

5.2.0. THE DISTRIBUTION OF CULTURAL VOCABULARY IN PAPUA

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5.2.1. INTRODUCTION

Linguistic work in Papua New Guinea has now reached the stage where it is possible to begin looking at some of the collected data to see what sorts of observations of interest can be made about the history of Man and his Culture in that part of the Pacific. Ideally such studies depend on large bodies of reliable data which are the end products of years of research into particular languages or groups of languages. In Papua New Guinea, however, we are a long way from this ideal with no more than perhaps a tenth of the languages well described. Nevertheless, we are fortunate in having a body of reasonably consistent data with which to begin. These data consist of numerous lists of basic vocabulary collected by linguists and others and used by them for language survey and classificatory work there.¹

These lists usually include a number of what are generally called 'cultural items', that is, items which refer to such socio-economically important items of material culture as the common foodstuffs, garden terms, animals, stimulants, weapons, ornaments, art forms, items of clothing, etc.² These items form a special subset within basic vocabulary lists because they are generally regarded as being 'probably borrowed' and therefore are to be treated especially carefully, if not excluded altogether, in using the basic vocabulary lists to calculate percentages of shared cognates between any two or more languages for purposes of suggesting the genetic relationships between them.³ Yet precisely because they are 'probably borrowed' these items are of particular interest as potentially important sources of historical information about contacts within and between languages and, eventually, about culture history.

Some of this kind of material has long been available as published lists in early government reports and has been used by Riesenfeld (1951) and others as support for their arguments about the history of introduction of tobacco into Papua New Guinea and surrounding areas.⁴ Over the past decade or so, however, many more lists have been added to this collection from areas previously unsurveyed, so in 1973 I began a systematic study of the form and distribution of the so-called 'cultural' items throughout languages of Papua New Guinea and elsewhere with a pilot study of a subset of them to see what sorts of conclusions could be drawn from the presently available data for languages of Papua. At that time I did not think it profitable in terms of time or effort to attempt to cover the whole of Papua New Guinea nor all the items for which material is available but chose instead to restrict the study arbitrarily to Papua, the area I am most familiar with and to a manageable subset of items which could reasonably be expected to provide interesting results. Those decisions meant of course that I had to acknowledge the possibility that some or all of the results may not be interpretable because complete patterns of distribution would not show up. It also meant that I would not be able to relate the results to other research going on in New Guinea (as distinct from Papua) which is directly concerned with culture history.⁵ However, I think it was justified as a pilot project, and, as it turned out, by the results that it did produce and the suggestions it has to offer for pursuing more detailed studies later.

In what follows I review the main details of that study now published as Dutton 1973, leaving it to the reader to look up the detailed lists of data and argumentation in that publication as interest determines. The linguistic background of that study reflects our knowledge of language distribution and classification extant in late 1973 - but the additions to that knowledge since that time do not significantly affect the nature of its findings.

5.2.2. BACKGROUND DETAILS OF THE 1973 STUDY

In my 1973 study, I concentrated on five foodstuffs - sweet potato, taro, yam, banana, sugarcane - and two associated agricultural terms - garden and fence. The first set represent the principal staples and/or supplementary food sources (depending on climate and excluding sago, terms for which have not been systematically elicited to date) throughout Papua.⁶ Of these sugarcane⁷ and bananas of the *Australimusa* group⁸ are thought to be indigenous to New Guinea, the others being introduced at various times - taro, yam and bananas prehistorically at a very early period from South-East Asia, and sweet potato very recently from Eastern

Indonesia where its appearance is thought to be associated with the arrival of the Portuguese in the sixteenth century.⁹ Each of these foodstuffs comes in numerous horticultural and folk varieties¹⁰ and, depending on area, most, if not all, are today cultivated in enclosed gardens protected from domestic and wild animals by some sort of barricade or 'fence' of fallen logs, upright stakes, and/or plaited pitpit (*saccharum robustum*). Historically, however, the practice of gardening cannot yet be tied to any specific foodstuff. All that is known at present is that a technologically quite advanced system of gardening (compared with simple migratory shifting agriculture) was being practised in swamplands in the central highlands of New Guinea as far back as 2,300 B.C., but it is not known whether this system was associated with the introduction of new crops.¹¹ Consequently in examining the linguistic evidence one could not assume that names for garden and fence were introduced in the same way as those of the principal foodstuffs sweet potato, taro, yam and banana, nor could one assume that introduced names would be retained or have the same referent through time¹² - these are questions which can only be judged from the linguistic evidence itself.

This evidence consists of vernacular equivalents obtained in as many languages throughout Papua as possible. Except for a few cases the recorded forms were those obtained as part of basic vocabulary lists during brief contact with indigenous informants. Consequently each form could only be taken to represent the currently most common term for each cultural item as no attempt had generally been made to elicit names for different botanical or horticultural varieties (except for 'yam' where forms for the two common varieties *dioscorea alata* and *dioscorea esculenta* were often elicited) or to record folk taxa, or to search for related forms in the languages being recorded. Thus there was considerable variation in both the quality and coverage of the materials employed so that results were affected to some extent by 'holes' in the pattern of distribution of many of the apparent cognates throughout Papua.

The area itself is inhabited by peoples speaking basically two distinct language types - Austronesian and non-Austronesian (or Papuan) - hereafter symbolised as AN and NAN respectively. The AN-speaking peoples are now to be found scattered around the coast east of Cape Possession and on the islands of the Milne Bay Province, excluding Rossel Island in the far east, which is occupied by speakers of the NAN language, Yele. The Austronesian languages number about 50, including lingue franche.¹³

Non-Austronesian speakers occupy the remainder (including Rossel Island just noted) of Papua which ranges from low-lying swampy deltas

around the Gulf of Papua through savannah grasslands and foothills up to the very mountainous central cordillera of the island. These people speak 160 languages, most of which are interrelated at various levels.

Once the data were assembled for each item the vernacular equivalents were scanned and grouped into sets of apparent cognates according to a set of principles designed to over-differentiate rather than under-differentiate between members since it was thought better to err on the side of excluding probable cognates rather than including improbable ones.

The application of these principles provided sets of forms which were all very similar but which must necessarily serve as a starting point for this kind of investigation until such time as more is known about sound laws in related languages of Papua.¹⁴ Any vernacular forms which did not seem to belong to any of the established probable cognate sets were listed together at the end of each item as 'isolates'.

Having thus established apparent cognate sets and isolates for each item the sets were compared with reconstructions that have been established or proposed for some of the items for different parts of the Pacific by Capell (1943), Chowning (1963), Dempwolff (1934-38), Dyen and McFarland (1970), and Grace (1969).¹⁵

5.2.3. RESULTS OF THE 1973 STUDY

The results of the various comparisons mentioned above showed that there was a large number of words most commonly used throughout Papua to designate the foodstuffs and associated agricultural items under investigation which could be grouped into a limited number of apparent cognate sets of varying sizes. Some of these sets were found to contain cognates distributed over a wide geographical area, others were not. Those which did were referred to as MAJOR SETS and those that did not as MINOR SETS.

Nothing much could be said about minor sets and isolates. Being limited to closely related or neighbouring languages (in the case of minor sets) or to single languages (in the case of isolates) it was impossible to tell whether they represented local innovations or isolated cases of more widely distributed forms which for one reason or another were not included in the data used for this study. Some were obviously borrowings since they occurred across major linguistic boundaries (e.g. the Austronesian-non-Austronesian boundary) but these cases were of little interest compared with those of much wider distribution that occur in major sets. Consequently nothing further was said of them except as individual cases were relevant to the discussion of

major sets from time to time. The rest of the paper was therefore concerned primarily with major sets.

In considering those I attempted to determine, in the first instance, which sets represented borrowings and which retentions, and then, as the next step, to see what could be said about the history of each item. In doing that I was concerned initially solely with the linguistic facts as distinct from the physical items they represent. That is, I first sought to establish whether the cognate sets represented borrowings or retentions before attempting to relate these findings to the present-day distribution of their referents. This was necessary because even though we know from other evidence that sweet potato, taro, yam and banana are introduced foodstuffs in Papua we cannot argue from that that the present-day words must also be borrowings, since many factors (e.g. word taboo, contact with others) may have intervened to change them. However, once we have established whether the forms represent borrowings or not we can then proceed to relate their histories to those of the present-day foodstuffs.

In attempting to achieve those aims I found it convenient to distinguish between formal, distributional and semantic aspects of the sets, that is, between the phonetic and morphological structure of the given vernacular forms, their geographic range and associated meanings. Of necessity each of these was treated separately, and in that order, although all three are subtly interconnected (in that, for example, cognates vary formally and semantically over distance). However, some attempt to interrelate them was made in the final section of the paper where some historical reconstruction was attempted.

5.2.3.1. FORMAL ASPECTS OF MAJOR SETS

Formally major sets were considered from two points of view, phonetic and morphological. Phonetically it was found that because of the large number of languages involved compared with the small number of major sets with cognates scattered throughout the many languages it was not possible to establish sufficient sets of regular sound correspondences between languages to gain any reliable insight into historical processes. On the other hand, however, it was also found that within individual cognate sets the differences between cognates was usually not great, even though cognates may have been very widely separated geographically. Take, for example, the following sets of forms for 'taro' (Dutton 1973: 443):

Southern Highlands	Central Papua	Southern Papua	Northern Papua
mai	mafi	haʔu	ma
maa	wadu		ba
ma	vadu		baxa
	madu		
	εlo maðu		
	maku		

and 'yam' (Dutton 1973:452)

Western Papua	Gulf of Papua	Central Papua	Southern Papua	Western Papua
buřk ^h u	<u>bapore</u>	<u>boluʔ</u> Λ	<u>bolai</u>	<u>amboro</u>
borometa	<u>mapore</u>	<u>boluk</u> Λ	<u>bolaʔ</u> l	<u>kamboro</u>
bolu	<u>maperi</u>	<u>boluka</u>		
		<u>hopoi</u>		

which are typical of the range of variation found.

