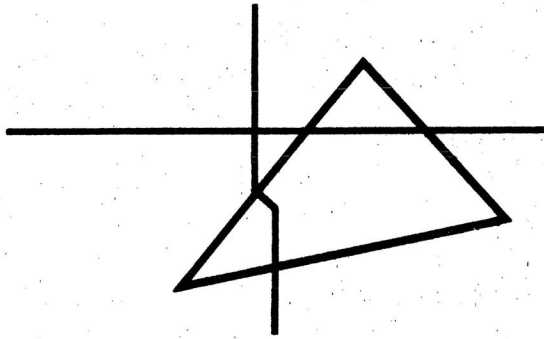


“Aspects of Modernization in Bougainville, Papua New Guinea”



by Dr. Douglas Oliver

**Working Papers Series
Pacific Islands Studies
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University of Hawaii at Manoa
Honolulu, Hawaii**

The author of this working paper needs no introduction to scholars and students working in the Pacific. As Dr. Oliver indicates in his preface, this report was originally prepared for the authorities of the North Solomon Province of Papua New Guinea. The document warrants a larger circulation, however, and for this reason, it is published as a Pacific Islands Studies working paper.

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ASPECTS OF MODERNIZATION IN BOUGAINVILLE, PAPUA NEW GUINEA

Douglas Oliver

1981

Photocopy, Summer 1986

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PREFACE

The following Report was written mainly for, and addressed to, the authorities of the North Solomons Province of Papua New Guinea. It is now being published and distributed in the belief that it may be of interest to a wider circle of readers, as an example of the application of social science research to a Pacific Island society undergoing relatively rapid change due largely to operation in its midst of a large European-owned and managed industrial enterprise (in this case a mine).

The background to the Report is described in the author's Bougainville: A Personal History, which was published by the Melbourne (Australia) Press in 1973 and distributed in the United States by the University Press of Hawaii.

Several monographs and articles written by the researchers engaged in the project have appeared in print since the writing of the Report, but because these were not available at the time the Report was written, and hence did not contribute to its findings and conclusions, they are not listed in the References; nor has the text of the Report been subsequently amended to reflect data and conclusions in those later monographs and articles.

Douglas Oliver
Honolulu, July 1980

LETTER OF TRANSMITTAL

January 1978

The Honorable Dr. Alexis Sarei, Premier
North Solomons Province
Papua-New Guinea

Dear Dr. Sarei:

As you know, several scholars from Papua-New Guinean, Australian, New Zealand and American universities have during recent years been studying a few of the changes that have been taking place in the Province's society and economy, since Bougainville Copper began its operations there. While some of our researches have focused on topics of more academic than practical interest (e.g., on the processes and consequences of modernization in a rural Melanesian setting), it has also been our purpose to provide you and your associates with data that might prove to be helpful to you in connection with your task of planning for the Province's social and economic well-being.

The researches alluded to were sponsored by the University of Hawaii, with which I am associated, and by a group of scholars at the Australian National University (under the leadership of E. K. Fisk), who now constitute the Council A.N.U. Development Studies Centre. The finances for most of these studies were provided by Bougainville Copper Ltd., whose managers were as generous with their financial and logistical support as they were scrupulous in their regard for the independence of the research.

Attached hereto is a list of the reports written or being written by the scholars involved in this programme. Some of these reports have already been published, some are complete but await publication, and some are nearing completion. Accompanying this letter are copies of the reports already completed, both published and unpublished; copies of the others will be sent to you as soon as they are completed.

As you will see, the reports listed concern a very wide spectrum of the kinds of changes that have been taking place in the Province in recent years: demographic, social, political, administrative, economic, etc. It would require a very lengthy volume to summarize the reports' findings on all those aspects—a task

that would be redundant and probably not very useful. In many of the topics reported on you and your associates are better informed than any outside researchers could ever hope to be. After all; you have been principal actors involved in many of them!

There is however one aspect of the Province's recent changes that, while crucial and almost inexorable, is less palpable than most others, and therefore deserving of special emphasis. I refer to Bougainvillians' growing dependence upon money, and their prospects for obtaining the money they believe they must have to satisfy their recently acquired material wants.

This is not to say that material things (and related services) are the only things that Bougainvillians want, or that money is the only means of acquiring those material things. In recent years, for example, they have demonstrated dramatically their desire for a larger measure of political autonomy. Also, they evidently place high value on ethnic unity and distinctiveness, and—verbally, at least—on some aspects of cultural continuity. In a real crisis I expect that Bougainvillians could and would forgo the goods and services that require money; they did so during World War II, and could conceivably do so again. But, their dependence upon money has increased immensely since the War, and future money deprivation would doubtless be, for many if not most Bougainvillians, a painfully traumatic experience indeed.

At the same time, Bougainvillians have on the average relatively large money incomes, higher than those of the indigenous residents of any other Papua New Guinea District or Province. Moreover, it seems likely that their monetary incomes will remain relatively high for several years to come. On the other hand, I will attempt to show in the report that follows that, if some present trends continue—trends in demography, land use, consumer choice, etc. Bougainvillians will become increasingly dependent upon money at a rate that the money-earning capacities of many (if not most) of them will not keep pace.

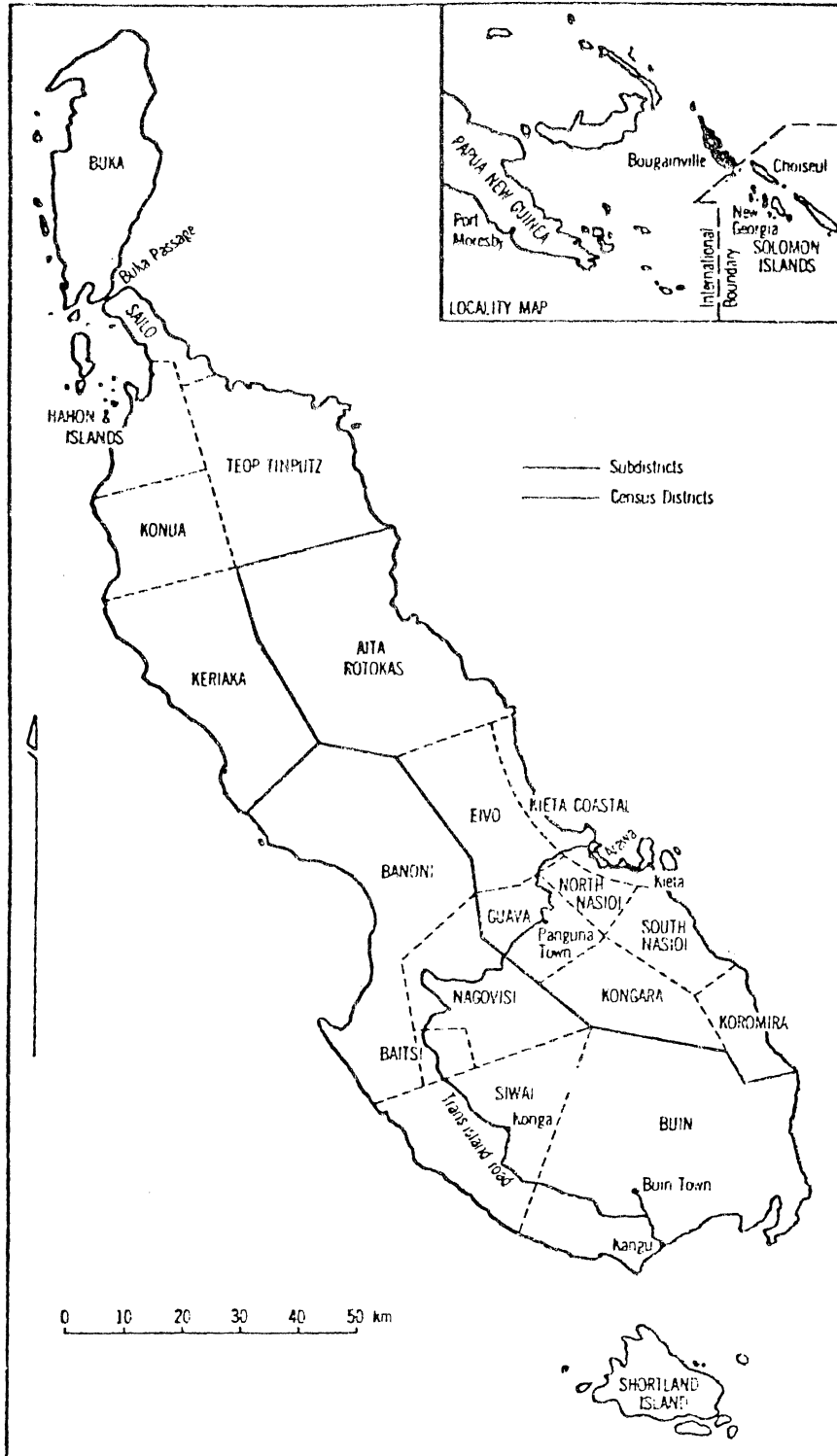
The principal factors in this pessimistic formula are the Province's small size and remoteness, its rapidly increasing indigenous population, that population's appetite for goods and services obtainable only with money and its methods and propensities for earning money. In this report I will attempt to summarize and where possible document these factors. To do so I will draw on personal observation and on data contained in the reports of members of our research

programme—supplemented by data collected by some other researchers not associated with our programme (e.g., Donald Mitchell, Jill Nash, and Eugene Ogan). The report has been read by some of my fellow researchers (i.e., Messrs. Bedford, Connell, Fisk, Hamnett, and Mamak) and contains some corrections and amendments suggested by them. However, its interpretations and conclusions as a whole are not necessarily representative of all their views. Some of them may share my views, in whole or in part, but the report should be read as reflecting mainly mine.

Needless to say, it has been a most interesting and intellectually rewarding experience to take part in this research programme, and I wish to thank you and your associates—along with Bougainvillians in general—for giving us the privilege of doing so. I hope that some of what we have reported on will be of use to you and your Government in your planning for the Province's future well-being.

Respectfully yours,

Douglas Oliver



BOUGAINVILLE

(Reprinted from "Taim bilong mani" Monograph No. 12, Development Studies Centre, The Australian National University, Canberra, 1978)

I. Material Wants and Needs

The main focus of this report has to do with the material well-being of the Bougainvillians* and the means they have for achieving it. At first glance that would seem to be a simple and straightforward matter to generalize about, but some reflection suggests otherwise. It would be easy enough to define that "well-being" in terms of irreducible biological needs—e.g., the amounts and kinds of food, liquid, oxygen, sleep, etc. required to maintain life and to support physical activity at average levels of expenditure. Such matters have been well studied elsewhere, and minimal need formulae have been established for individuals of different sex, age, body size, etc. The difficulty arises in trying to discover what the individuals themselves consider essential for their material well-being. When suffering the pangs of hunger or thirst or lack of air or when overcome with fatigue, the desire for food or water, etc. dominates all other wishes; for all contemporary Bougainvillians those biological survival needs are well enough satisfied most of the time to permit them to think about and wish for other satisfactions, including material goods either to consume directly or to use in attaining non-material ends.

In an earlier writing (Bougainville: A Personal History) I set down what I believed to be the Bougainvillians' conceptions of "The Good Life"—first, as those goals were prior to the colonial era, and then as they were at the time of writing, about five years ago. Regarding the pre-colonial Bougainvillians' desires for material goods I wrote as follows:

The individual Bougainvillian was no less preoccupied with food than most Westerners, and had very definite ideas about what constituted a satisfactory menu. Undoubtedly everyone would have enjoyed a steady diet of starch-, vegetable-, and oil-puddings and a quantity of fatty pork, but the scarcity of these foods limited them to festive occasions. It would not have occurred to anyone to hope to eat such luxury foods everyday; on the other hand the fact that such luxuries were eaten so infrequently added even more individual enjoyment and social importance to the occasions when they were actually served up. Moreover, while they did not favor excessive overeating (either for personal contentment or as a mark of affluence), neither were they constrained in their appetites by notions

*Throughout this report the word Bougainvillian(s) will be used to refer to the indigenous inhabitants of Bougainville and Buka. This includes the few Niuginians of non-Bougainvillian ancestry who also consider Bougainville-Buka to be their permanent homes.

about nutritional balance or weight control. (Yet very few of these islanders were fat.)

Any thoughtful islander leafing through the advertisements in a popular European magazine could not fail to be struck by their preoccupation with comfort: with the desirability of avoiding anything causing physical discomfort such as painful illness, minor variations in heat or cold, unyielding chairs or beds, discomfort from certain kinds of noises and odours, pain from physical exertion devoted to work (but not to play), etc. Perhaps the pre-European Bougainvillians disliked physical discomfort as much as present day Europeans do, but it is quite clear that much less thought and effort were expended by them to alleviate it.

Owning land was considered by many to be as desirable as having kin. Some men with only small land-holdings were able to achieve social influence through war-making skill or political shrewdness, but even for these the desire for large land-holdings was a powerful motive in life. Such feelings about land were in part sentimental: nearly every matrilineage had its sacred place, where its deceased members' bodies or charred bones were deposited, or where according to myth its ancestress first appeared. In addition, land was recognized as being the basis for most other forms of wealth: food crops, pigs and shell money. (The crops were necessary for feeding the pigs, and pigs were the principal item of exchange for shell money.)

As for the latter, tangible wealth in the form of surplus plant food, pigs and shell money was almost universally sought after, and although large hoards of these items did not in themselves indicate political influence, it was possible to achieve or maintain such influence only through generous handouts of them.

Another intangible evidently desired by many was prestige, the renown that derives from doing praiseworthy deeds. In the minds of these islanders several kinds of action merited praise: fine craftsmanship, skillful hunting and fishing, successful magic making, aggressive fighting, and, most important of all, open-handed generosity.

and concerning this point

'Generosity', to many Europeans, means giving something for nothing. The pre-European Bougainvillians also practiced this kind of transaction on occasion, but usually only among the closest of kin. Like ourselves they may have honoured such altruism as a utopian ideal, applicable to all fellow tribesmen; but realistically they probably did not expect it to take place outside narrow circles of kinship and friendship. Among all other persons the receipt of a service or object carried with it the obligation of a return, even though it may have been labelled a 'gift' at the time. And the kind of giving most favoured among these islanders was feast-giving: for the quantities of food (including luxury foods) thus received, the guests were expected to bestow praise on their host. Moreover, with such

verbal praise—the highest form recognized—went a degree of social respect, and hence social influence, and even some political authority.

As for the extent to which these desires were actually satisfied I wrote:

In attempting to learn how well Bougainvillians were able to satisfy their life goals with the means provided by their environment and customs, a good deal of guesswork is involved. In connection with food, there seems to have been enough available, in quantity and variety, to satisfy all individuals' everyday expectations (and also to fulfill most of their nutritional needs as defined by scientific criteria). Warfare must have served to reduce some tribes' food supply now and then, but there is no evidence of the kind of periodic and widespread famine so characteristic of other parts of the world, and no indication that some members of any tribe were significantly less well fed than others. There were of course regional variations in food supply, e.g. coastal dwellers were able to consume more fish and coconuts than mountaineers, but it seems unlikely that the latter would have considered themselves endemically deprived on that account.

A similar answer may be given with regard to expectations about physical comfort. For example, they had enough spare time, raw materials and craft skills to make their dwellings much more comfortable in the European sense; the fact that they did not do so can perhaps be taken to mean that they were content with what they had.

The desire for land—specifically, the desire to remain on and utilize one's own land—seems also to have been achieved by most Bougainvillians of that early era. There are cases reported where people were displaced from coastal areas by immigrants from elsewhere, but those were probably exceptional.

The desire for wealth—i.e., pigs, shell money, surplus food—as a means of achieving social influence and political power was not so easily and universally satisfied. These goals, by their very nature, had to be competed for, and as the goods used in doing so were not unlimited in supply it follows that not every man desiring more-than-average influence and power was able to achieve it. (It may be—probably was—the case that not every man desired more-than-average influence and power, but it is just as likely that some men who did desire it fell short of their goals.)

Now, after decades of contact with Europeans many Bougainvillians' goals for material well-being have changed in kind and quantity. And while some of their newly-acquired goals are attainable within present means, many Bougainvillians desire some other objects and services that only a few are ever likely to obtain. In fact, in terms of social and political considerations one of the most, if not the

most, important differences between contemporary Bougainvillians and their ancestors lies in this widening gap between their material goals and their ability to attain them. Formerly most people were able to attain most of their basic material goals; this is less true of the present and unless deliberate measures are taken to reduce it the gap between wants and satisfactions will become even wider in the future, thereby resulting in a large reservoir of social discontent—But this is getting ahead of the argument.

A fully comprehensive and representative listing of the kinds of goods and services Bougainvillians now want, and an estimate of the extent to which they now satisfy those wants, would require far more data than I have access to. Such data would include findings from Province-wide surveys of individuals' want lists, household inventories (showing goods purchased and the order in which they were purchased), records of store sales, etc. etc. Some of these facts are contained in the research reports I am drawing on (e.g., Mitchell, Moulik), but only for the places treated in those localized reports. Other facts bearing on this matter have been gleaned from my own observations around the Province—e.g., in rural and urban dwellings, in trade stores and supermarkets. These factual fragments cannot compare with a comprehensive scientifically-conducted survey in terms of representativeness and detailed accuracy, but such a survey would be very costly—and for the purpose of this report is not indispensable.

In pre-colonial times, I propose, adult male Bougainvillians fell into two somewhat indistinct categories with respect to their desires for material goods. (For present purposes I assume that most women shared or at least supported the wishes of their husbands in this regard.) Most men were content in having only enough vegetable food to satisfy hunger—plus desires for special dishes on special occasions; enough pigs and shell money for periodic domestic feasts and for carrying out prescribed social responsibilities; enough housing for weather-proof shelter; enough tools and (in some cases) water craft for subsistence. A second and smaller category of 'pre-colonial' men comprised those who wanted to obtain or control the distribution of some of the above objects—mainly food, pigs, and shell money—in order to maintain or acquire more-than-average social influence or power. (As mentioned above, it may be that all or most Bougainvillian men had some yearnings towards those political goals; however, in the societies that I have known or read about only a few men acted as if they believed themselves qualified to achieve those goals.)

In terms of their material wants present-day Bougainvillians present a more complex picture; instead of two categories they appear to differentiate into at least five.

First, there are those who acquire goods, traditional and "modern," mainly for the use of themselves and their family-mates including additional kinds and amounts needed for domestic celebrations and for carrying out social obligations (e.g., bride price, mortuary donations, hospitality). These individuals correspond to the first of the two pre-colonial types described above, except that they must now be differentiated into sub-types:

1(a). Those, mainly older, individuals who spend all or most of their lives in their villages and who live fairly "traditional" lives. Some of them earn modest cash incomes, principally through cash-cropping, with which they purchase small amounts of modern goods: tinned meat and fish, rice, bottled beverages, tobacco, sugar, clothing, lamps, kerosene, etc., plus perhaps radios, bicycles and bedding.

1(b). Somewhat younger (on-the-average) individuals who live in urban or peri-urban places, or who circulate between village residence and urban employment, or who earn fairly large incomes from cash-cropping. These individuals are similar to those in category 1(a) in being strictly "consumers," but they acquire and use more modern goods than the latter—e.g., more store-bought food, more modern houses and furnishings, more vehicles, more radios, etc. It may be objected that what I have divided into two sub-types of "mainly consumers" consists in reality of a single continuous category whose members differ from one another only in terms of quantity of modern goods consumed. However, I believe we have to do here with two different kinds of consumers—the one firmly "traditional" in their consumer wants, the other significantly more "modern" in theirs. (Regarding the former, I know of individuals who have evidently chosen to live a traditional style of life even though possessing enough money to be otherwise.)

