DEVELOPMENT CONTEXT

Subsistence and Cash Cropping

Changes in subsistence cropping

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CHANGES IN SUBSISTENCE CROPPING

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Production for their own consumption forms a large part of the output of most Melanesian farm households. The actual proportion varies from virtually 100 per cent in a few isolated areas or on individual farms, to almost zero on specialized holdings oriented to export production. Yet even where the 'subsistence' component remains dominant, the farming systems have almost always been modified in important ways. Many of these modifications are related to changes in the valuation of time (by the farmers or others who now control time allocation), land, and different types of produce. These, in turn, are closely linked to the incorporation of cash cropping into the agricultural systems and to the availability of alternative means of support, such as wage employment in rural or urban areas. Other changes, such as the replacement of taro by sweet potato in the Solomon Islands and Bougainville, result largely from the spread of plant disease.

Other papers in this volume (e.g. Yen, Golson, Spriggs) have demonstrated the great genetic, environmental and technical diversity of agriculture in Melanesia in the pre-contact and early contact periods. This paper tells of decline in that diversity. Diversity in agricultural systems has great advantages in dominantly self-sufficient economies such as those of pre-contact Melanesia. Planting of a wide variety of crops (and of varieties within one species) provides means of spreading production over an extended harvest season; of insurance against fungal or viral disease; of countering seasonality or unreliability in temperature or moisture conditions; and, generally, of creating a robust agriculture. Once self-sufficiency ceases to be a prime goal, specialization to meet the requirements of outside markets becomes an increasingly important organizing principle, the consequences of which flow back through the whole system. Thus, a basic theme of this paper is that as Melanesian communities became less self-sufficient, the degree of diversity in their agricultural systems declined.

THE NEW CONTEXT OF SUBSISTENCE PRODUCTION

The essential aspects of post-contact change are well known. Explorers, whalers, sandalwood and bâche-de-mer collectors, traders, planters or administrators sought supplies of root crops or meat for their crews or staff. By their preferences they gave new values to some products but not to others. They provided new tools and other goods as barter for the produce which, in the main, had hitherto only met local subsistence or
social demands. Salisbury (1962:108-109) has argued that the change from stone to steel tools in Siame reduced the labour requirements of subsistence from 80 to 50 per cent of a man's activity time. This may be too generous an estimate but there is no doubt that the effect was marked despite the fact that the adoption of new tools was selective. Fijians, for example, fitted their digging sticks with an iron blade, but the European spade was less popular because 'it cannot, without pain, be driven into the ground with the bare foot' (Thomson 1908:339). Other new materials were also adopted, such as corrugated iron troughs in place of pipes of hollow tree-fern trunks for taro irrigation in Fiji (Thomson 1908:339). The availability of cotton cloth, reduced the importance of paper mulberry, the source of tapa, as a crop. Manufactured building and other materials have replaced the products of local plants. The purchase of such materials obviously has entailed some redirection of labour and has displaced local production.

The employment of Melanesians on ships, at mission stations or on plantations both removed some of the agricultural workforce and brought familiarity with new forms of labour mobilization and reward which were disruptive of former systems. In Fiji, commoners were reported unwilling to plant food gardens for native officials and Roko Tui Kadavu complained that 'young men ... steal off to Suva, or elsewhere when ordered to meet for housebuilding and remain away until the time for such work is over. During [their] absence they support themselves by work on the wharves or any chance labour, and when they return they bring with them enough money to pay the fine' (Jackson to Chamberlain, Cd2240, 1905:446-447).

Cash crops and wage labour provided the means for purchasing new foods. Experience on plantations where rice and tinned meat were often the main foods provided for labourers helped, in time, to change tastes and alter the status of indigenous food crops. Thomson (1908:338) notes that in Fiji about the turn of the century, 'Preserved meats, biscuits, bread, tea and sugar are used by many of the richer natives, but always as luxuries'. They attributed their teeth decay to the sugar, and 'it was lately possible for an American dentist to realize a considerable sum by selling sets of false teeth to the native chiefs' (Thomson 1908:338). Such statements are equally true elsewhere in Melanesia seventy years later but tend to undervalue the social and economic advantages of foods such as rice, tinned meat or fish and flour. Ease of preparation, storage qualities and often lower cost per unit of kilo/calories or grams of protein or fat (McGee et al. 1980:254) give advantages to such foods over traditional root crops in many situations.

The newcomers brought new animals and crops. Captain Eagleston brought the first cattle to Fiji from Tahiti in 1834 (Eagleston unpub.:29).2 By that date goats had already been introduced. Pumpkins and pineapples were being grown by Fijians in Vanua Levu in 1809 (Davies 1925:145). Cassava was introduced before 1860 and, although it was 'not much relished in Fiji' (Horne 1881:87), within a few years it was increasing in importance relative to yams as it required less labour inputs (McGregor to Thurston, C5039, 1887:203). Cassava continued to spread throughout Melanesia and a century later it was being grown in Enga Province, Papua New Guinea (Lea unpub.; see also Thaman and Thomas 1980). In addition a range of 'European' vegetables was introduced and these were incorporated into subsistence systems. Cabbages, for example, were
reported in interior Viti Levu by Horne (1881:87) and by the late 1970s the Kalam of the remote Simbai area of Madang Province had incorporated pumpkin, cabbage, potatoes, beans and choko foliage into their subsistence system (Bulmer 1980a). Other introductions may have been less obvious to outsiders but today Fiji calls Xanthosoma, dalo ni tana (Tannese taro) while in Vanuatu it is taro Fij: Melanesian travellers, whether indentured labourers, seamen or, later, individual migrants, actively spread varieties of root and other food crops around the region as mobility became easier.

Cash crops, and especially tree crops, promoted by missions or governments, or adopted following the example of plantations, were also integrated into Melanesian agricultural systems in addition to the traditional crops now also grown for sale. As Lea points out, 'It is becoming increasingly difficult to say what is cash and what is subsistence. All subsistence crops [in Enga Province], including most European vegetables may be sold in local markets' (Lea unpub.). In Fiji, German New Guinea and Papua, government policy required the planting of cash crops by Melanesians. Their impact on the subsistence food component of the agricultural systems was often much more wide-ranging than expected. Bonnemaison (1978:32) reports Melanesians in Vanuatu as saying, 'We abandoned the rod blong kastom for the rod blong mane - that of the whites. Thus one day we killed our pigs and made fewer gardens, and instead we planted coconut palms'. Even when the tree cash crops were not grown on any significant scale by the Melanesians themselves, sale of land to (or dispossession by) European planters who did grow them, meant a reduction of land area for Melanesian food gardening. Furthermore, land could now be used to earn cash (via sales, rental or agricultural production) and thus acquired new forms of value which placed new stresses on older systems of allocation and use.

Missions and governments established points of conversion and control to which some Melanesians were attracted. Others were forced to relocate, as in the Sigatoka Valley of Fiji after the 'Little War' of 1876 when, 'orders were given that those of the towns which had been burnt which were situated on hills or in positions difficult of access should not be rebuilt, but that the reconstruction of those on the low grounds should be at once commenced' (Gordon to Carnarvon, C1826, 1877:220). The colonial governments of most Melanesian countries encouraged or forced people to move into larger and more permanent villages. Such moves were sometimes designed to ease accessibility for government control or collection of cash crops, but made access to certain types of land or resources more difficult and time-consuming for subsistence use. The consequent concentration of people on a smaller proportion of total land increased gardening pressure on some areas, leading to reduced fallow, greater use of those crops which are less demanding in terms of soil quality, and in some cases obvious erosion. Urbanization has increased gardening pressure around many Melanesian towns with evident impoverishment of the land and its covers.

LABOUR

Locational change made maintenance of diversity more difficult for some Melanesians. At the same time decline in the available workforce resulting from selective migration for paid employment or from rising death
rates stemming from new diseases, altered the man-land ratios of many villages and made retention of the full range of traditional foodstuff more difficult. Parallel with this, of course, the change from a relatively closed to a relatively open economic system made such retention less essential for village sustenance.

In most Melanesian societies, labour was relatively unspecialized. Although division of labour occurred (including a very important sexual division in many agricultural tasks), in the main each adult took some part in gardening, housebuilding, ceremony, manufacture of artifacts and other activities. Through the nineteenth and twentieth centuries new activities were added and some old ones became more, or less, important. Crafts, such as stone tool or pottery manufacture, largely disappeared and their products were replaced by bought goods, paid for by different forms of labour. Local defence requirements generally absorbed much less of men's time than formerly, but work for government or mission was added and, above all, cash cropping or wage labour became standard periodic or permanent activities. Throughout the 'more developed' parts of Melanesia the net result was a withdrawal of male labour from subsistence activities. Sometimes this was selective, sometimes total. The relative importance of the contribution of women in subsistence increased, but for social reasons women were not always able to replace all the labour inputs of men. This non-substitutability of labour is an important element in the decline of some agricultural systems and in changes in crop choice.

THE CHANGES

The diversion of labour to new tasks, the lightening of tasks through the use of new tools and the ability to mobilize labour through the use of new tools, and the ability to mobilize labour through the cash system as an alternative to the kinship system, have meant that tasks which formerly were performed by larger units in the society are now performed by smaller units (for example the nuclear family or household) or by individuals (Ward 1964:486). When associated with the opportunity to purchase a proportion of subsistence needs, this change opens the way for specialization in agriculture at the household or individual level. It also opens the way for individuals to opt out of communal obligations whose demands were often irregular and in conflict with the imperatives of commercial activity, and to seek alternative, often individual, routes to greater wealth or status.

The detail of the resulting changes in subsistence agriculture systems varies greatly from place to place and what follows is a very generalized description. Brookfield (1972:38) argues that Pacific agricultural systems embodied three forms of production - 'production for use', or 'the satisfaction of basic needs'; 'social production' for use in prestation, ceremony and ritual; and 'trade production' for barter and exchange. The latter 'may be indistinguishable from social production in many societies'. The social production element was often the first to decline. Missionaries discouraged it, governments regarded it as wasteful, and Melanesians turned to cash as an alternative more amenable to new patterns of time allocation. Thus some food crop production could be replaced without immediate loss of daily food supplies (Lea 1967). In the Abelam area of the East Sepik Province long ceremonial yams are grown in special gardens and although 'not important in terms of diet' they were the basis for acquiring fame and
CHANGES IN SUBSISTENCE CROPPING

leadership. Since the early 1960s less time and attention is devoted to ceremonial yams which may no longer be accorded separate gardens (Lea 1972:267-269). Bonnemaison (1978:28) points out that in Vanuatu the ceremonial crops of taro and yams were viewed as having a hierarchy of status and each of the eighty odd varieties of taro and fifty to eighty varieties of yam recognized had a particular 'cultural weighting'. Generally the fleshiest varieties 'with the greatest growth potential are accorded the highest place in the traditional classification, and are thus planted in the best parts of the garden'. With rice, tinned meat or cash supplanting traditional goods in prestige, these larger varieties are now grown less frequently. Similar changes can be documented in every Melanesian country.