Now if this means anything more than that the cognate sets are reflections of the method (for example, in that forms were not regarded as apparent cognates unless they were obviously very similar) it probably means that the forms represent loans rather than retentions, otherwise the different phonological histories of the many languages in Papua would surely have provided a much wider set of variations. However, even if one could accept this it would be something of a double-edged sword for the high degree of regularity in form does not enable one to say anything about whence the forms came or by what route.

In summary then, the phonetic features of the forms do not provide any conclusive evidence as to the status of the forms or their histories, although the general absence of progressive phonological differences between forms within sets over distance suggests borrowings, if it is not a reflection of the adopted method of choice of apparent cognates.

Morphologically it soon becomes apparent that many of the given vernacular forms are actually bimorphemic and at least one tri-morphemic (e.g. *ne ufurana garden* which is a combination of *ne*, *u-* and *-fura(na)* with cognates in many other sets). The following chart gives a listing of examples representative of the different cases found:

Form	Meaning	Form	Meaning
ba-buro	<i>garden</i>	ki-bani	<i>taro</i>
dzu-wore	<i>garden</i>	sa-gani	<i>taro</i>
ko-fura	<i>garden</i>	elo-siveli	<i>taro</i>
e-gelo	<i>garden</i>	elo-mađu	<i>taro</i>
so-papo	<i>garden</i>	ko-pare	<i>taro</i>
go-gola	<i>fence</i>	tau-?era	<i>yam</i>
xa-mbaro	<i>fence</i>	koroma-kuta	<i>yam</i>
va-bele	<i>fence</i>	sin-kau	<i>yam</i>
ku-rĭta	<i>fence</i>		
a-kira	<i>sweet potato</i>		
kaire-kuta	<i>sweet potato</i>		
au-kava	<i>sweet potato</i>		
kaua-mose	<i>sweet potato</i>		
ini-veyu	<i>sweet potato</i>		
gob-e?u	<i>sweet potato</i>		

In this chart hyphens indicate both probable and certain morpheme boundaries even though in some cases (e.g. *kaire-kuta* *sweet potato*) the forms were recorded as free forms elsewhere.

The interesting thing about these is that only a limited number of morphemes seems to participate in this kind of compounding (the most common ones being variants of *ko*, *kero*, *buru*, *hina*, and *kuta*) and that, furthermore, none of these compounds involved either '*banana*' or '*sugarcane*'. In other words whereas the principal staples are often described in terms of each other '*banana*' and '*sugarcane*' never are, though as we shall see later '*banana*' does participate in semantic changes with other foodstuffs in certain areas, and names for sugarcane seem to have been loaned around even though the item itself is indigenous. The reasons for this dissimilarity across items must surely lie in the obvious differences between the physical, culinary, agricultural and other properties of the different crops. Thus *banana* and *sugarcane* do not resemble *sweet potato*, *taro* or *yam* in shape, taste, texture, etc., are not principal staples, and do not need to be protected or tended in the same way that these principal staples do. However, this does not mean that all meanings of present-day forms for *sweet potato*, *taro*, *yam*, *garden* and *fence* are transparent, for they are not. For example, while *baburo* *garden* can be seen to be a compound derived from the words *ba taro* and *buru garden* respectively in areas where it occurs it is difficult (from a semantic point of view) to see how something like *kaua mose* *sweet*

potato derives from a combination of *kaua*, which when unqualified, refers to 'yam' and *mose sweet potato*. Loaning and semantic shift are obviously involved although at this point it is difficult to see any pattern in the distribution of these but we shall return to this question again later.

5.2.3.2. DISTRIBUTIONAL ASPECTS OF MAJOR SETS

The central feature of this aspect of major sets was found to be that most cognates cluster in one of two broad areas: (i) Western; and (ii) Central and South-East Papua. The former includes all languages approximately west of the Kikori River in the Gulf of Papua, and the latter, languages approximately east of Port Moresby excluding Yele of Rossel Island but including the AN languages of area I just west of Port Moresby. Separating these areas and including Yele just mentioned are other areas in which cognates are only rarely found. These areas include languages around the Gulf of Papua and inland of it, which are genetically very isolated or only remotely related to other NAN languages of Papua.^{††}

Within these two broad areas of concentration the distribution of cognates per set falls into a number of recurrent patterns with coastal and inland components, the first four of which are in Western Papua and the remainder in Central and South-East Papua. These are:

- 1) A weak Torres Straits component extending south from the Papuan coast across the Torres Straits;
- 2) A strong Kiwai coast component connecting coastal areas between Irian Jaya and the heel of the Gulf of Papua;
- 3) A weak Fly River component linking the Upper Fly, the Strickland, and Lake Murray areas with the south-west coast;
- 4) A very strong Turama-Kikori Rivers component linking the inland areas around Mt Bosavi and the Southern Highlands with the Kiwai coastal component;
- 5) A very weak Hiri component connecting the Gulf of Papua with the central coast around Port Moresby;
- 6) A strong central and south coast component connecting the central and south coast with the Hiri component and the islands of the mainland;
- 7) Various Trans-Owen Stanley components linking the Hiri and central and south coast components with the north coast.

^{††}Recent research has shown this assumption to be incorrect - see below.

Now if these components are compared with those of traditional trading routes as outlined by McCarthy (1939) it will be found that the two correspond in all except one major respect, viz. that no Purari River component appears in the linguistic data corresponding to the trade route of the same name connecting the inland areas of the Gulf of Papua with the coast. Disregarding this exception for the time being, the reason for such a high correspondence in distributional patterns is either that the distribution of cognates has resulted from contact between languages along traditional trading routes, or that the distributions represent patterns of common retentions, which, for other reasons, just happen to be distributed in a way that coincides with trade routes. What evidence is there for choosing between these two?

Firstly there is the general fact that wherever cognates are found in neighbouring areas across genetically diverse languages borrowing is more probable than retention. However, even though this applies well to many of the patterns just listed it does not apply to all, for example, the Kolarian (KOI), Yareban (YAR), and Dagan (DAG) language families of South-East Papua which span the 'tail' of Papua. Hence the principle provides only weak support for borrowing versus retention in this case. However, further support is to be found in the distribution of PAN reflexes in Papua. If these are examined as a separate subset they will be found to be distributed in precisely the same way as cognates of other sets, and since we know that wherever PAN reflexes occur in NAN languages they must have been borrowed at some time from some AN source it can be safely claimed that the cultural events we are dealing with are borrowings (and therefore 'cultural' in the sense defined in the beginning of this paper) and not retentions. In recognition of this then, and for convenience, I shall henceforth refer to the areas of concentration of cognates and their internal patterned components described above as diffusion areas and diffusion routes respectively.

Before leaving this section, however, there are two further points which need to be considered.

The first has to do with the connection between the two diffusion areas, and the second with the Purari trade route mentioned earlier.

With respect to the first it is to be noted that many cognate sets have members appearing in both diffusion areas, the highest correspondence being between the Trans-Fly Stock languages (especially the Kiwai Family) and languages in central Papua (notably Binanderean languages and AN languages of area II - see Map 1). This connection is surprising in view of the fact that many of the cognate sets concerned

are PAN ones and that the two areas are separated by a large non-diffusion area around the Gulf of Papua. The reasons for this correspondence are probably complex but amongst them were thought to be the following:

(a) One is that the cognates were borrowed from Hiri (or Police) Motu, the common lingua franca of mainland Papua. If so this must have been very recent since this lingua franca has only spread to western Papua since 'Pax Australiana'. Moreover, it cannot be true for all items since there are cases like *kamara sweet potato*, *anega taro* and *wara fence* in western Papua which are not, and as far as is known have not been, part of Hiri Motu vocabulary.¹⁶

(b) Another explanation might be that these items were distributed via trading links around the Gulf of Papua but have now been lost from those languages.¹⁷ But why should this be so? Could it be that the selected items under consideration were not culturally important to the Gulf people who may merely have acted as intermediaries in distributing these items but who never retained any of the names for the items themselves? Unlikely, but perhaps if one considered pottery and say, sago, the principal items of trade in this area, the picture may be different.

(c) A third but very weak hypothesis is that the words came from different but related sources into both areas - those in the west from Indonesia via Irian Jaya and those in the east via AN languages.

(d) Perhaps there was closer direct contact between western Papuans and the AN's of the central coast by way of trading voyages across the Gulf of Papua, for example, which have never been recorded or are now lost to memory.

(e) Finally, could some of the AN's of Central and South-East Papua have come from Indonesia, as Capell (1943) has suggested, into Papua via the Torres Straits touching Western Papua before finally establishing themselves in approximately their present position. There is a lot that such a suggestion might explain¹⁸ although it does not explain the recent items like *kumara sweet potato*. However, without further evidence from Eastern Indonesia (particularly between the Moluccas and Timor), for example, it cannot be profitably pursued here. Perhaps some or all of these explanations are involved.

