

Traditional Cultures Facing the Development of Agricultural Industries : A Preliminary Study of Culture Change in Irian Jaya

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I Introduction

Irian Jaya, the easternmost and largest of the 27 provinces of the Republic of Indonesia, has an area of about 420,000 square kilometers, or 22% of the nation-state's total land area. It covers the western part of the island of New Guinea and is separated by the 141st meridian from Papua New Guinea.

Although the largest in size, it is the poorest, most backward, and most sparsely populated province. The per capita income is Rp. 225,000 (US\$ 125), which is only one-third of the national average (Rp. 733,000, or US\$ 407); the population of about 1.6 million in 1990, with a density of 4 per square kilometer, is less than one percent of Indonesia's total population, of which the density is 95 per square kilometer.

Compared to the national figure, Irian Jaya's population density appears extremely low. On the other hand, compared to the current national figure of 2.08%, the annual population growth rate of 2.39% is quite high, as the result of the influx of spontaneous migrants from adjacent islands and areas further west as well as transmigrants from the overpopulated island of Jawa, which has a density of 826 people per square kilometer [*Preliminary Report* 1991: 1].

The island's varied geological history has produced a complex soil pattern. In most areas of Irian Jaya, a combination of steep slopes and heavy rainfall has reduced the fertility of large areas. Except in a few coastal areas near the estuaries of large rivers, such as the Mamberamo and Digul rivers, leaching has limited the formation of top soil and led to the predominance of poor soils. Almost the whole island is covered with dense tropical forest or extensive swamps, and savannah woodland only exists on the southern slopes of the mountain ranges in the center of the island.

Human settlements already existed in New Guinea 25,000 years ago, and subsequent prehistoric migrations from the Indonesian archipelago probably brought the cultivation of yam and taro to the indigenous peoples, who were hunters and sago gatherers [Hughes 1971]. Today, sago is still the staple of one quarter of the indigenous population of Irian Jaya. Yam and taro provide the bulk of food supplies on the slopes of the central mountains.

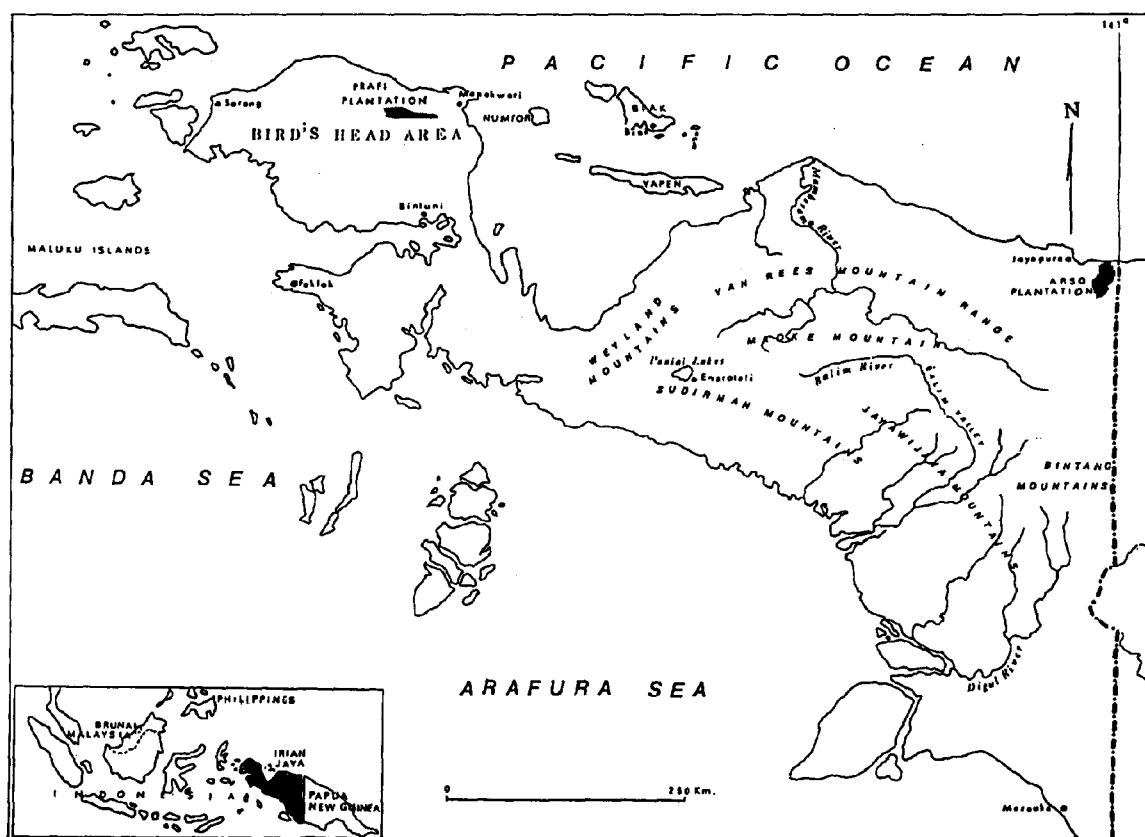
The movement of peoples in new Guinea in general and in Irian Jaya in particular has been

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effectively constrained by the extensive swamps, the dense tropical forests, and the snow-capped mountain ranges, some of which reach almost as high as 5,000 meters. The various mountain ranges of Irian Jaya stretch from the western part through the entire length of the island, and it is speculated that sweet potato spread to the large valleys of the central mountains during the 16th century; since then the inhabitants of this relatively densely populated area have adopted it as their staple.¹⁾

The geographical and environmental features account for the extremely large ethno-linguistic variety of the current population. The 1.6 million people of Irian Jaya speak over 234 mutually unintelligible languages, which belong to two completely different linguistic families [Barr and Barr 1970]; and it is not unlikely that there are as many different local ethnic cultures and traditions.

Almost half of the population is concentrated in coastal areas near river estuaries, where they subsist on sago gathering, limited cultivation of yam and taro, limited hunting, and coastal and river fishing. The inland areas of Irian Jaya are sparsely populated by small bands of hunters and sago gatherers, who roam along some of the large rivers. The densest concentrations of people are in the plentiful small and large high-altitude valleys of the Central Mountains, like the Paniai Lakes Valley in the Sudirman mountain range, the Balim Grand Valley in the Jayawijaya mountain range,



Map 1 Irian Jaya

- 1) Sweet potato seems to have been brought by the Portuguese to the coastal areas of New Guinea, and was further diffused to the Central Highlands [Golson 1972: 18].

and the valleys of the Bintang mountains (Map 1). People living in these valleys subsist on sweet potato, which is cultivated in swiddens by the slash-and-burn technique.

The traditional patterns of economic life were substantially intact when the Dutch, who were followed by Protestant and Roman Catholic missionaries, established themselves in several areas on Irian Jaya's coasts, west of the 141st meridian²⁾ in the middle of the last century. Many of the indigenous coastal populations were subsequently attracted to the Dutch administrative and missionary centers, which thus developed into small or medium-sized coastal towns.

Not being endowed with fertile agricultural land or mineral resources, and having a sparse, ethno-linguistically diverse population of irregular and unbalanced distribution and virtually no infrastructure, the area faces immense problems of growth and development [Malcolm 1970].

The Dutch colony became a province of the Republic of Indonesia when this country took over the administration of the area from the United Nations Temporary Executive Authority (UNTEA) in 1963, after extensive negotiations with the Netherlands and through enforcement by limited military activities. However, distracted by a number of domestic problems, such as the aftermath of ethnic wars, continuous deterioration of the nation's infrastructure and public facilities, economic breakdown, and the "confrontation with Malaysia" during President Sukarno's administration, the development of Irian Jaya had been neglected.