Brookfield (1972:41), quoting Allen (1968) and Bonnemaison (1970), describes how in part of Aoba, Vanuatu, coconuts were used to feed specially-bred tusked pigs which were kept in walled enclosures. The enclosures, heavily fertilized by the pigs, were then used to grow yams, the staple crop. With mission disapproval of the pig ritual and encouragement of coconut production for copra, the food source was diverted, and the social production - and much of the subsistence production - collapsed.

If some labour is diverted from subsistence gardening, adjustments will be made in the allocation of the remainder so as to maximize returns. Those crops which demand more labour at key phases in their growth cycle, or which are cultivated for secondary needs which can be filled more readily by substituting bought foods, will be dropped or cultivated in smaller quantities. Where men have withdrawn from subsistence agriculture the clearing of forest becomes more difficult for the community. Crops such as yams or (to a lesser extent) taro, which prefer the higher fertility and better soil structure of newly cleared land, tend to be replaced by those, such as sweet potato or cassava, which will continue to provide reasonable yields from more depleted soils and which allow the life of swidden gardens to be extended. Reduced labour supply may also be a cause of the widespread abandonment of irrigated taro cultivation. For example, the irrigated terraces of Saliadrau, Viti Levu, were damaged by flood and abandoned in about 1930. In 1957 villagers recalled that the amount of labour involved in terrace reconstruction and maintenance was too great in proportion to the return, in comparison with dry taro cultivation, which had lower male labour inputs. In New Caledonia the large yams and taro beds are now rarely made. Barrau (1958:84-86) points out that the coffee harvest of western New Caledonia clashed with the time for building the yam ridges and by the 1950s yams were planted later and with less care than formerly, and Xanthoeoma and bananas became relatively more important. Lea suggests that taro cultivation in general in Enga is falling out of fashion because it is a male crop and men 'prefer diversions such as politics, card playing and modern sector activities while women do most of the routine gardening work (Lea unpub.). As Yen (1974:132) points out 'the elaborate adaptive technology of cropping, in giving way to other values, takes on an aspect of a much more elemental agriculture'. Similarly, techniques for processing foodstuffs which require relatively large amounts of labour are now used less frequently. These include sago preparation in Papua New Guinea, the fermentation of starchy crops, and the prolonged washing of wild yams in order to remove toxicity.
The change to the 'rod blong mane' and the planting of coconuts (or coffee, cacao, bananas and other cash crops) also required reallocation of land. Throughout Melanesia, land which formerly carried root and other food crops has been planted in permanent or semi-permanent cash crops or devoted to cattle pasture. Although there is sometimes intercultivation, food crop gardens are often displaced to areas more distant from the farmer's residence.

Smallholders rarely establish commercial tree crops on newly cleared forest land, but rather on former food garden land. In a sense this extends the life of the swidden indefinitely - though it then ceases to be a swidden. Such land can no longer be recycled after fallow into food crops and the tendency is to force food crop gardens further from the village. As food gardens must be visited frequently, the increased travel time is a common source of complaint, and a burden which falls disproportionately on women. The cash crops and cattle, frequently male preserves, gain locational advantages. The importance of 'travel', much of which is to and from gardens, is illustrated by average figures for activities for five Papua New Guinea villages. Of 8.9 and 9.2 hours per day devoted to socio-economic activities by males and females respectively, 2.5 and 2.9 hours were taken up by 'travel' (Lea 1969-70, and unpub.). Any increase in this share clearly cuts into other time requirements. Grossman (1979) has described the cycle which emerged in the Eastern Highlands of Papua New Guinea. Cattle pastures are located close to the village; the food gardens are moved further away; the women are reluctant to visit gardens as often as in the past because of distance and the increased risk of sorcery in places far from the village; they weed less frequently and men repair fences less frequently; yields fall and loss of tubers to feral pigs increases; food supply becomes less assured and dependence on cash increases. Similar effects have been documented from Fiji and the Solomons, as well as elsewhere in the Pacific and these locational changes obviously accentuate the trends ascribed earlier to changing labour conditions.

The introduction of permanent cash crops also causes other changes in the land allocation. One of the great advantages of swidden cultivation with mixed species gardens is that a very wide range of soils and slopes can be used. Steep slopes, where freshly weathered material lies close to the surface, are often very productive, provided they are cultivated for only a short time and quickly returned to bush fallow. But they may not stand up to continuous use for permanent arable or tree cash crops. Thus, the major cash crops tend to be much more specific in their site requirements and land which can be used under a long-fallow swidden system may not be suitable for commercial crops. Furthermore, the permanent commercial crops may require the best land if productivity is to be maintained over the life of the crops. The subsistence component is thus again pushed aside in terms of land quality as well as location, and the range of gardening environments which is used is narrowed.

A similar relocation often stems from the access requirements of the commercial crops. Although the coastal location of coconut groves is partly due to the environmental requirements of the palm, it is also related to the need for ready access to beach or other loading points, or to roads. What Brookfield (1978:71) has called the 'coconut overlay' has covered much of the coastal alluvial plains of Melanesia and occupied
former food garden land. Thus the processes of concentration which in early years were fostered by missions and governments have continued as a response to monetary sector opportunities and today, even in remote parts of Papua New Guinea (e.g. in Simbai, Bulmer 1980a), concentration of population is leading to pressure, from both cash and food crops, on the soils around settlements. Access to the outer world increases the value of and pressure on some areas; lack of access has the opposite effect.

Two other features of land allocation may also be mentioned. When diversity is sought, and when mixed-crop swiddens are used, there is advantage for a household in having several swiddens of varying age scattered on different soils. Once the crop range is narrowed, and especially when it is restricted to one commercial crop, a fragmented holding becomes a disadvantage. Advantage now lies in concentrating on the best available soils, minimizing travel time between plots, having a consolidated holding, and sometimes in living on the plot rather than in the village (see Ward 1964; Frazer 1964). The process of change towards consolidation of holdings is quite advanced in parts of Fiji and will undoubtedly continue elsewhere in Melanesia.

The second change stems from the new value which land acquires once it can be used for cash cropping (or for leasing). A study conducted twenty years ago in three villages in Fiji shows that in the least commercialized village land was still allocated in a very flexible manner and registered title bore little relation to use. In the most commercialized village 'the would-be farmer ... [could] no longer ... obtain free use of the unused land of another i tokatoka' and, even though some villagers needed land for food gardens, land lay idle because the traditional system of allocation had broken down (Ward 1960:54). The process of change in land tenure arrangements has gone on very rapidly in Fiji since that time but always towards systems suited to commercial rather than subsistence agriculture.

The access to the outside world which is a prerequisite for commercial agriculture is usually assumed to be essential for 'development'. Yet better access is not an unmixed blessing. In the case of subsistence agriculture the spread of taro blight through much of the Solomon Islands and island Papua New Guinea since 1945 (Connell 1978), and the recent introduction of plant diseases of taro (both Colocasia and Xanthosoma), pit pit (Solanum edule), sugarcane, and sweet potato in the Keiron and Asai valleys (Bulmer 1980b), probably stem from breakdown of the natural quarantine which isolation, insularity, or ritual prohibitions (Bulmer 1980b:5) formerly provided. A mix of costs and benefits is also evident when easier access allows communities to obtain new forms of insurance against environmental risk. Damaging hurricanes in Fiji, the Solomons or Vanuatu, earthquakes and land slips in the Solomons, and drought and frost in Papua New Guinea have all been followed by large amounts of foreign aid for immediate and longer term relief. The disadvantages of this form of insurance are less obvious but no less real. In earlier times the community carried its own insurance in the form of maintenance of crops such as Alocasia and Cyrtosperma whose tubers would withstand storm damage and keep in the ground for long periods, the cultivation of varieties with a degree of frost or drought resistance, and by detailed knowledge of wild foods which might be gathered in times of hardship. The loss of such knowledge, and even of plant varieties, when reliance is placed on external aid may be irreversible and is one contributor to the decline in diversity.
in subsistence systems and to increasing dependency (Waddell 1975). Brookfield and Hart (1971:209, 262) have argued that Melanesian agriculturalists are essentially risk minimizers. One key element of the strategy was to maintain diversity in agriculture. When the risks are insured against from outside, diversity ceases to be so necessary.

The adoption of new tools by Melanesians has been mentioned above. Initially this was usually selective and involved relatively simple substitutions. The consequent changes in agricultural systems were usually minor although metal spades made cultivation of sod-bound grassland (itself often a product of earlier cultivation and subsequent repeated burning) easier than with digging sticks and hands. More important changes are now occurring with the greater use of mechanization, or even with ploughing using animal power. With hand cultivation of multi-crop gardens, variation in size or variety of planting material matters little. Ploughing to a uniform depth and planting in rows, techniques which are now used in food gardens in some places in Melanesia, make uniformity in planting material desirable. Harvesting by any mechanical means makes this even more necessary. Thus new criteria for selection of planting material are introduced and the whole tendency is away from diversity, towards uniformity. Food production in other regions has long since followed this route and it seems inevitable that it will be followed to some degree in Melanesia (Yen 1980:215-220).

The imperatives of marketing have parallel effects. Export markets in particular impose uniformity of product size, quality, shape, maturity and other characteristics as desiderata for produce, but the same requirements are emerging in local markets. In mixed subsistence-cash systems the market component is often grown in the same gardens as that destined for home consumption and the requirements of the former will inevitably affect the latter. Selection for the characteristics required for the market tends to narrow the crop range and variety range in food gardens. Brookfield notes that on Lakeba older taro varieties have been abandoned and three of the varieties now common are from Samoa and are amongst the most popular commercial varieties (UNESCO/UNFPFA 1977:157). Bathgate (1978:12-14) points out that of two villages studied in western Guadalcanal, that which concentrates more strongly on production for the market now grows only four traditional crops compared with the eight still cultivated in the less commercially-oriented village. This pattern appears to be widespread elsewhere in Melanesia.

