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FIELDWORK REPORT

**THE YONGGOM, THE REFUGEE
CAMPS ALONG THE BORDER, AND
THE IMPACT OF THE
OK TEDI MINE**

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This paper is a written version of a post-fieldwork seminar presented to the UPNG Department of Anthropology & Sociology on 29 May 1989. While this paper is an expanded version of an oral presentation, it is still preliminary in nature and, as such, lacks normal bibliographic documentation.

1 INTRODUCTION

This paper is based on twenty-one months of anthropological research among the Yonggom of Western Province.¹ Although the Yonggom

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occupy an economically and politically marginal position on the western periphery of Papua New Guinea, they are currently involved in two situations of importance to the nation as a whole.

First, the Yonggom are members of a cultural-linguistic group, also known as the Muyu, that extends across the border into Irian Jaya, Indonesia. In 1984, along with 6,000 other people from Irian Jaya, more than 5,000 Yonggom moved across the border to Papua New Guinea in an effort to attract attention to the political campaign for the independence of Irian Jaya from Indonesia. Most of these Yonggom refugees settled in border camps located adjacent to Yonggom villages in Papua New Guinea. Five years later the majority of these refugees are still living in border camps, their future uncertain.

Second, the Yonggom live beside the Ok Tedi River, into which the multinational copper and gold mining operation upstream deposits its waste materials, including large volumes of sediment and high levels of particulate copper and other heavy metals. This region immediately downstream from the mining complex has suffered the greatest ecological impact of any area apart from the immediate mining site, yet Yonggom landowners and residents have neither received their share of the mine's benefits nor compensation for the damage to their environment and disruption of their lives. Not only can the treatment of the Yonggom by Ok Tedi Mining Ltd be taken as a test case of the mining company's willingness to take responsibility for the mine's environmental impact, but the damage sustained by the Ok Tedi ecosystem can be used to predict the potential consequences of the mining operation for the entire Fly River.

Despite the involvement of the Yonggom in these two potentially explosive situations, government officials who make decisions about the refugee situation and the mining operation know very little about the Yonggom. This report is intended to help rectify that situation through the presentation of basic information about Yonggom society, culture, and history.

In the first section of this report I present an ethnographic overview of Yonggom society, including descriptions of their environment and subsistence strategies, social and political organization, land and property rights, religious beliefs, and the larger regional context. In the next section I present an overview of Yonggom history and discuss the impact of resettlement, responses to development and economic change, illness and the provision of health care, and the influence of the two largest

situation. I would also like to thank the following individuals for assistance directly related to this project: Frances Deklin, Colin Filer, Jim Griffin, David King, and Laura Zimmer. My thanks also to Mark Busse and Bob Welsch, who kindly shared their conference papers with me. My greatest debt, however, is to the Yonggom, both Papua New Guinea citizens and refugees. This paper was written with their concerns in mind.

churches. This information provides the background necessary for understanding the Yonggom refugee situation and the impact of the mine on the Yonggom, which will be discussed in the final two sections of this paper.

2 THE ETHNOGRAPHIC SETTING

2.1 The Traditional Scene

2.1.1 Environment and Subsistence

Approximately 18,000 Yonggom occupy the area between the Ok Tedi River in Papua New Guinea and the Kao River in Irian Jaya, making the Yonggom one of the largest interior lowland groups on the entire island.

Though located well inland on the Fly-Digul Plateau, the area is quite low; while the nearby town Kiunga is 800 kilometres up the Fly River, it is only 20 metres above sea-level. The terrain consists of closely-spaced ridges alternating with narrow valleys. High rainfall and the low slope to the south result in poor drainage, backwater or 'tidal' effects, and the characteristic oxbows, swamps, and backswamps of the Fly River. Toward the north the land rises into foothills that lead to the Star Mountains.

Most of the region is covered by dense, thin-stemmed, closed primary rain forest. Annual rainfall ranges from 4,000 to 8,000 mm per year, with higher rates occurring towards the mountains in the north. There is little seasonal variation in rainfall or temperature. Wildlife is abundant and includes feral pig, cassowary, marsupials, and rodents. Among the numerous bird species are the birds-of-paradise, hornbills, cockatoos, parrots, and eagles. Pythons, death adders, forest dragons, giant monitor lizards, and fresh-water crocodiles are among the many reptiles. Until recently, fish, prawns, shell-fish, and large turtles lived in relative abundance in the creeks and rivers.

Yonggom subsistence strategies include considerable gathering-hunting of uncultivated plant and animal resources. The Yonggom rely on sago, a starch harvested from the pith of the palm *Metroxylon spp.*, for the bulk of their calories. Sago trees are planted and maintained in the narrow swamps between ridges. Processing sago requires several days of intensive labor every fortnight. Other important tree crops include lowland pandanus (*Pandanus conoideus*), coconut (*Cocos nucifera*), breadfruit (*Artocarpus incisus*) eaten for its seeds, and okari nuts (*Terminalia sp.*).

The Yonggom also practice swidden or shifting horticulture, cultivating bananas (*Musa spp.*) and root crops, including sweet potato (*Ipomoea batatas*), taro (*Colocasia spp.*), and yams (*Dioscorea spp.*). The earth beneath the thin rain forest topsoil is clay-based and acidic. With the exception of land along the riverbanks, gardens bear crops for only two to three years and then must be left fallow for a decade or longer. Gardens are rarely fenced and root crops are often damaged by pigs.

There is a pronounced sexual division of labor in Yonggom society. Men are usually responsible for tasks that require more strength, such as felling trees; and women for tasks that require more endurance, such as processing sago. Men supply large amounts of meat at infrequent intervals, while women provide a more steady return of protein and calories from a wider variety of animals and plants as well as garden produce.

Communal labor is involved in clearing new gardens and in certain aspects of house-building, for example the setting of houseposts or thatching of a roof. There is little specialization of labor, although some men and women are recognized as possessing particular skills or areas of expertise.

2.1.2 Social Organization

There is no word for village or hamlet in Yonggom language; the largest residential unit is the household or homestead (*ambip*). Before the advent of western-inspired villages, Yonggom lived in isolated homesteads located in the center of patrilineally-held territories. These houses were often built high on the tops of trees and were internally divided into areas for men and women. The elevated houses and dispersed settlement pattern were associated with relatively constant fighting between Yonggom clans and with neighbouring groups.

The largest social unit is the clan (*ambip kin*). A Yonggom clan is made up of one or more descent segments of shallow genealogical depth, each usually comprised of a small number of brothers, male parallel cousins, and their immediate descendants. Because of the small size of clans, demographic processes are very important in the determination of clan membership. Non-kin recruitment is very common, and clans often merge when too small and split apart when too large.

Yonggom clans are exogamous (people marry outside the clan). Marriage involves the payment of a brideprice (*wonong konit*) to the wife's father's kin, a fee (*muk od*) to the wife's mother at the time of engagement, and sometimes further payments (*dana kibi*) to the wife's father's kin to compensate for the membership of the children in their father's clan. Each of these payments was made in the past with cowrie shell valuables (*od*) that also played a central role in regional pig feasts.

2.1.3 Land and Property Rights

Although land is recognized as ultimately belonging to the clan, property rights are inherited patrilineally. After marriage the couple ideally resides patrilocally (with the man's father) and uses land transferred to him by his father.

There is considerable variation in population density. Localized population densities as high as 17 persons/km² were reported from Netherlands New Guinea (Schoorl 1957). On the Papua New Guinea side of the border, however, it may take a man a full day to walk around the boundaries of his own land.

Ownership of land is necessary for access to many important resources, including: (1) gardens, (2) sago and other tree crops, (3) hunting grounds, (4) riverine resources, (5) selected forest products and uncultivated plants, (6) timber for house-building, and (7) specialized resources such as trees suitable for canoe manufacture.

As a result of small clan size, high mortality rates, and a high degree of mobility encouraged in the past by raiding activities and sorcery accusations, there is considerable flexibility in the actual distribution of use rights to land to non-clan members. When use rights extend beyond one generation, the individuals involved are often adopted into the clan that owns the land. There is a slight preference for a man to marry his mother's brother's daughter if she has no brothers, as he would then take over his mother's brother's land.

