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THE MARKHAM LANGUAGES OF PAPUA NEW GUINEA

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ABBREVIATIONS

LANGUAGE NAMES

ADZ	Adzera
ADZ(G)	Adzera, Guruf dialect
ADZ(Ng)	Adzera, Ngariawang variety of Guruf dialect
ADZ(Ts)	Adzera, Tsumanggorun dialect
AN	Austronesian
ARB	Aribwatsa
AWG	Aribwaungg
BNG	Buang
BUK	Bukawa
DWT	Duwet
KEL	Kela
LAB	Labu
MRI	Mari
MSM	Musom
MWT	Middle Watut
NNG	North New Guinea
NFI	Nafi
NWT	North Watut
PB	Proto Busu
PCP	Proto Central Papuan
PHG	Proto Huon Gulf
PLMK	Proto Lower Markham
PM	Proto Mountain
PMK	Proto Markham
PNNG	Proto North New Guinea
PNHG	Proto North Huon Gulf
POC	Proto Oceanic
PSHG	Proto South Huon Gulf
PUMK	Proto Upper Markham
PWO	Proto Western Oceanic
PWT	Proto Watut
SKM	Sukurum
SWT	South Watut
TNGP	Trans New Guinea Phylum
WM	Western Melanesian
WPA	Wampar
WPU	Wampur

GLOSSES

1, 2, 3	first, second, third person
1E	1st person exclusive plural
1I	1st person inclusive plural
AD	adessive
AL	alienable possession
ALL	allative
alv	alveolar
ART	article
BEN	benefactive
bilab	bilabial
C	consonant
CL	clause
CM	comitative
COM	completive
CON	continuative
CS	causative
D	dual
DAT	dative
DEC	declarative
DEF	definite
DEM	demonstrative
D.FUT	definite future
DIR	directional marker
DO	direct object
EL	elative

EX	exclusive
fort	fortis
FUT	future
F:	focal pronoun
GER	gerundive suffix
G.FUT	general future
I.FUT	immediate future
IMP	imperative
IN	inclusive
INAL	inalienable possession
IN.FUT	indefinite future
INDEF	indefinite article, reference
INST	instrumental
INT	interrogative
IO	indirect object
IRR	irrealis
len	lenis
LOC	locative
N	noun
NEG	negative
NOM	nominalising suffix
NONPAST	non-past
NP	noun phrase
Ns	nasal consonant
O:	object pronominal enclitic
OBJ	object
obs	obstruent
OO	oblique object
P	plural
P:	possessive pronominal suffix
PAST	past tense
POSS'D	possessed
POSS'R	possessor
PREP	preposition
PREPV	prepositional verb
PRES	present tense
PURP	purposive
Q	quadral/paucal
R	realis
R:	reflexive/reciprocal pronoun
REF	referential
REP	repetitive
S	singular
S:	subject pronominal prefix
sg	something
sne	someone
SUBJ	subject
T	trial
T/A	tense/aspect
TEMP	temporal phrase
V	vowel
V_1	first verb in serial sequence
V_2	second verb in serial sequence
vd	voiced
vel	velar
vl	voiceless
VP	verb phrase
VR	verb root

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CHAPTER 1

INTRODUCTION

1.1 AIMS OF THE STUDY

This study takes as its focus the Austronesian languages of the Ramu Valley, Markham Valley and associated valley systems in the lowlands of the Madang and Morobe Provinces, Papua New Guinea. It has the following closely interconnected aims:

(a) To test the proposition that the Austronesian languages of the Ramu and Markham Valleys are a genetically related unit. The languages being investigated are as follows:

Mari, Adzera, Wampur, Sukurum, Sarasira, South Watut, Middle Watut, North Watut, Wampar, Musom, Nafi, Duwet, Aribwaungg, Aribwatsa and Labu.

(b) To ascertain at what level they are related to previously established lower-order subgroupings of Oceanic.

(c) To elucidate the subgroupings of the Markham languages, using the comparative method.

(d) To reconstruct, as far as possible, the history of these languages using the available linguistic, social and geographical information.

(e) To provide short, reliable descriptions of the phonologies and morphosyntactic systems of the Markham languages.

1.2 THE ORGANISATION OF THIS WORK

In Chapter 2 I present some theoretical considerations, review previous work done on the languages of the Ramu and Markham area, and outline the methodology used in the collection and analysis of the data used in this study. Chapter 3 presents the Markham language communities in their geographic and ethnographic context. This background to the Markham societies is given in some detail because the linguistic analyses and comparisons which are made in the data chapters which follow need to be seen in their physical and social setting. I will be referring throughout to the 'Markham languages' which will include all the languages listed above, although the communities where one language, Mari, is spoken lie outside the geographical limits of the Markham Valley, and just inside the Ramu Valley.

In Chapter 4 I give brief sketches of the phonologies of the individual languages, and after a discussion of previous reconstructions of Proto Oceanic and Proto Huon Gulf I present a reconstruction of Proto Markham phonology with the evidence for the reconstructions. The

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morphosyntax of the languages is discussed and compared in Chapter 5, and in Chapter 6 the comparisons and contrasts made in the two preceding chapters are drawn together. This chapter presents the evidence for the internal unity of the Markham languages, and the evidence supporting subgroupings is then presented for each subgroup in turn. Throughout Chapter 6, the implications of this subgrouping evidence are discussed as they shed light on the histories of the subgroups and the individual languages of which they consist. The evidence for extensive contact with Papuan languages is discussed in this chapter, and the effects on the Markham languages are illustrated with examples.

Chapter 7 concludes the study, presenting in summary form the evidence which supports the hypotheses that the Markham languages form an internally consistent, genetically related unit which is descended from Proto Oceanic through Proto Huon Gulf, and that it consists of three lower-level subgroupings which can themselves be further divided internally. Non-linguistic evidence drawn from archaeological, historical, ethnographic and physical anthropological sources is used where appropriate to supplement the linguistic findings.

1.3 CONVENTIONS USED IN THE PRESENTATION OF DATA

In this section I outline the conventions used in the presentation of the data which forms the major part of this work.

1.3.1 SYMBOLS USED

In presenting phonetic and phonological data, I have chosen not to use some existing orthographies, for example for Yabêm and Wampar, and to use a standard orthography in order to make comparisons. Thus the Yabêm glottal stop, in the standard orthography written *c*, becomes *ʔ*, *ng* becomes *ŋ*, and *j* becomes *y*. Wampar *z* becomes *j*. I use the following symbols, with phonetic values as for the IPA alphabet:

b, β, d, f, g, ɣ, h, k, ʔ, l, m, n, ŋ, ñ, p, r, s, t, v, w, x, z, i, e, ə, a, o, u.