There are also to be found in the Province a number of men who correspond to the pre-colonial Big-man type—i.e., men who want goods not only for consumption by themselves and their families, but also for distribution (in the form of feasts and other displays of hospitality), for the purpose of acquiring social and political influence. These also may be divided into two types:

2(a). Some of these contemporary Big-men continue to use "traditional" goods in their distributions (although using some "modern" goods for personal consumption), while others—

2(b). include many "modern" goods and services in their distributions as well—e.g., kina, store-bought food and beverages, vehicular transport of goods and services, information about and intervention with Government.

(3) Finally, there are several Bougainvillians whose material wants and satisfactions differ so widely from those of their compatriots that they need to be placed in a category of their own. I refer to those few who appear to have chosen to live European material lifestyles just as completely as their incomes will permit—in housing, food, clothing, recreation, etc. Unlike some corresponding persons in, say India or Africa, I know of no Bougainvillian in this category who has pointedly rejected the traditional Bougainvillian lifestyle as something uncouth and distasteful, but they nevertheless do attempt to live in urban or peri-urban areas, and most of them are salaried—although some of them supplement their salary incomes from cash-cropping or other businesses. All of them that I know about have completed secondary education and many have undergone some measure of tertiary education. Some members of categories two and three have also engaged in secondary education, and a few in tertiary, but category three members are generally higher-educated than the others. (Note: Higher does not necessarily mean "better.")

The above typology is based on consumption wants—on the kinds and relative amounts of material goods (both objects and services) desired, and in varying measures acquired, by the persons being typed. Another typology relevant to this discussion is the one proposed by the social psychologist, J. K. Moulik, who carried out research on Bougainville in 1972-74 and whose report (Bougainville in Transition) has just come to hand. Dr. Moulik's study focused on household heads residing only in the Kieta and Buin sub-Districts (in the Guava, North Kieta, and South Kieta census divisions of Kieta; in the Lugakei, Paubake, and Siwai census divisions of Buin). However, from my casual observations elsewhere, I believe that the categories he has elicited—though not necessarily their proportional representatives—would be found to be applicable throughout all Bougainville and Buka.

Moulik's study was concerned mainly with certain psychological factors as they were revealed through survey-type interviewing and observations. While such methods cannot provide the depth of information and insight supplied by long-term,

intensive anthropological-type observation in single communities, it has the merit of being applicable to a much larger population sample, especially when carried out with the degree of knowledge, perceptivity, and scientific rigour that characterized this particular study.

The psychological factors that Moulik focused on were those believed by some psychologists to exert strong influences on an individual's ability to adjust successfully to "modern" forms of economic activity. The research method has been tried out, with some persuasive findings, in many other places around the world where "traditional" (i.e., "subsistence") forms of economic activity are being transformed into money and market-exchange forms. Moulik had previously carried out similar research in mainland Papua New Guinea and was therefore well sensitized to the kind of economic life found on Bougainville. A basic proposition implied in this study is the one shared by other researchers, including myself—namely, that all adult Bougainvillians want some money, or goods that can be acquired only with money. but that they differ (within certain limits) in their abilities to acquire that money. Some of these differences are due to their inequalities in capital resources—mainly land; others to the location of their residences (e.g., distances from markets); still others to level of education and experience; etc. etc. But Moulik asserts, with considerable persuasiveness, that the relative strength of three kinds of motivational drives also has an important bearing on money-earning in a society like that of present-day Bougainville. In the technical terms Moulik uses, these drives are (1) need for achievement, (2) need for affiliation, and (3) need for power.

Need for achievement, according to Moulik's usage, is positively related to entrepreneurship and response to economic opportunities, e.g., a person with high need-for-achievement "prefers moderate risk to high and low risk situations; he is confident in predicting his performance and he likes taking personal responsibility for his actions." On the other hand, a person having a high degree of need-for-affiliation tends to do the kinds of things that will bring him the approval of his peers, to "choose friends over experts to work with." And a high rating in need-for-power indicates a strong desire to control the actions of others—in other words, it is "the political means used to achieve economic or other ends."

Tests designed to reveal the proportions of these three kinds of motivational drives were administered to 453 male heads of households—228 in Buin and 225 in

Kieta sub-Districts. From the results Moulik divided the tested individuals into five types, which he labelled and characterized as follows:

Entrepreneurial managers, i.e., those having a medium level of achievement-motivation, a high level of power-motivation, and a low level of affiliation-motivation. In Moulik's words:

Looking at these psychological characteristics, one can identify entrepreneurial managers in the Bougainville situation in the persons of the leaders of 'interest associations', such as producers' and consumers' co-operatives, 'holding companies' related to transport, construction and retail business, etc. The 'interest associations' have two clearcut objectives: first, they seek to represent an 'interest' of a group of people, and second, they attempt to assert independence from expatriate dominance. In order to achieve their objectives, they try to exploit all possible money-earning activities by obtaining governmental and non-governmental assistance, by utilizing local resources and by drawing on new sources of wealth in their communities. These new sources of wealth could be cash cropping, wage-employment, compensation money given by the copper mine, share-holding, etc. In other words, an entrepreneurial manager is a person who is ready to participate in any kind of money-earning activities and even to try to influence other members of his 'association' or 'group' to do the same, so long as it satisfies the association's objectives. Apparently, this entrepreneurial manager group, although very small in size, is comprised of 'big peasant elites' representing the class interest of the 'interest associations'. The active members of these 'interest associations' are also mostly from the same 'big peasant elite' class. The entrepreneurial manager of the 'interest associations' usually seeks power and prestige for the interest group as well as for himself, rather than personal economic aggrandisement; he does this by obtaining control of the provision of government and non-government support services at the local level and usually by arranging the production and marketing of a certain agricultural commodity in a manner serving the interest of the association. Among the respondents under report, Kieta villagers seemed to have a slightly larger proportion of leaders with the motivational characteristics of entrepreneurial manager than did the Buin villagers.

Entrepreneurs, i.e., those being high in achievement-motivation, low in affiliation-motivation, and medium in power-motivation. According to Moulik those typed as entrepreneurs are

...people who start or expand small businesses. The key to their success has turned out to be what psychologists call the need for achievement, the desire to do something better or more efficiently. Again there seemed to be only a slight difference between Kieta and Buin villagers; a marginally greater proportion of Buin villagers have

demonstrated the motivational qualities of entrepreneurs than Kieta villagers. However, the proportions of respondents with entrepreneur characteristics were relatively low in both subdistricts. Who are these entrepreneurs? They are the keen innovators eagerly exploiting the new ideas of cash earning activities, especially cash crops, retail and wholesale trading, truck-transport business, etc. The motivational make-up of the entrepreneur is different from that of the entrepreneurial manager. Entrepreneurs are successful in setting up a small business and running it profitably as long as it remains fairly small and manageable, but they become less effective when the business expands and when the entrepreneur is required to manage a larger organization and to recruit and work with a large number of people. In other words as long as the enterprises are limited to a manageable challenging situation, the individual entrepreneur is effective because he still operates in the framework of achievement motivation with characteristic concern for competition and using oneself for achieving the competitive goal. But as soon as the situation demands helping others to give their best and supporting them to be effective, the relevance of achievement motivation becomes less and is overtaken by power motivation which is the characteristic of the entrepreneurial manager. Among the respondents under report, almost all the entrepreneurs were members of the 'interest associations' as described before in connection with the entrepreneurial manager. In other words, the entrepreneurs among the village elders of Kieta and Buin sub-districts tended to have the 'big peasant elite' class background as did the entrepreneurial manager.

The money-earning activities of these entrepreneurs follow a certain uniform pattern. Apart from membership and shareholding in the 'interest associations', their major aim is to own or set up some off-farm business enterprises. The indigenous private traders of cash crops and the wholesale trader of vegetables from Siwai who obtained contracts to supply weekly requirements to the copper mine and to the school at Kieta are examples of such entrepreneurs. Although the major thrust of their efforts is to own a business enterprise, the entrepreneurs are also deeply involved in village-based money-earning activities such as cash cropping and marketing of subsistence produce. They are also keen to supplement their incomes and savings from wage-earnings, by obtaining wage employment either for themselves or for members of their households. But to them wage employment is a temporary phase, resorted to when it is thought necessary to supplement their other cash incomes to generate sufficient savings for investment in business enterprises. The entrepreneurs would not wish to continue in wage employment beyond the point where they felt comfortable with the success of their business enterprises.

Moulik's third and fourth types, subsistence farmers and peasants, constitute opposite ends of a continuum rather than sharply distinct categories.

Subsistence farmers, i.e., those low in achievement- and power-motivation, high in affiliation-motivation. In Moulik's words these are

mostly elderly villagers without any wage-employment experience and with strong affiliation to the traditional norms of tribal clans who in effect remained isolated from the main-stream of the money economy by deliberately not participating in it fully. Most of these subsistence farmers have a relatively low resource base (land), and this does not permit them to shift their attention and labour to cash cropping in a major way. Even if switching their resources from subsistence to the cash crops promised some monetary gain, they would be obliged to reduce their subsistence output to grow the cash crop. Given the low land resource base, this would make expansion of cash crop production a hazardous undertaking, leaving no margin to meet the risk involved if something went wrong with their cash crops. It is therefore quite rational and justifiable for the subsistence farmers to be hesitant about entering fully into the money economy by way of cash crop production or other money earning activities. To try to explain the behavior of the subsistence farmers entirely in terms of motivational conservatism is unconvincing. On the other hand, it is perhaps this resource constraint, or more specifically the size of the margin of surplus productive capacity over the desired subsistence requirement that makes the subsistence farmers motivationally weak in money-earning activities. Not only do the subsistence farmers become motivationally weak, but they also try to rationalize their weak response to money-earning activities in terms of a protest against the 'ills' of the modernist onslaughts. Among the sample respondents, for example, the subsistence farmer group was most vocal in its complaints against the breaking down of the 'glorious' traditional norms of the tribal society.

As Moulik points out, no contemporary Bougainvillian is totally isolated from the monetary sector; the label subsistence farmer signifies merely relatively greater dependence upon traditional patterns of production, exchange, and consumption.

Peasants, i.e., those low to medium in achievement- and power-motivation, medium to high in affiliation-motivation. Dr. Moulik characterizes these as follows:

Motivationally, the peasant farmers are more favourably disposed than the subsistence farmers to operations in the monetary sector, with relatively higher achievement and power motivations. Perhaps a relatively larger land-resource base contributes to their motivational profile. But compared to the first two groups, the entrepreneurial managers and the entrepreneurs, the motive configurations of the peasant farmers is far less strong in that they remain basically dependent on land-based economic activities furthered by supplementary incomes from other money-earning activities such as wage employment. With their relatively large land-resource base, this group was able to take the risk of utilizing the money-earning opportunities by devoting a major share of their resources to cash

crop production even at the cost of subsistence production (while in most cases maintaining a minimum required subsistence level of production for sustenance). Such a major switch over to cash crop production was further facilitated by the growth of communications, transport, and marketing facilities. But in the process of their shift toward greater commitment to the money economy, the peasants ceased to be self-financing. As a result, there were changes in the economic organization of labour resources among the peasant families. To a certain extent the peasant family started depending upon its younger men—that is, the father at one stage, the son at another—for a cash income which it could not do without, but the major portion of its cash income was derived from village-based economic activities, particularly cash cropping. Having enough land to grow cash crops and a market for their produce, a peasant family has the choice between staying at home and farming its land or earning the cash that is needed in some wage employment away from home, and the choice is partly a matter of rational calculation based on the estimated difference in return, taking into account the fact that a stipulated wage is paid regularly, whereas the independent cash cropper has to bear his own risks.

In other words, as Moulik puts it,

... motivationally the peasant farmers seek to keep a foot in both worlds. They regard the village as home and cash cropping as their main vocation, while wage employment is considered as a short-term sojourn, supplementary to the primary concern of cash cropping. Eventually the wage earners of the peasant families settle down in the village when they have had enough of wage labour. Since the peasant farmers are motivationally committed to village-based activities and village life, but closely linked with the urban economy and outside market, their need for affiliation with traditional tribal values and norms get weakened, but not substantially eroded. In operational terms, a peasant farmer would be willing to disregard traditional norms and values only if it helps him in his cash cropping enterprise; otherwise he would maintain the expected traditional relationships with village people.

Peasants constituted about one-third of all of Moulik's respondents, entrepreneurs about one-tenth, subsistence farmers about one-thirteenth, and entrepreneurial managers less than one-fifteenth. The remaining respondents, over one-half of those questioned, were classed as "indifferent"—not because they were unmotivated or psychologically detached from the issues involved in adjusting to new kinds of economic circumstances, but because they did not fall into any one of the fairly clear-cut categories just itemized. According to Moulik, the "indifferent" group was in between the subsistence farmers and the peasants in terms of achievement-and power-motivation, but lower than either in terms of affiliation-motivation.

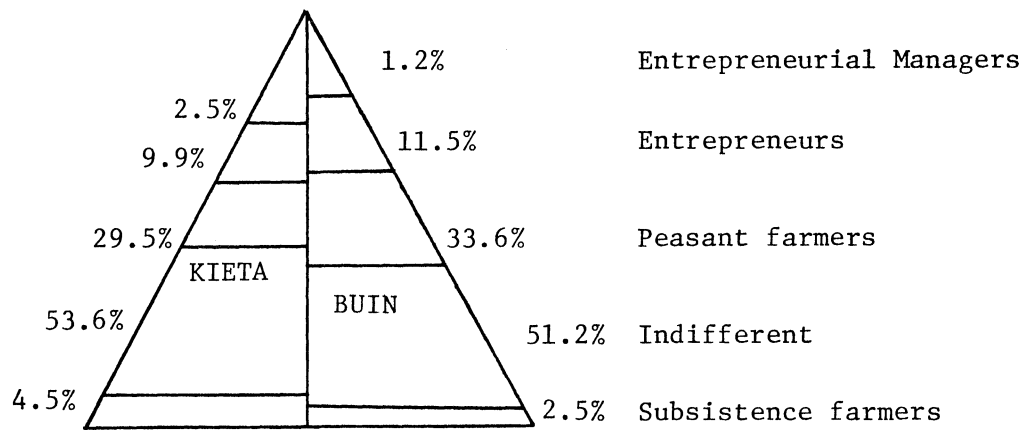
As an in-between group, the behavioral traits of both subsistence farmers and peasant farmers can be observed among the members of the "indifferent" group. In ownership of land, members of this group were almost equal to or slightly better off than the subsistence farmers, but they were nevertheless far below the level that could satisfy their motivational demand. Compared with the situation of the peasant farmers, further expansion of cash crops beyond the level already achieved by the "indifferent" group was either physically not possible or economically not viable. In addition, quite a few of the "indifferent" members were situationally constrained in that their villages were located in isolated interior (or hilly) areas or were at a considerable distance from the market centres. On the other hand, being constrained in cash crop expansion the "indifferent" group seemed to exploit subsistence resources fully. It was this group, for example, who were most keen to take the opportunities to market subsistence garden foods in the markets as retail sellers. But the cash earned from occasional retail sales of subsistence produce in the weekly food markets was too small to satisfy their motivational demand.

For the "indifferent" group therefore the strategy of the subsistence farmer was unsatisfying, whilst the strategy of the peasant farmer was not available to them. Since they did not have the inherent motivational drive of entrepreneurs, the only course left to them was to stagnate in their level of participation in the money economy. This 'stagnation' and the resulting frustration tended to weaken their need for affiliation to traditional norms and village life, and for many the only workable strategy seemed to be involvement in wage employment as a major source of money income, thus breaking away from the stagnating village economy. In this respect, the wage-employment opportunities in BCP in particular, and in other town-based jobs in the Panguna/Arawa/Kieta complex in general, were important motivating factors. Most often, however, they did not have proper information about these wage-employment opportunities. But this did not deter many of them from visiting their few 'wantoks' who were already working in these towns, in search of wage employment.

The deliberate choice of wage employment and often active seeking for it should not be construed as an indication that the "indifferent" group wanted to make a complete break away from their village life and permanently involve themselves in wage employment. To the extent that the "indifferent" group had the behavioral traits of the subsistence and peasant farmers' groups, they wanted to maintain their links with their village activities without being too emotional about it. If a member of this group were fortunate enough to have wage employment in the town, it is likely that he would send some money to the home village (at least during the initial years); and he would make occasional visits to the village (not initially, but later maybe once a year). In other words, he is likely to stay as a wage worker in the town longer than a member of a peasant family, but now permanently. As an ultimate aim, he wants to return to his village 'one day' and live there. Unlike other motivational groups, however, the "indifferent" group was not very choosy about the

location of wage employment; they certainly had a preference for Bougainville district, but were not unwilling to go to other parts of Papua New Guinea.*

Moulik presents the distributive results of his findings in a graphic manner, which is reproduced below:



Summarizing these findings he writes,

At the bottom more than half of the pyramid is occupied by the motivationally weak and economically disadvantaged groups of 'indifferent' and subsistence farmer categories; about one-third of the pyramid is occupied by the medium level group of peasant farmers; and lastly, only about one-eighth (the top) of the pyramid is occupied by the highly motivated and economically (socially and politically too) advantaged group of entrepreneurial managers and entrepreneurs.

*To add a personal view: although any attempt to categorize humans psychologically—to attempt to pigeonhole the countless and protean varieties of human personalities—is inevitably artificial, I am nevertheless impressed by the verisimilitude of Moulik's typology, as I expect many other long-term observers of the Bougainville scene will be. As I read through his characterizations I thought, time and again: "Ah! that fits so-and-so to a tee."

Another interesting and perhaps highly significant thing revealed by these distributions is the close similarity obtaining between the Kieta and Buin samples. Despite their closer proximity to the mine and other urbanizing-industrializing activities (and their much longer and more direct contact with pre-mine economic colonialism), the Kietans continue to be like their more rural Buin counterparts in the psychological features measured by this study. And while one would expect some even wider differences between Kietans, and say, Aitas or Konuas, in these respects (e.g., the physical isolation of Aita would tend to inhibit entrepreneurship and peasant-type productivity), the inference that may be drawn from the Kieta-Buin similarities is that the typology itself (and in some measure the overall type ratios) may apply to the Province as a whole.

In the course of his study, Moulik also investigated the job aspirations, etc. of a large number of secondary-school students normally resident in the Kieta and Buin sub-districts. Not surprisingly, he found a close similarity between them and their parental generation sub-district mates in motivational patterns. While the students tended to hold professions of medicine, political leadership, priesthood, engineering, and government official in the highest respect, most of them pragmatically aspired to and expected to obtain more feasible money-earning jobs—in which respect they seem to have conformed to their parents' reasons for financially supporting their post-elementary schooling.

As will have been noted, some correspondences exist between the two typologies just described—between the one based on consumption pattern and the one based on motivation. (For example, Moulik's subsistence farmer closely resembles the traditionalistic, non-Big-man villager in consumption pattern.) However, resemblances or differences aside, the conclusion to be drawn from the proportional features of both typologies is that money-earning, by one means or another, has become a major preoccupation of most Bougainvillians. Moreover, indications are everywhere apparent that this trend is on the increase. And while motivation is a very important factor in influencing the amount of effort people will devote to money-earning, other factors such as skill, natural resources, job opportunities, and economic infrastructures, will determine to a large extent how and how much of that money is actually earned. So, in assessing the Province's economic potential as this relates to the material welfare of its indigenous residents, we begin with a projection about the number of people whose material wants will have to be reckoned with in any planning concerning the Province's economic future.

2. Population

In 1939 Bougainvillians numbered about 45,000. (This is of course a very rough figure, put together from both head counts and guess work, but it is perhaps as nearly accurate as we are ever likely to obtain.) Moreover, it is plausible to assume that the population had not changed much in numbers during the five or six decades preceding 1939—i.e., that it had reached and maintained a constant state geared in with the technological, etc. circumstances that prevailed during the early stages of European contact. (For example, any natural increase in population numbers resulting from cessation of warfare and improvements in health may have been offset by the absence from home of reproductively active plantation-working men.)