Neither could much be said about the other cognate sets which have members in the east and west diffusion areas. Some of the same explanations possibly apply, others (like number 1 in Appendix 2 for example) obviously do not. We shall return to the question of direction of diffusion in the next section where semantic aspects of major sets are considered.

Meanwhile there is still the second point noted earlier to be considered, viz. the non-diffusion areas and the absence of a Purari River component in the linguistic evidence in particular. Part of the reason for this situation undoubtedly has to do with the fact, also noted earlier, that the languages in this area are linguistic isolates of one sort or another^{††} and that the area is sparsely populated by semi-nomadic groups. Part may also be, for example, that the languages in this area show connections in other directions, which, because this study was limited to Papua, cannot be seen in the present data but which may appear if data from New Guinea (as distinct from Papua) were included. However, if this is not the case, and if the non-appearance of cognates is indeed not because of the failure to recognise them, then the correspondence between this non-appearance and the comparatively high degree of genetic isolation of these languages becomes more significant. Could it be that these languages represent relatively recent arrivals (probably from the Central Highlands to the north) into areas until then relatively unpopulated? But even so it is strange that there is virtually no evidence of a Purari River trading route component in the present data. Perhaps this is to be explained by the nature of the data used in this survey or by the nature of the terrain, which is notoriously different, although it is hard to see why this should interfere with the borrowing of linguistic items when it does not seem to have affected trading in non-linguistic ones.

In review then, it was felt that it could safely be said that the results of the investigation thus far indicated that there are two diffusion areas of foodstuffs in Papua - one in Western Papua and the other in Central and South-East Papua - within which the diffusion of items has been along major traditional trading routes, although it was impossible to say anything yet about the direction of movement along these.

5.2.3.3. SEMANTIC ASPECTS OF MAJOR SETS

One of the other most noticeable things about many major (and some minor) cognate sets is that they cross item boundaries, that is, related forms appear in different languages as labels for different items. Sometimes these related forms merely refer to different species of the same genera, e.g. *maho* (< **mao taro* (MN-Chowning 1963)) in difficult parts of the Rigo area just east of Port Moresby may refer to either of two species of yam *dioscorea esculenta* or *dioscorea elata*,¹⁹ but

^{††} Recent research (see (I)2.7.5.-8. and (I)2.15.3.1.) has however shown that most of the languages of this area are, though remotely, related to other NAN languages, with one of them (Porome) still remaining an isolate.

generally they extend well beyond that. A sample listing of these sets is given in Appendix 2 to this paper.

Much of the information from which this sample is drawn can be summarised as a table of features of the following form which will serve to begin more detailed discussion of the characteristics of the semantic changes undergone by reflexes of established or proposed proto-forms throughout Papua. In this chart, as in Appendix 2, starred capitalised forms are used to represent tentative reconstructed proto-forms for those sets for which there are no previous established or proposed reconstructions.

SEMANTIC FEATURES OF COGNATE SETS THAT CROSS ITEM BOUNDARIES

Group Number	Proto-Form	Cognate Meanings							Notes
		<i>garden</i>	<i>fence</i>	<i>sweet potato</i>	<i>taro</i>	<i>yam</i>	<i>banana</i>	<i>sugarcane</i>	
1.	*kumara	x		x		x			Reflex of PN <i>sweet potato</i>
2.	*kale			x	x	x			Reflex of MN <i>taro</i>
3.	*mao			x		x			Reflex of MN <i>taro</i>
4.	*kubi	x		x	x	x	x		Reflex of PAN <i>yam</i>
5.	*kani				x	x	x		Reflex of POC <i>food, to eat</i>
6.	*(T)ISIABURU	x	x	x	x	x			
7.	*KERO	x		x	x	x			
8.	*(M)BERE	x	x		x	x			
9.	*KAU	x		x	x	x			
10.	*KUTA		(x?)	x		x			
11.	*KARA	x	x						
12.	*(KI)BANI				x	x			
13.	*HINA			x		x			
14.	*ADARI			x	x				
15.	*WAIA			x		x			
16.	*KOKIA			x	x				
17.	*HAGO				x	x	x		
18.	*BA	x			x				
TOTAL:		10	5/6?	12	12	14	3	0	

To begin with it is clear from this chart that the items garden, fence, sweet potato, taro, and yam regularly occur together or in groups in a way that banana and sugarcane do not. In fact sugarcane stands out from all the rest in being totally independent - reflexes of proto-forms for it never appear as anything other than 'sugarcane'. Thus the generalisation to be made here seems to be that whereas the principal staples and associated agricultural terms fluctuate in an integrated way the words for the supplementary foodstuffs do not (in the case of sugarcane) or do so only marginally (in the case of banana).²⁰ The question then arises, what are the determinants, if any, of this fluctuation, and what can it tell us about the diffusion of these items across Papua? In seeking to answer these questions, of course, one needs to look at the semantic changes to see what kinds of hypotheses allow for the explanation of the changes, e.g.: Is there a consistent sequence of change from item to item and/or from language to language? How do these relate to the distribution of present-day staples? In the fuller version of this paper these items were treated in the following natural groupings: associated agricultural items (garden and fence); principal staples (taro, yam, sweet potato), and supplementary foodstuffs (banana, sugarcane).

5.2.3.3.1. Associated Agricultural Items: Garden and Fence

When these items were studied in groups in which they occur together or with other items it was found that there was little evidence regarding changes in meaning involving these two items. Although there is obviously a close association between gardens and fences and the crops they contain or protect there was no clear evidence to indicate whether semantic changes have occurred in the forms discussed, and if so, whether these have been from garden to fence, or vice versa, or from principal crop to each independently. In only two cases was it possible to suggest some sort of historical development. One of those was *KARA which is evidently a proto-form for 'fence', reflexes of which now refer to 'garden' in certain dialects of three AN languages in Central and South-East Papua. The other was BURU which represents a development from *(T)ISIABURU *sweet potato* discussed further below which split into two parts representable as (T)ISIA or BURU which were reapplied to 'taro' and 'yam' and eventually to 'garden' in some areas where there is no linguistic connection between this form and present-day (given) forms for 'taro' and 'yam'.

5.2.3.3.2. Principal Staples: Taro, Yam, Sweet Potato

When these were considered in the same way it was found that they grouped together in the following way:

Case	Items
A	taro, yam
B	taro, sweet potato
C	yam, sweet potato
D	taro, yam, sweet potato

Case A was considered separately from the others because it did not contain any forms for sweet potato which for historical reasons has an important bearing on the interpretation of the data in the other cases. However, there was nothing in the data of case A to indicate the historical precedence of taro over yam or vice versa, or to indicate why forms have changed meaning in different areas.

Cases B, C, and D were treated together but in two subdivisions - those forms which reflect Proto-AN ones and those which do not.

In the former subset it was found that out of the Proto-AN forms that are reflected in Papua two have undergone semantic changes which are unsystematic, i.e. are unrelated to the present-day distribution of principal food sources while two are systematic but opposing in terms of the direction of change, suggesting that different time periods are probably involved. At the same time it seems that, if the name of an item can be said to be introduced with the item, many items have probably been introduced to NAN languages in Papua via AN languages of South-East Papua.

In the remaining subset of items containing '*sweet potato*' it was found that there was a variety of evidence which was in general agreement despite variations in the quality of the data. For example, in the *(T)ISIABURU example given in Appendix 2 to this paper there is a complex of forms which appear to be related by virtue of the fact that the smaller forms (which for argument's sake will be represented as (T)ISIA and BURU) can be identified as parts of a larger form tentatively reconstructed as *(T)ISIABURU. Distributionally and semantically these forms have the following characteristics:

(1) reflexes of the full form *(T)ISIABURU occur as words for '*sweet potato*' in NAN languages of the 'Bird's Head' area of Irian Jaya and the southern highlands of North-West Papua, and as the word for '*garden*' in a Binanderean language of North-East Papua;

(ii) reflexes of the part (T)ISIA occur as '*taro*' in South-East Papua (BIN, DOG, KOI, II) (for the location of languages and groups denoted by these abbreviations see Map 1, and Appendix 1 for an explanation of the abbreviations themselves), and in North-West Papua in one isolated instance (ESF);

(iii) reflexes of the part BURU occur (a) as '*garden*' in Central and South-East Papua with sporadic occurrences also in Western Papua (KIW) and in the Gulf of Papua (ELE, TAT); (b) as '*fence*' in a restricted area of North-East Papua (BIN, VIII); (c) as '*yam*' in Central and South-East Papua but with some sporadic occurrences in Western Papua (ETF, TEB) and the Gulf (ELE, TAT); (d) as '*taro*' in two isolated cases in South-East Papua (II, V).