A grant amounting to US\$30 million was indeed provided by the Netherlands and channeled through FUNDWI (Fund of the United Nations for the Development of West Irian), but its use was only activated in 1967 when Indonesia, under the Suharto government, rejoined the United Nations [Garnaut and Manning 1974: 21].³⁾ Therefore, only during the second Indonesian national Five Year Development Plan (REPELITA), which started in 1974, could the actual development of the area be initiated, although a framework of priorities based on a report of a United Nations' team of foreign experts had been completed in 1968 [UNDP 1968].

Many of the subsequent development programs relating to the rehabilitation of the existing⁴⁾ and newly built infrastructure, primary industries, human resources development, healthcare, community development, and public administration, have used the UN development plan as a general guide [Garnaut and Manning 1974]. The Indonesian government has also invested heavily in the development of education—and recently in agricultural industries.

A general weakness in the way development programs in the area have been carried out since the area became Indonesian territory is the limited knowledge about the area in general and the cultures and ways of life of the indigenous peoples in particular. With a limited understanding of the theory of culture change, many dedicated and zealous Indonesians who assumed that traditional ways of life could be changed overnight by the implementation of target-oriented crash programs, participated in

2) On the history of the 141st meridian as the most eastern limit of the Netherlands' East Indies colonial empire, see the description by P. W. van der Veur [1966].

3) On the history of Indonesia's withdrawal from the United Nations see [Kartodirdjo 1976].

4) The development projects initiated by the Dutch were discontinued when they almost totally withdrew from Irian Jaya after the transfer of sovereignty. Therefore, these projects had to be abandoned completely or rehabilitated.

the development programs without paying enough attention to the human aspect of development. When, for example, agricultural industries needed large plots of land to establish a plantation and a factory, it was often assumed that land that seemed to be unoccupied could be used without considering, for example, the indigenous land rights of the population. Past feasibility studies made for agricultural development projects often considered only the area's environmental conditions, geography, and topography, the quality of its soil, the infrastructure, and economic cost and benefits of production. Intensive studies of the human aspect of the project and the socio-cultural conditions of the people of the area were neglected.

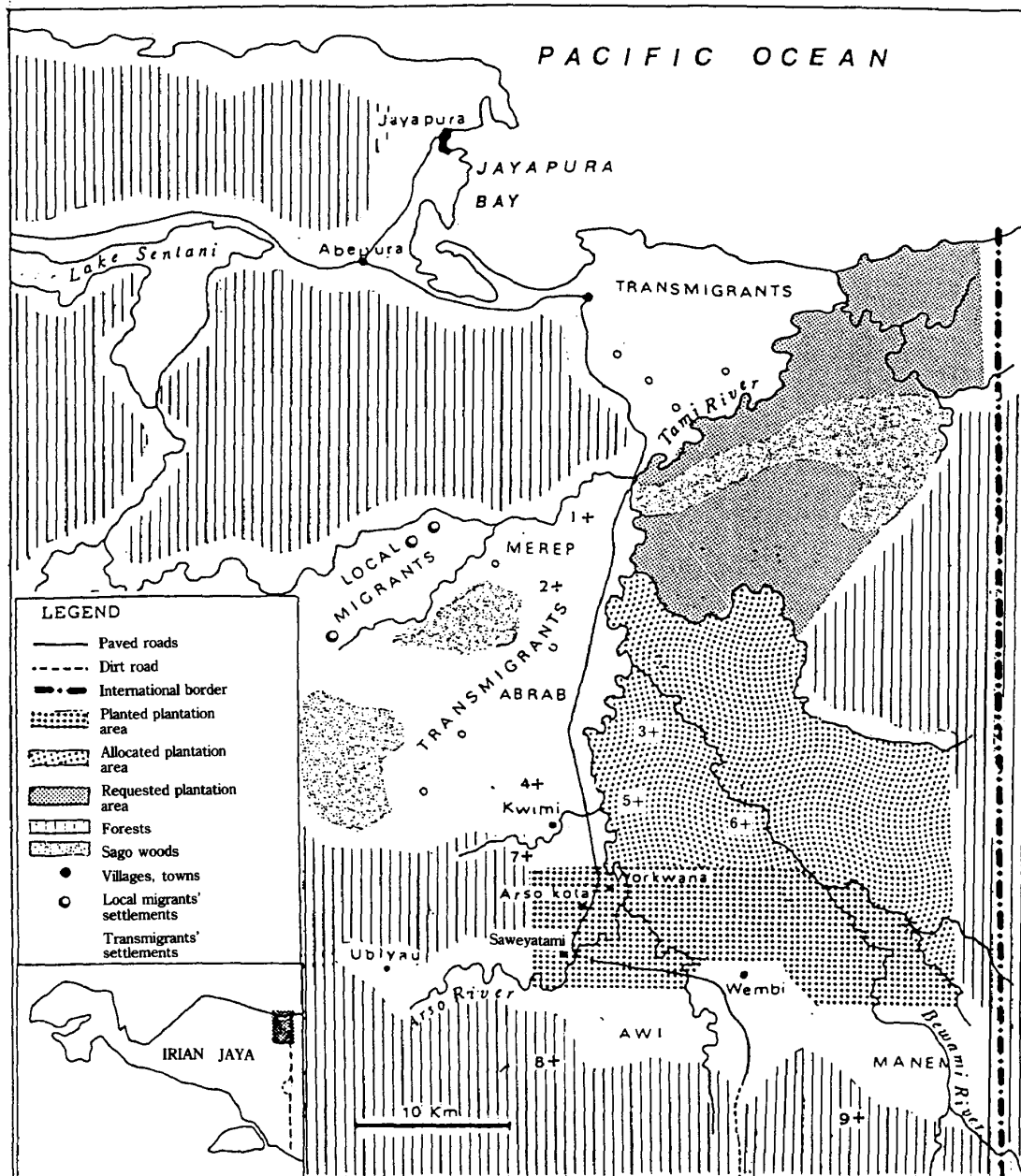
In the middle of the 1980s, the Indonesian development strategy began to pay more attention to the human aspect of development, involving the local populations in the projects. This policy, called the Nucleus Estate and Smallholder (NES) policy, was adopted in establishing large cash-crop plantations. The main, central part (the "nucleus") of an estate was to be run by professional managers of the plantation, but each nuclear family unit formerly occupying the area was to be allocated a plot (called a "plasma" plot), on part of which they could cultivate subsistence crops, and on the remaining part a cash-crop for the plantation. The product of the latter had to be delivered at fixed periods to the plantation, which would buy it at the current price. The estate would also advise on the appropriate technology of cultivating the crop. However, in order to avoid making the same mistakes as were made by the Dutch colonial administration when it pursue similar agricultural development strategies in the last century, a careful study of the socio-cultural infrastructure, customs, and beliefs of the people would have to be undertaken. Such a study is indispensable for a country as diverse as Indonesia, and Irian Jaya especially.

II The Oil Palm Project in Irian Jaya

Plans to establish two large oil palm plantations in Irian Jaya started in 1980, when the provincial government allocated 65,000 hectares of land in the Arso district, 60 kilometers south of the provincial capital of Jayapura near the Papua New Guinea border, and 39,000 hectares in the Prafi district, 40 kilometers west of Manokwari in the Bird's Head area (see Maps 1, 2, 3).