In many parts of Melanesia today the subsistence component of the mixed subsistence-cash crop mode of production is in a precarious state. In general, pressures are towards greater cash crop production. Yet, although the need to maintain subsistence production on oil palm, rubber, coconut or coffee smallholdings is often stressed in official documents, the reality is that malnutrition in rural Melanesia is sometimes worst on these planned commercial smallholdings (Ward and Hau'ofa 1980:39-44). There are calls for improving the subsistence component, which, by many measures, is now a depleted version of that which was practised a century ago. Whether the changes are reversible, or whether it is desirable to reverse them, remain open questions, the answers to which lie deep in the broader issue of what type of society and economy Melanesians wish to have in the future. If the answer is increasing involvement in the outside world, then the decline in diversity will continue. If greater insulation
from the outside were to be sought then some of the older diversity could still be regained.

NOTES

1It is important to note that the commonly made distinction between the subsistence and commercial elements in Melanesian smallholder agriculture is far from clear. Indeed it is now an artificial distinction. The same crops may be grown for own consumption as for sale; the produce actually sold may have been originally intended for own consumption, or vice versa; the same techniques and land may be used for both components. In most cases the present smallholder systems must be regarded as 'mixed subsistence-cash cropping systems' (Yen 1980:73).

2In his journal Captain J.H. Eagleston (unpub.) describes how he arrived at Rewa on 22 September 1834, from Tahiti, with the chief Cokanauto ('Phillips') on board. 'The cattle are now the great attraction and wonder of all and as I had presented two to Phillips many kind expressions of gratitude were expressed by all for my generous gift to Raver [Rewa]. Having some little difficulty in expressing name of each to the natives I classed the two in one and called them "Bula ma Coro" which was very readily taken up by the natives whose curiosity was centered on the strange and wonderful Tie Papalonge Bula ma Cow. ... [Phillips went ashore in a suit and sword] to craze the heads of all Raver with the sight and landing of first Bula ma Cow ever introduced among the Fijis'. Presumably this is the origin of the word bulmakau in Melanesian pidgin.

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PLANTATIONS AND THE PLANTATION MODE OF PRODUCTION

D. Evans

INTRODUCTION

Agriculture has traditionally been a major source of foreign exchange earnings in Melanesia. In recent years copper in Papua New Guinea, tourism in Fiji, and timber and fisheries in the Solomons have assumed greater importance, but agriculture still contributes significantly to exports. In 1976/77, it accounted for more than 58 per cent of exports from Papua New Guinea, although it had fallen to as low as 20 per cent with the high copper prices of 1973 (Densley 1978a). Sugar provided over 69 per cent of primary exports from Fiji in 1979 (Fiji Bureau of Statistics 1980), and farm produce comprised almost 50 per cent of exports from the Solomons in 1978 (Solomon Islands National Development Plan 1980-84).

Because of the importance of agriculture to Melanesian economies, governments are constantly looking to expand this sector. A second reason for expansion is that agriculture has been seen as a major vehicle for increasing indigenous participation in the cash economy. However because there is continual pressure from competitors on the world market for agricultural products, it is necessary to ensure that any extra output is produced efficiently. In the first part of this paper, consideration is given briefly to the types of developments that are likely in the agricultural sector in Melanesia. What has been termed the 'plantation mode of production' seems to be gaining popularity, and attention is focused on some of the economic aspects of this system in the remainder of the paper.

PLANTATIONS

Commercial agriculture in Melanesia began largely under plantation production. The dominance of the plantation sector has declined in recent years to the extent that it provided only about 50 per cent of the agricultural exports of Papua New Guinea in 1976/77 (Densley 1978a) and 60 per cent of those of the Solomons in 1978 (National Development Plan 1980-84). In Fiji cane production on plantations was replaced by a smallholder system beginning in the 1920s (Gillion 1977); today only about 2 per cent of cane is produced on estates.

Only in the Solomons does large scale commercial agriculture with little local participation in decision making appear to be part of national development plans. There, the latest development plan stressed the need to 'encourage development of viable, large scale commercial agricultural...
activities'. Three such enterprises currently are operating - with rice, oil palm, and coconuts/cattle/cocoa - and although they are theoretically joint ventures between expatriate firms and the government, they appear to be very similar to the old plantations. Farming decisions seem to be made by the expatriate firm on a commercial basis and the local residents are not involved in the decision process.

In Papua New Guinea and Fiji this type of development does not figure highly in national plans. In Papua New Guinea there are doubts about the economic viability of plantations (Densley and Wheeler 1978; Wheeler et al. 1978) especially since the large increases in statutory minimum rural wage rates (Wheeler 1978). Gordon (1976) in fact argues that viability of the plantation system required colonialism and will not survive in its absence. In neither country is it politically feasible to encourage more expatriate dominated plantation agriculture (Connell 1979; Yen 1980). Even in the Solomons the government is stressing the need for increased smallholder production and the development of communal estates. It appears therefore that traditional plantations will play but a small role in the future agricultural development of Melanesia.

THE PLANTATION MODE

A number of possible alternatives to plantation production can be considered. Most involve smallholder production. However, large scale production of the Solomons variety, and communal estates, are other possibilities. Smallholder production can occur with only limited outside help, as it evolved in many areas of Papua New Guinea for example, or with extensive services provided. Examples of the latter system are sugar production in Fiji and nuclear estate developments such as the Hoskins oil palm project in Papua New Guinea.

Initially after independence Melanesian governments chose to concentrate on smallholder production with few centralized services (Yen 1980). However, there are possibilities for significant economies of scale in the production of many smallholder crops, notably cocoa (Densley and Wheeler 1978), coconuts (Wheeler et al. 1978) and sugar cane. For this reason the output produced by smallholders often is not competitive with the output of large scale commercial agriculture. A lack of management and processing skills among smallholders also has contributed to their relative inefficiency compared to plantation agriculture. In Table 1 details are provided of the outputs per hectare achieved by smallholders and plantations in Papua New Guinea.

Although these figures could have been determined partly by other factors, such as the greater availability of capital on plantations, evidence of poor management and processing skills can be found. Weed control, for example, often is of an insufficient standard in cocoa (Densley and Wheeler 1978) and the quantity of smallholder-processed copra can be low (Wheeler et al. 1978). For these reasons, if smallholder production is to compete with larger scale commercial agriculture some ancillary services must be provided.
Table 1

Yield of export crops, plantations and smallholders Papua New Guinea 1967/77

<table>
<thead>
<tr>
<th>Crop</th>
<th>Smallholder</th>
<th>Plantation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coffee</td>
<td>1.218</td>
<td>1.650</td>
</tr>
<tr>
<td>Cocoa</td>
<td>0.554</td>
<td>0.336</td>
</tr>
<tr>
<td>Copra</td>
<td>0.420</td>
<td>0.755</td>
</tr>
<tr>
<td>Rubber</td>
<td>0.108</td>
<td>0.786</td>
</tr>
<tr>
<td>Tea</td>
<td>1.316</td>
<td>1.272</td>
</tr>
<tr>
<td>Palm Oil</td>
<td>3.497</td>
<td>3.906</td>
</tr>
</tbody>
</table>

Source: Densley 1978b:33

This type of development has assumed increasing importance. Schemes such as the Seagaqa Sugar Development Project and the Yalavou Cattle Project in Fiji and the oil palm schemes in Papua New Guinea are examples. Under these schemes farmers do not have complete autonomy in decision making. In Seagaqa families could be evicted if their performance farming cane was unsatisfactory, while at Hoskins settlers were required to plant two hectares of land to oil palm. Extension services usually are provided and the marketing and processing of the product are taken out of the farmers' control.

The alternatives to controlled smallholder production - community estates and joint enterprises - give varying degrees of power to indigenous decision makers. The Plantation Redistribution Scheme in Papua New Guinea is an example of the former; the Bellavista Vegetable Project, and the cattle schemes reviewed by Connell (1979) are others. The first two illustrate that this style of development is not simply imposed by planners but can also emerge in response to pressures from below.

An advantage perceived for these alternatives to traditional smallholder development is that economies of scale in production, processing and marketing can be reaped. However, significant economies of scale in production are unlikely to be realized in the Fijian cane industry where the government will not allow machines to be imported. Extension services for smallholders are designed to supplement the limited management skills of smallholders thereby ensuring efficient farming practices.

Thus two types of production systems are being considered for future agricultural developments in Melanesia - large scale plantation type enterprises with some local decision making, and production based on smallholders who are provided with a number of ancillary services. Both systems can be considered as elements of the plantation mode of production. Although the plantation mode is the basis of a number of existing and proposed schemes, the enthusiasm with which it has been espoused has varied widely. On the one hand is the enthusiasm of the Department of Lands in Papua New Guinea, reported by Connell (1979:594-595):
The aim of encouraging developments on traditionally owned land consolidated into a single enterprise is believed, especially by the Department of Lands, to be a significant change in development policy that could foreshadow a variety of economic projects at a large scale but with a traditional basis in land tenure and local participation.

In contrast to this response, Yen has argued that the traditional smallholder systems might be unable to meet the requirements of efficient commercial production and that 'production through larger-scale management systems seems likely to fill the role of the growth sector, if only by default' (Yen 1980:99).

ECONOMIC BEHAVIOUR UNDER THE PLANTATION MODE

Given that the plantation mode is likely to be important in the future economic development of Melanesia, it is necessary to gain some understanding of economic behaviour under this system. Two types of organization will be distinguished. Economic behaviour is likely to differ between schemes which are based on smallholder production but where there are some imposed constraints on decision making, and those where there is group participation in decision making. This dichotomy effectively ignores joint ventures like those in the Solomons which appear to seek to maximize profits in the same manner as more traditional plantations.