Such a distribution of forms and meanings may be explained by any one of a number of hypotheses. However, that which most easily and naturally explains this distribution in terms of the historical record as far as this is known is that which sees the smaller forms as different remnants of the larger one in different areas. That is, it claims that a form something like *(T)ISIABURU denoting one variety of sweet potato entered North-West Papua from Irian Jaya (and ultimately Indonesia, where it will be recalled (see 5.2.1. above) that the sweet potato is thought to have been introduced by the Portuguese in the sixteenth century), and spread into South-West Papua via the mountainous backbone where it split into (T)ISIA and BURU as names for '*taro*' and '*yam*' in areas where sweet potato has not become the principal staple. Furthermore, the split into (T)ISIA and BURU must have been subsequent to the spread of the full form since the full form occurs in one area of South-East Papua as the word for '*garden*'. If the change '*sweet potato*' → '*garden*' represents a subsequent development as was suggested by some evidence then reflexes of *(T)ISIABURU must have spread to at least the north coast of South-East Papua as '*sweet potato*' before being reapplied as the word '*garden*', and before splitting into the two elements (T)ISIA and BURU. Moreover, the passage of *(T)ISIABURU into Papua via Irian Jaya must have been south or north of the Central Highlands of New Guinea as no reflexes of this form have been recorded in that area despite the fact that sweet potato is the principal staple there.²¹ If south, then one has to ask how the forms got into South-East Papua across the non-culture area around the Gulf of Papua without trace. If north, then one can expect to find traces of it in languages of the Morobe Province along the Papuan border to the north when more data is taken into account.

Irrespective of these problems, however, a hypothesis of the form '*sweet potato*' → '*taro, yam*' (as one moves from north-west to south-east)

was generally found to satisfy the remaining examples in the subset, although there are exceptions which should be considered if the data were more complete. However, attempts to correlate each change with individual languages fails because no pattern emerges, that is, the same changes do not occur in the same place.

In summary then there appeared to be a variety of evidence in this subsection which suggested that the sweet potato spread into Papua, mainly but not exclusively, from the north-west via Irian Jaya, some having entered from AN areas probably from the east. Moreover, this spread must have been rapid and the impact great judging by the completeness of the spread in the several hundred years since the sweet potato is thought to have been introduced into Indonesia, as well as by the number of semantic changes that have occurred involving this item and others, including '*garden*' and '*fence*'. Not only that but the spread must have been accompanied by multiple independent developments since attempts to correlate changes with individual languages of language families or areas failed although there are individual cases of correlations between various semantic readings of forms and present-day distributions of principal staples, particularly yam and sweet potato. Yet the data raise many problems and leave many questions unanswered that should be investigated when more data become available.

5.2.3.3.3. Supplementary Foodstuffs: Banana and Sugarcane

As already noted these two items participate only marginally (in the case of banana) or not at all (in the case of sugarcane) in semantic changes across item boundaries. That is, the names of the supplementary foodstuffs tend to be stable except where they approach principal staple status. When this happens the name will be found to fluctuate with those of the principal staples with which they come into competition.²² For example, in the present data '*banana*' was found to alternate with '*yam*' and '*taro*' in each group of cognates in which it occurs with them (viz. PAN *kubi *yam*, PAN *kani *food, to eat*, and *HAGO) and in those areas of Papua where the banana is an important food-source, notably in Central and South-East Papua, south of the main range. It does not fluctuate with '*sweet potato*' because sweet potato has not yet become an important food-source in much of this area.

Sugarcane, on the other hand, nowhere approaches principal staple status and has no real competitor so that its name is never found alternating with that of principal staples (or any other foodstuff for that matter). It nevertheless shows the same diffusion pattern as the principal staples and is therefore cultural in the same sense. Thus

it appears to be the case that sugarcane has been traded about in much the same way as other items despite the fact that it is believed to be indigenous.

In summary then the evidence in this subsection seems to indicate that there is a general principle underlying the semantic changes that have been discussed throughout this section which may be briefly stated as follows: wherever a foodstuff comes into competition with another either as a principal or supplementary food-source its name will be found to fluctuate with the name for the competing item or items. Banana and sugarcane are good examples of this. Thus the names for both are generally stable - that is, they always refer to these items wherever they are found - except where banana comes into competition with taro and yam as principal food-sources in parts of Central and South-East Papua. Of course such a principle merely summarises the agreements noted between distributions of food-sources and the names used to identify them. It does not explain how, when, or where these changes occurred, though we do have a general idea of the sequences of events that have been involved in these changes. These may be briefly set out as follows:

(i) taro and yam, and in some areas, banana, were basic foodstuffs throughout Papua until the arrival of sweet potato; sugarcane never has been;

(ii) gardening has long been associated with the cultivation of yam and taro;

(iii) the sweet potato is a recent arrival from the north-west and has become the principal staple in many areas, but even in those areas where it has not it has provided many new names for gardens and fences;

(iv) all items have been traded throughout Papua (except for the area around and inland of the Gulf of Papua) in much the same way, though this diffusion has been anything but unidirectional.

5.2.4. CONCLUSION

In this paper I have reviewed the results obtained by taking a set of vocabulary normally regarded as borrowed and have examined it systematically to see whether the suspicions held about it are justified, and then to see what other conclusions can be drawn from the collected data. In the process I have come to the conclusion that all except those individual forms or small sets of related ones which are restricted to single languages, or to members of language families or neighbouring languages (herein labelled isolates and minor cognate sets respectively), are borrowed and are therefore justifiably regarded as 'cultural' in the sense defined.

In general related names for these items were found to be concentrated in two main areas - Western, and Central and South-East Papua - separated by a large non-diffusion, or culturally isolated area around and inland of the Gulf of Papua. Within these areas the names were found to be distributed in a way that is consistent with most of the known regular traditional intertribal trading routes although there is little clear evidence of the direction of movement along or between these, except for isolated cases that are referred to further below. Indeed the evidence seems to point to borrowing and loaning being multi-directional and not restricted to any one route or period of time. The distribution also raised the question of why the languages around the Gulf of Papua and inland of it do not show more evidence of contact with either east or west since there is a noticeable connection between the two diffusion areas involving, particularly, coastal languages from around the south-east corner of Western Papua and many languages of Central Papua across this very same Gulf, and especially since we also know that at least some of the coastal languages from around the Gulf of Papua have been in regular contact with traders like the Motu from Central Papua for a long time. Various possible explanations for this situation were discussed but there seemed to be no support for any one hypothesis over another so that the question remains open for further investigation.

As far as the history of individual items themselves was concerned the data turned out to be very difficult to interpret, principally because much of it was too sketchy to gain any insight into the sound changes that have occurred between different areas, and, in consequence, into the historical connections between similar forms in different places. In other respects, however, the data revealed glimpses of regular processes at work which have produced many inter-connecting series of cognates. Thus, for example, it was noted that the names for the principal staples sweet potato, taro, and yam were very unstable (in the sense that the same form will be found to refer to different items in different areas) but that this instability (wherever it could be interpreted) seemed to be related to the recent introduction of sweet potato and the present-day distribution of these staples. Thus it seems to be the case that wherever sweet potato has become an important foodstuff it has generally resulted in the spread of new names for yam especially, but also taro, elsewhere, where these are still important foodstuffs, as noted in the *(T)ISIABURU example discussed at some length. Much the same was also noted for banana in Central and South-East Papua though in a much more limited way. Sugarcane, on the other hand, is very stable though still loaned and borrowed and is never associated with gardens and fences as the principal staples are, probably because it

was indigenous and did not require protection and special tending as the principal staples do. Thus the evidence seems to indicate that wherever a foodstuff has come into competition with another either as a principal or supplementary food-source its name will be found to fluctuate with the name for the competing item or items.

At the same time, the evidence seems to indicate that yam and taro on the one hand, and sugarcane on the other, have been important basic, though complementary foodstuffs in Papua for a long time (at least out of the items considered here). Gardening and fencing have also obviously been long associated with the cultivation of yam and taro (and later sweet potato) since the names for these foodstuffs have gradually become the names for their associated protective and fostering items. However, there is, as yet, no indication of which of yam or taro is primary in time, or indeed, if either is, nor whence they came, except that some were probably introduced from AN areas probably in the east.

More recently the sweet potato has entered the scene and replaced the staples yam and taro in many areas as principal staple with linguistic consequences already outlined. This entry seems to have been mainly, but not exclusively, from the north-east via Irian Jaya and the regular trading routes, although it is still not clear why few traces of this entry are found in vocabularies of languages of the Central Highlands of New Guinea where the sweet potato is the principal staple, or in languages of the non-diffusion area around the Gulf of Papua. Some also entered from AN areas probably in the east though this does not appear to be very important and the varieties represented by the cognate sets in this data do not appear to have established themselves very strongly, especially in Central Papua, where the banana is an important staple. However, irrespective of the uncertainties surrounding the details of the direction of spread, the spread itself must have been rapid and the impact great judging by the completeness of the spread in the several hundred years since the sweet potato is thought to have been introduced into Indonesia, as well as by the number of semantic changes that have occurred involving this item and others, including 'garden' and 'fence'.

Finally gardening and fencing were found to be closely associated with the cultivation of the principal foodstuffs sweet potato, taro and yam and the names of these are often given as the names for their associated protective and fostering items. In one case in particular, this association has resulted in a semantic change such that words for garden will be found in many areas to be reflexes of *(T)ISIABURU *sweet potato* where there are no reflexes of this form used as present-day names for either yam, taro or sweet potato.

In conclusion then it is clear that while this survey has provided some insight into the history of some present-day names for the items studied here throughout Papua, it is also equally clear that much more could probably be said given information of the right kind. However, these results are not likely to be achieved lightly. Thus it is apparent from this study that efforts should be concentrated on detailed separate accounts of individual items or sets of related ones (in terms of function, use, appearance to members of user societies, etc.) over a wide area, including especially Eastern Indonesia which is a well-known important centre of distribution for most indigenous economically important plants and foodstuffs in Papua New Guinea today. In such studies, however, one should be prepared to collect not only vernacular forms for as many varieties of the item under investigation as possible, but also those for those items which could possibly be, or have been demonstrated in this study to be, regarded as related. For the starch staples this is likely to run into many hundreds of forms, but for others, like pig, for example, the range is likely to be very much smaller (e.g., village/tame/exchange versus wild/bush). Ideally too such studies should incorporate the more durable items of trade (e.g. pots, shells, axes, betel nut, sago, etc.) and/or other items which are known to have been recently introduced (e.g. cassava, pawpaw, corn, fowl, tobacco, etc.) and must inevitably involve other disciplines, but only in this detailed and co-ordinated way will it be possible to gain real insights into the culture history of Papua New Guinea today.