The following special symbols are used:

c	[ts], [tš]	voiceless alveolar or palatal affricated stop
j	[dz], [dž]	voiced alveolar or palatal affricated stop
y	[j]	palatal glide

Prenasalisation is phonemically significant in all the Markham languages, and is written as:

mp, mb, nt, nd, nc, nj, ŋk, ŋg, ŋʔ

Digraphs are also used for labiovelar and velarised consonants:

pw, bw, mw, kw, ʔw, gw, ŋw

Where a palatalised consonant is in contrast with an alveolar consonant, the palatalised consonant is written with superscript ^{y}: e.g. d^{y}.

Where mid-high vowels are in contrast with mid and high vowels, they are written as follows:

ê mid-high *e*

ô mid-high *o*

The contrast between high tone and low tone in Yabêm, Bukawa and Labu is indicated by using a grave accent on vowels with low tone, e.g. *à*, and leaving high tone unmarked.

Symbols for reconstructed phonemes follow the conventions stated above, but following Ross (1986) *q* symbolises what was possibly a glottal stop, and *ʀ* what was most likely a rhotic consonant.

1.3.2 CONVENTIONS USED IN GLOSSES AND COMPARATIVE DATA

Certain conventions are followed in presenting glosses. Elements not relevant to the comparison are bracketed with round brackets, e.g. a Musom verb stem *-ruk(wak)* 'to go down' is given with the final syllable in round brackets when only the *-ruk* element is relevant to the comparison being made.

Roots or stems which require a prefix begin with a hyphen, e.g. the Adzera verb root *-fa* 'to go', which requires a subject pronoun prefix. Roots or stems which require a suffix end with a hyphen, e.g. Wampar *baŋi-* 'hand, arm', a nominal root which requires an inalienable possessive pronoun suffix.

Following conventions set down by Geraghty (1983) and Ross (1986) a noun modifying a gloss is enclosed in brackets. If it refers to a subject or to a possessor, it precedes the gloss, e.g. '(dog) bite', or '(pig) tusk'. If it refers to an object it follows the gloss, e.g. 'to paddle (canoe)'. A plus sign after the noun indicates that it is a member of a similar set, e.g. '(man +) sit' indicates that man is a member of a set, comprising all human nouns.

Abbreviations used in glosses are:

sne	someone
sg	something
k	kind of

In giving glosses for pronouns, I use a capital letter indicating its class, followed by a colon and the pronoun's person and number. So P:1EP means first person exclusive possessive pronoun affix. Abbreviations used in pronoun glosses are:

F:	focal pronoun
P:	possessive morpheme
S:	subject prefix or proclitic
O:	object suffix or enclitic

1S, 2S, 3S	first, second, third person singular
1EP, 1IP	first person exclusive , first person inclusive plural
2P, 3P	second person plural, third person plural
D;T;Q	dual, trial and quadral/paucal, replacing P in those forms.

When cognate sets follow a proto form, the gloss of the proto form applies to the members of the cognate set unless otherwise indicated. If the language names are listed before one form, this means that the form is identical in all those languages. In the following example, the gloss 'father' for the Proto Oceanic form applies to each of the items, and the form of the reflex is identical in Adzera, Wampur, Mari, Sarasira and Sukurum:

POC **tama* 'father' > PMK **rama-* > ADZ, MRI, WPU, SRA, SKM *rama-* 'father'.

The bracketing conventions used in proto forms follow Ross (1986) and are:

(x) x may or may not have been present, e.g. in PMK **(re)fain* 'some' *re* may or may not have been present.

(x,y) either x or y was present, e.g. Proto Watut **a(r,m)i-* S:1IP means that the proto form was either **ari-* or **ami-* .

[x] the proto form is reconstructible in two forms, one with and one without x, e.g. POC **[k]o-* S:2S means that both **ko-* and **o-* are reconstructible.

[x,y] the item is reconstructed in two forms, one with x and one with y, e.g. PWT **[i,a]go* 'demonstrative pronoun, further away' means that both **igo* and **ago* are reconstructible.

The following abbreviations are used for language names which are referred to frequently throughout the text:

ADZ	Adzera	DWT	Duwet
MRI	Mari	NFI	Nafi
WPU	Wampur	AWG	Aribwaungg
SKM	Sukurum	ARB	Aribwatsa
SRA	Sarasira	LAB	Labu
SWT	South Watut	BUK	Bukawa
MWT	Middle Watut	YAB	Yabêm
NWT	North Watut	BNG	Buang
WPA	Wampar	KEL	Kela
MSM	Musom		

For languages which are less frequently referred to the full language name is used, for example Wantoat, Waffa, Numanggang.

Where it is necessary to specify the dialect from which an example is drawn, the dialect name is given in brackets beside the language name or its abbreviation, e.g. ADZ (Guruf) *intamp* 'earth' means that *intamp* is from the Guruf dialect of the Adzera language.

Throughout the text, I refer frequently to 'communalect'. By this I mean 'the collection of linguistic phenomena which has a functional identity within a speech community' (Crystal 1985: 175). This does not specify the social basis of the collection, and thus avoids the precise linguistic definition of 'dialect', another term which I also use when referring to the regionally-distinctive variety of one language.

1.3.3 Conventions used in correspondence tables and morphosyntactic tables

In the tables of sound correspondences given in Chapter 4, word-initial, -medial and -final environments are indicated by hyphens, e.g. *g-; -ɣ-; -k*. Where the reflex of the sound is the same in all environments, no hyphen occurs, e.g. *p*. Where one reflex is given without a hyphen, and is followed by a reflex with a hyphen, this means that the first sound occurs in all environments except that indicated by the hyphen, e.g. *s; -h* means that the proto phoneme is reflected as *s* in all environments except word-finally where it is reflected as *h*. Other environments are indicated as follows: *y/-i* , for example, means that the reflex is *y* before *i; s/i* indicates that the reflex is *s* before and after *i*. Where there is more than one reflex of a proto phoneme and these occur in the same

position, the reflexes are given separated by a comma, e.g. *f-, h-*. When a reflex can occur in two different environments, these are separated by a comma, e.g. d^y*/-i,e*. Where there is no known reflex of a proto form, this absence is marked with a full stop.

Conventions used in the presentation of morphosyntactic data follow those principles given above. Special conventions are:

Alternative forms are separated by a semicolon, e.g. Middle Watut *ciyo; yo; ya* F:1S are alternative forms for the first person singular focal pronoun in that language.

Suffixes are indicated by a hyphen at the beginning, e.g. PMK **-c* P:3S (subtype 2) is the proto form for the third person singular possessive pronoun suffix, for inalienable subtype 2. Prefixes are indicated by a hyphen occcurring at the end of the form, e.g. Adzera *ru-* 'continuous aspect', indicates that the form is a prefix.