For the year 1939 the least unreliable figures on sex and age come from the Buin sub-District, where the population was relatively non-mobile and fairly accessible to Administration census patrols. At that time the ratio of males to females was calculated to be 1 to 1.14, and "children" constituted about 36 percent of the total population. There is no reason for doubting the first of these percentages—though similar in shape, the lapses of that era left no uncertainty about the wearers' sex!—but the figure on age is dubious, to say the least. (In the absence of recorded birth dates the census-taking Patrol Officers classified as "children" all those that they judged to be under fifteen.)

World War II had a devastating effect on the District's indigenous population; in some places as many as one-half of the residents died from the direct or indirect effects of the war. With the return of peace, however, there began a process of increase that has continued with dizzying momentum. These increases have been recorded, after a fashion, in a succession of postwar censuses. And while these censuses are accurate enough to indicate general Province-wide trends, the sampling and counting procedures they were based upon render them inadequate as tools for serious social and economic planning. For example, published figures on the 1971 census do not distinguish between Bougainvillians and Indigenes from other parts of Papua New Guinea (and there were large numbers of the latter employed on plantations and on mine construction projects at the time). Also, while the 1971 census distinguished between "rural" and "urban" segments of the indigenous population, and while it is plausible to assume that the 78,700 persons listed as

"rural" were mostly Bougainvillians, it is not reported how many Bougainvillians were included in the 11,700 indigenes listed as "urban." In any case, whatever their imprecisions and ambiguities, the official censuses of that period do indicate that Bougainvillians were increasing in numbers at a rapid rate, and, by the end of 1977, will have reached a total number in excess of 100,000.

For a more accurate estimate of population trends among indigenous Bougainvillians one must turn to the studies carried out by individual researchers in recent years. One such was Friedlaender's anthropometric surveys of 1966-67 centered in certain villagers in Aita, Eivo, Simeku, Nasioi, Torau, Uruava, and Siwai. While some demographic differences were found to exist among the various sub-populations studied, they all revealed characteristics of "explosive" growth—e.g., a disproportionately large number of children as compared with adults, a median population age of 16 years (as compared with a median age of 27 years for Australia), and a high birth rate coupled with a relatively low death rate. Friedlaender notes that the substantial decline in crude death rate followed the establishment of anti-malaria and anti-yaws campaigns in the early 1960s.

Even more detailed are the studies carried out more recently by Shoffner, Connell, Hamnett, and Mitchell. While these studies concern only small samples of the total population, they are based on close and long-term observations, and include a wide range of the Province's cultural areas.

The first of these samples comprised the residents of three beach villages in the Teop-speaking area—Teop Island village itself, Unonovi, and Sunvahora. The researcher, K. Shoffner, lived there for over fifteen months in 1973-74 and knew the residents by sight and name. By use of written records and historical-calendar methods of dating, Shoffner was able to establish ages with a high degree of accuracy, with the following findings:

The total population of the three villages was 431, of which 193 were fifteen and under in age (97 males, 96 females)—in other words, a very "young" population and hence one undergoing a very high rate of increase. While in Teop, Shoffner recorded fourteen births and three deaths—a rate of increase amounting to about three percent per annum. Fifteen months is, of course, too brief a period for calculating credible long-term population trends, but such trends can be predicted fairly accurately by plotting a population's age and sex profiles.

The second of the more intensive population studies available to us is that of J. Connell, who carried out research in Siwai in 1974-76. According to Connell's credible estimate, in 1939 the Siwai numbered about 5000—which, in comparison with earlier estimates, represented a slight but steady increase. Then the war intervened and served to reduce the number of Siwais by about 1000—through a combination of increasing death rate and decreasing birth rate. After the war, however, the Siwais began to increase at a very fast rate. By 1975, according to Connell's own careful counts in eight villages, supplemented by figures from official censuses and mission records, the population had reached about 9000 and was continuing to increase at a rate that would result in its doubling in numbers in about twelve years' time. (This estimate, based on annual percentage increases, is supported by the figures on age distribution—e.g. according to the 1975 census 31 percent of the population were less than ten years of age and only 15 percent were over age 45.)

The third of these studies was carried out by M. Hamnett in the Atamo area of Eivo-Simeku. The population of the three villages in which Hamnett conducted censuses (one Eivo, one Simeku, and one mixed village) was 949 in May 1975. The ratio of males to females was 1.09 to one. This population too was very "young" with 49.3 percent of the population being less than 15 years of age. The rapid growth indicated by the age structure of the population is confirmed by both administration census figures and Hamnett's own data on population increase. Administration figures show an increase of 250 percent over the period 1945-72. Friedlaender reports that the rate of natural increase rose from 2 percent per year to 5 percent per year in the 1960s. (Hamnett's own figures show a rate of 2.8 percent per year for one of his three villages during seventeen months in which he recorded births and deaths.)

The fourth study is one that was carried out intermittently by D. and J. Mitchell in Nagovisi between 1969 and 1973. According to their own observations of births and deaths in a population segment of 445 individuals during the period of their field work, that segment increased at the rate of 4.18 percent per annum—an increase that if sustained over time would result in a doubling of the population in about 16.5 years. An even more intensive study of the demographic features of a smaller part of that Nagovisi segment (namely, the Waina clan of Biroi) led D. Mitchell to describe its growth in the following terms:

The conservative estimate, based on the crude rate of natural increase, implies a doubling time of about 18 years. The more precise estimates, based on the actual individuals, known to me, who will be involved in reproduction, implies a doubling time on the order of 11 or 12 years. The most conservative position I can imagine—allowing for maximum error on my part, maximum negative effects of unpredictable events (but not allowing for contraception of any kind)—would be for a doubling time of about 15 years, equivalent to an average rate per year of about 4.7%. My personal opinion is that such a (projected) rate is too low.

Mitchell then goes on to state:

The Waina are by no means exceptional. Such information as I have on other groups in the area suggests that they are quite typical in their birth spacings, marriage patterns, and the like. There is a possibility of some downwards movement in fertility in those groups (such as the people of Konawa village) where, because of land shortages, the bulk of the men are away for relatively long periods. Other than this, I see no signs of slackening population growth anywhere in Nagovisi.

The rapid increases in the populations of these smaller areas can be attributed to a number of factors. A decrease in infant mortality probably due in part to the anti-malaria and anti-yaws campaigns in the early 1960s and, in part, to better natal and pre-natal care available at the Missions, is probably most responsible for the population increase. There is also evidence that "traditional" attitudes toward birth-spacing are changing—i.e., many people are no longer abiding by traditional taboos that discouraged women from having sexual intercourse until their previous children were weaned.

Generalizing from the above studies, and from censuses cited earlier, the Province's indigenous population must be viewed as growing at a fast and accelerating rate. In some areas the rate is such as to bring about a doubling of the present numbers in periods as short as 11 and 12 years, and nowhere is the doubling period more than twenty-five years. (In comparison, it would require 77 years for the population of Australia to double by natural increase.) As just stated, the reasons for this increase are manifold: better health care in general and better infant and maternity care in particular, fewer killing diseases, the relaxation of traditional rules regarding birth-spacing, etc. But whatever the reasons, the fact of the increase must be reckoned with in any plan having to do with maintaining or improving the population's material welfare.

Other characteristics of the Province's indigenous population that are directly relevant to its economy are its distribution and mobility. Anyone who has travelled, and especially flown, over the Islands will have been struck with the wide differences that obtain in population density. Even leaving out of account such physically inhospitable environments as the higher mountain zones and the forbidding swampy lowlands, there are many areas whose low or very high densities cannot be accounted for by their geographic qualities alone—e.g., the vast empty stretches between Toimonapu and Tonolei as contrasted with the densely settled parts of nearby Buin. Perhaps most of the present-day patterns in population density are continuations of settlement patterns fixed in pre-colonial time, but some of them represent residential adjustments to influences, mainly, economic, that began two decades ago and are now operating with increasing weight.

A century and more ago the principal influences determining the locations of settlements were economic and 'military'. Proximity to good gardening land and/or good coastal fishing grounds seems to have been the main criterion—plus, in coastal areas, defensibility against maritime marauders. What constituted "good" garden land depended in part on certain qualities of soil, drainage, and slope—although the workable ranges of possibilities in these factors were quite wide. Another factor almost as important was the land's previous state. With the stone tools then in use clearing virgin forest was an extremely slow and arduous job, so that people usually cycled their gardens within areas of prior clearing whenever possible—and because of the slow rate of population increase in that era, that seems to have been possible most of the time. Of course, some population growth did take place, including natural increase and immigration, but compared with the rate of recent decades it was glacier-slow, and there was still much unused space to move into until World War II.

In pre-colonial times most Bougainvillians tended to remain close to their birthplaces throughout most of their lives. This was more characteristic of the coastal and plains-living people than of the mountaineers, but even the latter tended to move about within quite narrow bounds. Most of them tended to marry people living close by, and would have found it hazardous to travel very far, although there were some areas where trade, visiting, and even marriage took place across language and tribal boundaries. Some inland residents (mainly in the north) visited distant coastal settlements to engage in trade, but elsewhere goods were

traded from place to place by short and discontinuous links. And in the south and east most of the travelling, for trade or war, was done by maritime indigenes from Shortland and Mono.

The mobility of most Bougainvillians began to increase with the appearance of Europeans, and has been accelerating ever since. With the outlawing of inter-tribal fighting it was no longer so hazardous to move about, but few Bougainvillians (except for those working on coastal plantations, or off attending Mission schools) actually did so, and nearly all of the absentees eventually returned and remained at home when their indenture or schooling was finished.

Later on, large numbers of individuals were moved about in the course of World War II but with few exceptions most of the survivors subsequently returned to the neighborhood, if not always to the identical location, of their prewar homes, and remained at home for the next decade or so.

The first massive postwar movement began in the late 'fifties, when several whole settlements migrated from inaccessible inland areas to sites nearer the coast, in order to produce and market cash crops recently introduced. Such movements occurred mainly in the northern half of Bougainville Island, and involved particularly the Konua, Keriaka, and Aita. Elsewhere people tended to remain in their traditional home areas and transport their cash crops to coastal markets as best they could.

This period also witnessed some renewed movement on the part of individuals, for schooling and work, but with the spread of cash-cropping fewer left home to work.

Then beginning about a decade ago, there commenced a new, large-scale, and greatly accelerated movement that shows no sign of diminishing. The establishment of the copper mine necessitated the moving of several entire settlements, but in terms of volume most of this current residential movement involves individuals and single families, for periods ranging from days or weeks, to 'permanent' residential change. Almost all moves of this type are from rural areas to the Kieta-Arawa-Panguna urban complex, without doubt one of the most momentous social processes now taking place in the Province.

In addition to the residential movements just listed, the last decade has witnessed an incalculably large increase in travelling—marketing, buying, visiting, sightseeing, etc. People whose grandparents rarely moved beyond the safe boundaries of their homelands and whose parents regarded a ten mile journey as a major expedition, now think nothing of motoring fifty miles to sell their wares or purchase tools, or of flying a hundred miles for a brief social visit. Such mobility as this constitutes a whole new dimension in Bougainvillians' lives; in addition to its economic costs and consequences, it contains large implications for political and social change.

Having touched on two of the most economically salient features of the Province's indigenous population—its explosively fast numerical increase and its accelerating spatial mobility—there remain to be mentioned three other features that bear directly on the Province's changing economy, namely, the population's physical health and its psychological readiness and mental-technical qualifications for participating in the kind of economic activities likely to prevail in the foreseeable future. The population's psychological readiness was discussed in the previous section; in a word, most Bougainvillians are ready and eager to participate in the new economy (although on their own terms). As for their mental-technical qualifications for engaging in "modern" market-type economic activities, this can only be evaluated in terms of the job-preparation training they are receiving in school and at work—a subject that deserves closest scrutiny but one that I am unable to deal with in any competent way. Hence only the matter of physical health will be touched upon here.

"Touched upon" is an appropriate label for the little that I am able to say on this subject.

The major diseases that afflicted Bougainvillians prior to World War II were yaws, malaria, tropical ulcers, scabies, pneumonia, skin diseases, injuries from accidental causes, infections of the upper respiratory tract, leprosy, pulmonary tuberculosis, goiter, cerebro- and spinal-meningitis. Since then some of these diseases have been reduced in incidence (e.g., yaws and malaria) and the duration and discomfort of many others have been alleviated considerably by treatment in clinics and hospitals. Moreover, up to a few years ago it was possible to assert that few symptoms of the so-called 'diseases of civilization' were evident: namely non-

infective bowel diseases (appendicitis, colitis, diverticulitis, polyps and cancer of the bowel); obesity; diabetes; hypertension, arteriosclerosis; and such eye diseases as color-blindness, myopia, astigmatism, and glaucoma. By 1977 however evidence of obesity was beginning to appear in urban areas, and in some rural areas as well—a familiar tell-tale of increasing affluence, sedentary occupation (and perhaps a growing fondness for beer!). I do not know the extent to which any of those other marks of 'civilization' are beginning to appear, but would be surprised if they did not surface, at least in the urban areas.

Notwithstanding all these ailments (the 'indigenous' ones still not eradicated and the new ones on or just below the horizon) Bougainvillians seem to be a fairly strong and healthy people, well capable of coping with the physical demands of their new economic activities. Despite the predictions of some experts, the partial or in some cases total changeover to store-bought foods has not resulted in an overall deterioration of health—on the contrary, the increased protein content of some of these foods has had nutritionally beneficial effects. On the other hand, signs of obesity indicate that too much of the store-bought food, even if wholesome, can tip this balance the other way. And as a visit to almost any store—whether supermarket or village stoa—will show, a large proportion of Bougainvillians' hard-earned money is being spent on 'junk' foods and drink (e.g., cheese savouries and loliwara)—on things of little or even negative nutritional value.

I will not burden this report with another tirade against the Bougainvillians' already copious, and if anything increasing, consumption of alcohol. Suffice it to say that it represents not only a large hazard to physical health and social tranquility but to economic health as well.

With the vision—one might even say spectre—of the Province's future population numbers in mind, we turn now to the natural resources and institutional opportunities available to that population for satisfying its increasing material wants.

4. Man-made Material Resources

The Province also contains several man-made resources that must be reckoned with when planning for its economic future. Chief among these are its commercial plantations already in being; its areas of secondary-vegetated arable land; its transport and communications facilities—roads, air fields, wharves, telephones, etc.; its factories, workshops, and stores; and its numerous other substantial buildings, public and private.

Published statistics on expatriate-owned plantations are more reliable than those on indigenous ones, but even the former are somewhat out of date. The latest published figures (for 1974-75) stated that there were 15,000 hectares of expatriate plantations planted in coconuts and cocoa (out of a total of 27,000 hectares contained in the 58 holdings listed). Clearly, these large areas of producing trees constitute a huge investment in equipment and labor, one that produced in 1974-75 13,841 tons of copra and 5,732 tons of dried cocoa beans.

The question as to what economic benefits the Bougainvillians themselves derive from these expatriate-owned enterprises is difficult to answer. Prior to World War II hundreds of Bougainvillians earned wages from them but that is no longer the case, since most of the plantations' laborers are now mainland Niuginians. Some of the tax money generated by the plantations finds its way back to the Province in the form of Administration-dispensed goods and services. In addition, Bougainvillians receive some indirect economic benefits from these expatriate enterprises, such as use of plantation roads, and time-saving access to plantation trade-stores.

Statistics on Bougainvillian-owned cash-crop acreages and production do exist, but anyone who has observed at first hand how such statistics are collected will be highly skeptical of their accuracy. However, in the absence of anything better, the PNG Department of Agriculture, Stock and Fisheries Report for 1969-70 (Indigenous Crop and Cattle Statistics No. 4) gives the following figures for indigenous smallholders (who were, presumably, mostly native Bougainvillians):

Area under coconuts	20,017 hectares
" " cocoa	8,103 "
" " coffee and rubber	214 "
Production: copra	8,696 tons
" : cocoa	2,030 "

(Production figures for coffee and rubber are not given)

Tree-counting would provide more useful figures—if the age and productivity of the trees were also specified (which is not the case for the Province as a whole). Also, the above figures on production do not give the whole story, inasmuch as some of the Province's cash-crop production escapes recording as such, through direct individual sales to buyers elsewhere.

It should be added that, whatever figure is arrived at for the total or per capita value of this resource, that figure needs to reflect the cost of maintaining the cash-crop trees in full production—costs in terms of equipment and labor, particularly, unpaid family labor. In most cases that I know about the Bougainvillian owner is well aware of the amount of work involved in keeping his plantations in good order but does not consciously and quantitatively discount that kind of cost when calculating the long-term economic value of his plantations.

Another large and economically valuable resource owned by Bougainvillians consists of their food-growing lands. The food crops currently growing constitute only a very short-term asset, inasmuch as the kinds of vegetables and fruit being grown have no storage life to speak of. (Compare in this respect Bougainvillians' sweet potatoes and, say, pawpaws, with the tangible, resource value of rice and wheat stored in warehouses.) In long-term perspective, what is economically most valuable about the Bougainvillians' gardening is the large amount of land that has been transformed over time from virgin forest to gardenable condition. According to the CSIRO survey of 1962, about 1050 square miles, or 30 percent of the Islands' total land area, had "anthropogenous" vegetation—i.e., showed signs of having been used for cultivation within the past eight to ten decades. (The same survey put the amount of land devoted to current indigenous gardening and cash-cropping at 163 square miles, or 5 percent of the Islands' total area.)

Clearing the Province's primary forest areas is very costly in terms of labor, even when employed with modern equipment. (What it was like to clear with stone

tools, with which the original clearing was accomplished, is hard to imagine!) Even the secondary vegetation is difficult to clear, since local gardening techniques involve lengthy fallowing periods and hence advanced secondary vegetation, but that is nothing compared to the amount of labor that has gone into clearing the original primary forest. Hence, in adding up the Province's economic assets one must include this important labor investment. As will be shown below, the amount of land that will be needed in the future to sustain Bougainvillians economically will far exceed the 1,050 square miles classed as "anthropogenous" in the CSIRO survey.

In order to appreciate the magnitude of this asset, in monetary terms, the reader may find it instructive to calculate what the current cost would be, both with and without mechanical equipment, of clearing this amount of primary forest.

Turning now to the Province's other noteworthy man-made material resources—its roads, airfields, and port facilities—many readers of this report are far better informed than I am concerning the amount of money spent so far in building and maintaining these assets. I wish only to emphasize the fact that, under the climatic conditions that prevail, all of these assets will become useless in a very short time without regular maintenance. And, as is well known, the maintenance of such facilities is an already costly exercise that will become increasingly so in the future.

5. Self-Sufficiency

The question now to be faced is: What are the long-range prospects for Bougainvillians being able to satisfy their material needs and wants—in view of their rapidly increasing numbers, their economically relevant attitudes and skills, their growing appetites for imported goods and costly services—all of which must be considered in terms of the finite nature of their natural and man-made resources.

First of all, some (but not all) Bougainvillians should be able to satisfy all of their food needs and many of their food wants by continuation of their traditional subsistence activities.

Now that the change-over from taro to sweet potato has been nearly universally accepted and accomplished the crisis precipitated by the postwar taro blight no longer threatens. There remains some room for introduction of new food plants and for encouragement of more attention to diet balancing, but the technology of root crop gardening is being efficiently pursued—as 'efficiently' as the present long-fallow system of planting permits. And taking the Province as a whole there appears to be enough arable land, both "anthropogenous" and still untouched, to meet food growing requirements for a generation or more to come, even for the increasing population, and even under the present long-fallow system—provided no more land is transferred to cash cropping or other land-intensive uses. Unfortunately, even under these (unlikely) provisos, the location of such land is not sufficiently matched with the people who will be requiring it. Moreover, there are some other constraints that impede people's use of gardening land even if they reside nearby.