N O T E S

1. In this paper I shall assume that readers are familiar with the nature and use of basic vocabulary lists. For those who are not may I refer them to references and discussion in other chapters of this volume and especially to Laycock (1970) who gives a comparison of those frequently used for survey work in Papua New Guinea.
2. Normally the decision to regard this or that item as 'cultural' in this sense is based on linguistic and/or other criteria. For example, as will be indicated below, if it is known that certain foodstuffs are non-native to an area (as is the case of many of those discussed in this article) then it is highly likely that the names of those items will be transmitted along with the items themselves. However, this does not mean that the name always remains the same for other factors may intervene (e.g. word taboo) to change it thereby making the task of historical reconstruction more difficult.
3. See again Laycock (1970) for a discussion of the problems associated with eliciting this kind of vocabulary and for comments on the reliability of individual items.
4. Reference should also be made here to Chowning's 1963 article on Proto-Melanesian plant names, though it deals only marginally with Papua New Guinea. It does, however, contain some very useful comparative material and insightful observations which are referred to again later on.
5. For example the debate about the nature of pre-European agriculture and the introduction of the sweet potato into the Central Highlands of New Guinea; see for example Brookfield (1964), Brookfield and White (1968), Golson (1972), Golson and others (1967), Sorenson (1972), and Watson (1964a and elsewhere).

6. See Lea (1970), and Lea and Ward (1970).
7. See Warner (1962), and Womersley (1972a).
8. See Powell (1970), and Brand (1971).
9. See Barrau (1958, 1963, 1965), Brand (1971), Brookfield (1964), Brookfield and White (1968), Bulmer (1964), Golson (1972), Powell (1970), Sorenson (1972), Yen (1971), Watson (1964a, 1965, 1967), and Womersley (1972a).
10. See, for example, Williams (1928:116, fn.1), Sorenson (1972:358), Strathern (1969:193), and Brookfield (1964:21).
11. See Golson (1972), Golson and others (1967), and Powell (1970).
12. In fact we know from other studies that name-switching between different varieties across languages and even between different genres within the same language is to be expected. See for example, Merrill (1946:221-7) and Chowning's (1963) study of Proto-Melanesian plant names in which (p.43, fn.3) it was pointed out that
taro is called completely separate names in garden spells and everyday usage ... (and) that a Proto-Melanesian word for planted taro tops, *ufe is reflected in a number of Melanesian languages in which the words for taro itself are quite unrelated.
13. The exact number of Austronesian languages is not yet known because of the existence of numerous dialect chains which have not yet been fully described.
14. The only sound laws that have been established so far are those for the Ok Family by Healey (1964). However, Voorhoeve (1970) gives some notes on those in the Suki-Gogodala Stock as does Lloyd (1973) for Angan.
15. The actual status of these forms, i.e. established versus proposed or suggested, is not crucial to this study; they merely provide useful summaries of data found in the Pacific against which the items in this study can be compared.

16. Unfortunately there are no early records of the content of Hiri Motu except for a short wordlist published by Barton (1910), in which, however, only 'taro' (which is glossed therein as toera) of this set appears.

17. The only PAN reflex that occurs in Gulf languages is mao *sweet potato* (in PUR) (< *mao taro (MN: Chowning 1963); or * η mao taro (Grace 1969; Proto-Oceanic from Milke 1968)). For the location of the languages and groups referred to here by abbreviations see Map 1, and Appendix 1 for an explanation of the abbreviations themselves.

18. For example, the claim by the Motu that they came from the west rather than the east; the establishment of the Hiri; the peculiarities of the Motu language in respect of other AN languages of Papua.

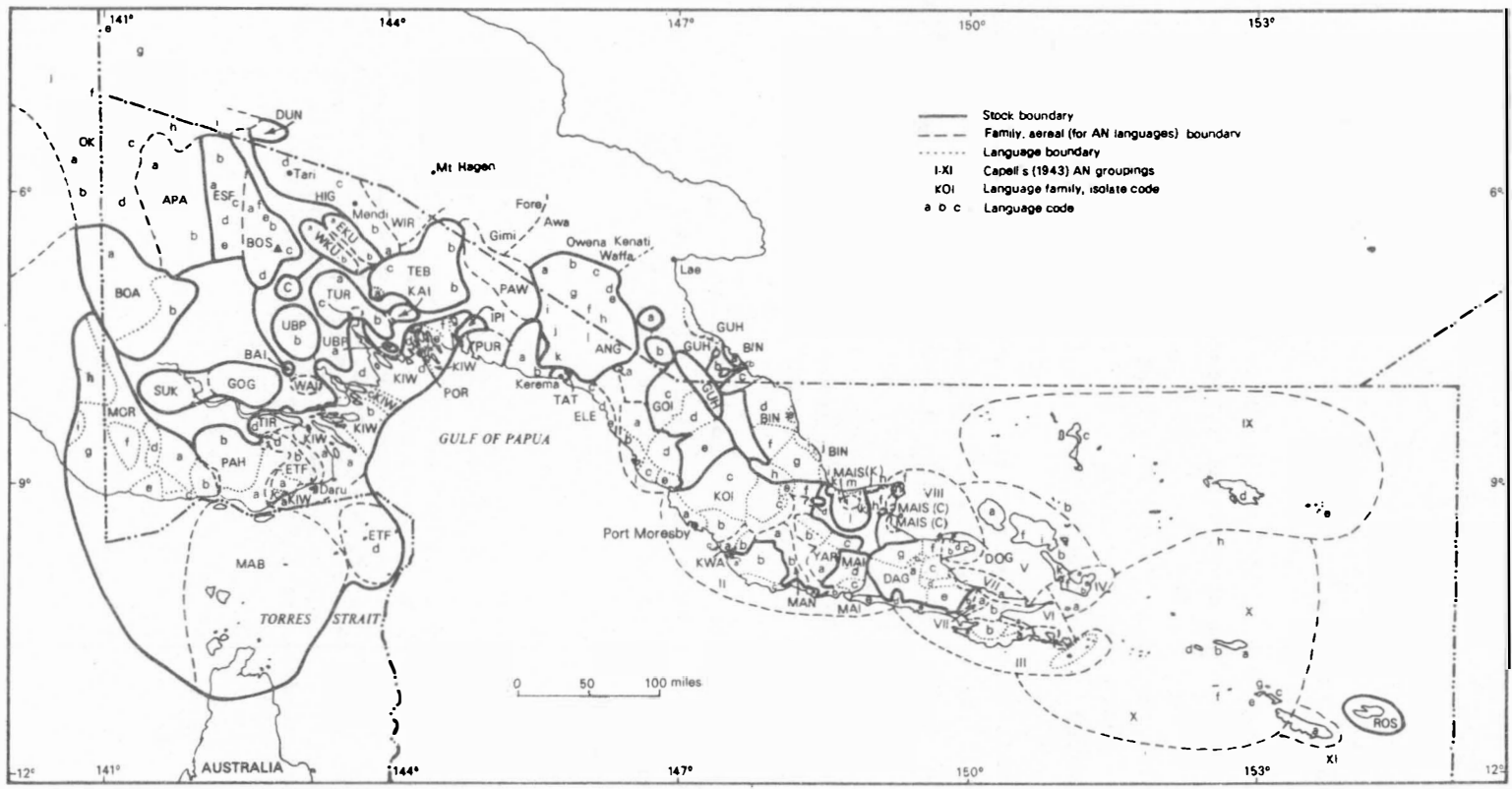
19. Although this is the simplest case it amply illustrates the point made earlier that the full distribution of cognates cannot be known until such times as all species names or folk taxa are included in the data.

20. Note the parallelism between this aspect of the sets and the morphological structure of 'banana' and 'sugarcane' discussed earlier.