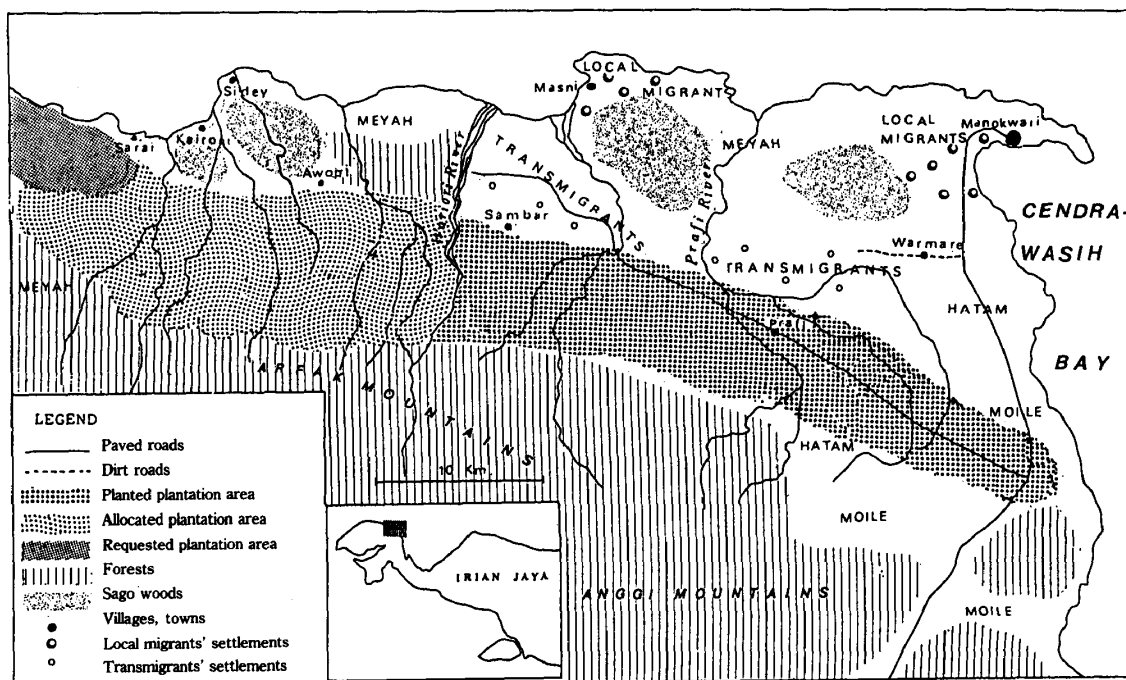
A research team organized by PTP II Central Oil Palm Management,⁵⁾ carried out preliminary studies in 1981 and 1982, and recommended the planting of 26,000 hectares of oil palm in Arso and 6,000 hectares in Prafi. Because PTP II management did not plan to use all of the allocated land during the first stage, in 1982 the provincial government decided to allocate 27,500 hectares in Arso, and 20,000 hectares in Prafi to the Department of Transmigration, which at that time was pressed for land to carry out its resettlement programs. Therefore, only 37,500 and 19,000 hectares respectively were left for oil palms in Arso and Prafi.

5) PTP stands for Perseroan Terbatas Perkebunan (State-Owned Estate Enterprise with Limited Liability), a central organization which manages all the 30 and more state-owned plantation enterprises. PTP II is the central organization managing oil palm plantations located in East Sumatra. Being the oldest, and therefore considered the most experienced organization in the oil palm business, it is often assigned to manage and establish, as well as develop, the new oil palm estates.



Map 2 The Arso Plantation and Environment

Another more detailed feasibility study of the two areas was organized by PTP II in 1986–1987, the result of which was a recommendation to develop a total area of 10,000 hectares in each of the plantations, which was projected to have been achieved by 1990. As indicated in Table 1, the Prafi plantation is already close to the proposed target. Table 1 also shows that the development at the Prafi plantation reached its peak in 1985 and 1986, when a project financed by Asian Development Bank planted more than 4,000 hectares of oil palm. The development of the Arso plantation went slower, as less than 3,500 hectares had been planted during the period between 1983 and 1989. However, the implementation of the project was speeded up in 1990 and 1991, when the average planted area was raised to 1,500 hectares per year. The most recent study (i.e., the third



Map 3 The Prafi Plantation and Environment

Table 1 Oil Palm Planted Areas in Arso and Prafi (in hectares)

Year	Arso Land allocated 37,500 ha.			Prafi Land allocated 19,000 ha.		
	Nucleus	Plasma	Total	Nucleus	Plasma	Total
1983	—	500	500	—	300	300
1984	—	400	400	155	400	555
1985	—	600	600	548	1,767	2,315
1986	—	100	100	782	1,700	2,482
1987	—	314	314	300	—	300
1988	—	500	500	225	200	425
1989	500	—	500	—	500	500
1990	500	1,000	1,500	—	—	—
1991	1,400	186	1,586	—	300	300
Total	2,400	3,600	6,000	2,010	5,167	7,177
Arso:				Prafi:		
Area developed				Area developed		
oil palm		6,000 ha.		oil palm		7,177 ha.
food crops		1,800 ha.		food crops		2,600 ha.
others		700 ha.		others		123 ha.
		8,500 ha.				10,900 ha.
Remaining land:				Remaining land:		
37,500-8,500 ha. = 29,000 ha.				19,000-10,900 ha. = 8,100 ha.		

Source: Slightly modified *Preliminary Report* [1991].

feasibility study) differs from its predecessors in encompassing the social structure and customs of the communities in both districts.

III The Feasibility Study on the Socio-Cultural Aspects of the Oil Palm Projects

The author was assigned by PTP II Central Oil Palm Management to design and organize the feasibility study on the socio-cultural aspects of the two oil palm projects in Irian Jaya.⁶⁾ Like most feasibility studies for economic development projects, the study was heavily constrained by limited budget and time. Therefore, only a limited number of elements of the socio-cultural systems of the populations, those providing information of direct practical use to the management of the plantations, were selected for the study.

However, the author was unable to ignore certain theories and propositions on the impact of culture change on traditional cultures, so as to make the study more meaningful than just an effort to collect the selected factual information needed by the plantation managers and the local administration in order to solve the socio-cultural problems which they faced in developing the plantations.

Exactly 30 years ago, the American anthropologist G. M. Foster [1962] advanced 6 points to explain the process and impact of technological change on traditional cultures:

1. Most major processes of culture change start in the socio-economic sector, from the middle urban-oriented levels of a society, and move down from the top.
2. Changes in this sector usually initiate fundamental changes in the society's kinship system.
3. The production of cash-crops for national export destroys traditional patterns of labor recruitment, which are usually based on the principle of mutual aid.
4. The development of money economy also changes traditional food habits, and consequently the nutritional content of the people's diet.
5. Processes of differential acculturation that cause uneven changes in various categories, levels, and sectors of the society, and the consequent socio-cultural strains and tensions, require special attention in the analysis and interpretation of culture changes.
6. Nationalistic movements should be considered as one phase in the acculturation process, in the sense of economic and political development.

To predict how the indigenous population near the plantation areas of Arso and Prafi would react to the technological changes introduced by the two large plantations, Foster's scheme was used as a theoretical framework of the research design of this study.

Indonesians in general, but also managers, professionals, and administrators in particular, have a very limited knowledge of Irian Jaya and they tend to generalize and apply to other parts of Indonesia, including Irian Jaya, the strategies and methods implemented in agricultural development projects in Sumatra or Jawa. They also often assumed, incorrectly, that the peoples of Irian Jaya

6) In the context of the feasibility study on the socio-cultural aspects of the oil palm projects, the author wishes to acknowledge his gratitude to Dr. P. Wirutomo of the University of Indonesia, who assisted him during the preparatory stage of the study, as well as to Mr. Naffi Sanggenafa and Mr. A. Dumatubun, who collected the data in the field.

are still “primitive” and, therefore, unable to understand the essential purpose of the development projects and to express their views and special demands concerning the projects. This lack of knowledge made it necessary for this study to provide basic ethnographic information on the peoples and cultures of Irian Jaya.