Despite their high degree of mobility, the Yonggom maintain strong ties to their land. Through the use of land over time, a man's personal history becomes part of the landscape. In the same way, land becomes a link to the deceased through its representation of their activities. The Yonggom come to know their land intimately, including where to find useful trees and plants, edible fruits and nuts, and fruit stands where birds come to feed; where to collect prawns, catch fish, and hunt for wild pigs or cassowaries; and the location of numerous tracks, camps and sources of drinking water.

2.1.4 Political Organization

Yonggom society lacked the 'big men' or low-level chiefs so common elsewhere in Papua New Guinea. In the past there were no formalized institutions of leadership, though younger men tended to rely on the guidance of older, more experienced men known as *aamkono*. The *aamkono* did not adopt generalized leadership roles, though they were called upon to direct negotiations concerning compensation or brideprice payments. Other men occupied temporary, situation-specific leadership roles due to their prowess in activities such as hunting, leading raids, or organizing particular rites.

Until the end of World War II, each homestead was under relatively constant threat of attack. Raids were carried out as reprisals for prior attacks or responses to perceived sorcery assaults. Usually one or two particular people would be targeted. Either the entire household would be placed under siege, or the attackers would trick the intended victim into leaving himself vulnerable. The bodies of the victims were sometimes dismembered, taken away in string bags, baked in tree bark, and eaten. The cycle of raid and retribution could be halted by negotiating truces at regional pig feasts and making compensation payments of cowrie shell valuables, pigs, cassowaries, and women to the relatives of the victim.

In addition to the instability that resulted from raids within Yonggom territory, head-hunting expeditions originating from Boazi and Marind-Anim territory to the south probably resulted in an unoccupied area or no-man's land between Lake Murray and the confluence of the Fly and Ok Tedi Rivers.

2.1.5 Religion

Yonggom religion includes myths, taboos, beliefs in magic powers and talismans, sorcery and sorcery divinations, elaborate dance performances, and male cult activities. In the past, the dispersed settlement pattern and lack of formalized leadership fostered a diversity of religious beliefs and practices. At the same time, secret men's cult activities and public ceremonies held at regional pig feasts exerted a complementary integrating force on these same beliefs and practices. Interaction between members of different cultural groups at these feasts also encouraged the cross-fertilization of religious beliefs.

The relationship between the Yonggom and their rain forest environment is also one of the main themes of Yonggom religion. Anthropologists working elsewhere in Papua New Guinea (e.g. Rappaport 1968) have pointed out how ritual cycles, particularly those involving large-scale pig feasts and warfare, can regulate subsistence activities and associated ecological processes. In Yonggom myths men become animals and magic is said to give men the power to turn into animals and back into men. Certain natural phenomena, such as a strong wind at dawn or a gold-coloured sunset (*dep aron*), are said to indicate forthcoming events. Each clan maintains at least one sacred site (*ketbon*) on its territory. Yonggom religion is closely linked to the environment.

Other important Yonggom beliefs are related to illness and death. Most cases of serious illness or death are thought to be the result of sorcery. There are a number of divination procedures that the Yonggom employ to determine the identity of the person responsible for the sorcery. A system of retribution sorcery limits direct conflict when ascertaining responsibility for the illness.

The system of sorcery beliefs generates an image of society in which each individual is willing to use sorcery to harm or kill anyone against whom he has a grievance. People are also expected to accept small payments (*kewot*) to use sorcery against someone with whom they maintain good relations. Even though violations of exchange obligations are most often cited as the reason for an act of sorcery, the dynamics of the exchange system require that such obligations be continuously deferred (cf. Welsch 1989). As a result, an emotional atmosphere of 'fear and mistrust' (Schoorl 1957) pervades Yonggom society.

2.1.6 The Regional Context

Map 1 depicts the basic cultural groups of the North Fly-Digul plateau. The Yonggom inhabit the area between the Kao and Ok Tedi Rivers. To their west are the Mandobo, who have one settlement, Kuem, in Papua New Guinea. To the east of the Ok Tedi River almost as far as the Strickland plateau are the Awin (Aekyom). To the north are the Ningerum, a small group living mainly in Papua New Guinea. Immediately to the south is an area that was largely uninhabited in pre-contact days; further south live the Marind-Anim west of the border and the Boazi to the east.

Yonggom language is part of the Lowland Ok language sub-family (see table 1). Early linguistic surveys made language-level distinctions between what are probably three Yonggom dialects, referring to them as North Kati, South Kati, and Yonggom. Ningerum is also a Lowland Ok language. Both Ningerum and Yonggom are closely related to the Mountain Ok sub-family of languages spoken in the Star Mountains. The Ok language family is a part of the larger Central and South New Guinea stock.

Kaeti and Wambon, the languages of the Mandobo, are part of the Awyu-Dumut Family, which also belongs to the Central and South New Guinea Stock. Awin (Aekyom) language is part of the Awin-Pa Family, which belongs to the Central and South New Guinea Stock as well. To the south, the Marind-Anim and Boazi speak languages of the Marind Stock. Both the Marind and the Central and South New Guinea Stocks are a part of the Trans-New Guinea Phylum of non-Austronesian languages.

Map 1: Cultural-Linguistic Divisions of the Fly-Digul Plateau

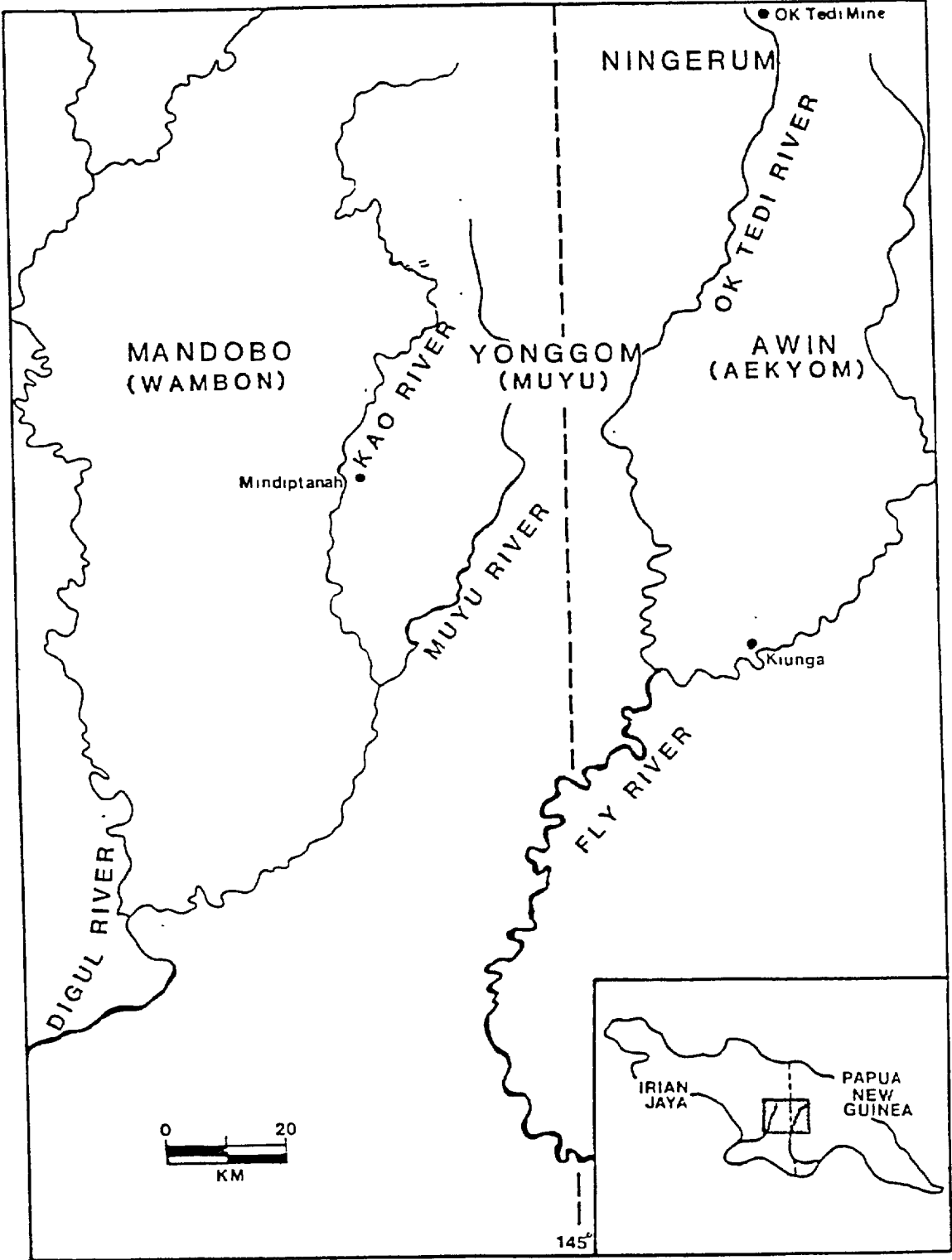


TABLE 1: SOME LANGUAGES OF THE FLY-DIGUL PLATEAU
(from McElhanon and Voorhoeve 1970)

