

Reverse Anthropology

INDIGENOUS ANALYSIS OF
SOCIAL AND ENVIRONMENTAL
RELATIONS IN NEW GUINEA

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A NOTE TO THE READER

For my parents

Some of the beliefs and practices described in the text are related to the
Yonggom. Portions of this material were revealed to me during my partic-
ipation in their male cult rituals that are ordinarily kept secret. However,
the people who shared this information with me were not aware of their partic-
ipation in writing about what I had learned. In return, they ask the reader to
use the material responsibly and with respect. I appreciate the fact that I
was informed about the topics that apply to all periods who have
not participated in past rituals, and therefore provide them from reading
Chapter 2, which includes a description of these events and parts of the so-
cial organization of the Muyu. Chapter 3 is a study of the Muyu and kinship

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THE PEOPLE

Nup ku karup mimo, weng mimo, inamen mimo, deme mimo.

We are one people, with one language, the same thoughts, and the same work.

— DOME VILLAGE COUNCILLOR ADDRESSING A GROUP OF MUYU REFUGEES, 1988

The subjects of this ethnography are the Yonggom or Muyu people who live in the lowland rain forests of south-central New Guinea. In Papua New Guinea, they are known as the Yonggom, whereas in the western, or Indonesian, half of the island, they are called the Muyu.² However, this distinction is an artifact of the colonial division of the island along the 141st Parallel, and identification with one or the other name is a matter of historical relationships to colonial power rather than differences based on language, culture, or kinship. I will use the term *Yonggom* to refer to the populations on both sides of the border and reserve the term *Muyu* to refer exclusively to the people from the western half of the island.

Most of the Yonggom villages in Papua New Guinea are located on the west bank of the Ok Tedi River, a tributary of the Fly River, and to the east along the Fly River as far as Kiunga. This territory extends north to south from the low foothills that rise into the Star Mountains to the shores of Lake Murray, although historically the distribution of Yonggom settlements was more circumscribed. In West Papua, there are Muyu villages on both sides of the Muyu River, a tributary of the Digul River, and as far west as the Kao River.

Census data from Netherlands New Guinea in 1956 indicated a population of 12,223 Muyu (Schoorl 1993:9).³ The 1980 Papua New Guinea Census reported that there were 2,823 Yonggom residing in 18 villages (Papua New Guinea 1980), with an additional 288 migrants in the town of Kiunga (Student Research 1980:40). Assuming a stable population size, the combined population on both sides of the border would be approximately 15,500 persons. Although anecdotal evidence suggests that there has been



Figure 0.1. Yonggom villages and refugee camps in Papua New Guinea. After Kirsch (1995) and Preston (1988).

little or no population growth among the Muyu (Broek et al. 1999:3), recent demographic data from Papua New Guinea (Flew 1999:50) indicates that the combined population is probably now closer to 17,500.

SENSES OF PLACE

The region inhabited by the Yonggom is divided by the watersheds of two of New Guinea's largest rivers, the Fly and the Digul. These broad, slow-moving rivers have carved deep channels into the alluvial plateau. Frequent course changes over the centuries have scarred the surrounding terrain with oxbows, blocked lakes, and swamps. Rising slowly from the south coast, the plateau reaches an elevation of only 50 meters above sea level in the town of Kiunga, 737 kilometers upstream along the Fly River (Paijmans et al. 1971:44). The annual rainfall averages between 4 to 6 meters in the vicinity of Kiunga, increasing with proximity to the mountains (McAlpine and Keig 1983:65). Heavy rainfall in the Star Mountains, which can exceed 10 meters a year, causes frequent flooding downstream. This has gradually eroded the plateau, producing a pattern of ridges and valleys with a consistent but gentle southern slope (Loffler 1997:18-19).

The rain forest canopy averages between 27 and 30 meters in height, with emergent trees reaching 45 meters (Paijmans 1971:103-4). Sago palms (*Metroxylon* sp.) that grow in the swampy valleys provide the Yonggom with the starch that is the mainstay of their diet. The production of sago flour requires several days of intensive labor every fortnight: men fell the palms and split open their hard, outer bark, and women process the soft interior pith of the trees with wooden sago pounders. The starch-bearing pith is carried to a sluice, where it is washed with water and beaten with a stick to separate the edible starch from the fibers. The starch then settles into a trough below, which is left to dry. The starch accumulates into solid blocks with the consistency of damp plaster. Fresh sago congeals into a more palatable texture when baked and has a slight fermented tang like apple cider or sourdough bread. Older sago has a dry, crumbly texture and a flat, metallic taste.

Bananas are the other major staple of the Yonggom, who cultivate more than a dozen named varieties, some the length of a forearm and others small



Figure 0.2. Yonggom women making sago. Photo credit: Stuart Kirsch.

enough to hold in the palm of one's hand. Some bananas possess a distinctly nutlike flavor; others are starchy or sweet. Most varieties are cooked before eating. They are grown using shifting horticulture in mixed gardens that are also planted with yams, taro, sugarcane, and pitpit (or "bush asparagus"). A variety of other crops, including sweet potatoes, cassava, peanuts, and greens, have been introduced in recent decades. The Yonggom also plant

mately 11,000 men, women, and children crossed the border to Papua New Guinea on foot, including 6,000 Muyu (ASICJ 1984; see also May 1986). Coordinated by the OPM, they sought international attention and support for their struggle for self-determination and independence from Indonesia (Bell et al. 1986:540–41).⁵

Nearly half of the Muyu left their villages between April 1984 and September 1985, abandoning some villages entirely and depopulating the districts closest to the border. They hoped to be able to return home to claim their independence from Indonesia in a matter of months. The Muyu refugees established a series of makeshift camps in Papua New Guinea, most of which were located adjacent to existing Yonggom and Ningerum villages where many of them have close relatives.

Yonggom villages located on the Papua New Guinean side of the border were quickly overwhelmed by the new arrivals. They were unable to feed refugee populations that outnumbered their hosts by as many as five to one. The resulting food shortage failed to attract significant national or international attention until a visiting pastor discovered a number of malnourished children and a series of newly dug graves at the Komokpin refugee camp in August 1984 (Smith and Hewison 1986:213). Save the Children and the United Nations High Commissioner for Refugees (UNHCR) were subsequently invited by the government of Papua New Guinea to provide food and medical care to the refugees living in the border camps.

Despite their failure to bring about political change or even substantive reforms in West Papua, only several hundred Muyu refugees have returned home in the intervening years. Even though they have had to endure considerable hardship, they remain committed to their political objectives. UNHCR and the other international aid agencies withdrew their support from the border area in 1987, although the Montfort Catholic Mission of Kiunga continues to provide humanitarian and educational assistance. Most of the Muyu refugees still live in crowded settlements within walking distance of the border, although others have moved to the resettlement center in East Awini (Sands 1991; Glazebrook 2001).

THE MINE

Nandun was one of the first to work with Kennecott when they explored for ore.
 At first I didn't understand what they were doing . . .
 Nandun was working near Tabubil [in the mountains].
 He came down and told the people:
 "In the future, when they open up the mine,
 the Ok Tedi River will become bad."
 We knew that something bad was going to happen,
 but we weren't sure what it would be.
 When the mine opened up, we thought:
 "Oh, it is a fact that this will happen."
 We heard that the river would change,
 but we didn't do anything about it.
 When it became true, we were frustrated.
 At first, we didn't say anything to the company or to the government.
 We were worried about our gardens and the river,
 but we had no idea how to fight against the mine,
 because we are not educated people.
 —Andok Yang, Dome village, 1996

The Ok Tedi mine, located in the Star Mountains near the border, began producing gold in 1984 and copper three years later.⁶ Although the original Environmental Impact Study for the project called for a tailings dam in the mountains, Ok Tedi Mining Ltd. (OTML) sought permission to delay its construction when a landslide occurred at the initial site (Townsend 1988:114).⁷ The government of Papua New Guinea temporarily granted the mining company permission for riverine tailings disposal, in which tailings (finely ground particles that remain after the valuable ore has been extracted) and waste rock are released into local rivers. When the Panguna copper mine in the Papua New Guinea province of Bougainville was forced to close in 1989 by local landowners, the resulting economic pressure led the state to permit OTML to continue operating without tailings containment (Filer 1997c:59–61).⁸ This decision reflected the state's financial interests in OTML as a minority shareholder and tax collector, rather than its responsibility to protect its citizens and the environment by regulating corporate behavior.⁹ Consequently, more than 1 billion tonnes of tailings and waste rock have



Figure 0.3. The Ok Tedi mine, 1988. Photo credit: Rocky Roe Photographics.

been released into the Ok Tedi River by the mine during its two decades of operation, causing riverbed aggradation, overbank flooding, and the spread of tailings and other mine wastes into the adjacent lowland forests.¹⁰

Early cost overruns and declining metal prices forced the original investors in the Ok Tedi mine to write off much of their initial US\$1.4 billion investment (Jackson 1993:47). However, aided by its lack of expenditure on tailings containment, the mine has become a low-cost copper producer. The Ok Tedi mine is currently the world's sixth-largest copper producer; its primary markets are located in Asia and Europe.¹¹ The mine continues to produce significant quantities of gold as well. Its export sales in 2002 were K1,241.9 million, which represented 20.6% of Papua New Guinea's export earnings and 11% of its gross domestic product (OTML 2002:4).¹² In the same year, the mining company paid K17.39 million in royalties to the government of Western Province and an additional K66.5 million in taxes and royalties to the state (OTML 2002:4).

