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CHANGING FOOD SUPPLY SYSTEMS IN EASTERN INLAND MANUS

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This paper looks at some of the historical background involved in a study of the dynamics of changing food supply systems. However in order to clarify what I mean by "Food Supply System" and the "dynamics of change" I will briefly outline a system for the Nali language area of Manus and list the major forces causing change.

There is, I believe, sufficient evidence to conclude that the food supply system of Manus, and most likely the whole of Papua New Guinea has been in a state of constant adjustment and change for a very long time and thus the often used idea of "traditional gardening" is inappropriate.

Last century and for possibly sometime before, the Nali area based it's food supply on large gardens of taro (Colocasia esculenta) with minor production of other garden crops. In addition, people regularly extracted sago from small cultivated stands of sago palm. Some people on the coast had access to larger tracts of uncultivated sago. Precisely regulated trading relations between the land based horticulturalists and the completely landless Titan fishermen played an important role in the supply of protein for the inland people although, in contrast to other observers (Mead 1930, Suhwa^rtz 1962), I believe that the Nali people were not necessarily dependent on this trade for protein. The gathering of wild yams, the edible pith of tree ferns and other uncultivated bush foods appears to have provided

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an emergency food supply for periods of environmental or social stress. The harvesting of seasonal fruits, in particular that of Pometia pinnata periodically provided a major input into the diet. Ceremonial exchange was an important mechanism for the internal redistribution of food production, both carbohydrate and protein.

This system was not and is not static and I am currently involved in a wider study of change based on oral and documentary evidence dating back to 1776 when Carteret, (Wallis. H. 1965), in between blasting canoes with grapeshot, made significant, albeit brief, observations of populations and food supply on the south coast of Manus. Some important factors leading to alterations in the total food supply system are:

- a) Population fluctuation
- b) Changes in the physical environment; both gradual and sudden, unexpected events.
- c) Changes inland tenure and comparative access to land.
- d) Changes in the knowledge base and technology of the society and the mechanisms for transmitting knowledge.
- e) Changes in the total world view of the society.
- f) The changing assessment of what is the acceptable minimum standard of material comfort as defined by both individuals and the society as a whole.

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- g) The changing assessment of what is an acceptable maximum labour input as defined by both individuals and society.
- h) Changes in social political and economic organization.

However for the remainder of this paper I am going to confine myself to the influence of population fluctuations and the introduction of a disease of taro, on the food supply as it relates to taro and sago.

The Nali taro technology is an extremely important part of the culture. Even in 1980 it has been possible for me to record details of some 80 different varieties each one distinguished by colour, leaf shape, leaf and petiole markings, corm size and appearance, taste, smell, growing characteristics and cooking characteristics. This is only a fraction of the number previously known and many are said to have been lost in recent years.

Taro, wealth, and leadership were closely interconnected and an industrious gardener would have three large gardens at various stages of development at any one time. The gardens were generally very large. In the late sixties I saw one garden that was more than half a hectare in size and reports indicate that some exceeded one hectare, consisting almost entirely of taro.

There are certain features of Manus taro gardening which are not common throughout Melanesia. The most obvious is that burning was not employed as a

tool for clearing the garden site.

The small saplings and herbaceous ground cover (thick, dark green Selaginella fern was used as an indicator) was slashed by women who also sliced the vines and fern growth away from the lower trunks of the trees which were then systematically felled by the men. Trimming of branches and reorganization of the debris ensured a continuous ground cover while enabling the women to use digging sticks to plant the taro setts in spaces between the tree trunks and branches. At no time was the soil directly exposed to rain or sun.

Taro cultivation, together with the other strategies referred to, sustained a comparatively high population. There is evidence to support the view that Manus underwent a period of severe depopulation during the latter part of the nineteenth century and the first half of this century.¹ This depopulation had an important influence on the relative importance of taro compared to sago.

Aerial photography taken during 1979 has revealed several areas of apparent terracing under what is now light tree over. I have ground checked one of these sites and it is most likely that this is evidence of intensive rather than extensive taro production.² To date I have failed to collect any oral data related to such techniques.

If there was in fact a need for such intensive taro production, it is reasonable to suggest that the

planting of sago may also have been on a more regular basis. I am at present collecting data on sago cultivation and utilization and my preliminary observation is that much of the sago exploited was established some three or four generations ago but in recent years there has been a renewed interest in sago planting.

It is possible that during the 1950's there was a surplus of sago available as a result of population depletion and the post-war social and political reorganization in the area. This reorganization involved a split in the already small population into two factions. One faction established a large composite village in close cooperation with their former Titan trading partners and enemies,³ while the other faction remained as scattered households and hamlets throughout the customary territory.