Since the pioneering work of Fisk (1962, 1964, 1971, 1975), economists have gained increasing insight into the motivation of smallholders in Melanesia and the factors influencing their economic behaviour. The literature is large (e.g. Shand and Straatmans 1972; Shaw 1973; Philp 1976) and will not be discussed in detail. Generally, the decision making unit is assumed to be the family. Economists argue that families are motivated by the desire to consume various commodities, one of which is leisure. In order to consume they must decide how best to allocate their resources, including time, between competing activities. This choice is constrained by such factors as the availability of land, labour and other inputs, and the need to meet minimum requirements for certain commodities.

Various complications can be built into this basic model. For example, it is not easy to divide time in Melanesian societies neatly between labour and leisure. Social or community activities could be introduced directly as a goal (the desire to consume 'prestige' or the desire not to consume 'social alienation') or as a constraint on the time available for either leisure or 'productive' activity. Also, the way in which people trade one goal for another could vary according to family background. For example, it has long been argued that Indians are more willing to trade leisure for cash in Fiji than are Fijians.

This type of model is not supposed to be a perfect description of reality with all its complications. It does not, for example, rule out the possibility that aspects of economic behaviour will be influenced by goals other than those that have been mentioned. A case in point that is relevant to much of Melanesia is that behaviour can be influenced by the desire to gain or retain control over land. But despite this type of goal,
these models are useful means of examining the response to economic stimuli.

With the greater sophistication of such models has come the conclusion that families react in a manner consistent with standard neo classical theory. They may not be profit maximizers, but if the price of one crop rises with respect to others, for example, there is likely to be a shift in emphasis to the more productive pursuit. This is likely to apply whether or not the desire to retain land is a dominant motivating factor. Numerous examples of 'rational' behaviour can be found. Tobacco and tea have not been accepted widely as smallholder crops in Papua New Guinea because they have been less profitable than competing crops, mainly coffee (Munnall and Densley 1978). Densley and Wheeler (1978) reported that families devoted less effort to cocoa and switched to other methods of providing consumption when cocoa prices were relatively low. Indeed, Philp (1976) applied a quite complex econometric model to handloom weavers in Papua New Guinea who were also subsistence gardeners, and concluded that there was nothing perverse about their response to economic incentive.

The question arises therefore whether these responses are altered by the additional services provided to smallholders operating under the plantation model. To the extent that some coercion is placed on farmers, policy makers have more control over decision making. In the Seagaqa scheme, settlers could be evicted if they regularly failed to produce a satisfactory cane harvest, and the degree to which they could neglect cane in favour of other activities was limited if they wished to retain the land. However, in a recently completed study of this scheme (Evans 1980) I concluded that a modification to the basic neo classical model provided useful insights into the response to economic incentive in this situation. The project administration had instituted a set of incentives and disincentives designed to encourage participation in the commercial sector and the model considered changes in labour inputs to cane in response to these measures. Although the model could not be quantified it provided predictions consistent with observed behaviour. Certainly the particular socio-political environment had to be considered, but the goal of maximizing consumption subject to certain constraints remained. Thus at the micro level there appears to be no reason for thinking that families react to economic stimuli in a different manner when producing as smallholders under the plantation mode. They simply have more constraints imposed on their decision making.

At the macro level, any economies of scale under this system would enable total production to occur at a lower point on the long run average cost curve. Extension services should ensure that more suitable agronomic practices than before were used, thereby raising the production function facing individual farms. The combined effect of the two would be to make the output more competitive on the world market. Evidence about whether the plantation mode does in fact create these two effects is scarce. In Seagaqa there was weak evidence to show that as unskilled farmers gained experience with cane the yields they obtained increased, but it was not possible to prove that yields were better if the recommended farming practices were carried out than if the family followed its own path. This might have been due to data problems.
Possible labour inputs under group decision making
GROUP DECISION MAKING

Neo classical economic theory does not say a great deal about group decision making. In Figure 1, AR and MR are the average and marginal returns respectively from some farming activity. OC is the opportunity cost of labour, here assumed for simplicity to be constant. Three possible group decision making processes are described.

(a) Profit maximization. If the community seeks to maximize the net benefit flowing to the group from this activity, it would choose the normal profit maximizing solution. This occurs at $L_2$ where the MR curve cuts the OC curve. For this situation to be feasible, the group must be able to coerce members to provide at least $L_2$ units of labour, but must also be able to prevent them applying more than $L_2$.

(b) Maximization of the returns to the workers. $L_1$ units of labour would be provided if the group initially working in the project could restrict entry and decided to maximize the return to themselves only. They would maximize the difference between the return per worker (AR) and the opportunity cost. Less labour is employed than in the profit maximizing situation.

(c) Unrestricted entry. If the group could not prevent members from working whenever they desired individuals would provide labour if the perceived return from this activity (AR) exceeded the return available elsewhere (OC). Only when $L_3$ is reached will no extra labour be provided. More labour than the profit maximization solution is provided, and the net surplus available to the community is zero.

Few studies of group decision making in Melanesia exist, and it is not obvious if any of these decision processes are applicable. The communal nature of society in many areas probably rules out the second, with equilibrium at $L_1$, and this possibility will not be considered further. In situations where it is difficult to restrict the activities of society members, $L_3$ would be more likely. In an attempt to discover if either $L_2$ or $L_3$ is likely to emerge from group decision processes in Melanesia, the Plantation Redistribution Scheme in Papua New Guinea will be considered briefly.

Most of the plantations that were returned to the traditional land owners were not subdivided but were kept as plantations (Densley 1978b). After a period, many were placed in the hands of a National Plantation Management Authority (NPMA). Profits and productivity were lower than under expatriate management and there is some evidence that labour inputs fell (Densley and Wheeler 1978).

If it is assumed that expatriate owners generally attempted to maximize profits ($L_2$), the observed decline in productivity is consistent with a movement from $L_2$ to $L_3$. However this would have implied an increase in labour inputs which apparently did not occur. This dilemma might be explained by the fact that the curves in Figure 1 may have been altered by the change in plantation ownership.
The AR curve might have been influenced in two ways. First, the fact that the NPMA was constituted suggests that the new landowners lacked management skills. They would therefore not have been able to attain the same output as achieved by the expatriate owners even when employing the same inputs. Assuming constant prices, the AR curve would have shifted downwards.

Secondly, Connell (1979) reported that groups often take longer to reach decisions than individuals. For crops requiring the precise timing of inputs, the effect of delays in decision making is the same as that of poor management - the AR curve falls.

It is likely, however, that the AR curve facing individual plantations was falling for a number of years prior to the change in ownership. This would have occurred had the expatriate owners allowed the stock of capital (including perennial crops) to decline in anticipation of expropriation, as suggested by Densley and Wheeler (1978). Indeed it is possible that the new owners allowed the rundown of capital to continue either because they had relatively short time horizons or because they could not obtain access to the funds necessary to restock.

It will be assumed that the expatriate owners had been operating at the profit making maximization point $L_2$ but that the AR curve was shifting downwards because the prospect of expropriation had reduced their time horizons. In this case both labour inputs and productivity would have been falling before the change in ownership. With the change, the AR curve would have shifted further downwards for the reasons mentioned above. Had the new owners attempted to maximize profit they would have been observed to apply less labour and to attain lower returns than the previous owners, which appears consistent with what actually occurred. However, the observed reduction in labour and its productivity is also consistent with a change in decision processes from profit maximization ($L_2$) to unrestricted entry ($L_3$) if there was a large enough fall in the AR curve.

These conclusions are not altered by the observation that the change in ownership was likely to have shifted the OC curve upwards. Many plantations in the colonial era had to rely on imported rather than local labour. An implication is that local people were not willing to work for the same real wage which attracted labour from other areas; their opportunity costs were higher. Those redistributed plantations that attempted to use the labour of the owning group would therefore have been confronted with a higher OC curve than that which the previous owners had faced. Even those which continued to hire external labour would probably have faced higher wage demands from workers expecting better conditions under indigenous ownership. An increase in the OC curve has the same effect on labour inputs and productivity as that of a downward shift in the AR curve.

The model which has been proposed does not therefore allow firm conclusions to be made about the type of decision making employed by groups which obtained plantations under the Plantations Redistribution Scheme. The little information which is available on the scheme is consistent with the new owners attempting to maximize profits. On the other hand it is also consistent with a change from profit maximization to unrestricted entry if the changes in the AR and OC curve were large. It can be
concluded, however, that if the new owners continue to allow the capital stock to run down, both labour inputs and productivity will fall further, regardless of which of the two decision processes is followed.

The possibility that neither of the two decision processes is relevant must also be considered. Tamilong (1979) emphasized that a major aim of the traditional landowners in one case was to regain control of land that had been alienated. Considerations related to current consumption possibilities were of minor importance. This conclusion is supported by the recent problems with Giligili and Gumanch plantations. There, pressure for redistribution was not great until the expatriate owners tried to sell to indigenous companies. If this had occurred, the Plantation Redistribution Act would no longer have applied and the land may never have been returned.

If group motivation was totally unrelated to the desire for current consumption, no resources would be applied to the plantation, and the constraint imposed by the necessity to meet loan repayments would become operative. In fact, poor loan repayment performance was one reason why the NEFMA began operations.

However, in other relatively land short areas, pressure to return alienated lands was related to the need to provide cash earning opportunities for indigenous people. Yet there appears to have been a serious rundown of yields in these areas too (Densley and Wheeler 1978). In these cases, the decision processes outlined in this paper deserve consideration.

CONCLUSIONS

Although the example of the Plantation Redistribution Scheme does not allow firm conclusions about the nature of group decision making in Melanesia, it reveals a number of costs of this form of the plantation mode of production. If management skills are lacking and decisions take additional time to be made, both labour inputs and outputs could fall. The former problem might perhaps be overcome if the extension services provided to smallholders were extended to group developments. However, it is possible that such costs could outweigh the benefits of the plantation mode which were outlined earlier, at least in the short run. In fact the scheme illustrated that there can be conflicts between two of the major goals of national planning. The desire for increased indigenous control of the commercial sector can be inconsistent with the desire for increased efficient agricultural production.

It appears that the plantation mode of production is gaining in popularity without detailed knowledge of how groups in Melanesia make decisions. Until this understanding is gained important questions such as whether groups are responsive to the same sort of incentives as individual households must remain unanswered. If, for example, communities were motivated by desires unrelated to the need to provide current consumption opportunities, governments would gain little from introducing the usual economic incentives.
If on the other hand, groups made decisions in accordance with one of the processes that have been outlined in this paper, they would be expected to react to economic incentives in the same manner as households, even if their reactions took longer. For example, an increase in the price of the product or a reduction in the cost of inputs would raise the AR curve and labour inputs and outputs would be expected to increase. Given the current emphasis on communal type developments in both Papua New Guinea and the Solomons, it is essential that further research on the nature of group decision making in Melanesia be undertaken.

