IRIAN
Bulletin of Irian Jaya

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IRIAN JAYA CULTURES: AN OVERVIEW

Malcolm Walker
Johsz Mansoben

This draft sub-report is a fuller statement of Section 5.2 in Volume II of the Inception Report on the World Bank/UNDP-sponsored project, "Regional Development Planning for Irian Jaya" (INS/83/013). The objectives of this project are:

- to prepare a plan for the balanced development of Irian Jaya leading to the formulation of a long-term investment policy, and
- to identify area-specific or sectoral projects and programs for immediate implementation.

Irian Jaya is the most remote and least-developed province in Indonesia. The rugged terrain of much of the interior and extensive coastal swamplands pose formidable barriers to communications and the economic development of the native population. These physical barriers are compounded by the extraordinary cultural and linguistic diversity of the inhabitants.

It is now well recognized that cultural impediments to development can be as formidable as any physical barriers. It is the role of the applied anthropologist to elucidate these impediments and indicate pathways to development so that change might be wrought through, rather than in conflict with, traditional cultural forms. In so far as is compatible with the long-term economic and social interests of the people themselves, the integrity of the local cultures of Irian Jaya should be safeguarded.

This report draws attention to some of the obstacles to be faced in bringing about change and concludes with a suggested approach to development which takes these obstacles into account. This approach is also reflected in Volume I of the Inception Report, Towards a Development Strategy.
1.2 METHODOLOGY

Because of the short time available, this report is based largely on written material and on interviews with representatives of government and non-government agencies as well as faculty members of the University of Cenderawasih.

The late arrival of the anthropologist and some early difficulties over travel clearance meant that only a limited number of field trips could be made. These were to Arso, Nabire and Manokwari. In part this lack of field experience is compensated for by previous experience in Irian Jaya as anthropologist during the FUNDIWI/8 (Fund of the United Nations for the Development of West Irian) program. Field trips will be an important aspect of the work during the next phase of the project.

1.3 ACKNOWLEDGEMENTS

Thanks are owed to the working group from BAPPEDA Tingkat I (Regional Development Planning Board) as well as to Lavalin-Hasfarm colleagues for the stimulating seminar discussions on many of the ideas in this sub-report.

Particular acknowledgement for valuable information and insights is made to Dr. Daniel Ajameeja, linguist at the University of Cenderawasih, anthropologists Dr. Joksz R. Mansoeben and Dr. Samuel Patty, University of Cenderawasih, and also to Drs. Bernard Otto van Nunen, anthropologist at the Catholic Theological Seminary (STFT), Apepura, Jayapura.

2.1 INTRODUCTION

Irian Jaya is a province of linguistic diversity, with 240 mutually unintelligible languages, and considerable cultural complexity. Villages range from tiny isolated hamlets of a few individuals to densely settled areas with populations in the thousands. The history of contact also extends from negligible outside influence to substantial cultural change brought about by both Western and Asian influence.

In considering indigenous people, anthropologists are prone to dwell on diversity because of their interest in exploring the great variety of responses that people make through particular cultural adaptations. Those concerned with development are likely to have less interest in diversity than in features the cultures have in common, because of the need to bring about change.

As a starting point to thinking about development, we first need to decide on the most rewarding approach for reducing their complexity to manageable proportions. This raises the problem of classification.

A classification of Irian people based on language groupings has advantages for some purposes but is not particularly useful here. Likewise, a classification according to culture areas which takes into account material culture, art styles and music is not pertinent to issues concerning development.

For a practical useful survey of the circumstances under which people live we need to examine the principal means of subsistence (mata pencarian pokok) and also the supplementary means of subsistence (mata pencarian pelengkap) (Ave 1970: 112).

The means of subsistence largely provides the base for understanding economic arrangements to do with distribution and consumption and social organization.

In the case of Irian Jaya, the means of subsistence of the indigenous people are clearly related to ecological zones which, given the limited technology available, give rise to particular socioeconomic adaptations. The zones are shown on the accompanying map (FIGURE I) on which the distribution of the major population groupings is also shown.

In the data set out in TABLE I below, it should be noted that in some cases population groupings and tribes appear more than once, because the people are distributed through more than one zone. In the listing of Principal Subsistence Activities, the principal subsistence activity is listed first and the secondary activity follows.

The tribes are listed on the TABLE but not shown on the map. Information on the exact distribution of a number of these groups is lacking. In many cases the information exists but is scattered throughout monographs and articles written in Dutch, Indonesian or English. It is believed that the gathering of these data on the distribution of the tribes of Irian Jaya and recording it on maps and in written form is a necessary though time-consuming undertaking. This would be a task the anthropologist in the project could supervise. The collection and recording of the data could be carried out by anthropologists at the University of Cenderawasih.

Also needed is what might be called a data bank on each of these tribes which would provide essential information in a readily accessible format. Information is needed by government and N.G.O.'s (non-government organizations) who are concerned with the welfare and development of the people. On some tribes there is a great deal of information available while for other groups, very little. Again, a problem is that the information is scattered and also is written in English or Dutch or Indonesian. The data bank information needs to be available in Indonesian. The recording of these data according to an agreed-upon format could be undertaken by anthropologists at the University of Cenderawasih. This would be a lengthy undertaking requiring the allocation of funds.
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2.2 MAJOR ECOLOGICAL ZONES

2.2.1 Swampy Areas, Coastal and Riverine: Sago and Fishing

Village sites are generally located with access to major coastal rivers. Villages can be large, ranging from 200-400 people and even over 1,000 (Townsend 1977).3

Unless the sago resources are dispersed and people have to travel a long way to get their supplies, such large concentrations of people are possible by this mode of subsistence even in the absence of gardens. Examples of these large villages can be found among the Asmat, Jaqai, Marind-Anim, Mimika and Waropen.

In these areas sago is the staple and although gardens can sometimes be located on levees, horticulture is of secondary importance. Among some of these people, gardens are not made on any sort of consistent basis even when gardening opportunities exist. Even coconuts may be planted only on a haphazard basis. This is the case among the Central Asmat who show little enthusiasm for gardening, notwithstanding the fact that teachers in some of these Asmat villages make successful gardens and have tried to get people to adopt gardening techniques.4

Fishing which includes shrimp, crabs and occasionally turtles is a major source of foodstuffs, particularly for those located closer to the coast. The most productive form of fishing involves fishing with nets erected across tidal streams. The fish, crabs and shrimp are taken at low tide.

Sago collecting does not place great demands upon people but everywhere is subject to rigid division of labour. Felling the palm and removing the tough outer bark is the work of men. Breaking up the pith and producing the starch is women's work. Elsewhere in Irian Jaya where sago is not the staple, this rigid division of labour may break down.

Generally, family groups will repair to their sago areas periodically and bring back sufficient sago for two weeks or more. Among the Asmat people it is customary for family groups to camp at bivouac sites for a few days at a time while collecting sago. Similarly, the fishing expeditions referred to above are undertaken by family groups.

The diet of sago and fish is augmented by hunting and collecting. Hunting is of minor importance but the items collected (mainly by women) add important elements to the diet. Sago is generally in plentiful supply and nutritionally the people are well served by their environment. (Armelsoort 1984).3

Traditionally, the ritual cycle followed throughout the year provided a rhythm to activities and also gave zest to life. Ritual functioned to integrate society and to link people to their environment. Much of the ritual related to sago and the perpetuation of this basic food supply. Ritual activities also brought people together in expressions of common purpose.

The ritual cycle is now largely a thing of the past. Ritual took an enormous amount of time and left little room for children's schooling and village development projects. Also, because of its association with head hunting and other practices, missions and government alike have sought to direct people's interests into other areas. The response has not always been encouraging and the loss of ritual and ceremonial life and the breakdown in the traditional belief system has left these people somewhat dispirited and directionless.

The Mimika in particular are said to be apathetic to the point of anomic. The Asmat people who have suffered many negative experiences over the exploitation of ironwood show little enthusiasm for development projects; this also seems to be true of the Marind-anim, the biggest of the south coast tribes.

Traditionally, these coastal swamp dwellers have followed a semi-nomadic pattern in that the village was seen as a base from which to exploit the surrounding environment. Village sites were not fixed but often changed and family groups would spend long periods away from the village camping in family-owned bivouac sites while fishing and collecting sago. This semi-nomadic pattern, like the ceremonial cycle, has also been restricted. People are now required to live in sturdy houses in permanent villages which call for a good deal of maintenance. As well, there are village projects that require labour.

The swamp dwellers of the south coast in particular have not responded well to development opportunities that call for consistent labour and restrict further their traditional semi-nomadic existence. Economically, their region holds out little promise for the immediate future and an acceptable development strategy could be to continue to effect improvements in village life through schooling and health clinics. Opportunities for earning cash would have to rest largely on village-based enterprises such as pit-saw cooperatives and government and NGO-sponsored building projects for which people are paid for their labour.

The people of the north coast who rely primarily upon sago have had a long history of contact and, traditionally, ceremonial life and warfare was not the same central preoccupation. This is also true of the swamp dwellers of the southern areas of the Bird's Head from Seget to Arguni Bay.
### 2.2.2 Highlands: Gardening, Sweet Potatoes and Pig-Raising

A greater contrast could hardly be drawn than that between the sago gatherers of the coastal swamps and the advanced agricultural techniques of the highlands. These reach a peak of sophistication in the Balem Valley with the practice of crop rotation, fallowing periods, and irrigation canals. In the Paniai Lakes where soils are poorer the Ekar also reveal a high degree of sophistication in their gardening techniques.

Human settlement in the New Guinea and Irian Jaya highlands has been shown to date back more than 25,000 years, and by 5,000 years ago horticulture and, probably, pig-raising were established. These early gardeners relied on taro and yams but, since then, new colonists introduced sugar cane and bananas and, much later, the sweet potato. Many types of these foods are used, as the range of altitudes produces a variety of climates.

From the Papua New Guinea border to the western limit of highland population, all the people are phallo-crypt-wearers (wearing of penis sheaths). The two major population groupings are the Ekar and the Dani.

The Ekar (or Kapauku) people in the western highlands number approximately 80,000. They live around the Paniai Lakes and in the Kamu Valley. Generally, soils are poor and in some areas apparently there is severe population pressure.

The Ekar were first contacted in 1938 and came under strong Roman Catholic mission influence after 1948. Much is known of the Ekar, particularly through the work of Leopold Pospisil who described them as "primitive capitalists". It is of particular significance that considerable numbers of the Ekar have apparently moved to the Nabire area of their own accord and in some cases have established gardens to supply the Nabire Market. Because of their acquisitiveness and desire to make money, the Ekar should be responsive to schemes for development which provide scope for individual enterprise. At the same time, the growing problems of the Paniai highlands in terms of poor nutrition, high infant mortality and growing population pressure make it a prime target for programs aimed at improving the quality of village life.

A community development project based at Moanomani aimed at teaching the people new agricultural skills and animal husbandry has had some success. This might serve as a model for other areas. A similar program has been initiated in the area of Wamena.

To the east of the Ekar are the Moni, an Ekar people and Amungme, a western Dani people each of whom number about 10,000. Generally, they live in steep valleys 1,500 to 2,000 meters high that offer little prospect for development.

Between 1951 and 1963 some 2,500 Amungme settlers moved to Akitumaga to obtain the supposedly greater benefits of living near the coast. Numbers died from malaria to which they had no developed immunity and in the late 1970's others fell victim to political dissident activity. At the present time the Akitumaga settlers are said to be dispirited and apathetic.

Many more Amungme who have suffered cultural and physical dislocation through the Freeport mining activities, at some stage will also need to move out of their area. A suggestion has been made that a community development scheme initially funded by Freeport should be commenced at Akitumaga.

### IRIAN JAYA CULTURES

A number of Moni have expressed interest in moving to the Topo area near Nabire, and some in fact have already settled there. The poor soils and steep slopes in their own area and limited outlets for anything they grow restrict the commercial possibilities of their area.

The Dani number approximately 100,000 people. The Western Dani inhabit the numerous valleys between the main and northern ranges and extend as far west as Biloriai and the Upper Kemenbu Valley. They touch slightly on the northern Grand Valley, extending as far south as Pyramid. The introduction of the Irish potato, a crop which can withstand frost and cold, has led to some settlement by Western Dani as high as 3,000 meters. Some sweet potato is grown, but the plants are very poor, and the crops are unreliable after frosts.

In the Grand Valley of the Balem live the Dani people—probably the best-known people in Irian Jaya.

Population density is high, and the residential pattern is dispersed traditionally into a number of political confederations each with numerous hamlets. Hamlets are composed of several self-contained compounds, each with its own cooking house, women's houses and pigsties. Agricultural methods are highly developed and include extensive irrigation ditches in the valley and elaborate stone terracing systems in the Balem gorge.

Further to the east of the Dani are the Eipomek, who were only contacted in the 1970's, the Ketengban and the Ngalum. The Ngalum are spread over narrow valleys in the Star Mountains region. Contact was made with them from the Oksibil Valley in the 1950's. Their population is estimated at 20,000.

All these people live in small nuclear villages in mountain valleys. Typically, the men's house which is the focal point of village life is surrounded by a number of family houses.

In all these highland areas pig breeding is a principal preoccupation. Much of the work involved in caring for the pigs is undertaken by women, as is a great deal of the day-to-day gardening work. The heavy work of clearing, breaking the ground and erecting fences is carried out by men.

Pigs are basic to these highland societies not so much because of their contribution to the food supply, but because of their importance in the indigenous economy. Pigs are highly valued and the ownership of pigs is a measure of wealth and status. Pigs are killed on ceremonial occasions such as deaths, weddings and also at great pig feasts when large numbers of pigs might be slaughtered. On these occasions the meat is distributed and these exchanges serve to cement relationships and alliances between individuals and groups. The highlanders are energetic and have shown themselves to be adaptable. The Western Dani in particular have been receptive to change and whilst the Grand Valley Dani have demonstrated stronger cultural cohesion manifest for example, in greater resistance to the teachings of the Christian Missions, everywhere there is a strong demand for manufactured items and an induced need for money to obtain these.

The Highland people have been subject to a good deal of pressure in recent years to accept change. With the cessation of warfare and the opening up of these hitherto isolated communities to all manner of modernizing influences, a commitment will have to
be made to the continued development of the area. The sheer numbers of people involved must make them a prime target for development efforts.

2.2.3 Foothills, Small Valleys: Gardening, Hunting and Pig-Raising

The inhabitants of this ecological zone generally live in small scattered villages of 40 to 500 people. The bigger concentrations of people are found in and around Lake Sentani and the Nimboran plain in the northeastern area of the province and the Ayamur Lakes of the Bird's Head.

With the exception of the Muyu in Merauke district, villages are based on the lineage, each village consisting of two or more lineages of the same or different clans. Descent is strongly patrilineal.

The people practice swidden agriculture, the main crops being taro and yams; cassava and sweet potatoes are of secondary importance. In areas where small swamp areas exist sago is also important. People replenish stocks by plantings and do not merely rely upon natural rejuvenation. Sago areas are found among the Sentani and Nimboran people, the Mandobo, Muyu, Citsak, Anyu and also the Kaimana living in the foothills east of the Bird's Head.

For some of the people of the zone trade is of great significance. The Muyu and Mandobo trade among themselves and also with each other for pigs and particular cowrie shells that are greatly valued. In the Bird's Head the Maibrat of the inland and surrounding tribes are involved in the kain timur trade complex—woven cloth of great antiquity originally brought by traders from the islands of east Indonesia. In the trade the Maibrat supply pigs and foodstuffs to the other groups in return for kain timur.

Hunting is an important activity in all these areas although it probably contributes relatively little to the domestic economy. Of more importance is lake fishing for the Sentani and Maibrat and river fishing for some of the other groups.

The history of contact and present development opportunities varies considerably in the ecological zone. In the southeast the Muyu, and Mandobo first experienced contact when the Dutch government established a post at Tanah Merah in 1926. These people are highly individualistic and aggressive and are also frustrated at the lack of development opportunities in their region. The Citsak, Anyu, Vair and Yaqasi are more remote and opportunities for development are fewer.

In the north coast foothills the Sentani people have had long exposure to urban influences and numbers of them are in government employment. The Nimboran were the subject of a major development project by the Dutch government after World War II. There is now much transmigration development of commercial crops and plantations and training in marketing.

The Arso people are eminently over land transactions in connection with the PTP project and transmigration settlements in their area. This is discussed in the later section of the Inception Report on land tenure where certain recommendations are made. Particularly because of the political sensitivity of the area; it is important that the land issue be resolved satisfactorily. It is also important that the Arso people be more actively involved in agricultural development projects in their region.

The Tor people who live on the coast further to the west originally moved there from the foothills and small valleys of the interior where some of them still remain. They occupy tiny hamlets of five or so houses. Little is known of the people occupying the small mountainous valleys to the west of the Timorini. Apparently they are of a highland culture. The Kaimana who live in the interior of the Bird's Head neck comprise a sparse population with little outside contact.

In the Bird's Head the Arafat who live in small steep valleys have had well over 100 years of contact extending back to the activities of the Dutch protestant mission group, Zending Nederlands Hevomdi Kerk (ZNHK). Compared with other groups they appear apathetic and indifferent towards development. This may possibly be attributed to the lasting negative effects of their early contact with the outside world, and failure to find cultural fulfillment in the newly imposed way of life.

The Karon and Ambobaken occupy the north coast of the Bird's Head and also extend inland. In the rich Kebar Valley, Karon people grow vegetables for the Manokwari market—a successful project which apparently could be extended. In the interior of the lower mouth of the Bird’s Head, east from Fak Fak, small isolated villages are often located on hill tops. There is little trade among these villages or with the coast and they exist by subsistence gardening.

2.2.4 Coastal Lowland Areas: Gardening, Fishing and Tree Crops

Villages range from 100 to 500 inhabitants. People practice swidden agriculture and, as well, in some of these areas also have access to either wild or cultivated sago resources. Fishing is of major importance in the subsistence economy.

In earlier years all the coastal people from Sorong to Nabire as well as Biak and Yapen were involved in very active trading. The people of Biak and Yapen in particular traded Chinese porcelain and other items in return for sago and other foodstuffs. This trading no longer takes place.

Coconuts are grown in all these coastal lowland areas. People produce oil, some of which is sold, but except for the area around Sorong and the adjacent Raja Ampat islands, there is little marketing of copra.

The Raja Ampat islands, Biak, Yapen and also Kaimana are visited by Chinese and Butones traders who purchase turtle shell, sea slugs and other sea products.

Around the southern mouth of the Bird's Head and partly into the interior, nutmeg is produced which the people sell to Chinese traders. Trees are indigenous to this area and apparently this is a crop which could be developed further.

All these coastal people have had substantial contact from outside and, particularly along the northwest coast, much contact with each other. Between the coastal Karon and Ambobaken there has been much mixture and also with the Yapen and Biak. The Biak people in particular have intermarried with other coastal groups.

The whole Cenderawasih Bay area is said to be experiencing vigorous development and, with the opening of the highland road from the well-planned growth centre of Nabire, should provide the catalyst to the penetration and development of the highlands.
Endnotes

1 Professor M.T. Walker was from 1971-74 a consultant anthropologist attached to the University of Cenderawasih under the FUNDWI program. The work on which this paper was based was carried out in 1986-88 as part of the Irian Jaya Regional Development project funded by the World Bank. Professor Walker was the first editor of the IRIAN and was responsible for establishing the journal. Drs. J.R. Mansoben was a lecturer at the University of Cenderawasih and Head of the Faculty of Anthropology there. He is presently pursuing graduate studies in cultural anthropology at Leiden University, the Netherlands.


INDIGENOUS POLITICAL STRUCTURE
& LEADERSHIP PATTERNS IN IRIAN JAYA

Drs. Johannes Mansoben
Dr. M. T. Walker

The Districts of Irian Jaya

INTRODUCTION

In an extremely influential paper written several years ago dealing with leadership styles and bases of political power in Melanesia and Polynesia, Sahlin (1963) coined the term, “big man”. He suggested this was an appropriate label for the most common leadership style found in Melanesia which includes, of course, Irian Jaya. By contrast with the Polynesian chief whose position is ascribed and is assumed by right of birth, the leadership position of the Melanesia “big man” is achieved and not infrequently transitory.

Sahlin's description of the Melanesian “big man” does have broad applicability to many areas of Irian Jaya. However, the model can only cause confusion if applied uncritically to the province as a whole. At least two forms of ascribed leadership can be distinguished here and two broad types of “big man”, depending upon whether their leadership be oriented more towards war or economic activities. Another area having features of both ascribed and achieved leadership can also be distinguished.

Because of its relevance to development issues, indigenous leadership patterns is an extremely important topic. In this paper a brief description is provided of each leadership type and comments are then offered on the implications for development.

CHIEF (ONDOAFI OR KEPALA SUKU)

Distribution

Jayapura district, Nimboran, Sentani, Tanah Merah, Arso, Waris and Jos Sudarso.

Succession to the position of ondoafi is generally through the eldest son although, if he is considered to be lacking in leadership capacity, the position may go to another son or even a brother of the previous ondoafi. The position must stay within the chiefly clan.
Indigenous Political Structure

The ondoafi is supported by three assistants (kipela). One of these is responsible for ritual, another for war and the third for economic affairs. This includes communal activities such as fish drives and hunting and also collecting payments due to the ondoafi. These assistants with their respective responsibilities are also drawn from particular clans and, like the ondoafi, these positions are hereditary.

The power of the ondoafi is validated by mythology which in times past was supported by a very elaborate ritual. The economic base for the ondoafi's power rested mainly on his control of the land.

Land is vested in the clan but said to be "owned" by the ondoafi who had the right to allocate unused land not previously claimed. In recent years there has been some conflict among these tribes over who has the right to negotiate land sales to outsiders. In a number of cases the ondoafi has acted without adequate consultation with clan members leading to charges that he has sought to enrich himself at the expense of clan members. In other cases apparently the ondoafi has not been sufficiently involved in land sales. The validity of many land sales in the greater Jayapura area has been challenged on one or other of these bases.

The geographical extent of the power of ondoafis among these tribal groups is limited and did not, as a rule, extend beyond one or two villages. There are now serious tensions in many areas of the Jayapura district over the matter of land alienation and apparently many younger people feel that their traditional leaders have lost much of their effectiveness. Most of these villages of course have come under very heavy urban influence.

RAJA

Distribution

Raja Ampat, Fak Fak and Kaimana.

The system has similarities to the ondoafi previously described. However, the chief is called raja (known by various local linguistic terms) and whereas the basis of the ondoafi system lay in ritual, here it rests more on trade.

The raja system has been adopted from the sultanate system of North Moluccas, Tidore, Ternate and Jailolo. The influence of this system in these regions of Irian Jaya dates from the sixteenth century when regular trading expeditions were made along the coast. Some rajas were able to dominate extensive territories embracing several language groups.

The system was oppressive with an elaborate political structure involving a principal raja who acted something like a paramount chief, and lesser chiefs distributed in each village who were responsible for collecting tribute from the people. This included items such as foodstuffs, bird of paradise feathers, turtle shell and slaves. Rajas would often consolidate their position by choosing wives from one another's clans.

The paramount raja was always drawn from a designated chiefly clan in a particular village. Succession was through the eldest son but if he was deemed unsuitable, the clan elders could choose another heir. Like the ondoafi, the raja was assisted by functionaries responsible for war, ritual, and economic affairs who also were supplied by particular clans.

Present Distribution

Sorong

There are four influential rajas - one in Misool, two in Salawati and one in Waigeo. Of these, the two with the greatest influence are in Salawati - raja Samate in the north and raja Sialolof in the south, from clans Arfan and Mayalibit respectively. These two rajas have traditionally consolidated their influence by sister exchange in marriage.

The Moi people who are found along the coast of the Bird's Head and on Salawati Island are under the control of these Salawati rajas.

Fak Fak

There are a large number of rajas in the Fak Fak region.

Fak Fak town area. Control is exercised by rajas Ali Ali and Fatagar, both of whom live in the town.

Onin area. Control is exercised by rajas Rumbati and Patipi. In earlier times these rajas had more extensive influence stretching along the coast of the northern mouth of the Bird's Head.

Arguni Island. Control is exercised by raja Arguni. Previously, influence was also exerted along the eastern coast. He still has some control over the land in the Bomberai River area, the site of a proposed transmigration proposal. The people concerned are the Bamu.

Kokas. Rajas Sekar and Sisir now live in Kokas. Formerly, their influence stretched to Goras in the east and also well into the interior.

Arguni Bay. Raja Namotata exercises control over a very large area embracing the whole of Arguni Bay and along the coast to the Western Mimika people. The people under his control, then, are the Western Mimika, the Kaimana and the Arguni people. Raja Namotata is assisted by district chiefs located along the coast.

From a survey carried out by Mansoben as part of his study it seems that there is a high degree of dissatisfaction with the present system of leadership which effectively excludes those who have no hereditary right from influential leadership positions. It may be that this system which is based on privilege and a rigid stratification system is not conducive to development today, in that it stifles the aspirations of many young people who aspire to leadership and are impatient to see change.

BIG MAN-TRADE

For the great majority of Irian Jaya societies, the most characteristic leadership style is that of the "big man". Where the principal orientation of "big man" activities was the accumulation of wealth and influence through trading activities and gift giving, his prowess as a war leader was of less concern and warfare was not a major preoccupation of the people.
Examples of societies with this style of "big man" are the Muyu, Ayamaru (Malbrat) and the Ekari. The Ekari who represent the most extreme development of this orientation have been described as "primitive capitalists" (Posispal 1963).

The Muyu and Ayamaru have a similar religious philosophy. Death other than through old age is attributed to sorcery or to the malevolent ghost of a dead kinsman and there is great concern in these cultures to placate the ghosts of the dead. This is reflected in a desire to maintain good relations with one's living kinsmen through gift giving, lest the ghosts of their ancestors be angered and work harm.

Among the Malbrat every two years or so a great feast was organized by the bobot ("big man") which involved payments to relatives and also provided the setting for economic transactions between groups. As a consequence of this feast, the dead were placated, the gardens would grow and all would prosper. The most valued objects which featured in gift giving among the Malbrat were the kain timur - woven cloth of great antiquity originally brought by traders from the islands of east Indonesia.