Those who opted for the "New Way" on the coast were exposed to new ideas and had to cope with an unusually high population density using land through non-customary access channels. Such a situation favoured the increased utilization of sago and the introduction of new cultivars and techniques. Sweet potato and new cassava varieties were introduced to M'Bunai in the early fifties but made little impact on peoples preference for taro.

Those who opted to stay on their customary land faced an underpopulation situation in which there

was a labour shortage for the cultivation of the very large scale gardens, a surplus of cultivated sago and an isolation from the radical ideas of the "New Way" and Urban Lorengau.

The underpopulation coupled with a possible increase in sago utilization led to a situation where previously controlled fallow areas (known as Iupiang) which were recognized as most suitable for taro, and dominated by useful plant species, were said to be changing to plant communities known as Keihui. Keihui is dominated by Callophyllum and tropical hardwood species, there is a lack of herbaceous ground cover and the soil is said to be very infertile. Areas where this change is said to be occurring have been left fallow for sixty or more years.

In the late sixties with the effects of the post-war population explosion beginning to be felt and with a return of many of the "New-way" people to their customary land, the food supply system underwent further adjustments.

Inland villages were reconsolidated and garden land close to these villages began to be utilized much more frequently.

Between 1965 and 1975 there was a growing revival of the customary exchanges and although sago was important in these exchanges, many people prepared large scale taro gardens. At the end of 1974 there was no doubt that taro was the staple food of the area. A

small amount of sweet potato was being produced by school and church groups exclusively for market sale.

By the time of the 1975 independence celebrations, despite the fact that several large gardens had been planted especially for the occasion there was no taro to be eaten anywhere in the Nali area. The disease that caused this demise of taro has been identified as taro blight i.e. the fungus Phytophthora colocasiae.⁴

The earliest recall of blight that I have so far recorded is for a garden in late 1974 close to the south coast. In early 1975 garden failure at Bulihan, Karon, Sohonihiu and Lundret villages had been reported to me. Although at that time I had no formal interest in the problem I examined five gardens and found 100% leaf infection with gardeners abandoning the gardens after finding that the corms were inedible.

Gardens around around Lorengau and the inland villages of Tingou and Kawa were blight free until mid-1976 and it is possibly no coincidence that a road connecting Lorengau, Lundret and Tingou was not completed until early 1976. A visit to Lou in June 1976 revealed no blight but was a serious problem by 1977. Most of the Province now appears to have a blight problem although I have not done an extensive Province wide survey. Exceptions appear to be Tong Is, Bipi Is and the Western Islands.

The possibility that blight may be endemic and simply undergoing epidemic outbreak due to unusually wet years has been considered and rejected. All my

informants are adamant that this disease is entirely new to Manus. There is no vocabulary for the disease which is always referred to in tok-pisin only - "sik blong taro". This is in direct contrast to other pests and diseases which are well known and have a vocabulary of terms, control measures and superstitions associated with them. Two of these diseases I take to be viruses and are said to have been in the area since "taim bipo". One of these diseases known as 'Toh' is of minor importance and effects some newly developing leaves only by causing them to roll up. The other known as 'M'Buleu' is said to be more important and effects the whole plant causing the leaves to crinkle and roll up and eventually causing the plant to die. The last major outbreak of M'Buleu was in 1946 but was by no means totally destructive and was controlled by well established local methods.⁵

Blight caught Manus completely unawares and there was no past experience which could guide people in control measures or give an indication of what to expect in future. Despite the fact that the natural spread of blight is by almost direct transmission of water borne spores from one plant to the next (Putter 1976) the explosive nature of the epidemic in Manus is understandable in the context of the social dimension of gardening.

Manus people are inveterate travellers and the mark of a journey is inevitably a bagful of plant cuttings. Once introduced the disease would have been

rapidly spread by the extensive trade in, and movement of, planting material between villages. Carrying taro to Bulihan was like carrying coal to Newcastle but nevertheless it happened regularly and in great volume. The heavy, constant rainfall of Manus accelerated the development of the blight.

Given that the major staple of the area was suddenly and unexpectedly removed from the scene, the question of how people have coped with the situation becomes extremely important.

The initial reaction of growers was to replant a new garden as quickly as possible following the initial blight. During 1975 while awaiting the results of this replanting people relied heavily on rice purchase. With no cash earning activities in this area (except for minor market sales of pineapples, bananas, aibika etc.) people were dependent on cash receipts from relatives working in Lorengau and other Provinces. Approaches were also made to the government for emergency relief, however by the time the government considered responding to these requests some 12 months later, the people had, fortunately, coped with the problem in a satisfactory way.