Trans-New Guinea phylum of non-Austronesian languages:

- Central and South New Guinea stock:
 - - Ok language family:
 - - - Mountain Ok sub-family.
 - - - Lowland Ok sub-family:
 - - - - Yonggom language;
 - - - - Ningerum language.
 - - Awin-Pa Family:
 - - - Awin language.
 - - Awyu-Dumut family:
 - - - Kaeti language;
 - - - Wambon language.
- Marind Stock:
 - - - Boazi language;
 - - - Marind language.

The societies inhabiting the north Fly-Digul Plateau, the Mandobo, Yonggom, Ningerum, and Awin (Aekyom), are similar in a number of ways. They all depend largely on gathering-hunting exploitation of forest and riverine resources, sago-harvesting, horticultural production of bananas and some tubers, and large-scale pig husbandry. Their technologies are also similar; they hunt using black palm bows and long *pitpit* arrows tipped with wood and bone, make stringbags as well as plaited baskets for sago, process sago using a wooden pounder and a washing trough, and use stone adzes instead of axes. Men typically wear seed phallicrypts and cane belts, while women wear two-piece bullrush skirts (cf. Busse 1989, Welsch 1989).

The integrating force of this northern culture area, as in other areas in Papua New Guinea, was the exchange system. The Yonggom, along with the Mandobo to the west and the Ningerum to the north, participated in an area exchange system based on pig feasts that the Yonggom call *arat*. While the feasts varied greatly in scale, the largest of them took several years to organize, involved hundreds of people and scores of pigs, and lasted for up to a week. The striking feature of these feasts is that the pigs were not given away, as is the typical pattern of New Guinea highlands pig feasts, but instead were part of a system of indirect exchange involving the cowrie shell valuables (*od*) also used in brideprice and other compensation payments.

Guests to an *arat* pig feast were obligated to present cowrie shells in exchange for pig meat supplied by the feast's sponsors. These exchanges reverse previous transactions of pig meat and cowrie shells at other feasts.

As the recipient of the cowrie shells incurs an obligation to return an equivalent value of shells at a future feast, the transfer of cowrie shell valuables is not simply a market transaction, but also a reciprocal exchange. The pig feasts also redistribute the scarce cowrie shell valuables necessary for brideprice payments.

It is interesting to contrast the Mandobo-Yonggom-Ningerum culture area with that of their southern neighbors, the Marind-anim and Boazi (cf. Busse 1989). The northern culture area had an indirect exchange system in which shell valuables were exchanged for women and pigs. The clan was the largest social unit. They practiced cannibalism, but did not stage headhunting raids to procure trophies. In contrast, the Marind-Anim and Boazi to the south had totemic clans, exogamous moieties, and sister exchange. Shell valuables had no place in their exchange system and they raised few pigs. They were headhunters and it is likely that their raids led to the creation of the unoccupied region or no-man's land between the two culture areas.

2.2 The Changing Scene

2.2.1 Contact and Resettlement

The exploration of the Fly River by D'Albertis in 1876 initiated the first direct contact between the Yonggom and the West. While on the Fly River he described and named the Raggiana bird-of-paradise which, thirty years later, brought Chinese, Malay and Australian hunters into the region. The Dutch, who governed the western half of the island, and the Australians, who governed the eastern half, established outposts in the area in order to control the hunting trade and halt traditional raiding activities. As pacification proceeded, there were gradual population movements from some of the more densely-populated areas of Yonggom territory in Netherlands New Guinea into the largely uninhabited no-man's land between Lake Murrury and D'Albertis Junction. Pacification was completed shortly after World War II ended. Missionary activity, which began in Dutch territory in the 1930's, accelerated after government outposts were re-established at the end of the war.

In the 1950's Patrol Officers on the Australian side of the border encouraged the Yonggom to abandon their isolated homesteads and form nucleated multi-clan settlements. These settlements of 40-100 people were built along the high ridges running from north to south in the vicinity of the border. In one case, that of Yat, the border runs through the center of the settlement. In the early 1960's these populations were again resettled, this time into larger villages further east along the Ok Tedi River. The new location made it easier for government patrols to provide health care, education, and other services, to facilitate local participation

in elections, and to transport rubber trees for the Yonggom to plant for future cash earnings.

2.2.2 Village Organization

The lack of any traditional political structure makes it difficult for the members of a Yonggom village to act in concert or organize themselves. In fact, because villages themselves are such a recent development, even the process of reaching a consensus is new and difficult. Village representatives to local government councils are not particularly effective or persuasive because the villagers assume that the officials will act in their own best interests, rather than on behalf of the community. The general atmosphere of 'fear and mistrust' contributes to the inability of the villagers to function as a cohesive community.

In many cases there is tension over the distribution of use-rights to the land surrounding each village. This land, even though the property of a few men, must be shared by the entire community. These tensions are particularly exacerbated in those villages that have substantial populations of refugees close by. There are also conflicts between members of different churches, particularly with regard to attitudes towards traditional beliefs and practice.

2.2.3 Illness and Health Care

Apart from venomous snakes, wild pigs, and flooding rivers, threats to health in the rain forest are generally microscopic. Anopheles mosquitoes in the area carry three varieties of malaria, including chloroquine-resistant falciparum. Malaria accounts for many deaths, most often among young children and the elderly, as well as cases of permanent mental impairment. Filariasis, also transmitted by mosquito, causes painful and sometimes crippling disfigurement. Hookworm is endemic and results in anaemia, contributing to general poor health. Leprosy and yaws have not been eradicated, but are under control. Respiratory diseases, particularly pneumonia and tuberculosis, are the most serious threats to human life apart from malaria. In addition to tuberculosis, other diseases present as a result of Western contact include polio, measles, and periodic and often deadly epidemics of influenza. Despite the availability of western medical care, infant mortality is still high.

The Yonggom attribute many serious illnesses and most deaths to sorcery. As a consequence, energies are usually directed towards discovering the identity of the person responsible for the illness or death, with the intention of healing or 'reversing' the illness, preventing further acts of sorcery, or obtaining revenge.

Western medical treatment is available at the village level from rural health workers (cf. Welsch 1985). For a number of illnesses or conditions

that are readily identifiable and can be effectively treated with western medicine, traditional treatments have largely been abandoned. Examples include infections, skin problems, and primary malaria. For those conditions that are harder to diagnose and treat successfully, a combination of western and traditional techniques may be sought out. In some of these cases the judgement as to whether a condition is the result of sorcery depends on the effectiveness of western medicine in bringing about a swift resolution to the problem.

In some circumstances, the patient and his relatives become convinced that sorcery is the cause of the condition. This determination is sometimes based on characteristics of the illness and prior effectiveness of western medical treatment in similar cases. In other cases social conditions trigger the decision to bypass western medicine and treat the illness as an instance of sorcery. Examples of such social conditions include a recent death in the community, public revelation of evidence of adultery, and recent complaints about failures to maintain exchange obligations. In one case, rural health workers were not consulted about several seriously-ill patients during an influenza epidemic in June 1988, because recent deaths had convinced the patients and their relatives that sorcery was responsible.