Pigs played a relatively minor role in these proceedings among the Malbrat. The Muyu who had a similar ritual cycle and beliefs used shell money as valued items, and pigs were much more important in the feast giving and as a symbol of wealth and status.

The Malbrat and Muyu show a close integration of economic, political and spiritual life. One reason for supporting a "big man" was that he could be called upon to help pay debts. Death, it will be recalled, is attributed to malevolent ghosts of the dead or sorcery on the part of the living. Failure to settle debts promptly was to invite sorcery.

The Ekari

The Ekari "big man's" (tonow) wealth depends upon successful pig breeding which, in turn, involves a large polygynous household, extending credit (through lending out pigs) and generosity. An essential skill also on the part of the tonow is eloquence.

The Ekari are noted for their extreme pragmatism, their obsession with wealth and their individualism which makes any sort of collective action extremely difficult to achieve. However, their acquisitiveness and entrepreneurial skill coupled with the fact that much of their land is poor and overpopulated suggest that the Ekari should be a prime target for small holder schemes whether these be located within or outside the Panial Lakes region.

B I G M A N - W A R

Two examples which in a sense show extremes in this orientation are the Dani of the central highlands and the Asmat of the south coast.

In both cultures the "big man" war leader must demonstrate bravery and have a number of killings to his credit. As well, he must have oratory skills and organizational ability. Among the Dani, however, economic and political life is highly complex and the man who rises to pre-eminence as a war leader would also have demonstrated capacity in manipulating the exchange system, so accumulating wealth and influence over a wide territorial area. War is an important focus of traditional Dani life and the inevitability of war an important element of their belief system. However, it does not compare with the importance of warfare among the Asmat.

Among the Asmat, initiation of young men, the prosperity of the sago, and head hunting were all part of a complex belief system. This was supported by an elaborate ritual which provided high points throughout the year and gave people a sense of purpose in life. War leaders of renown were able to dominate others through their force of personality and ruthlessness. Generally, it seems they were feared because of their predilection towards violence and unpredictability. Renowned war leaders were also believed to have powerful magical ability.

An orientation very similar to the Asmat is found among the Mimika and the Maring-Anem, although the belief system of the Maring is more complex and warfare was not the same preoccupation. This is also true of the Yakai and Awa.

A Dani-like "big man" is shared by other highland people to the west of the Dani, although there was an absence of the great alliances, and warfare was on a much smaller scale. The activities of "big men" war leaders are correspondingly smaller.

The cessation of warfare has had a dramatic effect on village life and also, of course, on the style of leadership. Among the Dani some of the great war leaders of the past still have much influence and apparently some of the newly emerging "leaders" are trying to ape the style of these men. Without killings to their credit the respect they enjoy is limited, although this may not be a great problem in the future as warfare recedes more into distant memory.

Dani leadership is highly egalitarian. Many men can claim the title of "big man" which may mean nothing more than the capacity to organize others in some action. Those who can do this more consistently and at higher levels of organizational tasks gain a reputation beyond the local neighbourhood level as "big men".

The point to be made is that the Dani have always recognized leadership, and the demise of warfare will not frustrate the emergence of such men. However, the cessation of warfare and therefore the need for alliances and the great confederation wide ceremonies has removed the need for leaders of this higher level.

In the case of the Asmat people, the war leaders of renown have now all died. It has been observed that in some cases the new leaders whose power rests on government support for their position have tried to adopt the style of war leaders of the past to the point of employing bullying tactics and even using physical violence. Among the Asmat, however, lineage heads can function as elders and provide a balanced form of leadership, if given the opportunity.

A R E A O F M I X E D L E A D E R S H I P T Y P E S

Distribution

Blak, Yapen, Waropen, Wandamen Bay, and the area east of Manokwari.

In these areas we find elements of the opndatu system and also of "big man". It is not uncommon to find hereditary leadership in some villages, and in other villages of the same area, a system of achieved leadership.
Indigenous Political Structure

In Biak the leadership picture is particularly complex. In Supirole Island to the south of Biak and along the coastal strip, soils are poor and the people were great sailors and traders. Here leadership rested on organizational and entrepreneurial skills and was not hereditary. Elsewhere in Biak leadership was sometimes achieved and based on prowess as a war leader and in other areas it was hereditary. Here the village chief (chieftainship did not extend over large areas) is the head of the "founder" clan. Descent is patrilineal and the principle of primogeniture is followed.

OTHER LEADERS

In a recent paper Godschalk has pointed out that the attention given to the more flamboyant style of "big men", whether their principal orientation be warfare or trade, has tended to overshadow the existence of other leaders who could play a significant part in local development plans. He calls these individuals "elders", a term adopted from Baker. Elders are senior male members of unilinear descent groups who are respected for their sound sense and good judgement. Their position is hereditary, but to an extent achieved in that their reputation for giving good advice must be earned. Elders are found particularly in those societies where descent groups are prominent, such as the segmentary lineage system among the Ekaris. "Big men" are more prominent when the principle of local grouping is important, as among the Dani where local groups comprise members of different descent groups (Godschalk p.4). In most societies the two types of leaders ("big men" and elders) are found side by side. The "big man" is not necessarily an elder and he operates on a different level of leadership. Godschalk points to some significant contrasts that can be drawn between "big men" and elders. The leadership style of elders provides stable relations. They are managers who direct business on household or hamlet level. "Big men" are opportunists who occupy positions of fluctuating relations of power. They are entrepreneurs who organize pig feasts on a larger scale and redistribute goods and acquire prestige, but all to enhance their own status and that of their followers. Elders together can act as an informal council. Between "big men" there is a lack of cooperation and often fierce competition.

There is some evidence to suggest that "big men" have achieved greater prominence in recent years than was the case in the past. Many "big men" have adapted very well to modern changes and have been able to seize opportunities and use them to advance their own enterprises. The position of elders, on the other hand, has been often negated through by-passing these men when dealing with villagers. Much would be gained in inviting their cooperation.

At the present time the practice has often been to deal with the local people as if the indigenous leadership system is uniform. Clearly, this is not the case and even if it is not always possible to utilize indigenous leadership patterns, there should at least be an awareness of what they are. To ignore the traditional leadership is also to invite opposition.

Endnotes


2 Drs. Mansoben was a lecturer at the University of Cenderawasih and Head of the Faculty of Anthropology there. He is presently pursuing graduate studies in cultural anthropology at Leiden University, the Netherlands. Professor M.T. Walker was from 1971-1974 a consultant anthropologist attached to the University of Cenderawasih under the FUNDWI program. The work on which this paper was based was carried out in 1986-1988 as part of the Irian Jaya Regional Development project funded by the World Bank. Professor Walker was the first editor of the IRIAN and was responsible for establishing the journal.


GENERAL CHARACTERISTICS OF IRIAN JAYA AND ITS PROSPECTS FOR DEVELOPMENT

Dr. John Davidson
United Nations Joint Development Project


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I. LOCATION AND ADMINISTRATION

Irian Jaya lies between the equator and 90°S latitude and 130° and 141°E longitude. It occupies the western half of the island of New Guinea and has a common border 740 km long with Papua New Guinea. The total area (including inland water bodies) is 414,800 km², which means the province is the largest in Indonesia. However, the population of 1.45 million (in 1985) is less than one percent of the national population. People are distributed unevenly at an average density of 3.5 persons/km² (Table A3.1).

The province, one of 27 in Indonesia, is administered by a governor directly responsible to the President of Indonesia and located in the provincial capital, Jayapura. Irian Jaya is divided into 9 kabupaten (districts) (Table A3.1) each headed by a bupati. Kabupaten are sub-divided into kecamatan (sub-districts) (total 117) (Fig. A3.1) each headed by a camat. The next lowest level of administration in rural areas is the desa (meaning village, but not in the sense of a single tribal village; several villages or hamlets are grouped together for administrative purposes) (total 841) administered by a kepala desa. The equivalent of the the desa in the towns is the kelurahan (total 66).
<table>
<thead>
<tr>
<th>District</th>
<th>Area Km²</th>
<th>%</th>
<th>Population Number</th>
<th>%</th>
<th>Persons per km²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Merauke</td>
<td>119,749</td>
<td>28.9</td>
<td>209,200</td>
<td>14.4</td>
<td>1.7</td>
</tr>
<tr>
<td>Jayapura</td>
<td>62,433</td>
<td>15.0</td>
<td>199,400</td>
<td>13.7</td>
<td>3.2</td>
</tr>
<tr>
<td>Jayawijaya</td>
<td>52,916</td>
<td>12.7</td>
<td>328,100</td>
<td>22.6</td>
<td>6.2</td>
</tr>
<tr>
<td>Fak Fak</td>
<td>45,552</td>
<td>11.0</td>
<td>73,400</td>
<td>5.0</td>
<td>1.6</td>
</tr>
<tr>
<td>Panai</td>
<td>40,160</td>
<td>9.7</td>
<td>217,500</td>
<td>15.0</td>
<td>5.4</td>
</tr>
<tr>
<td>Manokwari</td>
<td>37,901</td>
<td>9.1</td>
<td>111,000</td>
<td>7.6</td>
<td>2.9</td>
</tr>
<tr>
<td>Sorong</td>
<td>34,213</td>
<td>8.2</td>
<td>174,000</td>
<td>12.0</td>
<td>5.1</td>
</tr>
<tr>
<td>Yapen</td>
<td>18,746</td>
<td>4.5</td>
<td>39,400</td>
<td>4.1</td>
<td>3.2</td>
</tr>
<tr>
<td>Waropen</td>
<td>11,151</td>
<td>2.7</td>
<td>50,300</td>
<td>3.5</td>
<td>3.5</td>
</tr>
<tr>
<td>Biak Numfor</td>
<td>3,130</td>
<td>0.7</td>
<td>80,800</td>
<td>5.6</td>
<td>25.8</td>
</tr>
<tr>
<td>Irian Jaya</td>
<td>414,800</td>
<td>100.0</td>
<td>1,452,900</td>
<td>100.0</td>
<td>3.5</td>
</tr>
</tbody>
</table>

Source: IJRDS (Irian Jaya Rural Development Study) 1988

Repeated cycles of intensive geological erosion which followed the uplift during the Pleistocene Era have contributed to the creation of vast systems of alluvial fans to the north and south of the central ranges. Thus, the province can be divided into three main physiographic domains: 1) the Southern Coastal Plains, 2) the Central Mountain Ranges and 3) the Northern Mountain Ranges, Lowlands and Bird's Head. These in turn can be divided into physiographic regions and subregions (Fig. A3.3).

The Southern Coastal Plains

The Southern Coastal Plains domain is a major uniform feature of the landscape of Irian Jaya. The geology consists of crystalline basement rock at shallow depth. This is covered by a layer of mixed sedimentary and metamorphic rocks, the latter have drifted from the upper Central Mountain Ranges and deposited only in very localized areas of the foothills and fans.

The highly eroded Fly-Digul Shelf in the north-eastern sector of this domain consists of steeply sloping dissected terrain, whereas the Oriomo Fly Plain south of this shelf (Fig. A3.3) has extensive areas of more gently sloping land suitable for dryland and wetland agricultural development and forest plantations.

Along the coast, younger Quaternary sediments have been deposited under swampy conditions. These areas are considered favourable for wetland agricultural development, provided drainage can be managed properly.

The Central Mountain Ranges

The Mobile Belt consists of a complex mixture of rock types resulting from uplift and intrusion along the convergence zone. Within the Central Mountain Ranges, surficial deposits comprise erosion products from metamorphic gneiss, schists, basalts and sedimentary non-calcareous or calcareous materials. Surficial deposits which make up soil parent materials tend to be acidic to very acidic (unless limestone is close by) and nutrient deficient.

The Central Mountain Ranges are locally dissected by elevated intermontane valleys of two types. One type comprises the broader valleys such as the Paniai Lakes area, the Kamu Valley and the Balim Valley. These contain the most intensively used agricultural soils, but in terms of relative extent cover only a small area of the highlands. A further sub-division can be made into peaty, poorly drained lakeshore plains and into slightly better drained, mainly non-peaty, broad valley bottoms. The second and dominant type comprises steep-sided valleys with none or very little gently sloping land at the bottom. Many of these valleys are occupied by increasing numbers of people, resulting in the steep slopes being almost permanently deforested, in turn leading to excessive erosion and eventual breakdown of traditional farming practices.

The Northern Mountain Ranges, Lowlands and Bird's Head

North of the Mobile Belt, metamorphics, volcanic intrusive rocks and the predominance of older sedimentary rocks like schists, sandstones, siltstones and mudstones make up a wide range of geological complexes. Except for the volcanic rocks these parent materials usually weather to farm soils with low agricultural potential.
Below 1,000 m elevation, most of the lowland and foothill regions consist of sandstones, clayey schists and mudstone sedimentary rocks. Recent alluvia covers a number of inter-montane basins north of the Molucca Belt such as the large Mamberamo System making up the Central Depression and coastal regions such as the Bintuni Bay Lowlands. These basins were filled gradually, first with marine and littoral sediments then extensively with terrestrial deposits. In the Bird's Head extensive areas of limestone karst topography occur, e.g., the Teminabun Karst Ranges. These areas are only fragmentally suitable for agriculture.

In general these younger, northern basin sediments are considered more fertile than the older weathered deposits of the Southern Coastal Plains.

b) Soils

Wide variations in climate, geology and landforms have resulted in a diverse range of soils in the Province. Generally high rainfall throughout Irian Jaya has resulted in heavily leached, acid soils with low nutrient-holding capacity, high levels of exchangeable aluminium and low quantities of available nutrients. Except in limited areas where fertile volcanic-derived or unleached recent alluvial sediments occur, most soils are of poor to moderate fertility.

The poor quality of Irian Jaya soils means that they would typically require regular inputs of lime and fertilizer for conventional, continuous, sustained yield cropping. Much deforested land with steep slopes cannot be tilled continuously without very high inputs and risk of excessive erosion. Soil conservation therefore is one of the most important aspects of development in the highlands. A variety of soil conservation practices would be required to take into account steepness of slope and soil type.

Many of the extensive swamp areas throughout the province are too frequently flooded at unpredictable intervals to be cropped without extensive and costly water management. In addition, in these low-lying areas malaria and other diseases keep populations at very low levels.

c) Hydrology

Irian Jaya has substantial water resources with abundant rivers, lakes and swamps (Fig. A3.4). Most of the major rivers have permanent flows. Rivers in the highlands are mainly high-energy streams flowing in confined valleys and producing considerable sediment. In the wider valleys streams are braided, but are still capable of carrying high sediment loads. On the coastal plains and in the Central Depression, the large rivers have huge fresh water flows with potential for irrigation development e.g., the Mamberamo River in the north and the Digul River in the south. This would require costly water management and disease control programs.

d) Minerals

Minerals discovered include arsenic, aluminium, bismuth, chromium, cobalt, copper, gold, lead, magnesium, mercury, nickel, platinum, tin, tungsten, uranium, zinc, asbestos, diamond, marble, mica, opal, phosphite,apatite, talc, coal and quartz sand. The economic value of the province's minerals is uncertain and only general locations are known of the deposits with some potential for exploitation (Fig. A3.5). The appraisals of the different mineral deposits and their specific contents are not readily disclosed by the commercial interests involved. Many deposits are believed located in very remote areas with difficult access. Hence the actual potential for mining is difficult to evaluate. Prospecting is continuing.

B. Climate

Irian Jaya has a hot, humid climate (daily average temperature in the lowlands 28°C, humidity 75-80 percent) with significant regional and local variations in temperature, rainfall (Fig.A3.6) and humidity.

Average temperatures decrease with elevation. Minimum average temperatures below 7°C are recorded in several highland areas (4,000 m elevation) and frosts occur there periodically. Snow is recorded on the highest peaks. In the coastal lowlands the normal daily maximum is about 33°C except in the southeast where Merauke experiences a cooler winter season (25.5°C versus 27.5°C) because of cool air outflow from the Australian continent.

Rainfall is quite variable across the province and is strongly affected by macro and micro rainshadow effects of mountains as well as by seasonal changes in airmass circulation. The largest part of Irian Jaya is covered by agroclimatic zones with more than 9 consecutive wet months in a year (Fig. A3.7).

A distinct dry season of up to seven months occurs in the southeast coastal region which is influenced by the seasonal high pressure airmass of continental Australia. A steep rainfall gradient occurs from the south coast (1,500 mm mean annual rainfall and 7 months dry season near Merauke) to the southern foothills and fans (over 6,000 mm with little seasonal variation).

The topography of the highlands results in microclimates with highly variable wind and rainfall patterns over short distances. In general most of the highlands except the region centred on Wamena experience no pronounced dry season and tend to have a mean monthly rainfall of more than 200 mm for at least 9 months of the year.

In the Bird's Head the climate is drier on average. Atypical micro climatic conditions also occur there in mountainous parts. Very high rainfall occurs in small pockets along the southwest coast.

Climate is the least limiting factor of the biophysical components with respect to agricultural development potentials provided place to place agro-climatic variation (Fig.A3.7) is recognized. Although climate may constrain planting schedules and selection of suitable crops in some areas, particularly in the central highlands and the extreme southeast, the wide range of conditions offers a diversified agricultural potential for the province as a whole.

Transport is often disrupted by weather conditions. Small (single-engined) aircraft are affected by thick cloud and strong winds in the highlands requiring most flying to be carried out between daybreak and 10 a.m. High winds during the wet season hinder sea travel along the north and southwest coasts.
C. Vegetation and Forest Resources

About 84 percent of Irian Jaya still retains natural tree cover. There are 8 major vegetation types, corresponding to altitudinal zones: Mangrove, Swamp, Lowland Plains (0 - 100 m), Foothills and Low Mountains (100 - 1,000 m), Lower Montane (1,000 - 3,000 m), Upper Montane (3,000 - 4,000 m) and Alpine (4,000 m) (Fig.A3.8). These are influenced primarily by the range of climate and soils and secondarily by water regime and altitude.

Forest resources are presently classified on the basis of forest use categories (Table A3.2, Fig.A3.9).

<table>
<thead>
<tr>
<th>Areas of Forest Use Categories, 1986</th>
<th>Aref</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Production forests (HP)</td>
<td>224,200</td>
<td>54.1</td>
</tr>
<tr>
<td>a normal production forest (HPB)</td>
<td>(80,300)</td>
<td>(19.4)</td>
</tr>
<tr>
<td>b limited production forest (HPT)</td>
<td>(48,300)</td>
<td>(11.2)</td>
</tr>
<tr>
<td>c convertible forest (HK)</td>
<td>(97,600)</td>
<td>(23.5)</td>
</tr>
<tr>
<td>II. Protection forests (HL)</td>
<td>105,000</td>
<td>25.3</td>
</tr>
<tr>
<td>III. Conservation forests (PPA)</td>
<td>73,700</td>
<td>17.8</td>
</tr>
<tr>
<td>Unclassified and other</td>
<td>11,900</td>
<td>2.8</td>
</tr>
<tr>
<td>Totals</td>
<td>414,800</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: IJRDS 1988

Production forests have three sub-categories. Normal production forest areas are designated to meet the needs of the peoples for development, industry and exploitation. Limited production forest areas are designated to secure a dual function of watershed protection and timber production, thus allowing logging is allowed only on a selective basis. Convertible forest, the largest production class, designates areas which may be allocated for other land use activities, notably for agriculture. The primary function of protection forests is to preserve the forest resource for future generations but they are defined in law as those areas which, because of natural conditions, are designated to protect the catchment of domestic drinking water supplies, minimize floods and erosion and maintain soil fertility. Conservation forests are mentioned in the next section.

D. Conservation Areas

Forest and non-forest areas, which because of their special natural characteristics are designated exclusively for the protection of nature, numbered 51 and cover more than 62,000 km² (gross area) or about 20 percent of the province (Fig.A3.16). They comprise strict nature reserves (25 proposed or gazetted), national parks (2 proposed), wildlife and marine wildlife reserves (16 proposed or gazetted) and recreational parks (8 small areas near towns). The proposed Lorentz National Park includes the entire transect of ecosystems from the south coast to the alpine region of the province. Draft management plans have been drawn up for the Cyclops and Arbuk Nature Reserves and a management plan prepared for the Teluk Cenderawasih Marine Reserve. The boundaries and status of the others remains uncertain. Central government policy dictates that no development should take place in conservation areas, but in practice, the majority of conservation areas has not been gazetted and encroachment is taking place, particularly with timber concessions (Figures A3.13 and A3.16) which cover over 60 percent of the area set aside for nature conservation.

E. Land Resources

a) Available Information

Physiographic regions and sub-regions were shown in Fig. A3.3. The next level of division is into 16 physiographic zones as shown in Fig. A3.10. Within these zones the very extensive and diverse natures of the land resources of Irian Jaya are illustrated by the recognition of 89 land systems at a reconnaissance scale of 1:250,000. A summary only is included here.

Almost 39 percent of Irian Jaya is categorized in the Mountains zone. In descending order of area of occurrence the remaining zones are Old Coastal Plain 12 percent, Peat Swamps 11 percent, Hills 7 percent, Seasonal Swamps and Plains each 5 percent, Alluvial Valleys 4 percent, Alluvial Plains, Dissected Terraces, and Tidal Swamps each 3 percent, Alluvial Fans, Terraces, Backswamps and Meander Belts each about 2 percent. (Fig. A3.10).

Forty-seven land systems are classed as generally unsuitable for agricultural development (including tree crops, agroforestry and timber plantations). They cover about 271,000 km² or almost 65 percent of the province and consist of infertile sandy or bouldery terraces, deep peat, flood-prone plains or tidal swamps, as well as steep-sided hills and mountains with erodible soils.

Forty-two land systems are classed as suitable. They cover 143,399 km² or 34.6 percent of the province. If the areas of these land systems in conservation areas are subtracted, the net suitable area is 118,477 km² or 28.6 percent, which has some potential for one or more types of rural agricultural development (Table A3.3 and Fig. A3.15). Some of these land systems require moderate to high inputs, technology and management for successful sustained development. Such land systems are noted as "suitable for estates only" meaning they are not suitable for smallholder development with low inputs. Even though classified as "suitable", the other land systems generally have only moderate to low soil fertility, they comprise alluvial land that commonly requires some flood control or drainage improvement, and slopes in need of some degree of protection against erosion. They are, therefore, of marginal or at best of moderate suitability. For some land systems only dispersed parts of the land system are suitable. These are listed in Table A3.3 as "fragmentally suitable" so the areas shown could be reduced by as much as 75 percent if the unsuitable land units within the land systems are excluded. This is the case in small, highland valleys.
b) Requirements for More Detailed Land Resource Studies

Land resource surveys were carried out in the past only to fulfill an immediate need for local information about soil suitability in any one place where agricultural activities were planned or happened to be undertaken. As a result those surveys were generally small and rather fragmentary without an overall picture of Irian Jaya being developed.

During the early 1980's the Transmigration Programme stimulated the need for reliable and suitable scale land resource surveys. A high proportion of sites selected before the 1980's without adequate resource surveys were subsequently rejected after detailed field studies. Clearly there was a requirement for a province-wide study to provide a framework into which more detailed studies could fit.

A broad scale land resource study of Irian Jaya designed for development planning was completed in 1986 (RePPRrot Regional Physical Planning Programme for Transmigration). It provided a new and comprehensive resource data base drawn on improved and relatively accurate base maps. The RePPRrot study, which provided most data used in the previous section of this report, can be used effectively as a guide to the location of potentially suitable land that deserves more detailed investigations.

Since only a little over one quarter of the province is suitable for agriculture, more detailed land resource information would be required before implementing development projects, particularly to define small pockets of better than average land within land systems designated "not suitable" at the reconnaissance (1:250,000) scale.

**TABLE A3.3**

<table>
<thead>
<tr>
<th>Land use type</th>
<th>Area (Km²)</th>
<th>Percent of total land suitable land</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Suitable:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i) Wetland, dryland, tree crops</td>
<td>17,041</td>
<td>4.1</td>
</tr>
<tr>
<td>ii) Wetland crops</td>
<td>21,041</td>
<td>5.1</td>
</tr>
<tr>
<td>iii) Dryland and tree crops</td>
<td>31,433</td>
<td>7.6</td>
</tr>
<tr>
<td>iv) Dryland crops</td>
<td>722</td>
<td>0.2</td>
</tr>
<tr>
<td>v) Tree crops</td>
<td>23,394</td>
<td>5.6</td>
</tr>
<tr>
<td>vi) Fragmentally for tree crops</td>
<td>23,678</td>
<td>5.7</td>
</tr>
<tr>
<td>vii) Fragmentally for dryland</td>
<td>1,162</td>
<td>0.3</td>
</tr>
<tr>
<td>Crops</td>
<td>118,477</td>
<td>28.6</td>
</tr>
<tr>
<td>Total</td>
<td>414,400</td>
<td>100.0</td>
</tr>
</tbody>
</table>

* Excluding land within designated conservation areas. + Includes 24,862 km² suitable land unavailable in conservation areas.

Sources: IJROS 1987 and RePPRrot 1986
III. ECONOMIC DEVELOPMENT

A. Historical Aspects

In the early post-Dutch period, Irian Jaya was a very under-developed territory. The vast majority of the population still lived in the interior, under a subsistence economy. Only a few harbours existed along the coast. Biak and Jayapura had expanded considerably during World War II and had become significant trade centres for the infant but growing log export industry and general trade. Sorong was already the service centre of the small onshore oil industry which was in production long before the war.

In the late 1960's, following the full administrative integration of Irian Jaya into the Republic of Indonesia, the United Nations created the Fund of the United Nations for the Development of West Irian (FUNDWI). Using funds from the GOI (Government of Indonesia) and the Kingdom of the Netherlands, FUNDWI began with the implementation of a group of sectoral projects at the end of 1968.

The six main projects of FUNDWI were:
- Establishment of Development Institutions;
- Infrastructure Repair and Rehabilitation;
- Development of Forestry, Fisheries and Agriculture;
- Small Industries and Handicrafts;
- Development of Human Resources; and,
- FUNDWI Housing Projects.