Where a given form is obligatorily used in a language in association with a noun, N + is used before the form if it usually takes a noun before it, and + N is used after the form being discussed if it takes a noun after it, e.g. in Wampar N (poss'r) + N (poss'd) means that in Wampar nominal possession is indicated by using the two nouns in parataxis, and Musom *ena* + N P:3S, means that possession of a third person singular noun in Musom is indicated by the use of *ena* plus that noun.

CHAPTER 2

LINGUISTIC BACKGROUND AND METHODOLOGY

In this chapter I will first review previous linguistic work on the languages of the Markham, and then I will outline the methods used in collecting, analysing and organising the data in this study.

2.1 PREVIOUS LINGUISTIC STUDIES OF MARKHAM LANGUAGES

The earliest available sources of information on the languages of the Markham area are papers from the Neuendettelsau Lutheran missionaries. These are in the form of annual reports, special reports, correspondence and some articles published in Mission Society journals such as *Neuendettelsau Missionsblatt, New Guinea Lutheran,* and *The Lutheran Missionary*. There is occasionally some detail about the languages in these papers, for example the special reports by Stürzenhofecker (n.d.) on the culture of the Wampar, his Laewomba Grammatische Bemerkungen (1930a) and the Laewomba Wörterbuch (1930b). The missionary reports also give information on the location of certain of the language groups at the time of first contact with outsiders, and in some cases record what was known of the history of the groups with whom they came in contact, for example Schmutterer on the Labu and Musom peoples (Schmutterer n.d.a, n.d.b, 1923, 1928).

As the first missionaries in the area were deeply concerned about what language or languages should be used in their work, several papers about the *Einheitssprache* problem were presented at annual conferences (see Pilhofer 1963:202ff and Osmers 1981:88-91). Yabêm was used as the unofficial mission lingua franca by the Bukawa and Taêmi (sometimes called Tamigidu) personnel working in the Wampar and Adzera areas from 1918 until the beginning of the 1930s (K. Holzknecht personal communication). However, Rev. Panzer in the Wampar area and Rev. Oertel among the Adzera resisted the introduction of Yabêm in the schools in their areas until 1937. As a result of the concern felt by the mission about the appropriate language(s) to be used as lingua franca, Dr Otto Dempwolff, the medical doctor for the Neuguinea Kompagnie at Finschhafen (and a gifted linguist) was asked to produce grammars of some of the languages in question. This resulted in a grammar of Yabêm (Dempwolff 1939), a grammar of Gedaged (n.d.) and an analysis of Adzera (Dempwolff c.1928). However, Yabêm (in the Austronesian areas) and Kâte (in the Papuan speaking areas) continued to be the mission's lingua francas in this area until English and Tok Pisin were introduced into the Lutheran Church's education programme in the 1960s (Osmers 1981:111).

Dempwolff's *Analyse der Azera-Sprache* was the only non-missionary linguistic work done concerning any of the Markham languages between the late 1920s and the return to civilian government in New Guinea after World War II, in 1946. In that year the anthropologist K.E. Read

was sent to study the Adzera people by the ANGAU intelligence unit. He did his research among the Ngarowapum, a 'district group' speaking one of the dialects of the Adzera language (Read 1946/1947; 1947/1948; 1948; 1949/1950). His work has little to say about the language of the Ngarowapum, and concentrates on their social structure and agricultural practices.

On the return of the Lutheran missionaries to their field in 1946, some began linguistic studies. One of these was my father-in-law, Rev. K. Holzknecht, who published several articles on the Adzera language (K. Holzknecht 1973 a,b,c) and who is working on a dictionary of the Adzera language.

In the late 1940s and early 1950s, Arthur Capell conducted his surveys of New Guinea languages, in which he included Adzera, Wampar (which he incorrectly surmised was 'properly Wampur' (Capell 1954:34)) Bukawa and Yabêm. Capell noted in the first publication arising out of his surveys that people in both Adzera and Wampar areas appeared to be still literate in their own languages. He also remarked that 'neither language is tonal, and both are phonetically easier than Yabêm' (Capell 1954). Unfortunately, in the reference lists of languages by District, Capell includes Laewomba (Wampar) under New Britain and New Ireland, which makes it rather difficult to locate. In the revised version of this publication (Capell 1962a) he had changed only the bibliography, which was now listed by District, under Author and Language. He refers in the bibliography to 'Holzknecht, K. n.d. *Grammatik der Azera Sprache* ' which does not exist. However, he may have been confused by seeing the Dempwolff Adzera manuscript which was in the possession of Rev. K. Holzknecht at that time.

In the village listing by Capell are found some of the Adzera and Wampar villages listed as if the inhabitants spoke separate and different languages. The villages, not a complete list, are categorised into 'A' or 'B' according to their classification by the German culture-historian Carl Schmitz (as presented in Schmitz 1960b). Capell noted that 'A' refers to 'suffixing' languages and 'B' to 'prefixing ' languages, a categorisation taken from Schmitz's work, but not referred to by Capell. Thus, in *A Survey of New Guinea Languages* , Capell refers to 'Atsera, Amari and Laewomba' as AN_2 (Capell 1969:128) and 'Yabêm, Napa, Wain, Taemi, Kela, Kaiwa and Labu' as AN_1. It is not clear which languages he means by 'Napa' and 'Wain', but if they are the same groups referred to as Nabak and Wain by McElhanon (1967) then they are not AN at all but Papuan languages. On his Map 3, Capell (1969:129) includes the 'Atsera' in the area for his category B (iii) and Yabêm in category B (ii). B denotes 'event domination' languages. These categories, along with AN_1 and AN_2, are not very illuminating in the context of the Markham languages and tell us nothing about their internal or external relationships. The examples used to illustrate the Papuan influences in the Adzera language are in some cases wrongly recorded or transcribed, and are mistakenly analysed as, for example, postpositions (1969:56-57). This leads to his very misleading conclusions about the extent and nature of Papuan influence on Adzera.

The work by Schmitz which was used by Capell was the result of research undertaken in the Huon Peninsula from 1955 to 1956 (Schmitz 1960b). Schmitz was a German culture-historian who believed that by comparing linguistic, social and material cultural data he could discern three different cultural 'strata' in the North-East New Guinea area, and published his theories in his *Historische Probleme in Nordost-Neuguinea.*

Schmitz called the three successive cultural traditions 'Culture A, Culture B and Culture C'. Culture A he ascribed to a very old non-Melanesian (Papuan) culture and this is reflected, he says, in the present-day cultures and languages of the inhabitants of the inner Huon Peninsula. Culture B is

'mid-way' between his Culture A and Culture C, and he found the languages of this group difficult to classify. To this group belong the Markham languages.