Following a boom in rice sales there was a marked expansion in sago production. Cultivated sago stands were heavily utilized and access to the swamp sago via distant relatives, was activated in much the same way as during drought conditions. By Christmas

1976, one store in Bulihan that has walked in considerable supplies of rice, found that it was unsaleable; partly because of limited cash but more importantly because other food sources were available.

It was during 1976 that I observed for the first and only time people eating bush collected wild yams and the prepared stem of tree ferns.

It was also during 1976 that there was a vigorous upswing in gardening based mainly on sweet potato. This gardening revival was centred mainly on Bulihan village and was not only stimulated by the blight induced food shortage but was part of a positive drive for change and development under the leadership of ex-school teacher David Drayeu who is now the local Provincial Government member. The basis of this new found lease of life was in the past experience of growing sweet potato for the S.D.A. church activities.

Large sweet potato gardens rivalling the old-time taro gardens were planted and because of their size and the communal nature of the labour employed, yields appeared to be satisfactory. However in absolute terms my own estimation is that sweet potato was produced at a rate of less than two tonne/hectare. The scars of this activity in terms of the retarded regrowth of woody fallow can be clearly seen on the aerial photographs of Bulihan village.

These gardens also had other disadvantages

apparent to the gardeners. The technology adopted, in contrast to the taro techniques of the past, involved the burning of the felled forest and the total removal of ground cover prior to attempts to dig mounds on the steep root obstructed slopes. The high rainfall of this area inevitably stripped the ash layer from the surface and slumping and gullying were common place. Even after the sweet potato runners provided an effective cover the problems continued especially when the soil was again disturbed during harvest.

Because of the high investment of labour in preparing the sweet potato gardens compared to taro, people were reluctant to abandon the site after one crop.⁶ Inevitably cassava was planted as a follow up crop to sweet potato.

Since 1977 the problems of sweet potato have been more widely recognized and there has been an increasing tendency to plant cassava as a first and often only crop. As a first crop cassava is now usually planted using the same non-burning techniques previously used for taro.

Some innovative gardeners have found that by planting cassava in an unburnt clearing the debris decays sufficiently fast, to enable cultivation for sweet potato as a second crop. The success of this innovation is not yet known.

Surprisingly, the adoption of Xanthosoma saquittifolium as an alternative to Colocasia esculenta

has proceeded slowly. People often express a preference for Singapore taro over sweet potato but the lack of sufficient planting material and the longer growing time have hindered this development. Similarly a shortage of planting material for cooking bananas has been apparent although the sweet varieties seem to be abundant.

And what about taro in 1980? Despite a lack of initiative shown by the Department of Primary Industry in regard to this problem there is still a strong cultural attachment to taro. Most gardeners deny that they have any taro left at all, but a visit to gardens inevitably reveals that nearly everyone has taken steps to persist with the planting of a small plot of planting material. The rationale is more to preserve the taro varieties rather than to harvest a crop. When the plot is totally affected by blight the taro is trimmed and replanted. Such a procedure may infact gradually lead to an increase in populations of those varieties capable of resisting blight but such selection will be a hit an miss affair which would be greatly enhanced by D.P.I. fieldworkers actively searching for such resistant varieties.

FOOTNOTES

1. The evidence for depopulation is drawn from oral traditions of major epidemics of dysentery, pneumonia/influenza, polio. Oral traditions describing previously large scale villages and their trading and warfare. German Annual Report - (Sack 1979) and reports of early foreign visitors: Labillardier 1800, Jacobs 1844, Mosely 1944, Parkinson 1907.
2. Pers. Com. Les Groube Archeologist U.P.N.G. Groube has suggested from his examination of the photographs that the patterns are akin to taro terraces in the New Hebrides.
3. Mead M. 1976. Schwartz T. 1962. Interviews with leaders involved in this movement.
4. D.P.I. pathologist Alister M'Greggor finally visited Manus on 6th July 1980 and confirmed my opinion that the disease was Phytophthora colocasiae. My laymans diagnosis was based on Putter, 1976.
5. The description of the diseases 'Toh' and 'M'Buleu' is very similar to that described by Gollifer etal 1974 for the Solomon Islands. In the Solomons the diseases are known as 'Alomae' and 'Bobone'. Unfortunately (or fortunately!!) I have not been able to see these diseases first hand despite having had my informants specifically look for them.
6. Lea in Ward 1972 p256 suggests that sweet potato is adopted because it is "less time consuming, higher yielding". I do not think this is the

Sack P. and Clark D. (eds and trans)

German New Guinea: The Annual Reports

A.N.U. Canberra 1979

Schwartz T. The Paliu Movement in the Admiralty
Islands 1976-1954

AM. Mus: Nat. Hist. New York 1962

Wallis H. (ed)

Carteret's Voyage Round the World 1766-1769

Camb. Uni. Press 1965.