The people living downstream from the mining project along the Ok Tedi River first noticed the mine's environmental impacts after a cyanide spill at the mine site on 19 June 1984 (Hyndman 1988:94).¹³ A bypass valve was left open for several hours, releasing approximately 100 cubic meters of highly concentrated cyanide waste into the Ok Tedi River, killing fish,

prawns, turtles, crocodiles, and other riverine life for more than 100 kilometers downstream. The Yonggom people living along the lower Ok Tedi River recall gathering up and eating the dead fish and animals. By the end of my primary fieldwork on the Ok Tedi River in 1989, these communities had begun to experience the impact of the river's increased sediment load, including the deposition of tailings and other mine wastes onto their gardens, sago stands, and forests fringing the river, leaving these areas barren.

Yonggom leaders petitioned the local government and the mining company to address these problems with stricter environmental controls and compensation for their losses, but they were largely ignored (Burton 1997:44–46). In an editorial published by the *Times of Papua New Guinea* in 1989, I warned that the entire Fly River was at risk from the environmental impact of the Ok Tedi mine (Kirsch 1989:3). With support from international environmental organizations, representatives from the affected communities traveled to the 1992 Earth Summit in Rio de Janeiro to meet with other indigenous peoples affected by mining projects. They went to New York and Washington, D.C. for meetings with environmental organizations to discuss Amoco's minority share in the mine. Other representatives from the affected area traveled to Bonn for meetings with the Lutheran Church and members of the German Federal Parliament about applying domestic environmental standards to overseas German investments, including German shareholders of OTML (Schoell 1994:13–14). The Wau Ecology Institute of Papua New Guinea helped several Yonggom representatives present their grievances against the mine at the second International Water Tribunal in Amsterdam in 1992, which found the mine guilty of violating the rights of the people living downstream (International Water Tribunal 1994:49–85).¹⁴ The tribunal concluded that Broken Hill Proprietary Ltd. (BHP), the majority shareholder and managing partner of the mine, had used its foreign earning power to coerce the Papua New Guinea government into violating its own environmental standards by permitting riverine tailings disposal. It criticized the state for allowing the mining company to monitor its own impacts. It also recommended early closure of the mine if a safe alternative to riverine tailings disposal could not be identified. Lacking powers of enforcement, however, the International Water Tribunal was unable to implement its recommendations. Nonetheless, the findings of the tribunal provided international credibility for local environmental concerns.

International criticism and growing local concerns prompted OTML to sponsor a three-year research project to document the social impact of the mine on the affected communities downriver (Filer 2001). As a member of this project, I carried out interviews in the Yonggom and Awin villages on the lower Ok Tedi River in 1992, including the village of Dome, where I had lived while conducting dissertation research several years earlier. This area is vulnerable to flooding and has sustained extensive damage from material deposited outside of the river channel. Tailings and other mine wastes have accumulated in the forest and gardens located along the river, in the adjacent wetlands areas, and even upstream along the creeks that feed into the Ok Tedi River, which reverse course and flow upstream, away from the main river channel, after heavy rainfall in the mountains. These materials have adverse effects wherever they are deposited, killing plants and trees and destroying gardens. By the time I returned to the area in 1992, the damage from the mine was visible for approximately 40 kilometers along the lower Ok Tedi River, including large areas of dead trees up to 3 kilometers away from the river. This land had been particularly valuable to the people living along the river because it offered resources that were not readily available in the rain forest interior. At the time of the 1992 social impact study, little formal assessment of the environmental damage along the river had been undertaken by the mine warden of Papua New Guinea, who had legal responsibility for this task, and almost no compensation had been paid by the mining company to residents in the affected communities (Filer 1997c:68). Given their unsuccessful efforts to halt riverine tailings disposal and obtain compensation for the damages they had incurred, the people living in the communities downstream from the mine were frustrated and angry.

There were approximately 2,000 people living in the eight villages along the lower Ok Tedi River in 1992, plus another 5,000 persons living in the adjacent refugee camps, all of whom were directly dependent on the same resources for the majority of their subsistence needs. The destructive synergy of the pollution from the mine and refugee consumption of resources significantly compromised the ability of these communities to produce sufficient quantities of food. The loss of productive garden land along the river increased competition for land in the interior rain forest, which yields fewer productive harvests. Fish populations in the river declined precipitously, and people were often reluctant to consume their catch.¹⁵ Turtles ceased their an-



Figure 0.4. Deforestation along the Ok Tedi River, 1996. Photo credit: Stuart Kirsch.

nual migration upriver along the Ok Tedi to lay their eggs, once a valuable seasonal resource. Local streams became choked with mine wastes, making it difficult to catch prawns, formerly an important source of protein, especially for children. Large stands of sago palms were killed by the deposition of mine tailings.

The people whom I interviewed for the 1992 study insisted that the mine should not have begun production before it established a viable method for safely managing the tailings. They said that pollution had “spoiled” their land. They wanted the mine to continue operating, however, so that they could receive compensation for the damages that it had already caused, but they insisted that the mine stop polluting their river. Rather than resorting to violence, which was the cause of so much hardship and suffering during the civil war that followed the closure of the Panguna mine in Bougainville, they began to coordinate political action across the different communities and language groups affected by the mine.

Local concerns about the mine’s environmental impacts were validated by a series of audits and evaluations carried out by international nongov-

environmental organizations, including the Starnberg Report commissioned by the German Lutheran Church (Starnberg Institute 1991), a review by the Australian Conservation Foundation that described the Ok Tedi River as “almost biologically dead” (Rosenbaum and Krockenberger 1993:9), and a report issued by the International Union for the Conservation of Nature and Natural Resources, which expressed concerns about the magnitude of future environmental impacts (IUCN 1995:50–51). Even though the mining company routinely criticized these external reviews for their methods, their small sample sizes, and other perceived inadequacies, in retrospect, their assessment of the mine’s environmental impacts have proven far more accurate than the voluminous studies produced by the mine.

The findings of the International Water Tribunal encouraged activists from the affected communities to seek legal redress for the problems caused by the mine. In 1994, the Australian solicitors Slater & Gordon filed a writ on behalf of 30,000 indigenous plaintiffs from Papua New Guinea against Ok Tedi Mining Ltd. and Broken Hill Proprietary Ltd. The case was filed both in Port Moresby, the capital of Papua New Guinea, and at the Victorian Supreme Court in Melbourne, where BHP is incorporated. *Rex Dagi v. Broken Hill Proprietary Company Limited* was one of the largest tort claims in Australian history. It received extensive media attention, and the popular response to the mining company was overwhelmingly critical.

The legal case against BHP and the Ok Tedi mine did not directly address damage to property, because the Court concluded that it was unable to determine issues concerning land in another country (Gordon 1997:153). Nor did the case address the mine’s liability for environmental degradation, because of the absence of relevant statutes or laws deemed to rise to the level of an enforceable international norm (see Popović 1996). Instead, the case focused on “negligence resulting in a loss of amenity” (Gordon 1997:154), which embraced the subsistence economy of the plaintiffs. This was a novel concept for the court, given that it did not involve a claim for economic loss in monetary terms, which is the foundation for damages in western legal systems (Victorian Supreme Court 1995:59). The court’s recognition of subsistence rights under common law represents a valuable precedent for other indigenous peoples whose resources are threatened by development.

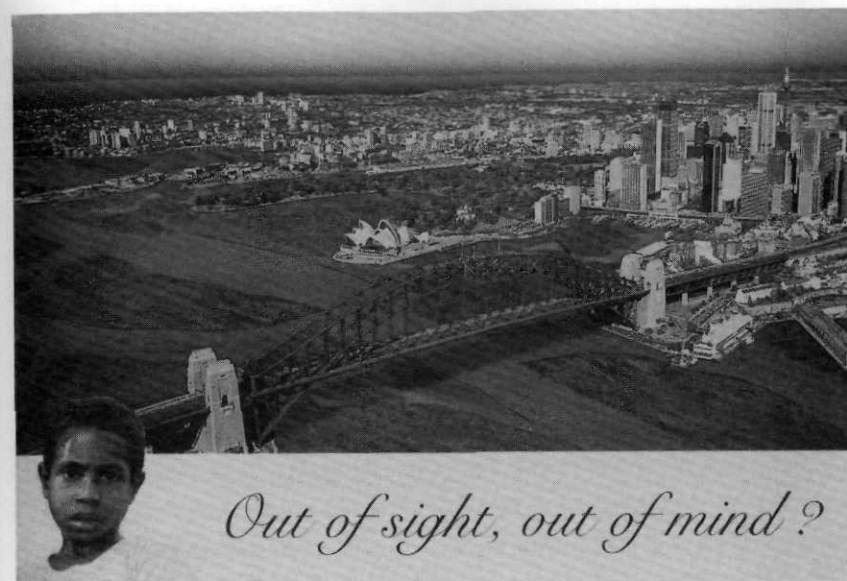


Figure 0.5. Ok Tedi campaign postcard (front view), 1999. Sydney harbor with the Ok Tedi River superimposed. Photo credit: Mineral Policy Institute.