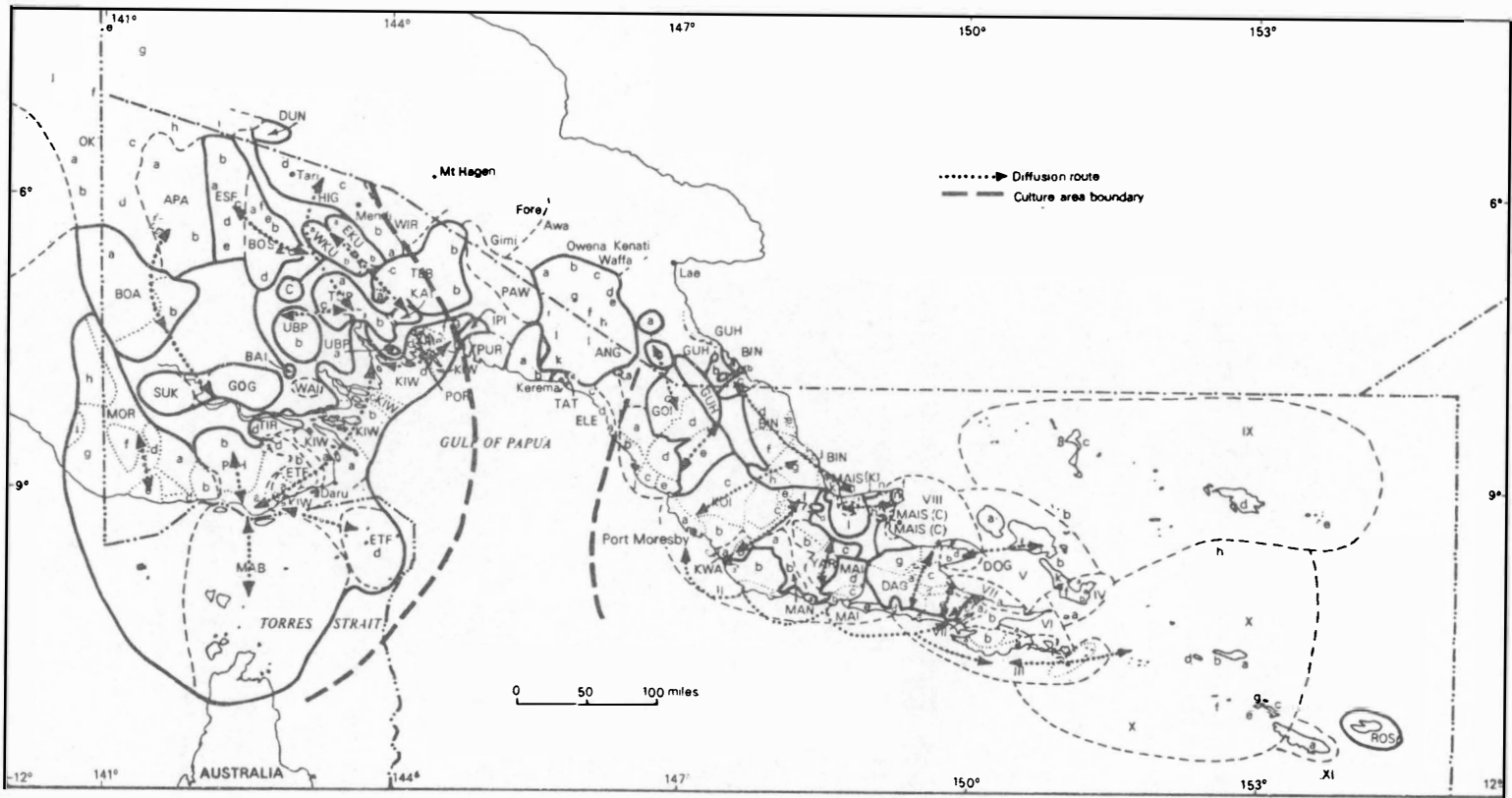
21. We also know that the sweet potato is just reaching some northern parts of the area that borders on the Central Highlands of New Guinea so that it does not seem to have passed that way either. See for example, Sorenson (1972).

22. Somewhat the same observations have been made by Chowning (1963: 42) with respect to sugarcane, *Derris*, and the putty nut throughout island Melanesia. Cf. the following:

the names of the plants other than the starch staples tend to be stable - that is, to remain the same in related languages - as long as the plant itself is regarded and used in the same way by the speakers of those languages. Thus the comparative stability of the names for sugarcane, *Derris*, the putty nut would result from their consistent and virtually exclusive use throughout Melanesia, for, respectively, refreshment, fish poison and canoe caulking.



MAP 1: LINGUISTIC GROUPINGS IN PAPUA



MAP 2: CULTURE DIFFUSION AREAS IN PAPUA

APPENDIX 1

Linguistic Groupings in Papua as Known in 1973

This appendix contains a complete listing of AN and NAN languages of Papua as identified by 1973. In it NAN languages are presented first within family and other higher-level groupings. AN languages are listed within areal groupings. Some dialects are also included. These are identified by small Roman numerals. The location of all languages is shown on Map 1.

NAN LANGUAGES

1. CENTRAL AND SOUTH NEW GUINEA STOCK¹ (McElhanon and Voorhoeve (1970:10))

(OK) Ok Family² (McElhanon and Voorhoeve (1970:10))

- a. Kati Ninati
- b. Kati Metomka
- c. Ningerum
- d. Yonggom
- e. Mianmin
- f. Tifal
- g. Telefol
- h. Faiwol
- i. Bimin
- j. Kawwol

(APA) Awin-Pare Family (McElhanon and Voorhoeve (1970:10))

- a. Awin
- b. Pare (Pa, Ba)

2. GOGODALA-SUKI STOCK (McElhanon and Voorhoeve (1970:10))

(GOG) Gogodala

(SUK) Suki

¹Voorhoeve's BED Bedamini (Beami) Family of this stock is now Franklin's (1973b) and Franklin and Voorhoeve's (1973) BOSAVIAN STOCK, and his KIWAI and other stocks superseded by Wurm's (1971) classification.

²Only languages c,d,h actually occur in Papua.

3. MARIND STOCK (McElhanon and Voorhoeve (1970:10))

(BOA) Boazi Family¹

- a. Boazi
 - i. North
 - ii. South
 - iii. Kuini
- b. Zimakani
 - i. Begua
 - ii. Zimakani

4. TRANS-FLY STOCK (Wurm (1971))

(KIW) Kiwai Family²

- a. South Kiwai
 - i. South
 - ii. Island
 - iii. Coastal
 - iv. South Coast
 - v. East Coast
 - vi. Daru
- b. Wabuda
- c. Bamu
- d. Turama-Kerewo
 - i. Goari
 - ii. Morigi³
 - iii. Kerewo⁴
- e. Urama-Gope
 - i. Urama-Gope
 - ii. Urama
 - iii. Gope
- f. Arigibi⁵
- g. Gibaio⁵

¹There are two other member families in this stock - Marind and Yaqay - but these are not represented in Papua.

²Miriam was originally included in the Kiwai-Miriam Stock in McElhanon and Voorhoeve (1970:10), but is now included in Wurm's (1971) Eastern Trans-Fly Family.

³Misspelled in Wurm's (1971) map. Also shown as a language (not dialect) on the map in Franklin 1973b and Wurm 1973.

⁴Also shown as a language (not dialect) on the map in Franklin 1973b.

⁵Two extra languages of the Kiwai Family shown on the map in Franklin 1973b and in Wurm 1973.

(TIR) Tirio Family

- a. Tirio
- b. Aturu
- c. Lewada-Dewara
- d. Mutum (Paswam)

(ETF) Eastern Trans-Fly Family (Wurm (1971))

- a. Bine
- b. Gidra
- c. Gizra
- d. Miriam

(PAH) Pahoturi River Family (Wurm (1971))

- a. Agöb
- b. Idi

(MOR) Morehead and Upper Maro Rivers Family (Wurm (1971))

- a. Nambu
- b. Iauga (Parb)
- c. Dorro
- d. Upper Morehead (Rouku)
- e. Lower Morehead (Peremka)
- f. Tonda
- g. Kanum
- h. Yey
- i. Moraori

(MAB) Mabuag (Australian)

5. BOSAVIAN STOCK (Map in Franklin 1973b and in Franklin and Voorhoeve 1973)

(ESF) East Strickland Family

- a. Samo
- b. Kubo
- c. Bibo
- d. Honibo
- e. Tomu

(BOS) Bosavian Family

- a. Beami¹
- b. Kaluli²
- c. Kasua²

¹McElhanon and Voorhoeve's (1970:10) Bedamini.

²One of these equals McElhanon and Voorhoeve's (1970:10) Bosavi.

- d. Kware
- e. Waragu¹
- f. Etoroi¹

(BAI) Baiapi

6. KUTUBUAN STOCK (Maps in Franklin 1973b and in Franklin and Voorhoeve 1973)

(WKU) West Kutubuan Family

- a. Fasu
- b. Some
- c. Namumi

(EKU) East Kutubuan Family

- a. Foe
- b. Fiwaga

7. INLAND GULF STOCK (Map in Franklin 1973a, and Franklin 1973b)

(UBP) Upper Bamu-Paibunan Family

- a. Minanibai
- b. Tao-Suamato

(IPI) Ipiko

8. TURAMA-KIKORIAN STOCK (Maps in Franklin 1973b, and in Franklin and Voorhoeve 1973)

(TUR) Turama-Omatian Family

- a. Ikobi
- b. Omati
- c. Mena

(KAI) Kairi

9. TEBERAN STOCK-LEVEL FAMILY (Wurm (1972))

(TEB) Teberan Family (Franklin (1973b))

- a. Daribi
- b. Tebera
- c. Polopa

10. ANGAN STOCK (Wurm (1972))

(ANG) Angan Family (Map in Franklin 1973b, and Lloyd 1973)

- a. Simbari
- b. Baruya
- c. Ampale

¹These languages were only recently identified.