This study also includes information on variations of customary land rights of the various tribes who inhabit the areas of the plantations. Due to the large ethno-linguistic variety of Irian Jaya's population, an area of 40,000 hectares may be occupied by 3–4 ethnic collectivities, each with very different customary land laws. The manager of a modern plantation covering areas in Sumatra, Jawa, or Madura, can apply the same system to run his business in those different areas, but the manager of an Irian Jaya plantation has to apply different systems for each area, and take into consideration the land rights of the ethnic collectivities involved. This information can only be obtained if one has a general knowledge of the subsistence and economic activities of the particular clans who have the right of disposal of certain areas in the forest, of the locations of their hunting grounds and sago swamps, of the rivers, streams, or lakes where the clan members have the right to fish, of the different trees that are usually planted and therefore individually owned by members of the clans, etc. Those land rights often differ substantially from one ethno-linguistic collectivity to another.

A comprehensive knowledge of those rights can only be obtained if one understands the customary inheritance rights of the indigenous populations, by learning about the various social and kinship structures of the population.

The social and kinship structure in traditional societies usually also indicates the patterns and systems of leadership, which often differ from region to region. Information on the variety of leadership systems is therefore indispensable to the people running the plantations, because they have to know who the proper people are to negotiate with when land has to be purchased, or when the indigenous laborers for the plantation have to be recruited.

In order to calculate accurately the average size of “plasma” plots to be allotted to each indigenous family on whose land the projects have been set up, rather detailed information is needed about the average annual income and expenditure of the indigenous households.

Finally, data on religion and religious ceremonies of the population is also relevant, to know how much an average indigenous household usually spends on those ceremonies (important for the calculation of average annual expenditures of households) and to know the locations of sacred spots owned by clans or clan-brotherhoods. The destruction of sacred spots may arouse the resentment of local populations towards the establishment of large land-consuming plantations.

As the indigenous peoples in and around the plantation areas—particularly in Prafi—have already been actively involved in plantation work, this study also attached an attitudes survey to obtain information on the way the indigenous peoples and the local migrants⁷⁾ think about the changes brought about by the missionaries and the schools which they opened in the area, by the plantations,

7) The term “local migrants” in this article refers to indigenous Irian Jaya people who have spontaneously come from other places in the province and settled near the plantations.

and by the consequent arrival of many different peoples in their area.

IV The Arso Plantation Area

IV-1 The Arso Population

The Arso district covers an area of about 338,400 hectares. Its population is multiethnic, and even the 37,500 hectares allocated for the Nucleus Estate and Smallholder (NES) oil palm project are populated by at least four different indigenous tribes, together with local migrants from at least 10 different ethnic collectivities, East Indonesian non-indigenous ethnic collectivities who had migrated from different parts of the province, and overseas transmigrants,⁸⁾ mainly from Jawa (Map 2).

According to the most recent (March 1991) population figures, the Arso District is populated by 14,302 people (or 3,759 nuclear family units), who occupy 16 settlements. The indigenous local population numbers 1,892 people, consisting of 378 nuclear family units. Of the 1,051 adults, 497 are women. The Irian Jaya migrants are represented by 5,400 people, including 1,189 women in a total of 2,486 adults. These migrants belong to at least 10 different indigenous and non-indigenous ethnic collectivities. The 7,010 overseas transmigrants (consisting of 1,849 nuclear family units) have now outnumbered the indigenous population. Of the 4,151 adults, 1,991 are women (Table 2).

Table 2 Population of the Arso District, March 1991

Population	Age	1-14		15-55 (+)		Total		Total
	Sex	M	F	M	F	1-14	-55 (+)	
A. Indigenous population		456	385	554	497	841	1,051	1,892
B. Local migrants		1,907	1,007	1,297	1,189	2,914	2,486	5,400
C. Outside transmigrants		1,509	1,350	2,160	1,991	2,859	4,151	7,010
Total		3,872	2,742	4,011	3,677	6,614	7,688	14,302

Source: District statistics.⁹⁾

IV-2 Tribes and Ethnic Collectivities

The local indigenous population (category A in Table 2) is known to outsiders as one ethnic

8) The term "transmigrants" refers to people who were deliberately moved from densely populated provinces in Indonesia (Jawa, Madura, and Bali) by the government under the transmigration program, to be resettled in one of the many specifically allocated less densely populated areas within the Indonesian archipelago. This national program has been operated since 1910 (during the Dutch colonial rule).

9) The district statistics are, as usual, unreliable, and should be corrected in the field by paying house-to-house visits to an accessible sample of the total population. However, the implementation of such a procedure in a rough terrain like the Prafi and Arso environments would take many months, and the field teams had less than 2 months. At least for category C, who are Christians, the district statistics could have been checked against figures in the records of the Protestant or Roman Catholic Churches, but even this procedure would require much time.

collectivity, called the Arso (or Kerom) people. They consist of at least four different tribes: the Abrab, Manem, Awi, and Merep, each speaking mutually unintelligible languages (see Map 3). Their social organizations, land rights, types of leadership, economic activities, and material cultures, however, are similar. Except for their languages, the differences between them are mainly in their religious beliefs and practices.

Their social organization is based on small nuclear families called *tei* (among the Abrab and Merep), *qingyu* (among the Manem), and *terh* (among the Awi). Nuclear families who are related to one another form small localized exogamous ambilineal clans called *girtei* (among the Abrab and Merep), *girqingyu* (among the Manem), and *qirtern* (among the Awi). Each of those clans includes 30 to 50 individuals, who express their solidarity feelings in communal rituals, which they perform at regular intervals in a sacred communal house. This house, called *jatiya* by the Abrab and Merep, *junguar* by the Manem, and *jewur* by the Awi, is usually located in one of the main villages, such as in Kwimi, Workwana, Saweyatami, Ubiyau, Wembi, and others. There is also one in the district town of Arso Kota. Some, but not all, clans are grouped into phratries or clan brotherhoods.

The territorial units are often dispersed villages and sub-villages, each consisting of two phratries. The Abrab villages, such as Arso Kota, Workwana, Saweyatami, and other smaller ones are also composed of two phratries each, called *dimamoigir* and *yatgubrugir* respectively. The Merep villages, such as Kwimi and Ubiyau, are called *wi* and *kayah*, whereas phratries of the Manem village of Wembi are called *mbaipase* and *tuwi*. The two clan brotherhoods in a village or sub-village are rivals in a positive sense, and as such each member always tries to improve his group's productive capacities.

Most of the local migrants (category B) have come from adjacent areas in Irian Jaya, such as the Jayapura area and the area around Lake Sentani; and others have come as spontaneous migrants from more remote areas, like the Paniai Lakes area in Central Irian Jaya, the Upper Digul River area (e.g., the Muyu people), or from the islands in the Cendrawasih Bay (the Biak and Serui people). A number of Buginese families from South Sulawesi, who lived in Jayapura for many years and later moved to the Arso district, can also be categorized as "local migrants."

The local migrants mainly occupy land in the northern part of the district, where the Skanto and the Tami rivers merge. Most of the local migrants are from more advanced ethnic cultures than that of the indigenous Arso people, having practiced swidden agriculture on a larger scale and had at least several years of elementary school education. Those who came from urban areas like Biak or Jayapura are motivated to improve their living conditions and their cultural value orientation, and are therefore more receptive towards development.

The Jawanese transmigrants who have been allotted land along the Tami river are relatively better off than the local migrants, and naturally even more so than the indigenous peoples.

IV-3 Existing Economic Activities

The Abrab, Manem, Awi, and Merep are basically food gatherers who collect sago in the swampy sago woods near their villages (and sub-villages) every four to five days. The work is usually done by a group of at least three persons: a woman, her daughter, and her daughter's husband (or the

woman's grown-up son). First, the man cuts the sago tree and splits the trunk lengthwise with an axe. The women scrape out the soft fibers inside the stem, and after adding water, they squeeze out the sago flour. One tree provides enough sago to feed a small family for three to four days. On days when they do not gather sago, the men, women, and children catch fish in the rivers, swamps, and nearby streams using bows and arrows, spears, small nets, and various kinds of fish traps. Occasionally, the men hunt small animals and birds, whereas the women and children collect insect grubs, wild vegetables, sugarcane, or dry wood.

