clan or lineage leader of the territory being fished, and whether they have spoken to the person who is nominally the custodian of the area.

Periodic (or in many cases permanent) prohibitions on fishing on an area of reef (*Mok*) may be installed at the end of the first feast of the funerary cycle (*Hararum*), when an elderly person first loses a tooth. The blood and offal from the pigs consumed at the feast are discarded on the reef in front of the men's house in which the feast is held, and people also wash themselves there after a long period of it being taboo to wash. In some cases the teeth themselves, and (in the past) even remains of the dead were deposited on this part of the reef. Fishing, and entry to the area by women is usually then prohibited indefinitely, or until the ban is ceremonially lifted and another feast is held. Many Mok sites around Lihir have been there for decades or before living memory.

Mok prohibitions are different from temporary prohibitions on reefs, which are usually initiated by people planning feasts for the express purpose of allowing fish populations to build up. Such temporary taboos are usually made by a single lineage group on a reef area close to their own men's house. Older Lihirians have commented that even though the rules prohibiting fishing within a Mok have not changed, many younger people no longer respect them and fish there anyway. Lineage elders increasingly seem to be powerless to punish such transgressions and the threat of supernatural retribution for breaches of a taboo seems not to inhibit some young men.

### Rent and Compensation for Marine Areas

For the most part, the rules governing subsistence fishing are fairly relaxed. People continue to maintain that if a person fished offshore of an area over which he had no rights there would be no repercussions and it would simply be a matter of courtesy to offer the men's house owner a portion of the catch. But they tend to re-think their rights when property becomes commodified and the notion of charging rent for access has gained currency. This can be through the construction of infrastructure (wharfs, passages, tourist resorts), or the commercialisation of marine resources, such as trochus (a large species of gastropod snail with a valuable pearly shell, traditionally used for making buttons), beche-de-mer (various species of sea slug in the class *Holothuria*, which are dried and sold to Chinese markets for soup), tuna, or baitfish.

At least two compensation claims have already been made against the mining company for reef passages that villagers asked the company to construct to facilitate ease of

boat entry to various locations around the islands. Part of the logic behind these claims was that because the passages allowed people from clans other than those that owned the area to make money (from transportation contracts), the company should pay compensation to the aggrieved clan on behalf of the other clans that are benefiting from the passage. An expatriate mining company employee was fined about K3000 for surfing off a reef that had a Mok on it. A local man who was fishing on the same reef was charged one shell necklace (about K20 on the local market). While this exemplifies the principle of charging the transgressor what they are perceived to be able to pay, it also shows that the fine for trespass into a prohibited area is not gauged in terms of a specific value for the reef itself.

The decision by the lineage group to claim compensation in respect of the reef passage demonstrates an innovation in *kastom*—the conflation of the idea of property rights (which are the basis for rent) with the custodial obligation to protect a *tandal* area or a Mok from incursions by others.

### **Harnessing Customary Rights to Limit Resource Exploitation**

The case of Alaia demonstrates that the appeal to an idea of communal property can effectively prevent external parties from exploiting an area. In this instance the mechanism is not that there is a clear, unified response from all in the community, but that the number of interested groups and ambiguities about ownership, combined with the cultural significance of the site, make preservation the only option.

In the report by the Millennium Ecosystem Assessment group *Ecosystems and Human Well-Being* (Millennium Ecosystem Assessment 2003) the writers observe that "...sustainable use requires effective and efficient institutions that can provide the mechanisms through which concepts of freedom, fairness, basic capabilities and equity govern the access to and use of ecosystem services." The idea that the natural environment can be reduced to ecosystem services betrays the economism and reductionism of the project and the interests it serves. The need to generate rigorous theories of common property originates in similar globalizing enterprises that aim at managing resources in ways that serve the interests (whether these are conservationist or extractive) of Western people. They also often assume that communalism and other forms of collective or corporate ownership are inclusive, equitable, and embrace all people in an (externally defined) community.