The lawsuit against BHP and the Ok Tedi mine was settled out of court in 1996. The settlement included a K110 million compensation package for the 34,000 people living along the Ok Tedi and Fly Rivers to be distributed over the remaining years of production at the mine, which is scheduled for closure in 2012.¹⁶ A second trust fund of K40 million was established on behalf of the landowners and residents of the lower Ok Tedi River, where the impact of the mine was the most pronounced. The state also acquired a 10 percent equity share in the mine on behalf of the people of Western Province. The central component of the settlement, however, was a commitment by BHP to implement the most practicable form of tailings containment following a government review of the available options. At the time of the settlement, the most likely option was thought to be a tailings pipeline from the mine site in the mountains along the east bank of the Ok Tedi River to a lowland storage area, with an estimated cost of US\$180–250 million. In the interim, the mine installed a dredge in the lower Ok Tedi River, which lowers the riverbed and reduces flooding into the adjacent forests. However,

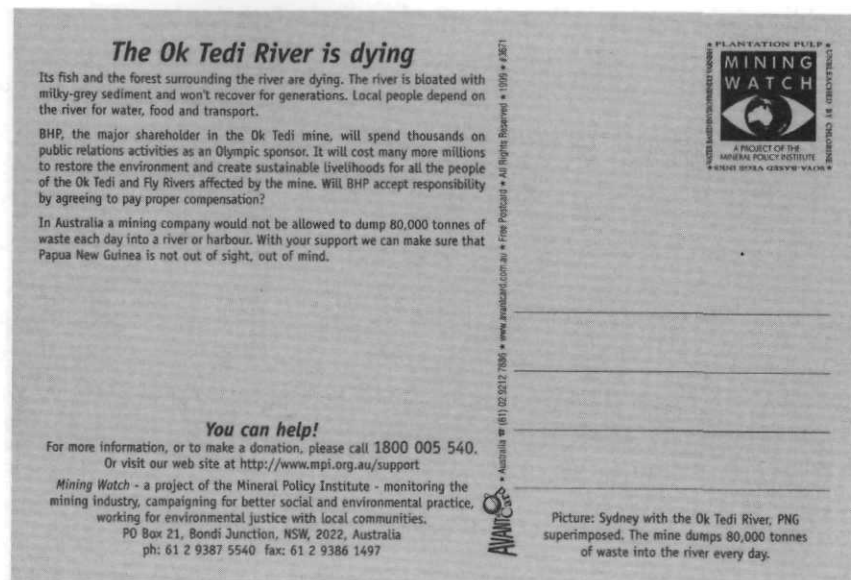


Figure 0.6. Ok Tedi campaign postcard (reverse view), 1999. Photo credit: Mineral Policy Institute.

the dredge removes only half of the tailings that the mine releases into the river, and only one-fifth of the total volume of waste material that enters the river system.¹⁷

The mining company completed its review of the mine's environmental impacts and tailings containment options in 1999, three years after the lawsuit was settled.¹⁸ The managing director admitted that the mine's impacts were "far greater and more damaging than predicted," contradicting long-standing denials that there were serious problems downstream from the mine (OTML 1999). The review pointed out that even if mining were to stop immediately, the environmental problems downstream will continue to increase given the sheer volume of tailings already in the river and ongoing erosion from waste rock dumps in the mountains (Parametrix Inc. and URS Greiner Woodward Clyde 1999). Pollution from the mine is expected to have a cascading effect as it gradually migrates downstream toward the Gulf of Papua, leaving deforestation in its wake. The mining company now acknowledges that the heavy accumulation of sediment in the lower Ok

Tedi will last for another 60 years, while the impact on the Middle Fly will continue for several hundred years (OTML 2004:12). Although 1,554 square kilometers of rain forest along the river has already died or is under severe stress, this damage is expected to increase to 3,000 square kilometers (OTML 2005:4). It may eventually cover the entire floodplain of the river, or 4,200 square kilometers (OTML 2005:4). Local species composition is not expected to return to premine conditions, with grasslands and wetlands replacing much of the affected rain forest (Chapman et al. 2000:17).

Questions about the toxicity of heavy metals at both ends of the food chain remain unanswered (Parametrix Inc. and URS Greiner Woodward Clyde 1999). Copper levels may be inhibiting the growth of algae in the river. Although the health risks to the populations living along the river are expected to be minor, consultants for the mine have recommended that these populations be monitored for their exposure to lead and cadmium, both highly toxic substances (Parametrix Inc. and URS Greiner Woodward Clyde 1999:14). Finally, continued operation of the mine without effective tailings containment increases the possibility of acid rock drainage, in which sulfur dioxide leaches heavy metals into the river (Chapman et al. 2000:8–9, 19). The consequences of acid rock drainage would be "catastrophic," leading to the "loss of all ecosystem functions over affected areas for prolonged periods" (Parametrix Inc. and URS Greiner Woodward Clyde 1999:8). The most recent environmental reports indicate that acid formation is already occurring at low levels in the Ok Tedi River and the Middle Fly (OTML 2005:1–2).

The 1999 corporate review asserted that none of the proposed strategies for tailings containment will substantially mitigate the environmental processes already in train. However, subsequent evaluation of these reports by the peer review group appointed by the mine (Chapman et al. 2000) and the World Bank (2000) raised questions about these findings. The World Bank recommended the early closure of the mine after the establishment of programs to facilitate the social and economic transition to life after mining (World Bank 2000). The failure of the mining company to implement tailings containment despite its commitment to do so in the 1996 settlement agreement forced the plaintiffs in the original case to return to the Victorian Supreme Court in Melbourne in April 2000, charging BHP with breach of contract.

BHP subsequently indicated its intention to withdraw from the Ok Tedi mine. In the Mining Act of 2000 (Ok Tedi Mine Continuation [Ninth Supplemental Agreement]), the Papua New Guinea Parliament endorsed BHP's transfer of its 52% share in OTML to a trust fund that will support development projects in Papua New Guinea. In return, the company and the government were indemnified against future claims relating to losses from pollution or damage to the environment resulting from the operation of the mine. Although the trust fund will benefit communities throughout the country, it has been described as a "poisoned chalice" because it relies on the continued operation of the mine, including the disposal of more than 80,000 tonnes of mine tailings and waste rock per day into the river system, to underwrite development (Evans 2001). The Mining Act limited BHP's economic liability to the value of the trust, even though it is uncertain whether the returns from its shares in the mine are sufficient to offset the cost of the damages. The Mining Act also provides OTML with unprecedented power and authority to set its own environmental standards as well as the procedures for monitoring and compliance. Even given the pervasive influence of neoliberal ideologies that promote corporate self-regulation, the agreement represents an extraordinary transfer of rights from the state and ordinary citizens to a private company (Divecha 2001). In 2001, BHP merged with the South African mining company Billiton to become BHP Billiton, one of the five largest mining companies in the world. The legal action against BHP Billiton and the Ok Tedi mine was settled out of court in January 2004, without reducing the mine's environmental impact (Kirsch 2004; Munro 2004).¹⁹

OVERVIEW

Chapter 1 describes Yonggom history in terms of their encounters with others. Following the insight from gift exchange that objects embody social relations, it focuses on the social life of three artifacts. The chapter draws on Yonggom ideas about social relations to challenge representations of New Guinea that emphasize its isolation and difference rather than its historical connections to the rest of the world. It also builds on Yonggom recogni-

tion of the agency of the animals with whom they share the landscape by showing how the particular characteristics of natural species can influence history.

Chapter 2 examines Yonggom modes of environmental analysis, including animism that takes the form of communication with birds and other animals. The Yonggom respond to these other beings through their magic spells. Totemic relationships and other naming practices also connect the Yonggom to animals; knowledge of the magic names of these animals confers power over their referents. Another form of magic allows people to temporarily assume animal form, providing them with new perspectives on the world. These practices challenge the assumptions of capitalism, modernity, and science about human-environmental relations.

Chapters 3 and 4 are concerned with exchange as a form of social analysis. Chapter 3 considers the performative contexts of Yonggom exchange and how social relations are composed or decomposed in regional pig feasts, bridewealth transactions, and mortuary exchange. The chapter focuses on the problems caused by failed exchange. The experience of unrequited reciprocity can be dehumanizing and is explicitly linked to the problem of mortality by providing the motivation for acts of sorcery. Colonial-era threats to Muyu exchange practices and perceived opportunities to overcome the challenge of unrequited reciprocity resulted in a series of cargo cults in the 1950s that I also describe and analyze in Chapter 3.