REFERENCES


THE INTRODUCTION OF CASH CROPPING TO THE
WESTERN HIGHLANDS – SOME EVIDENCE FROM ENGA

R. Lacey

CONTEXT AND FRAMEWORK

The cultivation of agricultural produce for export has been one of the principal and more permanent characteristics of the colonial economy in Papua New Guinea since the 1880s. Gross production and export figures for the recent postwar decades show that an expansion and diversification in cash cropping has been one of the most marked features of this period. Two trends are apparent: the expansion of the smallholder segment as a proportion of total production and the development of cash cropping in the Highlands region. Recent surveys reveal that, by the 1970s, 76 per cent of 29,951 ha under coffee were being cultivated by smallholders and that 29 per cent of the 79,399 ha under cocoa and 56 per cent of the 248,207 ha under coconuts were also in the hands of smallholders (Densley and Dick 1978). This was in contrast to the situation in 1940 when smallholders produced only 3–4 per cent of the total agricultural output for export (Shand 1963:47). One indication of the postwar growth of commercial agriculture in the highlands is found in coffee production figures. In 1946/47 48 tons of coffee valued at approximately $A7,536 were exported, while in 1974/75 36,136 tons (of which 87 per cent came from the Highlands region) valued at $A33,501,000 were exported (Munnall and Densley 1978:26, 27). This paper will explore aspects of the Enga experience with cash cropping as part of this postwar expansion of smallholder production in the Highlands region. But, because that expansion came late in the colonial chapter, it needs to be placed in its historical context. It will be argued that this was particularly so for Enga producers who entered the cash economy only in the 1950s, in the last generation of colonial rule.

Any study of transformations and adaptations in the lives, economies, incomes, perceptions and values of the villagers of Papua New Guinea, particularly in the postwar era, would need to take account of the growth and expansion of both plantation and smallholder cash cropping. Their significance and influence would need to be balanced against the expansion of mining, fishing and timber milling, together with other extractive, trading and manufacturing activities by multinational corporations, and the growth of towns and cities as places in which village migrants have found alternative means of gaining incomes. Postwar social and economic change at the local level is a varied and uneven part of wider regional and national strategies and trends. Hence expansion or decline in smallholder production is not simply a pattern of change in village economies, or a product of initiatives, experiments and choices by villagers, either as individuals or groups. Because crops were produced for sale in local or
regional markets, or for export and sale in international markets, these activities inevitably became woven into larger regional and national systems and policies. Local experiences need to be seen as part of these larger patterns and trends, because smallholder activities cannot be isolated from wider structures and trends. Earlier experiments in prewar Papua, to induce villagers to produce a variety of cash crops for export, failed. One major cause of the failure of these experiments was that they were ill-timed. Crops were ready for marketing just as world prices were falling. The large influx of cash into coffee producing areas of the highlands in the 1970s, as a result of spiralling world prices, is the opposite side of this coin. Studies in cash cropping need to balance local, regional, national and international perspectives and forces and take account of their interplay and interdependence.

There have been relatively few studies of smallholder production and enterprise. The prewar phase has been barely touched upon, though studies by Pirth (1972, 1978), Miles (1956), Reed (1943), Salisbury (1970) and Shand (1963) reveal some of the relevant sources and point to some major trends. In the studies of postwar patterns numerous approaches have been taken. One is found in local ethnographic or micro economic studies. These show local forces at work shaping the responses of producers to new economic opportunities and the development of ties between these producers and government extension agents who disseminate new seeds and plantings as well as technical advice, but who also implement government 'development programmes' (Brookfield 1973; T.S. Epstein 1968; A.L. Epstein 1969; Salisbury 1970; Shand and Straatmans 1974; and many of the early New Guinea Research Bulletins).

Another approach has been to explain the growth of cash cropping in terms of the behaviour and motives of dominant middlemen and beneficiaries, those entrepreneurs whom the government encouraged and favoured in the 1950s and 1960s. The most stimulating example of this approach is Finney (1973), though Salisbury's study of Yunamami closes with a review of the achievements of six successive innovators, who became transformed in the villagers' view into 'traditional leaders' (1970:313-333). These men played a key role in the early copra trade, the moves to consolidate smallholders' groves, the push for locally owned and run copra driers in the 1930s and the experiments with and expansion of cocoa production and cooperatives from the 1940s. Two other approaches are allied closely with this focus upon entrepreneurs. One is the study of that generation of innovators whose consciousness was transformed by their experiences in the Pacific War but who were born too soon to be able to achieve any of the radical changes in their own and their peoples' lives which they desired. There have been too few studies of these men, their reform movements and their place in the growth of cash cropping. Maher (1961) and Oram (1967) demonstrate in their studies of Tommy Kabu and the Purari Kompani how this returned serviceman planned to wean his people away from their dependence on the cash incomes they earned as plantation labourers, by initiating a scheme to transform them into independent producers of sago for marketing in Port Moresby. Their thrust into cash cropping failed in the 1950s for a number of reasons, including a lack of managerial skill among Kompani personnel; the scarcity of adequate transport links to Port Moresby when their jointly owned cargo vessel was destroyed; strained relations between Kompani officials and government officers, and the lack of a clearly defined policy by the colonial government for relating to and assisting
self-help projects such as these. Out of the ashes of the Purari Kompani came policies to assist the formation of cooperative producer societies in the 1950s and 1960s.

The second approach, allied to the focus on entrepreneurs, is exemplified by a detailed study of the flow of information and the diffusion of innovation in the East Sepik (Allen 1976). This concerns rice growing schemes in the 1940s and 1950s and more recent experiments in economic change. Allen shows the relevance of the ideas, experiments and schemes of men returning from the war; but these activities also demonstrate how policies for 'development', formulated at the centre, are diffused and filtered through communication networks into local arenas, where producers implement them in their own terms.

Each of these approaches to cash cropping focuses primarily on the local level. All are based on the assumption that cash cropping is a mode of production different in form and purpose from preexisting subsistence modes. All demonstrate that the introduction of this new mode, whether at the hands of local reformers, or entrepreneurs, or government agents (local or expatriate) opens the possibility of raising living standards and incomes through production and marketing of crops in return for cash. These changes also generate conflicts within village communities and between villages. All, whether explicitly or implicitly, apply models to analyse and interpret the confusion and complexity of evidence. This is true for the most recent approach towards analysing and explaining the processes and impact of cash cropping, namely the debate about the 'peasantization' of Papua New Guinea societies. Some of the contributions to the debate are Connell (1979), Donaldson and Good (in press), Fitzpatrick (1979), Gerritsen (1975), Howlett (1973, 1977) and Meggitt (1971). It is not my purpose here to assess the outcome of this debate. Though each is focused upon local transformations, all apply models from analyses of changes in rural economies and societies elsewhere and, in so doing, point up some of the consequences and impact of cash cropping. At an early stage, the shift from the subsistence mode of production to a dependence upon cash ushers in an era in which labour is exported into the plantation economy and the new smallholder mode of production begins. This shift creates changes in the social relations of labour in the village economy. Men who act as mediators between village and colonial enclaves gain access to new forms of wealth, new tools, seeds and cuttings for commercial crops. As producers of food crops which they barter with and then market to members of the growing foreign enclaves in their midst, then as the earliest experimenters with export crops, these men begin to mobilize their dependents as an informal workforce. As their holdings grow, this workforce increases and becomes transformed into a rural proletariat, working for cash wages. Differences in scale of production, income and access to colonial power and wealth begin to emerge and spread as cash cropping spreads. Inputs of labour into subsistence are in competition with those into cash cropping. As colonial institutions spread, their influence on the lives of village producers increases; colonizers become the agents of 'law and order', the providers of roads and markets and of education and welfare agencies. Thus villagers become more fully peasants, producing to secure stable cash incomes from which to pay increasing taxes for these services and to acquire the consumer goods which have become necessities of life. Since the push towards cash cropping, particularly in the highlands, was so constant in the 1950s and 1960s, and
earnings from export crops (subject to price fluctuations on the world market) were a major source of income, these newly dependent peasants have been seen as caught in a process of 'terminal development', which favours the few rich and threatens the many who make minimal incomes from their cash crops. The immediate prospect is that such divisions, based on access to wealth, political influence and the productive sources of income, will become hardened into class structures within the rural peasantry, while the mass of smallholders will slip into a backwater after the temporary and easily consumed benefits of the current coffee boom have passed away. One final possibility is that garden lands and coffee plots will stabilize while population increases, so that land disputes will increase.

HISTORICAL PRECEDENTS

Despite its bleak analysis and the sense of foreboding it creates about the future, the 'peasantry' debate blends and balances local, regional, national and international forces. That is an important contribution towards understanding of the meaning and consequences of postwar cash cropping. A further perspective needs to be added: the historical perspective gained from a review of what occurred before and during the Pacific War.

One writer noted a physical legacy from early experiments in Papua carried over into the postwar era:

[While] there was not much to show for all this effort in 1940, in post war years the coconuts which natives had been forced to plant ... have been the basis on which considerable economic development has been built. Nearly every co-operative society in Papua today has been made possible by the copra produced from these trees. Nor were some of the unsuccessful experiments entirely without value .... [The] cacao in the Northern Division which is still growing wild provided information which assisted the development of cacao as a crop in the Rabaul area (Miles 1956:326).

In New Guinea, in the islands and along the coast where plantation and small holding activities had their heaviest concentrations, this physical legacy from prewar experiments did not often survive the ravages of the Pacific War. One feature which did have a direct bearing upon cash cropping, particularly in the highlands, was the attempts made in New Guinea to test and disseminate a variety of new food plants and to engage in agricultural extension. Under the vigorous experimental policy laid down in 1923 by Dr G. Bryce, the first director of agriculture in New Guinea, and followed by his successor Mr G. Murray, three stations were set up in Morobe District at Sangan, Wau and Lae, as testing places for cotton, maize, tobacco, legumes and other plants and as centres of diffusion for commercial and food crops for surrounding villages. This was followed by the foundation of Kerevat station in the Gazelle peninsula, first as a training institution for local field and extension workers and later as a demonstration plantation in which new strains of plants were tested. The Morobe stations closed in the late 1920s but their pattern and that of Kerevat were applied when a new station was founded in the late 1930s at
Aiyura, in what became the Eastern Highlands. From this station spread new ideas and seeds which formed the basis of most cash crops and new varieties of food crops in many postwar economies (Radford 1979).