Regarding the first of those constraints, there are some places (e.g., Aita) where the population is small and scattered and where suitable land (both anthropogenous and arable primary forest) is found in large enough quantities to meet local gardeners' needs for decades to come, proportionate even to predictable natural increases in the local population. In contrast, there are other areas (e.g., southwest Nagovisi) where the denser—and very rapidly increasing local—population is already beginning to run out of suitable land for gardening (a predicament

that has been hastened by transformation of garden land into cocoa). One "logical" solution to this disparity would be to encourage land-poor people to migrate to land-abundant areas—but for many Bougainvillians that is easier said than done. On the one hand, while many Bougainvillians appear willing to move from their villages to urban areas (when gardening is not at issue), moves of whole families from home villages to other populated villages where kin ties are tenuous or altogether lacking, are infrequent and usually objectionable to both parties. For such migrants this kind of move entails the attenuation of social ties with familiar kinfolk and neighbors, and loss of those feelings of security that are derived from proximity to ancestor-linked land. (Similar losses are incurred when people move permanently into the towns, but in such cases there are compensations, material and social, without equivalents in village life.)

Migrants to distant villages are even more disadvantaged with respect to land; for, no matter how abundant the land may be in the destination village area, it will be found to be already owned. Traditionally, Bougainvillians were usually most generous in allowing one another to garden, more or less freely, on their own land; and this commendable custom still prevails in areas where land is relatively abundant. Lending land for cash-cropping is however a different matter. For one thing, cash crops generate money, and therefore—it is reasoned—ought to require rent in the form of money. Again, whereas garden crops last only a year or two from planting to harvest, cocoa and coconuts pre-empt their sites for very long times. (Under the system of long-fallowing that governs it, root-crop gardening also pre-empt a site for many years after the crop is harvested, but not as long as cash-cropping—and in any case Bougainvillians do not seem to attach much weight to this factor when lending land for food gardening.) Thus, while immigrants may experience no difficulty in their new homes in borrowing land for food-gardening, they will most likely find it more difficult and costly to purchase or lease land for cash-cropping there.

The situation just described prevails mainly on Buka, along Bougainville's northern and eastern coasts, in the Nasioi-speaking areas and throughout southern Bougainville. Other peoples—including the Eivos, Aitas, Rotokas, Keriaka, and Konua, who in recent decades have moved from their ancestral lands to places nearer or more accessible to the coast (mainly in order to engage in cash-cropping) could return to their now uninhabited ancestral domains if survival depended upon

it, but this would entail a return to a wholly "traditional" standard of living that few contemporary Bougainvillians would care to revert to—notwithstanding some of the current political slogans extolling that way of life.

Traditionally, Bougainvillians supplemented their cultivated food plants with wild or semi-wild ones: sago, canarium almonds, ferns, fungi, mushrooms, etc. In most areas they still do so, although these plants constitute a small fraction of total food consumed. In fact, as more and more store-bought foods are eaten there will be a corresponding decrease in consumption of wild foods, although as long as traditional feasting continues there will perhaps be a demand for sago and almonds—in many places even surpassing the supply, in view of the Islands' increasing population and of the more or less fixed number of trees likely to be available.

Coconuts will undoubtedly continue to be desired for food and drink for decades to come, and in rural areas there appears to be little likelihood of shortages. Even foreseeable urban demand for edible coconuts could be satisfied for a long time to come, given proper transport and marketing facilities. However, the Province's present stands of palms will eventually age past bearing, so that systematic new planting will be required to supply demands of an increasing population. Moreover, it is conceivable that a time will come when, in the absence of other money sources, Bougainvillians may be moved to forgo eating this nutritionally valuable food in order to convert all of it into money, via copra—a development that has already taken place in some other Pacific communities.

For anyone familiar with prewar Bougainville it is difficult to conceive of rural life there without pigs. These affable beasts did not constitute a large part of their owners' daily diet but as one of the few available sources of animal protein they were important nutritionally. And they were, and in some places continue to be, almost indispensable for some of the most admirable, enjoyable, and socially integrative aspects of Bougainvillian culture, such as feasting, respect-showing, marriage-making, and the maintenance of cooperative kin ties. Unfortunately, in many places pigs have now become so scarce relative to demand and so costly to purchase that they are becoming a diminishing asset both nutritionally and culturally.

Home-grown beef, chickens and eggs have never figured importantly in rural diets, and are not likely to do so in the foreseeable future. However, as is well known, efforts have been made in recent years to encourage their production for sale—an enterprise that will be considered in a later section of this report.

Compared with the Papua New Guinea mainland, Bougainville contains fewer species of wild fauna, and none of them plays a large role in economic life. Wild pigs and opossums continue to be hunted throughout the Islands but, it would seem, more for sport or ceremonial uses than for food. Nevertheless, these animals do provide an occasional protein supplement and are thus to be considered a useful native resource—and one likely to diminish at present rates of depletion. Similar generalizations apply to Bougainville's birds and flying foxes, which add more color to the forests than food to indigenes' meals.

Reference was made earlier to the possibilities of developing a large-scale fishing industry in the Province's off-shore waters. A question may also be asked about the economic actualities and possibilities of the Islands' inshore and freshwater marine resources.

There can be no doubt about the benefits of locally-caught marine products to the diets of many of the Province's shore dwellers, and some of these latter—e.g., in Teop—obtain money and other kinds of foods by exchanging some of their fish with inlanders. Some inlanders elsewhere would also claim that they obtain large quantities of fish from their rivers (as BCL compensation negotiations have discovered!), but there are also other places where freshwater fish are either too scarce, or fishing activities too desultory, to provide much of this source of valuable animal protein. Still, the streams and ponds are there, and should be surveyed by experts with a view to periodic stocking with edible fish, etc. to supplement local diets and reduce the costly dependence on tinned fish.

In the distant past the Province's forests supplied all of the materials used for construction of dwellings and other indigenous buildings—clubhouses, pig pens, etc. Currently, however, imported materials are used preponderant or almost exclusively in many 'public' structures, and Bougainvillians are also using such materials more and more for their own dwellings. Such is the trend and such it is likely to continue—so long as money continues to be available for purchasing those imports. Unlike food, however, Bougainvillians could shelter themselves quite

adequately for generations to come by reverting to dependence upon local building materials. Given the rate of population increase and the trend to cash-cropping there will not be sufficient land, in the right location, to permit future generations to feed themselves wholly from their own gardens, but they could shelter themselves for many more generations by using materials from their own forests—if they choose to do so.

As with their newly acquired food wants, however, it is extremely unlikely that Bougainvillians will revert contentedly to wholly traditional types of shelter, hence money will be needed to satisfy this along with their wants for other kinds of costly goods and services. With this in mind we turn now to consideration of the means available to Bougainvillians to acquire the money they need to satisfy their recently acquired material wants.

6. Money through Expropriation

Several Bougainvillians have asserted to me that 'all profits from outsider-owned enterprises ought to be divided among all Bougainvillians.' Some of these opinions came from university-trained youths and were phrased in sophisticated political dogma, but most of them came from individuals expressing an unelaborated but deeply-felt conviction that all such enterprises belonged rightly and exclusively to Bougainvillians—regardless of the outside capital and energy that had been invested in them.

In view of these convictions, which I imagine to be fairly widespread, it may be pertinent to speculate about the magnitude of such a redistribution, should it ever eventuate. In other words, to what extent would Bougainvillians be able to satisfy their present and future money needs if all of the revenues from outsider-owned enterprises over and above direct operation costs were to be shared among themselves, exclusively, on an equal per capita basis? (One assumption underlying this exercise is that the Central Government would consent to the arrangement; another that the enterprises would continue to operate at current rates of "profit"—I leave it to others to judge whether these assumptions are realistic!)

Needless to say, estimating such "profits" involves a host of uncertainties and extrapolations—but let us at least try, and base our calculations on what figures there are available on costs and revenues during the last fully reported years.

The figures on BCL are the most detailed and readily accessible—a special boon to our exercise, since these figures constitute the overwhelmingly largest part of all outsider-owned profits earned in the Province.

According to the Company's Annual Report for 1976 the net earnings for that year were K61,670,000. Of this amount K20,303,000 was paid out in taxes to the Papua New Guinea Government, and K26,738,000 in dividends to shareholders. Assuming that all of the net earnings (before taxes and dividends) were distributed equally among all Bougainvillians alive at the end of 1976—an estimated 100,000—this would provide each of the latter with a sum of about K617.

Such a distribution of Company earnings would of course not only deprive the P.N.G. Government—and through it the North Solomons Provincial Government and the Central Government's other agencies in the Province—of its K20,303,000 tax revenues, but by paying no dividends it would deprive the P.N.G. Government and PNG Investment Corporation of K5,347,500, which represented their share of those dividends. (It would also deprive Bougainvillian shareholders of their dividend incomes—how much I do not know.)

Turning to the Province's non-indigenous rural holdings, the most recent published data obtainable cover the year ended 30th June, 1974.* During that year the holdings in question numbered sixty-eight, and employed 4,475 persons, of whom 4,405 were indigenes and principally mainland Papua Niuginians. The total value of produce for the year was about K11,819,000, and total estimated costs about K2,907,000 (labor, operations, construction), resulting in a gross "profit" of about K8,912,000. According to Bedford, who calculated these estimates (based on data published by the Papua New Guinea Bureau of Statistics, these "profits" seem very high, but—as he points out—the period in question was one of high prices for both copra and cocoa.

Comparable data on the Province's secondary industries (which, for the period in question, were mainly non-indigenous in ownership) cover the year ended 30 June 1975.

The thirty-five "factories"*** listed employed a total of 1,186 persons and produced goods and services worth K11,596,000. The gross profits from these "factories" are not stated, but may be estimated by subtracting from the above figure the reported costs of all wages (i.e., K4,393,000) and of all power and materials used in production (i.e., K5,374,000). The resulting figure, K829,000, evidently does not reflect the additional costs of depreciation, insurance, etc. (nor does the comparable estimate given above for the rural industries). If these

*The "Preliminary statement" on Rural Industries issued by the PNG Bureau of Statistics for the year ended 30th June 1975 does not provide enough data to permit estimation of "profits," hence our use of the previous year's figures.

**A "factory" being defined as ". . .any establishment engaged in manufacturing, repairing, assembling, preparing, treating, or making up any article or substance and in which four or more persons are employed, or where power (other than manual) is used."

additional costs are subtracted, at an estimated rate of 3 percent of gross profits, the resulting profits (before taxes) would amount to about K8,645,000 (for the rural industries) and K204,000 (for the secondary industries).

I am unable to provide comparable estimates of profits for other kinds of non-indigenous commercial establishments located in the Province (e.g., retail, transport, stevedoring), but the ones just given are sufficient for the purpose of this rough exercise.

Summarizing the foregoing, recent annual profits (before tax) of the Province's three most important types of non-indigenous money-earning enterprises total about K70,519,000. If this sum were to be divided equally among all Bougainvillians alive at the end of 1977—conservatively an estimated 100,000—the share per person would be about K705.—a tidy windfall indeed for a population whose average annual money income would probably come to less than one-tenth of that amount,* but hardly approaching the vast sums that some Bougainvillians envisage in their fantasies. Also, if the recipients would wish to continue to receive the benefits they now receive free or at a low cost to themselves—e.g., education, health care, use of roads, governmental technical services, police, defense, etc.—the costs of these, it is logical to assume, would have to come out of that windfall in the form of taxes or of direct pay-for-use, thereby leaving a residue of no more than about K460 per capita per annum. (This figure is based on an assumption that the Central Government spends about K24,500,000 per annum on the Province, either in the form of direct costs and grants, or of per capita distributions of nation-wide costs for Defense, Health, tertiary education, Administration, Communications, etc.)

But that would be only now. In view of the population's natural rate of increase, and assuming that the cost of public services will continue to increase and the profits in question remain about the same, the net share per capita per annum would be less than about K250, twenty years hence, and would become proportionately smaller in time.

*This estimate of course is nothing more than a impressimistically based guess. A few figures are at hand giving money income average for small components of the indigenous Bougainvillian population—e.g. from wages, cash-crops, compensation payments, vegetable sales, etc.—but these are not numerous enough to provide credible Province-wide statistics.

To appreciate the significance (or rather, insignificance) of these sums they should be compared with estimates of the current costs of feeding Bougainvillians on a diet of imported food. That figure (which will be discussed in a later section) comes to about \$150 per annum on the basis of food costs in 1970. At recent rates of inflation these costs would have about doubled by the end of 1977, and will reach about K3000 twenty years from now! Such figures are of course meaningless unless account is also taken of inflation in the prices for copper, gold, copra and cocoa—and hence in the 'profit' to be redistributed from the expropriated enterprises. Historically, however, the price increases in the latter have not kept pace with those of imported goods, including foods, so that it is not safe to assume that they will do so in the future.

Thus, while the expropriation, "provincialization," and universal sharing of money earned by outsider-owned enterprises would serve to feed all Bougainvillians with imported foods for a few years to come, it would not continue to do so for very long—and would be quite insufficient even in the near future to provide Bougainvillians with all the other imported goods and services they have come to want and depend upon. Clearly, even with expropriation, Bougainvillians would have to find other ways, old or new, for obtaining the money they need or want.

7. Money from Compensation

In recent years numbers of Bougainvillians have obtained money through "compensation"—sums paid to individuals and kin groups by BCL to recompense them for loss of land, buildings, economically valuable trees and crops, fish, tranquility, etc. The history and the magnitude of these transactions, through 1974, have been described in detail in Compensating for Development, by Richard Bedford and Alexander Mamak. The main points of the study that relate to the principal concern of this report are the following:

By the end of 1974 BCL had paid some 1,500 persons a total of \$1.8 million in compensation (not including the costs of resettling several villages, and exclusive of the occupying costs at Arawa and Loloho). These payments were of two kinds: lump-sum and annual occupation rents.

Of the 1,000 individuals whose payments were reviewed in the Bedford-Mamak study (comprising a total of about \$1.6 million in payments) only three percent received over \$10,000 each, and less than one-third received over \$1,000 each. In fact, the median amount received by individuals over the period 1966-74 was only \$244.

The recipients of the \$1.6 million payments recorded by Bedford and Mamak were residents of 62 villages—a very small percentage of the Province's total number of villages. The total amounts received in those 62 villages varied widely. One of them (i.e., Jaba) receives about \$50,000 per annum in occupation fees, but about half of all the recipient villages each received \$10,000 or less throughout the period 1966-74.

Since 1974 the number of individuals and communities receiving compensation from BCL has increased, and will probably continue to do so—Bedford and Mamak estimated the resident population eligible for compensation, directly or indirectly, to be about 4,000. However, even this larger total constitutes less than five percent of the Province's total present population. Moreover, it is estimated that only a small part of the amounts thus far received in compensation payments have been invested in ways that will produce future incomes to the recipients or

their heirs, the rest having been spent on consumer goods and expendable capital goods like trucks.

Among the more durable forms of compensation payments are occupation fees, some of which will continue throughout the life of the mine. However, only a very small percentage of Bougainvillians will be receiving this kind of monetary benefit, and only a few of these will receive enough to satisfy all the money needs they can be expected to experience and voice.

8. "Work" versus "Cargo"

In one sense the windfall exemplified by the kind of expropriation and redistribution just considered is akin to the belief in "Cargo," which has surfaced in these islands in various places from time to time.

Kago, the Melanesian genre of a world-wide cultural phenomenon, has materialized in the Province in many versions, but its common, underlying theme—indeed, its definitive characteristic—is a belief (and practices based on that belief) in the efficacy of supernatural assistance for the acquisition of material goods. Elements of the theme are of course age-old, as for example the use of magic to make crops grow and fish bite. For the last six or seven decades, however, imported manufactured goods have largely replaced indigenous ones on the lists of the things desired, and bits of Christian dogma and ritual have been added to the mix—plus, in some instances, various social and political goals.

On Bougainville manifestations of kago have ranged from large-scale politically militant movements, to small clandestine cults. And the mixture of logics involved in their dogmas have varied between total dependence upon supernatural agents, to heavy reliance on hard work (merely supplemented by expectations of supernatural assistance). The question is: To what extent are Bougainvillians of the future likely to depend upon the supernatural agencies of kago, rather than productive or entrepreneurial or wage-earning work, to obtain the money they want?

On the basis of research reports of others, supplemented by personal observations, I have the impression that kago thinking still prevails in the minds of a great many Bougainvillians and that it will continue to do so for a long time to come—until Bougainvillians have learned and assimilated the hard realities attending their involvement in a world-wide exchange economy. The roots of this thinking, as just noted, can be traced to the past, but I think it must be recognized, however unpalatable the charge may be, that kago thinking has been encouraged during the past decade by politically motivated promises, official and otherwise, that the "kago will arrive" once some desired political change takes place. First it was "independence," then "secessionism," then "provincial government," then the

voting-into-office of some candidate or another. Even in societies with totally literate, historically sophisticated, and market-wise citizenries, some of this kind of utopian thinking persists, thereby affording opportunities to politicians, sincere and otherwise, to maintain or win office; hence it is no wonder that Bougainvillians are susceptible to it.

On the other hand, I have also formed an impression that most present-day Bougainvillians recognize that all the money they want will not fall from Heaven, or be induced into being by ancestors' bones, or appear out of the blue upon the establishment of some new political order, without some practical, mundane work on their part. So, let us turn now to the several kinds of money-earning occupations in which Bougainvillians are now engaged, and enquire about the potentialities they offer for providing Bougainvillians with the money they want.

9. Working for Wages

To recapitulate a well-known slice of history, Bougainvillians began working for wages more than a century ago.

In the beginning, especially, and even up to 1945, there was an element of coercion in the recruitment of laborers for such work. For example, the head tax system had the effect, if not perhaps the declared official intention, of forcing many men to work for wages inasmuch as they had no other way of earning money for the mandatory head tax. This kind of interpretation could be extended even to some present-day situation—i.e., to the degree that school fees must be paid—but many present-day Bougainvillians appear to choose wage-earning as a desirable way of acquiring money—or even as a preferred way of life.

In any case, whatever the reason may be for engaging in it, wage-earning provides a large source of money for present-day Bougainvillians, and it will continue to do so in the foreseeable future.

Prior to World War II the principal, almost the only, occupation in which Bougainvillians served was that of unskilled plantation laborer. In 1939 some 3,400 were thus employed—i.e., almost ten percent of the whole population; and of those about 900 were employed outside the District (as it then was). At that time the modal wage was six shillings a month, plus shelter, food, bedding, laplaps, soap, and tobacco. After World War II plantation wages were increased somewhat, but few Bougainvillians returned to such work, in the District or elsewhere. Receipt of large sums of war casualty compensation—about eight pounds (Australian) per capita—may have contributed to this reluctance, but perhaps a more potent reason was the near-universal discontent with plantation living and working conditions, including long-term employment.

In consequence of these sentiments relatively few Bougainvillians were engaged in wage-earning activities until the middle of the 'sixties, there having been few wage-earning jobs locally available, except on plantations (which were by that time importing nearly all of their labor from the Mainland). Store-tending, stevedoring, and desultory public-works programs provided some jobs, and some

Bougainvillians worked on weekly or daily time bases for nearby Missions and expatriate plantations, etc. A few even worked for other Bougainvillians in the latter's plantations—although there seems to have been a widespread reluctance to employ or be employed by fellow-villagers for money.

The District-wide volume of wage-earning throughout the early postwar era cannot be reconstructed now. It must, however, have varied widely from place to place, according to proximity to Missions and to such centers as Buka Passage and Kieta. One indication of the scope of it is provided by Ogan, who carried out research in the Aropa valley in the early 'sixties:

In general, men in the sample villages worked for wages on a short-term basis only. Of the 20 able-bodied Rumba men between the ages of 17 and 50 with whom I had most contact, only one was employed (at the sawmill) for most of the fieldwork period. [A total of four young men worked for me as cook-domestic servant. Only one worked for more than five months, and his eleven-month stint was broken in the middle by my trip to Australia.] Three others held jobs for periods of three to six months at a time, while 15 had casual jobs lasting not more than one or two months at a time—sometimes only a week elapsing before they were fired. Ten of these men had as their longest job experience during 1962-64 a five-week stint maintaining the airstrip, supervised by a Buin man who had married locally. This job, although paid by the government, was in its daily routine like working for a fellow villager. Thus it could reasonably be said that villagers avoided work for Europeans. (Ogan 1972:142)

At that time wages ranged from sixty to eighty cents a day, "bosbois" having received somewhat more.