Their houses, fishing gear, and tools sometimes need repair, but hardly any kind of artistic expression exists. Arso children know few communal games or sport activities, and leisure time is spent resting, sleeping, or drinking their own brewed alcoholic beverage (*wati*), but also imported beer.

Only a few people practice some limited gardening and plant cassava, betel nuts, breadfruit and other fruit trees. Coconuts are gathered to be sold to wholesalers who come from the city by canoe to collect the coconuts and forest produce at regular intervals.

The local Irian Jaya migrants also gather sago, hunt, and fish once in a while, but their main source of livelihood is their gardens. They grow vegetables and tuberous plants, such as yams and taro, as well as peanuts and bananas for their daily consumption. Cocoa and fruit trees are also cultivated, but the fruits are sold in the local market. In addition, they raise chickens, pigs, goats, and, in some cases, cows, which are tended by the wives and children, as many of the men work part-time at the plantation or are engaged in gardening activities.

Beside gardening, many of the local Irian Jaya non-indigenous migrants from South Sulawesi often sell food from small food stalls. Like the Jawanese transmigrants, they have similar economic activities, but do not gather sago. They cultivate rice instead, and unlike the local migrants or the indigenous people, they do not get any plasma land.

A rough estimate of the indigenous populations' income and expenditure (A), that of the local migrants (B) and the Jawanese transmigrants (C) was based on a small survey among a sample of 70 nuclear family units in the village Kwimi. The result of the survey is shown in Tables 3 and 4.

There is a lack of information on income from the oil palm harvest on the 2 hectares of plasma land, as none of the respondents in the sample had received their share of plasma land at the time of the survey.

Table 4 shows that the field workers were not able to collect information on (i) expenditures on health care for the (A) and (C) categories, and (ii) expenditures on religious ceremonies. The reason for (i) may be because the people (at least those in the sample) did not spend any money on medicine, because medicine is often unavailable, although they frequently attended the local health clinic in the district town, for which they did not have to pay, or because the indigenous people and the Jawanese transmigrants have their own traditional curing methods and extensive knowledge of medical herbs for minor illnesses. The high occurrence of skin diseases among both categories was often ignored, because these are not considered as illnesses in the respective cultures.

Table 3 Annual Income of the Arso Population Per Nuclear Family Unit (Nf) and Per Capita

Income	(A) Indigenous population (N=30 Nf)	(B) Local migrants (N=20 Nf)	(C) Outside transmigrants (N=20 Nf)
Sago gathering, hunting, fishing for own consumption	Rp. 156,000 (US\$ 80.49)	Rp. 125,000 (US\$ 64.49)	—
Garden produce for own consumption	Rp. 1,143,000 (US\$ 589.78)	Rp. 1,080,000 (US\$ 557.27)	Rp. 720,000 (US\$ 371.51)
Sago gathering, hunting, fishing for the market	Rp. 240,000 (US\$ 123.83)	Rb. 150,000 (US\$ 80.49)	—
Garden produce for the market	Rp. 780,000 (US\$ 402.47)	Rp. 882,000 (US\$ 455.10)	Rp. 3,700,000 (US\$ 1,909.18)
BHL work in the plantation	Rp. 115,000 (US\$ 59.33)	Rp. 115,000 (US\$ 59.33)	—
BHL work in other projects	—	—	—
Total per Nf	Rp. 2,434,000 (US\$ 1,255.93)	Rp. 2,352,000 (US\$ 1,213.62)	Rp. 4,420,000 (US\$ 2,280.70)
Per Capita	US\$ 279.09	US\$ 269.69	US\$ 506.82

Sample: 70 nuclear families.

The US dollar conversion is based on the May 6, 1991 exchange rate of Rp. 1,938 per US dollar.

According to the Indonesian Central Bureau of Statistics, the average nuclear family size of the Irian Jaya population is 4.5.

Table 4 Annual Expenditures of the Arso Population Per Nuclear Family (Nf) and Per Capita

Expenditures	(A) Indigenous population (N=30 Nf)	(B) Local migrants (N=20 Nf)	(C) Outside transmigrants (N=20 Nf)
Food	Rp. 1,299,000 (US\$ 670.27)	Rp. 1,205,000 (US\$ 621.77)	Rp. 720,000 (US\$ 371.51)
Clothes	Rp. 45,000 (US\$ 23.21)	Rp. 100,000 (US\$ 51.59)	Rp. 121,000 (US\$ 62.43)
Education of children	Rp. 84,000 (US\$ 43.34)	Rp. 120,000 (US\$ 61.91)	Rp. 180,000 (US\$ 92.87)
Health care	—	Rp. 43,200 (US\$ 22.29)	—
Recreation	Rp. 180,000 (US\$ 92.87)	Rp. 200,000 (US\$ 103.19)	—
Religious ceremonies	—	—	—
Total per Nf	Rp. 1,608,000 (US\$ 184.38)	Rp. 1,668,000 (US\$ 191.26)	Rp. 1,021,000 (US\$ 171.07)
Per capita	US\$ 184.38	US\$ 191.26	US\$ 117.07

Sample: 70 nuclear families.

The US dollar conversion is based on the May 6, 1991 exchange rate of Rp. 1,938 per US dollar.

According to the Indonesian Central Bureau of Statistics, the average nuclear family size of the Irian Jaya population is 4.5.

IV-4 Kinship System, Land Rights and Community Leadership

According to the customary law in the social organization of the indigenous communities of the various ethnic collectivities of the Arso peoples, the right of disposal of a piece of land around or in the neighborhood of an Arso village is always divided into two parts, which are respectively controlled by the two existing phratries or clan brotherhoods. Each phratry consists of 3–5 groups of kinsmen (clans), who are the descendants of a real or mythical ancestor 5–10 generations ago, following the male¹⁰⁾ (but occasionally also female¹¹⁾) line. Members of a clan usually live close together in a village or in a cluster of settlements, and share a common clan name. One village may consist of 7–8 different named clans, each consisting of 40 to 50 individuals. A small brotherhood of 3 clans, for example, thus controls an extensive area of ancestral land to be used by around 150 individuals (or in the Arso area about 33 nuclear families), for cultivation, hunting grounds, gardens, with sago woods in the swamps, and the rivers and streams for fishing.

Individual ownership of land is still unknown to most of the indigenous people of the Arso district, particularly the Abrab, Merep, Awi, and Manem, for whom individual ownership only concerns large perennials, such as breadfruit trees which have been planted by certain individuals. However, this complicates deals with outsiders where land is involved. Therefore, it is useful to make an accurate distinction between the four categories of land conceptualized by the indigenous customary law of the Arso peoples, which are often expressed by different local terms (see Table 5). The four categories are: (1) communal phratry land, (2) swamps containing sago trees, (3) hunting grounds, and (4) gardens.

An Arso individual has to involve the head of his clan if he wants to utilize a piece of land for certain purposes. The head of the clan has the right to decide on the use of clan and phratry land,

Table 5 Indigenous Terms for Four Categories of Land Among Four Ethnic Units

Category of land	Ethnic unit			
	Abrab	Merep	Awi	Manem
Communal phratry land	Maader	Muter	Muder	Puskoingaf
Sago woods	Numui	Nanamui	Numanggir	Nipuskus
Hunting ground	Madisi	Masai	Mudisi	Imungni
Garden	Mamandep	Mamandep	Mumandep	Inyasak

Source: field notes.

- 10) In social-anthropological terminology the principle of tracing descent through males is called patrilineal descent, and through females, matrilineal descent.
- 11) Such a mixed principle of descent is called ambilineal descent. Social anthropologists claim that there are universally three principles of descent: (i) ambilineal, when in the same family some kin members choose to trace their descent through the male line, i.e., their father's line, while other kin members of the same family choose the female line, i.e., that of their mother; (ii) bilineal, when all members of the same family trace descent through the male line for certain rights, and through the female line for other rights; (iii) bilateral, when all members of the same family trace their descent and all the rights that go with it through both the male as well as the female lines.

and the right to make the ultimate decision on the use of phratry land rests, of course, with the eldest of the clan heads, who is also head of the phratry and leader of the various village communities located in the area.