The rural health program of the North Fly is extensive, ambitious, and in many ways successful. The responsibility for health care is divided between the provincial government, the Catholic Mission, and the Evangelical Church of Papua. As a direct result of having three administrations for one job, however, resources are inefficiently distributed. Medical personnel tend to exhibit a general indifference toward local beliefs and concerns, even when they impact significantly on the health of the people. Few education programs are carried out. Difficulties in establishing communication and transportation networks in the area result in unnecessary deaths.

The presence of thousands of refugees in the area has also overloaded the existing medical system. By not acknowledging the presence of refugees in the border areas, health care is provided on the basis of population estimates of 2,000 rather than the more than 6,000 persons currently living in the vicinity of the Ok Tedi River.

2.2.4 Economic Development

The Yonggom exchange system used cowrie shell valuables (*od*) that were in many ways similar to money. Schoorl (1957) refers to the Yonggom (Muyu) as 'shell money capitalists' and describes the passion that they had for acquiring cowrie shells. Despite apparent similarities between the Yonggom exchange system and the imposed economic system, the transition to a monetary, capitalist economy controlled by outsiders was difficult. By 1960 small amounts of Dutch or Australian

currency were included in brideprice payments and several years later foreign currency had completely replaced shell valuables as a medium of exchange, even in *arat* pig feasts.

The substitution of paper currency for cowrie shells did not proceed entirely smoothly, however. As was common throughout Papua New Guinea, the new money became the focal point of cargo cult activities (Schoorl 1957) that sought to make sense of the new power structures as well as obtain a 'fair share' of the wealth or 'cargo' involved. Male cult myths were re-worked so that they accounted not only for the origins of Europeans and Papua New Guineans, but also for the unequal distribution of wealth and power between members of these two groups. The unrealistic expectations involved in these cargo beliefs were reinforced by both a fundamental ignorance of the way in which western economic systems operate and the inability of the Yonggom people to influence or improve their own situation.

In the late 1960's copper and gold deposits were located on Mt Fubilan in the Star Mountains. This discovery inaugurated the era of development, though its real impact was not felt until the 1980's during the construction phase of the Ok Tedi mine. Associated with the development and increase in employment opportunities was a significant rural-urban migration, with the net result that one quarter of the Yonggom population in Papua New Guinea, including the entire village of Ullawas, has moved to Kiunga (King 1983).

In Kiunga the Yonggom live in seven or eight crowded settlements along the road between the developed area of town and the airport. Settlements are organized around village affiliation. Houses are built largely of traditional materials and resemble village houses. There is no running water or electricity in the settlement areas. The lack of traditional patterns of leadership and authority limits the effectiveness of their urban leaders in much the same way as their rural counterparts.

Some Yonggom are employed in unskilled and semi-skilled capacities in mining and construction projects, and others in public sector services, especially health and education (cf. King 1983). Urban households are usually centered around one wage-earner whose income supports extended family members residing in his house. Household budgets are supplemented by cash earned at the town market by selling garden produce, fish, prawns, and chicken to immigrant workers.

The North Fly region, in part because of a quarantine on taking food crops or animals out of the border zone, has been the focus of few village-based development programs. At present, the only substantial cash crop is rubber. When rubber was first brought to the region in the mid 1960's, the government officials involved expressed skepticism that, because of high transport costs, the harvests would ever be economically viable. Only with the AIDS crisis and the subsequent demand for high-quality latex has

rubber production in the North Fly become economically viable. Due to the lack of either a government organization or a grower's cooperative to purchase raw latex from farmers, profits accrue to an independent purchaser rather than to the villagers. As a result, very few Yonggom villagers exploit their rubber groves to their full economic potential.

Villagers are generally dissatisfied with their limited economic opportunities. Standard economic aspirations of villagers include having regular access to small amounts of cash to purchase goods to supplement their own production, building permanent houses with iron roofs, starting small businesses, usually trade stores, and acquiring vehicles for river or road transport. Their inability to fulfill these aspirations encourages urban migration, even among mature men who prefer to stay in the village.

The Yonggom want more economic opportunities at the village level. They want to have the value of their potential mineral, petroleum, and timber resources evaluated as a prelude to their exploitation. They also want improved transportation so that they can participate more fully in urban markets.

2.2.5 Exchange Practices in a Wage Economy

Despite their partial involvement in a wage economy, urban-dwelling Yonggom still participate fully in the traditional system of exchange obligations. While brideprices are currently very high, usually within the K3,000 to K5,000 range, there is not a commensurate level of anxiety over obtaining wives. The inflation of brideprices over the past few years has paralleled increased wages and opportunities for wage-earning. Combined with the fact that the husband has a number of years to pay off the debt, the increased access to cash has meant that it has been relatively easy to settle old debts. If wages and opportunities have peaked, which seems to be the case since the end of Ok Tedi Mining Ltd's construction phase in 1988, it will become increasingly difficult to pay off brideprices in the future. A recent attempt by local government council members to limit future brideprices to K3,000 will, if accepted, help prevent this problem from occurring.

The custom of brideprice and the traditional exchange system have both positive and negative economic consequences in a wage economy. On the positive side, the exchanges redistribute wages, which accounts in part for the lack of relative poverty in the region. On the negative side, brideprice payments place high demands on wage-earners, effectively acting as barriers to capital formation. This means that people from outside the province who are not obliged to participate in local exchange networks are more likely to have the start-up capital necessary to create their own businesses. The establishment of business in Kiunga by immigrant workers is a source of considerable animosity between local Yonggom and Awin (Aekyom) people and the immigrant community. Another

negative consequence of the traditional exchange system is that demands on wage earners by close kin are so great that they discourage participation at the low end of the wage scale, where the worker is likely to end up with very little of his own salary. Great disparities between the salaries offered by the mine and those available elsewhere also discourage potential wage earners from seeking other types of employment when there are no opportunities at the mine.

2.2.6 Church Influence

Today most Yonggom are affiliated with one of several Christian churches active in Western Province. The two main churches are the Catholic Church and the Evangelical Church of Papua (ECP). The Dutch Roman Catholics moved into the village of Ninati in Netherlands New Guinea in the 1930's, and the Asia Pacific Christian Mission, now known as the ECP, arrived in the North Fly at the end of World War II. The Montfort Mission of French Canadian Roman Catholics did not arrive in Kiunga until 1960, but they were able to build on strong Catholic sentiments fostered by Dutch clergy working in the border areas.

The Catholic and Evangelical churches differ significantly. The Catholics do not interfere with traditional religious beliefs and practices, but exert considerable influence over church members as a result of their control of transportation, medical and educational resources, and employment opportunities. Few local people participate in high-level decision-making in the Catholic Church and little attempt is made by the expatriate clergy to encourage a synthesis of Catholic and local beliefs.

In contrast, the Evangelical Church of Papua reinforces beliefs in sorcery and magic by acknowledging their efficacy and condemning them as the work of the devil. ECP members are instructed to ignore traditional restrictions and obligations, destroy sacred objects, and publicly reveal secret cult practices. The Evangelical Church of Papua encourages Yonggom and Awin (Aekyom) participation in the administration of the church.

Yonggom members of the Catholic Church still conduct sorcery divinations, dance in public ceremonies, and retreat for male cult activities. In contrast, members of the ECP not only reject these practices, but try and discourage their continuation. In villages with residents belonging to both churches, this is a source of tension and a cause of conflict. In villages that are dominated by ECP members, these activities have been completely repressed.

The Yonggom refugees have a strong attachment to the Catholic Church. They are also active participants in ritual activities, particularly public dance performances. In many cases this has strained relations between the refugees and members of the ECP Church. In fact, both of the villages

that forced nearby refugee camps to relocate were ECP-dominated villages (Atkamba and Kamokpin).

3 THE YONGGOM REFUGEE SITUATION

3.1 Historical Dimensions of Cross-Border Movement

The border between Papua New Guinea and Irian Jaya runs along the 141st Parallel, with a bulge westward at the Middle Fly. This arbitrary demarcation was established by Dutch and Australian Governments without regard to traditional boundaries between ethnic or tribal groups and, as a result, effectively divided a number of groups.