Some men in Ogan's sample villages also employed or worked for other Bougainvillians, at somewhat lower and less consistent wage rates than those cited above.

Aropa's proximity to Kieta and the airfield probably made it a higher-than-average area in terms of wage-employment, much more active than areas like Aita and Eivo and Guava, where opportunities for wage work scarcely existed.

The late 'sixties, of course, witnessed a huge increase in wage-earning for the District as a whole, beginning with the mine exploration phase. At the peak of construction, in 1970-71, Bougainville Copper and its contractors employed over 6,300 indigenes, about 30 percent of them Bougainvillians. In 1974 this dropped to

about 4,500 indigenes for the project as a whole, and the numbers of wage-workers decreased sharply and fairly regularly thereafter.

At the start of the construction phase of the mine there were not enough Bougainvillian job applicants to fill the urgent demand, and laborers were brought in from the Mainland in large numbers. With the decrease in demand, however, hundreds of Bougainvillians who sought jobs with the project were rejected—e.g., between April and September 1971, 30 percent of the 1,300 Bougainvillian job applicants were turned down.

During the first eight months of 1974 BCL employed 749 indigenes—including 289 Bougainvillians, but there continued to be more applicants than jobs (e.g., of the 209 Bougainvillians who applied for jobs during January-April 1974 only 108 could be employed).

I do not have precise figures on job applications and acceptances for the years since 1974 but it is quite clear that throughout this period the number of applicants has exceeded the number of job openings on the mine project by a sizable margin. This has quite understandingly led many Bougainvillians to demand that non-Bougainvillians be excluded from the work force (competition for jobs has not, of course, been the only cause for such sentiment). While BCL has not—probably cannot—agree to this demand, the company does appear to have favored, heavily, Bougainvillian applicants in recent years. But even if only Bougainvillians were to be employed on the mine project, there would probably be more applicants than jobs. In other words, however dim a view Bougainvillians may have of BCL's presence on their Island, and however unfavorably they may look upon employment with BCL, compared with other kinds of wage-earning jobs, their desire for money will continue to persuade them to seek jobs with the Company in numbers exceeding the jobs.

Another manifestation of the economic differences that prevail between the Province's several geographic regions is found in BCL employment figures. Since these differences have been described in some detail in the publications of Moulik and of Bedford and Mamak, only the most relevant high-points will be mentioned here, namely:

--Residents of the Buin sub-District have consistently outnumbered those of Kieta and Buka on the Company work force

--Residents of Buka tend to stay with the Company longer than those of Buin and Kieta, and to work in higher-paying jobs.

Several circumstances seem to account for these differences (e.g., the Kietas' easier access to other wage-earning jobs; the Bukas' higher education levels and their farther distance from home), and these differences will probably continue to prevail for a while, thereby reinforcing the several other circumstances that serve to differentiate the Province's various regions both economically and socially, and perhaps politically as well—a point that will be returned to later in this report.

BCL is by all odds the Province's largest employer of Bougainvillians but it is not the only significant one. The difficulty for most of the Province's wage-job seekers lies in the fact that most of these other jobs are also concentrated in the Kieta-Arawa area. Kietas living in or near this area are able to reside at home and commute to work, which large numbers of them do; but except for those few whose employers provide housing and subsistence, all others must pay a high price for housing and feeding themselves near their jobs. — Here again, therefore, the concentration of the Province's wage-earning jobs in one area serves to widen even further the differences among its various regions with respect to money income—and all the consequences thereof.

As will be described, not all Bougainvillians want or need wage-earning jobs, but regarding those who do—and these will probably continue to outnumber job-openings—it is relevant to this report to enquire about the kinds of jobs they prefer—or will accept. Answers to this enquiry are not available for the whole of the Province, or for all age groups, but Moulik's study provides some clues about the job preferences and aspirations of an important segment of the population.

The study in question was based on a survey of the opinions of 596 male and female secondary school students, 277 from the Kieta sub-District and 319 from Buin. The students were asked these substantive questions:

1. How they ranked, in terms of respect (from "very highly respected" to "held in every low respect"), the twenty-six occupations available to most school-leavers of Papua New Guinea.

2. Which of the fourteen kinds of jobs most readily available to them they would prefer to have.

3. Which of those fourteen jobs they actually expected to obtain. In answer to the first question the most prestigious occupations in their views were: doctor, political leader, priest, police, teacher, mechanic, and positions in Army, Navy, or Air Force (including commercial airplane work). At the bottom were: village gardener, painter, driver, cook/houseboy, and plantation laborer. ("Village gardener" was differentiated from "cash-crop farmer," which placed somewhat higher in their ranking.)

In the listing of preferred occupations (as contrasted with those considered most prestigious) "teacher," "mechanic," "doctor," "government officer," "nurse," and "clerk-typist" placed highest; while "engineer-scientist," "BCP job," "political leader," "police," and "store assistant" placed lowest. (Note that while "political leader" and "police" were considered to be highly prestigious by the students, few of them aspired to hold such jobs.)

In their listing of expected jobs most of the students questioned appear to have either raised or lowered their aspirations in terms of their current information, or misinformation, about economic and social realities. For example, while many of them preferred to be doctors, few expected that they would in fact become doctors. And while many said they aspired no higher than to such low-prestige jobs as farming, several of those said they actually expected to obtain jobs that they considered to be higher in prestige.

Moulik's study also revealed some significant differences between Kieta and Buin students in the matter of job preferences and expectations. Those from Buin, for example, were generally more ambitious than their Kieta counterparts—a reflection perhaps of the latter's closer exposure to the realities of the job market. This and other differences between the responses of the two sub-Province samples suggests that corresponding or even wider differences in job preferences and expectations would be discovered if similar studies were conducted in other parts of the Province.

The students were also asked by Moulik about their expected incomes from the jobs they aspired to. Although their answers revealed a large measure of

ignorance about existing wage rates, they did indicate a strong preference for what the students perceived to be the higher-income jobs. Moreover, this finding was reinforced by the specific reasons given by the students for choosing the jobs they chose—i.e., "to make a lot of money" placed second only to "to be helpful to others," and above "to be able to increase knowledge and give new ideas" and all other reasons.

The most pertinent conclusion to be drawn from all the above is that wage-earning has become an acceptable temporary way of life for many Bougainvillians, and an acceptable permanent way of life for many others, particularly for the better educated ones, whose numbers will increase if present trends continue to prevail. The question is: Will there be enough jobs?—either to satisfy occupational aspirations now being generated or, more critically, to provide incomes for those who will have no other ways of obtaining the money needed to satisfy basic material needs and wants?

Even a cursory examination of present job opportunities, and of credible job-generating programs now underway or being planned, suggests that the answer to the above question is negative. I will return to this question later on in this report, but before considering the other ways in which Bougainvillians now obtain, or might obtain, the money they need and want, some mention should be made of the commitments Bougainvillian wage-earners evidently make towards their jobs, and the place their jobs occupy in their lives.

It would appear from employment records that Bougainvillians in general are more interested in seeking higher wages than in the kinds of "job satisfactions" that some workers elsewhere derive from mastery of particular skills. Not only do most Bougainvillians, if given the chance, change jobs quite frequently, and mainly for higher wages, but a large proportion of such wage-earners voluntarily and recurrently leave their jobs to return to their villages—to harvest cash crops, plant gardens, "save money," visit kinfolk, etc. And while these actions are in a sense marks of the personal freedom they enjoy, and while periodic return to village life and rural productive activities may be desirable in some ways, the effects of these practices are costly both to the employers and, in some important ways, to the workers themselves. For, while such on-again, off-again wage-earners may obtain higher incomes while job opportunities last, or while rural cash-cropping remains

profitable and practicable, such wage-earners will become competitively disadvantaged in the job market, particularly with respect to higher-paying jobs, should the possibilities of pursuing those alternatives decrease.

10. Cash-Cropping

The growing of plant products for sale engages more Bougainvillians than any other money-earning enterprise and it produces in aggregate the largest money income. This section of the report will summarize some of the strengths and weaknesses of that cash-cropping and will raise questions about its place in the economic future of the Province.

Bougainville's climate and much of its soil are evidently very favorable for the growing of coconuts and cocoa. With respect to climate there are some regional differences—e.g., some experts blame the relatively inferior coconuts grown in the Buin Plain on that area's greater cloudiness—but except in the higher altitudes climate is not the weightiest factor that influences cash-cropping's degree of success. Regional differences in soil and other surface features are weightier: there are several extensive areas—e.g., the 200 or so square miles of poorly-drained (so-called "Silibai" land type) areas of southern and western Bougainville—that are ill-suited to tree crops, and still others—the 363 square miles designated as Class VII lands in the CSIRO report—described as being unsuitable for any commercial land use. It must not be concluded from this, however, that all the rest of Bougainville's area (i.e., some 2 900 square miles) is ideally suited to cash-cropping; factors of topography, etc. would reduce that figure considerably. But if there were no other inhibiting circumstances to limit cash-cropping in the Province there is no question but that there is suitable land enough to accommodate much additional planting in years to come.

Unfortunately, the limiting factors are numerous. Beginning with copra, Bougainvillians have been selling copra for a century or more—first to visiting traders and then to locally-based trade stores. Also, they became laborers on expatriate plantations located on Bougainville and elsewhere—that is, until World War II, since which time few Bougainvillians have been willing to engage in this kind of onerous and generally low-wage work. Parallel with these developments, many Bougainvillians have established plantations of their own, either as individual or cooperative ventures; and in some parts of the Province, mainly on Buka and along the east and north coasts of the larger island, copra is the principal source of

money for the indigenous cash-croppers. Elsewhere copra production has not flourished as well, due either to local growing conditions or to transport difficulties, or both. But even where copra production is a principal, or the principal, indigenous money-earning activity it seems to be impeded by natural or human obstacles—mainly the latter.

Generally speaking, pests and diseases are not as devastating in the Province as they are in some other nearby islands (e.g., on New Ireland, where the Asiatic rhino beetle was introduced about 1942, or on Goodenough Island, where coconut palms were completely defoliated in 1966 by migratory locusts). However, the poor ground maintenance that characterizes many if not most indigenous plantations encourages pests and diseases that reduce yields, and the same poor ground maintenance makes it more difficult and time-consuming to collect the fallen nuts.

Throughout most of the Province the quantity and quality of indigenously produced copra fall short of potentialities, and this is due to several widespread human-made causes.

In most places seed nuts are taken at random, without any selection for quality. Nor do many planters take the trouble to establish seedling nurseries (a practice that would serve not only to protect the vulnerable new palms but also to ensure that only healthy seedlings be planted). Most planters appear to understand the need for proper spacing but few indigenous plantations are so spaced: in some the palms are too close together for healthy growth, in others farther apart than necessary—and hence wasteful of land. Most indigenous plantations would benefit from application of fertilizer or mulch. Fertilizer is costly but where land is in short supply its cost might be offset by higher yields. Again, few if any indigenous planters trouble to plant leguminous cover crops, which would both improve the soil and retard excessive undergrowth.

In most places indigenous copra continues to be processed in small, family-owned smoke-driers. Hot-air drying produces higher quality copra, and while hot-air dryers cost more to build, and involve larger cooperative groups to operate efficiently, they have proved to be economically successful elsewhere (e.g., in Fiji).

Transporting copra from dryer to buyer is relatively easy and inexpensive for most coastal producers, or for those on all-weather roads, but because of its

bulkiness, moving copra from isolated inland areas (such as Atamo or inland Teop) can be so costly that it discourages this form of money-earning altogether when copra prices are low.

Against all these liabilities now serving to reduce the economic potential of the Province's indigenous copra industry, one important asset of the industry must be noted, namely, the way in which the producers' own labor is put into it. Unlike most wage labor, which requires the laborers to devote many hours of many days, continuously, to a job, the indigenous copra producers can earn money income from their plantations by working in spurts and at times more or less of their own choosing. Harvesting and drying require devotion of several days in succession, but this need occur only a few times a year. Undergrowth cutting should also be done with some regularity, but may be spread out over time. Thus, the indigenous copra producer can easily fit this activity into his total work regime, including subsistence gardening, other kinds of cash-cropping, and even some wage-earning. (Some individuals manage to harvest and dry their coconuts during weekend or holiday leaves from distant wage-earning jobs.)

As suggested earlier, considering the Province as a whole there is probably enough suitable land to accommodate a large expansion in coconut planting. Unfortunately, the location and present ownership of that potential land are not well matched with the population that will need this source of income—but before describing some specific instances of this disparity, I will list some parallel features of Bougainvilles' other principal income-earning and land-using enterprise, cocoa.

Several of the errors and oversights that reduce indigenous copra profits find their parallels in indigenous cocoa production.

In the areas known to me, directly or indirectly, few growers exercise much care in selecting better seed, or go to the (profitable) trouble of establishing nurseries.

Except in areas of heavy cloud-cover (e.g., in parts of Buin and Siwai), cocoa grows best under shade. A few indigenous growers do follow the recommended practice, but most of these appear to plant the cocoa and intended shade tree (e.g., leucaena) simultaneously, which leaves the new cocoa plant unprotected during its initial growth period, or provides no shade at all.

Growing cocoa requires more frequent weeding than coconuts, and in addition the plants must be kept free of vine; observation indicates that neither of these measures is carried out with enough regularity. High yield also depends upon regular and proper pruning of suckers—but according to one observer, "fewer than one in a hundred" of the cocoa farmers in his area correctly understood the technique of pruning.

The pests that cause most damage to the Province's cocoa are flying foxes, rats, and such insects as Pantorhytes—all of them liabilities but evidently not fatal ones. Numerous diseases affect local cocoa plants: black pod, white root rot, coffee borer, pod borer, thread blight, horsehair blight, etc. The first named of these, black pod, is damaging enough to reduce yields considerably, but few if any indigenous growers seem to be informed enough or interested enough to take prophylactic measures against it.

Few Bougainvillian growers appear to follow very carefully the recommended techniques for harvesting cocoa pods or for removing the beans, but the resulting damage to the beans, if any, does not appear to be serious.

Like copra, cocoa has the advantage of allowing growers to devote much of their time and labor to other activities, although it is not quite so undemanding as copra-making in this respect. Coconuts ripen and fall fairly steadily year-round, and may safely be left on the ground for days or weeks before processing. Cocoa also ripens continuously but unlike coconuts should be harvested at least once a month for best results. Moreover its ripening peaks annually in a "flush," which requires additional labor within a brief period if all the crop is to be harvested and the plants kept relatively disease-free.

The difference in price between wet beans and expertly-processed dry beans is usually large enough to pay growers—especially growers who have no alternative money-earning jobs to compete for their labor—to process their own beans. Some indigenous growers do in fact ferment and dry their wet beans in small, make-shift village fermentaries; this however results in a dried bean which, though usually commercially acceptable, is often poor in quality and brings a lower price. Few individual growers, or family-group growers, produce enough beans to make it economically feasible for them to construct and operate the kind of costly

fermentaries capable of producing consistently high-quality dried beans. In fact, most growers now sell their wet beans to large fermentaries, expatriate or indigenous, or join with neighbors in supporting and managing cooperative fermentaries. Selling wet beans outright protects the grower from the risk of losses that can occur during processing and transport but, as just noted, it reduces his potential profits. The 'cooperative' method would seem to offer the best solution, with both risks and profits being widely shared—if the management were efficient and trustworthy (circumstances that, unhappily, have not always prevailed).

Finally, as with coconuts, if one looks at the Province as a whole one could justifiably conclude that there is enough suitable land in it to accommodate a fairly large increase in cocoa growing. But, as with coconuts, most of that "extra" land will be increasingly required for other uses—including mainly subsistence cropping. Also, it is not in the form of a large undivided resource reserve that can be allocated to Bougainvillians according to individual and family needs—that is to say, it is divided into innumerable estates, all of them firmly owned by particular individuals or kin-groups, and hence not available (under present laws and customs) for redistribution according to need.

Next to coconuts and cocoa the most important kind of cash-cropping engaged in by Bougainvillians in recent years has been garden vegetables and fruits grown for sale in one of three kinds of markets. The largest by far of these markets are the messes of BCL and its associated companies. Next in volume of sales are the weekly or bi-weekly markets of Arawa, Panguna, Kieta, and Buka Passage. And last are the rural markets that have become weekly events in several rural centers, e.g., Buin Town, Konga, and Wakunai. (Some food bartering has been engaged in for decades and perhaps centuries, as in the case of Teop (see below), but institutionalized commercial markets are a postwar development in the Province.)

As is well known, the purchase of garden vegetables and fruits for the mining company messes began a decade ago and had developed into a highly organized enterprise, with most of the purchases being bought and transported from rural pick-up points by company trucks. The peak of this traffic was in 1971, during the mine construction phase, when recorded purchases reached \$340,000 per annum. Subsequently, with the decrease in number of employees, the purchases

have decreased by more than one-half, but continue to provide substantial incomes for many individuals. In the beginning the trade was restricted to communities located very close to the mine-company sites, but with improvements in roads the rural pick-up points have spread farther out—a trend that has been supported by a decrease in interest in this form of money-earning on the part of many peri-urban residents. In addition, a few enterprising individuals in places as far away as Siwai have organized large amounts of local purchases, which they then transport to BCL and other urban buyers.

Bedford collected several kinds of information about the Arawa and Kieta markets during December and January, 1973-74: the village of origin and sex of each seller, modes and cost of transport, percentage of produce sold and approximate price received. Taking Arawa as the sample, on four successive bi-weekly market days a total of 247 sellers offered goods for sale (132 males, 115 females). Most of the 34 villages they represented were located in north and south Nasioi, but a few sellers came from as far away as Guava, Koromira, and Eivo. Of the 247 trips to market, 105 were done on foot, 140 by car or truck, and two by a combination of walking and riding. The walkers evidently paid nothing for their transport—surely, one of the only remaining free-doms left to Mankind! For those riding to market the total transport costs for these four market days amounted to K50.50, or an average cost of K0.36 per trip.

Turning now to the results of all that effort and expense (including of course the effort that went into growing the produce): of the 207 sellers who reported their sales, 187 sold all of their goods—a large percentage for such enterprises, it would seem. However, the total receipts from all these sales amounted to only K513.51, which averages out to about K2.10 per seller—142 of whom, it will be recalled, paid an average of K0.36 per trip for transport.

When pondering the economics of these market transactions (and Arawa is probably the largest and most "profitable" market in the Province) it should of course be added that marketing of this kind is more than an economic event —i.e., it has recreational and other social value for many sellers and buyers as well. But from a strictly economic point of view such marketing is clearly not a highway to wealth. Indeed, it is not unlikely that some of the sellers return home with no money at all to show for their efforts, having spent their meager earnings, and more, in slaking their thirsts, or restoring their lost calories, etc. in the market-centers' nearby stores.

In an inventory of Bougainvillians' ways of money-earning the cash-cropping of garden vegetables and fruits for sale in urban markets and to company messes must be considered a widely distributed source of cash—but mainly for people living in communities easily accessible to those markets. Ironically, it is the residents of those nearby communities who also have other opportunities for earning money, unlike most of their compatriots in distant rural areas.

Finally, any discussion of Bougainvillians' money-earning activities must include a few words about recent efforts to produce beef, poultry and eggs for local urban markets.