These legacies, however fragile or small in scale, underline the need to discover and analyse some of the major trends in cash cropping in its prewar phase. Studies by Firth (1972, 1976 and 1978), Hempenstall (1978), Reed (1943) and Salisbury (1970), as well as the evidence from official reports (Sack and Clark 1979) and foreign observers and residents (Whittaker et al. 1975), remind us that, before a policy to encourage the growth of an expatriate plantation economy was launched in German New Guinea, a vigorous copra trade developed between village growers in the islands of the Bismarck archipelago and numerous foreign traders. With the spread of mission, trading and government stations and then plantations along these coasts, strategically placed villages produced food crops for barter and sale to the members of these enclaves. This meant that even as late as 1909, when 8,650 tons of copra were exported from the colony, '[by] far the biggest proportion ... is trade copra i.e. copra produced by the natives and then bought from them by traders' (Sack and Clark 1979:313). Already a process of differentiation and 'peasantization' was at work in the areas where production for the copra trade was operating. So vigorous was the competition between traders, that producers 'know the precise value of copra and obtain very good prices when they sell it'. In consequence, this report noted that there were some chiefs who had 'a regular monthly income of up to 300 marks from copra'. So vigorously had some of these coastal communities participated in the expanding copra trade that the German authorities had found it necessary to pass some earlier decrees: one of 1900 prohibited traders from purchasing whole coconuts from producers to force villagers to prepare their coconuts for sale; others of 1900 and 1901 banned the use of shell money (tambu) as a medium of exchange in transactions between Tolai and traders, especially in the copra trade (Sack and Clark 1979:200, 217). The spirit of this legislation is captured clearly in the comment made in the Annual Report for 1900-01:

The use of shell money ... has been a great handicap to the development of trade. It was often very difficult for the European firms to obtain the shell money required to purchase copra etc. In this respect they were completely dependent on the natives, and at times the exchange rate for shell money was forced up absurdly high .... Doubtless shell money will continue to maintain its role in transactions between natives for a considerable period. But as it will not be possible after 1 April 1902 to obtain European goods for shell money, the natives will be compelled, in order to obtain such goods, to devote their labours to the production of really useful goods, suitable for export, such as copra etc., instead of to the acquisition of shell money. This will promote commerce as a whole (Sack and Clark 1979:220).

After the failure of early attempts to extend plantations beyond the islands to the mainland, the new economy took hold, so that, by the end of German rule, a substantial proportion of copra exports (which had increased in value eightfold between 1903 and 1913) came from the foreign
plantations. The area planted expanded from 4,470 ha in 1900 to 34,190 in 1913 (Firth 1978:45). Meantime, field officers patrolling out from the network of new stations, which were established to 'pacify' selected new areas and open up their populations to supply a constant flow of labourers for the plantations, were advised to 'persuade' people in these areas to engage in the production of commercial crops. The response to new opportunities in some newly opened regions was so vigorous that the government thought of placing extension workers in the field to assist villagers with technical advice. Thought was also given to measures for quality control in copra production and to the setting up of driers in some villages (Sack and Clark 1979).

Even allowing for official bias in these glowing reports, it would seem that both smallholder and plantation modes of production were solidly entrenched in some areas by the end of German rule in 1914. There was growing tension and potential conflict of interest between the rising demands for plantation labourers and the labour needs of those villages attempting cash cropping. In this context the German administration did not see the need to implement forced planting ordinances, though clearly they were given to exercising 'persuasion' on their subjects, to ensure there was adequate cash for the payment of taxes.

The relationship and tension between smallholder and plantation production under the subsequent Australian administrations has been outlined:

When the Australian Naval and Military Expeditionary Force administered the Territory ... there was no definite policy formulated or followed with respect to native development. There was ... some interest in Murray's plan for enforcing planting but this apparently waned before there was much application.

Estimates of the later native contributions to exports ... are very fragmentary and inconclusive. The 1929/30 Annual Report states that for the most important area of New Britain native sales of copra 'probably exceeded' 1,200 tons [In German times total small holder copra production was 1,350 tons in 1884, 2,280 in 1896 and 5,000 tons in 1913]. In the description of other districts it did not suggest any other sales of importance. In 1937/38 there was an estimate of 22,200 acres of native coconut groves in bearing for the whole of New Guinea (as against 253,235 acres bearing for plantations). [By the following year that total acreage showed a slight increase, and in both years New Britain's acreage represented about 33% of the total.] If we take the average native yield for that year in the Rabaul District and apply it to the acreage for the whole Territory, a total production estimate of only 2,666 tons is obtained [while the total quantity exported was 73,716 tons in that year] .... Evidence seems to support the view that, with the exception of the early period up till the end of the 1914/18 War, there was only a small proportion of
native-produced copra in the total for the Territory, and in particular during the years of low prices (Shand 1963:50, 51).

This represents 3.6 per cent of total production which goes close to the estimate of smallholder production at 3 to 4 per cent in both Papua and New Guinea in the decades prior to 1940. Australian policy strongly favoured and encouraged copra production by plantations from 1914 and the gross figures show the resulting expansion (Reed 1943:191-200). But within this framework the enlightened and experimental policies of Dr Bryce for the development of village commercial crops took shape. A consequence was the series of agricultural stations, culminating in Aiyura and Kerevat, and the attempts to launch a training scheme for extension workers. Little remains in the official reports to record how viable or effective that scheme of education and extension was (Firth and McKillop, in press). The policies on 'native agriculture', proposed by Bryce and Murray, were based on the view that most subsistence systems were devoted to 'shifting cultivation' which they saw as being 'on the whole ... very backward'. This required, for its reform and development, changes to a more stable crop-rotation system producing better varieties of root crops in rotation with maize, cotton, legumes and tobacco. Thus they envisaged a combination of subsistence and commercial production for marketing.

In Bryce's mind this grand design for agricultural reform was linked intimately with the growth of the plantation economy:

One of the most striking features on plantations is that the labour force is fed on exotic ... [imported] foods .... Issues of rice and tinned meat are made, and these are in a few cases, varied by local purchase of sago, taro or maize, or by distribution of food stuffs such as manioc, sweet potato or maize grown on the plantations (New Guinea Annual Report 1923-24:41).

His solution was the rapid and widespread distribution of maize seeds to villages near plantations, along with the provision of extension services to launch the first stage of crop rotation. He also sought to improve plantation exports by breaking the dominance of coconut planting. By the late 1930s, these experiments were bearing fruit. This is shown by rising exports of coffee (63 tons valued at £A2,060 in 1940), cocoa (315 tons for £A11,340 in the same year) and rubber (119 tons for £A13,328 also in that year) (New Guinea Annual Report 1939-40:72). There were direct lines of continuity between a number of the policies and practices developed in New Guinea in the prewar phase and what happened in the Highlands region in the early postwar years. Aiyura continued to be the testing ground for subsistence and commercial crops. Patrol reports from the Enga area in the 1940s and 1950s show the continuity of disapproving attitudes by some kiaps to subsistence cultivation at the same time as their dissemination of new varieties of commercial plants. There are also hints that some new plants could have entered the region along trade routes, before the arrival of the first patrols (Lacey 1979a).

The contrasting trends in British New Guinea and Australian Papua compared with those in German and Australian New Guinea are of significance. In British New Guinea and then in Papua attempts were made
to induce village producers to enter the cash economy by the force of government decree. One legacy of this policy was the laying down of a foundation for postwar copra cooperatives. In German and Australian New Guinea there were a number of stimuli inducing village producers to grow crops for trade: the pressure from competing traders offering goods, shell currency and later cash, in return for their products; the growing presence of expatriate plantations which induced villagers to provide food for their labour force, but which also brought transport and marketing facilities for those who wished to produce for export; the continuous pressure and intervention of field officers (later from a department of agriculture) who even without formal legislative force demanded improved output for commerce and for the payment of taxes. No history of trading has been written for Papua. F.R. Barton's argument in 1906 against enforced planting of commercial crops by villagers, because it would expose them to the corrupting effects of those 'undesirable parasites', the petty traders, reflected a more widespread view among administrators about the role of trading in economic life (Miles 1956:319). In his recent study of the mining frontier Nelson (1976) has revealed that, in its early stages, much of the energy and policy of the British New Guinea administration was devoted to supporting the growth and development of gold mining. This did not necessarily mean that the administration favoured mining; on the contrary it was responding to the presence of a large group of prospectors. In 1892 the lieutenant-governor, Sir William MacGregor, instituted a policy of forced planting to encourage villagers to become contributors to the money economy (Joyce 1971). At that stage there were few traders and many more gold prospectors; in fact in some cases villagers were making steady incomes as providers of food from their gardens for labourers and prospectors at mining camps. In a situation where subsidies and bounties were provided to support mining, the plantation economy began late and developed slowly, so the stimuli to production, as well as the infrastructure and marketing facilities provided by the presence of plantations, were long in coming.

With the aim of turning villagers into independent producers, and providing them with resources for the payment of their taxes, the Native Plantation and Native Taxation Ordinances of 1918 were launched. As in the case of German New Guinea, many official statements and reports of this scheme have survived. One study of its failure has been written from these reports (Miles 1956). There is a need for other studies based on evidence from surviving station and patrol reports. For instance, a preliminary survey of reports from the Gulf Division, founded in 1906, reveals a number of pertinent issues. By the time of tax census patrols in 1920, there were quite extensive coconut groves in many beach villages, which had been planted over previous decades as a result of field officers' urgings in accordance with MacGregor's original decrees. There was also, from 1911, an expansion of trading. This provided producers with some outlets. By the early 1920s, some local entrepreneurs were seeking government advice and assistance to help them compete with traders for a share in copra marketing. Into this situation, under the new ordinances, was injected an experiment in rice cultivation, without clear plans for its processing and marketing. The response among villagers was almost wholesale resistance; many choosing gaol rather than launching into what they saw as a useless venture. Two additional results were a flight of youth into the labour force, which they had sedulously avoided previously, and signs within some
beach villages of upheaval and social disorder (Kerema Patrol Reports 1906-40; Lacey 1979b; Williams 1923, 1934).