The leadership pattern of communities in the Arso area and adjacent areas is of the type called *ondowafi* by J. R. Mansoben,¹²⁾ which is a hereditary village head, and usually the eldest member of a traditionally dominant senior clan (in the sense that the clan is believed to be the direct descendants of a mythical ancestor) in a community. This leader is assisted by three sub-headmen: a person who takes care of rituals, another one who handles economic affairs, and a war leader. Their statuses are ascribed, based on the seniority principle. The *ondowafi* himself handles all matters concerning phratry land, particularly land disputes.

The local Irian Jaya migrants are still considered as outsiders by the Arso peoples, and they can therefore only use land by borrowing or renting it from members of the phratry unit concerned. The Jawanese transmigrants, however, obtained their land directly from the central government.

IV-5 *The Religion of the Abrab, Merep, Awi, and Manem*

Many of the indigenous peoples of Arso have formally converted to Roman Catholicism, but they have not yet abandoned many of the basic principles of their original religions, which are oriented towards the veneration of mountains. They were taught by their mythology that, as their ancestors had come from there, certain mountains are sacred. When their ancestors died, their spirits returned to those mountains. The indigenous religious system is, therefore, based on the veneration of the spirits of ancestors. On Map 2, the sacred mountains of the Abrab and Merep, namely, Tuguria, Sanggeria, Numotnasi, Anamoi, and Wutu (indicated with the + mark) are numbered 1, 2, 3, 4, and 5, respectively. The sacred mountains of the Awi people are Yasrakur, Makrabut, and Yamer, which are numbered 6, 7, and 8 on the map. The sacred mountain of the Manem is Mount Imom (number 9). Because of their status, the destruction of these places should be avoided.

The local Irian Jaya migrants are either Roman Catholics or Protestants, and they do not practice their traditional beliefs since they have left their original socioreligious communities. In their new habitat they go to church.

The Buginese migrants and the Jawanese transmigrants are Muslims.

V The Prafi Plantation Area

V-1 *The Population*

The 19,000 hectares of plantation land in the Prafi district is also occupied by many different ethnic collectivities, as besides the local indigenous population are local Irian Jaya migrants and transmigrants from Jawa.

12) He is an indigenous Irian Jaya anthropologist who graduated from the University of Indonesia and is currently working on a dissertation on "Types of Traditional Leadership in Irian Jaya."

Table 6 The Population of Sidey (Prafi District) January 1991

Population	Age	1-14		15-55 (+)		Total		Total
	Sex	M	F	M	F	1-14	15-55 (+)	
Indigenous population		400	350	825	590	750	1,415	2,165
Local migrants		50	58	43	65	108	108	216
Outside migrants		550	400	930	850	950	1,780	2,730
Total		1,000	808	1,798	1,505	1,808	3,303	5,111

Source: District statistics.¹³⁾

According to the January 1991 figures (Table 6), which were obtained from Sidey, a sub-area of the district, there are 2,165 local indigenous people, with 1,415 adults, of whom 590 are women. The same sub-area is inhabited by 216 local migrants from other areas in Irian Jaya, with 108 adults, of whom 65 are women. The Jawanese transmigrants number 2,730 people, consisting of 1,780 adults, which include 850 women.

V-2 Tribes and Ethnic Collectivities

The local indigenous population of the Prafi district belongs to an ethnic collectivity which occupies most of the northwestern part of the Bird's Head area. To outsiders they are known as the Arfak people, a name which actually refers to the large Arfak mountain complex in the interior. Internally, the Arfak people consist of a number of smaller ethnic collectivities: the Meyah, Hatam, and Moile, who occupy the 4,000 hectares allotted to the oil palm plantation. The Meyah live on the eastern part of the area on the north coast of the Bird's Head, i.e., the area west of the city of Manokwari as far as Sidey, and south to the eastern part of the Kebar valley. The Hatam are in the area east and south of Warmare, as far as the headwaters of the Prafi river. The Moile were the Hatam's eastern neighbors, but have been pushed eastward to the coast of the Cendrawasih Bay, and southward against the slopes of the Anggi mountains. The oil palm project therefore has the Meyah, who occupy the western and northern parts of the presently allocated 3,000 hectares, and the Hatam, who live in the center of the plantation and along the northeastern fringes (Map 3).

The local migrants originate from the islands in the Cendrawasih Bay, particularly from Numfor and Doreri (Map 1). In the Prafi area they occupy the coastal area of the bay south of the city of Manokwari. Some of them have assimilated with the Hatam, and some live in villages on the north coast, such as Masni and Sidey. In the center and western parts of the plantation area, two new communities have arisen: Sambar and Awopi. Before arriving at their present locations in 1971, shortly before the establishment of the Prafi plantation and factory, the inhabitants were roaming bands of hunters and sago gatherers in the Arfak Mountains. There are 45 nuclear family units (222 individuals in total) living in Sambar, and 37 (126 individuals) in Awopi (Map 3).

13) Because the figures in Table 6 have been copied from unreliable district statistics, the comments in footnote 9 apply here also.

The Meyah, Hatam, and Moile, as well as the local migrants who live in the area near the Prafi plantation (except those originating from the Arfak Mountains) seem to be more development-oriented than those living in the neighborhood of the Arso plantation.¹⁴⁾ The young generation has attended school, which seems to have motivated them to seek opportunities to improve their living conditions. The plantation should therefore make special efforts to recruit them for plantation labor.

As indicated on Map 3, the Jawanese transmigrants have been allocated land bordering the northern part of the plantation. However, like the local migrants, they also live in the villages of Masni and Sidey on the north coast. These transmigrants were dominantly wet-rice farmers in their homelands, but practice shifting cultivation or sedentary dry-land farming in their new environments. Most of them have some formal education, and are highly motivated to improve their lives. Recruiting them exclusively for plantation labor, however, may create resentment among the indigenous peoples.

V-3 *Existing Economic Activities*

The people of the Prafi district mainly live on crops which they cultivate by slash-and-burn methods. Having selected an appropriate site in the forest, the men clear the bushes and cut down the trees, which are left for about a month to dry before the leaves, twigs and branches are burned. A fence is then made to keep away pigs and other wild animals. In their gardens, they cultivate a variety of edible roots, such as yam, taro, cassava, sugarcane, a large variety of bananas, and betel nuts. Lately they have learned from the Jawanese transmigrants to cultivate peanuts, long beans, onions, and maize. Harvesting of these crops, which are partly used for their own consumption and partly sold in the local district market, is done by women. Fruit trees and coconut palms are also planted.

Occasionally, the Meyah, Hatam, and Moile people gather sago or hunt boar, small kangaroos, and various birds, although they do not consider these as their main means of subsistence. Fishing, on the other hand, is done regularly by men, women, and children. Some of them also raise chickens (the eggs are regularly sold to the plantation employees); pigs are by tradition raised by women. The peoples in Irian Jaya have recently begun raising goats and cows.

A large number of the indigenous Meyah, Hatam, and Moile men are employed as plantation workers on a daily basis. Like the men from Sambar, some also work in other development projects. The people of Awopi, and probably also of Sambar, gather sago from sago woods owned by Meyah clans, based on a sort of share-cropping system.

The local migrants from Numfor and Doreri have in general similar means of subsistence to the Meyah, Hatam, or Moile peoples, whereas the Jawanese transmigrants also practice slash-and-burn agriculture, animal husbandry, and fishing. They plant rice as their staple, and do not gather sago. Wild boars and birds are hunted for recreation. Many of the men are permanent or part-time workers at the plantation or other development projects, and recently there is a trend among the Jawanese transmigrants to go to the city of Manokwari, to the oil industrial center at Sorong, or to

14) This impression has to be confirmed by further qualitative and quantitative research.

the industrial center at Bintuni (Map 1).