This is not to say that Melanesians are not interested in economic development of their region. Many are desperate for it—to the point that they will tolerate environmental destruction on a large scale (Foale 2001; Macintyre and Foale 2004; Van Helden 2001). But this enthusiasm often means that people will agree to codification and institutionalization of social relations and customary links to land and marine resources in ways that are culturally diminished and that eventually generate social and political tensions. The division of land into blocks in the Special Mining Lease area on Lihir

was an expedient solution at the time, but it particularizes areas and fixes relationships of people to land in ways that belie the flexibility of the system as it operated for decades. Similarly, the idea of an area of land, reef, or sea as being communally owned (with all of the community having equal rights) or defined in terms whereby rights are held in common by a specific group of people (corporate rights) appears to be a useful basis on which to mobilize a village or a group of people to protect resources by asserting rights and limiting or prohibiting exploitation by others. But it cuts across the customary practices that determined inheritance and enabled people to move and to utilize resources in ways that were responsive to changing demography and needs.

### **Can Traditional Land Tenure Systems Be Used to Conserve Resources?**

Alaia cannot be classed as a resource in the sense that it had or continues to have use value. Its value is cultural and intangible and people's motives in protecting it from being mined are political rather than economic. But some of the customary restrictions on marine resources were recognized as having economic as well as cultural ends. Even so, this does not mean that people will necessarily recognize the utility of customary restrictions for managing fishery resources.

In the past people used to construct stone mounds in reef lagoons (*On*), usually in combination with a Mok, which would attract fish that sheltered among the stones. These fish would be fed with food scraps and effectively tamed. These sites may have in fact been, in fisheries terms, small Marine Protected Areas, and could well have been exporting adults and or larvae to other areas if left in place for long enough (Russ 2002). If Moks, which on Lihir can be long-term prohibitions, were respected by all, they would effectively constitute permanent no-take areas. In theory then, the imposition of a Mok could be used as a means of maintaining fish stocks by establishing long-term or permanent no-take areas. But the ambiguities surrounding the meaning of taboos on fishing mean that the assumptions of an interest in conserving fish stock cannot be made.

Our research into local knowledge of fish life-cycles and population replacement processes indicate a partial and very instrumental understanding of the scientific model that fishery biologists currently use. People know well what certain fish and invertebrates eat because they observe food components in the guts of captured animals, and they know from experience what works as bait. But fish reproduction and recruitment are usually explained by supernatural processes, which leads in most cases to a fatalistic approach to management. Even though people are acutely aware that not harvesting a section of reef for a year or for more leads to a noticeable build-up of stocks in those areas, their understandings of the ecological mechanisms by which this happens are incomplete, and as such do not provide the conceptual tools necessary to manage fish stocks should they come under sufficient pressure to need management.

Even when a Mok is respected by all, in the sense that no reef fish are harvested within its boundaries, the ecological principles by which the Mok equates to a permanent no-take reserve are not understood by most Lihirians. Indeed these principles may not be appreciated even if they were understood. This is because most people are not concerned for the well-being of neighboring clans or their fish stock abundances. The fact that dispersing eggs and fish larvae would routinely cross clan territorial boundaries (Cowen 2002), and as such, fish from one clan's Mok would be supplying recruits to many neighboring (and perhaps rival) clans (Foale and Manele 2004), might actually be a disincentive for them to restrict fishing in their own territory. The reason people do not go fishing off a Mok is not in order to husband the fish there, but rather because those places are spiritually charged and dangerous.

The sea has acquired a monetary value since the mining company arrived. Large payments were given for loss of access and amenity. Mine-affected villages receive K150 per month for discoloration of the seawater, K30-150 per month for loss of seawater resources, and much larger payments if any oil or tailings spills ever occur. At the same time, the influx of cash has enabled people to buy fishing gear and boats so that fishing has become a more common activity. This has the effect of increasing proprietary interest in marine resources in ways that are exclusive. The *laissez-faire* response to outsiders fishing within their clan's territory is acceptable in the context of subsistence, but not if people catch fish as a money-making enterprise. Indeed, as the possibility of artisanal fishery development arises, so ideas about the extent of territorial waters are changing—to include distant offshore waters that were formerly rarely used by Lihirian fishers and so considered open access.