- d. Kawacha
 - e. Kamasa
 - f. Menya
 - g. Yagwoia
 - h. Angaataha
 - i. Ankave
 - j. Ivori
 - k. Lohiki
 - l. Kapau
11. ELEMEN (or TOARIPI) PHYLUM-LEVEL FAMILY (Wurm (1972))
(ELE) Eleman Family (Map in Franklin 1973b and Brown 1973)
- a. Haura (Orokolo)
 - b. Opao
 - c. Toaripi
 - d. Kaipi
 - e. Sepoe
12. HIGHLANDS STOCK (Map in Franklin 1973b)
(HIG) West-Central Family
- a. Sau
 - b. Kewa
 - c. Mendi
 - d. Huli
13. GOILALAN STOCK-LEVEL FAMILY (Wurm (1972))
(GOI) Goilalan Family (Dutton (1971))
- a. Biangai
 - b. Werl
 - c. Kunimaipa
 - d. Tauade
 - e. Fuyuge
14. KOIARI-MANUBARA-YAREBAN STOCK (Wurm (1972))
(KOI) Koiarian Family (Dutton (1971))
- a. Koita
 - b. Koiari
 - i. East
 - ii. West
 - c. Mountain Koiari
 - i. Southern
 - ii. Central
 - iii. Western

- iv. Northern
- v. Eastern
- vi. Lesser-Eastern

- d. Barai
 - i. North
 - ii. South
- e. Aomie
- f. Managalasi
 - i. East
 - ii. Central
 - iii. West

(KWA) Kwalean Family (Dutton (1971))

- a. Humene
- b. Kwale
- c. Mulaha (Extinct)

(MAN) Manubaran Family (Dutton (1971))

- a. Doromu
- b. Maria

(YAR) Yareban Family (Dutton (1971))

- a. Abia
- b. Doriri
- c. Yareba
- d. Bariji

15. MAILUAN STOCK-LEVEL FAMILY (Wurm (1972))

(MAI) Mailuan Family (Dutton (1971))

- a. Domu
- b. Morawa
- c. Binahari
 - i. Ma
 - ii. Neme
- d. Bauwaki
- e. Magi
 - i. Domara
 - ii. Mailu Island
 - iii. Borebo
 - iv. Derebai
 - v. Asiaulo
 - vi. Darava
 - vii. Geagea
 - viii. Ilai

- ix. Baibara
- x. Other islands
- xi. Gadaisu

16. DAGAN STOCK-LEVEL FAMILY (Wurm (1972))

(DAG) Dagan Family (Dutton (1971))

- a. Daga
 - i. Northern
 - ii. Southern
- b. Mapena
- c. Gwedena
- d. Ginuman
- e. Sona
 - i. Northern
 - ii. Southern
- f. Jimajima
- g. Maiwa
- h. Onjob

17. BINANDEREAN STOCK (Hooley and McElhanon (1970))

(BIN) Binanderean Family (Dutton (1971))

- a. Suena
- b. Yekora
- c. Zia
- d. Binandere
- e. Ambasi
- f. Aeka
- g. Orokaiva
 - i. Sohe
 - ii. Waseda
 - iii. Popondetta
 - iv. Dobuduru
- h. Hunjara
- i. Notu
- j. Yega
- k. Gaina
- l. Baruga
- m. Dogoro
- n. Korafe

(GUH) Guhu-Samane

18. YELE-SOLOMONS-WASI STOCK (Wurm (1972))

(ROS) Rossel Island Family

a. Yele

Gulf District Isolates (Franklin (1973b))

(POR) Porome

(PAW) Pawaian

(PUR) Purari

(TAT) Tate

(WAI) Waia

(WIR) Wiru

Unclassified (Dutton (1971))

(DOG) Doga

(MAIS) Maisin

AN LANGUAGES

(I) Area I

a. Mekeo

b. Roro

c. Nara

d. Kuni

e. Kabadi

f. Doura

(II) Area II

a. Motu

b. Sinagoro

i. Ikolu

ii. Balawaia

iii. Saroa

iv. Kwabida?

v. Taboro

vi. Boku

vii. Ikega

viii. Wiga

ix. Buaga

x. Kubuli

xi. Tubulamo?

xii. Omene

xiii. Kwaibo

xiv. Alepa?

xv. Vora

xvi. Oruone

xvii. Babagarupu

c. Keapara

i. Hula

ii. Babaga?

iii. Kalo

iv. Keapara

v. Aloma

vi. Maopa

vii. Wanigela

viii. Kapari?

ix. Lalaura

d. Magori

(III) Area III

a. Suau

i. Bonarua

ii. Dahuni

iii. Dalomoni

iv. Dau

v. Logea

vi. Mugula

vii. Sariba

viii. Suau

b. Buhutu

c. Tubetube

(IV) Area IV

- a. Nuakata
- b. Guregure
- c. Kelologean?
- d. Noboda
- e. Sawabwara
- f. Urada

(V) Area V

- a. Bwaidoga
- b. Dobu
- c. Enataulu
- d. Galeya
- e. Gilagila?
- f. Kukuya
- g. Lakulakuia
- h. Mataita
- i. Molima
- j. Nada
- k. Sewa Bay

(VI) Area VI

- a. Wagawaga
- b. Kehelala
 - i. Basilaki
 - ii. Kehelala
 - iii. East Cape
 - iv. Yalaba?
 - v. Maiwara
 - vi. Tabara

(VII) Area VII

- a. Wedau
 - i. Wedau
 - ii. Taupota
 - iii. Awalama
- b. Dawawa
- c. Boianaki

(VIII) Area VIII

- a. Igora
- b. Paiwa
- c. Mukawa
- d. Gabobora
- e. Ubir
- f. Arifama-Miniafia
 - i. Arifama
 - ii. Miniafia
 - iii. Oyan
 - iv. Lakwa

(IX) Area IX

- a. Gawa
- b. Gumasi
- c. Kiriwina
- d. Murua
- e. Nada

(X) Area X

- a. Alinganda
- b. Bobohaean
- c. Nimoa
- d. Panayati
- e. Panakrusima
- f. Sabari
- g. Tokuna

(XI) Area XI

- a. Sud-Est

(PM) Police Motu or Hiri Motu,
the principal lingua franca
of Papua

5.2.0. THE DISTRIBUTION OF CULTURAL VOCABULARY IN PAPUA

APPENDIX 2

Some Examples of Cognate Sets that Cross Item Boundaries

This appendix groups together those cognate sets from different items which appear to be reflexes of the same proto-form. The first five contain reflexes of established or proposed Proto-AN forms, the remainder, reflexes of as yet unestablished proto-forms which are tentatively represented herein by starred capitalised forms, e.g. *BURU. For further details see Dutton 1973. The listing follows:

1. *Kumara

Cognates	Meaning	Languages	Source
amara	<i>garden</i>	DAG/f; DOG	<i>garden</i> : set 27 in Dutton 1973
kumwala	<i>sweet potato</i>	III/c; V/c	<i>sweet potato</i> : set 9 in Dutton 1973
komwara		V/b	
kumuara		V/d,k	
kumala		VI/bv1	
kumara		KOI/b11	
kamara		KIW/eiii	
amareta		ETF/b	
ambara } biro }		GOI/c	
t ^h ambara		BIN/g	
tambara		BIN/e,1	
kevara		MAN/a	
evara		KOI/d11	
gumala	<i>yam</i>	KWA/c	<i>yam</i> : set 25 in Dutton 1973
kubara		MAN/b	
[umana]		KWA/a	
gubara		MAN/b	
Reflexes of:			
kumala ¹ } kumara } ?umala } gumala } kumaa }	<i>sweet potato</i>	Polynesian (Ray 1907:168)	
<p>¹See Brand 1971:359-63 for a discussion of the origin of this word and refutation of the notion that it is related to the American Indian Quechua word cumar.</p>			

2. *Kale

Cognates	Meaning	Languages	Source
kali	<i>sweet potato</i>	TEB/a	<i>sweet potato</i> : set 3 in Dutton 1973
gali		TEB/b	
ga		IPI	
ale		HIG/c(N.Mendi)	
sali		PAW	
kairé		DOG;VII/b	
kairé kut}		VIII/e	
kai re kut			
kairé kuta		VIII/fi,fii,fiii	
kæle}		DAG/d,e1,e11,f	
kairé			
kairé kuta		MAIS(C)	
kairu kuta}		BIN/m	
kairé tuta}			
kiru kuta		BIN/n	
baire		DAG/a1(Gwedena),b,c	
baere		DAG/c	
bairén		DAG/c,g	
kare	<i>taro</i>	MAN/a	<i>taro</i> : set 25 in Dutton 1973
kale		II/b1,b11,bv1,bv11,bv111, bxvi,ci,c11	
kae		BIN/g;II/bx	
?ale		II/civ	
galiyo	<i>yam</i>	ESF/a	<i>yam</i> : set 6 in Dutton 1973
gayo		ESF/b	
gali		ESF/c,d	
kara		BOS/a	
kaaliya		BOS/a	
[yare]		KOI/d11	
kae		BIN/g	
gae		BIN/i	
Reflexes of:			
*kale	<i>taro</i>	MN-Chowning 1963	

3. *Mao

Cognates	Meaning	Languages	Source
mao	<i>sweet potato</i>	PUR	<i>sweet potato</i> : Isolates
mao	<i>yam</i>	BOA/a11;II/bv	<i>yam</i> : set 3 in Dutton 1973
maho		KIW/d111,e11,e111;UBP/a; IPI;KWA/a;PM;II/a	
ma.o		II/b	
mau		BIN/e	
ma?ou		KIW/g	
[maho]		KWA/a;MAI/b	
[maho?uro]		KWA/b	
Reflexes of:			
*mao	<i>taro</i>	MN-Chowning 1963	
*ŋmao	<i>taro</i>	Grace 1969 (POC from Milke 1968)	