Chapter 4 shows how sorcery discourse influences Yonggom interpretation of their own emotions, motivations, and intentions. The Yonggom have also used the discourse of sorcery to examine their relations with the Ok Tedi mine. The resulting compensation claims are also a form of political action. Rather than treat the impact of the mine as a purely environmental problem that can only be solved by technical means, their compensation claims show how pollution is a kind of social relation.

Chapter 5 begins with a first-person account of my participation in Yonggom male cult ritual. Like the cargo cults described in Chapter 3, the accompanying myths focus on overcoming the problem of unrequited reciprocity. The myths are organized episodically, and the more recent episodes of the myth provide interpretations of colonial history. Their analysis of history focuses on social relations, challenging explanations of inequality that

social terms may in fact inure us to violence and suffering, indicating the value of the interpretations proposed by the Muyu refugees.

This chapter illustrates how indigenous analysis is applied to political problems along the border. Chapter 7 returns to the environmental problems downstream from the Ok Tedi mine. It examines how Yonggom responses to these issues draw on their relations to place, including narratives of loss and their political mobilization against the mine. The chapter also examines Yonggom concerns about the future, including their discussions about the *aman dana*, the children of the future.

CHAPTER 7

Loss and the future imagined

When I walk beside the Ok Tedi River with a friend, it is difficult to identify the places where we once shared a meal or went swimming. Where towering trees stood, only ghostly tree trunks remain. The creeks are all buried by sand. Not only are these changes to the landscape physically disorienting, but they displace memories of the past. A young woman who remembered making sago with my wife expressed dismay that the sago swamp where they once worked together was now dried up and filled with sand. Memories previously anchored to the landscape have lost their mooring.

Several years ago Buka Nandun took me to the place where his mother made her gardens when he was young. This was an island in the Ok Tedi River known as Dutbi, fertile ground where gardens bore fruit without fallow. Tailings from the mine have covered the island, connecting it to the shore and destroying their gardens. The few trees that remain lean precipitously. Leading me to a place he had previously visited countless times,

Buka lost his way in a thicket. Turning his head to the right and then left, he searched in vain for a familiar landmark. Pollution has erased all traces of the past.

What is the meaning of these empty places? Given the relationship between place and memory, the destruction of these landscapes also threatens history. These are not just empty places, but scenes of loss.

Pollution from the Ok Tedi mine has caused extensive deforestation, the destruction of garden land and sago stands, the disappearance of birds and other wildlife, and the introduction of unknown chemical hazards into the river system. How have the Yonggom responded to this devastation? The transformation of the tropical rain forest into a barren landscape evokes powerful feelings of sorrow and loss, although these sentiments must be understood in relation to the Papuan "poetics of loss and abandonment" (Feld 1982:130), as well as the broader context of change. The Yonggom also express concerns about the new forms of environmental risk produced by the mine. Despite the challenges posed to Yonggom "senses of place," their spatial imagination gave rise to new forms of mapmaking and facilitated their international campaign against the Ok Tedi mine. These experiences influence how the Yonggom think about the future and the character of change in the new millennium. However, the settlement of their lawsuit against the mine and the payment of compensation for environmental impact has remade their world in the form of money, raising important questions about competing forms of value. Their campaign against the mine is a cultural struggle for control over their lives and the meaning of their experiences in a landscape ravaged by mining.

EXPRESSIONS OF LOSS

In a series of life history interviews with women living along the Ok Tedi River in 1996, I asked them to describe how their lives had changed since production began at the Ok Tedi mine. Bumok Dumarop told me:

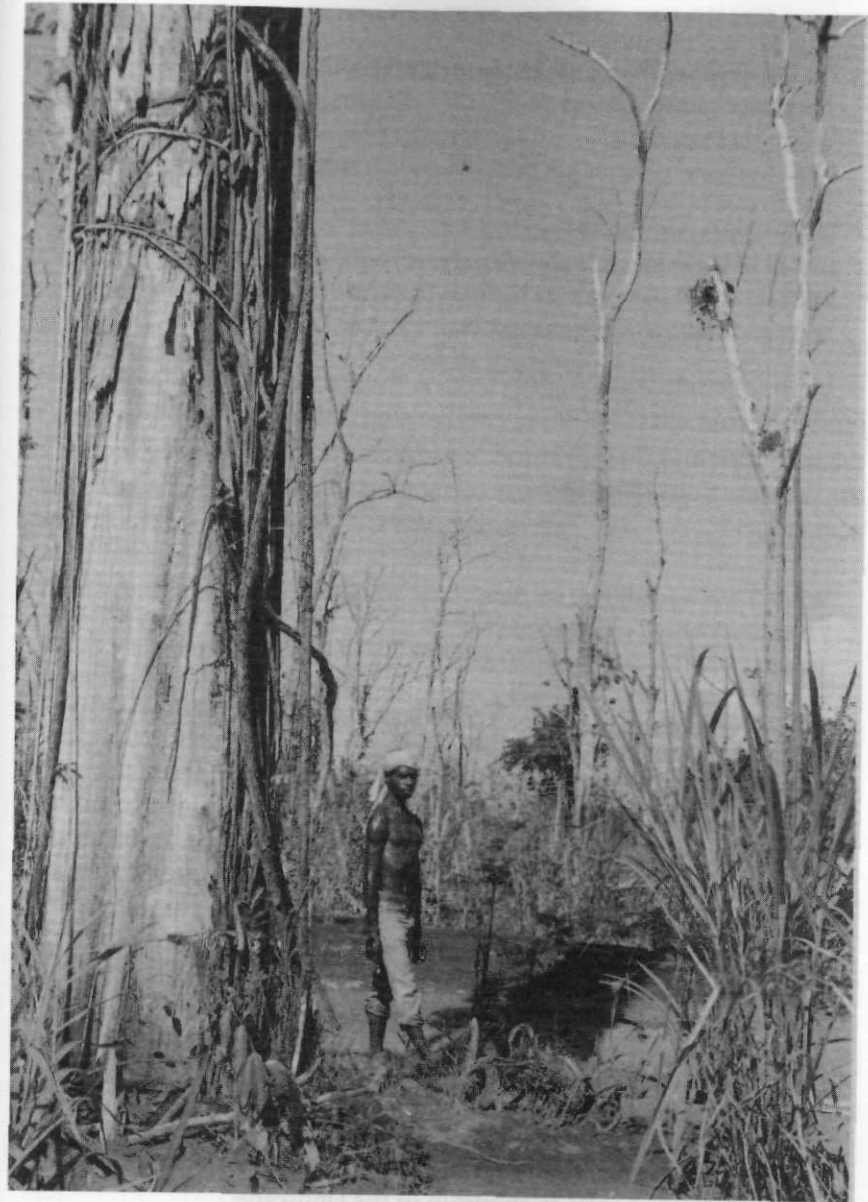


Figure 7.1. Buka Nandun at Dutbi Island, 1996. Photo credit: Stuart Kirsch.

I'm unhappy with what the company has done.
 They have ruined our way of life.
 Before we lived easily.
 Food from our gardens was plentiful, as was wild game.
 The river was fine.
 You could see the fish, the turtles,
 and all of the other animals living there.
 But now it's all gone and it's hard.
 We're suffering, so I'm unhappy.

In an interview with Andok Yang, a woman in her 60s, she compared life before and after the mine, emphasizing both the physical changes to the landscape and their practical consequences. In her eloquent narrative, she presents a eulogy of the past through the lens of her own childhood memories:

When I was a small girl, we didn't have any contact with the white world.
 I had never tasted sugar or salt.
 Women wore *woyam* [reed skirts]
 and men wore *orom yop* [bush mango penis sheaths].
 We cooked our food in *koyap* [leaves].
 We had bananas, sago, taro, and greens.
 The gardens grew well along the river . . .
 We never ran out of food.
 We raised pigs and my father hunted in the forest,
 bringing back wild pigs, cassowary, and other game.
 When I was very small, my mother used to carry me to her garden.
 When I grew older, she gave me a *men* [string bag] and
 an *om bat kono* [sago bark knife] so that I could cut bananas, too.
 I used to go fishing and look under rocks for crayfish with the other girls.
 We would bring them to the house and cook them in tree bark.
 We would put greens and breadfruit seeds inside, tie up the ends,
 and cook them.

Andok explained how pollution from the mine was responsible for a fundamental rupture in their relationship to the landscape:

Our lives began to change in 1984.
 The effects of the mine were obvious when looking at the river.
 The water became muddy.
 Before it was clear, you could see the fish clearly.