In the past the Yonggom moved freely throughout the area that was to become the border zone. To the east there was better sago land, and to the west, better garden land, and the Yonggom moved to take advantage of different resources. Marriages linked families throughout the area. Large-scale pig feasts brought people together to participate in a network of exchanges that unified distant homesteads. At the same time, those attending the feasts participated in trading relationships, including the exchange of green stone axe-blades from the mountains to the north-west. Male cult activities and public ceremonies were also held at these pig feasts.

The major population dynamic across what was to become the border, however, involved movement that resulted from fear of raids, reprisals, and sorcery attacks. As the Yonggom lacked 'big men' or chiefs who could settle disputes or halt reprisals, and lived in isolated homesteads that were difficult to defend, one of the few viable responses to the threat of attack was to flee. Sorcery accusations served warnings of possible reprisal raids and thus also encouraged relocation. In some cases homesteads were abandoned and re-established in other areas, in other cases individuals who felt endangered would leave the area themselves. Although such movements were usually temporary in duration, sometimes they endured; the children of those involved would be adopted into another Yonggom clan. The wide dispersal of the Yonggom between the Kao and Ok Tedi rivers permitted the resolution of conflicts through the separation of potential adversaries.

Long before the border was surveyed, the impact of the division of the island between colonial powers was felt by the Yonggom. In the first two decades of the century, the Dutch permitted Chinese, Malay and Australian bird-of-paradise hunters to enter their territory, while Australia refused them entrance. The hunters traded steel knives and axes with the Yonggom; populations living west of the border received the first steel tools and were able to control their trade. Later, during the initial period

of pacification, feuding clans took advantage of the eagerness of the Dutch colonial administration to maintain order and punish violations of the foreign-imposed peace. On at least two occasions, the response of Dutch-sponsored native policemen to traditional raiding activities ended in the massacre of local populations defenseless against shotguns.

Pacification also brought about the end of the head-hunting raids of the Marind-Anim and Boazi from the south, which opened up large areas of uninhabited no-man's land for settlement. Half-a-dozen villages were established in the 1930's between the Binge River and the junction of the Ok Tedi and Fly Rivers by Yonggom migrants from west of the border. Two villages were established on the north shore of Lake Murrumbidgee by migrants from the border area near Kungim. The members of this early population movement established themselves as residents of the Australian territory without the objection of the government.

Unequal rates of development on the two sides of the border during the first decades of contact also increased cross-border traffic as the Yonggom moved to take advantage of economic opportunities. In the Dutch-controlled territory of Netherlands New Guinea (NNG), the close proximity of the towns of Mindiptanah and Tanah Merah, as well as access to transportation to the more distant cities Merauke, Hollandia (now Jayapura), and Sorong, attracted aspiring laborers from both sides of the border. Shotguns and a market for crocodile skins drew people to Netherlands New Guinea, as did the Catholic church and school in Ninati. Occasional Australian government patrols provided wage-earning opportunities for inhabitants from both sides of the border. The Yonggom pursued these different opportunities with little regard to the presence of the border.

The two colonial administrations, however, sought to discourage border movements that they fostered through policies resulting in unequal development. They marked trails that led to the border, regularly sent back immigrants they encountered on patrols, and ordered local populations to confine their movements to short-term visits. As the border had yet to be surveyed, the Dutch and Australians disagreed on who was responsible for the administration of a number of villages. During the first period of resettlement into villages during the 1950's, a provisional agreement was entered into, assigning the disputed villages to one side of the border or the other (Veur 1966).

Of greater importance to the Yonggom living near the border, however, was the fact that gradually they were forced to commit themselves to one of two very different futures. Clans, families, and brothers were divided by these residence decisions. This process continued in the 1960's when the border area villages were permanently relocated further east along the Ok Tedi River. The members of Yat village, for instance, which straddled the border, divided themselves between several villages in Netherlands

New Guinea, the town of Mindiptanah, and Dome village in the Australian Territory of Papua.

During the 1950's the Dutch were under pressure to withdraw from then Netherlands New Guinea and turn the territory over to the Indonesians. They responded by fostering an elite group of Melanesian civil servants and encouraging local expectations for independence. These expectations were also spread among rural populations.

Even before the transfer of power, there was some resistance to the Indonesian presence. Out of this resistance the Organisasi Papua Merdeka (OPM) or Papuan Freedom Organization was formed. In spite of considerable support among both rural and urban populations, the OPM has had limited success in its campaign for the independence of Irian Jaya from Indonesia.

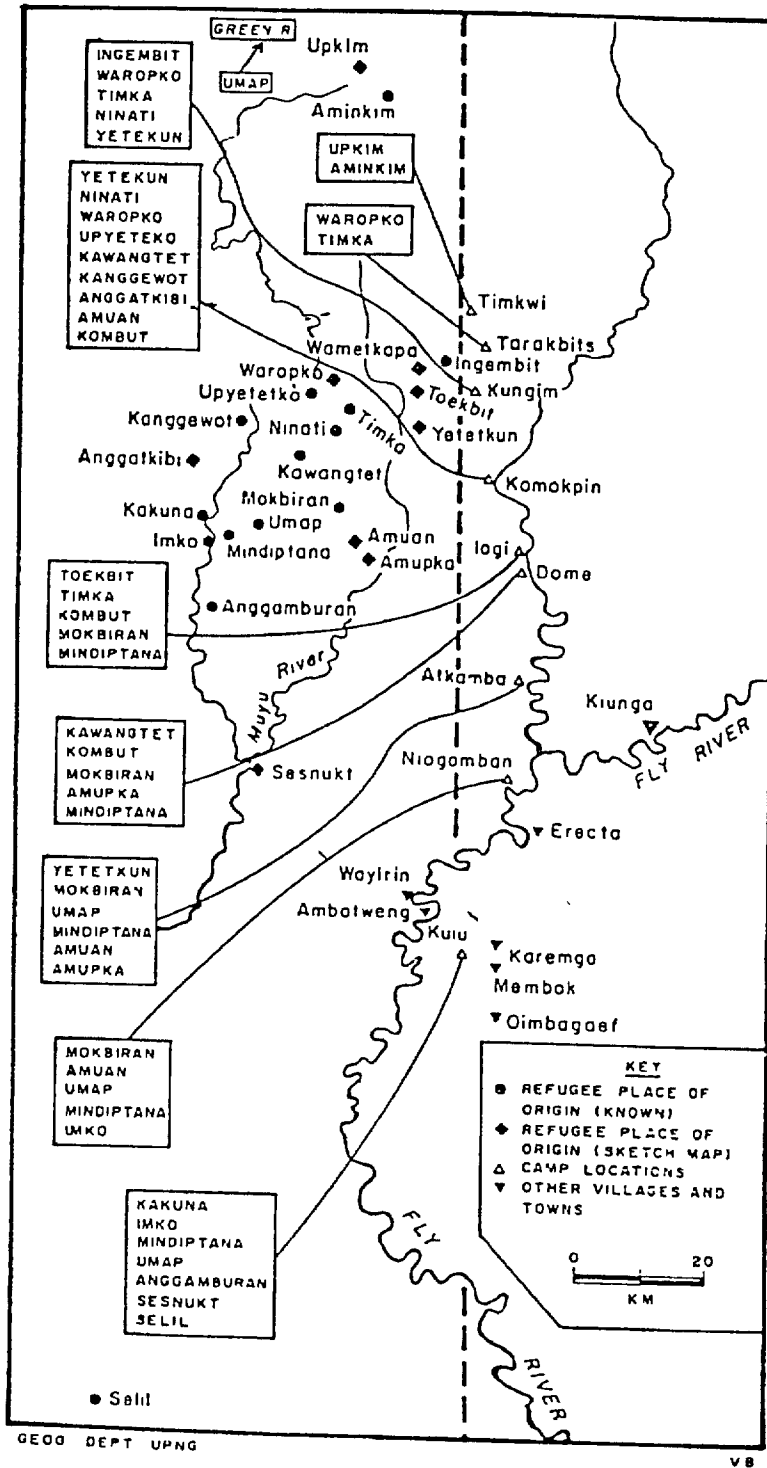
It was an OPM-sponsored flag-raising in the Irian Jaya capital of Jayapura in April of 1984, however, that triggered off the largest and most dramatic demonstration of solidarity in Irian Jaya to date. In the midst of Indonesian reprisals for the illegal flag-raising, the first of an eventual 11,000 men, women, and children made their way across the border from Irian Jaya to Papua New Guinea seeking political refuge. Among them were more than 5,000 Yonggom refugees.