4. *Kubi

Cognates	Meaning	Languages	Source
upi tupi	<i>garden</i>	DAG/c DAG/d	<i>garden</i> : set 20 in Dutton 1973
hopeʔa ¹ hobeā } gobeʔu kobeʔu gobou gobeu kubeu gobeu kobeʔa gobeʔu kupe kupi kupi kupa	<i>sweet potato</i>	ANG/l KOI/ci KOI/ci KOI/ci(Eava) KOI/cii KOI/ciii GOI/b, civ, cv, cvi KOI/b KOI/dii GOI/d GOI/e(Karukaru) GOI/d GOI/d,e	<i>sweet potato</i> : set 11 in Dutton 1973
ʔuvi ² kubi kuv ubi	<i>yam</i>	VII/c VIII/c IX/d DOG	<i>yam</i> : set 7 in Dutton 1973
kuve kuvalava } kubu	<i>taro</i>	GOI/d	<i>taro</i> : Isolates
ufi uhi wi wɣhi uvu uve udze kufe	<i>banana</i>	KOI/ai, aii KOI/ai, aii KOI/ai KOI/ai KOI/ci KOI/cii, ciii, civ, cv, cvi KOI/e GOI/d	<i>banana</i> : set 7 in Dutton 1973
Reflexes of:			
*huvi *qupi	<i>yam</i> <i>yam</i>	MN-Chowning 1963 Grace 1969 (POC from PAN in Capell 1943)	
*qubi[ʔh] *qumbi[ʔh] }	<i>yam</i>	PAN-Dyen and McFarland 1970	
*ubi hubi	<i>yam</i> <i>yam</i>	PAN-Dempwolff 1934-38 IN-Capell 1943	
¹ For eʔa, eʔu : <i>yam</i> : set 41 in Dutton 1973.			
² Perhaps also related to kombi, komba etc. given in <i>yam</i> : set 18 in Dutton 1973.			

5. *Kani

Cognates	Meaning	Languages	Source
kani } ?ani } ?ani ?ʌn an aneg anega sagani tagani ganisa	taro	VII/c DAG/c DAG/ei DAG/eii ETF/d KIW/aiii KIW/dii,diii KIW/f ANG/g	taro: set 7 in Dutton 1973
gani yani kanikani anemai aniani narem sagani	yam	III/cvii II/cv,cvi,cix V/q I/a V/f III/a11 KIW/dii	yam: set 19 in Dutton 1973
aniani	food	II/a	
yani gani ?ani } a:ni } ani	banana	II/bv,ciii II/b I/f II/civ	banana: set 31 in Dutton 1973
Reflexes of:			
*ka, *kai	food	Grace 1969 (from Biggs 1965)	
*kani	to eat, food	Grace 1969 (POC from PAN in Capell 1943)	

6. *(T)ISIABURU

This large group is divided into (T)ISIA and BURU subgroups for ease of comparison. Some data are common to both.

6a. The (T)ISIA subgroup

Cognates	Meaning	Languages	Source
isiaburo	garden	BIN/m	garden: set 1 in Dutton 1973
siyofulu siyafuu siyobulu siyabul	sweet potato	ESF/a ESF/b ESF/e ESF/d	sweet potato: set 10 in Dutton 1973
siapuru } siabulu }		BCS/a,b,c;WKU/a	
siyabulu siapuri supuru tia dia diani		BCS/a BAI WKU/a HIG/a TEB/c TUR/Barika	

<u>sesiayuro</u>		4. Iria ¹	Information supplied by C.L. Voorhoeve and J.C. Anceaux
<u>sersiabura</u>		5. Asienará	
<u>sie, sibu</u>		11. Iha	
<u>tiawu</u>		12. Barau	
<u>sia?i</u>		17. Puragi	
<u>sijapido</u>		20. Inanwatan	
<u>siap</u>		41. Borái	
<u>siew</u>		42. Hattam	
<u>isia</u>	<i>taro</i>	BIN/k,l,m,n	<i>taro</i> : set 13 in Dutton 1973
<u>yisiya</u>		BIN/n	
<u>gesí</u>		DOG	
<u>sisi</u>		II/Labu	
<u>diyas</u>		ESF/c	
<u>iya</u>		KOI/c11	

¹The locations of these languages are as follows:

4. Iria (NAN)	} Western side of Kamarau Bay
5. Asienará (NAN)	
10. Baham (NAN)	} Eastern side of McCluer Gulf and around to Rijklof Van Goens Bay
11. Iha (NAN)	
12. Barau (NAN)	
17. Puragi (NAN)	} Western side of McCluer Gulf
20. Inanwatan (NAN)	
41. Borái (AN)	} North-western side of Geelvink Bay
42. Hattam (AN)	

6b. The BURU subgroup

Cognates	Meaning	Languages	Source
moro	<i>garden</i> ¹	KIW/b	<i>garden</i> : set 1 in Dutton 1973
muro		MAN/a,b	
bua		BIN/a	
buro		BIN/e,i,j,k,l,m	
pure		BIN/f,g,h	
<u>baburo</u>		BIN/i	
<u>isiaburo</u>		BIN/m	
<u>kopura</u>	}	VII/c	
<u>kupura</u>			
<u>upura</u>			
<u>kofura</u>	}	DAG/d	
<u>ne ufurana</u>			
<u>dzuwore</u>		KOI/f1	
<u>dzuwora</u>		KOI/f111	
<u>dzuwari</u>	}	KOI/d	
<u>dzuwai</u>			
<u>dzuru</u>			
<u>dzaure</u>			
<u>dzura?e</u>		KOI/f111	
ware		BIN/n	
buru		KOI/b1,c1,c11,c111,cv	
bu:		GOI/e(Karukaru)	
vu:		KOI/civ	
mu:}		KOI/e	
mue			

<u>forova oti</u>		ELE/b,c	
<u>oru(uta)</u>		ELE/c	
<u>faura</u>		TAT	
<u>vo.ore</u>		KWA/a	
<u>porotuto</u>	<i>fence</i>	VIII/b	<i>fence</i> : set 4 in Dutton 1973
<u>varanue</u>			
<u>furu</u>	<i>fence</i>	VIII/f1;BIN/m	<i>fence</i> : set 16 in Dutton 1973
<u>fuř</u>		VIII/f11,f111	
<u>furo</u>		BIN/m	
<u>siyofulu</u>	<i>sweet potato</i>	ESF/a	<i>sweet potato</i> : set 10 in
<u>siyafuu</u>		ESF/b	Dutton 1973
<u>siyobulu</u>		ESF/e	
<u>siyabul</u>		ESF/d	
<u>siapuru</u>		BOS/a,b,c;WKU/a	
<u>siabulu</u>			
<u>siyabulu</u>		BOS/a	
<u>siapuri</u>		BAI	
<u>supuru</u>		WKU/a	
<u>sesiayuro</u>	<i>sweet potato</i>	4. Iria	Information supplied by C.L. Voorhoeve and J.C. Anceaux
<u>sersiabura</u>		5. Asienará	
<u>sibu</u>		11. Iha	
<u>tiauw</u>		12. Barau	
<u>sia?i</u>		17. Furagl	
<u>sijapido</u>		20. Inanwatan	
<u>siap</u>		41. Borái	
<u>siew</u>		42. Hattam	
<u>buřku</u>	<i>yam</i>	ETF/c	
<u>borometa</u>		ETF/c	
<u>bolu</u>		TEB/a	
[<u>bolu?^</u>]		KOI/c	
[<u>boluk^</u>]		KOI/c11	
[<u>boluka</u>]		KOI/c11,civ	
<u>bapore</u>		ELE/a	
<u>mapore</u>		ELE/a,c	
<u>maperi</u>		TAT	
[<u>amboro</u>]		BIN/h	
[<u>kamboro</u>]		BIN/i,k	
[<u>hopoi</u>]		GOI/c	
[<u>bolai</u>]		DAG/a1,e1	
[<u>bola?i</u>]		DAG/e1	
<u>olu</u>	<i>taro</i>	II/Bina	<i>taro</i> : set 38 in Dutton 1973
<u>boro</u>		V/b	

¹Cf. related forms in *fence*: sets 4 and 16; *sweet potato*: set 10; *yam*: set 4; *taro*: set 38 in Dutton 1973.

7. *KERO¹

Cognates	Meaning	Languages	Source
e <u>gelo</u> <u>igenai</u>	<i>garden</i>	BCS/b BCS/c	<i>garden</i> : set 2 in Dutton 1973
<u>gero</u> <u>kirutua</u> <u>irui</u> <u>keloto</u> ; <u>kilote</u> <u>akira</u> ; <u>agira</u>	<i>sweet potato</i>	BIN/a KOI/f1 KAI KOI/f111 EKU/a	<i>sweet potato</i> : set 2 in Dutton 1973
<u>kera</u> <u>elomaðu</u> <u>kero</u> <u>keru</u>	<i>taro</i>	KIW/a11 KOI/d1 VIII/d1 VIII/c	<i>taro</i> : set 21 in Dutton 1973
<u>elo</u> siveli <u>iro</u> <u>kiroma</u> <u>ilo</u> [<u>iro</u>] [<u>iro</u> ma] <u>keru</u>	<i>yam</i>	KOI/d1 KOI/d1,d11 MAN/a YAR/d KOI/d MAN/b(Uder1) VIII/b	<i>yam</i> : set 13 in Dutton 1973
¹ This group may also include <i>mokela</i> , <i>mosera</i> etc. given in <i>sweet potato</i> : set 1 in Dutton 1973.			

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P A R T 5.3.

KINSHIP TERMINOLOGY