We saw the fish and crayfish dying [after the 1984 cyanide spill].
 They were lying on the sandbanks.
 People wondered what would happen next.
 That was also the beginning of the sandbanks
 that later covered our gardens along the river.
 By 1986, the plants and the trees growing along the river began to die.
 First their leaves became yellow and then they fell off.
 Gradually this spread into the small creeks,
 into the sago swamps, and into the forest.
 All the sago swamps became blocked by mud, too.
 The creeks turned into swamps and filled up with sediment,
 killing off the sago palms.
 Now it is difficult to find sago.
 The sago palms growing along the river are covered in mud
 and it is very difficult to make sago.
 Sometimes when you cut down a sago palm,
 there is only water inside, no starch.
 Sago palms no longer grow along the river,
 so we have to walk for two or three hours to find sago to harvest.
 First the fish disappeared,
 then the animals living along the riverbanks:
 the pigs, cassowaries, pigeons, and bandicoots.
 They all disappeared and we don't know where they are staying.
 In the past, when it was time for the turtles [to lay their eggs],
 we went and sat and waited along the sandbanks. . . .
 Now the places where the turtles laid their eggs
 have been covered up.
 We don't know where the turtles are now;
 they've all gone away.

Many of the women whom I interviewed expressed feelings of *mimyop*, of sorrow and loss, about the destruction of local landscapes. Duri Kemyat from Yogi village, a woman in her mid-50s, presented her views on these changes in the stylized form of a lament, the speech genre associated with bereavement:

Before the river was not like this;
 it makes me feel like crying.
 These days, this place is ruined,
 so I feel like crying.

Where I used to make gardens,
the mudbanks have built up.
Where I used to catch prawns and fish,
there is an empty pool. . . .
So I feel like crying.

Before it wasn't like this.
We had no difficulty finding food from our gardens and wild game.
We had everything we needed.
Now we are suffering and I wonder why.

The narrative coupling of place and past events is associated with feelings of sorrow and loss in many Papuan societies. Memories of the deceased are evoked by the places where they once lived and worked. The living are reminded of the absence of their deceased relatives by the gradual disappearance of the physical traces of their actions as abandoned gardens and house sites are reclaimed by the forest. These losses are revealed by movement through the landscape, whether a physical journey, the biographical accounting of a person's movements between places, or in metaphorical journeys like the songs performed during the Kaluli *gisalo*, in which place names move men and women to tears by evoking memories of the deceased (Schieffelin 1976; Feld 1982, 1996).

The other beings with whom the Yonggom share the landscape may also call their attention to loss. The call of *on kuni* (hooded butcherbird) at dawn evokes memories of the deceased, as suggested by Kutem's song about the loss of his young daughter. A flowering sago palm also evokes feelings of sorrow and loss. These trees flower only once, after 12 to 15 years of growth. They should be harvested before this time because the efflorescence consumes the bulk of the tree's edible starch. A flowering sago palm, because its starch has gone to waste, evokes memories of relatives who are too old and frail for the labor-intensive process of making sago, or who have already died. Jimmy Woia composed the following song that expresses these sentiments:

<i>om bat det kok</i>	the flowering sago palm
<i>kanen bet winanen?</i>	who will fell the tree?
<i>nup nima ku awaniwen, kowe</i>	all of our sisters are already married, so
<i>ena ya ku kijom derepbiwen</i>	our mothers are already too frail
<i>oh, nom bat det kok</i>	our flowering sago palm

The sounds of sago being produced, of women rhythmically beating sago to separate the starch from the pith, may remind passersby of the family members who made sago for them when they were children.¹

The association between place and memory shapes Yonggom experiences of loss, including their response to the impact of the mine on their landscape. Duri Kemyat's moving elegy to place and loss—"Where I used to make gardens / the mudbanks have built up / Where I used to catch prawns and fish / there is an empty pool. . . . / So I feel like crying"—recognizes the landscape as the embodiment of history, and therefore the medium through which the experience of loss is made explicit.

THE CONTEXT OF CHANGE

Pollution from the mine has also affected Yonggom relationships to the other beings with whom they once shared the landscape. What happens when there are no longer any fish in the river, birds overhead, or animals nearby? Children are growing up without learning the names of the fish their parents used to catch in local rivers and streams, and they do not recognize the names of the birds and animals that populate their myths. The power of their hunting magic to reveal the animals and fish concealed by the forest and the river has been diminished. The forests have grown quiet, and Yonggom dialogue with the other beings around them has all but ceased. When they no longer interact with these other beings in their habitats, their myth and magic may lose their immediacy and value. Although the Yonggom may still use their hunting magic away from the polluted river corridor, its local failure foreshadows a future in which their magic may cease being efficacious altogether. The narrative conventions of magic are regarded as powerful and compelling because they are seen to have effects in the material world, and when that world is altered profoundly, the power of speech itself may become attenuated.

As the Yonggom recognize, other forms of knowledge are also being lost. During my visit to the village in 2000, Buka Nandun described his participation in a recent *arat* pig feast. A group camped in the forest for several weeks, building shelters for the guests and cages for the pigs, cutting

firewood, making sago, and storing water in bamboo tubes. The evening before the event, the organizers gathered in the feast house for the call-and-response singing associated with the ritual. Buka realized that only the old men knew the words and expressed concern that his generation will not be able to perform the ritual songs after they die. The guests were expected to dance into the festival grounds the following afternoon, their bodies decorated in charcoal and red pigment, presenting themselves in a vocal and emphatic display. This spectacle testifies to the agency of the sponsor, who literally draws his guests out of the forest. Much to the disappointment of the sponsor, however, the people attending the feast quietly filed into the compound, dressed in ordinary attire.

Buka also told me about a recent trip to Mindiptanah in West Papua, during which he encountered Muyu men in their 30s for whom the lingua franca Bahasa Indonesia was their only language. He could only communicate with the older men and women who still spoke their shared vernacular. Buka's experiences in West Papua, where language as a crucial part of identity and cultural knowledge is being erased by linguistic hegemony, and his observation that certain forms of ritual knowledge and practice are disappearing, are part of a broader series of changes in the Pacific that have been described in terms of "culture loss" (Kirsch 2001a; Hirsch 2001:37). The Yonggom also express concerns about the ability of their children to comprehend the lives of their predecessors, as I describe below.

A related development is the introduction of foreign and invasive plant and animal species. A new variety of fish has colonized the Ok Tedi River, probably a species of climbing perch introduced from Indonesia. A new species of grass from China was planted along the river by the Ok Tedi mine in an experimental effort to rehabilitate the land covered by tailings.² These transplants have the capacity to render local landscapes alien. Another new plant species also grows on the mine tailings left behind after the Ok Tedi River floods. It has tough skin, and the Yonggom use it like steel wool to scour their dirty cooking pots. However, it is difficult to control and it dulls the blades of their machetes when they try to keep it from spreading. The only way to limit its expansion is by cutting off the new shoots that grow on its front edge. This foreign plant became the

vehicle for a new metaphor in a story that described how one of the Yonggom leaders in the campaign against the mining company successfully rebuffed a political foe in debate by "cutting off his talk" and leaving him "no room to advance," oratorical skills that were compared to knowing how to manage the invasive plant by trimming its leading edge. Although the differences between the indigenous and the introduced, including the Indonesian fish and the Chinese grass, are carefully noted, there is an openness to hybridity, with the abrasive and intrusive variety of cane serving as the perfect metaphor for a particular kind of politics and how it might be contained.

These changes are accompanied by interest in new forms of technology. I was sitting by Amot creek one afternoon with some friends when a bird called out from a distance. "*On kane*," I asked. "Who is that?" Buka told me the bird's name, that it likes to perch on the edge of gardens, and that it steals their fruit. Later the same day, we were standing by the road waiting for my ride back to town. Several trucks rumbled by, and Buka identified the vehicles and their drivers by the sound of their engines long before they became visible, much like the birdcalls that we heard earlier in the day. The environment and technology are not opposed here; the same ways of knowing and talking about the world are applied to both bird song and engine sound. However, these observations reflect a gradual shift in their attentions away from the other beings that inhabit the landscape.

Although the new forms of technology occupy a greater share of people's attentions in town, their interests remain primarily social. People take note of who drives which car, who lives in each house, and what other people purchase at the store and carry home in their plastic bags, much like they once paid attention to hunters when they returned from the forest with their net bags bulging with meat. They possess detailed knowledge of where other people might be at any given moment: "I saw him at the market," "He was walking from his office to the shops," "She was making sago by the road." Their attention to trucks, markets, roads, and stores remain focused on their implications for social relations.

The changes experienced by the Yonggom as a result of the environmental impact of the Ok Tedi mine are part of more widespread developments

occurring throughout the country, including urban migration, the shift to wage labor and the growing significance of commodity relations, conversion to Christianity, and emerging regional and national identities (Knauff 2002; Foster 2003). Yonggom responses to these changes are not oppositional in character, which is a common assumption of the literature on indigenous political movements. In fact, their views challenge dichotomies that are largely taken for granted in the West, including the opposition between technology and the environment, or between society and technology. Although the Yonggom are attentive to the differences between the indigenous and the introduced, they make creative use of hybrid forms. Although they do not view the relationship between development and the environment as a zero-sum game, their attention to technology comes at the expense of their engagement with the other beings that inhabit their shared landscape. However, their interest in technology remains directed towards social ends.

INDIGENOUS RISK SOCIETY

Yonggom subsistence has always depended on their ability to exploit a variety of plant and animal species. They participated in the regional system of exchange for pigs and shells, and they traded black palm bows for tobacco and nassa shells from the mountains, but were self-sufficient in food production. In recent decades, they have become increasingly involved in the larger capitalist economy through markets in which they sell a portion of what they raise in their gardens or extract from the forests and rivers, the sale of cash crops, including rubber, wage labor, and compensation payments from the mine. However, until recently the landscape provided them with both sustenance and security.