3.2 Yonggom Refugees

The Yonggom refugees settled into a number of makeshift camps, most of them built alongside existing Yonggom or Ningerum villages. They brought with them few belongings and only enough food to last several days. Subsequently they were dependent on their Papua New Guinean relatives and hosts. It was not long after their arrival that the food shortage began, as the Yonggom and Ningerum villagers were unable to supply food to refugee populations that were up to five times the size of the villages. The resulting malnutrition did not attract much notice until a visiting pastor reported substantial number of newly-dug graves in August 1984 (Smith et al. 1985). Shortly thereafter the Catholic Church and the United Nations High Commissioner for Refugees (UNHCR) began to supply food and medical care to the refugees. Administrative personnel or 'kiaps' were assigned to each camp to maintain order, stabilizing the situation.

Why did the Yonggom leave Irian Jaya for Papua New Guinea, abandoning their land and risking their lives? Were they driven across the border by the Indonesian army's fierce reprisals for the flag-raising? Did the OPM force them to flee in order to attract world-wide attention?

Map 2: Places of Origin of Refugees from Irian Jaya Residing in Western Province Border Camps (from Preston 1988:14).



The refugees say that neither the Indonesians nor the OPM forced them to leave Irian Jaya, but that they freely chose to come Papua New Guinea. Shortly after the flag-raising incident, local OPM leaders visited the villages in the border areas of Irian Jaya. In Mindiptanah and Waropko sub-districts the OPM leaders had meetings with Yonggom villagers, renewing ongoing discussions about leaving Irian Jaya and settling in Papua New Guinea until the Indonesians granted them independence. The OPM informed the local people that the time to move had come, but then left each family to make its own decision. The voluntary nature of the decision-making process is reflected in the pattern of movement: some people stayed behind in almost every village. More than one quarter of the Yonggom from Irian Jaya came across the border, leaving behind large pockets of heavily depopulated areas.

If the Yonggom refugees were not forced to flee, why did they come to Papua New Guinea? The Yonggom refugees do not say that violence had been perpetrated against them, that their land had been taken away and their forests destroyed, or that large numbers of Indonesians had settled in their area, as has been reported from other areas of Irian Jaya. And although the elite, educated refugees from urban areas of Irian Jaya speak of racism, cultural imperialism, ethno-genocide, and the political process of 'Indonesianization', these terms are not in the vocabulary of the Yonggom refugees.

Instead the Yonggom refugees speak in terms of unsatisfactory relationships with the Indonesians. They note that they and others from Irian Jaya were not treated equally. They felt powerless to influence decision-making processes or to appeal judgments against them. They feared for their future, for they knew that elsewhere in Irian Jaya land and resources have been taken from owners without permission or payment of compensation. When the Yonggom were able to gain employment in Irian Jaya, not only were their wages seen as insufficient, but they were unable to protest that fact or seek to improve the situation. 'Indonesians', the Yonggom refugees said, 'controlled everything and kept the local people from having anything.' Finally, the refugees often referred to what they saw as the Indonesian 'rule by rifle', and objected to the constant threat of force that the Indonesian presence signified.

The Yonggom refugee movement of 1984 followed the traditional pattern of out-migration in response to uncertain and potentially dangerous situations. While in the past the Yonggom fled from sorcery accusation or threats of raids or reprisals, in this case they fled from the Indonesian presence in Irian Jaya.

The refugee movement of 1984, however, differed in three significant ways from previous populations movements. First in the scale of the exodus; the size of the population movement was unprecedented and well beyond the local people's capacity for absorption. Second in organization; the population movement was orchestrated by the OPM. Third in

intention; the exodus was a political statement intended to attract international attention to their dissatisfaction over the Indonesian presence in Irian Jaya.

At the time that the refugees came to Papua New Guinea, they were under the impression that their exodus would attract considerable attention, that world opinion would be on their side, and that the Indonesians would therefore be forced to abandon Irian Jaya. The refugees expected that this process would take only a few months, after which they would receive independence and return home. Though their expectations for an immediate response to their demand that the Indonesians abandon Irian Jaya were not fulfilled, this fact did not affect the success of subsequent rumors to the effect that independence was only a few months away. In fact, five years later, there is still considerable optimism in the refugee camps about the possibility of an immediate resolution to the problems in Irian Jaya.

The unrealistic expectations of the refugees in Western Province border camps reflect more than just naivety and a lack of political sophistication. In many respects their response to the Indonesian presence is similar to their earlier 'cargo cult' responses to Dutch efforts to introduce paper currency and a monetary economy. The refugees ignore rather than acknowledge their relative powerlessness and seek to represent the situation in ways that suggest they have considerable influence over their future. In some cases these attempts to improve their situation have been given 'validation' by re-worked myths. Like other aspects of their ritual world in which most anything is seen as possible, rumors about the Indonesians, events along the border, and the refugees' situation in general tend to be uncritically accepted. The vagueness of the future aims of the refugees as well as the exaggerated secrecy surrounding their plans are also characteristic features of cargo cults.

3.3 Refugees or Border Crossers?

The fact that the Yonggom who left Irian Jaya followed a traditional pattern of conflict management via out-migration is sometimes cited in efforts to re-classify them as 'border crossers' rather than 'refugees.' 'Border crossers' are dealt with according to a provision from the border agreement between Papua New Guinea and Indonesia (see below), and are not entitled to any special assistance or protection from the United Nations High Commissioner for Refugees or the Papua New Guinea government. They can be forcibly repatriated should they stay too long. Designating the population movement of 1984 a 'border crossing' would effectively minimize the Papua New Guinea government's responsibilities towards the immigrants.

A close reading of the border agreement between Papua New Guinea and Indonesia, however, shows that this was not a traditional border crossing. The relevant clause defines 'border crossing' as

movement across the Border ... for traditional activities ... such as social contacts and ceremonies including marriage, gardening, hunting, collecting and other land usage, fishing and other usage of waters, and customary border trade, ... formulated on the principle that such movement ... shall only be temporary in character and not for the purpose of resettlement. (Article 4 of the 'Basic Agreement between the Government of Papua New Guinea and Government of the Republic of Indonesia on Border Arrangements', Port Moresby, 29 October 1984, cited in Wolfers 1988:164).

As the Yonggom refugee movement of 1984 involved resettlement for an indefinite period of time, the Yonggom do not qualify as border crossers. Furthermore, while the population movement bears resemblance to cross-border movements of the past, differences in scale, organization, and intention make it clear that it was not a traditional border crossing.

3.4 Border Camps Versus Resettlement

As it became clear that the refugees were going to remain in Papua New Guinea, the PNG national government began to develop plans to relocate them away from the border. They established a resettlement center in East Awin between Kiunga and Nomad. The major advantage of the area was its low population density; theoretically, there was enough land available to accommodate all of the refugees. Its disadvantages included isolation and difficult access, a swampy, malarial terrain, the lack of potable water, and the absence of sago palms. In spite of the limitations of the site, the government proceeded with its plan to resettle the refugees in East Awin.

For a period of several months the government directed the inhabitants of the border camps to move to the relocation center, but the majority of the refugees ignored the directive, preferring to remain in the border camps (see Table 2 below). Finally, in October of 1988, the government officially closed the border camps. While the flow of rations was halted and medical and administrative personnel were withdrawn from the camps, the government did not physically force the refugees to move. The apparent rationale behind the closing of the border camps was to coerce the refugees, through withdrawal of basic humanitarian aid, to move to the relocation center. The attempt failed; again very few refugees moved to East Awin. By 1988 the gardens the refugees had planted were bearing well and they were able to feed themselves more or less adequately.

TABLE 2: YONGGOM REFUGEES REMAINING IN BORDER CAMPS OR RELOCATED TO EAST AWIN RESETTLEMENT CENTER, BASED ON OCTOBER 1987 CENSUS FIGURES (from Preston 1988:21).