These projects formed the first wave of development in Irian Jaya.

The total development budget for the 1968 to 1974 period was US$88,205,200 (45.9 percent from FUNDWI and 54.1 percent from GOI).

The FUNDWI projects were integrated with all of the development projects in Irian Jaya under REPELITA I (the GOI's first Five Year Development Plan for Irian Jaya, 1969-74). Based on the report of the first three years of REPELITA experience for Irian Jaya (Pengalaman Tiga REPELITA Bagi Irian Jaya), the development process of the province was practically in line with the FUNDWI project activities but human resources development lagged behind.

Since 1971, the Irian Jaya Joint Development Foundation (IJJDF; half FUNDWI and half Government of Indonesia funded) has been responsible for much of the development of the province. A large part of its development expenditure has been allocated to the maintenance of roads built during colonial times, to the improvement of sea and air transportation and to urban infrastructure. In addition, IJJDF has loaned over Rp 1.1 billion to rural indigenous smallholders for agriculture, livestock, fisheries and transportation.

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IJJDF has also helped establish four development companies:
- P.T. JODEFO : involved in the processing and marketing of rubber, cocoa, copra, soybeans and vegetables;
- P.T. YOTefa : the intercoastal shipping line;
- P.T. YOSIBA : an independent shipyard for constructing small ships (25 DWT-Dead Weight Tonnage);
- P.T. COKRAN : a joint venture cocoa estate.

Irian Jaya's economy since the early 1970's can be characterized as a dual economy consisting of an enclave industry sector (mining) and the rest of the economy. The enclave industry sector accounts for almost half of the Gross Regional Domestic Product (GRDP) (Table A3.4). Since 1976, the overall GRDP, expressed in 1983 constant dollars, has been on a decline due to fluctuations in the prices of primary industry products (mining). On the other hand, the non-mining GRDP has been growing steadily at an average annual growth rate of 10 percent. The non-mining sector has been fueled by the food production sector, trade and, above all, government, but forestry and fisheries have declined (Table A3.4).

TABLE A3.4

IRIAN JAYA GROSS REGIONAL DOMESTIC PRODUCT (GRDP) IN CONSTANT 1983 BILLION RUPIAH

<table>
<thead>
<tr>
<th>SECTOR</th>
<th>(a) 1990 GRDP</th>
<th>(b) 1980 GRDP</th>
<th>(c) 1980 EMPLOYMENT</th>
<th>(d) 1985 GRDP</th>
<th>(d) 1985 EMPLOYMENT</th>
<th>(e) 1995 GRDP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Agri/Fishing/Forestry</td>
<td>17.4</td>
<td>50.2</td>
<td>85.0</td>
<td>23.7</td>
<td>44.0</td>
<td></td>
</tr>
<tr>
<td>Food &amp; Tree Crops</td>
<td>8.8</td>
<td>27.0</td>
<td></td>
<td>1.9</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>Livestock</td>
<td>1.1</td>
<td>3.5</td>
<td></td>
<td>4.2</td>
<td>7.6</td>
<td></td>
</tr>
<tr>
<td>Fisheries</td>
<td>3.2</td>
<td>9.7</td>
<td></td>
<td>1.5</td>
<td>2.9</td>
<td></td>
</tr>
<tr>
<td>Forestry</td>
<td>3.3</td>
<td>10.0</td>
<td></td>
<td>1.5</td>
<td>2.9</td>
<td></td>
</tr>
<tr>
<td>Mining</td>
<td>67.3</td>
<td>-</td>
<td>-</td>
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<td>0.2</td>
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<td>100.0</td>
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<td>332.8</td>
<td>889.0</td>
<td>472.6</td>
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</tbody>
</table>

* GRDP excluding mining (GRDP = Gross Regional Domestic Product)

** Employment as a percentage of total working-age labour force

General Characteristics of Irian Jaya

With the non-mining sector progressing at an annual average rate of 10 percent and the population growing at an annual average rate of 3.3 percent (1976 - 1983; 4.2 percent 1980 - 1985), it is implied that the real wealth of the province is increasing. However, further examination of the aggregate figures reveals that, from 1979 to 1983, household consumption only grew at a rate of 3.5 percent, whereas government consumption increased by 8.6 percent and investment principally by non-Irianese increased by 21.1 percent.

This would suggest that most of the wealth of the province has not been passed on to the inhabitants. Furthermore, most of the evidence indicates that the distribution of wealth has been unequal between the urban and rural population, the Irian born and non-Irian born, and the coastal and highland populations.

During the 1980-85 period, most of the urban growth consisted of non-Irian born, mostly migrants from Sulawesi. This group has been responsible for 65 percent of the urban growth. Agricultural sector growth was mostly attributable to the transmigrant sector which was only 2 percent of the rural population in 1980 but is now over 9 percent. This does not mean that the Irian born have not been participating in greater numbers in the monetized economy. It emphasizes, however, that the benefits of the rapid growth in recent years have been enjoyed more by the non-Irian born population. Conscious efforts will have to be made to redress these imbalances.

B. Agriculture

Roughly 29 percent of the area of Irian Jaya is potentially suitable for agricultural production (Table A3.3). Agriculture, excluding fisheries and forestry, represented 18 percent of the GRDP in 1985 and about 34 percent when excluding mining. In 1980, the agricultural sector, including fisheries and forestry, represented 85 percent of the total employment of the province, excluding employment in mining. Agriculture is treated in greater detail in Annex 7 of the UNDP report on Irian Jaya Provincial Development.

a) General Practices

Shifting cultivation is a common practice throughout the province. It is a very successful approach for many areas with large land resources, but can have a negative impact in areas where the carrying capacity is being exceeded. The consequences are manifested by a reduction of the fallow period and/or the cultivation of marginal or unsuitable land.

In lowland areas adjacent to swamps, sago cultivation prevails, and in the highlands root crop production is mostly concentrated on valley floors, but also extends up the steeper mountain slopes. More recently, the transmigration programme has attempted to introduce high-yield agricultural production using intensive cropping schemes for wetland (rice) and dryland food crops. These schemes have met with mixed success; there have been several failures.

Coastal dwellers cultivate mixed crops using shifting cultivation and harvest sago where available. Permanent tree crop plantations also exist in several locations near the coast.

b) Transmigration

It is estimated that approximately 1,997,000 ha of land are suitable and available for about 929,300 families of transmigrants (using current farming models) (Fig. A3.11). The transmigration programme builds villages (SP) of up to 500 families into communities comprising three to four villages. It is basically an agricultural development programme which establishes fixed site, small lot (3.5 ha or 2 ha) agricultural production. Wetland, dryland and tree crop models have been initiated, other models are under investigation.

c) Plantations and Tree Crops

Three types of plantation models are currently promoted in Irian Jaya, under the direction of the Estate Crops Service of the Ministry of Agriculture (Dinas Perkebunan). These include:

i) nucleus estate with smallholders (NES/PIR)
   a) under government ownership (nucleus estate parts of transmigration settlements);
   b) under private ownership; (smallholdings in transmigration settlements)
ii) private or company estate (private sector estate) (PBS) and,
iii) estate development enterprise (PMU).

Tree crop development projects for the two existing PIR plantations (Fig. A3.12) consist of sizeable ventures that when and if completed should have a marked impact on the local economic structure. One, an oil palm project near Jayapura, is now planted on 1,500 ha, with a proposed expansion to a total of 20,000 ha. The other, an oil palm and cocoa project near Manokwari, has expansion plans for 35,000 ha, with currently only 10 percent planted, mostly with oil palm. Both of these schemes are operated under government holding as parts of major transmigration schemes. In the future, the nucleus estate will be retained by the government and smallholder blocks will be handed over to families, mainly immigrants.

The two principal private estate plantations comprise about 1,700 ha planted. The most important of these, a 700 ha mixed cocoa/coconut hybrid plantation south of Manokwari, has a proposed site expansion to 5,500 ha.

Smaller plantations (100-400 ha), under the PMU model, are the focus of a specific Estate Crops Service project. This project now covers 861 ha of coconut and 219 ha of cocoa plantation at several locations (Fig. A3.12). Inputs (seeds and fertilizer) and extension services are provided by the government, while labour for land preparation is provided by the local people.

Small scale tree crop plantations at the village level exist in several locations mainly for coffee, but small areas of rubber, nutmeg and clove are grown (Fig. A3.12). Village collection schemes for processed and unprocessed crops are operated by many different organizations, such as NGOs (non-government organizations), missions, and IJIDF.
C. Fisheries

Fisheries represent 4.2 percent of the GRDP and comprise 7.8 percent of the total provincial employment (excluding mining).

Although Irian Jaya has a relatively strong fishing sector which exports to Japan and Europe, the total current production of 39,000 tonnes per year is only a fraction of the estimated potential (see section II.F.).

Three types of fishing can be distinguished: marine fishing; brackish water pond culture; and fresh open water fishing (rivers and lakes). Marine fishing activities account for 66 percent of total registered catches, excluding most of the subsistence economy. Brackish water pond culture and fresh open water fishing are still embryonic, with only very small experimental projects being tried so far.

Local populations harvest marine fish for subsistence. Near urban centres, relatively good markets for fresh fish encourage production for cash sales.

The non-industrial fisheries sector has not experienced any significant growth, largely because fishing is still artisanal and a lack of skilled labour, entrepreneurship, capitalization, and established markets and transportation infrastructure tends to inhibit growth. Inland fisheries are treated in Annex 10 of the UNDP report on Irian Jaya Provincial Development.

D. Forestry

While exploitable forests are estimated to cover 54 percent of the total land area of Irian Jaya, forestry is a largely untapped resource. Its contribution to the GRDP has declined from its 1980 level of 3.3 percent to 1.5 percent in 1985; if mining is excluded the decline is even more marked, showing a decrease from 10.0 percent to 2.9 percent over the same period.

Unlike the high value dipterocarp forests of Kalimantan, the forests of Irian Jaya contain few dipterocarps among a diverse range of species. Many species are not established on the world market, a major commercial obstacle. Furthermore, commercially interesting timber is scattered over extensive areas, incurring high extraction costs. Other problems for the provincial forest industry include difficulties with marketing, manufacturing, and handling of the newer products. The inability to provide constant supplies of quality woods for export has also hampered the establishment of a permanent, large-scale forest industry in the province.

These difficulties, combined with a lack of skilled labour, have contributed to the fact that, of the 80 concessions granted in the past (Fig. A3.13), only two continued with logging and milling operations in 1987.

The forest industries of Irian Jaya now are at a turning point after exhibiting poor performance for the last 10-15 years. There are signs that the industry is entering a period of modernization and expansion after a period of stagnation following the total ban on log exports in 1985. Early indications of these developments are apparent along the central north coast with industrial foc at Biak and Nabire for integrated wood-using industries including sawn timber, plywood and blockboard manufacture. In the southeast a large pulp mill complex has been proposed for an area near Bade and several logging concessions are soon to be reassigned in Kabupaten Merauke.

Over the next few years substantial investments are likely to be made by forest industries with scant knowledge of the forest resource and its appropriate management and use.

Present logging concession areas frequently conflict with recommended land use categories derived following recent (1986) studies of the land systems of Irian Jaya (compare Figs. A3.13 and A3.16). Of particular concern are the encroachments of concessions on recommended and gazetted conservation areas and the scant concern paid to the proprietary rights of indigenous peoples.

The prospect of increasing land use conflicts in the vicinity of large industrial forestry units calls for intervention now rather than later so that excessive delay is not caused to soundly planned initiatives which private entrepreneurs are prepared to take in the near future, while at the same time ensuring maximum benefits accrue to the indigenous population.

This intervention should take the form of constructive participation of appropriate government agencies in the development process, particularly in regard to the social and physical environmental impacts of industrial forestry units. These interventions for the large part should be financed by the forest industry, but the government agencies ultimately responsible for the conservation and wise use of the forest resources of Irian Jaya, i.e., the Ministries of Forestry and of Population and Environment, must take a leading role supported by donor funds and NGOs where necessary.

The World Bank has financed a national Forestry Institutions and Conservation Project (US$ 34 million) which has just become operational. Activities of relevance to Irian Jaya include:

(a) developing appropriate strategies for forest management including policies and incentives for sustainable development of natural forest and tree plantation development where appropriate, and for limiting the more destructive forms of shifting cultivation while ensuring welfare of local people,

(b) strengthening forestry research through improved planning, management and funding of adaptive research,

(c) strengthening information for subsectoral planning, through forest inventory focussed on priority areas for forestry development,

(d) improving Ministry of Forests’ manpower development planning and training capacity and,

(e) preparing investment projects consistent with subsectoral strategy recommendations.

Because of these ongoing World Bank supported activities, the Mission has not prepared an industrial forestry component in the present Project. The output from the World Bank forestry project mentioned earlier would provide benchmark information which would be acted on by the proposed Provincial Land Resources Evaluation and Mapping Unit (see section II E b).
General Characteristics of Irian Jaya

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E. Non-Rural Economic Development

This category includes mining, secondary and tertiary (industrial) sectors and investment.

VI. DEVELOPMENT PROBLEMS

A. Development of the Province

Irian Jaya is one of several provinces of Indonesia which remain comparatively undeveloped, primarily because of an inherent shortage of accessible natural resources (minerals, timber, arable land) which can be exploited economically, but also because local manpower is insufficient in numbers, education or awareness.

A number of indicators can be used in assessing the level of development of Irian Jaya relative to other provinces in Indonesia from 1980 - 1985. Irian Jaya is the fourth most urbanized province but has the lowest level of manufacturing. Irian Jaya exceeded national per capita figures in only two commodities - coconuts and marine fish. The province's poor 1986 per capita agricultural performance demonstrated the infancy of the non-mining primary sector. This was in spite of ten years' continual growth of 10 percent in the agricultural sector's contribution to GRDP, faster than for any other provincial group. Irian Jaya's growth in manufacturing and in trade services was also faster than the national average. However, these apparently favourable growth figures were distorted because of the small base and the fact that transmigration development activities contributed to most of the growth, not areas inhabited mainly by the indigenous population.

In order to try to improve Irian Jaya's relative development status, central government expenditure (APBN-national budget-and INPRES) was 142 percent higher per capita than the national average. Expenditure on the administration and infrastructure (schools and roads) accounted for much of this. Little of the funds reached the people at grass roots level where it was desperately needed.

Because of its large size Irian Jaya still has the lowest level of accessibility. Services infrastructure is also unevenly distributed. Piped water availability appears high in Irian Jaya but this is skewed by the high level of urbanization. Rural electricity supplies are least developed in Irian Jaya.

Irian Jaya had the highest level of per capita health care provision, expenditure and paramedics. These high levels of inputs are not reflected in better health of the population; incidences of malaria and malnutrition in the province are twice the national average. Mainly, the reason for this is the bias caused by the high concentration of population, particularly immigrants, in towns and transmigration centres which are much more lavishly provided with medical facilities compared with the sparsely populated hinterland.

The situation is similar with regard to education. Although there is a high level of per capita provision of primary schools, the per capita provision of primary teachers is low, though existing posts are all filled.

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General Characteristics of Irian Jaya

Irian Jaya has the lowest proportion of students completing primary education. The situation with regard to secondary education is somewhat different, probably because most (secondary) schools are in urban areas. Irian Jaya conforms to the national average for SMP students/1,000 population.

An inter-provincial analysis helps position the relative level of Irian Jaya's development compared to other provinces. In regional terms the province groups can be categorized as having:

- mature mixed economies: Java
- evolving mixed sector economies: Sumatera, Kalimantan
- established primary sector economies: Bali, Sulawesi
- evolving primary sector economies: Maluku
- transitional sector economies: Nusa Tenggara Barat, Nusa Tenggara Timur
- pioneer economies: Irian Jaya

Irian Jaya is categorized as a pioneer economy because it is dependent on a very restricted range of primary produce with the most important contributors to GRDP (mining and oil) having only limited development impact outside their immediate areas of operation. In all other respects the province is dependent on agriculture but the agricultural sector is only just beginning to be organized to produce significant exports and most production is still for domestic consumption either as subsistence only or for sale to local urban centres. Irian Jaya has exceptionally low levels of industrialization and optimal accessibility, a situation which is magnified by the high level of urbanization. Utilities and services provision is uneven, benefiting only those within reach of the enclaves towns, where apparently high levels of secondary school attendance probably hide significant age slippage and low pass rates for Irianese. A high population growth is obtained by net in-migration, both government-sponsored and spontaneous. The immediate goal of economic development in Irian Jaya must be to raise the province from 'pioneer economy' to 'evolving primary sector economy' status.

B. Constraints to Development

While resource opportunities undoubtedly exist in Irian Jaya, the rate at which long-term development can be realized will be determined by the speed with which key constraints can be progressively overcome and removed.

The key constraints can be summarized as:

Economic constraints:
- low commodity prices,
- inadequate domestic and external markets,
- high transportation costs and lack of infrastructure,
- small labour force.

Social constraints:
- lack of awareness of income generating work,
- lack of aptitude for sustained work,
- lack of understanding and co-operation between tribal groups and between indigenous and migrant people,
- low levels of education, health and nutrition.
Institutional constraints:
- lack of financial institutions outside the main towns,
- low penetration of administrative and other services,
- standard administrative structure and practices poorly adapted to local situation,
- low levels of staffing of key support institutions,
- low levels of participation by Irian-born people.

Service constraints:
- concentration of existing services in main towns,
- lack of rural service centres and marketing structures,
- poor transportation links to and within areas with development potential,
- poor communications generally outside the urban areas.

Resource constraints:
- rugged and inaccessible terrain,
- large tracts of land unsuitable for sustainable agriculture because of infertile soils and steep slopes,
- forest resources with low commercial value per unit area,
- mineral resources only partly explored,
- inadequate procedures for dealing with traditional systems of land tenure and proprietary rights to natural resources.

Some of these constraints can only be reduced by action at the national level, taking into account international market influences and, in some cases, requiring legislative changes. Others can be removed through action at the provincial or regional level by altering existing policies, strategies and initiatives or by establishing new ones. This project seeks to support these changes and remove constraints to the extent possible.

C. Potential for Balanced Development

Current economic development in the province has resulted from a very slow identification of natural resources, often inappropriate attempts to reinforce the subsistence sector and some attempts at establishment of estate crops in which indigenous landholders have gained none or little equity. Not all sections of the rural population have benefited equally. Some groups have been particularly disadvantaged during establishment of estates and transmigration sites.

The fresh direction in rural development should be to expand smallholder production of cash crops and make greater use of available labor. Establishment of a comprehensive market sector would follow with marginal land manpower development and evolution of a full range of marketing and service industries. Finally the provincial economy would become export-oriented with development of the secondary and tertiary sectors. The pace of these changes will be slow and cannot be forced. The time required to implement the changes mentioned above will be more likely 20-25 years and certainly not as little as 5-6 years.

The first step by the government in development of the pioneer economy has been to establish a universal basic administration. Unfortunately, the imposition of the standard administrative pattern from central Indonesia has not been effective in moving appropriate development forward in this large, ecologically diverse province. Critical problems requiring area-specific solutions. It has been recognized that in the future primary focus should be on the indigenous Irianese. The direct consequence of this is that the short and medium term emphasis should not be on major economic development projects because of the people’s limited experience with and ability to respond to modern development. This strategy has been put forward in response to the government’s goal of equity to correct a perceived bias towards other groups. Currently, there is a real concern that there is no shift in priorities towards the Irianese; there could well be further social alienation which might, in the long term, result in severe security problems.

What is required is eco-development, that is ecologically sound development, meaning both the social and physical environments must be taken into account and given high priority during planning and implementation of rural development. The province can be divided into two main eco-development regions - the Lowlands and the Highlands. Each of these can be further subdivided into Agroecological zones (Fig. A3.14). These are different in respect of natural features (Figs. A3.2-4, A3.6-8, A3.10, A3.14), average population density (Fig. A3.15), ethnic grouping of the indigenous population (Fig. A3.14), subsistence activities (Table A3.5), human carrying capacity of the land (Fig. A3.15), agricultural development potential (Fig. A3.15), accessibility (Table A3.5), level of past support (Table A3.5) and area set aside for nature conservation (Fig. A3.16).

a) Lowlands

I) Coastal Plains

Natural features: The relatively dry, more easily accessible coastal lowlands are depicted as narrow and discontinuous bands along the north coast from the PNG (Papua New Guinea) border to the Mamberamo River, around Nabire, along the north coast of the Bird’s Head from Ransiki to Sorong, along much of the southern coast of the district of Fak Fak and in the drier southern part of the district of Merauke. The area also includes the larger offshore islands Yapsen, Biak Numfor, Waisoro, Salawati and Misool and the numerous smaller islands (Fig. A3.14).

Economic features: The zone’s suitability for dryland agriculture means it contains most of Irian Jaya’s commercial estate agriculture and all the transmigrant sites settled to date. Consequently, a very large proportion of recent development expenditure has been spent in this area, but little has reached the indigenous people in traditional hamlets.

Perhaps 70 percent of the area’s indigenous farmers are in a transitional stage between subsistence farming and cash cropping, or are already predominantly cash croppers selling produce to the towns. They can grow a diverse range of crops. In transmigration areas rice, maize, groundnuts, soybeans, cassava, sweet potatoes and tea crops are grown. Subsistence activities include gardening, pig husbandry and fishing.

The Coastal Plains rural populations increasing involvement in the cash economy, their comparatively advanced state of farming, their relatively high standard of living (especially near the towns) and their accessibility to urban social and commercial services means that they are much better off than those living in other RDAs (Rural Development Areas).
Socio-cultural features: 1985 population of the Coastal Plains area included 330,000 people living in towns, 87,000 transmigrants and 173,000 predominantly indigenous rural people. The area therefore comprised 29 percent of the province's rural population, but the number of transmigrants has since increased to more than 120,000, making a total of about 300,000 rural dwellers. Most of the transmigrants and other non-urban dwellers live reasonably close to the towns so that there are extensive intervening areas with very low population densities.

ii) Coastal Swamps and Rivers

Natural features: The remainder of the lowland areas of Irian Jaya are in the Coastal Swamps and Rivers category. This is made up of both wetland and dryland areas currently only accessible by water or air transport. The principal areas lie along the east side of Cenderawasih Bay, along the southern coast of Sorong, around Bintuni Bay in the Bird's Head and throughout the district of Merauke around the Digul and other major river systems.

Economic features: The zone's potential for wetland agricultural development remains virtually unexploited. In addition to agricultural development to improve local food supplies, opportunities for cash cropping include semi-commercial sago production, crocodile farming and prawn culture, but none of these activities has been established yet on any significant scale. Rural households are wholly or mainly in the subsistence sector and are dependent on wild or cultivated sago, fishing, hunting and gathering activities. Living standards are moderate to low.

Although coastal and river transport can be easily improved, the zone's farmers and fishermen are disadvantaged by their distance from urban markets, low population density and lack of commercial opportunities. Only a very minor share of the recent rural development effort has been spent in the Coastal Swamps and Rivers Zone.

Socio-cultural features: The estimated 1985 population of the Coastal Swamps and Rivers zone was only 280,000 (25 percent of the provincial rural population). It is very thinly dispersed, with local concentrations along the major rivers and at places where missions have long been established.

iii) Inland Foothills and Small Valleys

Natural features: Between the lowland coastal areas and the densely populated highlands lies the intermediate Inland Foothills and Small Valleys RDA. The main areas are in the Bird's Head and the Bird's Neck, the higher ground around the upper Mamberamo river, most of the inland part of the district of Jayapura and a narrow belt along the southern foothills of the cordillera of the Central Highlands. In a few places the foothills reach the coast.

Economic features: Living standards are relatively low compared with those of the Coastal Plains Zone but perhaps higher than those of the Coastal Swamps and Rivers Zone. Except in the Bird's Head and near Jayapura, where access to urban markets is possible, farmers in the Inland Foothills and Small Valleys Zone live far from potential markets and urban services. Very little of the rural development effort has been directed to this zone.

The principal constraints to development are low population numbers, the fragmented pattern of cultivable land, poor accessibility and lack of markets; the small, fast flowing rivers are generally unsuitable for navigation.

Social features: In 1985, only some 40,000 people (3.5 percent of the provincial rural population) lived in the zone. The scattered households are wholly or mainly in the subsistence sector, relying on gardening, pig raising and hunting and gathering for food. The dissected terrain and limited soil fertility restricts commercial cropping potential, although most coastal zone cash crops could be grown there.

b) Highlands

i) Hill Slopes in Narrow Valleys

Natural features: The Central Highlands include the entire mountain cordillera in the districts of Paniai and Jayawijaya. This zone takes in the steepest slopes and most rugged mountains.

Narrow valleys are ones in which there is very little flat or gently sloping ground in the valley bottom and high-energy streams carry heavy sediment loads. The potential for erosion of cultivated land on slopes is severe.

Economic features: Outside of some minimal NGO activity with introduction of coffee and temperate vegetables, there has been practically no systematic rural development in this zone. The principal constraints are lack of agricultural research on appropriate cash crops and on environmentally suitable farming models. Access is poor, there are no roads, air transport is by small, single-engined mission aircraft operating from a few, small, scattered airstrips. Market opportunities for cash crops are virtually non-existent.

Social features: The population is about 400,000 (38 percent of the provincial rural population). They are almost exclusively Irianese. These highlanders are subsistence gardeners and pig raisers; they are heavily dependent on sweet potato as a staple. A form of cyclical cultivation is practised but population increases in a number of critical areas (Fig. A3.16), e.g. at Anggunuk, have resulted in decreasing fallow periods, soil loss and land deterioration. Excessive tree felling has occurred both for firewood and for bringing even steeper slopes under cultivation. Standards of living are low, with high levels of morbidity associated with malnutrition. Localized famines result from overdependence on the frost and drought sensitive sweet potato. Attitudes to development vary considerably from area to area depending on the scope and type of contact with outsiders and time elapsed since first contact.

ii) Broad Valleys

Natural features: These are distinguished from the former category by their size and the broad, flat, often poorly drained plain at the valley bottom. The largest is the Baliem Valley in which Wamena is located. The Baliem Valley is some 15 km wide by 45 km long at an elevation of about 1500 m.