> The dialects of the Markham Valley, although possessing a prefix conjugation, show such marked differences in vocabulary from the other Austronesian dialects that they have always been suspected as belonging to an older stratum of the Austronesian family. (Schmitz 1960b:413).

He does not tell us, however, who has 'always...suspected' this. He says that the languages of Culture B cannot be called Austronesian, and that the structure of Kâte (a Huon Peninsula Papuan language) represents the true grammar of these languages. Therefore the prefix conjugation typical of the Melanesian languages must be due to later Austronesian influences from the east – from Yabêm and Tami.

As for Culture C, Schmitz says that the carriers of this wave must have reached New Guinea by sea, invaded the mainland through the river deltas, and spread from there to the west and east. He postulates two waves – one along the coast, westwards to the Markham River,

> ...and the other wave must have come down the lowland strip from the Sepik-Ramu area and crossed the divide between Ramu and Markham rivers, and finally settled down as the so-called Azera group on the upper Markham-River. (Schmitz 1960b:425)

Thus Schmitz tries to account for one 'divergent' branch of the Austronesian family tree, the Adzera. Adzera's close connections, linguistic and cultural, with any of its AN neighbours such as Wampar are not explored.

Loukotka, in his account of the languages of the Pacific, ventures into the Markham area (Loukotka 1957), but his work, although frequently given as a reference by Austronesian linguists, is of little value to comparative or historical linguists interested in the area. He says:'The linguistic position of some tribes in the valley of the Markham River is not certain, because the documents on their languages have been lost' (1957:32; my translation). He quotes Neuhauss (1911) as the only source for the languages of the coastal area , 'But the other languages, like Dambi, spoken to the west of the Salamaua station, and the Buasi to the north of the latter, etc are absolutely unknown' (1957:38; my translation). As for the languages of the Markham 'One can say the same thing about the languages of the Albert-Viktor Mountains, of whom we know only a few names like the Garaman and Marapuman in the catchment area of the Markham River etc.' (Loukotka 1957:38). These names given for Markham languages, 'Garaman' and 'Marapuman' were names attributed to two of the Adzera groups encountered by the German explorers Dammköhler and Fröhlich in 1907 on their trip through the Markham valley, and were mentioned in Fröhlich's account of the journey (Fröhlich 1908). Loukotka in fact lists this reference in his bibliography, but this is his most up-to-date reference on the area.

In 1960 Salzner published the two-volume *Sprachenatlas des indopazifischen Raumes*. The first volume lists all the languages dealt with, classified into some semblance of groups and subgroups. Unfortunately the grouping mixes Austronesians and Papuans indiscriminately, and the maps are even more inaccurate. This work gives a confused and inaccurate picture of the linguistic situation of the area.

The German ethnographer, Hans Fischer, conducted ethnographic and linguistic research in the Watut area in the early 1960s. His published work, *Watut* (1963), includes a short composite grammar sketch of the three Watut languages, and also compares word lists for Adzera, Wampar and

Watut. The cognate percentages which he calculated from these lists are very high, and some of the items are not strictly accurate. In a later article (Fischer 1966b) Fischer attempts some further comparisons between Wampet, Mumeng and Labu, three other Austronesian languages bordering on the Watut. However, the data is neither detailed nor extensive enough to allow any real genetic or subgrouping hypotheses to be formed. Fischer has also done subsequent work among the Wampar, and has completed a dictionary of the Wampar language in manuscript form (Fischer n.d.).

Wilhelm Milke, in his paper of 1965, compares Azira (Adzera), Watut, Yabêm and Tami. He discusses especially the reflexes of POC **s* and **z* in the languages discussed. He also notes the 'Markham Valley merger of *t with *d and *R, with *R >l' (1965:341-342). Milke's case for **z > Ø* in Adzera is not well-attested, from the examples given. Therefore, his classification of Adzera with the Gedaged group and the Mukawa group on the basis of this one innovation is not valid. His suppositions about Adzera verb morphology (1965:347) are incorrect. He wonders if the number of recurrent first syllables in Adzera verbs *('a-, ja-*, etc.*')* may be classificatory prefixes. There is no evidence that Adzera has a classificatory verb-prefixing system. His contention that:

> ...all these groups which share the development POC **s > s*, POC **z > Ø* are seen to share also the use of clasificatory prefixes to verbs, three of which are identical in two, one in all three groups. (1965:347)

is not justified. It would seem more logical to look at geographically closer groups for clues to the subgrouping of Adzera than to far-flung language groups such as Gedaged and Mukawa. Milke's conclusion that 'the group Gedaged-Azera-Mukawa will ultimately prove to be a genetic unit' (1965:348) is not borne out by any subsequently collected data. His suggestion that the Ham language of the Gogol area may be the linking language between Gedaged and Adzera is also a red herring, and not a fruitful direction for comparative research. Indications are that Ham is a close relative of Gedaged, and only distantly related to Adzera (M. Ross personal commmunication).

During the late 1960s and early 1970s, Bruce Hooley and Ken McElhanon of S.I.L. surveyed all the languages that they could identify in the then Morobe District. This was the first attempt at an extensive coverage of all the languages of the area. The results of this survey were published as Hooley and McElhanon (1970), Hooley (1970; 1971; 1976a, 1976b). They were the first linguists to assign the languages which are the subject of my present work to a 'family', which they called the 'Adzera Family' after the largest language in the group. Up until the Hooley and McElhanon survey, the only languages of the 'Family' for which information had been recorded were Adzera, Wampar and Watut. The classification of the languages into the 'Adzera Family' was based on lexicostatistics. The 'Family' was postulated as having 13 member languages, with percentage relationships ranging from 13 per cent to 70 per cent on their cognate count. Some of the languages surveyed had much higher cognate counts, and the two authors decided that these were dialects of languages rather than separate languages. Hooley (1971) divided the 'Family' into three subfamilies, as follows:

1. The Lower Watut subfamily: Dangal, Maralango, Silisili
2. The Markham subfamily: Adzera, Onank, Mari, Wampur, Sirasira
3. The Musom subfamily: Musom, Sirak

Sukurum and Guwot were not assigned to any subgroup, but Hooley said that they appear to be more divergent members of the 'Family', and that Sukurum might belong to the Markham subfamily. He also suggested that Guwot needed further investigation, and might be a language isolate, with the relationship to the Adzera languages being largely attributable to borrowing (1971:98). Hooley did

not assign Wampar to a subfamily, but this can only have been an oversight as it appears on the list of languages in the 'Family' (1971:97). The survey missed the Aribwaungg (Yalu) language altogether, and also missed one language in the Lower Watut area (which I am calling North Watut in this study).