<u>Border Camp</u>	<u>Remaining</u>	<u>Relocated</u>
Timkwe ^a	552 (100%)	0
Tarakbits	553 (96%)	25
Kungim	940 (98%)	22
Komokpin	495 (40%)	754 ^b
Iogi	337 (81%)	81
Dome	205 (72%)	81
Atkamba	447 (100%)	0
Niogamban	488 (68%)	225
Kuiu ^c	900 (76%)	281
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TOTAL	4917 (77%)	1469

^a Includes an unknown number of Ningerum refugees.

^b Forced to move by police following dispute with local landowners.

^c Includes an unknown number of Mandobo (Wambon) refugees.

The most important reason why the Yonggom refugees have not relocated is that they do not want to leave Yonggom territory. From their point of view, even though they have crossed an international border, they still have a connection to the land on which they are living. In addition, as long as they stay in the border area, they can also obtain information about what is happening in their villages where they still have relatives and land rights. This contact would become more difficult to maintain from the relocation center. In effect the government relocation plan demands that the refugees escalate their commitment to their refugee status by severing their remaining connections to their land.

The move to the East Awin resettlement center would also, at least in the short run, increase the refugees' dependence on the United Nations High Commissioner for Refugees (UNHCR). This is problematic because the refugees do not trust the UNHCR. They remember that the presence of the United Nations in Irian Jaya did not prevent Indonesia's political takeover. At the same time, they do not understand the limited influence that the UNHCR has on Indonesia and Papua New Guinea, viewing it as further evidence that the UNHCR is unwilling to assist the refugees.

It is also possible that another reason the refugees have not moved is that the border camps serve as bases for OPM members who operate along the border. While OPM activities place the population of the refugee camps at risk by potentially drawing Indonesian soldiers across the border, individual OPM members do not want to lose contact with their families by having the border camps relocated.

Another issue that provoked heated sentiments among refugees considering the move to the relocation center was the tentative plan to develop a large-scale rubber project at the new camp. The project would have been similar to the rubber programs of the 1960's: the refugees would receive rubber plants and plant their own groves; in a few years they would begin earning money from the rubber. As it is well-known that most of the rubber produced in the North Fly is purchased by a former Australian businessman, the refugees took strong offense to the project and the windfall profits that would presumably accrue to the middle-man, arguing that 'we didn't come here to work for white men, we came for independence'.

The limited amount of direct communication between the Papua New Guinea government and members of the refugee camp is a further source of animosity. Meetings occur very infrequently and are of short duration. Helicopter visits of expatriate politicians, usually Australians, also provoke a great deal of anger, as do other brief 'fact-finding' tours.

3.5 Problems in the Border Camps

Instead of an overall solidarity that one might expect to find in the refugee camps, the emotional atmosphere of 'fear and mistrust' characteristic of Yonggom society is amplified by the uncertain circumstances, haphazard social groupings, high population density and crowding, and competition over scarce resources.

Sorcery accusations occur more frequently because health problems in the camps are intensified by unsanitary and protein-poor diets. Sorcery accusations exacerbate existing tensions. The departure of refugees to the relocation center or their return to Irian Jaya is thought to indicate that the people who left the camp were involved in sorcery. It is also not uncommon for refugees who have been elected to a camp's organizing committee to later leave the camp under the cloud of sorcery accusations.

At its extreme, the atmosphere of 'fear and mistrust' can turn into a more generalized paranoia. One such case occurred after the *Times of Papua New Guinea* published an article which incorrectly asserted that: (1) the Indonesians deliberately introduced the often-fatal parasite cysticercosis into Irian Jaya as a form of biological warfare; and (2) the refugee population were carriers of the parasite. Not long after the article was published, an influenza epidemic resulted in a number of deaths in Dome refugee camp. At a post-mortem sorcery divination, one possible cause of death discussed was whether or not 'the Indonesians had poisoned a pig that the man had eaten, causing him to die'.

Since the border camps were officially closed in 1988, the refugees have re-organized themselves into a smaller number of camps that reportedly have at least 1,000 occupants apiece. The reorganization was planned by

a combination of refugee leaders and local politicians with the intention of coercing the PNG government into permitting the UNHCR to again supply food to the camps. The reorganization led to even greater demands on local carrying capacities and another food crisis. Sago stands have been over-harvested and will take many years to regenerate. Wild game reserves close to the camps are being rapidly depleted. In the months immediately following the resettlement, there were not enough mature gardens to support the influx of refugees and as a result there was a several month period of hunger. Theft from village gardens also caused hunger among the local residents.

Villagers are torn between the desire to support the refugees because of kinship ties and cultural affinity, anger at the refugees because of the depletion of resources, and fear of the refugees because of their potential, via sorcery, to cause illness or death. The reorganization into large camps has also exacerbated tensions between villagers and refugees.

3.6 Recommendations

When I talked with the refugees, they often asked me my opinion about their future. The old men would ask: 'Will I die here, or will I live to be buried in my own land?' Parents, referring to their young sons born in Papua New Guinea, would ask: 'Will he ever learn the boundaries of his land?'

A first step towards creating an improved future for the refugees is to provide them with the means to better understand their own situation. This could begin by providing them with education about refugees elsewhere in the world. The refugees should be encouraged to adopt a more realistic perspective on their future as well as that of Irian Jaya. This could be done in part by encouraging internal dialogue in Papua New Guinea on the issues, inviting refugee participants.

Papua New Guinea officials could work more closely with the refugees, rather than abdicating responsibility for the refugees to the UNHCR and other support groups. Once these government officials have established good, working relationships with the refugees, they will be in a better position to understand their needs as well as help them.

Training programs should be established to develop the skills of refugee spokesmen and translators. Funds should also be acquired to provide higher education in Papua New Guinea or elsewhere for refugee students.

The first priority of the refugee policy of the past Papua New Guinea governments has been to maintain cordial relations with Indonesia. While the need to minimize friction between the two countries may limit government initiatives on behalf of the refugees and the inhabitants of Irian Jaya, there is still room for action by Papua New Guinea citizens. As Wesley-Smith (1987) recently argued, there is a need to develop an

approach to the problems in Irian Jaya themselves, not just to their symptoms. This could be accomplished in part by 'internationalizing' the issue. Some of the steps that could be taken to improve current conditions in Irian Jaya include:

- (1) Seek the support of international forums for protection of land rights of people in Irian Jaya.
- (2) Similarly seek to ensure that landowners in Irian Jaya receive adequate shares or compensation for resources such as minerals, timber and oil. Pressure can be applied on the multinational conglomerates that purchase and process raw materials in Irian Jaya.
- (3) Seek the withdrawal of international support for the transmigration program that relies on World Bank and United Nations support to transfer thousands of Indonesian families a year to Irian Jaya.
- (4) Invite global involvement in the preservation of the Irian Jaya rain forests being destroyed for timber or to create farmland for immigrants.
- (5) Develop forums that encourage traditional identity and culture in Irian Jaya.

Finally, perhaps the most important thing that can be done is to pursue all possible non-violent means to improve conditions in Irian Jaya, for it will be an even greater human tragedy if the people from Irian Jaya come to see violence as their only opportunity to influence their future.

4 THE IMPACT OF THE OK TEDI MINE ON THE YONGGOM

The discovery of gold and copper at the headwaters of the Ok Tedi River brought great promise to a region that had languished economically in comparison with the rest of Papua New Guinea. The Yonggom, from whose language the Ok Tedi takes its name, hoped to participate and share equitably in the resulting development.

Instead, the Ok Tedi River became the outlet for the mine's waste materials, seriously damaging the local ecosystem in the process, and the Yonggom people have neither received their share of the mine's benefits nor compensation for the damage to their environment and disruption of their lives.

Ok Tedi Mining Ltd's treatment of the Yonggom can be seen as a test case of the mining company's willingness to take responsibility for the mine's

negative environmental impact. Furthermore, the damage to the Ok Tedi River can be used to predict potential impact on the entire Fly River.

4.1 Damage to the Ok Tedi Ecosystem

While scientists in Port Moresby debate how to measure and evaluate the impact of the Ok Tedi mine, the Yonggom do not have to wait for the completion of these analyses to assess the damage already done to their environment. The negative effects of the mine are not only readily perceptible, but they have also significantly affected the lives of the Yonggom in a number of ways.