These well intentioned, misconceived and ill-timed plans by Sir Hubert Murray to induce improvements in village production and to launch the people into the money economy by legislative force we now know, with the clarity and wisdom of hindsight, were doomed to failure. The scheme was timed for implementation at a crisis point in the world economy. It was implemented also at a crisis point in the development of the Papuan economy. Income from mineral exports had dropped in the years after Australia assumed control in 1906. In 1901 gold represented 66 per cent of the total value of exports; by 1918 it was 15 per cent. In the same years, plantation products were 7 per cent and 48 per cent respectively of total exports (British New Guinea/Papua Annual Reports 1901-18). The rise in the output of copra and rubber came as a result of a policy to encourage plantation growth by the application of liberal land and labour legislation. A by-product of this policy was a continued growth in output and earnings into the 1920s. But, as in the earlier attempt by the Germans to found their colony with an influx of German yeomen settlers, the Australians failed to attract a significant number of planters. So in the 1920s and 1930s, when the scheme for 'native agriculture' was being implemented, a point of stagnation was reached in the growth of the Papuan plantation economy.

Miles has isolated a number of factors responsible for the failure of the 1918 ordinances to stimulate the growth of cash cropping. Compulsion and the threat of imprisonment produced resistance and non cooperation in cases other than the Gulf. In many instances, because of the absence of a plantation economy or the strictures on government spending, few communications, transport or marketing facilities existed. Thus attempts to stimulate cultivation in remote though fertile areas meant that produce could not be readily brought to market. In one case a special regulation was passed to force inland villagers to carry the crops, which they had been forced to produce, to an accessible marketing point on the coast. With a limited budget to be supplemented by tax proceeds, which, in turn, were to come from planting and sale of crops, there was little chance to develop a fuller department of agriculture with extension services, as had been possible in the richer economy of New Guinea. The severe lack of capital meant that, in the restricted and difficult pricing and marketing situation of the 1920s and 1930s, growers could not receive interim payments for their produce. No wonder they soon lost enthusiasm for what they saw too often as 'government work' (Miles 1956:327, 328). In the case of the Mekeo, who, like the people of the Gulf, were induced to plant rice, there was a temporary boom. But they finally went the way of others when their rice scheme collapsed in 1935. Recent research based on local records and oral testimony has revealed the reasons for failure as being primarily 'because [the scheme] could not support the expense of the manager's salary and the costs of running a truck' (Stephen 1974:129; see also Hau'ofa 1976). So these plans to force Papuans to become independent producers foundered. What began in reality was a process of transforming these villagers into peasants who had few alternatives for choice.
A HIGHLANDS CASE: ENGA

The legacies from these experiences in prewar Papua and New Guinea profoundly influenced policies and attitudes towards smallholder production in the immediate postwar years. This is particularly evident in the multiplicity of cooperative copra producing ventures which sprang up along the coast. It could be argued that differences between these movements in Papua and New Guinea were largely the result of what had gone on before in the 1920s and 1930s (Snowden, in press). Another dimension to the growth of these movements and their relationship to newly evolving postwar government policies and structures was provided by the Pacific War itself.

This involved the exposure of many young men to the complex technology and organization of modern warfare, their experience of new places in their own country and beyond, and their awareness of promises for change and the possible means to bring that change about. Among the survivors who returned home after the war were a whole generation of restless, energetic and questioning potential reformers. Nelson has caught the sense of urgency, restlessness and dreaming which stirred this generation:

In the 1950s some Papua New Guineans could look back to the war as an awesome disruption that brought few permanent changes. But for many, there was no return to the 1930s. Communities on Manus, in Madang, the Sepik and the Gulf of Papua took their own initiative. Paliau, Yali and Kabu were revolutionaries who conceived plans in varying degrees of knowledge about the economic situation that they hoped to change. The soldiers returning to Toaripi had been aware that the foreigners had power not just through wealth and knowledge, but through organisation. The Toaripi were determined to do more for themselves by combining into larger units and drawing on more manpower and capital (Griffin, Nelson and Firth 1979:99).

A second legacy from the war concerned the role of government in agricultural administration and policy. One primary objective of the joint military-civilian structure (ANGAU) set up in 1942 was the provision of essential supplies (copra and rubber in particular). Under one of its wings, the Production Control Board, resources and manpower were mobilized to such a degree that by 1944/45 the output of copra and rubber from its Papuan plantations had reached 9,239 tons valued at £A284,196 and 1,856 tons valued at 377,493 respectively (Stanner 1953:83). In the case of copra this output was a little less than the prewar peak and in the case of rubber it exceeded that peak. At first the board assumed control over existing plantations in Papua, but, as areas of New Guinea were taken from the Japanese, plantations there were taken over and returned to working order. The success of the board demonstrated what could be achieved when government assumed centralized and efficient control over productive resources. It could also lay down and repair transport facilities where needed and it established the precedent for postwar marketing boards to control and stabilize prices for export crops. These patterns of central administrative control persisted beyond the war.
A third legacy was the 'new deal' policy; one stressing the primacy of 'native welfare and development'. This not only borrowed heavily from new policies which had currency in the aftermath of the war. It was based on an injection of expertise from a vanguard of Australian intellectuals who were given a structure within which to rethink Australia's postwar colonial policies. The cooperative societies and the push to encourage other forms of smallholder production flowed from this new thinking (Stanner 1953; Griffin, Nelson and Firth 1979). It was significant that the first postwar administrator, J.K. Murray, was one of this group, as well as being a prominent agricultural scientist. The tensions which grew between the Purari Kompani and both field officers and central administrators in the newly emerging cooperatives division was typical of this period. In the turmoil of reconstruction, when faced with a multiplicity of new ideas and movements for local initiative in development, colonial officers, many of whom had been in the prewar administrations, sought to establish order before development. They also worked to fit these local experiments into the emerging framework of central control. Producers also faced the consequences of fluctuating world prices for exports as their energies and initiatives were contained within administrative moulds.

It was into this world of the 1950s that Enga producers came, as the postwar administration extended its control and 'pacified' them from Mt Hagen, Wabag and other posts. Like other highlands populations, their entry into smallholder production and marketing came from growing food for mission and government stations. First they bartered these goods for shell currency and steel tools. In this phase they participated in what Hughes (1978) saw as a highlands-wide inflation in shell currencies, beginning in the 1930s. Labouring on 'public works', for instance, the construction and maintenance of government and mission posts and the cutting of 'roads of peace' through their valleys to link these posts into networks then became an alternative source for earning new valuables. From the start, because of the habits and perceptions of missionaries and kiaus who sought 'chiefs' through whom they could negotiate with new populations, a small circle of kamango (rich men) or young 'would be' kamango, soon seized opportunities to control the distribution of the new wealth. Precedents were already established for this behaviour by kamango, particularly among communities in central and eastern Enga regions, where they and their fathers were 'holders of the way' in the cycles of exchange which ebbed and flowed along roads of alliance traversing these valleys (Lacey 1979c; Meggitt 1974). New possibilities for differentiation through access to and manipulation of wealth were in the making and the flow of shell currency, steel tools and new strains of pigs in exchange for food and labour quickened the transition from old to new.

Then in the early 1950s came coffee and Australian currency to add further dimensions and complexities. Meggitt, in his study 'from tribesmen to peasants' (1971), drew on evidence from Wabag station reports. In 1955 the government had imported into the district, for distribution through kamango, who were now bosbots and lutaus, the following commodities: 1,568 axes, 2,012 machetes, 614 pearl shells, 38 bailer shells and 256 lb of large and 112 lb of small cowries. While they used items of shell currency increasingly for transactions with trading partners out on the edge of central valleys, to draw more in pigs for their exchange cycles, the central Enga themselves moved into the money economy. This movement is
shown by the growing volume of cash being paid to them by *kiaps* in return for timber, food and the new cash crops, particularly coffee. The following figures, compiled by Meggitt (1971:203) from station reports, record this rise in the flow of cash:

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount (£A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1957/58</td>
<td>10,790</td>
</tr>
<tr>
<td>1958/59</td>
<td>12,410</td>
</tr>
<tr>
<td>1959/60</td>
<td>19,420</td>
</tr>
<tr>
<td>1960/61</td>
<td>18,180</td>
</tr>
<tr>
<td>1961/62</td>
<td>19,730</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount (£A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1962/63</td>
<td>23,750</td>
</tr>
<tr>
<td>1963/64</td>
<td>32,200</td>
</tr>
<tr>
<td>1964/65</td>
<td>57,350</td>
</tr>
<tr>
<td>1965/66</td>
<td>No record</td>
</tr>
<tr>
<td>1966/67</td>
<td>150,000</td>
</tr>
</tbody>
</table>

By 1966/67 the effects of income from a new cash crop, pyrethrum, were also showing in these payments. This first stage of coffee production saw consolidation by missions and government, through the establishment and spread of facilities like schools, hospitals, agricultural stations and trade stores. This was followed by the beginnings of local government councils (1963) and the establishment in 1964, by the Lutheran Mission, of a diversified consumer-producer cooperative, WASO (Fairbairn 1967). In consequence part of the people's earnings was taken up in taxes and other payments for services and there were consumer outlets for spending. At this stage, *kamongo* old and new continued and expanded their transactions in the *tee* exchange, which now embraced in its orbit new communities and provided roads to influence and prestige for a larger number of exchange partners within its traditional boundaries. Some were also investing their own and their clan's new wealth in trade stores and trucks as well as buying shares in WASO, which provided marketing facilities for the coffee and vegetables which they were growing as cash crops (Freund 1971; Lacey 1973; Meggitt 1974).