Regarding beef production, I think it may be concluded that prospects for large-volume production are not very hopeful. Despite a large and assured market, and despite major Administration efforts—promotional, advisory, and financial—to establish cattle growing by individual villagers or rural cooperatives, the results so far have been too meager to warrant optimism. Perhaps a different kind of organization, one involving large capital resources and expert management, might eventually succeed and bring jobs to a few Bougainvillian workers and dividends to Bougainvillian share-holders—but the land required for such enterprises would be a kind also suitable for growing food and cash crops, i.e., land already or soon-to-be in short overall supply.

In comparison with cattle, recent efforts by some Bougainvillians to produce poultry and eggs for urban markets appear to be meeting with considerable success—enough, in fact, to justify additional official encouragement and assistance. Moreover, the land requirements for producing chickens and eggs on a commercial scale are small, relative to those of other agricultural activities—another mark in its favor. However, chicken- and egg-producing should not be viewed as a universal, or even major, kind of money-earning enterprise. One cannot predict what the future local market will be (and a foreign market appears highly unlikely), but it will certainly not be large enough to provide substantial incomes for more than a small fraction of the Province's growing population in years to come.

But let us turn now to some specific case studies, to exemplify the above generalities.

Teop

In 1974-75 the coastal Teop occupied three villages—one on Teop Island and two on the nearby mainland—and numbered 363 individuals, of whom 295 were resident and 68 living temporarily elsewhere (in school or at work). The land area owned by these coastal Teops totalled 2,080 acres, all of which corresponded to the CSIRO type designated as being "land suitable for cultivation with (only) minor or moderate limiting factors." Of this acreage 260 acres were given over to roads, house sites, streams and other unplantable areas, leaving a total of 1,820 acres for agriculture—or about five acres for each of the local residents, present or temporarily away from home. Since the average Teop resident consumes garden food—taro, sweet potatoes, bananas, yams, etc.—at the rate of about 0.2 acres worth a year, it might appear to the uninformed that the Teop are in no danger in the foreseeable future of running out of land. But consider the realities.

First of all, Teop gardening methods involve a fallow time of about twenty years. This, together with a cropping time of about three years means that each individual will require a reserve of about 1.4 acres of arable land in addition to the land now being gardened, unless the fallow period is shortened. But even without fallow-shortening it would seem that the Teops should experience no major difficulties about land—providing that:

- the population does not increase by more than about 20 percent, ever;
- they continue to catch a surplus amount of fish; and
- they give up cash-cropping altogether.

Unfortunately, the first of these provisos is wholly unlikely to eventuate. During Shoffner's period of fieldwork, 1973-74, the natural rate of population increase was three percent per annum, and children under fifteen constituted over 45 percent of the total population—signifying that the population will double in about twenty-three years unless there is a very marked decrease in birth rate and/or an epidemic increase in death rate.

The proviso regarding fishing is based on the fact that these coastal Teop catch enough fish in their favored waters to enable them to eat what they want and trade the rest to inland Teop (a trade that has been going on for decades and perhaps centuries). In fact, the coastal Teop obtain about 25 percent of the vegetables they consume from this trade. In other words, if this source of

vegetables were cut off, the coastal Teop would require another one half acre per capita in garden land reserve in order to insure a continuing supply of vegetable food for themselves—with no population increase, that is.

The third proviso is as unlikely to eventuate as the first. In 1973-74 some 435 acres (about 21%) of the Teops' total land holdings were planted in cash crops and all signs pointed to continuing expansion—so long, that is, as prices for copra and cocoa do not plummet and remain low for long periods of time. This prediction of continuing expansion of cash-cropping is based on two discernible trends. In the first place, the Teops, like other Bougainvillians, are acquiring larger and larger appetites for goods that can be obtained only with money, and unless they resume work as unskilled laborers on nearby expatriate plantations (which no Teop would probably choose unless desperate), or unless they obtain attractive employment in distant urban centers (which few Teops would be able to do), the only way open to most of them to earn money is by cash-cropping at home. And secondly, in view of the present circumstance that it is the more educated and widely travelled Teops who have taken the lead in cash-cropping, the increase in educational level that is now occurring will probably accelerate interest in cash-cropping in the future.

In summary, if the Teops continue to increase in numbers at present rates—a conservative prediction, and if they double their cash-crop acreages during the period in question—an even more cautious prediction, they will reach the point in 1997 (i.e., the year in which their population will have doubled) when their lands reserved for future food gardens will amount to only 805 acres.

As was pointed out earlier, the average Teop now annually consumes vegetables at a rate that takes 0.2 acres to produce (plus those vegetables obtained in exchange for fish). And under the present system of fallowing this requires a reserve of another 1.4 acres to sustain. In other words, if the predicted increases take place, both in population and in cash-crop acreages, the average Teop of 1997 will continue to have a 0.2 acre garden from which to obtain his current vegetable food needs (a total of 145.2 acres for all Teops), but 1.1 acres in reserve for future garden needs (a total of 805 for all Teops). — And the margin between land under cultivation and land in reserve would continue to decrease with every passing year.

Of course, the final day of reckoning could be postponed somewhat by shortening the fallow time—but that could only be done by use of fertilizer, which

would be very costly, or by introduction of new, short-fallow crops. (It is of course conceivable that the conventional fallow times, in Teop and elsewhere, are in fact longer than necessary, and that they could be shortened without significant reduction in production—but such possibilities should be experimentally demonstrated before they are officially proposed.)

Another way by which the reckoning might conceivably be postponed would be by using the money earned from cash-cropping to purchase food equivalent to that lost through diminished gardens. This conception is however erroneous in at least one important respect. As will be shown below, the profits earned from cash-cropping, as presently practiced throughout the province, are not sufficient to purchase, at present prices, the amount of food that is now grown on equivalent acreages of land. And unless prices for cash crops rise steadily and at the same rate as prices for store-bought food this discrepancy will become even wider over time.

In conclusion, even highly favored coastal Teop will soon reach the day when there is not enough land available locally to feed its expanding population. More fortunate than most inlanders, they will still have fish for the catching, but unless large numbers of the Teop work elsewhere for wages, and send generous remittances home, they will not be able to grow or purchase the staples that make up most of their diet—nor all the other goods and services that they are becoming increasingly dependent upon.

Nagovisi

Compared with coastal Teop the Nagovisi's entry into a money-based economy has been more recent and rapid. In fact, until the vehicular "Buin" road was cut through to join with BCL's Jaba pump-station road terminus, Nagovisi's main links with the outside world were by foot, by air, or by long-distance roads and sea. However, by way of the new road links goods and people now move between Nagovisi and Panguna-Arawa-Kieta in ever-increasing volume, thereby expanding and intensifying Nagovisi's wants for non-indigenous goods. The question, again is: How have the Nagovisi's fared in satisfying their newly acquired wants? And what are their prospects for doing so in the future?

The best information available about Nagovisi society and economy concerns specifically only one small part of it, the Pomalate village area of south-central Nagovisi. However, the authors of this study imply that their findings are typical

of Nagovisi as a whole. Several writings have come out of this study (e.g., J. Nash, 1972, 1974; D. Mitchell, 1971, 1976, n.d.; D. Mitchell, J. Nash., and E. Ogan); the one I make most use of here is D. Mitchell's Land and Agriculture in Nagovisi, one of the most comprehensive and best-documented reports ever published on the economics of Melanesian agriculture.

The main problem faced in Mitchell's monograph is described by the author as follows: "How have the Nagovisi fitted the cultivation of permanent tree crops, the products of which are exchanged for money, into a system based on the shifting cultivation of root crops; and can it be said that this change represents any kind of an advance in either the social, economic, or ecological sense?" As Mitchell points out, many expatriate advisors and indigenous leaders hold that ". . . increasing participation by all sections of (Papua New Guinea) society in the world monetary economy is a sine qua non of 'development'." And, he goes on to state, even at the village level ". . . there are few who doubt that the way to 'progress' is to increase money incomes and to consume more Western-manufactured goods and food." Continuing, he adds, "No one would doubt that some cash income is essential to modern rural life on Bougainville (and elsewhere) or that rural life has improved in some measurable ways in consequence of cash-cropping. But there have been some heavy costs. . .", which he proceeds to describe.

As elsewhere on Bougainville, the Nagovisi made the change-over from taro to sweet potato gardening quite successfully. At prewar rates of population increase and without a large-scale shift to cash-cropping they would likely have been able to feed themselves adequately and healthfully for generations to come. Disparities in land ownership do exist, some clans being land-rich per capita and others land-poor; but in the past the latter usually experienced little or no difficulty in obtaining permission to locate their food gardens on the lands of the former. However, with recent increases in population this kind of adjustment has become more and more impracticable, and has been greatly complicated by the massive change-over to commercial cocoa growing.

As cocoa growers the Nagovisi are probably no better or worse than other Bougainvillians. Regarding maintenance, Mitchell states, ". . . about the only care taken of cocoa is cutting the grass and removing the vines from the trees. Probably fewer than one in a hundred Nagovisi cocoa farmers understands the technique of pruning and other regular maintenance procedures which are necessary if the cocoa is to bear at a high level. Certainly none of the cocoa stands with

which I am familiar have been well maintained and there is no doubt that yields have suffered as a result. Ignorance has been the most important factor in lack of maintenance. Most growers are aware that 'the branches should be cut' but no Pomalate or Biroi grower had been carefully instructed in the actual techniques of using secateur, saw and pruning knife. No instruction had been given regarding prophylactic measures against thread blight and black pod diseases, although, again, these were recognized by the growers as difficulties which should ideally be dealt with."

Mitchell continues, "Growers who were considered successful were in fact successful not because they grew cocoa efficiently (had stands which produced at high rates for a given area), but because they had large, extensive stands which, even though they produced at a low rate, nevertheless produced large quantities of beans. Growers seem to have concluded that extensive stands were necessary for large production and in many cases growers planted more cocoa than they could possibly care for. . ."

In summary, Mitchell states, "Most of the problems which have led to poor maintenance might be overcome if it were considered desirable or necessary to do so. It seems clear that with better maintenance, the yields of Nagovisi cocoa could be increased, perhaps by a factor of two or three times."

Mitchell also observed that many Nagovisis do not follow recommended procedures for harvesting beans, but this does not seem to have resulted in widespread damage to them.

In terms of soil and climate it is clear that the Nagovisi area is well suited to cocoa growing, despite the presence of the few pests and diseases found there. On the other hand, the topography is too uneven and the soil patterns too diversified to permit the development of large contiguous plantings, such as occur on coastal (and mainly expatriate) plantations, and such as would favor large-scale and more mechanical methods of production. Moreover, the location of much of Nagovisi's cocoa gardens, separated as they are by long and often roadless distances from processing or marketing centers, must be considered a major liability.

Nearly all the cocoa production known to Mitchell was organized on a single-household basis, most efforts at larger-scale production having proved unsuccessful.

Until 1968 most wet beans were dried in small make-shift village fermentaries; this often resulted in dried beans of barely acceptable quality.

Subsequently most beans grown in the area were sold, wet or dry, to the BANA Society, which had better facilities. And in recent years some of the beans have been sold directly to brokers in Kieta or Buin, at slightly higher prices than could be obtained from BANA.

Transport of cocoa beans in any sizeable quantities from fermentary to port-side buyers (and in some cases, from garden to fermentary) requires dependable vehicles and navigable roads—both of which cost large sums of money to acquire and maintain, and neither of which appears to be included in calculations concerning "profits" from cocoa production. On the one hand, few if any growers seem to amortize, consciously, the original costs of their vehicles against sales receipts of beans, nor do they plan for or amortize maintenance costs of those vehicles—a very large cost item because of the local climate and roads.

Another evaluation criterion that must be applied to Nagovisi cocoa production concerns the labor: are the man hours devoted to it "adequately" compensated in terms of the individual "profits" derived from it? In the Nagovisi setting the answer to that question is simplified—but by no means entirely answered—by the circumstances that, other than vegetable-growing for the Panguna and Arawa markets, there is no other local money-earning work to which labor can be applied.

Still another measuring-stick to apply to Nagovisi cocoa growing concerns the scale and efficiency of its work structure—that is to say, is it managed and organized as efficiently and economically as possible?

According to Mitchell, the production stage of the industry is carried out by household groups, and works quite well. Some efforts have been made in the past to organize larger-scale producer groups but these have not endured. The small size of household groups rules out the labor-division efficiencies made possible in larger groups, but small-group operation is well-suited to the fragmented nature of cocoa-growing sites. (In this connection, it is interesting to note that Nagovisi's matrilineal clan organization and its concomitant pattern of land tenure and marital residence location—i.e., the husbands go to live in their wives' villages—does not appear to have served as an institutional deterrent to cash-cropping, as has been the case in some other matrilineal areas, notably in Central Africa. (cf. J. Nash, 1974).)

In another sense however cash-cropping has brought about a break with traditional Nagovisi agricultural practice. Whereas people were formerly generous in sharing land and labor with one another in the production of crops for home consumption, they now demand rent or wages when lending their land or labor to people (other than household mates) for the production of cocoa.

In summary, although the productivity of cocoa-growing could be increased through improvements in planting, maintenance and processing methods, it now provides many Nagovisis with a domestic and culturally congenial way of obtaining money incomes. But can this situation continue for long?

For some individuals (i.e., those fortunate enough to belong to land-rich clans) this happy situation could continue for a generation or so—unless the market price for cocoa falls far and remains very low. But for many others their agricultural lands are already in short supply. Of course, it is conceivable that such disparities in land ownership might be corrected by voluntary or forced redistribution, but for various social and political reasons neither of these measures is likely to eventuate. And it is at least conceivable that the land-poor might acquire what they need from the land-rich by purchase—provided the former had the necessary money (which is unlikely to be the case) and provided that the latter would be willing to sell (which is rarely the case). In any case, taking Nagovisi "as a whole," even redistribution, by government fiat or voluntary exchange, will only serve to postpone for a few years the crisis being brought on by Nagovisi's increasing population and by their continuing inclination to convert garden land into cocoa.

Concerning the latter, Mitchell's studies indicate that one hectare of agricultural land can provide enough food for the average size household for about five years, before fallowing. On the other hand the same hectare converted to cocoa (and hence more or less 'permanently' removed from food production) will bring in an annual money income (if prices remain high) of only \$100, which ". . . cannot possibly purchase enough imported foodstuffs to maintain each household, even without considering such (other) expenses as taxes, school fees, traditional obligations and so on."

Of course, if each household had at its disposal enough land for gardening and cash-cropping, all would be well. But, as Mitchell points out, some households are already approaching the limits of their land resources. And if Nagovisi's population growth continues much longer at its present rate, cash-cropping will have to be significantly improved in productivity and greatly reduced in planting

area in favor of food-growing if the future population is to obtain enough food staples, let alone the other goods and services that have become essential parts of their lives.

For better appreciation of the impending crisis in Nagovisi economy the reader is urged to read Mitchell's impressively documented monograph. In addition to the persuasive case he makes for the impending crisis in material welfare, he draws attention in his monograph to a kind of social crisis which is developing in Nagovisi, namely, a kind of social inequality based on property—specifically on disparities in land ownership. As Mitchell says, Nagovisi have always had momiako and bakilo (big-men and destitute) but this distinction has never rested on much more than hard work. Anyone could become a momiako through hard work and most bakilo were lazy and unskillful. But this is not the same thing as becoming a momiako because of a few hundred hectares of bush, or becoming bakilo because cash cropping froze the land holdings in a clan at a time when some had none.

In one instance, at least, some have-not clans were beginning to unite in a cargo-like organization which was anti-modernist in ideology and socially factionalizing in effect (J. Nash, 1974); it remains to be seen whether this reaction to the new kind of "poverty" will occur elsewhere.

Siwai

Our most recent data on Siwai were collected by John Connell who engaged in field study there between October 1974 and April 1976. At present writing (November 1977) Connell has not yet completed what promises to be a very comprehensive and detailed monograph on most aspects of contemporary Siwai economy, but the data he has recorded so far on population, land use, gardening, and cash-cropping will enable us to compare Siwai with our other area samples in terms of our principal focus, namely, the long-term prospects faced by each area's residents in satisfying their material wants by utilization of local resources. For the present, and in the immediate future, the Siwai as a whole appear to be fortunately placed. In gardening the transition from taro to sweet potato has been successfully accomplished. Small amounts of taro continue to thrive in some places, for use mainly on ceremonial occasions, but sweet potatoes are now the accepted staple and are grown in ample quantities—enough both for domestic consumption and for "export" to urban centers. The Siwai also plant other food crops in their gardens—including "Chinese taro (*Xanthosoma*), yams, cassava, bananas, corn, pumpkins, sugar cane, and aibika (*Hibiscus manihot*)—and while (like

most other Bougainvillians) they could and should place more emphasis on plant variety (especially the less starchy ones) in their gardens—and thence in their diets—there appears to be enough land available, and in current use, to ensure enough calories for all present Siwai. (Ironically, the Siwai appear to have reduced the variety of the food-plants—not in order to reduce gardening labor but because of a preference for store-bought foods.)

According to Connell's measurements and calculations, a producing garden of about 0.15 acres is sufficient to feed one person (on the average) quite adequately—adequate, that is, in terms of calories.

Inasmuch as the Siwai continue to raise pigs and to feed them mainly with garden produce, the per capita figure for garden-size requirement needs amending, upwards, but how much upwards is difficult if not impossible to estimate.

Compared with Buka and north and east Bougainville, coconuts grow poorly in Siwai (possibly because of the heavier cloud cover); nevertheless the Siwais produce enough nuts for domestic use, and in addition, many of them own enough palms to produce copra for sale—when the price is high enough to induce them to do so. During the peak-price year of 1974, for example, many individual Siwais earned up to \$500 or so from copra, but with the fall in prices production dwindled to almost zero, and higher priced cocoa became the object of most Siwai's cashcrop efforts.

At the time of my writing, Connell's discussion on Siwai cocoa production has not yet been completed, but he makes it clear in other chapters of his report that cocoa has become far and away the area's most important cash crop—in terms of acreages, labor and money income; and while it is not yet reported how much land is being devoted to cocoa growing, and hence removed from foodplant growing, Connell does state that—"overall there is no contemporary land shortage on Siwai. . . ."

The evidence for Connell's statement is based on rough calculations of per capita land needs (which are somewhat uncertain), on estimates of land carrying-capacity (which are speculative, to say the least), and on personal observation (of the existence of extensive unplanted areas). However, it should be noted that Connell qualifies his statement, i.e., his use of the term "overall" by adding that, ". . . the problems (of land availability) are those of land distribution over space and between groups." (This is yet another expression of the previously noted

predicament, that while there may be enough land now available for food-production and cashcropping, it is not always available to the people who need it.) As he says, ". . .some matrilineages are already short of land."

Moreover, Connell's comforting estimate of overall land sufficiency must be recognized as referring to "now." As described earlier, Siwai's 1975 population of 9,000 appears to be increasing at a rate whereby it could double its numbers by about 1987-88. And even with some slackening of that galloping rate, the time is sure to come, within a century or less, when Siwai gardens will have to be extended into the inhospitable marsh lands towards the coast and the rugged mountain lands in the north, unless these enterprising people curb their wants for imported goods and services, or unless they discover and utilize other means for earning money—or, of course, unless they emigrate in large numbers.

Eivo

According to Michael Hamnett, who carried out field work in Atamo between August 1974 and May 1976, the Eivo and Simeku speakers in that area were much like the Teop, the Nagovisi, and the Siwai in terms of the growing and processing of their cash crops, but even more handicapped than the Nagovisi with respect to marketing, i.e., villagers living on the eastern side of the Crown Prince Range had to carry their produce over a three-hour walk to the nearest vehicular road terminal, at Manetai, while those Eivo living on the western slopes of the range had an even longer path to negotiate and over mountainous terrain. (The Simeku village of Korpei was better off than others in this regard, having had close access to a vehicular road for a number of years. Consequently, perhaps, Korpei villagers were the first of their ethnic mates to plant cocoa and now probably have the largest number of trees per capita—a clear indication of the relation between cash-cropping and market access.)