Economic features: Low level NGO rural development activities have established agronomic suitability for coffee, temperate vegetables, rice and small animal husbandry. Growing of vegetables for export by air is increasing. There is a pioneer honey production effort. Apart from these initiatives there has been no systematic, appropriate
rural development programme in these valleys. The principal constraints are lack of access and lack of research on appropriate cash crops and on environmentally suitable farming models.

Social features: The population of the Broad Valleys is about 100,000 or 8.7 percent of the rural population. The Baliem Valley contains one of the largest concentrations of indigenous people in Irian Jaya. Like other highlanders, the inhabitants of the broad intermontane valleys are subsistence gardeners and pig raisers. Sweet potato is the staple. Population increase has caused cultivation of the staple to be carried on farther and farther up the steep valley sides. Loss of forest cover on steep slopes has been severe and short garden fallows do not allow forest to regenerate. Standards of living are low with high levels of morbidity.

iii) Lakeshore Plains

Natural features: This zone has a restricted occurrence around Panrai, Tigi, and Tage lakes (Enarotali, Waghete, Moanemani) in the west-central highlands at an altitude of about 1,750 m. The swampy lake margins and lake shore plains extend into long, narrow, rather swampy valleys, with alluvial-colluvial fan cones on valley sides. Drainage of the flat land is poor.

Economic features: NGO rural development activities have established agronomic suitability for coffee and small livestock (mainly rabbits). The growing of coffee for export by air is increasing. Apart from these efforts there has been practically no systematic rural development. The main constraints are lack of access and lack of agricultural research on appropriate cash crops and on conservation farming models. This region will be the first highland region to be connected to the coast by road (Enarotali to Nabire).

Social features: The population of about 40,000 is 3.5 percent of the rural population. This is the second largest concentration (after the Baliem Valley) of indigenous people in the province. In an effort to ease the pressure some people have been resettled to the coast near Nabire. The people of the lakes area are subsistence gardeners, pig raisers and fishermen. Sweet potato is the staple. Loss of forest cover because of fuelwood gathering has been severe.

A summary of the main characteristics and future development directions for the six Rural Development Areas is given in Table A3.5. Socio-cultural aspects of the population are amplified in Annex 5, and Land Tenure and Rights to Natural Resources are treated in Annex 6 of the UNDP report on Irian Jaya Provincial Development.

Endnotes

1 Taken from the Irian Jaya Provincial Development Fund Project Preparation Mission Report, May 1989, Annex 3.

2 Dr. John Davidson worked in Irian Jaya for over six months on three major visits in 1975 (to Lake Panrai), 1987 and 1989. He has been a member of the IUCN Commission on Ecology over the past decade and has had a number of papers and booklets published by them.
### Table A3.5

**RURAL DEVELOPMENT AREAS SUMMARY OF CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Rural Development Area</th>
<th>No.</th>
<th>Density</th>
<th>Description Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LOW LANDS:</strong> Coastal Plains</td>
<td>300</td>
<td>Med/Low</td>
<td>Topography: Relatively flat; Road/River Access: Good; Cropping Potential: High; Land Vulnerability: Low; Relative Living Standard: High; Human carrying capacity: High; Subsistence Activities: Gardening, fishing, tree crops.</td>
</tr>
<tr>
<td><strong>Coastal Swamps and Rivers</strong></td>
<td>280</td>
<td>Low</td>
<td>Topography: Flat; Road/River Access: Medium for rivers, poor to none for roads; Cropping Potential: Low to Medium; Land Vulnerability: Medium; Relative Living Standard: Low; Human carrying capacity: Sago gathering, hunting, fishing.</td>
</tr>
<tr>
<td>Inland Foothills</td>
<td>40</td>
<td>Low</td>
<td>Topography: Hilly; Road River Access: None to poor; Cropping potential: Low to Medium; Land Vulnerability: Medium; Relative Living Standard: Low; Human carrying capacity: Medium; Subsistence Activities: Pig raising, hunting, gardening.</td>
</tr>
<tr>
<td><strong>HIGHLANDS:</strong> Hill Slopes in Narrow Valleys</td>
<td>Low, but locally very high</td>
<td>Topography: Very steep, mountainous, little flat land; Road/River Access: none; Cropping Potential: Low; Relative Vulnerability: Very high; Relative Living Standard: Low; Human carrying capacity: Very Low; Subsistence Activities: Gardening (sweet potatoes), pig raising.</td>
<td></td>
</tr>
<tr>
<td>Broad Valleys</td>
<td>Very high</td>
<td>Topography: Flat valley bottoms, steep adjacent slopes; Road/River Access: None; Cropping Potential: Medium; Land Vulnerability: Low on flats, high on slopes; Human carrying capacity: High; Subsistence Activities: Gardening (sweet potatoes), pig raising.</td>
<td></td>
</tr>
<tr>
<td>Lakeshore Plains</td>
<td>High</td>
<td></td>
<td>Topography: Flat lakeshore plains, steep adjacent slopes; Road/River Access: None; Cropping Potential: Medium; Land Vulnerability: Low on plains, high on slopes; Human carrying capacity: Medium; Subsistence Activities: Gardening (sweet potatoes), pig raising.</td>
</tr>
</tbody>
</table>

### AND FUTURE DEVELOPMENT DIRECTIONS

<table>
<thead>
<tr>
<th>Share of Previous Development Resources</th>
<th>Development Directions</th>
<th>Priority for Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interventions, Activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very high but concentrated on towns and transmigration</td>
<td>Productivity; Improvements; Marketing; Processing; Coastal shipping; Ocean and brackish water fisheries; Estate cropping; Deer management; Management of conservation areas.</td>
<td>Low and near transmigration centres, Medium elsewhere.</td>
</tr>
<tr>
<td>Negligible to Low</td>
<td>Develop productivity potential, especially tree crops; Improve river access; Commercial culling of managed wildlife; Freshwater fisheries; Emphasize traditional crops (e.g. sago); Management of conservation areas.</td>
<td>Medium</td>
</tr>
<tr>
<td>Negligible to Low</td>
<td>Improved air, road and river transportation; Food crop and small animal diversification; Conservation farming; Management of conservation areas.</td>
<td>Low</td>
</tr>
<tr>
<td>Negligible</td>
<td>Remedial Nutrition; Famine and Epidemic Control Programme; Arterial and feeder road access; Cash crop based conservation farming; Freshwater fisheries; Food crop and small animal diversification; Improved air service; Management of conservation areas.</td>
<td>Very high</td>
</tr>
<tr>
<td>Negligible</td>
<td>Remedial Nutrition/Famine and Epidemic Control Programme; Arterial and feeder road access; Cash crop based conservation farming; Freshwater fisheries; Food crop and small animal diversification; Improved air service.</td>
<td>High</td>
</tr>
<tr>
<td>Negligible</td>
<td>Remedial Nutrition/Famine and Epidemic Control Programme; Arterial and feeder road access; Cash crop based conservation farming; Freshwater fisheries; Food crop and small animal diversification; Improved air service.</td>
<td>High</td>
</tr>
</tbody>
</table>

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50 51
THE PEOPLE OF IRIAN JAYA

Dr. John Davidson  
United Nations Joint Development Project


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Figure A5.1 Population

I. DEMOGRAPHIC BACKGROUND

Reliable population data for Irian Jaya are very scarce. The last census was in 1980; an Intercessal Population Survey was conducted nationally in 1985. Annual statistics are collected at the village level, but these often appear to be incompatible with the census figures. Time series are not long enough for trends to be clearly established. Apart from the numbers of transmigrants settled, few statistics are collected on in-migration to Irian Jaya from other provinces or on out-migration; there are few data on population movement within the province and none on movement within individual districts. Data are thus lacking on rural to urban migration, which has been a major contributor to urban growth in recent years.

According to the 1985 Intercessal Population Survey, for the period 1980 to 1985, the total population of the province increased from 1,174,000 to 1,450,000, an increase of 276,000 over five years; i.e., an annual rate of 4.2 percent. Net in-migration was just over 100,000 people. About 87,000 people were settled on transmigration sites during this five-year period; of these perhaps 85 percent (74,000) came from outside the province. The total population increase can be broken down as follows (IJRDS = Irian Jaya Rural Development Study, 1988):

| Natural increase | 174,000 | 63% |
| Transmigration from other provinces | 74,000 | 27% |
| Other sources (including spontaneous immigration) | 28,000 | 10% |

**Total** 276,000 100%

If this breakdown is correct, the rate of natural increase of the resident population was approximately 2.8 percent per annum. The distribution by districts and composition of the provincial population in 1985 are shown in Table A5.1. Population density is indicated in Fig. A5.1.

**TABLE A5.1 THE DISTRIBUTION AND COMPOSITION OF THE PROVINCIAL POPULATION IN 1985**

<table>
<thead>
<tr>
<th>District</th>
<th>Urban</th>
<th>Rural</th>
<th>NON TRANSMIGRANT</th>
<th>TRANSMIGRANT*</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jayapura</td>
<td>103,800</td>
<td>83,000</td>
<td>12,600</td>
<td>95,600</td>
<td>199,400</td>
</tr>
<tr>
<td>Sorong</td>
<td>71,000</td>
<td>77,000</td>
<td>26,100</td>
<td>103,100</td>
<td>174,100</td>
</tr>
<tr>
<td>Manokwari</td>
<td>43,500</td>
<td>56,300</td>
<td>11,200</td>
<td>67,500</td>
<td>111,000</td>
</tr>
<tr>
<td>Biak</td>
<td>36,700</td>
<td>44,100</td>
<td>-</td>
<td>44,100</td>
<td>80,800</td>
</tr>
<tr>
<td>Merauke</td>
<td>26,500</td>
<td>154,500</td>
<td>28,200</td>
<td>182,700</td>
<td>209,200</td>
</tr>
<tr>
<td>Paniai (Nabire)</td>
<td>15,900</td>
<td>192,300</td>
<td>9,300</td>
<td>201,600</td>
<td>217,500</td>
</tr>
<tr>
<td>Fak Fak</td>
<td>18,000</td>
<td>55,400</td>
<td>-</td>
<td>55,400</td>
<td>73,400</td>
</tr>
<tr>
<td>Yapen Waropen</td>
<td>14,200</td>
<td>45,200</td>
<td>-</td>
<td>45,200</td>
<td>59,400</td>
</tr>
<tr>
<td>Jayawijaya (Wamen)</td>
<td>5,900</td>
<td>322,200</td>
<td>-</td>
<td>322,200</td>
<td>328,100</td>
</tr>
</tbody>
</table>

**TOTAL** 335,500 1,030,000 87,360 1,117,400 1,452,900

*settled at end of 1984; includes local transmigrants.

Sources: Intercessal Survey 1985; Department of Transmigration; IJRDS.

II. THE INDIGENOUS POPULATION

Between 80 percent and 85 percent of the population is Irian born; the majority of these are indigenous Irianese; the remainder are children of immigrants.
The original inhabitants remain dominant in rural areas, where 95 percent of the population is Irian born, with even higher percentages in more remote areas well away from the coastal towns. In contrast, the Irian born constitute only 33 percent of the urban population. Indigenous Irianese probably represent less than 20 percent of the urban population.

There is considerable physiological and cultural variation among the Irianese, who speak 240 distinct languages (of which only 23 have more than 10,000 speakers) and have differing systems of tribal organization, kinship, leadership and settlement pattern. Traditionally, most neighbouring groups were often antagonistic towards each other in the past and tribal warfare was common in modern times. Social tensions can easily result where tribal groups become mixed, as in the towns or resettlement areas, or where outsiders enter tribal areas, especially if traditional land and hunting rights are not respected or are misunderstood.

Many of the differences among indigenous groups have come about because of the particular environmental characteristics of the areas in which they live, so that the inhabitants of each of the main rural areas have evolved different traditions for subsistence living. Moreover, neighbouring groups within the same region often have markedly different cultural attributes and attitudes, and they may respond in diverse ways to constraints (such as overpopulation and environmental deterioration), new opportunities (such as education, improved accessibility), new agricultural methods and wage employment opportunities. These different responses may, in part, now be determined by past experience with missionaries and other outsiders. Attitudes to work are also conditioned by the fact that, in most indigenous cultures, women do the bulk of the daily work while men have little concept of (or enthusiasm for) working for reward. The gradual abandonment of ritual, which took up much of their time, has resulted in many groups becoming apathetic and disoriented (for more information see Section VI).

In comparing people in the highlands and lowlands, generally the former are more open to new ideas and willing to put in more work to achieve results, probably because they are driven by circumstances to improve the very tenuous situation in which they find themselves i.e., they do not want to be left behind in the market economy they see developing around them.

III. URBANIZATION

In 1985, 23 percent of Irian Jaya's population lived in the towns. As Table A5.2 shows, during the 1980-1985 period, the population of the five largest towns increased by 112,000 (10.7 percent per annum). According to the Intercensal Survey, two-thirds of Irian Jaya's urban population was not Irian born. Between 1980 and 1985, 65 percent of urban in-migration was inter-provincial and 35 percent intra-provincial (i.e., across district boundaries). These percentages exclude rural to urban migration within each district, for which no statistics are available. It is also unlikely that the proportions were the same for all towns.

### Table A5.2: Urban Population 1980-1985

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Jayapura</td>
<td>74,300</td>
<td>103,800</td>
<td>6.9%</td>
<td>31%</td>
</tr>
<tr>
<td>Sorong</td>
<td>33,300</td>
<td>71,000</td>
<td>16.3%</td>
<td>18%</td>
</tr>
<tr>
<td>Manokwari</td>
<td>24,500</td>
<td>43,500</td>
<td>12.2%</td>
<td>21%</td>
</tr>
<tr>
<td>Merauke</td>
<td>12,400</td>
<td>26,600</td>
<td>16.4%</td>
<td>11%</td>
</tr>
<tr>
<td>Blak</td>
<td>23,900</td>
<td>36,700</td>
<td>8.0%</td>
<td>6%</td>
</tr>
<tr>
<td>Subtotal</td>
<td>169,300</td>
<td>281,500</td>
<td>10.7%</td>
<td>87%</td>
</tr>
<tr>
<td>Nabire</td>
<td>-</td>
<td>15,900</td>
<td>-</td>
<td>5%</td>
</tr>
<tr>
<td>Fak Fak</td>
<td>-</td>
<td>18,000</td>
<td>-</td>
<td>4%</td>
</tr>
<tr>
<td>Serul</td>
<td>-</td>
<td>14,500</td>
<td>-</td>
<td>2%</td>
</tr>
<tr>
<td>Wamena</td>
<td>-</td>
<td>5,900</td>
<td>-</td>
<td>2%</td>
</tr>
<tr>
<td>All Towns</td>
<td>335,500</td>
<td></td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Regional Cities Water Supply Project Preparation

About 88 percent of all urban growth occurred in the five principal mainland towns: Jayapura, Sorong, Manokwari, Merauke and Nabire (Table A5.2). All of these experienced rural to urban migration originating primarily in the highlands (Jayapura and Nabire), the Bird's Head (Sorong and Manokwari) and the southern lowlands (Merauke). Inter-provincial in-migration was most marked in Jayapura, Sorong, Merauke and, probably, Manokwari.

IV. TRANSMIGRATION

In 1985, more than 5 percent of the rural population was non-Irian born; two-fifths of these migrants had arrived since 1980, largely under the transmigration programme. By March 1988, 15 major transmigrant schemes covering some 60,000 hectares had been developed and settled (Fig. A5.11 see previous article). Design plans drawn up by consultants (Phase II or Phase III) cover a further 220,000 hectares. Official figures indicate that at the end of 1988 about 44,000 families should have been settled, raising the non-Irian born rural population to over 9 percent. Actual and proposed settlement to the end of 1988 are summarized in Table A5.3.

Irian Jaya first received substantial numbers of transmigrants under REPELITA (5-year development plan) III, during which more than 80,000 people were settled (nearly 20,000 families). More than one-third of these went to Merauke and another third to Sorong; the remainder were evenly divided between Jayapura, Manokwari and lowland Panial. The annual settlement rate was about 3,800 families.

The rate was more than halved, to about 1,600 families a year, in the early years of REPELITA IV, partly because of major cutbacks in the national program and partly because of logistical problems in implementation. The highest numbers of settlers were sent to the district (kabupaten) of Jayapura where more than 1,500 families were settled, and Manokwari, which received more than 1,200 families. Settlement in Merauke and Sorong was much reduced and no families went to Panial; a very small number was located in Fak Fak. The most dramatic reduction was in Merauke, which only received 13 percent of the total.
### TABLE A5.3: TRANSMIGRATION SETTLEMENT BY KABUPATEN TO END OF 1988

<table>
<thead>
<tr>
<th>Districts</th>
<th>REPELITA II</th>
<th>REPELITA III</th>
<th>REPELITA IV to '86</th>
<th>REPELITA IV 1987/88</th>
<th>Total to end 1988</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Families %</td>
<td>Families %</td>
<td>Families %</td>
<td>Families %</td>
<td>Families %</td>
</tr>
<tr>
<td>Jayapura</td>
<td>637 41.7</td>
<td>2,274 11.7</td>
<td>1,911 39.5</td>
<td>3,649 19.8</td>
<td>8,472 19.1</td>
</tr>
<tr>
<td>Merauke</td>
<td>169 11.1</td>
<td>6,783 35.0</td>
<td>636 13.2</td>
<td>9,173 49.8</td>
<td>16,761 37.8</td>
</tr>
<tr>
<td>Manokwari</td>
<td>280 18.3</td>
<td>2,252 11.6</td>
<td>1,318 27.3</td>
<td>894 4.9</td>
<td>4,744 10.7</td>
</tr>
<tr>
<td>Paniai</td>
<td>291 19.1</td>
<td>2,050 10.6</td>
<td>-</td>
<td>500 2.7</td>
<td>2,841 6.4</td>
</tr>
<tr>
<td>Sorong</td>
<td>150 9.8</td>
<td>6,032 31.1</td>
<td>724 15.0</td>
<td>1,937 10.5</td>
<td>8,843 19.9</td>
</tr>
<tr>
<td>Fak Fak</td>
<td>- -</td>
<td>- -</td>
<td>245 5.0</td>
<td>2,629 12.3</td>
<td>2,505 5.6</td>
</tr>
<tr>
<td>Yapen</td>
<td>- -</td>
<td>- -</td>
<td>-</td>
<td>200 -</td>
<td>200 -</td>
</tr>
<tr>
<td>Waropen</td>
<td>- -</td>
<td>- -</td>
<td>-</td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td>Irian Jaya</td>
<td>1,527 100.0</td>
<td>29,391 100.0</td>
<td>4,835 100.0</td>
<td>18,413 100.0</td>
<td>44,166 100.0</td>
</tr>
</tbody>
</table>

Source: Kantor Wilayah Departemen Transmigrasi Propinsi Irian Jaya

In part this reduction for Merauke was due to lack of supply of transmigrants and in part due to a lack of drinking water. By the beginning of 1987, Merauke had 3,000 transmigrant houses that had been built but remained vacant and a further 5,300 houses lots on which houses had not been constructed yet. Thus, to achieve the district (kabupaten) target of 9,200 families (46,000 people) at the end of 1988, only 900 additional house lots were required. It was originally intended to settle more than 9,000 families in other districts, with the greatest numbers going to Jayapura (20 percent of the total), Fak Fak (12 percent) and Sorong (10 percent). Yapen Waropen received its first transmigrants during 1988. If these targets are achieved by March 31, 1989, the annual rate of settlement under REPELITA IV would have been 4,650 families, 20 percent higher than under REPELITA III.

Targets are still being calculated for 2,000 to 2,500 families per year, totalling 12,500 families for REPELITA V. At present, however, the Department of Transmigration admits that an annual settlement rate of 1,500 families per year is more likely to be achieved. Table A5.4 presents IJRDS estimates of future transmigrant numbers by district (kabupaten).

### TABLE A5.4: TRANSMIGRATION UNDER REPELITA V: IJRDS ASSUMPTIONS

<table>
<thead>
<tr>
<th>District</th>
<th>Number of transmigrants</th>
<th>No. of families</th>
<th>No. of settlement units %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Local</td>
<td>Non-local</td>
<td>Total</td>
</tr>
<tr>
<td>Jayapura</td>
<td>1,090</td>
<td>4,920</td>
<td>6,009</td>
</tr>
<tr>
<td>Merauke</td>
<td>2,090</td>
<td>9,520</td>
<td>11,619</td>
</tr>
<tr>
<td>Manokwari</td>
<td>590</td>
<td>2,540</td>
<td>3,130</td>
</tr>
<tr>
<td>Paniai</td>
<td>340</td>
<td>1,560</td>
<td>1,900</td>
</tr>
<tr>
<td>Sorong</td>
<td>1,090</td>
<td>4,920</td>
<td>6,000</td>
</tr>
<tr>
<td>Fak Fak</td>
<td>290</td>
<td>1,310</td>
<td>1,600</td>
</tr>
<tr>
<td>Yapen</td>
<td>230</td>
<td>1,070</td>
<td>1,300</td>
</tr>
<tr>
<td>Waropen</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Irian Jaya</td>
<td>5,670</td>
<td>25,830</td>
<td>31,500</td>
</tr>
</tbody>
</table>

Assumptions:
- Annual settlement rate assumed to be 1,500 families per year.
- Average family size 4.2 persons.
- Local transmigrants 18% of total.
- Average size of Settlement Units 500 families;
- Settled in 1,500 families.
- Percentage distribution based on past distribution, adjusted to include Yapen Waropen.


### V. FUTURE POPULATION TRENDS

Future population growth will be determined by the rate of natural increase of the existing population, new transmigrant arrivals, and spontaneous inter-provincial migration.

Table A5.5 presents a tentative estimate by IJRDS of projected population growth by district to the end of 1995. The estimate has been built up on the basis of the following assumptions:

- i) natural increase among all groups will average 2.8 percent per annum;
- ii) all those born in the province will remain in the district where they were born;
- iii) the transmigration programme will continue as planned to the end of 1988 and thereafter at a rate of 1,500 families settled per year. Transmigration family size was assumed at 4.2 persons and the proportion of all settlers coming from other provinces 82 percent;
- iv) the distribution of transmigrants will be as planned to the end of 1988 and roughly in the same proportions as all previous settlement by district - Jayapura 19 percent, Sorong 19 percent, Manokwari 10 percent, Merauke 37 percent, Paniai 6 percent and Fak Fak 5 percent, with 4 percent allocated to Yapen Waropen.
v) net non-transmigrant in-migration from other provinces will continue at a rate of 5,000 persons per annum (the apparent rate for 1980-1985 was 3,400 per annum);

vi) the distribution of non-transmigrant in-migrants will be roughly in proportion to all other growth in each district.

### TABLE A5.5 ESTIMATED POPULATION GROWTH, 1985-1995

<table>
<thead>
<tr>
<th>District</th>
<th>Population growth 1985-95</th>
<th>Composition of growth</th>
<th>Annual growth rate %</th>
<th>% of provincial growth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Natural Increase (2.8% per Inter-provincial NI %</td>
<td>Other Total Population</td>
<td>attributable to NI</td>
<td>attributable to</td>
</tr>
<tr>
<td></td>
<td>1985-95</td>
<td>Natural Increase</td>
<td>Transmigration</td>
<td>1985-95</td>
</tr>
<tr>
<td>Jayapura</td>
<td>199,400</td>
<td>32,000</td>
<td>26,400</td>
<td>4,000</td>
</tr>
<tr>
<td>Sorong</td>
<td>174,100</td>
<td>22,600</td>
<td>24,500</td>
<td>8,300</td>
</tr>
<tr>
<td>Manokwari</td>
<td>151,000</td>
<td>13,800</td>
<td>17,900</td>
<td>3,000</td>
</tr>
<tr>
<td>Biak</td>
<td>80,800</td>
<td>11,700</td>
<td>11,000</td>
<td>25,700</td>
</tr>
<tr>
<td>Merauke</td>
<td>209,200</td>
<td>8,400</td>
<td>46,100</td>
<td>9,000</td>
</tr>
<tr>
<td>Paniai</td>
<td>217,500</td>
<td>5,100</td>
<td>61,200</td>
<td>3,000</td>
</tr>
<tr>
<td>Fak Fak</td>
<td>73,400</td>
<td>5,700</td>
<td>17,800</td>
<td>23,300</td>
</tr>
<tr>
<td>Yapen-W</td>
<td>59,400</td>
<td>4,500</td>
<td>14,400</td>
<td>18,000</td>
</tr>
<tr>
<td>Jayawila</td>
<td>328,100</td>
<td>1,900</td>
<td>102,500</td>
<td>104,400</td>
</tr>
<tr>
<td>Irian Jaya</td>
<td>1,452,900</td>
<td>108,700</td>
<td>327,600</td>
<td>27,900</td>
</tr>
</tbody>
</table>

Sources: Statistics Bureau Irian Jaya; Department of Transmigration; IJRDS, 1988

Obviously these IJRDS assumptions can be debated. In particular, the distribution of growth from in-migration may be quite different, with the major towns continuing to receive proportionally much higher shares of new arrivals, and very much fewer people going to the inland areas (especially Jayawila and Jayawila). Similarly, out-migration from inland kabupatens (districts) can be expected to redistribute some population growth resulting from natural increase, to coastal areas, and especially to those areas in and around the principal coastal towns. Such movement could be encouraged with suitable rural resettlement schemes in underpopulated lowland areas with agricultural development potential, provided diseases such as malaria could be reduced.

Estimates in Table A5.6 suggest the overall growth rate between 1985 and 1995 would be 3.3 percent per annum. Thus the total provincial population in 1995 would be about 2 million and the resident population alone will increase by more than 335,000 in the ten year period. It must be emphasized that some of the growth has already occurred and that growth can be expected to continue at similar rates in the medium to long term after 1995 with indigenous Irianese accounting for a declining but unquantified share. This would lead to a total provincial population of about 2.4 million in the year 2000, 2.8 million in 2005 and 3.3 million in 2010. In that year the population could have more than doubled the 1985 population.