Hooley's word lists, which were used as the basis for his lexicostatistical counts, are not entirely satisfactory (1971:118-133). Firstly, they are too short to provide an adequate statistical count, 128 items finally being selected for each language. Secondly, the items chosen are uneven and do not elicit what would appear to be important and perhaps distinguishing forms for Papua New Guinean languages. For example, he elicited 'white', 'black' and 'yellow' but not 'red'. He also elicited some personal pronoun forms, 'I', 'thou', 'he', 'we exclusive', 'you', 'they' but did not complete the set with 'we inclusive' and dual forms, which certainly appear in many of the languages being surveyed. A few verbs were elicited, but not enough. Thirdly, there are many blanks for items in the Adzera Family lists, making the lexicostatistical percentages even less reliable.

There are many inaccuracies in the actual items elicited. Most of the nominal forms were recorded with their possessive suffixes attached, but not indicated with morpheme breaks. The possessive suffixes recorded represented all persons and numbers, not one standard regular form. For example, all the Adzera kinship terms were recorded with the third person possessive pronoun suffix *-n* attached (but not marked as such), while the Wampur kinship terms were recorded with the first person inalienable possessive pronoun suffix *-ŋʔ* attached, also unmarked. Errors of transcription, probably from handwritten lists, also occurred, for example in the Amari list, several occurrences of *ŋ* were transcribed as *y*. In many of the lists verbs were recorded with subject pronoun prefixes attached, without any indication that this was the case. Other verbs in the same lists were recorded with the gerundive suffix attached.

The errors and inconsistencies pointed out above mask real cognates, and could also lead the researchers into identifying false cognates. However, the study done by Hooley and McElhanon has been of real value in determining the genetic relationship of the languages of the Morobe Province, and provides a valuable basis from which to expand into more detailed and intensive research, either into subgroups postulated by their study or on individual languages.

The first use of the name 'Adzera' to cover all the Austronesian languages of the Markham area appeared in Hooley (1970), and subsequent publications have retained this name for the whole 'Family'. In the present work I am using the name 'Markham' to cover these languages, for several reasons. Firstly, the name 'Adzera' is the name of one language in the group, and this leads to confusion between the language name and the 'Family' name. Secondly, the speakers of all the languages which are the subject of the present study use the term 'Markham' to designate themselves as a linguistic entity, recognising their linguistic and historical relationships to each other. Thirdly, even though some of the language communities do not live in the Markham Valley itself, it is now the geographical focus of many of their activities, communication network, etc. Therefore it is felt that the name 'Markham' represents these languages as a group more adequately than the name 'Adzera'.

One researcher who used the Hooley study, supplemented by his own data, was Joel Bradshaw. Bradshaw tried to subgroup the languages of the Huon Gulf area, in which he included the languages of the 'Adzera Family' postulated by Hooley (Bradshaw 1978a). Bradshaw used sound correspondences and grammatical features to identify shared innovations which have occurred since the break-up of Proto Oceanic, and based his subgroupings on that data. With regard to the sound correspondences, he says that the 'Adzera languages' are characterised by POC **p > f, (> h > Ø* in some communities*)* and a tendency for *(m)b* (from POC **mp*) to devoice in a large number of

languages (1978a:55). Also, as in most of the Huon Gulf languages, POC **ʀ* merges with **l* and **d*, with **t > l*, **ns > s*, and **ŋm > mw* in the Adzera languages, setting them apart from the Buang, Hote and coastal groups which show different phonological isoglosses. However, he does qualify these latter statements by saying that the data are 'too skimpy to sustain generalizations about their various reflexes' (1978a:55). He concludes his analysis of sound correspondences by stating that the phonological isoglosses largely agree with the lexicostatistical boundaries established by Hooley in 1971. One problem with interpreting the apparently well-attested isogloss of Adzera *l, d-* as reflexes of POC **t* is that Bradshaw appears to have combined all the Adzera data available to him into one composite phonological paradigm, without stating whether the sounds being presented are from individual languages or represent reconstructed proto phonemes. In at least Adzera, Mari and Wampur, what he gives as the *l* phoneme should be *r*, and in Wampur, Mari, Sukurum and Sarasira *l, r* and *d* alternate freely (see Chapter 4 below). The reflexes of POC sounds are thus not as clear-cut and well-attested as Bradshaw believes. Also, taking into account the shortcomings of the Hooley lists which I have discussed above, Bradshaw's use of these lists as his primary data throws some of his conclusions into doubt.

Bradshaw makes a valiant attempt to distinguish subgroupings based on the poor morphosyntactic data available to him, but the morphological and syntactic features chosen as subgrouping features are not particularly significant ones. For example, irrealis marker, discontinuous negative morphemes, bracketing of relative clauses, and the identification of third person singular and plural forms were chosen by Bradshaw as subgrouping features, but are not as significant for subgrouping as many other morphological and syntactic features. This will be discussed later in this work (see Chapter 5 and Chapter 6, below).

Bradshaw's summary is inconclusive, on the evidence provided. The features he selected do not indicate clear directions for subgrouping purposes, and it is most likely that his supposition that 'we are getting as much geographical as genetic information' (1978a:51) applies to morphosyntactic data as well as the lexicostatistics.

The *Language atlas of the Pacific area* (Wurm and Hattori 1981-1983:Maps 7 and 8) presents a picture of the Markham languages which is also based on the Hooley and McElhanon survey. The language names and their boundaries are taken from that survey, and need some alterations.

McElhanon (1984) produced his field guide to the languages of Morobe, with a check list of all the villages by linguistic affiliation. This is a very useful reference for linguists and non-linguists alike, but as it is also based on the Hooley and McElhanon surveys of the 1960s, some of the details are not accurate.

Ross (1986) classifies the Markham family as a lower-order subgroup of the Huon Gulf family of Western Oceanic. Ross includes in this family three subgroups:

i) Labu

ii) Lower Markham network: Yalu, Musom. Sirak, Duwet, Wampar, Silisili, Maralango, Danggal

iii) Upper Markham network: Adzera, Sirasira, Sukurum, Wampur, Mari

This study uses not only lexical data, but morphosyntactic data as well in order to define the subgroupings. However, some of the language boundaries were not accurate, particularly those adopted from the Hooley and McElhanon survey, and some minor adjustments need to be made to the definitions and membership of the subgroups.

Foley (1986) contributes to the mythology that the Markham languages have been so heavily influenced by Papuan languages that they are unrecognisable as being genetically Austronesian. He states that Adzera betrays its Austronesian affiliation 'only in some basic vocabulary and a few morphemes' (1986:26) The contention that Adzera now employs 'verb-final word order and postpositions' (1986:26) is not true, and the references he cites to support this fallacy (Capell 1976b and Dutton 1976) do not mention Adzera anywhere. In fact Capell (1969:56) does state that Adzera has postpositions, but this is a mistaken interpretation of the data available to him at the time. This reference of Capell does not even appear in Foley's list of references. It is unfortunate that such an influential work as Foley's should perpetuate such fallacious beliefs, without any supporting evidence whatsoever.