This aspect of their relationship to the landscape has been fundamentally altered by pollution from the mine. In addition to the visible problems downstream from the mine—the dead trees, the river dried up and full of mud, and the disappearance of fish, birds, and other animals—the Yonggom perceive a number of other changes in the world around them. They say that the sun has become hotter and burns their skin, the rainy season lasts longer, the stars and the moon are no longer as bright in the night sky,

the rain harms the plants in their gardens, and the wind has become more abrasive (Kirsch 1995:70). They question whether the physical world will continue to sustain their lives. In describing the effects of the mine on their forests and rivers, they use the adjective *moraron*, which they ordinarily apply to things that have gone bad, like a piece of wood that has decayed or fruit that has become rotten.

The impacts of pollution are perceived across the landscape, even at a distance from the river. People living in the raised foothills several kilometers to the west of the Ok Tedi River share many of the same concerns as the people who live beside the river. Pollution from the mine is thought to travel upstream in their creeks and streams, to rise up through the ground, and to fall to the earth in the rain.³ The problems caused by the mine are thought to be widespread and systemic rather than restricted to certain areas or particular plant and animal species. They are concerned that the world has been so fundamentally altered that exposure to the air, rain, and sun may be harmful. They fear that pollution from the mine will ultimately result in the failure of the entire ecosystem, like the biological process of trophic cascade.⁴

Yonggom concerns about environmental collapse reflect the new forms of risk created by the mining company and the challenges that they pose. Ulrich Beck (1992) has argued that a significant consequence of the environmental risks produced through industrialization is that our senses no longer provide us with adequate information about our surroundings.⁵ He describes this as a loss of sovereignty over our relationship to the world, a disenfranchisement of the senses that forces us to turn to science for help in discriminating between what is harmful and what is not (Beck 1987:155–56). The Yonggom lack a clear understanding of how pollutants are transported through the air, in the water, or beneath the ground, and how to assess the resulting risks. This loss of self-determination includes such quotidian matters as whether it is safe to consume the fish that they catch in the river or the sago that they extract from palm trees. Even their bodies have become the subjects of scientific scrutiny following the recommendation that they be tested regularly for their exposure to cadmium and lead, both highly toxic substances (Parametrix Inc. and URS Greiner Woodward Clyde 1999:14). The irony is that the Yonggom have become dependent on the scientific

discourse and practices that were responsible for creating these problems, and in some instances, on the same mining company personnel (Beck 1987; Stephens 1995:292–99).⁶

Beck (1987:154) has also described how pollution can lead to a “doubling of the world” in the sense that surface appearances may conceal underlying problems. Their sago palms may show no outward signs of damage, but they cannot be depended on to bear the normal quantities of starch. Even when their gardens appear prosperous, they may not yield the anticipated harvest. Appearances belie the mine’s most destructive impacts. The “world behind the world” is at odds with perception and experience (Beck 1987:154; Stephens 1995:298). Yonggom magic works by revealing opportunities that are concealed within the landscape; pollution from the mine now damages the unseen world, compromising indigenous modes of environmental analysis.

Another significant change in Yonggom relationships to the world is that their daily survival is no longer based solely on local resources. Men are more likely to bring home rice and canned fish from a trade store than to parade game from the forest through the village. The largest source of income for the Yonggom has become cash compensation for the mine’s impact on their river and forests, which is scheduled to continue throughout the remaining years of production at the mine. Because it is no longer feasible to live off the land, the Yonggom have become dependent on compensation payments from the mining company. They have shifted from a subsistence economy based on natural resources to a cash economy based on resource rents, with payments made according to external valuation of their land and resources (Filer 1997b). Unlike ordinary resource rents, however, the Yonggom do not receive compensation in exchange for the value of their resources when consumed by others, but are compensated for the destruction of the productive capacity of their land as an indirect consequence of mining that takes place in the mountains. Their landscape is no longer a site of productivity, but a scene of loss. Instead of providing them with security, it confronts them with new, indecipherable risks.

PLACES AND MAPS

Despite the destructive impact of the mine on their landscape, the Yonggom continue to emphasize relations to place.⁷ One way in which these relationships are made explicit is through new forms of mapmaking. In the previous chapter, I described a map made by Pascalus from Kawangtet village in West Papua, which geographically placed that territory in relation to the other countries of the world and temporally located it relation to historical events, including the advent of postcolonial self-determination for the other nations of the world. Like the medieval maps described by Michel de Certeau (1988:120–21), Pascalus’s map encompassed both geography and history, bringing together what Euro-Americans see as diverse kinds of knowledge in a spatial form of representation.

The Yonggom make maps for other purposes as well. Another map was shown to me in 1996 by a woman whose life history I recorded. It sketched the rain forest trails that connect the different places in which she has lived, including locations in West Papua. She shared the map with me like I might show an album of childhood photographs to a close friend. It presented her “biography as itinerary” (Feld 1996:113), suggesting that she is the sum of all of the places in which she has lived. The medieval maps described by de Certeau (1988:120–21) depicted specific journeys undertaken by travelers, which provided guidance to persons who wished to follow the same route; this map was a spatialized form of self-representation, with the person defined as a particular constellation of places and the journeys between them.

Another Yonggom map illustrated the historical configuration of lineage boundaries along the lower Ok Tedi River. It was created as evidence for a dispute that was being adjudicated in the district land court. This type of map has become increasingly common given the competition for land and resources that has resulted from the mine’s destructive impact along the river, the influx of refugees, and population growth. In contrast to the map of the woman’s life history, which had no cardinal orientation or other features that would enable someone unfamiliar with the area to identify the places that it represented, the map made for the court case was embedded within the territorial grid of the state. The biographical map was inward-looking and relational; the map made for the court case connected local

NEW GEOGRAPHIES OF THE IMAGINATION

Yonggom spatial imaginaries have also played an important role in their campaign against Broken Hill Proprietary Ltd. (BHP) and the Ok Tedi mine. Rejecting the agreement between the mining company and the state that allowed for the continued dumping of mine tailings and other waste materials into their river system, Yonggom political leaders embarked on a series of international journeys to identify potential allies and sources of political support.⁹

The Yonggom began to protest against the mining company in the mid-1980s by circulating petitions that called for stricter environmental controls and compensation for the damages already incurred. As long as their protests remained local, however, they failed to achieve their objectives. Their petitions disappeared into government filing cabinets; the mining company provided the affected villages with water tanks, school buildings, and development projects in lieu of tailings containment; and although university students protested against government policy in the capital of Port Moresby, they were unable to alter the status quo.

When their campaign against the mining company went global in the early 1990s, it sought to make visible the ordinarily concealed movement of capital and minerals. Even prior to their 1994 lawsuit against the mining company, Yonggom activists Rex Dagi and Alex Maun traveled throughout Europe and the Americas seeking support from environmental NGOs and other international partners who could publicize the actions of BHP. The 1994 lawsuit leveraged their political activities by simultaneously affecting multiple corporate pressure points: shareholder concerns, BHP's public reputation, and the mine's ability to sell copper ore in the global market. As a political campaign against a mining company, their actions were virtually unprecedented, for unlike the petroleum industry, there is no direct interface between mining companies and consumers.

Although undertaken for novel purposes and expanded over unprecedented distances, the travels of the Yonggom activists nonetheless corresponded to a familiar genre. Their campaign built on their practices of tracing the productive connections between places, including the location of trading partners, potential marriage alliances, sago stands, and hunting grounds, and sharing the resulting information. In their personal narratives,

the Yonggom present in cartographic detail the paths that they have followed. Similarly, when I first visited the village, I was repeatedly asked to recount every leg of my journey. These narrative practices extend the listener's knowledge of places at a distance. By revealing the connections between distant locales and the potential for new relationships, their narratives also map the geography of power. The Yonggom followed these spatial forms of organizing information in their campaign against the mine.

Only by confronting BHP in the international arena were the Yonggom and their neighbors able to obtain a favorable settlement of their lawsuit. In 1995, Maun traveled to Canada's Northwest Territory to meet with members of the Denne Nation and testify at public hearings held in Yellowknife to evaluate BHP's plans to establish a billion-dollar diamond concession. Information about the environmental problems caused by the Ok Tedi mine aroused public concerns about a proposed BHP copper mine in the Caribbean island of Dominica, which was subsequently deferred. A meeting was scheduled with the operators of a smelter in Japan that purchased copper from the Ok Tedi mine to request that they pursue alternative sources.