Despite their transport difficulties all of the villages in the area observed by Hamnett had planted cash crops, except for the residents of Kopani, who were involved in a kago movement that rejected cash crops—particularly cocoa—as "samting bilong ol waitmen." Thus, it would appear that most residents in the area, like Bougainvillians elsewhere, entertained hopes and expectations of earning some money in this way—which, incidentally, was the only way for money-earning open to them at or near home.—By mid-1976 however such hopes were yet to be realized by the average grower. In Atamo, for example, the 57 cocoa growers without fermentaries of their own earned an average of only K25.67 during 1975. The four Atamos who owned and operated fermentaries did much better, having

earned a total of K6309.70 through their productive and processing activities—but their larger earnings were accomplished, clearly at the expense of their 57 grower-only village mates. This disparity was of course perceived and commented upon by some of the growers, some of whom had built, or were in the process of building fermentaries of their own. However, Hamnett recorded instances wherein such ventures had failed, due mainly to lack of technical knowledge. Moreover, had more than the four successful ones actually succeeded, this would have decreased somewhat the disparity between growers and grower-processers, but it would not have increased the total or per-capita Atamo income from cocoa in the end.

In nearby Kanavitu the total income from cocoa was about the same as that of Atamo in 1975—the two villages had 10,888 and 11,689 cocoa trees, respectively—but the distribution of that income was quite different. In Kanavitu the 19 growers constituted a society and processed all their cocoa through the society's fermentary. In 1975 the society's total income from sale of processed beans was K6093.38. Of this, K1240.41 was distributed among the growers—i.e., an average of K65.25 per grower, or in terms of the village's total population, only K4.36 per capita. The rest of the proceeds was either banked (K845.00) or used to purchase goods for sale by the society's store.

As for the other villages in the Eivo census division, they had at the time some 32,220 cocoa trees in production, and those yielded even smaller incomes, per grower, and per capita, than those of Atamo and Kanavitu. Nevertheless, the people of the census division continued to increase their plantings, and to build new fermentaries, in the, now somewhat tarnished, hope that wealth would eventually come from this source.

The people of Eivo census division displayed even more persistent hopes for the future of copra—perhaps because of their longer experience with it and the less efforts it demanded—even though little of it was made or sold at the time. (For example, in 1975 only 14 bags, which brought a net income of only K84.40, and which, like cocoa, had to be carried by foot the several miles to the nearest vehicular road.)

Against all these difficulties experienced by residents of Eivo in establishing cash-cropping, and against the small money-incomes obtained by them so far, must be balanced the circumstance that the Eivo still possess ample land for both food and cash-cropping; i.e., according to the 1972 census the division contained only 6.7 persons per square mile. However, this favorable situation will not continue for

more than two or three generations, if the present rate of natural increase continues, and if the present trend to cash-cropping persists. And even before that pressure on land becomes critical, many people of this division will have to shift their residences in order to live nearer the diminishing agricultural lands, even to the extent of returning to the remote and roadless western slopes of the Crown Prince Range. Thus there will develop an ironical situation in which many Eivos, in their efforts to enjoy more fully the material benefits obtainable only by money, will be forced to live even farther away from the urban centers from which those material benefits derive. Before such a westward move becomes necessary, many Eivos will shift their groves and gardens eastward, nearer to the recently completed coastal road—a move, in fact, that was already in progress in 1975. But eventually that area will also fill up, and the westward trek will have to begin.

11. Rural Businesses

Despite their knowledge about numerous store failures many Bougainvillians persist in viewing retailing as the shortest road to financial success. To preside over shelves holding readily selling staples and brightly labelled manufactures is seen by many to be far more attractive than planting, harvesting, and processing cash crops, or engaging in physically demanding wage work. Even the labor of acquiring goods for sale is viewed by many as more adventure than drudgery, and a kind of prestige-enhancing mystique attaches to many retailing enterprises, however modest these may actually be.

Some of the roots of this widespread attitude may be traced to the prewar era, when viturally all retailing was in the hands of foreigners, Europeans or Chinese, and thus represented a mysterious and wholly unattainable level of material wealth. The war then served to change this situation in two important ways. First, the war itself put a stop to all store-bought commodities for the duration, thereby creating a universal and unsatisfiable demand. Later on, the distribution of war reparations provided many persons with the cash to satisfy that demand (and for a few, to enter the retailing business itself). As a result trade stores sprang up everywhere—e.g., in remote Nagovisi, where prewar there was not one indigenous store, by 1955 there were twenty-six. Moreover, this proliferation was not a momentary fad—e.g., in the Buin and Kieta census divisions surveyed by Moulik in his 1973 study there were 322 such stores, each having an average of only 108 steady customers.

To characterize such enterprises I can do no better than quote from D. Mitchell's study:

... The establishment of a village 'store' is a predictable Nagovisi pattern, which appears to be similar in many, if not most, respects to those in other parts of Bougainville. Village stores generally operate as small co-operatives, although the investors never conceive of them as such. Village households contribute share capital, usually on the order of \$10 per household, which is used to purchase an initial shipment of trade store goods from a merchant in one of the urban centers, or from a local whole-sale co-operative (one began to function in 1969, in Nagovisi, but ceased operations in 1974).

These goods are put in the store, marked up, then primarily purchased by the store's 'owners' who do not receive any discount. As stocks dwindle, the store's cash generally increases and a new shipment of goods is then brought in. Villagers may 'charge' goods, although nearly every store has a sign prohibiting dinau (debts). Profits, when there are any, are never distributed among the investors. Eventually, most stores collapse, usually through real or alleged fraud (more often, in fact, just mismanagement and poor accounting). Upon collapse, most investors get back their original investment and not much else. There are exceptions, of course; some stores are well run, appear to turn a profit (although even in the best-run stores, they are not distributed to the investors) and are usually well-stocked. More commonly, a store will have a lifetime of one or two years before collapse; after a short period, a new one will be organized, usually by a different kin group within the village and will live out its own lifespan. (D. Mitchell 1976: 123)

Mitchell then goes on to state that: "... a store run along standard individual entrepreneurial capitalistic lines would not succeed in the (Nagovisi) village context. The owner would be seen as personally profiting from the villagers while they receive nothing."

The account by Eugene Ogan about trade stores in the Aropa Valley reveals a more complicated situation. In 1962-64 (the year of his first study there) many of the trade stores in the Valley were associated with indigenous copra production and some of them took on the aura of cargo-ism. In Ogan's words:

The pattern for these new "bisnis" ventures was remarkably uniform: a man with some knowledge of European ways—who was at least fluent in Pidgin, at most the possessor of a mission secondary education—and more than average coconut holdings, solicited cash contributions from villagers in his own area and beyond. With this capital he attempted to act as agent for copra sales and manager of one or more tradestores. In each case the goal of 'living like Europeans' proved unattainable with the limited material, educational and organizational resources available, at which time activities were noticed by Europeans which they identified as 'cargo cult'. (Ogan 1972: 161-162)

In fact, writes Ogan, "... 'bisnis' and 'kago' (i.e., material and spiritual riches obtained by supernatural means) were never differentiated in Nasioi minds, and ... the emphasis on supernatural elements only increased as the, in European eyes, business-like aspects of the various operations failed."

Ogan's monograph contains case studies of the beginnings and ends of several of the Aropa 'bisnis'—some of which involved substantial amounts of kago thinking, and none of which was conducted according to usual commercial methods of

bookkeeping, pricing, inventory control, credit constraints, etc. For example, in the case of one store:

Jude (the store keeper) maintained that the regular mark-up over the price paid to Wo Fat for goods was 5¢ per 50¢ Bakatung's manager quoted 5¢ per \$1). However, on the one occasion when Sebastian delivered the order in person, he set prices on a more haphazard basis, with mark-ups averaging 5¢ to 10¢ on every item over 40¢, but never exceeding 50¢ on even the most expensive items. (Perhaps for my benefit, he carried out this procedure with maximum use of Pidgin and English billingsgate—for example, "Makim tu bloody shilling"—much in the manner Wo Fat's sons employed when dealing with Nasioi). Special order items, on the other hand, such as beer for a party or a Petromax lamp for Jude, apparently received no mark-up at all. (Ogan 1972: 168)

An examination of Jude's books revealed to Ogan ". . . a kind of 'bookkeeping' in which no accounts balance." For example, when Jude returned to the relatives of a recently deceased share-holder the latter's share in the store enterprise he calculated the figure to be eighteen dollars. According to Jude's calculations the deceased "... had made an initial contribution to the store of \$10, and had purchased some \$10 to \$15 worth of goods before his death: therefore (sic) his 'profit' came to \$18."

Continuing about the hopeless, but ever-hopeful, Jude (who eventually was typical of Aropa store-managers in those days), Ogan wrote:

Even more disastrous for the store, however, was the problem of "dinau" or credit. Every tradestore in the 'chain' which I visited posted a sign forbidding extension of credit: "Dinau itambu" or "Ino gat dinau." Yet every store extended credit, with the rationale that shareholding made this the individual's right. Jude argued that no villager would leave the area without settling his obligations. This was perhaps true, but the argument shows no awareness of the reduced liquidity resulting from sales on credit.

For example, each month the Rumba store purchased about \$230 worth of goods from Wo Fat. Assuming a mark-up of 10 percent, the store's margin would total \$23 per month, from which Jude's \$12 salary and a transport fee of about \$2 had to be paid. At best the store might have a net sum of \$10 above the obligation to Wo Fat. In fact, "dinau" at Rumba store never went below \$50 during 1963-64; the largest debtors, Edmund and Casimir, never reduced their combined debt to less than \$40, and many men had balances of \$2 to \$4, which they periodically cleared. Consequently each month cash available to purchase stock would be at least \$40 less than the value of stock desired. Unlike Jude, Wo Fat would not extend credit indefinitely, so that Sebastian had to exert pressure on Rumba

villagers or make up the deficit himself. In any event, "dinau" alone would have eventually caused the collapse of the store.

In addition, traditional values of generosity and sympathy impinged upon Jude. When Antsi died, her maternal grandfather wished to provide an impressive offering of food to funeral visitors. He went to Jude and asked for rice, tinned fish, tea, biscuits and sugar, saying that he would give up his share capital in the store as payment. (Of course, in Western bookkeeping his share capital had already been consumed by haphazard management.) Jude gave him the goods outright, to an estimated value of \$20, on the basis that he was "sori" for the grandfather's bereavement. (Ogan 1972: 169)

Hamnett reports that the situation was similar in Atamo. Several individuals had operated stores there since the 1950s but few of them had kept track of profits and losses and few had survived. During Hamnett's stay there in 1975-76 a store was operated by a young man with some business training—and evidently a better-than-average "business sense." However, when his goods were priced higher than those of stores in the towns—reflecting his higher transport costs, etc.—his neighbors complained, one saying, "When we got our own stores after independence we were sure the prices would drop—but they haven't; prices here in the village are now higher than ever." In another case reported by Hamnett, a store owner (now no longer in business) had deliberately priced his goods lower than cost, explaining, "I don't need to make a profit; I have cash crops."

Without comparable data from all other parts of the Province one cannot assert that village retailing is everywhere like the stores described by Mitchell, Ogan and Hamnett; in fact, a few that I have seen appear to be quite successful. However, the failures and the barely-surviving ones seem to outnumber the successful ones by a wide margin—in terms of conventional "profits," that is. In some other respects, even the failures may serve useful purposes while they last. As Mitchell writes:

These stores serve a very useful service function—making imported goods available to the villagers—and in that respect alone they are seen as worthwhile. The idea of profits is always strongly stressed, but the fact that none ever appears is not really seen as a drawback. When stores do run well, the profits are invested in other things. One store has expanded into transportation and other activities, very successfully.

As economic phenomena, trade stores are almost exactly analogous to other forms of Nagovisi economic cooperation: capital is taken in, some kind of work is done, investors are 'happy' and 'proud' to think of what they have formed. No direct monetary benefits accrue to the

investors, but all benefit from the services provided. (D. Mitchell 1976: 123)

The most usual causes of village trade-store failure in the past have been, in Mitchell's words, "... internal dissension (i.e., among share-holders) or mismanagement, or (rarely) fraud." In the future however such stores will have to contend more and more with large urban stores, including some indigenously owned and operated ones, which can offer a dazzling variety of goods at less than village-store prices, and which are becoming ever more accessible by means of the Province's expanding road network and increasing number of vehicles.

In any case, whatever other useful purposes the Province's village stores may serve, they are not likely in present form to produce sizeable monetary profits for many of their owners. With drastic reduction in numbers, and with changes in organization and management, some of them might provide handsome profits to a few owners, or—what is more likely—help to reduce prices for larger numbers of share-holder customers, but that is about all they can be reasonably expected to accomplish in monetary terms.

Although trade stores are the most visible type of rural business enterprise, they are not the only one, and in some places, they are not the most income-generating ones. In the Atamo area, for example, cocoa processing has probably been more profitable than retailing. Hamnett writes as follows about these enterprises:

Some processing businesses are set up like co-ops but members have not remained satisfied with their return. One or two men have run such operations and "profits" have been either banked or put into trade stores and the "members" have seen no return.

Prior to the establishment of "co-ops" a few individuals (most of whom received some training from DASF) set up cocoa dryers and began buying wet beans at a fairly low price—K0.05 per pound. They fermented and dried the beans and then paid for transport to Kieta. These men made "profits" (i.e., income over and above costs) substantially higher than growers.

By 1975, enough growers were fed-up with the lack of income from the co-ops and selling wet beans to private entrepreneurs, that many were building or planning to build their own dryers. When I went to Atamo, there were two cocoa fermentaries. By the time I left there were four operating and two others under construction. This proliferation of cocoa businesses was also occurring in other Eivo and Simeku areas.

When the completion of the Kieta-Wakunai Road became a reality, there were several Eivo and Simeku speakers organizing groups to buy trucks.

For Eivo, I would say that most would-be entrepreneurs see cocoa—then transport businesses financed by cocoa—as the way to make money. A number of people have been burnt on trade stores and although a few people still dabble in stores, I think more see cocoa fermentaries and then, if they get enough income, trucks, as the enterprises to which they aspire.

The Siwai have been much more active than the Eivo-Simeku in operating rural businesses. According to Connell's Report, now awaiting publication, most attempts to organize and operate stores and other kinds of commercial enterprises in Siwai have with a few exceptions fared no better than those just described. Like the latter some of the "stores" are little more than family or lineage commissaries, which provide their share-holder members with goods otherwise obtainable only in distant centers like Buin Town or Kieta. And, as elsewhere, others of them constitute parts of enterprises involving also the production or processing or transporting or marketing of cash crops. As such, few of these stores return any profit to their owners, other than savings in the time and (rarely) money that would be used in buying from distant shops.

Organizationally, most of these rural businesses, whether separate retail outlets or multi-faceted complexes, are "owned," theoretically, by numbers of shareholders (e.g., lineage mates, village neighbors), but are managed, almost exclusively, by one or two individuals. Like their numerous counterparts elsewhere in the Province, few of them survive very long, and fewer still earn any monetary profits for their shareholders.

In addition to the multi-owned enterprises just mentioned, Siwai contains several individually-owned businesses, ranging from single-faceted ones (e.g., stores, bakeries, fermentaries, transport services) to complexes containing two or more facets. As with the multi-owned ones, most of these do not manage to survive very long, or continue to limp along at a very modest pace. However, in striking contrast to all the above businesses, multi- or individually-owned, there are a few individually-owned Siwai businesses that have succeeded remarkably well—both in providing useful services to fellow Siwais and in earning substantial money incomes for their owner-managers. Case studies of these successful enterprises are contained in Connell's report; they merit close study as models for potential development elsewhere.

Finally, Connell notes in his report that, historically, the Siwai appear to be shifting from multi- to individually-owned (and managed) business enterprises. This trend, together with the fact that the more financially successful businesses are individually owned, suggests that the two circumstances may be causally linked—but this does not mean that multi-ownership as such is necessarily a disadvantage, in Siwai or elsewhere. Nor does it follow that the monetary success of a few outstanding entrepreneurs is a more desirable social goal than that exemplified by the individually smaller but more widely distributed profits that might be earned through multi-ownership business enterprises.

In connection with the latter, Bougainville has been the scene of numerous "cooperatives" during the past three decades. Some of them have been initiated and assisted by Administration officials, others through purely local initiative and resources. Some of them have been utter failures from their very beginnings, others have failed or slowed down after years of early success, and a few continue to operate as highly successful and widely useful enterprises. By their very nature they are (or should be) even-handed facilitators for the productive activities of their whole memberships, and do not (or should not) serve to promote the financial success of a few privileged leaders.

The reports written by some members of our research program contain descriptions of the histories and operations of some of these co-operatives, but they are not representative enough, geographically, to permit generalizations to be made about the Province's co-operatives as a whole.

12. Urban Indigenous Businesses

I write this section of the Report without knowing the present (November 1977) status of indigenous businesses in the Province's main urban area. From the histories of those that commenced before 1975, however, it is possible to draw some conclusions that may also be applicable to more recent, and to near-future, enterprises of this kind.

The first of these conclusions is that the profits (and losses) derived from those enterprises were restricted to a very small number of individuals. Up to 1975 a typical enterprise—retail, transport, restaurant, etc.—was initiated by two or three venturesome and relatively sophisticated individuals acting on their own or as representatives of several clansmen and friends. Moreover, the numbers engaged in those earlier enterprises were further limited through the circumstance that several of the principals were investors and "directors" in two or more operating businesses—either separate companies or those linked into "holding companies."

A second finding regarding the pre-1975 urban businesses is that most of their founders occupied high-status positions, either in BCL, or politics, or both. Also, many if not most of the founders were actively encouraged to start their business—with advice, finance, and technical assistance—from BCL and the Administration. In other words, any profits that the businesses may have earned went mainly to individuals (and their close associates) already earning relatively large incomes, or already holding economically favored positions. (Conversely, the losses incurred in the failures of some of those businesses had to be borne by the same few principals—who however in most cases were protected from destitution by income from their other jobs.)

A third finding is that the private financing for the pre-1975 indigenous businesses (the rest having come from "public" sources, such as development-bank loans or PDF) derived mainly from BCL compensation payments and rents—which, incidentally, were at the time almost the sole source of large amounts of readily available and unencumbered indigenes' savings (still another reason why these enterprises were limited to the residents of areas within or near the mine complex).

Since 1975 some developments in "private" indigenous businesses indicate a widening of the potential benefits—and losses!—from this type of money income. One of the most successful of these businesses is described by Connell in his Taim Bilong Mani, and concerns a Siwai, Luke Pauru, who by 1970 owned the most sophisticated trade store in Siwai, and was also involved in transport and cocoa purchasing enterprises.

In 1972 with the assistance of a Development Bank loan Pauru took up a lease on one of the earliest shops to be constructed in the Arawa town centre. He operated this as a general trade store, the first to be owned by a Bougainvillean in Arawa, and hence heavily patronised by urban Bougainvilleans. Stock came directly from Australia, Singapore, Japan and Hong Kong, apart from Papua New Guinea. In the first full year of operation, to July 1975, the store earned a net profit of \$24,000 (and Development Bank records suggest that the profit over the calendar year 1975 was \$53,000). The success of this first store, which employed 5-6 Siwais, enabled him to set up a second store in 1975, selling clothing, and by 1976 he was intending to set up new branches in Rabaul and possibly Port Moresby.

At present there are few entrepreneurs with the business expertise of Luke Pauru and no other locally owned stores that have achieved this level of success. Although his rural stores started in the same way that others had done in Siwai, involving numerous contributions from friends and kin, the urban stores were essentially individual enterprises in which only one other Siwai made a financial contribution.

Another move in the direction of private business is exemplified by some of the older and more established enterprises that have broadened their bases of ownership by including more rural residents (typically, kinfolk of the principals) among the holders of shares. Usually, the villagers have been content to leave management (including most policymaking) to their urban associates—a situation that can be expected to change if and when such businesses suffer continual losses!