There have been two detailed studies made of individual languages of the Markham since the Hooley and McElhanon survey. These are the excellent grammar of Labu by Siegel (Siegel 1984) and my own grammar of the Amari dialect of Adzera (S. Holzknecht 1986).

In summary, previous linguistic studies which have dealt with any Markham languages have had several shortcomings. One is the sporadic nature of most studies, which concentrated on one, two or three of the major languages and ignored the rest. Because of this, the nature of the interrelationships of these languages, and their relationships with neighbouring languages, Austronesian and Papuan, has not been clearly understood and presented.

Another problem with analyses of Markham languages lies in the fact that Adzera, probably the most innovative of all the Markham languages, has received most attention from linguists. It has also been taken as the iconic language for all Markham languages. This has given the mistaken impression that the languages are all like Adzera and can be classified as 'aberrant' Austronesian languages.

A further shortcoming lies in the conduct of surveys in the area. Where this was attempted for the Markham languages by the Hooley and McElhanon survey, the scope of the data collected, and the quality of that data, has diminished the value of the work to comparative Austronesian linguists. One problem in such surveys lies with the use of lexicostatistics as a method of subgrouping languages. As will be discussed in later chapters of this work, there are some features of Markham societies, and indeed of many Papua New Guinean societies, which diminish the usefulness of lexicostatistics as a research tool. One of these features is word taboo, another is the heavy borrowing from neighbouring languages, whether Austronesian or Papuan, which occurs in all Markham language communities. Simons (1982) discusses the effect of word taboo on lexicostatistics in Solomon Islands Austronesian languages, and also two papers by myself (S. Holzknecht 1987; 1988) discuss the problems caused by word taboo in elicitation in the Markham languages, and the implications of word taboo for language change. Because of these reservations about the validity and usefulness of lexicostatistics in the Markham situation, I have chosen not to use it as a methodological tool in my study.

This present work is in agreement with Ross' conclusion that there is a Huon Gulf group. It goes on to show that the languages of the Markham form a subgroup of Huon Gulf, and this group is referred to throughout as 'the Markham languages' rather than 'the Adzera Family' as proposed by Hooley. The Markham group consists of three lower-order subgroupings – (1) Upper Markham, (2) Watut, and (3) Lower Markham. Upper Markham includes five languages – Mari, Adzera, Wampur, Sukurum and Sarasira. Watut includes three languages – South Watut, Middle Watut and North Watut. Lower Markham includes Wampar, Musom, Duwet, Nafi, Aribwaungg, Aribwatsa and

Labu. The evidence places Labu with the languages of the Lower Markham subgroup, but shows that it has been influenced considerably by its neighbour Bukawa.

The conclusions suggested by the discussion above are that in order to delineate the genetic affiliation of a group of languages, all the languages of the group must be studied. It is not sufficient to take one or two as representatives of the whole group. Secondly, the scope and extent of the study must be such as to provide accurate, consistent data to work on. A survey using a 100-, 200-, or even 300-word list is not sufficient. A much more extensive list should be used, in order to provide as much raw data as possible for analysis of phonology, morphology and lexicosemantics. The extensive word lists must be supplemented by morphosyntactic data, and wherever possible textual material should be collected from every language in order to be sure that representative speech varieties are documented. A monumental work analysing the data resulting from such a survey is Ross (1986) which surveys and subgroups 218 Oceanic languages of Western Melanesia. Ross' work is based on not only a large body of lexical items, but also on morphosyntactic data, and provides the most comprehensive survey and subgrouping of Western Oceanic languages available to date.

2.2 METHODOLOGY OF THE PRESENT STUDY

In this section I discuss the methodology used in collecting the data in the field, and the methods used in analysing the data out of the field.

2.2.1 METHODOLOGY IN THE FIELD

It was with the studies discussed above as background that the present study was planned and carried out. I felt that it was necessary to survey thoroughly all the extant languages of the group in order to provide an accurate picture of their internal and external affiliations, and of their internal subgroupings, and to make some suggestions about the histories of the societies. The Hooley and McElhanon survey provided the geographical scope of the field, and the study by Ross, which was not completed at the time I began my research, gave me an indication of the theoretical and methodological scope which my study would have to encompass.

My own previous research in anthropology and linguistics in the Adzera language group provided me with background knowledge of the area, the people, their cultures and some familiarity with the linguistic situation. It also provided me with the all-important contacts, without which the present study could not have been carried out. From these resources, I mapped out the geographical area which the study would have to cover. Through various sources I discovered that there were more living languages in the Markham linguistic group than I had previously realised, and that other related languages had already disappeared. For example, I found that the Aribwatsa language, long supposed to be extinct, had one speaker still living, so in the interest of completeness I included that language in my study. Several other languages, however, have indeed been lost, in the mountainous area south of the Markham River, and I was unable to locate any speakers of these languages. The total number of separate languages in the Markham group for which I collected data is 15.

With the actual geographical scope of the study more or less fixed, I was then able to decide on the content. I chose to combine word lists set up by Tryon and Ross for use in Austronesian languages of the Pacific, but modified for my purposes (Ross n.d.; Tryon n.d.). For example, I deleted many of the maritime items because I knew that they would be irrelevant in the context of inland Austronesians. I added items in the fields of agriculture and horticulture which I knew to be relevant,

and also added some cultural items which would be of comparative interest. The full list had 1,684 items, arranged according to semantic fields.

Questionnaires were constructed to cover sociolinguistic background, and included questions on population statistics, perceived dialect/language boundaries, multilingualism, word taboo, marriage and trade relations with neighbouring groups, and migration history of the group or groups in the community. Information recorded for individual informants included names, age, sex, village affiliation, languages spoken, educational history, and work history.

In order to collect data which could be used to analyse the morphosyntactic systems of the individual languages, an interview schedule was drawn up which contained a check list of possible morphological and syntactic categories, sentences for elicitation, outlines for paradigms for pronominal sets, patterns of verb morphology, and clause and sentence structures. The scope of this schedule was partly determined by the knowledge of Adzera, Wampar and Watut morphosyntactic systems which I had gained both from my own work and from the available literature on the languages. The word list and the schedule were both set up in English, but administered in Tok Pisin. I found it more practicable in the field to translate the sentences which I found, after several tries, would elicit the most relevant morphosyntactic patterns, into Tok Pisin. Thus a set of Tok Pisin sentences and paradigms based on the original English check list was created in the field and used in all the languages.