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**VI. CUSTOMS, ATTITUDES AND LIFESTYLES**

**A. Leadership and Political Structures**

Tribal alliances have two alternative systems of leadership: hereditary leadership and leadership achieved and exercised by individuals ("big men"). The latters' power depends upon manipulating the traditional exchange system to achieve wealth and status. Leadership of the "big man" is limited by the individual's capacity to reward his followers in the face of competition from rivals. His power tends to be transitory, particularly among the highland cultures. This form of leadership tends to neglect concern for the community as a whole.

Because of the rudimentary political development among Irianese indigenous groups, notions of community interest and welfare are generally ill-developed except in terms of descent groups (alliances). The Indonesian concept of "concerted action" (gotong royong) is not commonly found. This means that appeals for concerted action based on some concept of the wider common good are not likely to be successful, at least at first. However, lineage and sub-lineage heads are able to exercise influence and the use of these elders' advice and leadership potential can influence the initial success of development projects.

**B. Relations with Other People**

Rights, obligations, duties and behaviour towards others in indigenous culture are all prescribed by kinship relations. Through the descent group, an individual is given his identity and sense of belonging. Beyond this, relationships are tenuous. Ties of marriage, trading partners or "war captives" link individuals to other groups. Such links are always on an individual basis, although they may provide a basis for group
encounters (i.e., pig feasts or in some cases war alliances). Traditionally, any sense of loyalty to anything remotely approaching a tribal group is lacking.

The strength of such kinship ties provides individuals with an enormously powerful resource but, at the same time, one that is incompatible with the development of many types of individual entrepreneurial enterprises. Kinship obligations can function as a great levelling device and the obligation to share earnings or crops with kinsmen inhibits individual enterprise. It is generally recognized that in kin-based societies, economic development is inevitably accompanied by a retrenching of kin ties which takes time. Consequently, individuals who have moved ahead economically in various ways will seek to disguise wealth or organize their assets in such a way that they cannot readily be shared by everyone who might have a claim.

C. Work, Time and Attitudes Toward Possessions

Work is not valued for the same reasons as western societies, e.g., to make indefinite amounts of money. People will work when they have to and will put in whatever effort is necessary to achieve the specific task, not to produce a large surplus for trade or cash. At times effort expended may be considerable, e.g., opening new gardens, digging ditches and erecting stout wooden fences to keep out pigs.

The way work is viewed relates to the way time is viewed. Time is not seen as a valued commodity such that the day is divided up into periods of work, rest and recreation. Generally, work is a social activity and there is no particular compulsion to get a task over quickly by the most expeditious allocation of labour so that people can get on with something else.

Attitudes towards work and time also affect the way possessions are viewed. People desire durable goods such as steel tools, nylon line and hooks, cooking utensils, items of clothing and so on and, if opportunities are available, will work to get money to acquire these. Having acquired the particular items they want, there is no compulsion to go on working to acquire more goods. From the Irianese point of view, there is no point in working to acquire more goods than one needs. Of course, many possessions beyond what is needed for survival and recreation are desired by others in the economy and a desire to catch up to others suggests that people are not static and where rapid economic development nearby raises income expectations.

D. Attitude to the Environment

In their world view, the Irianese do not see nature as something to be conquered or exploited, but rather as a living force to which they adapt within their means of perception. One danger in changing traditional agricultural practices in favour of more intensive food production practices is that this may also entail a change in attitude towards the physical environment; from one characterized by adaptation to one of exploitation, with attendant problems of soil depletion and erosion. For example, it was the practice in the past to plant Casuarina as a tree fallow to improve soil fertility, but, as fallow periods have shortened and seedlings have become scarcer, this practice is disappearing.

The effect of traditional agricultural techniques, combined with features of the traditional culture such as warfare, which can act as a device for holding populations within viable numbers, has been to safeguard the environment. The introduction of new agricultural techniques involving perennial crops has to rest on such traditional understandings. Rapid population increase due to the cessation of warfare and the provision of improved health care places the environment in great danger. Development plans and projects therefore have to incorporate environmental safeguards for maintenance of soil fertility, prevention of erosion and destruction of forest cover and for maintenance of clean water supplies.

E. Attitude to New Ideas

It is a feature of the indigenous rural population that outside-induced sociocultural changes, though often radical, have been absorbed by the people rather than the people having been absorbed into the new culture. Key features of the pre-existing social system such as the traditional (adat) social order and kinship have not been altered, even by conversion to Christianity.

The key to introducing new ideas lies in understanding already existing features of the society. Where changes have been perceived by the people as being in conflict with fundamental principles of the society, they have been rejected, often with force (e.g., the alienation of alliance lands). It can, therefore, be assumed that any future changes which do not alienate the people from their social system will become firmly rooted in, and be interpreted according to, the existing culture of each area.

Although documentation is fragmentary and incomplete, experience suggests that the capacity for accepting new ideas in an area is finite during a given period. This capacity is greatest when the changes are readily acceptable to the people. Poor judgement by outside change initiators in an alien culture often occurs and such errors increase the conservative resistance common to most subsistence societies. Thus, even if new ideas are successful, one can expect a saturation point after which the society needs to absorb those innovations and will reject new ideas for a period which may last from a few to many years. This explains why, after decades of trying, no quick fixes have been found to promote development in Irian Jaya and the rule should be to continue to tread lightly and slowly. This thesis can be qualified somewhat where a community is not static and where rapid economic development nearby raises income expectations.

Ideas that have won ready community acceptance tend to be those which provide quick tangible benefits. Examples are: foot-bridge building, water supply systems, coffee and rubber tree planting and improved fishing techniques. Other ideas, where the realization of benefit takes a longer time or is deemed too contrary to traditional lifestyles by village elders can succeed, but require intensive guidance over a long period. These would include women's social welfare groups, community health and introduction of cattle and new house designs. Unfortunately, examples are also found where new ideas have been introduced that benefited outside organizations rather than the target group, e.g., coffee share cropping and other estate schemes, or resettlement projects. These were often implemented using threats or force, sometimes leading to a backlash when settlers have been attacked or, in extreme case, where thousands of people have abandoned their traditional lands and crossed over into Papua New Guinea.
VII. ROLE OF WOMEN AND YOUTH

A. Women

The role of women is clearly defined by custom. Women are locked on primarily as sources of labour for work both inside and outside the house. Although men do work, at times quite hard, male labor tends to be more occasional in nature, such as opening up a new garden from the forest, while routine daily work such as looking after children and domestic animals, cooking and gathering staple foods is the responsibility of women. Women thus tend to be put in a position where they shoulder the burden of family life and their existence is a monotonous one compared with that of men.

Although the average population growth rate in rural areas is not high, this does not mean women are rarely pregnant. High infant mortality rate (IMR) and the importance of progeny both mean that fertile women might be pregnant each year. This is in itself a contribution to a high IMR, as women become progressively weaker with each pregnancy. There are exceptions, such as in the Dani culture where there are taboos which require a husband to refrain from sexual intercourse for a number of years after the wife gives birth. A practice which promotes polygamy.

Women’s position in society is greatly affected by the imposition of a bride price whereby the prospective husband’s family gives a retribution to the woman’s family. This is commonly thought of as purchasing the woman and in extreme cases it is felt that she is a possession that can make no demands nor complain about the actions of or the treatment by her “owner”. The bride price is an important source of wealth and prestige and the practice is deeply entrenched in most indigenous social systems.

With a few exceptions, past development activities in rural areas have neglected women. Agricultural extension workers rarely involve women in their activities. NGO (non-government organization) leaders are mostly men; equally local government is dominated by men. Where there have been women’s activities these tended to take on an inappropriate stance in relation to women’s role in their traditional communities. Courses often concentrated on a stereotyped urban view of women where they are taught to support their husbands by making cakes, keeping a tidy home, cooking tasty meals, sewing, making decorations and handicrafts, while neglecting basic hygiene and nutrition. As a result of ignoring the reality of women’s lives, such courses increase the burden of women by giving them more duties. Similarly, men (and usually children) are already looking after pigs, the introduction of extra livestock such as goats, sheep and ducks gives them much to manage because there is no “spare” time available. Time is even more at a premium in deforested areas where firewood has to be carried long distances and produce has to be carried several km to market, both by women.

Where women have become involved in community-based development approaches the results have been promising—such as health care and nutrition in the west Baliem Valley and the PS training scheme in Erarotai and Moamenani. Even then progress has been slow and the people responsible for implementing the more successful programmes on raising the status and practical knowledge of women were themselves mainly women. This has significant implications when it is realized that less than one in ten government extension agents is a woman.

B. Youth

Opportunities to find a future outside the traditional environment are more open to the better formally educated, younger generation, but there are already signs that frustration will be even greater for youths as job opportunities fail to materialize. For example, there were 500 applicants for 20 civil service positions recently advertised in Nabire.

Today secondary school graduates are at times reluctant to return to rural areas, although there is already high unemployment in urban centers. This breeds frustration and discontent because these people feel too highly educated to return to the life of their parents in the village but cannot find suitable work in either the town or in rural areas.

Youth organizations at village level are mainly associated with sports and cultural activities. Youth have been little involved in development activities promoted by government, NGO and private organizations.

Religious institutions have been the best structured and staffed to have an efficient working mechanism in the village and for working with youth, being involved in agriculture, education, health and social youth initiatives.

VIII. EDUCATION

Basic education facilities are very rudimentary, both in terms of quantity and quality of service. The level of these services is far below that of the rest of the country, as are the literacy levels. Poor education is largely responsible for the low participation in the economic development process and for lower productivity.

In 1984-85, Irian Jaya had a total of 1,801 primary schools, 187 secondary schools, 29 high schools, and 34 technical/vocational schools, with a total enrollment of 257,735 students.

The number of primary and secondary schools proportionate to population appears, on average, to be adequate and consistent with national standards. The number of teachers also appears to be sufficient and at the primary level there is a surplus of several hundred teachers at present. The problem is that because of the dispersed rural population many children are not within reach of a school, which means the indigenous Irianese as a group are at a disadvantage and falling farther behind in the proportion of the population achieving a basic education.

Prior to 1987, the national policy was to provide education at all levels only in the Indonesian language, and to enforce a common curriculum throughout the country. This was considered inappropriate to all circumstances for Irian Jaya. In particular it has been recommended that use of local languages should be permitted where appropriate for the first three years of primary school. URDS also recommended the primary school curriculum should be made more relevant to local circumstances and the traditional ways of life, especially in remote rural areas.

This degree of flexibility will be permitted in future, under controlled conditions, by the application of Department of Education and Culture Decree No. 0412/V/1987. To apply this new policy a massive effort will be required to produce new curriculum materials in as many as 30 local languages.
The People of Irian Jaya

Parental preferences, by the increasing proportion of immigrants over Irianese, particularly in the towns, for a purely academic education of their children, have reduced the demand for vocational/technical training at the secondary level. The first three years of the technical curriculum is being phased out in many areas.

This development is to be regretted, particularly in the rural areas where only a small minority of Irianese students will proceed to higher education and government or professional employment. The remainder are likely to end their schooling with no employable skills. Rather than phasing out vocational/technical education altogether, there is a need to shift these activities along with teachers, curriculum materials and moveable hardware to new locations in smaller rural service centres to serve the youth of the province most in need of this kind of education.

The IJRSDS recommended that vigorous efforts should be made to retain and expand the opportunities for technical/vocational training at the secondary level (Department of Education and Culture) and at the adult level (Department of Manpower Vocational Technical Centres). In addition non-formal education designed to reduce the rate of illiteracy and the school drop-out rate should remain a high priority.

The University of Cenderawasih (UNCEN) offers courses in demography, law, social sciences, anthropology, and agriculture. Other institutions offer specialized programmes in government, business administration, law, accounting, economics, social sciences, agriculture, forestry, and theology.

The IJRSDS Sector Report on Education and Training made several recommendations to extend and improve the facilities and staff of the University. It is considered highly desirable that UNCEN should play a more active role in the development of the province, in research and development programmes and by acting in a consultant capacity to agriculture and industry in Irian Jaya. Other IJRSDS sector reports (Anthropology, Land Resources, Agriculture, Water Resources, Forestry, Health) also made detailed recommendations on upgrading specific faculties, the Environmental Studies Centre and Irian Jaya Studies Centre at UNCEN.

IX. HEALTH

In keeping with the long term National Health Development Plan, the priority for health improvement in Irian Jaya is the creation of a comprehensive primary health care programme. The main constraint to this effort is lack of trained manpower.

The provincial infant mortality rate is 106 deaths per 1,000 livebirths; the birth rate is 37 births per 1,000 people; life expectancy is 40 years. Communicable diseases and poor nutrition are prevalent as a result of wide-spread ignorance and poverty.

Severe malnutrition problems occur in the eastern highlands, around the Paniai Lakes in the western highlands and in the southeast. Goiter is endemic in the central highlands and the interior of the Bird's Head. People in isolated highland and interior southern swamp areas have problems with venereal diseases, tuberculosis and leprosy, as a consequence of recent increases in contact with the outside world.

There are 126 government health centres providing treatment and public health programmes for maternal and child health, vaccination, nutrition and diarrhoea disease control. Services of some 350 sub-health centres are being expanded to include public health programmes. There are also over 250 mission health posts. For more serious problems, people are referred to one of 23 hospitals or to one of 23 health centres with inpatient beds.

Roughly 100 physicians currently work in Irian Jaya; of these only six are Irian born. In addition, a high turn-over rate for physicians at health centres causes a lack of continuity. Only two-fifths of health centres have physicans. The basic staff is drawn from a group of nearly 1,000 paramedics (manteri). Nurses and assistant nurses make up the next level of staffing. In both cases these groups are severely understaffed.

Rural health education efforts are making slow progress, due to lack of staff for training and supervision and the communication problems imposed by a population broken into 240 language groups. Special teaching materials have been prepared for 10 of the most prevalent languages and the plan is to have materials in a total of 19 languages to reach about 70 percent of the indigenous population.

Health and nutrition are treated in detail in Annex 11 of the UNDP report on Irian Jaya Provincial Development.

X. VILLAGE LEVEL DECISION- MAKING AND THE EXTENSION SERVICES

Governmental administration within a sub-district (kecamatan) is based on a theoretical model which is meant to communicate the aspirations of the people to government officials at all levels. A sub-district is made up of a number of village clusters (desa) which are further divided into sub-villages (rukun wilayah) and again into sub-sub-villages (rukun tetangga). Desa, rukun wilayah and rukun tetangga officers are supposed to be elected and are not civil servants although they receive payment and are responsible to the bupati (kabupaten government administrator).

Community leaders are represented by the Village Consultative Council (LMD), which for socio-economic development can take the advice of the Village Development Board (LKMD).

Final decisions on plans made by the LKMD and approved by the LMD are made by the village council head (kepala desa) who then submits them to the bupati via the camat (sub-district government administrator). The LKMD is made up of a number of sections including those for national consciousness, women's affairs, environmental concern, security and community development. It is more appropriate to a Javanese nucleated village than to a dispersed family oriented social structure. The camat is the bupati's representative in the kecamatan and acts in the name of the bupati.

In practice, there are many problems in implementing this system and it has many critics including government officials at district and provincial levels. Many of the problems arise from the sheer size of the province (equivalent to the area of Spain or California) and 10 times the area of the West Java province. Average size of kabupaten, kecamatan and desa are 24, 20 and 32 times respectively as large as those of the province of West Java.

In Irian Jaya, a desa may be several days' journey from the main town. This limits the influence of the camat. The distance between hamlets or villages belonging to the same desa may be up to 20 km with no road connection. This prevents regular visits by desa administrative personnel. The success of the system depends greatly on the enthusiasm and ability of the camat. It is a common complaint that the camat is rarely present. All the camats are temporary immigrants to their kecamatan, they feel isolated...
and concerned for their family's welfare, can rarely speak any of the local languages and have limited understanding of the cultures in which they are living.

Appointees as village heads are often young people selected for their educational background rather than for their standing in the community. Frequently, there are conflicts of interest between these 'government' personnel and the traditional leadership structure. Moreover, desa level organizations generally exist in name only. Very few of the people interviewed by IJDRS teams understood the functions of the LKMD, LMD or other groups such as family welfare education (PKK). Only in a few places were these organizations active. Despite these constraints, the village administration would be more effective if the village heads were elected by the people rather than appointed by the government.

There are two major problems hindering the development of desa-level bodies. Firstly, there is a lack of adequate funding to support any LKMD that wants to be active, thus causing frustration. The government provides each village with an annual grant (Rp 1.5 million - US$ 670 or about US $ 1.50 per family - in 1997/88). A few villages manage to use these funds effectively according to advice from extension workers, but mostly the funds are wasted. Where an LKMD is active, it becomes despondent after submitting project proposals that are never given a reply. Secondly, there is a lack of supervision and managerial experience, so only a few village groups receive guidance to develop project proposals. When there is adequate project funding, the lack of control means that it is seldom used wisely. There are reports of several camat and village heads having been removed for misuse of funds. For self-help activities to work where the LKMD is ineffective, a smaller, more homogenous group is needed which is far below the level of desa or sub-divisions of a desa. In some locations this may be as small as a family unit. A mechanism has to be found to have funds reach down directly to that level as well.

For the current government administrative system to work, a smooth interface between kabupaten and kecamatan is essential for the successful implementation of bottom-up planning. At present this appears so weak that even if the camat submits plans to the kabupaten, kabupaten level officials can ignore these and plan projects independently without consulting the kecamatan or desa.

In each kecamatan there is, in principle, a small technical staff of specialists in agriculture, health, education, etc. In practice, there are very few staff and they are generally poorly qualified. For field work they have to walk to their target areas. Hardly anywhere do the government services have an effective presence far from the kecamatan capitals. The quality of technical services provided to the people is limited, sometimes because of the inapplicability of models designed for other parts of Indonesia (see Annex 7 of the UNDP report on Irian Jaya Provincial Development).

Adding to these difficulties is the problem of scarcity of reliable data about the physical resources and agriculture of the province. There are no large-scale maps of kecamatan, the locations of hamlets or villages on existing maps are often wrong and the boundaries of the kecamatan are ill-defined and often do not follow natural features such as ridges or streams. There are few reliable data on soils, on soil capability, on the limits of the critical zones where ecological problems occur or where human carrying capacity has been exceeded, nor are there proven means to increase agricultural productivity and to maintain soil fertility after traditional practices are altered. However, it would be possible to start with modifying and reinforcing traditional practices. Later, new ideas backed up by research results could be introduced.

Where village co-operatives (KUD) have been set up, they exist in most cases in name only. They very seldom carry out any useful function. Driven by frustration arising out of what is perceived as lack of interest by farmers themselves, camats and kepala desas normally have taken the initiative in establishing KUDs. Unfortunately, the KUD office holders have been appointed also by the camat or village head concerned. In these instances, the KUD is no longer viewed as a farmers' organization but merely as "yet another government institution" with a "top-down" approach.

The National Farmers' Association is viewed in a somewhat similar manner to the KUD. The National Chairman is in Jakarta (former Minister of Transmigration), the present Minister of Agriculture is on the National Board. In Irian Jaya the bupani of Jayapura is Provincial Chairman. The membership includes government servants in the capacity of administration, research and project supervision. Candidates for office are agreed upon by the governor. So, it is a "farmers' association in name only. It is meant to do many of the same things the extension service is supposed to do and have a bottom-up approach, but hasn't proved effective in Irian Jaya.

The reasons why associations and co-operatives are not popular are the same as those given in section VLA, concerning "concerted action" or "community self-help". Appeals for concerted action based on some concept of the wider common good outside of kinship obligations are not likely to be successful, at least in the short term, while cultural ties to small lineage groups remain strong.

Finally, it must be mentioned that many people feel burdened by the amount of government bureaucracy pressing down on them, e.g., the several overlapping agricultural extension services run by Departments of Agriculture, Education and Culture and Lands, the National Farmers' Association, etc. The end result of all these difficulties is that most government development programmes in Irian Jaya are recognized to be ineffective.

Nevertheless, there is a tremendous demand from individuals and kinship groups in the more open rural communities for involvement in development activities. Up till now this demand has been partially satisfied by NGOs (non-government organizations), who have been able to operate small-scale community development projects successfully. They cannot expand their activities as much as would be desirable for three reasons: (a) lack of administrative skills, (b) lack of trained field trainers and technical advisors, and (c) lack of long term financial support.

XI. IMPLICATIONS FOR DEVELOPMENT

The above description of the general features of rural society in Irian Jaya allows one to formulate a few points which have to be taken into account when implementing projects requiring community participation.

Common features of successful people-oriented projects are:

- a) the people are allowed to make decisions and organize projects to suit themselves;
- b) the project has the support of traditional leaders;
- c) the people reap the benefits themselves;
d) the project requires no major shift in fundamental lifestyle (i.e., it does not require people to give up their land);

e) all sections of the community are involved (men, women, youth) and as far as possible training is carried out near the villages;

f) the development potential of women is not ignored. This requires a conscious and thorough sensitization of the development worker to problems concerning women;

g) the activities are planned and timed to fit into the traditional pattern or seasonal cycle of work, particularly to involve men who periodically leave villages to hunt, travel to other areas or participate in traditional ceremonies.

Endnotes

1 Taken from the Irian Jaya Provincial Development Fund Project Preparation Mission Report, May 1989, Annex 5.

2 Dr. John Davidson worked in Irian Jaya for over six months on three major visits in 1975 (to Lake Paniai), 1987 and 1989. He has been a member of IUCN Commission on Ecology over the past decade and has had a number of papers and booklets published by them.

THE POSSIBILITY OF DEER-FARMING IN IRIAN JAYA

Agustinus Kilmaskossu

Consumsi protein hewani di Indonesia masih tergolong rendah, yaitu sekitar 69% dari target yang telah ditetapkan. Pemerintah telah berusaha melalui berbagai cara untuk mengatasi hal tersebut, seperti: peningkatan mutu genetik ternak, pemanaatan bibit unggul, inseminasi buatan, peningkatan teknik beternak dan penyuluran perkedelternan ternak. Namun ada satu aspek yang perlu dipertimbangkan yaitu budidaya hewan atau satwa liar seperti rusa, kasuari, buaya dll. New Zealand dan Australia telah membudayakan rusa dan telah memperoleh manfaat yang besar dari jenis peternakan ini. Irian Jaya mempunyai potensi yang besar untuk peternakan rusa, karena sejak dinautroduksikan hewan ini telah beradaptasi dan berkembang dengan habitat yang serupa dengan wilayah Irian Jaya. Berlimpahnya padang rumput memungkinkan digunakan sebagai peternakan rusa atau ranch.

Introduction

The consumption of animal protein in Indonesia is still low. According to KOMPAS (Nov. 6, 1988), the average consumption is about 68 percent of the target. The government has used various methods to solve this problem such as using improved breeds, applying artificial insemination, improving breeding techniques and the possibility of hiring animal stocks. However, one alternative that should be considered is the breeding of wild animals such as deer, cassowaries, crocodiles, etc.

The breeding of deer has been done successfully in New Zealand and Australia. In 1958, New Zealand was able to export 3,000 tons of venison (Williamson and Payne, 1978). The New Zealand deer are predominantly Cervus elaphus, with Dama dama making up about 10 percent. New Zealand in 1986 had about 400,000 deer on more than 2500 farms (Woodford, 1986). Meanwhile, in Australia deer-farming has developed as an alternative pastoral industry since the mid 1970’s. After 19 years of development, there are about 50,000 deer on 900 farms (Mulley, 1988).

The rusa deer (Cervus timorensis) was introduced to Irian Jaya in 1900 (Frith 1979). These animals acclimatized and reproduced well, and spread naturally through the country. Nowadays they are killed by hunters or local people to provide food. If such activity is not limited, the animals will become extinct. Therefore, there must be an effort to preserve these animals.

This paper discusses the potential of deer-farming as a means to preserve the animals and as a source of meat production in Indonesia, particularly in Irian Jaya.

Advantages and Disadvantages of Deer-farming

Reid (1981) indicated that deer-farming in New Zealand is a potential enterprise. Figure 1 gives an illustration of the resources required to generate NZ $100,000 net income under New Zealand conditions. Moreover, there are many positive aspects of deer-farming. First, deer-meat has very little marbling so that 95 percent of the soft tissue is lean meat. This kind of meat is mainly preferred by people who must avoid cholesterol. The deer carcass percentage is about 52 percent of liveweight and three-quarters of the valued cuts are found in the hind legs. This is higher than in cattle, the most common breeding animal. The price for venison in Australia in 1980 was
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About $5/kg, and a live deer could cost $2,000 (Reid 1981). Secondly, the velvet的年轻人 antler has a high price in the Asian retail market. The highest quality product of processed velvet could be $2,500/kg. Prices of raw velvet in New Zealand range from $10 to $110/kg based on the grade quality. Thirdly, various other by-products could be harvested such as leather for rugs and fashion goods; tusks for jewelry; antlers for trophies, jewelry and fancy goods; pizzles, tails and sinews for oriental medicines; and feet and heads for taxidermy. By-products from a slaughtered animal can be worth $50 to $75 depending on quality and sex (Reid 1981).

Figure 1. Resources Required to Generate NZ $100,000 Net Income

![Diagram showing resources required to generate NZ $100,000 net income.]


Potential of Deer-farming in Irian Jaya

Since the deer were introduced to Irian Jaya, they can be found in parts of the province. But the most dense population is in Merauke near the south coast of Irian Jaya and the south-west border of Papua New Guinea. The local people hunt the animals and use them as a meat source to provide protein in their meals. Other sources of protein include fish and other wild animals such as pigs, birds and rodents. However, these sources are limited and because of the pressure of the indigenous people they often become scarce and could become extinct.

Eighty percent of the population of Irian Jaya live inland in the mountainous areas, where there is a scarcity of wild game. These people consume more tubers than animal protein; their consumption of animal protein is still low. Further study is needed to ascertain the exact figures. There must be a supply of available meat protein.