V-4 *Kinship, Land Rights, and Community Leadership*

In the kinship system of the Meyah and Hatam¹⁵⁾ the most important social unit is the named clan, which is patrilineal or ambilineal¹⁶⁾ and locally compact. Unlike that of the indigenous peoples in the Arso district, the concept of clan-brotherhood hardly seems to exist. Therefore, the right of disposal of communal land, sago woods, hunting grounds, gardens, and other economic resources are, according to Meyah and Hatam customary law, vested in the clan. In addition, the Meyah also consider land near the sea (including the beach) as a separate category, which is a very special area for collecting certain kinds of wood, driftwood, shells, and sea animals (turtles, turtle eggs, etc.), for food.

Because the Meyah and the Hatam subsist mainly on the products of their gardens, they value their gardens highly. In this frame of reference, individual ownership is quite developed. Individual clan members—and in fact also heads of clans—have been known to sell not only their trees to outsiders, local migrants, or Jawanese transmigrants, but also clan land that has been occupied for a long time. There were cases where also the sons of a clan head had sold the piece of clan land occupied by their father during the latter's life.

The head of a clan (*maniterep*) normally inherits his position patrilineally from his father or his father's brother, based on the seniority principle. Community leaders, i.e., village heads or heads of settlement clusters, are often *maniterep* of a supreme clan (a clan whose members are considered to be the direct descendants of mythological ancestors). However, it is considered ideal that community heads be elected on the basis of leadership qualities, popularity in the community, and achievements. Mansoben has indeed stated that the leadership dominant in the Bird's Head area is of the "big man" type. Therefore, it is not automatically the *maniterep* of a supreme clan who becomes the community leader. This fact is, of course, important for the plantation management, for instance in negotiating land compensation, or on recruiting plantation laborers, which, according to Meyah and Hatam custom, can be solved by just negotiating with the community leader.

V-5 *The Religion of the Meyah, Hatam, and Moile People*

Part of the Meyah, Hatam, and Moile have been converted to Protestantism, and another part to Roman Catholicism since the 1930s. Yet most of them still retain many of their traditional religious beliefs, which are based on veneration of the spirits of ancestors, whom they believe came from a land across the sea, beyond the horizon. They believe that their ancestors came from over the rainbow, and that after the souls of their deceased have become spirits, they will ultimately return there after wandering and occupying sacred places in the forest. Due to practical difficulties and the harsh terrain, it would have taken too much time for the investigators to plot the locations of the sacred places on the map.

15) The Moile were, due to limited time, not surveyed by the field team.

16) The term "ambilineal" refers to a principle of descent which in particular cases reckons the male line, but in other cases the female line.

Additional elements in the traditional religious system of the Meyah, Hatam, and Moile are witchcraft and sorcery, which are based on the belief in *suangi*, a person possessing evil power (without being aware of it himself), causing sickness, disaster, and death. This belief came from the Maluku islands, west of Irian Jaya (Map 1), where the *suangi* belief also forms an important cultural trait in the indigenous religion. As in many other communities in the world, witchcraft and sorcery are potential sources of conflict and violence among the Prafi peoples.

The local Irian Jaya migrants are either Roman Catholics or Protestants. They no longer practice their traditional beliefs since they left their original socio-religious communities, where those beliefs may still exist. In their new habitat they go to the local church. The Jawanese transmigrants are Muslims.

VI Attitudes of the Indigenous Population Towards Technological Change

It is a mistake to regard all the indigenous peoples of Irian Jaya as primitive and to accuse them of having a prelogical mind and way of thinking, out of line with the principles of contemporary logic, and being inconsistent and unreliable.

Although many of the indigenous peoples have had no primary school education and have only been very superficially influenced by Roman Catholicism or Protestantism, many of them have normal logical minds and behave very consistently when it concerns concrete matters and problems. They are, above all, faithful to their promises, but are suspicious of persons who do not keep theirs. Formal school education has brought many changes in their comprehension of more abstract matters, and they can now understand more abstract promises. Consequently, some of them can also understand discussions concerning plans for future projects, of which the results are not immediately visible. In this context it is the government's policy to increase educational facilities drastically (for example by the INPRES method), and allow religious missionaries to build more schools and spread their religions in the province.

Table 7 shows that there are sixteen government elementary schools in the twelve settlements and villages within the Arso district, which enroll boys as well as girls. There are also two junior and one senior high schools in the district town Arso Kota.

In the Prafi district, the first elementary school was established by Roman Catholic missionaries before World War II, and the Indonesian government started building schools in almost every village in the district since the 1970s. Unfortunately, no exact figures of the number of schools are available at the regency administration office in Manokwari. Our field research team focused on the large Meyah village of Sidey on the north coast, where they collected information on that village and on the neighboring ones. Table 8 shows the number of schools in three traditional Meyah villages and three transmigration settlements, whereas Table 9 shows the number of Meyah individuals in Sidey who have had some formal education.

Exposure to school education has not only increased the mental capacities of the indigenous population and their awareness of events outside their local communities and environments, but also raised their demand for market goods and thus increased their dependency on them. These include

Table 7 Elementary and Secondary Schools in the Arso District (School Year 1990/1991)

Elementary School	Settlement/village	Boys	Girls	Total
1. SD INPRES 1	Arso Kota	65	75	140
2. SD INPRES 2		116	62	178
3. SD YPPK		78	65	143
4. SD INPRES 1	Arso II	130	98	228
5. SD INPRES 2		120	113	233
6. SD INPRES 1	Arso III	150	162	312
7. SD INPRES 2		105	99	204
8. SD INPRES 1	Arso IV	120	88	208
9. SD INPRES 2		113	100	213
10. SD INPRES	Arso PIR I	92	84	176
11. SD INPRES	Arso PIR II	73	56	129
12. SD INPRES	Workwana	58	48	106
13. SD INPRES	Sawyatami	21	8	29
14. SD INPRES	Ubiyau	31	10	41
15. SD INPRES	Arso SKPF3	25	15	40
16. SD INPRES	Kwimi	9	1	10
17. SD INPRES	Wembi	44	12	56
Total elementary school students		1,350	1,096	2,446
1. SMPN 1		251	132	383
2. SMPN 2	Arso Kota	124	82	206
3. SMA YPPK		114	17	131
Total high school students		489	231	720

Source : Kanwil P. & K. Office, Jayapura.

Table 8 Schools in Villages and Settlements on the Northern Part of the Prafi District (1991)

Village/settlement	Elementary school	Junior high school
Sidey (Meyah)	SD YPPK	—
Kaironi (Meyah)	SD INPRES	—
Masni (local migrants)	SD INPRES	—
SP 6 (transmigrants)	SD INPRES	SMP Negeri
SP 7 (transmigrants)	SD INPRES	—
SP 8 (transmigrants)	SD INPRES	—

Source :field notes.

transistor radios, flashlights, and watches, like kitchen utensils, sugar, frying oil, rice, cigarettes, beverages, clothes, shoes, and soap.

Particularly in the Prafi district, where the plantation has been running for some time, the indigenous population has started to become involved in the plantation as workers. Table 10 shows the number of inhabitants of villages and settlements near Sidey who work in the plantation.

Table 9 Inhabitants of Several North Coast Meyah Villages with Formal School Education (1991)

Village	Ethnic background	No education	Educated persons			
			Elementary	J. High	S. High	Univ.
Sidey	Meyah	90	30	8	7	1
Kaironi	〃	150	70	5	3	1
Sarai	〃	70	20	—	—	—
Aurmois	〃	125	35	6	2	—
Sambar	〃	50	40	5	—	—
Masni	Local migr.	60	80	12	8	1

Source: field notes.