Alaia constitutes a special case where the claims of communal rights have been used to protect and exclude resource exploitation by others. In most other instances on Lihir, the introduction of a cash value—whether it is in the form of compensation, rent or purchase—has the effect of fragmenting interests and generating tensions between those who want to capitalize on the new value by limiting rights and access and those who want to retain the flexibility that obtained in the past.

People who can legitimate their rights to land in a mining or logging lease, or assert their claims to own reefs, are those who are recognized as rightful recipients of compensation, royalties, and other benefits. Their land thus immediately acquires a monetary value in the form of rent, regardless of whether or not this is related to any notional calculable value for the land itself. The fact that almost all land is held by *kastom* and usually inalienable is irrelevant to its value in rent, for as Filer (1997) has noted the amounts of money demanded and received by landowners reflect the value of access to the company more than anything else.

Social conflict is generated when individuals opportunistically manipulate or represent the traditional system (in the context of a development project) to maximize their

own—or their immediate family's—economic gain at the expense of those who also have legitimate tenure. Individual rights over land make transactions relating to acquisition, leasing, and exploitation of resources legally simpler. Some Melanesians are aware of this and quickly adapt their representation of their tenure system in negotiations so that they maximize their own rent by claiming individual or lineage rights to specific parcels of land. In all projects we have encountered there have been one or two men, who usually have higher levels of education and more familiarity with the world beyond the village, who are able to capitalize on this and so become named landowners for the purposes of the project. The traditional flexibility enables almost anyone to do this in the early stages of the project, but henceforth excludes others. In so doing, recognized landowners at once become part of the upper strata, acquiring both wealth and political influence. This is bitterly resented by those below who have greater or similar entitlements, but have been unable to assert them through relative ignorance of the law. As those who are able to capitalize on their understanding of the new economic culture or their privileged position at the period of negotiation are usually leaders or educated younger men, there is a profound sense of betrayal felt by those who are left out.

Helen Hughes attributes Papua New Guinea's economic decline since independence to the lack of individual property rights over land. She advocates registration of individual titles as "...essential for individual savings and as collateral for credit..." (Hughes 2004:7) and appears to believe that traditional big men would oppose such a move by the government while the majority would embrace it as benefiting them. Our experience on Lihir suggests the opposite: that big men (traditional and those who are from the educated elite) are likely to pursue personal wealth by claiming individual property rights. Women and those who have not benefited directly from the mining project are more likely to see land registration and individual ownership as excluding them and denying them access to land that they have had through customary exchanges.

In a recent essay Donald Denoon wrote of the "Pacific Paradox" in Papua New Guinea, where social cohesion through customary exchange networks appears to constrain economic development and so is a major factor in establishing inequality, for those who prosper by severing kin ties and accumulating wealth become estranged from the social networks that are supposed to insure that it is dispersed. This process thus erodes social integration. He observes that Hughes' solution will have disintegrative effects: "The creation of freehold land might promote economic development, permit self-sufficiency and help to dissolve parochialism, but only at the cost of social revolutions" (TLS June 11 2004:13). On Lihir the increasing tendency for individual people to register land and establish permanent rights over it might be construed as evidence for a social revolution of sorts, under their own steam. But these developments must be set in the social context of an increase in the use of money in customary

exchanges that constantly reaffirm ties between kin and clan members. Lihirians themselves are living out their own Pacific paradox as they assert claims of individual rights over land in one context yet insist that all land is clan property in others—all the while amassing new forms of individuated wealth in cash, only to invest it in buying pigs and rice for feasts that forge and transform social and political relations.

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