By tracing the movement of ore from Mount Fubilan to copper smelters in Germany and Japan, and by forging connections between widely dispersed locations of capital and power, the Yonggom forced BHP and Ok Tedi Mining Ltd. (OTML) to respond to their concerns. Andrew Strathern (1989) once used an informant's expression "a line of power" as the title of a book about the exchange cycles that linked big men across communities in the Western Highlands of Papua New Guinea; during the litigation against BHP and OTML, new global lines of power connected the Yonggom to their lawyers and the courts in Melbourne, to environmental and mining NGOs in Australia, Europe, and the United States and to other indigenous peoples from around the world with whom they have many concerns in common. Their geographic imaginary expanded to include Australia from Sydney to Melbourne and the capital city of Canberra, the Americas from the Canadian Yukon to New York, Washington, D.C., and Rio de Janeiro, and Europe from London to Amsterdam and Bonn, all strategic sites on the campaign trail. The mapping of global connections reveals previously unknown relationships between places. By tracking the global circulation of capital, commodities, and power, the Yonggom were able to force the settlement of their lawsuit in terms that promised an alternative environmental future.

FUTURE THOUGHTS

Yonggom expectations for the future appear in two competing forms. During fieldwork in 1999, the members of an evangelical Christian church emphasized the importance of the impending millennium, which they hoped would usher in a new era characterized by material prosperity. They defined the future in terms of access to powers that would enable them to effortlessly obtain whatever they desired simply by thinking of it.¹⁰ The millenarian perspective posits an opposition between the universe of villages, bush material houses, and indigenous technologies, and "modern life," which is characterized by the towns and technology associated with Euro-Americans.

This perspective is focused on chronology rather than location and assigns agency to a particular moment in time, the year 2000. It is simultaneously a globalizing discourse that synchronizes the future of the Yonggom with the fate of other Christians. It marks a conceptual shift from practices that reveal opportunities that are contained within the landscape, as elicited by magic, communicated by the other beings inhabiting the landscape, or appearing in their dreams, to an arbitrary moment of time which is by definition independent of place.

Other Yonggom expressed competing views about the future, even though they shared comparable aspirations. A village catechist for the Catholic Church disputed the millennial expectations popular among members of the rival evangelical church:

The changes are already taking place. The road to Kiunga is coming closer and soon they will build a bridge over the Ok Tedi River and complete the road to the village. People have already begun to construct permanent houses. Soon you won't see sago roofs at all, only tin roofs. Not long afterwards, electricity will be coming in as well. These are the real changes and they are already taking place.

The catechist sees the technological markers of modernity, including roads, permanent houses, and electricity as slowly diffusing across the landscape, moving steadily closer to the village. In keeping with prior understandings of how opportunities are created by revealing the landscape's hidden potential, the catechist suggested that their own political efforts were responsible for bringing these developments to the village.¹¹

These two perspectives are based on opposing assumptions about the nature of change. The millenarian scenario posits a succession of epochs, a position familiar to anthropologists from an earlier generation of cargo cults (Lawrence 1964; McDowell 1985). As distinct from most cargo cults, however, the millenarian transformation is a consequence of chronological time rather than ritual activity, and is consequently independent of human agency. With its synchronizing frame and the universality that a calendrical system implies, the resulting model of change is more conducive to conceptualizing simultaneity with other peoples and places, a dimension of millenarian movements that analysts have not always emphasized. The alternative perspective, represented here by the Catholic catechist, is that change is linear, progressive, and already under way as a consequence of human action.¹²

The two views differ in terms of their understandings of how the future comes into being. The first scenario involves an episodic transformation in which the millennial future will become manifest at a preordained moment in time, whereas the second scenario adopts the productionist rhetoric of development and progress. The millenarian view corresponds with prior Yonggom understandings in which the future is made visible in the present through enchanted means, but their agency is displaced by magical forms of chronology. The linear model of the future implies a shift to a productionist worldview that, while still grounded in place, expresses a rationalist, disenchanting view of progress. Neither view of the future is exclusively new and modern, or local and traditional. Rather, they both rely on novel juxtapositions of ideas from different perspectives.

The Yonggom express similar concerns in their discourse about the lives of the *aman dana*, the children of the future.¹³ Older people are concerned that contemporary youths are not learning how to hunt and fish, make string bags from tree bark, or build houses without nails and sawn timber. They have grown up eating rice and tinned fish, and some of them resent the hard labor required for gardening and making sago. Discourse about the *aman dana* includes concerns about culture loss in relation to ritual songs that may soon be forgotten, ritual practices that are too easily ignored, and their inability, because of the damage to their environment, to share knowledge about the birds and other animals that figure prominently in their myths.¹⁴

An old woman once told me how she looked forward to receiving compensation from the mining company, “so that I can taste some sugar before I die.” Yet the hoped-for receipt of compensation payments will not alleviate her concerns about the *aman dana*, because “they won’t be following what my life was like.” The scope of the recent changes in their lives has made the present a significant turning point between the past and the future. The Yonggom express concerns that these changes will impose a conceptual divide between the generations, the way that mine tailings have transformed the landscape of Dutbi Island beyond recognition.¹⁵ In an interview with a man who works for the mining company and lives in the modern township of Tabubil, he poignantly described this dilemma: “When I tell my children what life was like when I was growing up, they think I am telling them a fairy tale.”

REMAKING THE WORLD IN THE FORM OF MONEY

It would be better to give us the money . . .
because the river is already dead.

—DOME VILLAGE, OCTOBER 1998

What are we going to do without money?
When we say fortnightly [compensation payments],
it means survival.

—YERAN VILLAGE, OCTOBER 1998

Melanesian expectations for compensation from resource developers bear resemblance to an earlier generation of desires expressed in cargo cults. Filer (1990:96) implicitly compared the demands for compensation made on behalf of the people affected by the Panguna mine in Bougainville to cargo cults that sought to acquire enough money or valuables to obviate all future conflict.¹⁶ These aspirations for a “new life” through compensation are similar

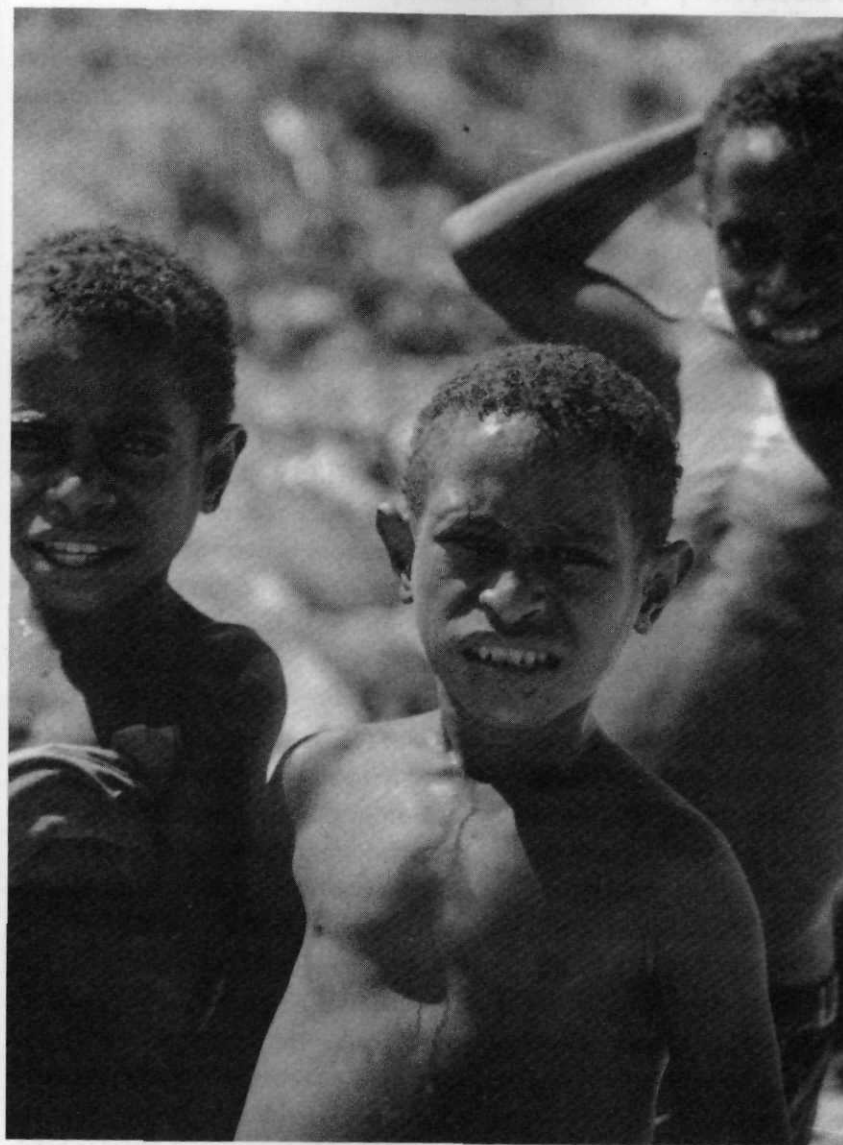


Figure 7.3. *Aman dana*, children of the future. Photo credit: Stuart Kirsch.

to the hopes of people who play the lottery in anticipation of a cash windfall. They envision a level of compensation that will enable them to trade their "old lives" for what they call "modern" or Euro-American lifestyles, including the kind of houses they will live in and the food they will eat.¹⁷ Compensation may even be expected to alleviate the need for labor, enabling them to obtain whatever they desire without having to work for it.