Keeping these animals on farms and breeding them is an alternative that could preserve the animal from extinction. If this is organized properly it could become an industry which will produce considerable supplies of meat. In addition, deer-farming has a potential to develop the economy of the country. It could create employment and increase the income of the local people. It could also increase the income of the country so as to stimulate the growth of the GNP (Gross National Product). For example, in 1969 Kenya yielded an estimated revenue of approximately U.S. $34 million (Williamson and Payne 1978). Irian Jaya has a lot of native grasslands which could be used as deer-farms or ranches.

Research Needed to Support Deer-farming

Fundamental research is needed to support the idea of deer farming because the deer is a wild animal which lives in a free environment. Basic studies into behavior, reproduction, nutrition, breeding, management and disease control should be done to find out the best method in deer-farming. Some points to be considered are as follows:

1. study of behavior and temperament; temperament and growth rate,
2. behavior and physical management (handling),
3. biological and physical characteristics (size and appearance, weights and growth rates, birth weights, growth rates from birth to weaning, cycles of growth in older animals, age and size of physical maturity, reproduction);
4. seasonality and growth (seasonal growth patterns, annual pattern related to reproduction, breeding pattern);
5. reproductive management (mating, weaning, fertility and twinning, artificial breeding, pregnancy diagnosis, weight gain and conception rate);

6. nutritional management (liveweight patterns, nutritional requirements, energy requirements, feed budget, efficiency of feed conversion, metabolic rates, stocking rates, supplementary feeding, feed intake, fecal output and grazing pattern);

7. breeding and genetic improvements (performance recording, effective breeding life, ratio of breeding females to males, selection);

8. management strategies (time of weaning, technique of weaning, handling, yarding and fencing);

9. production systems (hand rearing management, pasture and ranch management);

10. carcass quality (slaughtering and dressing, post-slaughter treatments, grading, carcass composition and evaluation, venison quality and human nutrition);

11. testicular function and antler growth or antler physiology;

12. diseases of deer (health management and disease prevention).

To date these overall studies have not been undertaken in any detail. However the evidence available for individual components of biological productivity suggest that deer are reasonably efficient (Woodford 1986).

Conclusion and Recommendations

In the earlier stages the farming of deer is costly but in the long run the development of deer-farming in Irian Jaya has the potential to create the diversification of animal production, to increase the consumption of animal protein and to provide a sustainable animal source.

It is recommended that the development should begin with providing breeding-stocks up to 500 heads, starting with a small herd and building up over a long time. Therefore, a deer research facility and grazing-land of 10 ha must be built. After the breeding stock becomes available, the development would be based on small herds - five females plus one male - within a period of three years. These packets should be distributed to selected farmers. Training for special managerial skills should be done. To implement this project a loan-aided fund must be obtained.

"Does deer-farming have an economically viable future?" I can only say that I have great confidence in the future of deer-farming. Deer-farming provides a means of converting cheap grass into a new and valuable meat, in contrast to pig or poultry meat, which is produced with food already fit for human consumption.

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Endnotes

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Bibliography


KAIN TIMUR AND THE PAYMENT OF FINES

A preliminary study of the Karondori people of Irian Jaya's Bird's Head region

Nafi Sanggena
Universitas Cenderawasih


1. Introduction

This paper was written for the New Guinea Workshop to be held in Nijmegen, the Netherlands, in February, 1987. It is based on the material I collected in 1983. I have also used recent anthropological reports from other parts of Irian Jaya related to the subject of cloth exchange (kain timur).

Following the suggestion of the Nijmegen Workshop Committee, I shall discuss a topic which concerns the kain timur (ori) complex. As we know, the kain timur complex forms one of the prominent socio-cultural complexes of the Bird's Head area. It is a cultural focus for the majority of the Bird's Head societies. This is reflected in the writings of anthropologists such as Elming (1955, 1968), Pouwer (1957), Kamina (1961), Schoorl (1975), Sanggenana (1984), Miedema (1984), and Haenen (1989), who have dealt with activities centering around kain timur.

However, I shall narrow down the discussion to the relevance of kain timur relative to the payment of fines, particularly in the village cluster (desa) of Fef in the Sausapor subdistrict (kecamatan) of the Sorong district (kabupaten). I do so because there is no literature to date which deals specifically with this topic. I will demonstrate the use of kain timur for fines (maru) which individuals have to pay when breaking adat (traditional) rules.

I choose here to do a systematic treatment which begins with a global outline of the natural environment and local community of Fef. I then proceed with a special discussion of the kain timur (ori) and the payment of fines.
2. A General Picture

2.1. Location and Environment

The village cluster (desa) of Fef forms one of the village clusters within the area inhabited by Karondori people. It consists of a fusion of smaller, formerly separate land-owning and land-using villages. The latter also differed as to clans. The old villages consisted of 10-15 households and were located on river banks in valleys isolated from each other by mountain ranges.

The present day village cluster called Fef is a fusion of the villages of Fef, Wayo, Asseh, Yabo, Sujak, and Subun. The new fused pattern of settlement facilitates the efforts of government officials and missionaries in including all the previously-isolated regional communities in their activities.

The village cluster of Fef is located on a bank of the Irawan River, one of the southern sources of the Kamundan River. It is flanked by several high mountains. Administratively, it lies in the subdistrict (kecamatan) of Sausapar, which contains seven village clusters (desa) spread out along the coast and into the interior. The settlement pattern of the coastal village clusters is relatively centered and dense, while the interior village clusters are more scattered and mutually isolated.

The subdistrict (kecamatan) of Sausapar, which includes the village cluster of Fef, shares borders with the subdistricts (kecamatan) of Morai and Mega to the west, Ayamaru to the south, and Kebar to the east. The population of the whole subdistrict of Sausapar is numbered 3,395 persons, according to 1983 census data. The same source sets the total population of the Fef village cluster at 630.

As to the natural environment of Fef, it is morphologically mountainous, its mountains being the continuation of the Tamrau and Fotter ranges. Mountains alternate with valleys through which large rivers such as the Mega and Warsamsum flow toward the north coast.

The region is covered with forests consisting of heterogeneous mixtures of trees. The ironwood (intina), matai, and cemar (Agathis spp.) are the most interior forests are still virgin, relatively untouched by the local population as well as by private and government enterprise. Natural products are harvested on a small scale for local consumption only.

2.2. Population of the Fef village cluster

It has already been mentioned that the new cluster of villages is populated by the inhabitants of six former villages, one of which is the village of Fef. The original Fef people consider those from the five other villages as newcomers. In everyday life, the latter are limited in their rights of land use around the settlement. The original Fef people themselves have occupied this land for generations. Both genealogically and according to the oral literature of their community, they differ from the people of the other five villages in terms of origin and the development of their community. By tradition only original Fef people have the rights to use land and to collect forest products in the area around Fef. It is only they who may clear gardens on this land and in the surrounding forest. Other people wanting to use the land for this purpose are required to obtain permission from the original inhabitants.

The desa settlement is partitioned on the basis of differences between the old villages. The people of Wayo, Asses, and Yabo occupy the southern part of the settlement. Those from Subun and Sujak inhabit the eastern part. But the original Fef people inhabit the central part of the settlement. The Subun and Sujak people are classified with the Karon Madik because of a linguistic difference between them and the two other groups.

The desa settlement is built lengthwise with a road through the middle of the settlement and houses on each side of it. Some houses, however, do not follow this pattern but are scattered here and there behind the two regularly planned rows of houses along the road.

Gardening forms the principal means of subsistence. It is carried out on the basis of shifting cultivation and slash-and-burn clearing of garden land. One shifts to a new place after having harvested the crops of an existing garden. Garden products are still limited to crops such as cassava, taro, bananas, and vegetables. All of these are grown for family consumption only. At present, both Catholic and Protestant churches are introducing new products, such as peanuts, onions, and green peas. The promising results of this experiment may lead to a future increase in the production of these crops.

Life in the settlement of Fef, as well as in several other desa settlements, does not yet show any significant influence by modern development programs, except, perhaps, the activities of the Catholic and Protestant missions. These have resulted in the building of churches and health centers. The local administration, on the other hand, is handicapped in carrying out the government development programs because its funds and other means are insufficient to cover the needs of all the interior village clusters. Furthermore, since the population of the local desa inhabitants is insufficient, the influence of the desa inhabitants is forced to stay at least two or three days in the gardens before they can return to the settlement with sufficient food supplies for the family. For this reason, many desa settlements leave an unsettled impression as far as the well or woe of the local population is concerned.

Leadership is still clearly in the hands of informal leaders such as the traditional clan leaders (reansom) and the tuan (originally an Indonesian term meaning “rich person”), who hold important positions in the desa community. The reansom possess the right of decision in matters concerning the adat system within the settlement. The influence of the reansom is also important to the proper desa officials. With regard to both internal and general desa affairs the latter make an appeal to the reansom to influence the local population and bring it into action (Sanggena, 1984).

The tuan, on the other hand, owe their importance to the fact that they possess a large collection of kain timur. A tuan usually has a sufficiently large collection of kain timur at his disposal to deal out kain timur to his trading partners or to use his yields for loans to other people who are in need of kain timur. Their position and kain timur possessions explain why the tuans are in the local community considered as the people with a great knowledge of kain timur affairs.

3. Kain Timur and the Payment of Fines

It is perhaps superfluous, but nevertheless important, to mention that in the social life of the local people, particularly in the desa regions, the customs and traditions (adat-isladat) play an important role in the ordering of the society. These customs and traditions are considered essential to human existence in these regions. All adat
supporters endeavor to maintain the adat rules as well as possible. It is because of the important role of the adat that violations of the adat rules have a significant disturbing effect on social life.

In order to keep the social order in balance, offenders must be punished according to the weight of their offences. These penal measures, here seen as sanctions of the social order, are inflicted in the form of physical punishments or deprivation of property. But they may also imply mental inflictions such as exposure to fright, putting to shame, or inflicting hatred (Pospisił, 1958).

In the desa settlement of Fef, cases of the infliction of penal sanctions on offenders of the adat rules occur frequently. An offence is usually settled by the two parties (offender and offended) under the authority of the adat leaders. The offending party is sentenced according to the adat to pay a fine (maru) in compensation for their offences.

From the viewpoint of the Fef people, maru has a double meaning. It is in the first place a means of compensation for loss or damage. It serves in the second place as a means of social control for the resolution of a particular social situation, i.e. the restoration of relationship between the two parties involved in a conflict.

3.1. Marriage Offences and the Payment of Fines

It has already been pointed out that kain timur (qan) plays an important role in the life of Bird's Head people. This is implied in the fact that the qan turn up in many socio-cultural domains and thus form an essential aspect of Bird's Head society and culture (Van der Leeden, 1982).

Marriages in particular are occasions which involve all participants in a process of lending and borrowing the needed kain timur (qan). As a rule, the givers of the marriage payment make preparations long before the actual marriage transaction. This is done by collecting the necessary cloth (qan) through trading partners (kusuma). The recipients of the marriage payments also prepare well in advance. In addition to the benefit of acquiring cloth, the preparation for the actual bride wealth payment event forms a splendid occasion for the partners (kusuma) to extend their trading relations by seeking new trading partners.

For another thing, marriage life in the desa settlement of Fef is often disturbed by offences leading up to the payment of fines. These payments are in the form of cloth (qan) and other goods. I refer here to the following marriage offences: eloping with another man's wife, divorce, and extramarital relations. All of these offences require compensation in the form of fines which are paid by the offender to the offended.

From my observations and from the information I obtained, it appears that the wealthiest ones (tuqan) are among the people who most frequently commit marriage offences. This is due to the fact that for the tuqan, wealthy possessors of cloth as they are, paying fines because of committing marriage offences is actually an opportunity to exhibit their wealth. To substantiate this explanation I here cite what a tuqan once said to me: "I don't bother much about marriage offences and paying maru, for I am able to pay because I am wealthy. If necessary, I will marry again."

**Table 1**

<table>
<thead>
<tr>
<th>Kind of Offence</th>
<th>Total Cases</th>
<th>Goods Exchanged</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elopement with another's wife</td>
<td>5</td>
<td>150 bolts of kain timur</td>
</tr>
<tr>
<td>Divorce</td>
<td>3</td>
<td>90 bolts of kain timur + 2 pigs</td>
</tr>
<tr>
<td>Extra-marital relations</td>
<td>2</td>
<td>60 bolts of kain timur + 1 pig</td>
</tr>
</tbody>
</table>

Table 1 clearly demonstrates that elopement with another man's wife occurs more frequently than the other types of offences. It is followed by divorce and then by extramarital relations, in descending order of frequency. The five known elopement cases, alone, resulted in the transfer of 150 bolts of kain timur and 2 pigs.

As for elopements, these are settled directly by the offended party with the knowledge of the clan or village authorities.

They begin by approaching the house of the offender collectively in a group of five men closely related by kin ties. The action of accusation may take place in the morning or afternoon. On their arrival the group of accusers surrounds the offender's house, loudly shouting accusations and demanding an immediate payment.

The accusers do not leave the place before the offender has paid his fine. Conversely, an offender will pay the demanded fines as soon as accusations are addressed to him. The goods already put aside for this purpose are handed over to the leader of the group of accusers.

The goods thus received as a fine by the group leader are then brought back and given to the family of the offended person. Some goods are reserved for the members of the group that carried out the accusation.

On the other hand, cases of divorce and extramarital relations may be solved on the basis of a traditional (adat) legal arrangement settled by the adat leaders together with the parties involved. If an agreement has been reached concerning the size of the fine, the latter must be paid by the offender within a relatively short period of time.
3.2. Death and the Payment of Fines

The anthropological literature and my personal research experiences indicate that for most Bird's Head communities, including Fef, death is a phenomenon which may have serious consequences for the relatives of the deceased. The participants recognize two causes of death: First, there is death as the logical consequence of old age and, as such, to be experienced by everybody. Second, there is death caused by epidemic disease, accident, or some kind of disaster. To the Fef people, cases of the second kind create serious problems which require their investigation.

According to the perception of the participants, "accidental" deaths are caused by either poisoning, suicide, or illness. All of these cases are thought of as the result of situations of mutual suspicion between people and the victim, interpersonal conflicts, or rivalry concerning kain timur (go) transactions. It should be understood, of course, that the members of the local society of Fef in principle try to foster good interpersonal relations in order to maintain a harmonious existence in the settlement. However, "accidental" deaths as described above are always considered to result from hostility and are, therefore, subject to investigation as to the person to be blamed for causing the "accident." This is the reason why I here classify cases of "accidental" death as offences (see below).

For a picture of the frequency of cases of death due to "accidents" (and therefore to offences), and the payment of fines to which these may lead, I refer to Table 2.

Table 2: Offences Leading to Death and the Payment of Fines

<table>
<thead>
<tr>
<th>Kind of Offence</th>
<th>Total Cases</th>
<th>Goods Exchanged</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Poisoning</td>
<td>4</td>
<td>100 bolts of kain timur</td>
</tr>
<tr>
<td>2. Causing Suicide</td>
<td>2</td>
<td>50 bolts of kain timur</td>
</tr>
<tr>
<td>3. Causing Fatal Illness</td>
<td>1</td>
<td>30 bolts of kain timur</td>
</tr>
</tbody>
</table>

It becomes clear from Table 2 that cases of poisoning were most frequent during this period. Of the three offence types, poisoning is the fatal crime feared the most by the people of Fef.

Poisoning is carried out by someone involved in a conflict with someone else. One uses a poison called akar borek (lo) which is mixed with the food or drink to be consumed by the victim. The act of poisoning is carried out during festivities or on occasions out in the gardens when people drink palm wine, known by the local Indonesian term tuak.

Suicide by drinking poison as the ultimate result of an offence is a desperate act, carried out by the victim without the knowledge of other people. People who commit suicide basically experience ill-fortunes during their lifetime, such as broken marriages or unsuccessful kain timur (go) transactions. During my stay at Fef I obtained information about two cases of suicide, both cases committed by women. Both women did so because their husbands married other women, thereby evoking rivalry between the women involved.

Fef people consider that illness caused by purely physical disturbances may be treated directly at the health center. However, illness because of human intervention (through magic) should be treated by a shaman who can repel the illness. This kind of illness inevitably affects the conduct of the patient.

The case of death through magic referred to in Table 2 was ascribed to the fact that the victim, before falling ill, had not kept a promise of paying a debt.

All cases referred to above are not closed by the death of the victim. But, as the result of offences, they lead to later claims which were not expressed directly at the time of the victim's death, but are postponed until some time after the death.

To prove that a person is guilty of wrongings others, specifically of causing the death of other people, one carries out a test by means of augury (potani). There are two distinct kinds of divination (potani): (1) Divination (potani) carried out with a kind of bamboo (gouli). (2) Divination using hot water, called arike ndro.

The kind of bamboo called bulu tui in local Indonesian or gouli in Karondori is a small kind that grows around the settlement and is used especially for augury (potani). For a potani ceremony, a cut piece of gouli bamboo of the length between two joints is covered with red leaves and nettles. Then it is put on top of two forked poles right in the middle of a gathering of spectators. The accused and his family must stand on one side of the gouli and the wronged family on the other side. The adat leaders now give each party an opportunity to offer its view on the case.

This is followed by the reciting of formueltas by the adat leaders. When this is finished the adat leaders break the bamboo under the close scrutiny of the two sides. If the interior part of the gouli actually contains traces of a fluid resembling blood, then the suspect has been found guilty of committing the crime.

Arike ndro is a kind of potani for which a specially prepared bamboo container is filled with water. The bamboo container and its contents are heated over a fire until the water boils. This is followed by reciting a formula, specifically by the clan leaders. Then they give time to the suspect to dip his fingers in the boiling water. If his fingers actually get burnt, then his guilt has been proven.

As soon as the positive result of a potani test is known to the persons executing the test, the wronged party sets the amount of the fine to be paid by the wrongdoer.

3.3. Land and the Payment of Fines

I mentioned in section 2.2 that all land in and around the desa settlement falls under adat regulations and belongs to the original land-owning clans of Fef, whose members since long ago have inhabited the territory. It is they who have the right of land use in this territory, and who decide what land may or may not be used.
I have so far not met with actual cases of illegal use of land in the Fef territory. This is probably due to the fact that everyone still uses acaf land in his place of origin.

I obtained the information from one of my informants that a payment of 25 bolts of kain timur (qa) was once made by somebody from Wayo to a local Fef inhabitant because of land use in the Fef region. According to me, however, this was not a proper many case. It was probably due to the fact that the land owner urgently needed kain timur and therefore asked the land user from Wayo to help him.

I have discussed the subject raised in this paper exclusively in a descriptive and informative way. The paper presents a preliminary study which needs to be followed up by detailed future research.

However, my paper does illustrate that the exchange of cloth (qa), particularly in interior regions, still plays an important role in settling marriage offences, homicide, suicide, and land use questions. Until the present day, for the settling of adat conflict, kain timur (qa) ranks highest in importance, followed by other objects. I hope that my paper may stimulate our attempts at a better understanding of the functions of the kain timur complex in Bird's Head societies, and also at a better insight into the ways, positive and negative, in which cloth exchange influences the modern development of this society.

Endnotes

1 Naffi Sanggenafa did his undergraduate study at Universitas Cenderawasih in Abe pura, Irian Jaya. He did graduate studies in anthropology of law in the Netherlands and is now a lecturer at UNCEN.

2 The village clusters (desa) in the Sausapor subdistrict of the Sorong district are: Sausapor, Wur, Kwoor, Wau, Fef, Siak, and Asses.

3 Source: Data Sensus Penduduk 1983, Kecamatan Sausapor, Kabupaten Sorong.

4 The original community of Fef consists of the clans: Boufura, Kinho, Jembra, Jewen, and Tafi.

5 These statistics were obtained from Mr. A. Baru, age 50 years, who is a leader in traditional (adat) matters. He is from Yabo, and was active as a desa official in 1983.

6 At the time of my research Mr. A. Hae, 54 years old, led a group of people who claimed the payment of a fine for an offence regarding his sister.

7 A clear expose of this problem can be found in Schoorl (1979) and Miedema (1984).

8 These statistics were obtained from Mr. A. Baru and are limited to the year 1983.

9 Akar bong is a local Indonesian term for a poison taken from a kind of creeper in the gardens, and, occasionally near houses.

10 I obtained this information from Mr. A. Baru, 50 years old, who had witnessed the case.

Bibliography


THE ROLE OF WOMEN IN TRADITIONAL IRIAN JAYA SOCIETIES AS EXEMPLIFIED AMONG THE BAUZI AND KETENGBAN

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UNCEN-SIL


I. INTRODUCTION

This paper is based on data collected by two SIL teams² and will show how the spirit beliefs and worldview of these people dictate the roles of women in traditional Irian Jaya societies, making progress for women very difficult unless it is initiated by a change in their belief systems.

II. WORLDVIEW AND WOMEN’S ROLES

Worldview has to do with how people understand the composition and functioning of life. It encompasses religion, cosmology, concepts of time and space, and indeed all of life. Animism is part of some people’s worldview. Both worldview and animism are responsible for the roles women play in traditional Irian Jaya societies.

Animism, or the belief that life is in large part controlled by many spirits who inhabit things or beings in the physical world, is the basic traditional religion of many Irian Jaya ethnic groups. These spirits are usually considered to be malevolent and must be constantly appeased to avoid their wrath and retribution. Their behavior or desires, if properly understood, can explain everything that happens in life. Animistic religion is generally holistic so that life is not compartmentalized into secular and religious, as it is in industrial societies. Every aspect of life must be in accordance with the desires of the spirits or punishment will come.

There are two primary beliefs widely documented across Melanesia and Irian Jaya which are foundational to women’s roles in societies holding them. The Ketengban and the Bauzi groups both hold these beliefs. The first belief is that initiated men are the only authorized communicators with the spirits, the only wielders of sacred power and sacred items, and the holders of secret knowledge about the spirit world, giving them authority over non-initiates, e.g. women and children. The sacred items usually include the best and most nutritious foods, which are then partly or totally taboo for non-initiates. Women can never be initiated, and are forbidden to hear, see or participate in any sacred feasts, ceremonies or rituals. The less nutritious foods are sometimes taboo for men.
The second foundational belief is that women, and particularly their menstrual and childbirth fluids, are pollutants which contaminate and weaken spiritual power and the men who wield it, also bringing danger of sickness and death through the anger of the spirits for those so contaminated. This belief makes women outcasts from the village during menstruation and childbirth, and many nutritious foods are taboo to them at those times, impeding their health and that of their infants. Newborn babies are dangerous to men among the Ketengban, so men avoid any nearness to them, which precludes men helping their wives at those times. When women are feared as weakening and harmful, men tend to restrict their contact with them, sleeping in separate houses, having taboos against sex at certain times, and generally seeing women as a “necessary evil” to keep pigs and gardens, and to bring bride price and wealth.

Other beliefs which often accompany the two basic ones, and which also indirectly affect women’s roles, are:

1) female spirits are evil and often more deadly than male spirits;

2) women are sometimes sorcerers but never healers;

3) sexual intercourse weakens men;

4) women and children are especially susceptible to attack by spirits;

5) fathers pass along their name, land, and secret knowledge to their sons (patrilineal);

6) women go to live with their husband’s family after marriage (patrilocal) and serve them, bearing children for that clan;

7) large bride price payments; (Among the Bauzi, bride price payments can be demanded back if the wife is mistreated until she runs away or commits suicide. Among the Ketengban, if a wife commits suicide the husband must pay the bride price anyway, as well as bride price for a new wife, thus affording women some protection.)

The implications of these beliefs for women’s lives are clear: men would have all the authority due to their privileged position with the spirits, men would fear women and stay away from them whenever possible to avoid contamination and weakening, and women would be viewed as a means to the ends of wealth and position. In fact, women under the above beliefs become, literally, second-class citizens, deserving only enough care to keep them productive.

These beliefs lead logically to many customs commonly found in Melanesia and Irian Jaya, such as initiations for men but not women; sacred flutes which are only for men to see and play; ritualized male homosexuality (to avoid contamination); separate birth and menstruation houses; long post-partum sex taboos (leading to polygyny and immorality); and feasts for men only (giving women less good food than men). These beliefs also form the reasoning for the division of labor in these groups. Women raise pigs, cultivate gardens, prepare food, and raise children, not only so that men are free to carry on religious activities, warfare, initiation of younger men, and economic exchanges including bride price, but also to prevent contamination of the men. These beliefs lead to private men’s houses and separate boys’ sleeping houses so that women won’t be involved in sacred things, nor be too near to men.

III. BAUZI AND KETENGBAN SOCIETIES

The Bauzi are a group of about 1500 hunter-gatherers scattered around the Mamberamo area of Irian Jaya, still largely practicing the lifestyle handed down for generations. Outside contact began for them in the early 1970’s with the entrance of Christian teachers from the highlands and expatriate missionaries from the Regions Beyond Missionary Union. They are animists and although nomadic, are now turning to more permanent villages in areas where contact with outsiders has been steady, and are starting to make gardens.

The Ketengban live in the eastern highlands of Irian Jaya in the kabupaten of Jayawijaya, and number about 10,000 people in approximately 60 hamlets ranging over rugged mountain territory. They raise pigs, taro and sweet potato, and have a ritualized panadasen men’s cult dominating their religion. Outside contact began for them in 1972 with the entrance of Un-evangelized Fields Mission personnel to the area. They, too, are centering in larger, more permanent villages near airstrips and sources of outside benefits. Neither group has a history of millenial movements, nor cargo interest.

Both groups follow the beliefs described above. Let us examine the lives their women live, and then note the changes now taking place as modern ideas gradually enter and are slowly accepted and acted upon.

Bauzi men hunt cassowary and wild pigs and use hunting dogs to help them. Bauzi women and their fluids can contaminate both men and their dogs and keep their hunting from being successful, leading to many taboos for women in childbirth and menstruation, taboos on sexual relations after hunting, a month-long isolation for women after childbirth and many rituals to counteract such contamination and restore good hunting. Bauzi culture associates the color red with menstrual blood, and all “red” foods are taboo for women during menstruation (to avoid too much bleeding), such as red sweet potato, taro, pig, cassowary, possum, lizard, jumping rodent or marsupial, tree kangaroos, all water animals, fish, and eggs. White foods are associated with semen and should be eaten during menstruation to counteract the power of the red blood, and include tapioca, bananas, white sweet potatoes, cucumbers, papayas, snakes, breadfruit, possum-like animal, and a small jumping rodent. Women may only leave their menstruation or birthing houses if they are wrapped in such a way as to keep fluids from contaminating the ground or water. They may never garden at such times lest they contaminate the food. Food is brought to them, but if brought by their husband, he must leave the food at the very edge of the clearing and not approach the house. These food taboos and restrictions have definite negative effects on women’s nutrition and health.