Table 10 Inhabitants of 2 Villages and 3 Settlements in the Prafi District Who Work in the Plantation

Village	Male	Female	Total
Aurmois (Meyah)	20	8	28
Kaironi (Meyah)	10	5	15
Masni (local migrants)	9	5	14
SP 7 (transmigrants)	5	—	5
SP 8 (transmigrants)	3	—	3

Source: field notes.

Because of their lack of even elementary education or any skills, they can only be hired as laborers in the fields, where they have to clear the brush, harvest the crops, load them on trucks, etc. In the attitudes survey it became obvious that almost all of them want to improve their status, and that all of them are aware of the fact that the only way to obtain better jobs is by attending school and by learning a skill.

As the indigenous peoples of Irian Jaya in general, and the populations of the Arso and Prafi districts in particular are becoming involved in various development projects, they have developed certain attitudes towards their environment, including the peoples and institutions outside their own communities with whom they now have to deal. It may, therefore, be of practical use to obtain information about these attitudes as well as to gain knowledge about the aspirations of the indigenous population.

The general attitude of the indigenous population, including the local migrants, towards the Indonesian government, which includes the district heads, regents, and officials who frequently visit their villages, is so far favorable. They seem to understand the benefits of development and the government's good intentions. They have, however, stated their objection to the number of plans and projects that have to be carried out simultaneously.

The indigenous people are in great favor of the Puskesmas local health clinics, and as mentioned earlier, often visit them to have medical attention for diseases considered as illnesses by them, such as malaria, diarrhea, and lung diseases, but are often disappointed by the lack of supply of medicines.

They are on friendly terms with many members of the Indonesian army stationed in their area ; however, they seem to dislike the suspicious attitude shown by the police, who often make arrogant remarks about the behavior of the indigenous peoples.

Their relations with local migrants from other parts of their province seems to be very good. In fact, in the Manokwari area, many migrants from Numfor have assimilated with the Hatam through marriage or by joining their parishes.

The indigenous peoples, particularly in Prafi, generally tolerate the presence of the transmigrants from overseas, from whom they learn to cultivate new crops, fruit trees, and vegetables, which were before unknown to them. Some jealousy, however, seems to be growing as the transmigrants are getting much support and facilities from the government. In Arso, however, anti-Indonesian propaganda by separatist movements operating from across the international border have been known to create violent conflicts between the indigenous peoples and the Jawanese transmigrants in their area, with the result that the military had to intervene.

The presence of the Buginese merchants in Arso, as well as the Jawanese, Buginese, and Chinese merchants in Prafi, is generally well-received by the local people. However, their goods are still too expensive for them to buy.

The indigenous Irian Jaya population in Prafi and Arso are eager to work in the oil palm plantations in their respective areas, and they are therefore willing to get special training in the skills required for lower level technicians in the factories, or for more skillful oil palm planters. They also send their children to school so that they will get better and more responsible jobs in the future.

Generally it can be assumed that a greater commitment is required on the part of the government and the plantation managers to improve the welfare of the indigenous people, by providing housing in the vicinity of the plantations, better water supplies, health care, wages, and salaries, besides training in various skills needed to work in the palm fields and factories, transportation within the plantation, etc. The plantation management should also subsidize indigenous enterprises in the sector of gathering forest products (such as rattan), vegetable gardening, cattle and pig raising, etc. For their children, scholarships should be made available to enable good students to have more advanced education in Manokwari, Jayapura, or even in other places in Indonesia. Building various religious centers and improving public transportation will ultimately improve the attitude of the Irian peoples towards the oil palm plantations in particular, and other development projects in general.

VII Conclusion

To conclude this report, we may relate its data to Foster's scheme of culture change mentioned in the Chapter III. The points mentioned in the scheme actually constitute an integrated summary of views advanced by other social scientists and confirmed by data mainly obtained in Mexico, where Foster's research has focused on many years. There are two additions that are distinctly Foster's own ideas, i.e., that technological changes in the acculturation process introduce changes in traditional food habits, and that nationalistic movements are closely associated with that process, actually forming a phase in it. The first additional point can be confirmed also by the Arso and Prafi

data, whereas the second one may be true for the nationalistic movement in Mexico and those taking place in the early 19th century, but is probably not applicable for the understanding of the motivations of more recent nationalistic movements, e.g., of the People's Liberation Front (PLO) in West Asia (or the "Middle East").

Concerning the first point in Foster's scheme, some additional comments may be made on the basis of data collected for this feasibility study. The proposition that most major processes of culture change start in the socioeconomic sector and usually move from the top-down seems to apply to the Arso area, where the Abrab, Merep, Awi, and Manem peoples for the first time began changing their cultures and adjusting their lives to a new situation as a result of a top-down decision by the Indonesian government to establish a large and modern plantation in their area. However, even in this case, the peoples do not seem to be passive followers of a certain development process, and it is quite likely that grass-root level changes have developed as well.

On the other hand, in Prafi, for example, culture change among the Meyah, Hatam and Moile peoples did not come top-down from the urban areas. They were first converted to Protestantism in the latter half of the 19th century, almost one and a half centuries before the palm oil plantation¹⁷⁾ was established. Of course, it may be argued that missionaries came from urban areas, but the real process of culture change among the indigenous peoples of the Bird's Head area of Irian did not start with their conversion to Christianity, but with their awareness of the benefits of school education. The emergence of this awareness is obviously a grass-root development rather than a top-down process of change.

The second point in Foster's scheme does not apply in the Arso or Prafi situation, as the plantation project has not changed the kinship system of the indigenous peoples (the Abrab, Meyah, and others). Even if the present situation differs from that of a century ago, this was not caused by a socio-economic change, but probably by the disappearance of headhunting and warfare (which was indeed a consequence of Dutch control—in other words, a top-down directed change). A similar argument can be advanced for Prafi.

The third point in Foster's scheme is probably based on the assumption that labor recruitment in traditional cultures is usually based on the principle of reciprocal aid and communal cooperation.¹⁸⁾ However, in Irian Jaya and Papua New Guinea communities in particular, and in Melanesia in general, the populations have always had an individualistic cultural value-orientation concerning communal cooperation.¹⁹⁾ Labor recruitment for modern technology is usually based on individualistic values, and therefore did not cause radical changes in the basically individualistic-oriented society of the indigenous Papua New Guinea peoples. The plantations in Prafi and Arso, which have been

17) For the history of Christian missionary activities in Irian Jaya, see the articles by F. J. F. van Hasselt [1935] and H. Geurtjens [1935] included in the standard work on Dutch New Guinea edited by W. C. Klein [1935–38].

18) Several studies on mutual aid as a principle in labor recruitment have, among others, been carried out among the Fellahin in South Egypt [Blackman 1927], in India [Dube 1958], and in Jawa [Koentjaraningrat 1961].

19) See, for example, M. Mead's view on this point in her book, *Cooperation and Competition among Primitive Peoples* [1961].

in operation for almost a decade, also have not changed the traditional form of labor recruitment. It should be remembered, however, that for almost 30 years the Indonesian ideology of Pancasila, has stressed the capitalization of the mutual aid principle (*gotong-royong*); and this may have had some impact on the value-orientation of those people in Irian Jaya who have been exposed to school education or are occupied in the civil service. The indigenous people in Arso and Prafi, however, as yet do not seem to have been affected by that Indonesian cultural value-orientation.

The author naturally agrees completely with Point 5 of Foster's scheme, which has actually already been worked out by R. Naroll in his "Index of Social Development" [1956], in which he presented a preliminary list of cultural elements that change with different speeds.

As an initial guide for analyzing processes of culture change, Foster's scheme is indeed very useful. It should be noted, however, that the people who are undergoing a change at the grass-root level are often active rather than passive subjects of the process.

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