The decision was made to use Tok Pisin as the language of the interviews, of elicitation, and of text translation. This was based on the fact that Tok Pisin was the only language which I had in common with all the informants. Tok Pisin was also the most convenient language to use for comparability purposes. It has the advantage of being politically and socially 'neutral' in the Markham context, where the use of certain local languages such as Wampar and Adzera have come, through mission contact and the colonial period, to have social and political connotations. My use of either of these languages as the lingua franca for my study could have had unfortunate connotations for the informants. The disadvantages of using a pidgin language for elicitation and translation lie in the limited vocabulary and reduced syntax of the language itself. However, I believe that these disadvantages were overcome, and misunderstandings were often cleared up by supplementing Tok Pisin with another language common to myself and the informant, for example Adzera, or Yabêm. Few of the informants had sufficient knowledge of English to enable me to use that as the common language, although I occasionally checked data with English-speaking informants as an extra precaution. I made all the final decisions about orthography, although literate informants frequently made suggestions over my shoulder when they believed I was writing their language 'incorrectly'.

My original intention was to visit villages in every language group of the Markham, and collect my data from speakers of the language in their village context. This was achieved for all the languages except for South and Middle Watut, Musom, and Duwet. For various reasons, the communities speaking these languages were inaccessible by any means available to me at the time of my field work. In order to work in these four languages, I contacted speakers who were resident either in Lae or within reach of Lae, and interviews were conducted at their settlements.

I had also intended to choose informants from a range of sociolinguistically relevant groups within each community. I had hoped to collect data from as many different types of speakers as possible in each language community, including older and younger speakers, male and female speakers, educated and non-educated, those who were known to be monolingual and those who were known to be multilingual. This of course did not work in practice. In some cases the informants chose me, and

the informants who were sometimes assigned to me were not always those I would have chosen myself. As I progressed in my data collection, and after several frustrating false starts, I settled on the 'committee' method of collecting data as the most profitable for me, and the least tiring for my informants. So a small group of people, usually some older men and women, was the environment of most of my elicitation sessions. Recording and translation of text was, however, done with individuals, as the 'committees' were too noisy for this type of activity. Crosschecking with other speakers of the languages was done whenever possible.

All elicitation sessions were recorded onto cassette, and were played back to the informants in the village for checking purposes. All texts were recorded, played back and translated immediately into Tok Pisin with the assistance of the speaker, and the translation was also recorded. Transcriptions were checked again later out of the recording context.

Thus for each of the 15 languages in the study I collected a body of data consisting of more than 1,684 lexical items, over 100 sentence patterns, paradigms and at least one text with a Tok Pisin translation. I also collected a similar body of data for Bukawa, an Austronesian language of the Huon Gulf family which I included in order to determine whether or not the linguistic affiliations of Labu, a 'problem language' of the Markham group, lay in that direction (see 6.2.8.2 The Bukawa influence on Labu, below).

2.2.2 METHODOLOGY USED IN ANALYSIS OF DATA

After completing data collection in each of the languages, I spent about one week transcribing the tape-recorded word lists, sentences and texts of that language before beginning work in another. For each language I wrote a brief outline of the phonology, morphology and syntax, and produced the text with interlinear translations in both Tok Pisin and English. I could then do crosschecks with any available informants.

When all languages had been surveyed, and data checked, the comparative analysis was begun. The word lists were transferred to large sheets of paper, and the language items entered for each English item. Through inspection resemblances were identified, and separate lists were made of cognate sets. Sets of sound correspondences were then drawn out of these lists and listed separately. After this procedure was completed, available lists of Proto Oceanic and other reconstructed forms were consulted, for example Wurm and Wilson (1975), Grace (1969) and Ross (1986). Where POC antecedents could be clearly identified, these were added to the top of lists of cognates. The process of reconstructing a Proto Markham sound system then proceeded. Reconstructions at lower levels were also attempted. The results of this are tabulated and discussed in Chapter 4 of this work.

Morphosyntactic forms were also tabulated, and compared. Where cognate forms and functions coincided, separate tables were drawn up to facilitate the process of morphosyntactic reconstruction. Reconstruction of Proto Markham morphology and some syntax was then attempted, and lower-level reconstructions were also done. The results of that analysis and reconstruction are presented and discussed in Chapter 5 of this work, and a discussion of the implications of all the data for subgrouping and for the history of the Markham populations is set out in Chapter 6.

It is not my intention in this work to enter into the 'pidginisation' versus 'mixed languages' debate. However, a few points need to be made here about the behaviour of languages in contact. My observations of the 15 languages of the Markham, and of some of their Austronesian and Papuan neighbours, indicate that in this inland area, any language is in contact at any time with at least one

other language, and any culture is in touch with at least one other. These contacts are sometimes sought, as in marriage connections or trade activities, or unsought as in a refugee group becoming clients in another group, or in a patron group receiving refugees from another language. All these contacts necessitate linguistic accommodation. The direction of this accommodation depends on many factors. Social pressures such as which is the language with highest prestige at any time and the status of affines within any community can affect the direction of linguistic accommodation. Linguistic pressures such as markedness of features and complexity of structures can affect the direction of linguistic accommodation. To say that languages which accommodate each other in these ways are 'pidginised' is incorrect in this context, according to definitions from such writings as Mühlhäusler (1974; 1986). To say that they are 'mixed' is also not correct, as the idea of 'mixing' implies the existence of some 'pure' languages which are thus diluted by each other. If this is the case, then there is no such pure and perfect linguistic entity in the geographical or linguistic area of this present study.

CHAPTER 3

GEOGRAPHICAL AND SOCIAL CONTEXT OF THE MARKHAM LANGUAGES

3.1 INTRODUCTION

In this chapter I will 'set the scene' for the discussion and comparison of the Markham languages which follows in Chapters 4, 5 and 6. I will first describe the geographical area which is inhabited by speakers of the languages. I will then discuss each of the language communities in turn, looking at the name(s) by which the language is known, the villages in which the language population lives, the geographical location of the villages, and the population statistics. In this section I will also give a very brief account of the migration history of each group, insofar as this can be reconstructed from oral accounts and written sources. The third section will be a detailed discussion of the social context of the Markham people, in which I attempt to place the languages and their histories in their social setting. There are certain aspects of the cultures of the Markham people that are inextricably woven in with language, its use and its change and the discussion will concentrate on these features. I am aware that in highlighting some aspects of culture and down-playing others I am presenting a slanted picture of these societies. Every aspect of life is connected with language use and with the way the people think about their languages and their societies at every level. However, rather than leave the problem to the anthropologists and confine myself to the abstract notion of 'language' I will attempt to deal with the aspects of Markham societies which it is essential to understand before the languages can be analysed.