Bauzi women must marry before puberty (menstruation is believed to result from sexual relations), and their husbands teach them about sex. But mothers have to teach their daughters about menstruation and so young couples live near the wife’s parents until the bride has been so taught and until the husband has proved to be a good provider. Then the couple moves to the husband’s house or village. Unless the girl has married a man from her own hamlet she will rarely see her own family.
Bauzi men seek to have sexual relations before hunting to ensure success and before war to leave heirs in case they die, but relations after killing a pig are forbidden for 10 days, and after killing a crocodile or turtle for 20 days. These taboos are to keep the men from losing success at hunting and to avoid angering the fish spirit.

Women are considered to be at fault for barrenness unless the man’s semen is clear and not white. If a woman leaves her husband for infertility and runs away with another man, her husband will put a curse on her to cause her barrenness. Barren women can have magic worked to make them fertile and there are three methods of birth control for women who are having too many children. Bauzi women will occasionally help pregnant women with their work if they are very tired. Women usually give birth alone, and if the infants are born dead, premature or malformed they must bury them themselves. Twins are believed to be bad luck, and the second one must be buried as the child of the fish spirit and must therefore be buried alive. Girls are valued primarily for the bride price they bring upon marriage and for the birth price their husband’s family must pay when they bear children to their husband’s clan.

Ketengban women have much the same life as the Bauzi women except that they raise domesticated pigs and have larger, more sophisticated gardens to care for. There are no hunting dogs or taboos among the Ketengban. Ketengban men cut trees and clear the gardens, but the women do all the rest of the gardening. They must work in fields in the early rain season, while the men work the home heavy loads of harvested food plus their children and firewood, often while leading pigs by a rope. Ketengban men are often preoccupied with the elaborate ceremonies and rituals needed to keep the spirits happy, as well as with their economic exchange patterns. Women provide food and wealth (pigs, daughters for bride price, songs for help) for Ketengban men. Their only recourse in case of illness or injury is to threaten or commit suicide, infanticide, or adultery. Any of these cause trouble to the husband as he must appease his wife’s family by paying back bride price and find a new wife to take care of his pigs, garden, and children.

Occasionally Ketengban husbands order the wife to commit infanticide, but since the birthing house is taboo to men they have no control over their wives’ actions there. Women return from childbirth after only a week, but newborns are dangerous to men and babies have to be three months old before even powerful spirit specialists can be around them, and six months old for ordinary men to approach them. The Ketengban have menstrual houses, and like the Bauzi, Ketengban men can only bring things to the edge of the clearing for their wives during menstruation or childbirth. But unlike the Bauzi, Ketengban women are expected to keep up their regular work during menstruation and to start gardening again four days after childbirth. However, they may avoid men while bleeding and call out that they are “unclean” if they see men approaching.

While the Bauzi believe in color-associated pollution, the Ketengban believe that “soft and cold” things such as fluids are polluting and bad, while “hot and hard” things like the sacred taboo foods red pandanus, cuscus, most parts of the pig, two types of banana and taro, one type of sugarcane and two types of sayur ilili (the unopened flower of a cane like sugarcane) are safe. All liquids, frogs and tadpoles, are soft and cold. Women and children are also soft and cold, and may eat frogs and tadpoles, but may not eat the men’s sacred foods. Drinking water is also soft and cold and is forbidden to women in the birthing house and to men during ceremonies lest it weaken them. They must get their liquid from sucking sugarcane. If this water taboo is broken during childbirth then excess rainfall will ruin hunts and ceremonies for the entire village. Women usually deliver alone because women helping them would contact the fluids and then endanger men when they returned to the village. Many rituals are necessary to keep the spirits from harming women and infants.

Ketengban women have no voice or choice in their marriage partners or their children’s marriage partners. Wife beating for various offenses is common among the Bauzi, but less so among the Ketengban.

IV. IMPLICATIONS FOR CULTURAL CHANGE

As the modern world infiltrates the more isolated groups in Irian Jaya, change does take place, but its effectiveness is directly related to the amount of genuine alteration in the worldview of the people. Again the Ketengban and Bauzi serve as examples of this.

Today, more among the Ketengban than among the Bauzi, change is taking place rapidly in areas with considerable outside contact. The Bauzi are a much smaller, scattered group so change spreads more slowly, but they are building settled villages and gardens. As schools and modern medicine are introduced, the people are abandoning the use of menstruation and birth houses. Men are less fearful of contamination from women. Women and children are now allowed to hear about the spirits because belief in their power has diminished with acceptance of Christianity. Initiations for men are no longer being held and most food taboos are no longer observed. Men are showing greater concern for their wives and children. Girls are going to school along with their brothers although older men and women are not learning to read.

But, although “progress” is being made, the health of Ketengban women is still adversely affected today by overwork, by getting less good food than the men, and by lack of hygiene in childbirth. There is a Ketengban woman working at the clinic, but normally any new lessons or activities for women must not interfere with their household tasks. Although women are accepted as equals in the churches, they must care for the children during services and this prevents full participation.

Some women in both groups are learning to read and would be allowed to teach other women. Both groups are beginning to choose modern medical treatment for some illnesses. However, the division of labor has not changed between men and women, even though there is work in rituals, ceremonies, spirit appeasement and warfare has greatly decreased. Men now simply do less. Their fundamental view of men’s and women’s value and roles have not yet changed.

In conclusion, the animistic beliefs and worldview of many traditional Irian Jaya societies tend to keep the women in a subservient, powerless position. Change superficially imposed by decree which doesn’t affect those beliefs will have little effect on women’s roles in those cultures. But if change comes as a result of acceptance of modern education and/or religious teachings which truly replace the traditional beliefs about women and spirit beings, then that change will be more thorough, deep and lasting because it will not simply be copying what they see others do, but result from their inner convictions.
Role of Women in Irian Jaya Societies

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Endnotes

1 Joyce Sterner works as an anthropology consultant under the auspices of the Cooperative Program of the University of Cenderawasih and the Summer Institute of Linguistics.

2 David and Joyce Briley have been working with the Bauzi people since 1975 and this information is from Joyce's unpublished paper "Controls of Red and White in the Bauzi Cycle of Reproduction". Andrew and Anne Sims have worked with the Ketengban people since 1983 and their data is documented in the two yet unpublished papers, "Of Red Men and Rituals: the Ketengban of Eastern Irian Jaya" by Andrew and "Myth and Metaphor in Ketengban Pregnancy and Childbirth Practices" by Anne.

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THE BERIK LITERACY PROGRAM:
from illiteracy to national language proficiency

Delle Matthews

UNCEN-SIL

Makalah ini mendokumentasikan sejarah dari program pemberantasan buta aksara Berik termasuk gambaran dari materi-materi yang dihasilkan dan pelatihan guru.


Para tutor tidak hanya dilatih bagaimana mengajarkan buku-buku tersebut tetapi juga mengajar kekharan dan prinsip-prinsip ekonomi.

Kampanya pemberantasan buta aksara yang diumum pada tahun 1985 telah mengalami hambatan tetapi walaupun demikian, kemajuan yang mantap telah tercapai. Tahap terakhir dari proses untuk membaca dalam bahasa Indonesia telah tercapai dengan bantuan para mahasiswa Universitas Cenderawasih.

0.0 INTRODUCTION
1.0 THE PREPARATION PHASE
2.0 THE MATERIALS PRODUCTION PHASE
3.0 TRAINING
4.0 THE LITERACY CAMPAIGN
5.0 TRANSITION TO BAHASA INDONESIA
6.0 CONCLUSION
APPENDICES

0.0 INTRODUCTION
0.1 The Berik People

The Berik language is spoken by approximately 1000 people. They now live in four village clusters (desa) along the banks of the Tor River, on the north coast of Irian Jaya province, Indonesia. Berik is a Papuan (non-Austronesian language) of the North Papuan phylum and the Tor stock.
0.2 The UNCEN-SIL Facilitators

Peter and Sue Westrum, members of the Cenderwasih University-Summer Institute of Linguistics (UNCEN-SIL) Cooperative Program, first moved to the Berik area to begin their work among the Berik people on May 1, 1973. Peter, having a Masters in Linguistics from the University of North Dakota and Sue, a registered nurse and literacy consultant, conducted linguistic, translation, anthropology, and community development work, including literacy and health promotion among the Berik language group over a period of 17 years.

0.3 The Literacy Program

This paper summarizes the literacy program conducted by the UNCEN-SIL Cooperative Program among the Berik people from 1973-1990. At the beginning of the program the Berik people were in the main pre-literals. Following a phased project plan and based on a good understanding of the Berik language and culture, teaching materials and supplementary reading materials were prepared in the Berik language. Vernacular speakers were trained, first as new literates and later as teachers and supervisors in the vernacular phase of the literacy program. Transitional courses into the national language complemented these initial literacy efforts.

1.0 THE PREPARATION PHASE

1.1 Linguistic Preparation

The first year among the Berik people was spent learning the Berik language and studying the Berik culture and became the basis of all succeeding work. Since this paper is limited to a discussion of the literacy program, other activities and papers produced will not be mentioned except to say that both linguistic and anthropology studies provided a sound foundation for the development of literacy materials and a literacy program that was appropriate for the Berik people.

Following the publication of a phonological analysis of the Berik language in 1975 the Westrums, with the help of Anne Cochran, a linguistic consultant from the Papua New Guinea Branch of SIL, developed a tentative Berik orthography.

The Berik orthography was designed to be as much like the orthography of the national language, Bahasa Indonesia, as possible. The Berik sound system differs from Indonesian in the following ways: Berik has seven phonemic vowels to be represented where Indonesian uses only five symbols. The two vowels not found in Indonesian are /i/ and /æ/. It was decided to underdifferentiate and represent both /i/ and /æ/ as 'i', /æ/ was represented as 'a'. In the primes /i/ was represented as 'i' in the first 20 lessons in order to train new readers to distinguish between 'i' and 'I'.

As a result of many years of working with the Berik literacy tutors and students it was decided to add 'ei' to the spelling system. During this time the Berik tutors themselves developed a greater awareness for their language and their preferences for spelling. They have chosen to write /nu/ as 'nw' and /sil/ as 'sy'. Working as a committee they have made decisions on words that had been inconsistently spelled because of dialectal variations. The committee chose to spell the complete version of many words which in fast speech are often abbreviated. They also made many decisions on the spelling of individual words.

1.2 Informal Literacy Preparation

Pre-literate people such as the Berik people do not have the benefit of the informal preparation received in the home by those in literate societies. A number of informal activities were made available to the Berik people in preparation for the formal instruction to follow. Some of these included looking at picture magazines, playing with jigsaw puzzles, manipulating shape games and other visual discrimination activities. Other motivating activities including sending of letters and making signs (e.g. to announce the arrival of a plane), both in the Berik language.

1.3 Easy-reading Materials

Some picture-books were produced with the purpose of motivating illiterate Berik people to learn to read as well as giving the opportunity for them to learn skills such as handling a book in preparation for learning to read. The books were the work of Berik artists and authors. All the pictures and text were tested to be sure the Berik people could recognize them easily. Then the books were printed by the UNCEN-SIL Program.

1.4 The Berik Newsletter

In 1979 a newsletter called Berik Tatis began publication. The editor/producer was a Berik man who worked under the guidance of the project facilitators. The letter was produced in digitot, Berik and Indonesian appearing alongside each other. Items included local events, births and deaths. The newsletter was printed on a donated Gestetner machine.

2.0 THE MATERIALS PRODUCTION PHASE

2.1 Primers

In 1981 the Westrums attended a primer construction workshop held under the auspices of the UNCEN-SIL Program and funded by a grant from The Asia Foundation. At that time they began the development of the vernacular primer series designed to teach illiterate Berik people to read and write in their own language. The workshop ran for eight weeks and was held at the UNCEN-SIL study center of Danau Biru outside the Berik area. The Westrums completed a rough draft of the primer series during the workshop.

Test classes were held January to April, 1982, in the villages of Tenwer and Somante. With the help of village and government leaders, 10 students were chosen for each class, five others joined later and 19 of those 25 finished the course. Each day after teaching, the facilitators wrote the teacher's manual to accompany the lesson for
The Berik Literacy Program

that day. These would be eventually used by the Berik tutors when they taught the primers. Two Berik literates and a non-Berik evangelist were trained to teach as they assisted the UNCEN-SIL personnel. During the period of these trial classes UNCEN-SIL literacy consultants made an evaluation visit and gave advice on the progress of the classes. The classes were very successful and the students were given certificates by government officials at a closing ceremony where two of the best students read stories, one in Berik and one in Indonesian. The purpose of the trial classes was to test the primer material and some problems were found that had to be rectified. The Westruns made revisions daily on the draft primers in preparation for their final printing. These included changes needed because of cultural problems and some problems in the materials themselves. Probably reflecting the cultural attitude that no one should excel and all are equal the students did not want to read aloud individually. The solution was to read together as a group. Those who were slower benefitted from hearing those who were good. Another problem that presented itself was name taboo or name avoidance. Students read slowly so that they would not accidentally say these. The solution for many people has been to have someone else read the taboo word for them. (With education many Berik people are losing their fears and this is no longer a problem.) Another problem encountered was that many of the lessons contained too much material to be covered in one short class period. These lessons had to be split into two and more review was given.

Following the revision of the primers each one was checked and approved by an SIL consultant before the books were printed for wicer distribution. Printing was a slow process due to unforeseen delays and the last primer was not available for distribution until 1984.

The first book in the Berik primer series teaches pre-reading skills (see Appendix A). These include mind preparation (tutors read a story to the students), ear preparation (students are taught to discriminate between sounds they hear in words), eye preparation (students are taught to differentiate between letter symbols) and hand preparation (students are taught book-handling and pre-writing skills). Students were also taught skills such as left-to-right direction; word recognition; word, phrase and sentence matching through the use of an experience chart (See report on the trial classes and teacher’s manual for more detailed information on the pre-reading program).

The next three books taught students to read each letter and the most common grammatical units found in the Berik language (see Appendix B). These were taught in the order of frequency they occur in Berik stories. The method followed was the Gudschinsky reading method which is an eclectic method adopting the principle of introducing one new element at a time, controlling vocabulary to match only that which the student has already been taught and teaching grammatical elements as a whole unit. A new letter is first introduced with a keyword, a word that contains the letter and is picturable. Several drills enable the student to learn to decode this letter in other syllables not found in the keyword. The student is then given a short story which contains words using the letter or grammatical unit being taught and only letters taught up to that point. Thus decoding, fluency and comprehension are taught. This is followed by a writing lesson. This included penmanship which was taught using the method developed by Des Oatridge, an SIL linguist working in Papua New Guinea, and creative writing. In the earlier books students wrote words and sentences that were dictated to them. In Book 5 they were given a topic to write about.

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The final book in the series contained stories. This book was designed to improve the students’ fluency in reading and comprehension. The vocabulary used was controlled so that a student could transfer easily from the previous book. Each story is followed by comprehension questions which the students answered in writing.

2.2 The Teacher’s Manual

In addition to the five student’s books, the Westruns prepared three teacher’s manuals designed to be used by both Berik and non-Berik speakers (see Appendix C). They include instructions to tutors for every lesson found in the primer including illustrations of all that the tutor needs to write on the blackboard. They also include an explanation of the phonology and grammar of Berik in Indonesian, and an explanation of the Gudschinsky method. All activities found in the pre-primer are presented in digit with Indonesian and Berik alongside each other on every page.

Each of these books was prepared for printing by the SIL computer department and printed at the UNCEN printshop. The cost was underwritten by a grant from The Asia Foundation.

2.3 Supplementary Reading Books

In addition to the Berik primer series several other books were prepared to both motivate the Berik people to learn to read and to provide extra reading material for new literates (see Appendix D and E). Topics included flora and fauna, locally authored stories, hymns, and other culturally appropriate topics. Many of these books were printed at the UNCEN printshop, but some were prepared and hand-printed by the Berik people themselves using a silk-screen press.

3.0 TRAINING

3.1 Tutor Training

In September of 1985 local Berik leaders and government officials chose three potential voluntary literacy tutors from each of the Berik villages. They were people who themselves were literate, dependable, had demonstrated confidence in front of a group, who were leaders in other areas and who had the esteem of their peers. Eighteen of the 21 chosen were Berik speakers. The other three were resident teacher-evangelists representing local churches in the area.

The literacy campaign had been broken into segments and the tutors attended a two week training period before each segment. The first of these was held September 13-27, 1985 and the tutors were taught how to use the first teacher’s manual and teach Book 1 of the primer series. After three weeks of teaching Book 1 in their villages the tutors returned to the training center to learn how to teach Books 2 and 3, using the accompanying teacher’s manual and basic health and economic principles. A final course was taught three months later on the use of Books 4 and 5 and the accompanying teacher’s manual. This course was interrupted by unrest in the area.

The courses were held in Somanante, being the most central village and the location of local government offices. The cost of the course was again underwritten by The Asia Foundation.
The Berik Literacy Program

The goals for the trainees during the course included:
- to become fluent readers of Berik.
- to become fluent writers of Berik.
- to learn the skills of teaching other Berik people to read and write.

To achieve these goals the trainees were taught to use the Berik teacher's manual and primers, to use calendars, to read more fluently, to improve their handwriting, and to use the experience chart and pocket chart. They were also given the opportunity for practice teaching in all the skills they were learning.

In March of 1987 a three-day inservice Seminar was held for the tutors which included the installation of a Supervisor.

Since the beginning of the literacy effort in the Berik area 24 tutors have been trained to teach the Berik primer series.

3.2 Health Training for Tutors

The tutors were also trained as village health workers. This included how to teach a series of health charts, child-care (weighing and providing nutritious food for babies) and how to treat sores and malaria.

3.3 Training in Economic Principles

The tutors were trained in the basic principles needed to run a small store (cooperative). They were given an initial stock of reading books, writing books, salt, etc. Each month they reported on the literacy, health and cooperative programs and replenished supplies for the store, buying goods from the money made during the previous month.

3.4 Writers' Training

In 1983 two Berik men attended a writers' workshop which was held at the Danau Bira study center. The workshop was conducted by UNCEN-SIL consultants Jean Dawson, Vera Stair and Dave Brooks. Activities included writing assignments, discussion classes on writing skills, typing classes, appropriate technology projects such as sewing, oven and bread making, the preparation of stencils and mimeographing of books using a silk-screen, and recreational activities. The workshop was funded by both the Summer Institute of Linguistics and CIDA (Canadian International Development Agency) and was sponsored by the UNCEN-SIL Cooperative Program.

As well as producing a booklet of stories the Berik writer trainees gained confidence in writing in a natural discourse style.

In February, 1988, four more Berik speakers attended another writers' workshop again held at Danau Bira. This workshop was led by Delle Matthews, an SIL literacy consultant and was sponsored by the UNCEN-SIL Program. The trainees devoted half their time to helping with translation activities and half in the writers' course. The workshop was run informally with each participant working at his own pace. Two of the Berik participants were given help in writing in their language. Two were trained as typists and all four learned to illustrate books and to prepare and mimeograph books using a silk-screen press.

4.0 THE LITERACY CAMPAIGN

4.1 Opening Ceremony

On October 2, 1985, local government officials, the Berik people and the facilitators organized an opening ceremony for the first Berik literacy campaign. The formal ceremony included dancing, speeches, a demonstration of reading, a song from the school children and the opening of the literacy campaign. This was followed by a meal which had been prepared for the visitors.

4.2 Progress and Problems

Enthusiasm among the Berik people was high and 183 students in eight villages enrolled to learn to read in Berik. These were divided into classes taught by 17 tutors, including eight head tutors and nine assistants. Due to high enthusiasm the classes completed Book 1 during the first month of classes.

At this time, November, 1985, there was some unrest in the Upper Tor River area near Buruwater and Tabiere villages and the two non-Berik tutors left the area and never returned. In fact, for a time, the Berik people also deserted those villages. The one assistant tutor left was not capable of handling classes by himself and so classes were discontinued in that area.

Classes in the other six villages continued until Christmas, 1985. The students completed Book 2 during that time. Some students understood the material well and others needed much more review. Plans were made to divide the classes according to the abilities of the students.

Further unrest in late December, 1985, and early January, 1986, caused the evacuation of four more villages. The start of classes in 1986 was delayed. Eventually classes in the two remaining villages, Kondirjan and Taminabor, continued slowly.

On May 1, 1986, the Westrums and the literacy supervisor had to leave the area. They were absent from the area for 10 months. During that time classes continued sporadically in Kondirjan and Taminabor, occasionally in three of the other villages and not at all in Somanente.

The situation did not improve until 1987. Nevertheless classes were able to be continued in Kondirjan and Taminabor. The students were able to complete the primer series. The program facilitators gave final exams to the students and the results of the testing were good.

Why did classes in Kondirjan and Taminabor continue while others did not? One possible explanation is that the tutors in those villages were the most capable. Both are leaders in their community, one being the literacy program supervisor and the other being the kapala desa (head of the village cluster). Also Kondirjan was almost untouched by the unrest in the area.
4.3 Results

Since the program began a total of 24 tutors have been trained and approximately 40 to 50 Berik people have completed the literacy course. It is difficult to determine the number of graduates accurately due to the mobility of the Berik people during the period of unrest; however, 21 people received certificates at a closing ceremony of the campaign. Nineteen people had previously received certificates after finishing the trial class. There have been other changes that cannot be measured. There has been an increase of the number of people who read books in their homes. Parents now encourage their children to attend school and many more young people are going beyond an elementary education entering middle school (SMP) which is in Somanente and high school (SMA), outside the area. Literateness is gradually gaining value among the Berik people. One visible sign of this is the increase in letter writing by the Berik people to family members who live in town.

4.4 Closing Ceremony

A closing ceremony for the first Berik literacy campaign was held on November 29, 1988. Dr. August Kafiar, Chancellor of the Cenderawasih University, representatives from the Indonesian government’s Non-formal Education Department and SIL representatives attended. Dr. Kafiar gave a speech complimenting the Berik students on their diligence and stressing the importance of their vernacular language.

5.0 TRANSITION TO BAHASA INDONESIA

The Berik students began learning to read and write in the Berik language, their mother-tongue. Using these skills they then progressed to reading, writing and for many, speaking Indonesian, the national language.

5.1 Tutor Training

In February, 1989, the Berik literacy tutors were trained to teach the Indonesian literacy materials Kejar Paket A by University students from the Cenderawasih University. The Berik students who had completed the Berik Primer series began transferring their reading and writing skills to learning to read and write in Indonesian, the national language. Since only some of them speak Indonesian well the materials were used to improve their ability in Indonesian as well.

The university students supervised the re-establishment of classes. A total of 139 Berik students in five different villages enrolled in the classes.

5.2 The Kejar Paket A Program

The materials used are provided by the Indonesian government under the Kejar Paket A program.

The Kejar Paket A program teaches Indonesian, literacy, mathematics and basic technology and living skills with the intention of improving living conditions and work skills of the participants. To this end funding is provided for each group of students to establish a small income-generating enterprise. In September of 1989 another group of four university students from the same university went to the Berik area to give further training to the Berik tutors and to help each of the groups of students choose, plan for and begin just such a project. Projects began under the supervision of the Berik tutors and the university students in four out of the five villages. These included an agriculture project (a community garden of red onions), a fish project and two chicken projects. To date three of the four projects continue to run well but one of the chicken projects suffered a setback when all but three chickens died of disease.

6.0 CONCLUSION

The road to literacy for the Berik people has not been an easy one. There have been unforeseen delays in the production of the materials and disruptions to classes due to the unrest in the area. When physical safety was uncertain and food was scarce education became a low priority. The results to date of people who have learned to read are not as high as first hoped. However, despite the problems, the program continues today much to the credit of the UNCEN-SIL fieldworkers, the Berik tutors and the resilience of the Berik people themselves. Motivation was tested and yet many persisted. The Berik literacy program has just begun, albeit a slow beginning. With the enthusiasm of the tutors and students, and with the encouragement of the local government officials and the Westrums, all appearances are that the program will continue. With the new peace that has been established in the area since February, 1989, the program should eventually produce the original goal of a literate Berik society.

Endnotes

1. Delle Matthews works as a literacy consultant under the auspices of the University of Cenderawasih and the Summer Institute of Linguistics.
2. See Oesterwal, G., 1981. People of the Tor, Assen, for further information.
5. Titles include:
   Gagala Berikmana (Berik artifacts), 1975.
9. Titles include:
Junu Tor Bwaina (Bird book), 1979.
Yesus Kristus (The life of Christ), 1979.
Anggwa Bura Yahudi Fomfom Ge Tabana? (Daily life in Bible times), 1981.
Buku Tateris Alserem Sowensomana (Stories), 1983.
Buku Tateris Gijonmana (Stories), 1983.
Berik Ol Ge Nasbili (Triglot conversation book), "885.
Ol Ungwawaner Berik Olam (Triglot thesaurus), 1988.
Berik Tor Bwaina Aahe Nwihliswenaram (Stories), 1988.
Taterisl Angtane Kursus Kondirianmana (Stories), 1988.
Buku Simal Berikmana (Hymnbook), 1988.


Sample Pages from Berik Pre-Primer

Sample Pages from Berik Primer
APPENDIX D

Pelajaran 23 (Buku 2)

PERSIAPAN
(Penanggapan, Buku daftar hadir, pensil untuk guru dan tiap peserta kursus, Buku 1 dan 2 untuk guru.

Kartu kota, timon, nisan, timonanana, natamana, nana.

Paper tulis, kepur tulis, penghapus, kertas bergara.)*

PENGARUSUN

Penanggapan, Berdoa.

Penanggapan daftar hadir

(Guru, mengajak siapa Pelajaran 1.)