It is not clear yet by what process coffee was adopted and spread as a cash crop among Enga producers. One agricultural officer has suggested that, in the early days when Enga were searching for opportunities to gain the new wealth, one man in an eastern Enga clan, through his links with government officers, obtained and planted coffee seedlings in his garden. This man claimed to his clansmen that he had been told that he could sell the fruit of these trees for money. They treated his claim with scepticism but watched and waited to see what might happen. When the coffee trees matured a few years later, he gathered the beans and brought home cash, which he spent on consumer goods. He also planted more trees. It was now evident to his fellow clansmen that this man had found a road to wealth with trees, so they followed his example and coffee planting spread rapidly in their area (N.A. Robinson, personal communication 1972). When I met that man in the early 1970s he was a councillor, the owner of a trucking business and of several trade stores: a new *kamongo*. His career is reminiscent, on a smaller scale, of those of the Goroka entrepreneurs studied by Finney. Perhaps the blend which he described for the Goroka men was also part of the process in Enga. In Goroka it was made up of these ingredients: preexisting value systems and structures which favoured the rise of bigmen as vigorous manipulators of wealth; a government policy which encouraged cash cropping and which promoted coffee production through the distribution of seedlings, accompanied by sympathetic care and advice from extension workers; opportunities for these men to mobilize a dependent labour force cheaply, to extend their plantings on clan lands and
to benefit from the assistance of key sponsors in colonial society; opportunities to diversity their capital investments beyond cash cropping when the government curbed coffee planting and withdrew its earlier support (Finney 1973:83-122).

Recent studies show that coffee growing expanded rapidly in the Highlands region, exhibiting the pattern noted at the beginning of this paper: a growth in export production from 48 tons valued at $A7,536 in 1946/47 to 36,136 tons valued at $A33,501,000 almost thirty years later in 1974/75 (Munnall and Densley 1978:26, 27). But that overall boom needs to be adjusted in scale for Enga coffee production: in the year 1975/76 a survey of estimated production (in terms of bags of green beans), revealed that the total for Enga was 18,643, 2.6 per cent of a total of 717,229 for all provinces. Within that total the five highlands provinces dominated, with 87 per cent. The highlands provinces, in terms of their total production, were ranked as follows: Western Highlands 259,960; Eastern Highlands 224,811; Chimbu 112,262; Enga 18,643; Southern Highlands 4,584. In other words, Enga ranked fourth, contributing only 3 per cent of the total highlands production in that year (Munnall and Densley 1978:27). Unlike the Eastern Highlands, Enga province has not had any expatriate-owned plantations with which the smallholders could have developed symbiotic relationships as they began planting their trees. In Goroka, the growth of partnerships and sponsorships enabled the entrepreneurs to gain their headstart. A recent census of coffee trees in three census divisions of the Wabag district revealed that of 473,345 trees counted a total of 398,360 (84 per cent) were mature and only 70,069 (16 per cent) immature. In addition, there were only fifteen nurseries where seedlings were being cultivated (Carraud 1979). These figures, if they are typical of the pattern in Enga, suggest that coffee cultivation, begun in the early 1950s, has by the 1980s reached its peak.

Two further dimensions can be added. Within the boundaries of the present Western Highlands Province lies the area of highest coffee production for the Highlands region. It represented 42 per cent of all highlands production, compared with 3 per cent from Enga, according to the 1975/76 estimates. The spread of coffee into Enga belongs to that era before 1973, when it was part of the Western Highlands. But there were then real constraints upon its spread. It could not be cultivated above certain altitudes. Those areas in which it could be planted were regions with the highest population densities. Poorly developed modern infrastructures on this rugged fringe of the Western Highlands meant that facilities for marketing were limited, even with the development of WASO from the mid 1960s. There do not seem to have been instances of innovative coffee growers pushing for the building of roads to open up marketing possibilities, as was the case among Fore growers in the 1950s (Sorensen and Gajdusek 1969). Hence the beneficiaries of the coffee boom have always been those Enga who live at the appropriate altitudes in valleys in the east of the province, thus creating a pattern of uneven development. The recent census among a section of them reveals that less than 10 per cent of the growers had more than one plot (Carraud 1979). Perhaps the opportunities to consolidate production, which were seized by the Goroka entrepreneurs, were not available to the Enga Ramongo because of the ecological and demographic constraints. In many ways it seems that the coffee age has come and gone and that most of the Enga have been passed by.
For those Enga living in higher valleys to the north and west of Wabag, another age of cash cropping came. That is part of the pyrethrum story. In the late 1950s pyrethrum seeds from Africa were tried at Aiyura station, and later at Tambul, as an alternative cash crop to coffee, particularly for higher altitude dwellers. Agreements were reached between the Australian government, the Papua New Guinea administration and international chemical companies about the processing and marketing of pyrethrin extracted from the dried flowers. A factory was to be built at Mt Hagen for processing, on the understanding that certain output targets would be reached. The days of forced planting seemed to have returned and an integrated, highly orchestrated pyrethrum 'push' was launched in the mid 1960s. The recipients of this extension programme were predominantly Enga. In 1963/64 15,000 kg of dried flower were produced, of which 5,000 kg came from the Western Highlands, within which Enga was still contained. By 1966/67 production had reached its peak and a total of 590,000 kg was produced, of which 398,000 kg (68 per cent) was from Western Highlands. In 1969/70, the year in which a further large push took place, the overall production was 461,000 kg, of which 296,000 (64 per cent) came from Enga, listed by then as a separate production area. The production continued to decline, until it had reached 201,000 kg in 1976/77, of which 191,000 kg (95 per cent) was produced in Enga. More detailed local figures from purchasing centres reveal that the regions serviced by the Laiagam centre produced 28 per cent of the total output in 1967/68 and 68 per cent in both 1974/75 and in 1976/77, making it the largest producing area of this crop in the country (Anderson 1978). A study of a sample of producers from the Laiagam area revealed that there was a high degree of resistance to the cultivation of pyrethrum. Some of the reasons given by growers were: that women and children did most of the picking in the gardens, but received only a small share of the income (this was in contrast to the cultivation and marketing of food crops at local markets, where women could gain steady and independent, though small, incomes); that men could not invest in trade stores, pigs for sale at markets, or trucks and beer, or other conspicuous assets from pyrethrum production, because the income per unit day was so low; that it was difficult to expand the income base because required garden sizes were restricted and therefore producers needed a multiplicity of plots (Scoullar 1973).

Yields never reached expected or required targets once the peak production began to drop. Hence the major push organized in 1969, involving the gathering together of more than a hundred agricultural field officers from all around the country. Unwittingly this push repeated the pattern of the Papuan experiments in rice, coffee, copra and other crops in the 1920s. It was concentrated upon high altitude areas which were struck by devastating frosts in 1971/72 (Waddell 1975). Despite a few minor upswings in output in the mid 1970s in the Laiagam region, one of the most severely hit by the frosts, production has been on a downward path ever since 1972.

CONCLUDING REMARKS

Any farmer worth his or her bread or kau kau knows that much clearing and preparation is necessary before he or she can make and plant a garden. Much of this paper has been spent in building frameworks and historical perspectives prior to launching into a study of cash cropping in Enga. One
reason for this is that, in the colonial era, Enga were at the end of the road - latecomers to the scene. In the 1930s and 1940s the colonial frontier was only beginning to move along the major Enga valleys. In the 1970s that great and ambiguous artery through the centre of the country, the Highlands Highway, was still being upgraded, smoothed and extended only halfway into what was formally constituted as one of the last districts in that colonial era. Everything that happened in the short colonial generation in Enga happened somewhere else in the country before. That is true of those two major cash crops, coffee and pyrethrum. Remoteness, being at the end of the road, and high altitude have meant that coffee development came to comparatively few. And perhaps, for good or ill, for those few Enga, the coffee generation now seems to be passing. Pyrethrum had been tried in other fringe, high altitude areas of the highlands, but its main victims were non coffee producing Enga and in the 1960s they had visited upon them the revived ghost of forced planting, followed by ravaging frost. Some older men and women may have recalled from their youth the ways in which the arrival of the Taylor and Black patrol was followed in 1939-40 by devastating frost and famine then by killing diseases which struck down people and pigs. These disasters were followed by cries from prophets who bade their parents kill what pigs remained in order to become renewed. These older people must have thought twice about pyrethrum in the early 1970s.

Though remote according to the perspectives of the colonial era, the Enga experience with cash cropping, like the whole postwar surge towards village commercial production, did not occur in isolation. This long view of the process is an attempt to demonstrate that. In any search for broad patterns of change and transformation in the village economies of Papua New Guinea it seems clear that the documentation and interpretation of early trading relations are of great importance. It also seems that the recruitment and siphoning off of younger men from villages to serve as labourers in growing colonial enclaves was often the essential cutting edge of a moving colonial frontier, particularly under German and Australian rulers. But this paper has begun to show that an inquiry into the evolution of the smallholder mode of production, and its tensions and ties with patterns of change in the plantation economy, could enlighten our understanding of the dynamics of colonial and village economies. The move from subsistence cultivation and exchange transactions to a mixed economy, in which some goods are grown for sale in local, regional or overseas markets, clearly begins complex processes which need close analysis and explanation.

This paper, like the heated debate on peasants which went before it and ended in thoughts about 'terminal development', hopefully lays to rest one ghost which persisted, for both colonials and cultivators, throughout the ninety years of the colonial era. Many saw that cash cropping was a panacea, that it opened the door to improvement and real progress. It now seems apparent from this review of the historical context that this often became a false illusion, except for those few who emerged as beneficiaries, the entrepreneurs or 'big peasants'. The challenge remains that other alternatives for gaining improved living standards among village people need to be sought out. One of these may be to look away from the small scale side of the equation towards the large scale model provided by the existence of the plantation economy. That has recently been suggested by
one Pacific islands scholar, who argues that the perceptions which came from the peasant model may well be false for the region:

... the aspirations for material goods and for services among the Pacific peoples are already so high, and rising, that rural development, as presently conceived and executed, is not able to meet them. Pacific Islanders aim not for a rise from poverty, which in general they do not have, but for a shift from one form of relative affluence to another. Agricultural development based on semi-subistence/semi-commercial smallholdings will lead, as it has begun to do, to a decline in relative levels of living. The indigenous peoples of the Pacific have never been peasants and do not have attitudes to labour and life born of centuries of struggle for survival. To introduce models of smallholder-labour-intensive commercial agricultural development devised elsewhere for true peasant societies is tantamount to introducing a programme for trapping people in rural poverty (Hau'ofa 1980:485).

For the Enga, to whose territory expatriate plantations never came, perhaps an alternative would be ventures which consolidate holdings within clan corporations, to produce vegetables, the crops with which they entered the cash economy in the 1950s.

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