The payment of resource rents by mining companies has been criticized for promoting the idea that money can be obtained without working for it, comparing the "easy money" of resource rents to the popular pyramid schemes known in Papua New Guinea as "money rain" (*Post Courier* 2002). However, the value of resource rents and compensation payments made by resource developers, even when cumulatively large, is not sufficient to bring about the hoped-for transition to modern life after they have been divided among all of the eligible claimants. When pollution or other forms of environmental degradation impair subsistence production, the affected communities may be left in a perilous position, betwixt and between two worlds. This has been a recurrent dilemma for communities in Papua New Guinea affected by mining and logging projects, which neither bring about the desired transition to a new life, nor permit continued exploitation of subsistence resources.

In the Ok Tedi case, the value of the 1996 settlement was initially estimated at US\$500 million, including K110 million in compensation for the affected communities downstream from the mine. An additional K40 million was earmarked for the people living along the lower Ok Tedi River, where the damages were the greatest. However, the actual payment of compensation for environmental damage posed a number of challenges to the Yonggom and the other affected communities. First, the scale of the settlement proved deceptive: how is it possible that K150 million not remain a large amount of money, even when shared? Yet the funds must be divided among the 34,000 people living in the mine-affected area over the remaining years of the mine, which is currently expected to close in 2012. The value of the settlement has also been reduced by nearly two-thirds against the U.S. dollar because of the devaluation of the Papua New Guinea kina, even though the mining company sells copper on the world market for foreign currency.

The 1996 settlement agreement also required the mining company to implement the "most practicable form of tailings containment" following a review of the available options by the government of Papua New Guinea. Far from reducing the mine's environmental impact, however, the total area of deforestation has increased more than threefold, from 478 square kilometers shortly after the 1996 settlement to 1,554 square kilometers in 2004 (OTML 2004:12). The combination of the decreased value of the compensation payments and the progressive deterioration of the environment downstream from the mine has significantly compromised the value of the settlement. In one of the affected communities, the 2004 compensation payments amounted to only K120 (US\$30) per person annually, plus additional payments of K50 and K80 for damage to their gardens and the river. The combined payments average about US\$5 per month (Matit 2005:43).¹⁸

William Pietz (1999:61–62) has argued that money and commodities become fetishised not "when the value of goods is 'realized' in the form of money (that is, 'real' money, currency), but rather in the financial representation of economic assets recorded on balance sheets according to their hypothetical market value," which represents the world in the form of "monetarily quantified assets." In the legal deliberations in Australia, the court recognized that the subsistence practices of the people who live along the Ok Tedi and Fly Rivers operated partially or substantially outside of the monetized economy. Whereas the common law ordinarily makes awards for damage in terms of its monetary value, the court concluded that the plaintiffs were nonetheless entitled to recompense for their losses (Byrne 1995). The court also recognized that it was standard practice under common law to render its judgments in financial terms. With the settlement of the lawsuit against the mining company, new representations of the world downstream from the mine were established in monetary terms.¹⁹ Writing about conflict over resource extraction in the Nigerian Delta, Pietz (1999:79) noted that the establishment of monetary value through the "esoteric technicalities" of tort law may be the only form of "salvation available in a thoroughly civilized society."²⁰

The Yonggom critique of this process focuses on questions of value, and in particular corporate accountability for the value that the Yonggom attribute to their land, as Kutem Buru argued in 1998:

This is the only land we have; there are no other places.
 We should be compensated for the value that the land has for us.
 We should receive greater benefits for settling the case
 [because] our gardens and the land we use have been destroyed.
 Land is our only means of survival.
 They [the mining company] must reconsider
 how much our land is worth;
 we are not satisfied with the compensation payments.

The company doesn't face this problem.
 They eat in the mess, while we live on hunting and gardening.
 We cannot afford to buy fresh meat from the stores.
 Once our [compensation] money is spent,
 it is difficult to make ends meet.

The environment has already been destroyed;
 the only option is to provide us with additional funds.

Kutem Buru asserts that the value of the compensation payments that they receive is incommensurate with their losses. The Yonggom have lost control over the valuation of their resources, reminiscent of their struggles during the monetization of the local economy in the 1950s. Kutem challenges this process, effectively asking: What principles of accountability should be applied in the Ok Tedi case? Should BHP be liable only to the extent of its investment in the mine, or the total value of the damage caused by the mine? If the latter, how should this be measured: in terms of the market value of their resources, or the value of these losses to Kutem and his neighbors?²¹ Kutem rejects the market valuation of his land, comparable to the way that *arat* pig feasts and marriage exchange have continued to operate using money while protecting these transactions from the market. The questions of value raised by Kutem indicate that this is more than simply an economic dispute. As Pietz (1999:71) argued, the continued "existence of political and cultural worlds" are the real stakes in these newly monetized relationships.

Although Filer (1997a:174; as cited in Chapter 4) was critical of the antagonistic character of Yonggom compensation claims, the Yonggom hoped that the successful negotiation of compensation payments and environmental reform would ultimately strengthen their relationship with the mining company. However, the Mining Act of 2000 had the opposite effect. By indemnifying BHP against any future environmental liability, the Papua New Guinea government allowed the mining company to withdraw from the

project after transferring its shares to a development trust, leaving the mine's environmental problems unmitigated. Far from improving its relationship to the communities downstream from the mine, BHP's departure was an act of negative reciprocity writ large across the landscape.

MAKING THE FUTURE VISIBLE ALONG THE OK TEDI

Environmental degradation along the Ok Tedi River threatens to undermine Yonggom relations to place, but they have creatively responded to this challenge. Their spatial imagination has given rise to new forms of mapping and shaped their international campaign against the mine. Their experiences of loss have stimulated debates about the nature of change and the fate of the *aman dana*, the children of the future. In contrast to the oppositional terms in which indigenous political movements are usually represented, the Yonggom do not view these changes solely in terms of the indigenous versus the introduced, technology versus the environment, or social relations versus technology. Instead they recognize hybrid possibilities and new opportunities to pursue their own agendas.

There is no way to avoid the magnitude and significance of the environmental impact caused by the Ok Tedi mine. Like Duri Kemyat, there are times that "it makes me feel like crying." The rationale for reverse anthropology becomes clear in relation to the politics and pragmatics of writing ethnography in the wake of disaster. To focus exclusively on loss may reinforce the status of the subjects as victims and obscure their capacity to respond. The repetition of all too familiar disaster narratives can lend these problems a sense of inevitability that slights the agency of all of the parties involved, from the mining company to the people living downstream. The naturalization of these problems within narratives of progress also threatens to relegate indigeneity to the past, an effect with a long-standing genealogy, including claims about Melanesia's isolation from global history and continued fascination with "lost tribes," which lose their special status at the moment of their recognition (Kirsch 1997a).

As a form of politics, the influence of ethnography may be limited, but it can effectively challenge these one-dimensional representations. Even

though it might have been expected that the Yonggom would be overwhelmed by the difficulties they have faced, indigenous modes of analysis have helped them to interpret and respond to these problems. In Chapter 4, I described how the Yonggom view pollution as a manifestation of social relationships that connect the mining company to the people downstream, rather than relegate the problem to the realm of nature and science, and consequently defer potential solutions to technical experts. Through their claims for compensation, they sought to establish the kinds of social relations with the mining company that would force acknowledgement of the problems downstream from the mine and promote an effective response. In this chapter, I have shown how the Yonggom have drawn on their relations to place, and practices that identify the connections between places, in their campaign against the mine. They challenged the mining company by tracking the movement of capital, commodities, and legal claims across distant landscapes. Their campaign depended on the relationships that they formed with their lawyers in Melbourne, with other indigenous peoples facing similar dilemmas, and with environmental activists and nongovernmental organizations around the world.

The representation of the world in the form of money conceals a range of other meanings that were previously associated with the landscape. At stake in the Yonggom campaign against the Ok Tedi mine is not only a way of life, but also indigenous modes of analysis that have helped them to interpret and respond to their experiences, and have formed the basis for political action. Social movements like the campaign against the Ok Tedi mine are cultural struggles over the control and meaning of their experiences. The actors in these social movements “struggle to become [or remain] the subjects of their own action and to produce autonomous meanings in relation to space and time, to life and death, and sexuality and reproduction” (Melucci 1998:425). At stake are questions of cultural reproduction inherent in Yonggom concerns about culture loss and the fate of the *aman dana*. Given the challenges posed by the transformation of their landscape, the practices described in this chapter can best be understood, as suggested by Kutem Buru’s haunting observation—“we have no other places”—as efforts to elicit new possibilities in their relationships to place. Like their hunting magic,

which works by revealing the unseen animals of the forest, these endeavors are intended to help make visible their future along the Ok Tedi River.

The Conclusion examines the different forms of indigenous environmental, social, and historical analysis discussed in this book, and their relationship to contemporary theoretical and political debates, including their contribution to political action. I also revisit the concept of reverse anthropology in relation to these findings.