Guru menyampaikan

Bayak Natan bercerita berbegini:


Tidak berapa lama, saya melihat seseorang besar yang macam layak dari akan. Saya tahu param, anak guru. Dan kanguru di tanah, lalu saya bawa jadi dan sambangnya, jadi beri di kanguru dengan sambang, kena di sari depan — dan mati.

Lalu saya guang ke tanah dan bu melihat besar, dia meraup luak dan berteriak, "Tal...!"

Saya拨ong kanguru dan kanguru Natan, maka jadi, meraup dan sata melatih dengan para para.

Sampaikan di ainta.

Mendengar buwai huruf

Kali ini kita mulai dengan latihan baru. Saya

menambah 3 kata. buwa bibi bim

Sample Pages from Berik Teacher's Guide

APPENDIX E

Habat Pater

Habat pater ala mene gisam bitulu

Habat Pater

Habat pater ala mene gisam bitulu

Habat Pater

Habat pater ala mene gisam bitulu

Habat Pater

Habat pater ala mene gisam bitulu

Habat Pater

Habat pater ala mene gisam bitulu
ORTHOGRAPHY TESTING IN MEAH
Using Meah or Indonesian Semi-Vowel Rules

Gilles Gravelle
UNCEN-SIL

1. INTRODUCTION
2. AREAS MOST NEEDING EXAMINATION
3. DIALECT SITUATION
   3.1 Evidence of Dialect Differences
   3.2 Attitudes Towards Other Dialects
4. REACTION TO TRIAL BOOKS
5. A DISCUSSION OF PSYCHOLINGUISTIC TESTING AND OBSERVATIONS MADE
   5.1 Testing Methods
   5.2 Advantages and Disadvantages of Indonesian vs. a Meah Orthography
6. ORTHOGRAPHY PROPOSAL
   6.1 Marking Pitch and Stress
   6.2 Acceptance of Differing Dialects
7. CONCLUSION

8. APPENDICES

Appendix 1: Sample Text
Appendix 2: Orthography Chart
Appendix 3: Map of Dialect Areas
Appendix 4: Examples of the Three Tests Used

1. INTRODUCTION

The purpose of this paper is to examine the results of using the Meah tentative orthography within the last year, and to make further recommendations based on those results for working orthography status.

The Meah people live in the eastern part of the Bird’s Head, in the Manokwari district (kabupaten) of Irian Jaya, Indonesia. Besides the many villages in the highlands and valleys of the Arfak mountains, there are also numerous villages along the north coast of the Bird’s Head bordering the Amberebaken language area to the west, and extending east as far as the regional center of Manokwari. Due to the government’s trans-location (trans-lokas) program, higher population density may be found in the north coast lowlands as well as in the coastal zones. There are an estimated 10,000 to 12,000 Meah, with 35-40% living within the urban areas.

Meah is a Papuan language and is classified as a family level isolate within the East Bird’s Head phylum level stock. (Voorhoeve 1975:49) The closest related language to Meah is Moskona (63% lexical similarity).

The Meah tentative orthography status was developed in January, 1989. Since then 94 pages of native authored text, and 25 pages of native co-authored translated text have been distributed. Of the native authored text, one is an alphabet book, the second is a story book for beginning readers, and the third is a collection of Meah folktales for intermediate and advanced readers. The tentative orthography is based on the phonological analysis by Gravelli and Gravelli (1988). A copy of the Meah phonological description is on file in the archives of the University of Cenderawasih and the Summer Institute of Linguistics in Abepura.

2. AREAS MOST NEEDING EXAMINATION

The areas most needing examination and testing are ranked according to degree of importance:

1. Meah phonology uses different semi-vowel rules than Indonesian. However, most educated Meah are writing Meah using Indonesian semi-vowels rules. Which system would be easier for literate readers, and acceptable to current literate Meah?

2. There are three dialects in Meah. The three dialects are all mutually intelligible with one another and only display minor spelling differences. Which dialect should be used for writing Meah, and how receptive would groups from the other dialects be to words spelled differently?

3. Meah has low function pitch and contrastive stress. Would there be any difficulty in reading if pitch and stress were not marked?

The proposed Meah orthography already closely matches the Indonesian orthography. Indonesian uses the /j/ and /w/ in syllable initial positions and the /l/ and /u/ in other positions. Because most semi-literate and literate Meah have learned the Indonesian orthography, most are already writing Meah using that orthography. Even so, the use of Indonesian rules for semi-vowels, as stated above, conflict in certain Meah word environments. One of the main goals of this testing was to compare the readability of both systems for Meah readers.

3. DIALECT SITUATION

As noted in the introduction, Meah speech communities are far-flung, extending from Merdai in the southern lowlands to the north coast and eastward to Manokwari. With a geographical area as large as approximately 2,100 square kilometers, involving rugged terrain and large empty expanses between population areas, one would expect to find several dialects causing some limitations in mutual intelligibility amongst the more distant communities.

Initial lexicostatistic surveys showed vocabulary similarity between regions ranging from 80% to 86% (Gravelli 1985). However, more recent observations and conversations with Meah from different dialects would place the similarity around 96%. In other words, all dialects are mutually intelligible with one another. The major differences lie with pronunciation of words. (Since we are dealing with the issue of writing Meah I will henceforth refer to the spelling of Meah words). One reason for this widespread mutual intelligibility may have to do with their semi-nomadic nature. The Meah often travel widely (within their linguistic boundaries) to seek help from members of their lineage in the collection of bride wealth. Therefore, different speech communities have frequent interaction with one another.

There are three dialects within the total Meah community. The first dialect area is generally around the Yoom area of the Arfak mountains. The second area is generally around the Meyers River area. The third area is from the North coast area around Sidiei (see map, Appendix 3). Within the Manokwari area all three dialects are well-represented, either within their original villages or the government relocation villages (trans-lokas). Those boundaries are very arbitrary in that a mixture of differing dialects may be found within all three areas. The boundaries have more historical significance.
Today it may be more realistic to view the dialects on a continuum instead of within separate distinct boundaries.

The spelling differences among the dialects primarily involve the front and mid vowels, and bilabial and alveolar consonants. There is no area in which a person may speak one of these dialects exclusively. There are no areas with speakers using words exclusively of their own dialect. That is, there are shared words between some dialect areas. Each area has a few words from another dialect area mixed in. As seen in Table 1 below, Sedi has some similarities with Yoom, but not Meyes. Meyes has some similarities with Sedi, but not Yoom.

3.1 Evidence of Dialect Differences

**TABLE 1: Spelling Differences between Dialects**

<table>
<thead>
<tr>
<th>YOOM</th>
<th>MEYES/MIERENKEI</th>
<th>SEDI</th>
<th>GLOSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>gago</td>
<td>goha</td>
<td>'they two'</td>
<td></td>
</tr>
<tr>
<td>tago</td>
<td>taga</td>
<td>'different'</td>
<td></td>
</tr>
<tr>
<td>efesi</td>
<td>ewesi</td>
<td>'inside'</td>
<td></td>
</tr>
<tr>
<td>efesa</td>
<td>ewesa</td>
<td>'his child'</td>
<td></td>
</tr>
<tr>
<td>agow</td>
<td>agow</td>
<td>'strike'</td>
<td></td>
</tr>
<tr>
<td>rura</td>
<td>rura</td>
<td>'they'</td>
<td></td>
</tr>
<tr>
<td>ber</td>
<td>bera</td>
<td>'it, that'</td>
<td></td>
</tr>
<tr>
<td>ongg</td>
<td>ongga</td>
<td>'that is'</td>
<td></td>
</tr>
<tr>
<td>ofos</td>
<td>owos</td>
<td>'skin'</td>
<td></td>
</tr>
<tr>
<td>row</td>
<td>now</td>
<td>'for'</td>
<td></td>
</tr>
<tr>
<td>okwag</td>
<td>okag</td>
<td>'ahead'</td>
<td></td>
</tr>
<tr>
<td>orkwa</td>
<td>orka</td>
<td>'carry'</td>
<td></td>
</tr>
<tr>
<td>gwauid</td>
<td>gaidu</td>
<td>'where'</td>
<td></td>
</tr>
<tr>
<td>owsa</td>
<td>owya</td>
<td>'finish'</td>
<td></td>
</tr>
<tr>
<td>skowta</td>
<td>skoyta</td>
<td>'toward'</td>
<td></td>
</tr>
<tr>
<td>mahtefa</td>
<td>mohtefa</td>
<td>'mud'</td>
<td></td>
</tr>
<tr>
<td>mamas</td>
<td>momos</td>
<td>'garbage'</td>
<td></td>
</tr>
<tr>
<td>eferwei</td>
<td>eferwe</td>
<td>'change'</td>
<td></td>
</tr>
<tr>
<td>mahwkeni</td>
<td>mohwkeni</td>
<td>'kain timur'</td>
<td></td>
</tr>
</tbody>
</table>

Spelling differences involve:

- /a/ → /o/
- /e/ → /a/
- /b/ → /l/ → /w/.
- /k/ → /kw/
- /g/ → /gw/

3.2 Attitudes Towards Other Dialects

None of the Meyes interviewed feel any difficulty exists in communicating with Meyes from other dialect areas. There doesn’t seem to be a dialect that every Meyes speaker feels is the original or most distinguished besides their own. After administering the reading test, I pointed out the different ways Meyes pronounce the semi-vowels, and what geographical area they correspond to. Each speaker felt that their pronunciation was correct, and the others incorrect. I asked what dialect, if any, they felt had less prestige than any of the others. Most felt that the Meyeser / Yoom area was the least prestigious due to influence by the Manikion language. Even some Meyes speakers from that area admit that their dialect is influenced by Manikion, and is therefore less prestigious.

All Meyes interviewed agreed about their ancestors’ place of origin within the Meyes Efej, Meyof area (see map). After discussing the dialect areas that most reflect their place of origin, and have had the least influence by outside speakers, all Meyes interviewed agreed that the central dialect would most likely be the Meyekiba Efej / Meyerenkey area. Interestingly, this area is the most centrally located, and does exhibit more of a mixture of the three dialect areas.

After explaining the difficulty in catering to all dialects, I asked them which of the three dialects, besides their own, would they most likely accept books in. All people interviewed felt that the Meyekiba Efej / Meyerenkey area would be the most acceptable.

4. REACTION TO TRIAL BOOKS

Three types of books using dialect 2 were distributed to Meyes within the three dialect areas. The books ranged from alphabet books to a longer folklore book, and six chapters of scripture from the Gospel of Luke. The books were distributed to elementary school readers (SD), junior high school readers (SMP), and high school gradutes (SMA) and college graduates (Stafana). The scripture text was given to some church leaders from both the Gereja Kristin Akitab Indonesia (GKA) and the Gereja Kristin Indonesia (GKI).

Initial responses were good from all levels. All those interviewed felt that they had no difficulties in reading the material. Some questions were raised regarding the spelling of certain words. Most of those words had to do with either a dialect difference or the use of semi-vowels y and w according to the Meyes phonology.

5. A DISCUSSION OF PSYCHOLINGUISTIC TESTING AND OBSERVATIONS MADE

Three types of formal tests were given to a select group of 15 readers in order to ascertain the true readability of Meyes using the suggested Meyes orthography.

The education of participants selected ranged from 4th grade through college. Ages varied from about 10 years old to 63 years old. Most students were educated within the Indonesian school system. Some of the adults, who have only gone as far as sixth grade, were educated at a mission school; two of the adults were educated during
the Dutch Administrative era. Among those tested were students, laborers, church workers, a government medical worker, a government administrator, and two government customs employees. Readers from all three dialect areas were tested. I chose a wide variety of age and educational levels with the hope that any unique attitudes stemming from educational or age status would show.

5.1 Testing Methods

Three types of test were administered. It was made clear to all people being tested that it was not a test in the usual sense. I told them that I was interested in getting their opinion on how Meah should be written, and to find out if what was being presented was acceptable to them.

Multiple Choice

The first test was a multiple choice questionnaire testing the reader preference. Nineteen words were listed with two to four alternate spellings for each word, depending on the possible ambiguities. Words were spelled either using Meah semi-vowel rules or Indonesian semi-vowel rules, and according to differing dialects. The persons being tested were told that all the words listed under each number were the same word, but spelled in different ways. They were asked to choose the one that they felt was best or "looked" most correct in their opinion.

Results:

The results of the test showed that 58% of the words using Meah semi-vowel rules were chosen and 42% of the words using Indonesian semi-vowel rules were chosen. There was no strong consistency in choosing a particular spelling. Often the person being tested picked a syllable structure using Meah semi-vowel rules and later on in the same test he chose the Indonesian semi-vowel rule for the same syllable structure. However, the readers were fairly consistent in choosing their own dialect spelling.

Readability Test

The second test administered was a Meah word list containing 54 words. Words differing from the first test were used. Words were written using both Meah semi-vowel rules and Indonesian semi-vowel rules. The words were interspersed among other non-confusing words. Different word spellings according to dialects were also interspersed throughout the word list. The readers were asked to read the word list out loud, one item at a time. A note was made each time a reader made either a reading mistake or paused before reading a word.

Results:

Out of the 15 readers tested, there was a total of 38 errors and 32 long pauses.

- 15 errors or pauses involved syllables using the Indonesian ei spelling.
- 10 errors or pauses involved using the Meah ey spelling.
- 4 errors or pauses were made involving the Meah ay spelling.
- 9 errors or pauses involved the Indonesian spelling of au, ou.
- 5 errors or pauses involved the Meah spelling of au, ow

The other 28 errors or pauses were a mixture of general reading errors that did not show any consistency. Few errors were made reading the same word written according to differing dialects. No errors were made on pitch or stress.

What is interesting to note is that of the 20 words in the word list involving the spelling of ei or ey about 60% of the errors were made with words using the ei. The other 40% involved words using the syllable ey. This error rate closely matches the preferences shown in the multiple choice survey, of 58% for /ey/ and 42% for /ei/. Statistically speaking, the error rate suggests that using the Indonesian semi-vowel rule is slightly more difficult.

Reading a Prepared Text

The third test administered was the reading of a two-paragraph native-authored story. The story dealt with making a bow and arrow and then hunting for food. The terminology was simple and the story involved day-to-day concepts for the Meah.

Two versions of the story were prepared. Version A. used strictly Indonesian orthography. Version B. used the proposed Meah orthography. The reader was asked to read story A. first, then story B. Since the reader would naturally do better with the second story, the order was rotated for every other reader. So the next reader read story B. first, then story A. A note was made by the tester for each reading error or long pause.

Results:

For story A. (Indo orth) there were 13 mistakes and 24 long pauses. For story B. (Meah orth) there were 11 mistakes and 7 long pauses. Of the 55 total errors or pauses made, 11 involved the use of the spelling ei. No reading errors or pauses involved the use of the syllable ey. There were 18 errors or pauses involving the use of the spelling ou as opposed to 10 errors or pauses involving the use of the spelling ow. The 16 remaining errors were general and did not show any consistent correlation to specific sounds.

Out of the 24 reading errors between the two texts, 55% were made in story A., and 45% were made in story B. Out of a total 31 long pauses made, 75% involved story A., and 25% involved story B. Again there was no evidence of errors made with pitch or stress.
It is interesting to note that the 55% error rate using the Indonesian orthography compared to the 45% error rate using the Meah orthography closely matches the 60% to 40% ratio from the word list test, and the 58% to 42% ratio from the multiple choice test. The vocabulary items differed between all three tests administered. The only consistency among the tests was the types of potentially confusing spelling structures.

5.2 Advantages and Disadvantages of Indonesian vs. a Meah Orthography

The three types of tests used have hopefully yielded some evidence of the readers' true psycholinguistic preferences/perceptions. It was hoped that by having the participating students read words in isolation, in context, and in a multiple choice questionnaire pattern would emerge. At no time were they ever told of any attributes or failings of either spelling system.

Since most of those tested had received their education in Indonesian, they were already accustomed to that particular orthography. However, for illiterate Meah who may enroll in a beginning literacy course, the results of this test may be misleading since they have not been exposed to and therefore influenced by the Indonesian orthography.

Using the Indonesian orthography did show slightly more difficulty in reading. The total average mistakes made on all three tests shows that using the Indonesian orthography had a 57% error rate as opposed to a 43% error rate in writing with a Meah phonological orthography.

The difficulty lies within Meah syllable boundaries. Words with syllable initial and final vowels are somewhat common. Therefore using the Indonesian semi-vowel rule would result in difficult spellings that do not fit Meah syllable patterns, i.e. efelaga 'expound' or moaeis 'sink hole'. This grouping of vowels could cause difficulty for beginning readers. The /ou/ syllable occurs less frequently than the /ei/ syllable before a vowel.

On the other hand, there are already an estimated 3,000 to 4,000 Meah who have had at least an elementary school education. That number is on the rise with the number of Meah children being enrolled in primary schools today.

Present primary school students already tend to write Meah using a pure Indonesian orthography or a mixture of both Indonesian and Meah. Future students will do the same. If they know how to interpret the semi-vowels, then there is no confusion in reading. However, using a pure Meah phonological orthography may cause some confusion. Couple this with the tendency to write using the Indonesian orthography and there would be, in effect, two orthography systems in use.

Another difficulty that may arise using the Indonesian semi-vowel rule is the conditioning factor for the allophones [s] and [n]. When [v] precedes [s] or [n], the consonants are palatalized and become allophones [s] and [n]. Since [l] does not affect palatalization, there is a potential for confusion over the reading of that syllable. This was actually demonstrated on the reading test. When the word efelena 'new' was written, six out of 15 paused and failed to read the [n] as palatalized. When written as efeyna only two misread the word.

After testing was complete, those tested were asked what system they preferred. There was no strong preference either way.
<table>
<thead>
<tr>
<th>Proposed Meah Spelling</th>
<th>Indonesian Spelling</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>efeyei</td>
<td>efeyei</td>
<td>&quot;wet&quot;</td>
</tr>
<tr>
<td>mei</td>
<td>mei</td>
<td>&quot;water&quot;</td>
</tr>
<tr>
<td>ofokai</td>
<td>ofokai</td>
<td>&quot;small&quot;</td>
</tr>
<tr>
<td>efina</td>
<td>efina</td>
<td>&quot;new&quot;</td>
</tr>
<tr>
<td>eyel</td>
<td>eyel</td>
<td>&quot;cold&quot;</td>
</tr>
<tr>
<td>Meyekiba</td>
<td>Meikeba</td>
<td>&quot;place name&quot;</td>
</tr>
<tr>
<td>efel</td>
<td>efel</td>
<td>&quot;ride&quot;</td>
</tr>
<tr>
<td>ajuens</td>
<td>ajuens</td>
<td>&quot;moment&quot;</td>
</tr>
<tr>
<td>edahina</td>
<td>edahina</td>
<td>&quot;my husband&quot;</td>
</tr>
<tr>
<td>einelnic</td>
<td>einelnic</td>
<td>&quot;confused&quot;</td>
</tr>
<tr>
<td>einelina</td>
<td>einelina</td>
<td>&quot;confused&quot;</td>
</tr>
<tr>
<td>eyahelher</td>
<td>eyahelher</td>
<td>&quot;forbidden&quot;</td>
</tr>
<tr>
<td>eitej</td>
<td>eitej</td>
<td>&quot;eye&quot;</td>
</tr>
<tr>
<td>akina</td>
<td>akina</td>
<td>&quot;my father&quot;</td>
</tr>
<tr>
<td>meyaga</td>
<td>meyaga</td>
<td>&quot;rotan&quot;</td>
</tr>
<tr>
<td>mou</td>
<td>mou</td>
<td>&quot;sweet potato&quot;</td>
</tr>
<tr>
<td>melisowfa</td>
<td>melisowfa</td>
<td>&quot;clothing&quot;</td>
</tr>
<tr>
<td>odou</td>
<td>odou</td>
<td>&quot;liver&quot;</td>
</tr>
<tr>
<td>ofofem</td>
<td>ofofem</td>
<td>&quot;hot&quot;</td>
</tr>
<tr>
<td>mowesi</td>
<td>mowesi</td>
<td>&quot;sink hole&quot;</td>
</tr>
<tr>
<td>agou</td>
<td>agou</td>
<td>&quot;strike&quot;</td>
</tr>
<tr>
<td>ofoukou</td>
<td>ofoukou</td>
<td>&quot;mary&quot;</td>
</tr>
</tbody>
</table>

7. CONCLUSION

The tentative Meah orthography based on the phonological analysis of Meah, and the Indonesian orthography are for the most part similar. The consonant-vowel patterns differ somewhat, causing some confusion in the use of semi-vowels.

In spite of the fact that using the Indonesian orthography caused 14% greater rate of error in reading, it would be more advantageous to use the Indonesian semi-vowel rule in writing Meah. This will conform with the way all literate Meah are now writing Meah. It will also allow easier transition for Meah enrolled in Meah literacy courses. Although the test showed a slight preference for the Meah orthography, no preferences were expressed by the persons tested towards writing Meah using a pure Meah phonological orthography.

Using the central dialect in the spelling of words seems acceptable to all those who were interviewed.

Endnotes

1 Gilles Gravelle works under the auspices of the Cooperative Program with the University of Cenderawasih and the Summer Institute of Linguistics.

2 The majority of educated Meah have only gone as far as sixth grade. Of all the educated Meah, there are only six with a four year college degree. We estimate several hundred to have junior high and high school educations. Today a significant number of Meah are not going beyond elementary school level.

Bibliography


8. APPENDICES

APPENDIX 1: Sample Text


Beda mimit magot jera mudou ongga oufamofa rot mocongg jera mesigebr koma. Jeska mimif miref mar beda mint fob.

APPENDIX 2: Orthography Chart

<table>
<thead>
<tr>
<th>Phoneme</th>
<th>Allophone</th>
<th>Orthography</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>[b,b,p]</td>
<td>b</td>
<td>obkosa</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ebeiren</td>
</tr>
<tr>
<td>d</td>
<td>[d]</td>
<td>d</td>
<td>didif</td>
</tr>
<tr>
<td>g</td>
<td>[g,gré]</td>
<td>g</td>
<td>gago</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>nomnaga</td>
</tr>
<tr>
<td>t</td>
<td>[t]</td>
<td>t</td>
<td>tago</td>
</tr>
<tr>
<td>k</td>
<td>[k]</td>
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<tr>
<td>c</td>
<td>[c]</td>
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</tr>
<tr>
<td>j</td>
<td>[j]</td>
<td>j</td>
<td>juents</td>
</tr>
<tr>
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<td>pogora</td>
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<td>[s,š]</td>
<td>s</td>
<td>enesi</td>
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<td></td>
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</tr>
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<td>[h,χ]</td>
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<td>mamu</td>
</tr>
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<td>[n,ń,ńo]</td>
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<td>onot</td>
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<td></td>
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<td>ameyeńa</td>
</tr>
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<td>ongga</td>
</tr>
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<td>[r,l]</td>
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<td>rura</td>
</tr>
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<td>[w,ǵ]</td>
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<td>y</td>
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<td>y</td>
<td>yaxmahı</td>
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<td>yahmahı</td>
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<td>mimip</td>
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<td>e</td>
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<tr>
<td></td>
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<td>oufa</td>
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</tbody>
</table>
APPENDIX 4: Examples of the Three Tests Used

TEST NUMBER ONE. Multiple Choice of words that the person being tested considers correct to him/her.

Meydu ongg bua budow eskeyra rot?
Which one do you like or think is correct?

1. a. agosuwyt  
   b. agosut  
   c. agosuyt  
   d. agosuwt
2. a. owyra  
   b. oyra  
   c. oyda  
   d. ousa
3. a. owyda  
   b. odyra  
   c. owa  
   d. owsa
4. a. owysa  
   b. oyasa  
   c. oysa  
   d. ousa
5. a. owyfa  
   b. oyfa  
   c. ofwa  
   d. ofua
6. a. mow  
   b. mou  
   c. owfa  
   d. oufa
7. a. agou  
   b. agow  
   c. odu  
   d. odou
8. a. odow  
   b. odou  
   c. ofow  
   d. ofowkow
9. a. ofoukou
10. a. ofokay  
    b. ofokai  
    c. ofkek  
    d. ofue
11. a. ayjuens  
    b. ayjuens  
    c. eyj  
    d. eney
12. a. eiye  
    b. eij  
    c. eif  
    d. eney
13. a. eney  
    b. eney
14. a. eytey  
    b. eitej  
    c. eteij  
    d. eteij
15. a. efey  
    b. efey  
    c. efey  
    d. efey
16. a. ebeyrens  
    b. ebeyers  
    c. ebeiers  
    d. ebeiers
17. a. mey  
    b. mei  
    c. mei  
    d. mei
18. a. efey  
    b. efey  
    c. efey  
    d. efey
19. a. eineina  
    b. eynena

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139
TEST NUMBER TWO. As readers read the word list, reading mistakes or long pauses were noted next to the word by the tester.

<table>
<thead>
<tr>
<th>Test Number</th>
<th>Word</th>
<th>Score</th>
</tr>
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<tbody>
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<td></td>
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<td>2. beda</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. deysmos</td>
<td></td>
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</tr>
<tr>
<td>4. ebah</td>
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</tr>
<tr>
<td>5. deisef</td>
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</tr>
<tr>
<td>6. ofa</td>
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</tr>
<tr>
<td>7. meytetb</td>
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<td>8. oufa</td>
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<td>10. ambai</td>
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<td>11. efeyei</td>
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<td>12. mah</td>
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<td>18. kenda</td>
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</tr>
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<td>19. meimos</td>
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Orthography Testing in Meah

TEST NUMBER THREE. Persons being tested were asked to read text A, then text B. The tester made notations where reading mistakes or long pauses were made. (Potentially difficult spellings are in italics. They are not in italics on the original tests)

Story A (Meah orthography)


Beda mimif magot jera mudow ongga oufamofa rot mocongg jera mesigebr koma. Jeska mimif miref mar beda mint fob.

Story B (Indonesian Orthography)


Beda mimif magot jera mudow ongga oufamofa rot mocongg jera mesigebr koma. Jeska mimif miref mar beda mint fob.

IRIAN, Volume XVIII, 1990

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