The Ok Tedi river is super-saturated with sediment from the mine. This sediment is being deposited along the riverbanks, forming five and ten metre-wide stretches of knee-deep mud. After a heavy rain in the mountains, the Ok Tedi River overflows its banks, depositing waste sediment along what was the most fertile area for gardens, the shoreline. Instead of enriching the soil so that crops could be grown almost continuously along the edge of the river, the sediment from the mine prevents the crops from growing at all.

The Yonggom report that soon after the mine started production, the fish in the Ok Tedi River died and floated up to the surface. Few fish currently live in the Ok Tedi. Particulate copper has been deposited on top of the sandbanks where turtles come to lay their eggs. When there are heavy rains upstream, the backwater effect causes sediment from the mine to wash into the small creeks and streams that feed into the Ok Tedi, thus threatening other riverine life, including prawns, lobsters, and bivalves. The birds that depend on aquatic life, including egrets, riverine kingfishers, and brahminy kites, have left the Ok Tedi River.

The environmental damage caused by the mine has had many practical consequences for the Yonggom and Awin (Aekyom) living in the villages along the Ok Tedi River. They can no longer drink from the river, nor can they swim, bathe, or wash clothes in it.

The Yonggom are unable to replace the protein in their diets that was formerly provided by aquatic resources. New gardens must be made every few years in the rainforest instead of using the land along the riverbanks. These changes have become more important as a result of the presence of the refugees from Irian Jaya in border camps along the river. Traditional subsistence techniques - slash and burn or swidden horticulture combined with sago harvesting - are suitable only in areas with relatively low population densities. Over-use of land and resources rapidly reduces the return for labor invested. Thus the impact of the mine and presence of the refugees have combined to significantly decrease Yonggom food-producing capabilities.

High levels of sedimentation have led to the formation of sand banks that clog navigation channels for travelling the Ok Tedi River by motor canoe, which is the only route available for transporting produce to local markets, rubber to buyers, and food and medicine back to the villages.

Finally, it is not only material losses that the Yonggom suffer as a result of the pollution caused by the mine. The damage to their ecosystem ultimately weakens the intimate association between Yonggom myths, religious beliefs, and their environment. For example, an important male cult myth is told about certain fish that used to live in the Ok Tedi River. As the fish have not survived the impact of the mine and do not live in the smaller creeks, the myth no longer has the same significance. As events and actions are seen as mapped onto the physical world, environmental destruction also erases social histories and memories of the deceased. The Yonggom express great sadness about the mine's impact on their environment.

4.2 Impact and Compensation

One of the planning stages of every development project is the assessment of potential environmental impact and the establishment of acceptable levels of damage to the environment. For the Ok Tedi Mining project, this was accomplished in part by the Ok Tedi Environmental Study written by Maunsell and Partners (1982) and a series of agreements between the individual share-holding companies, Ok Tedi Mining Ltd, and the Papua New Guinea government.

Perhaps because a planned tailings dam could not be built, the original assessments of the mine's impact on the Ok Tedi River were inaccurate. The environmental impact report, for example, asserted that the 'greatest physical disturbances will occur' in the areas belonging to the 'Wopkaimin, Ningerum, and Awin peoples' (Maunsell and Partners 1982:1). Instead, apart from the immediate areas surrounding the mine and the nearby town of Tabubil, the 'greatest physical disturbance' has been to the Ok Tedi River and the area inhabited by the Yonggom.

After the original plan for a tailings dam was cancelled,² it became obvious that the pollution of the Ok Tedi River would be the necessary 'price to pay' for keeping the mine open. Thus a tacit agreement to overlook the damage to the Ok Tedi River was made by participating parties. The definition of Ok Tedi Mining Ltd's environmental responsibilities toward the river system reflects this decision. In agreements between Ok Tedi Mining Ltd and the PNG government, the 'River System' is identified as the

² The irony is that the name 'Ok Tedi' is a corruption of the Yonggom name for the river, 'Ok Deri', which means 'dam or blockage of a river or stream'.

Fly River below the confluence of the Ok Tedi and the Fly River down to and including the delta of the Fly River (Independent State of Papua New Guinea et al. 1986:18),

effectively excluding the Ok Tedi River.

Even as the ecological sacrifice of the Ok Tedi watershed was acknowledged as necessary for the success of the mine, no effort was made to reconsider the obligations of the mining company to the people who lived along the river. Thus the Yonggom, despite bearing the brunt of the mine's negative impact, have neither received their share of the mine's benefits nor compensation for the damage to their environment and disruption of their lives.

By not compensating the Yonggom, Ok Tedi Mining Ltd has also avoided setting any precedents for payments to the owners or residents of an affected watershed, a policy with significant implications for the people living along the entire length of the Fly River.

4.3 The Future of the Fly River

The damage sustained by the Ok Tedi ecosystem can be used to predict the potential consequences of the mining operation for the rest of the affected watershed. If the mining company follows through on its plans to substantially increase production in the near future, then the damage sustained by the Ok Tedi River may very well be replicated downstream. What is at stake is nothing less than the future of the Fly River and portions of the Papuan Gulf and the Torres Straits as well.

One potential solution to the threat posed by increased production is to construct a tailings dam to retain the bulk of the sediment and other waste products from the mine that would otherwise be released into the river system. This proposition is currently under consideration and pressure from involved and concerned parties would increase the likelihood that such a dam would be constructed.

The issue is complicated, however, by the fact that plans exist for two different sized dams. Ok Tedi Mining Ltd advocates building a smaller, compromise dam that would not be as expensive, but would allow higher levels of sediment, particulate copper, and heavy metals to be released into the Fly River system. Furthermore, as a result of earlier agreements, the mining company is under no obligation to begin construction of a tailings dam until January 1, 1991.

In order to avoid the extent of ecological damage to the Fly River that has already been sustained by the Ok Tedi, careful attention must be paid to the mine's production levels until a tailings dam has been completed. Any agreement between the PNG government and Ok Tedi Mining Ltd that a tailings dam will be built should not abandon the rights to moderate

production levels in the interim. Furthermore, if the smaller, compromise tailings dam is selected for construction, the government should maintain the rights to limit the mine's production levels even after the dam is complete.

Plans should also be made to evaluate the social consequences of existing and potential ecological damage caused by the Ok Tedi mine. It is not enough that physical scientists (biologists, geologists, and chemists) establish acceptable levels of environmental impact; social scientists (geographers, anthropologists, and sociologists) who can evaluate the social consequences of that environmental impact should be a part of any program to monitor the progress of a development project. It is not clear why there is no provision in the Ok Tedi Mining Agreement (Colin Filer, personal communication) for monitoring social impact over time and seeking solutions to problems that arise. This is certainly an issue that should be addressed.

Thus far Ok Tedi Mining Ltd has failed to accept responsibility for the environmental and social impact of the mine. Because the Yonggom living along the Ok Tedi River are numerically small, geographically peripheral, and politically impotent, they have not been able to effectively voice their protests. As a result, the mining company's neglect has largely gone unnoticed.

Should the Fly River begin to suffer environmental damage like the Ok Tedi River, it is unlikely that the mining company would be allowed to continue avoiding its responsibilities. Should the Papua New Guinea national government fail to exert a limiting influence on Ok Tedi Mining Ltd's production levels, neither the Fly River Provincial Government nor the people living along the Fly River would permit this to happen.

By avoiding setting any precedents for payments to the owners or residents of an affected watershed, Ok Tedi Mining Ltd is trying to limit its liability for potential damage to the Fly River. The first step towards forcing Ok Tedi Mining Ltd to accept responsibility for the environmental and social impact of the mine is to establish a fair and reasonable compensation plan for those people who live and own land along the ecologically-damaged Ok Tedi River system. Once these important precedents for compensation have been established, Ok Tedi Mining Ltd will also have to confront the costly future consequences of failing to protect the environment.

Finally, this case is of importance beyond the fact that the Fly is the longest river in Papua New Guinea and should be protected as one of its treasured resources. Papua New Guinea is staking its future on the development of mineral, gas and oil resources that not only offer tremendous potential economic benefits, but also bear great ecological risks. Any policies formulated with regard to the Ok Tedi Mine situation

quite rightly stand as potential precedents for development elsewhere within the nation.

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