An interesting switch in the situation just noted occurs with respect to the Teop-Tinputz Development Enterprises. While this business is based in the Teop-Tinputz region, and managed locally, several individuals from the region living and working in the urban area owned shares in the company, and thereby retained some economic ties with their home villages.

Most of the business mentioned above involve owners and managers belonging to one or another ethnic group, or sub-group (e.g., only north Nasiois, or Guavas, or Siwais, etc.). More recently there have been started one or two businesses that include owners and managers from two or more ethnic groups—e.g., the

Bougainville Marketing Coop, whose directors include individuals from Siwai, Buka, Kieta, and Buin. And there is at least one urban company I know of, Arawa Contractors, consisting of partners from Bougainville and mainland New Guinea; there may be others unknown to me.

Finally, there are of course the several enterprises under the respective umbrellas of the Bougainville Development Corporation and the Panguna Development Foundation whose operations and earnings could have important economic consequences for a large number of Bougainvillians, but whose present financial conditions and future financial prospects are much better known to the target readers of this report than to myself.

Before closing this brief inventory of the kinds of business that have been and are being developed by or for Bougainvillians in the Province's main urban area, a word of caution is called for, lest some readers be persuaded to consider them a panacea. Briefly stated, the caution has to do with the numbers of urban businesses and with their indigenous managers' business skills.

At present writing the urban setting is an open frontier, inviting many kinds of new businesses hitherto untried there. As each new kind of business is established it enjoys the economic advantage of monopoly—until another one like it comes along. In other words, as more and more indigenous businesses become established in the Province's urban areas, competition will sharpen, and success will depend more and more upon the display of kinds of managerial skills for which Bougainvillians have traditionally had little indoctrination or training. Bougainvillians' dominant social values and attitudes have been learned in rural settings, where benevolence and cooperation with neighbors outweigh self-seeking profit. Conducting a business in an urban setting is subject to fewer and weaker social pressures than those surrounding (and often stifling) a village trade-store, but such pressures will probably persist, even in Arawa and Kieta, for a long time to come. It remains to be seen whether Bougainvillian businessmen operating in urban centers will be able to acquire enough marketplace attitudes—at the expense of their rural based values—to conduct their businesses profitably in a more competitive setting.

13. Investment and Savings

In a Melanesian Society like Bougainville's, categories like "investment" and "savings" are as difficult to define as they are to quantify. Even where money is the value "invested" or "saved," some of the enterprises deposited in and the dividends expected or realized, are wholly unlike those dealt with in conventional Economics. And even where the "business" invested in has some of the appearance of a straightforward retail outlet, or a producer or transport co-op, the management of the business and the definition and distribution (if any) of "profits" are, as described earlier, often too bizarre to comprehend.

As is well known, many Bougainvillians "save" their money by burying it, thereby obtaining dividends only in the form of mental comfort. And many others invest it in woolly enterprises that bring them neither dividends nor the recovery of the amounts invested. Unfortunately, I see no possibility of discovering how much of Bougainvillians' money stagnates or disappears in these ways, but I suspect that the amount would be found to be very large—large enough to warrant the initiation of an official public-education program aimed at reducing its size.

Nor do I have any idea about the quantities of Bougainvillians' money invested in enterprises that do yield dividends. A few examples of such enterprises, including estimates of their earnings and dividend distributions, are supplied in some of the reports I have drawn on, but these are too few and randomly scattered to provide any credible picture for the Province as a whole.

There remain two other forms of interest- or dividend-yielding money usage that are publicly reported and that do earn money, or may be expected to earn money, for Bougainvillians; I refer of course to registered savings banks and, mainly, to BCL and BDC. In writing this report I do not have available to me any recent figures concerning numbers of Bougainvillian depositors and share-holders, or amounts of earned interest and dividends. Such figures, however, need to be included in any quantitative survey of Bougainvillians' money-earning activities.

14. Urban Life: A Postscript

After preparing a first draft of this report, copies of it were sent to several other members of our research program for their comments, amendments, etc. Most of the comments, etc. received have been incorporated in the text of the preceding sections, but one of them, by Richard Bedford, deserves quoting in full inasmuch as it serves to correct a bias evident in the original draft of the report. Bedford puts it as follows:

There is one general matter which struck me as I read through your material and this relates to the very obvious rural bias in the content and arguments. And while I see this as being very logical given that 80 per cent or more of the Province's population still live in rural communities I think more explicit mention could be made of some problems the urban area and its residents will face in the future.

Inevitably the drift to towns in southeast Bougainville will continue. When prices for cocoa drop (copra has already fallen sharply since 1974 and cocoa prices may also have gone down by now) the returns from cash cropping may no longer seem as attractive as a regular wage income in town, especially for the younger men and women with some experience of urban residence while attending schools or visiting kin/friends. Collapse of the copra market has led to a rapid acceleration of townward migration in the New Hebrides and Fiji. I am sure Bougainville will not escape this sort of trend. You do mention the limited opportunities for wage employment in towns in Section 9. But I think something should also be said to the effect that Bougainville's planners and administrators (who are mostly urban-resident) must expect growth in an under-employed/unemployed population living in sub-standard housing near, if not in, the existing towns. Low cost housing schemes and subdivisions in poorly ventilated/drained land set aside for no-covenant housing are not going to prevent this. By January 1974 there were already quite extensive 'squatter' settlements behind Arawa, south of Toniva, and scattered among plantations between Kieta and Kobuan. Not all residents were Bougainvillian, but this component in the squatter population was growing.

Perhaps more significant than this trend is the effect of inflation on living standards of urban-dwellers. Alex Mamak did some useful work on this subject and has demonstrated in income/expenditure surveys that many of the households dependent on the wages of unskilled or semi-skilled employees were finding it difficult to make ends meet in 1973/74. This was especially the case for employees of the then District Administration. Not only were they required to pay quite high utilities charges which BCL covered for its employees, but their wages were generally lower. Among this group difficulties in making ends meet were quite common.

It could be argued that if they find life in town too hard they can always 'go home' to the village. But for some town is now 'home' and in the future the urban born and raised population on Bougainville will increase quite rapidly. In this regard Moulik's very interesting typology misses one group in Bougainville's population—the wage-earning proletariat. This group comprises a very small proportion of the total population at present, but, again, it will grow. I'm no social psychologist, but in Moulik's terms I would class many of the emerging proletariat as having medium achievement motivation, low-medium affiliation motivation, and low-medium power motivation. They are not all 'entrepreneurial managers' although there is, of course, this group in the urban as well as the rural population.

A few points more might be raised with reference to urbanisation both in the immediate past and future: rising crime rates (I think we mentioned this in our very general paper in Jackson's volume i.e., Bedford and Mamak, 1976 (b)); increasing inequalities in income; standard of accommodation, consumption patterns and general levels of living; increasing class consciousness and new sorts of divisions in an essentially classless society. You touch on most of these matters in different sections of the report but I wonder if more explicit mention of their urban dimensions is also required.

Alex Mamak and I have covered most of the issues raised above in our publications; we certainly will be making much more of them in our proposed book.

15. Major Conclusions

Bougainvillians have reached a stage in their westernization at which they are wanting—and in some respects actually needing—considerable amounts of money to satisfy their material requirements (and perhaps social aspirations). Moreover, those wants are increasing at such a rate for the population as a whole that there are reasonable doubts that they can be satisfied, even in the near future, and even by any but a small number of Bougainvillians.

The factors contributing most heavily to this impending crisis are the following:

1. The Bougainvillians' increasing, and in some respects indiscriminating, desire for goods and services that can only be obtained with money.
2. The population's rapid and accelerating rate of increase—one of the world's highest.
3. The constraints upon money-based, Western-style prosperity imposed by the Province's isolated location, small size, and intractable geography.

Concerning the first of these factors, contrary to a widely voiced sentiment, Bougainvillians—in comparison with other equivalent populations of PNG—already possess relatively large amounts of money and the goods and services obtainable with money, and relative large opportunities for earning money. By no stretch of the imagination can they be accurately described as PNG's "orphans" in terms of their material welfare—and especially not in terms of the westernized components of that welfare.

Nevertheless, Bougainvillians' wants for such goods and services continue to increase, individually and in the aggregate—partly as a result of imitation of expatriates' consumption patterns (which they have continual opportunities to observe), partly as a result of the tantalizing view of imported goods afforded by the Province's well-stocked stores, and partly—one must add—by their views (inspired both by cargoistic hopes and politically-based promises) that there are few limits to the desirable things they deserve and in fact could obtain (if certain political solutions and economic changes would only come about).

Paradoxically, the mental attitude just described (which is widely—but probably not universally—shared) conflicts somewhat with another widely held sentiment favoring a return to "ancestral" Bougainvillian values and life-styles. (Whether the modum conceptualization of those values and life styles is in fact like those of the "ancestors" in all respects is open to argument, but it does envisage, among other things, less dependence upon Western type goods.)

I am unable to judge which of these opposing kinds of mental attitudes is the more widely held—in fact, many Bougainvillians seem to hold both of them, without discomfort about the contradiction involved. On the surface, however, it appears that the desire for more (rather than less) Western-style goods and services predominates.

Turning now to the second of the factors contributing to the crisis foretold in this report, namely, to the Province's explosive rate of population increase, there is little more that needs to be said, other than noting that there exists in this matter two views that are no less contradictory than the ones just characterized. On the one hand, our researchers have heard some Bougainvillians (mainly younger, more highly educated ones) express a desire, rationalized in various ways, for fewer offspring. And on the other hand, there are the widely favored views for larger families—views based partly on religion, partly on political ideals, and partly on notions that large families were characteristic of the ancestral way of life.

The third set of factors contributing to the Province's impending economic crisis—namely, the constraints imposed by the islands' location, size, and geography—are too numerous and complex to summarize here. It may however be useful to emphasize once again that they are also absolute: nothing can be done to change them. Even with vastly speedier and cheaper forms of transport, the Province will always remain isolated, relative to other centers of high population. Also, its size relative to area/population ratios of mainland PNG will remain small in the foreseeable future. And its geographical constraints—slopes, drainage patterns, etc.—cannot be significantly altered for the better except by engineering feats too costly to contemplate.

The effects of these constraints could of course be mitigated in some respects—for example, arrangements might be made to permit and encourage Bougainvillians to emigrate to mainland PNG; a brake might be applied to the

headlong, unplanned conversion of garden land into cash-cropping; fallow-time could be shortened and garden productivity increased by introduction of new crops and/or agricultural techniques; etc. But all these measures will require a major effort in comprehensive assessment (including an accurate census), planning, experimentation, and long-range and consistent implementation.

In addition to the above, there are some other trends now prevalent in the Province—trends that many Bougainvillians may disapprove of—which are likely to increase unless deliberate efforts are made to stay or reverse them. Reference here is to the growing disparities—individual and regional—in economic opportunities and, consequently, in economic well-being and social equality. Some of this is probably inevitable; but if Bougainvillians in general wish to retain the, in my view, admirable degree of social-equalitarianism that prevailed in ancestral times the attainment of that objective cannot be left to chance.

My colleagues and I have not been asked by the Provincial authorities to make recommendations regarding the matters discussed in this Report. Also, any appropriate recommendations for planning and action will have to be formulated in terms of Bougainvillians' own social and political goals—which I as an outsider am not qualified to define. Because of the relatively greater objectivity in which a trained observer can study a society other than his own he (or she!) may be able to describe with some accuracy how another society operates, and predict with some degree of probability where it is headed. But no outsider is in a position to say how it should go.

Finally, I wish to point out that the findings summarized in this Report are based mainly on the researches of social scientists of the "softer" variety—i.e., anthropologists, geographers, and sociologists. It was with some satisfaction, therefore, to have these findings corroborated by an economist—a representative of that "hardest" social science. I refer to the paper by M.L. Treadgold, "The Regional Economy of Bougainville: Growth and Structural Change", which I received after the Report was completed and typed. Treadgold's approach is a macro-economic analysis, based entirely on published documents. It will appear in print in its entirety, but I am adding an excerpt from it as an appendix to this Report.

APPENDIX

Excerpt from M.L. Treadgold, "The Regional Economy of Bougainville: Growth and Structural Change." Occasional Paper No. 10. Development Studies Centre, The Australian National University, Canberra, 1978 [pp. 65-68] *

At the beginning of this paper Bougainville was described as being in a process of economic transition. Now, having examined mainly historical change, there remain the questions of whether the process will be sustained and, if so, in what manner. Definitive answers are of course impossible, but in this last substantive section an attempt is made to identify some of the key issues, including the economic implications of possible changes in the political status of the region.

Sustained export-led growth or technological dualism?

Unless a smelter is constructed on Bougainville to covert concentrate into blister copper, there seems little prospect of the copper-mining industry continuing to act as a leading sector in the growth of the Bougainville regional economy. A decision about smelting will depend, inter alia, on (1) the comparative costs of transportation of concentrate and blister to northern hemisphere markets, (2) developments in copper-mining in other regions of PNG which, if successful may make attractive an alternative prospect of a single processing facility in a more centralised location such as on the Gulf of Papua where advantage could be taken of the Purari hydro-electricity potential, (3) levels and expected movements of foreign processing costs, international metal prices and local factor costs relative to each other, (4) the existence of markets for sulphuric acid, a by-product of smelting (or, in the absence of these markets, costs of waste disposal), and (5) the future political situation in PNG.

Judging from what can be gauged of these factors, a Bougainville smelter is unlikely in the foreseeable future. In its absence, the real direct contribution of

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copper-mining to regional economic activity is likely to be roughly constant in the short to medium term and to decline gradually in the long run, as the mineral content of the ore decreases.³⁶ Indirectly, mining has created some potential for further regional growth based on import-replacing food production and industrial development serving the new urban markets of Kieta-ArawaPanguna (which may have a population of the order of 20,000 before the end of the century); and, once established, there may be scope for some of these activities to gain additionally a foothold in extra-regional export markets in neighbouring areas such as New Britain, New Ireland and the Solomon Islands (Scott 1973: 6-2). However, import-replacement aimed at urban markets will be essentially a once-and-for-all process, offering quick immediate gains, but little sustained long-term growth in demand; and there can be no guarantees about subsequent moves into export markets by food producers and manufacturers, given what Garnaut (1974:31) has termed the 'high resistances associated with historical trade patterns' and competition from other suppliers enjoying advantages of terms of relative factor prices and already exploiting substantial economies of scale.

In these circumstances, it is necessary to look to other sectors for potential growth stimuli. They appear to be strongest in the traditional area of agricultural exports, although there are also prospects for the export of other primary produce such as timber and, possibly, marine products. Admittedly, within agriculture, the expatriate- and foreign-owned plantations are unlikely to experience further significant expansion because of political constraints associated with nationalistic sentiment and income-distributional issues. However, smallholder production of cocoa and copra suffers from no such liabilities and offers scope for widespread participation by indigenous Bougainvilleans. With the substantial improvement in infrastructure (especially transport links) in the last decade, the effects on incentives of exposure to consumption levels and patterns within the mining enclave, and recently favourable prices, conditions now appear ripe for the smallholder sector to resume, unchallenged, its previous leading sector role in regional economic growth.

³⁶This statement is based on the assumption that there will not be any new copper mines developed on Bougainville. Such a possibility cannot be ruled out completely, but there has been no indication of it in Government or Company announcements, and there would probably be considerable local opposition to the establishment of another mine.

Future expansion is, however, likely to be qualitatively different from that of the past. Hitherto, cash-cropping for export has occurred almost exclusively as a supplement to subsistence food production, a process made possible by the existence of surplus or spare resources of both land and labour. Evidence is now accumulating (e.g. Ward 1975:97-101; Moulik 1977:44-5) to suggest that in some areas at least the process of expansion is beginning to exhaust available supplies of labour and that within individual holdings further increases in export production can occur, given existing levels of technology in both export and subsistence production, only at the expense of subsistence production. This situation points, in turn, to the probability that within the next few decades the smallholder sector will move substantially into what Myint (1973:35) has typified as the second phase of peasant export expansion when some household units begin to specialise or devote the whole of their available resources to export production. Shand (1965) has demonstrated in a general PNG context the nature of the income gains to be made from this shift in resource allocation, not only for the units specialising in export crops, but also for the units who correspondingly specialise in producing a marketable surplus of subsistence foodstuffs to meet the cash demands now flowing from the former units.

Of course, progress towards specialisation may be slowed through caution induced by the greater risks associated with sole reliance on export commodities that have a history of notoriously unstable prices. On the other hand, the eventual rewards are potentially great. In addition to the very large static gains accruing from the exploitation of comparative advantage and (possibly) increasing returns at the household level, specialisation facilitates productivity-increasing technical progress and capital formation; it encourages the development of factor markets, particularly for labour and perhaps, at a later stage, land; and it enhances the opportunities for backward and forward linkage (production of intermediate inputs and processing of crops respectively) and for some local non-food consumer goods industries.

This development path appears to hold great promise, but the economic history of other less developed areas indicates that it is not one along which the initial steps automatically and inevitably trigger a continuous movement. In specialising, smallholders may take full advantage of the static benefits of a more efficient allocation of resources, but fail to exploit (perhaps for reasons beyond

beyond their control) what Myint (1973:39) has termed the 'technical opportunities' for improving their productivity that are conferred by specialisation. If this happens, then expansion will still continue as long as unused land is available and population growth augments labour supplies. However:

Sooner or later the extension of cultivation will press against the limits of cultivable hinterland, and thereafter population growth will outstrip export expansion and lead to a situation of overpopulation and 'disguised employment' in agriculture. (Myint 1973:39).

In short, the prospect of self-sustaining, export-led growth may collapse into the reality of stagnant technological dualism characterised, on the one hand, by a foreign-owned, capital-intensive advanced enclave (copper-mining) offering limited scope for factor substitution and hence limited employment opportunities and, on the other hand, by a much larger (in terms of labour absorption) traditional rural sector using primitive and highly labour-intensive techniques to yield a marginal product of labour approaching zero.

Although it would be premature and alarmist to forecast such a situation for Bougainville, two necessary (but not sufficient) conditions for its emergence appear to be present already. One, previously discussed, is the limited scope for further expansion of the output (and hence employment) of the mining-oriented modern sector of the economy. The other is the extremely rapid rate of growth of the population of the region, even discounting for the effects of immigration during the construction phase of the copper project. The long run implications of the present very high rate of natural increase can be easily overlooked in the present situation of relatively abundant agricultural land and incipient labour shortages. Ward (1975:67-73) has roughly estimated that the Buin sub-district of southwest Bougainville, which contains about a third of the indigenous population of the region, could support through subsistence agriculture alone without any improvements in technology at least three times its 1972 village population at living standards equivalent to those of the early 1960s. Alternatively, if all suitable land were used for cocoa production (apparently again without any improvements in technology), the estimated supportable population would rise to some six times its 1972 level. However, Ward (1975:29) has also estimated the rate of growth of the village population in the sub-district over the period 1963-72 to have been as great

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*NOTE: All authors listed were members of the Research Program except those identified with an asterisk.

as 4 per cent per annum. If this were to continue, the total population of the area would treble in as little as 28 years and increase six-fold in no more than 46 years.

Considerable caution is needed in interpreting this simple Malthusian arithmetic, and ever greater caution is required if it is extrapolated to the whole of the region; but it does highlight a potential trap in the likely future growth path of the Bougainville economy. It also highlights the importance of policy action in a sphere that has to date generated little sense of urgency, not just in Bougainville but throughout PNG. However, even if population growth is significantly reduced (a formidable task in itself), sustained per capita regional growth will still require in addition continuing increases in smallholder productivity. Specialisation, it has been argued, facilitates these increases, but it does not ensure them. Once again, there will clearly be a need for policy action, in this instance aimed at ensuring adequate flows of technical assistance (in a broad sense) and capital funds to the smallholder sector.

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