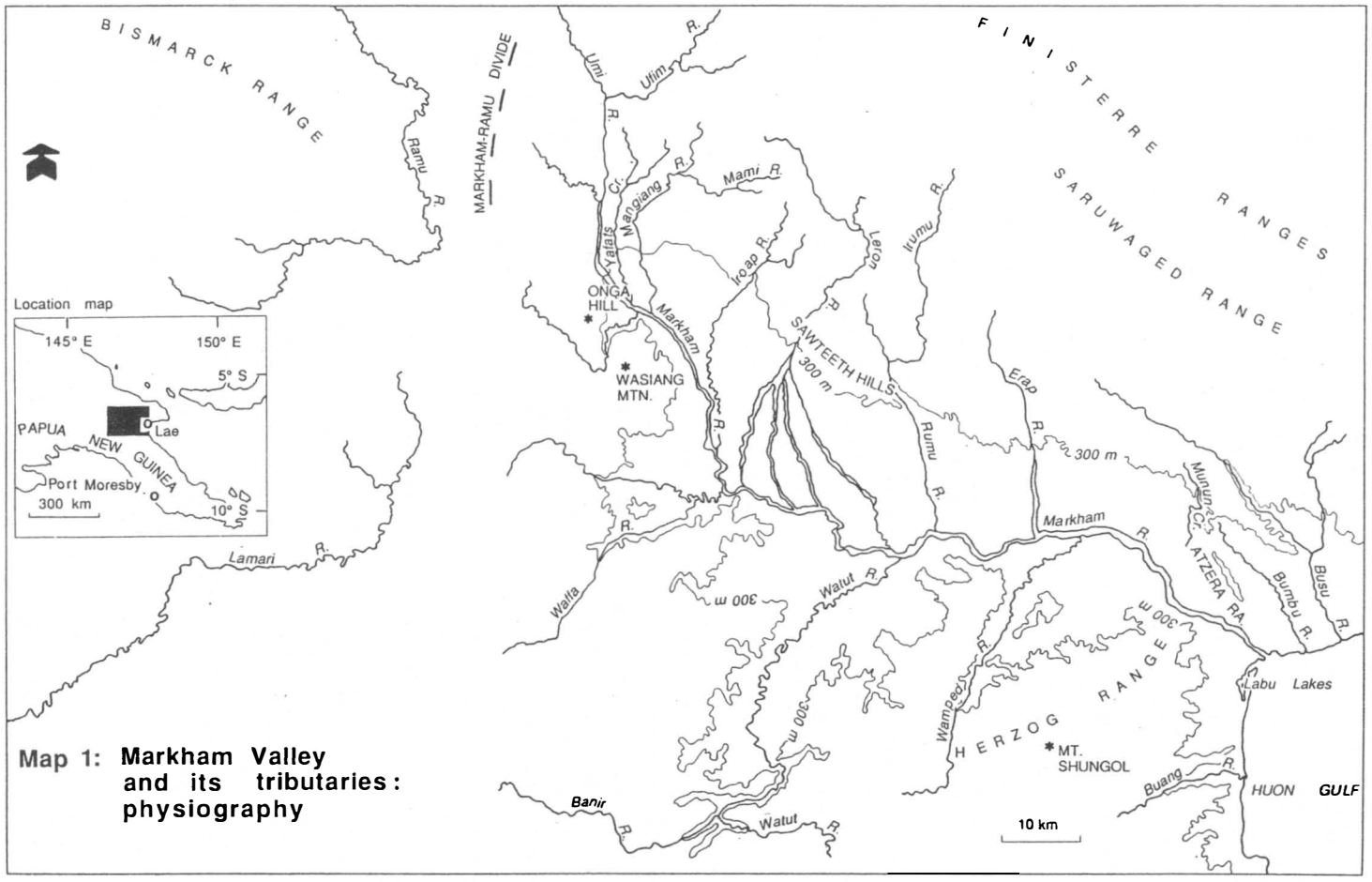
3.2 GEOGRAPHY OF THE MARKHAM VALLEY AND ITS CATCHMENT AREA

The Markham Valley appears, on first impression, to be a long, broad, flat area of savanna grassland, bounded on two sides by high, precipitous mountains covered in dense rainforest (see Map 1). It appears to be a physical entity, with clearly defined boundaries. This is deceptive. It is actually only part of the whole picture, a picture which has no boundaries. The Markham Valley is in one sense the central part of the whole catchment area, and is interconnected with the tributaries and other valleys which are inhabited by people who belong to a wide network of cultures and languages. This network has no boundaries in the sense that each language community, each village, each clan, each individual has a network of traditional kinship and trading ties that stretch, little by little, beyond the artificially constructed boundaries of languages and cultures. The people themselves have an awareness of this wider network, using it whenever possible to their advantage and evidently did so in prehistoric times as well. But at the same time there exists a paradox in the purely local focus of

the peoples' awareness, which is concentrated inwards to their own small kin-based group. This is reflected in their languages, in their songs and dances, in their ceremonies and social contacts. Both the wider network of social, economic and cultural ties and the localised group identification and consciousness have played a part in the linguistic history of every language group in the Markham.

Therefore I will not discuss just the geography of the Markham Valley, or the culture of the valley populations. My description must include the tributary valleys and their people, and sometimes must wander over the high mountains into other areas, into other cultures.

When one begins the journey from the coast at the mouth of the Markham River, the Markham Valley is not visible. The gap where the Herzog Mountains to the south of the river mouth and the Atzera Range to the north almost meet gives, however, a tantalising glimpse of an open plain beyond. The Valley does not become visible until one has travelled about 30 kilometres inland, and near Gabsonkeg village, one of the Wampar villages, suddenly the wet rainforest ends and the wide savanna grassland opens out. This grassland comprises mainly the tall grass called *kunai* (*Imperata spp*) in Papua New Guinea Tok Pisin. To get this far, one has had to cross numerous streams such as Munun Creek, flowing south towards the Markham River. Other larger rivers flow northwards into the Markham, like the Wamped and Watut Rivers. Going further into the valley, it widens suddenly, and at the broad, dirty Erap River the first major river crossing has to be made. One is aware that there must be more behind those mountains from which the Erap, then the Rumu and the Leron flow. The *kunai*-covered slopes at the foot of the range are dwarfed by the towering forested mountains of the Saruwaged Range to the north of the valley and the Herzog and Kraetke Ranges to the South. As the rivers flow out into the plain they broaden, and old braided paths of the rivers can be seen where the earth is just grey gravel, many kilometres wide. One travels on below the mountain range to the north called the Sawteeth Hills by Australian surveyors but called *Aruf sisun* ('maidens' breasts') by the Adzeras, and around the spectacular Leron river terraces. The plain is broadest at the point where the Leron River enters the Markham River, about 20 kilometres wide from north to south. It then begins to narrow again, and there are more trees in the *kunai* plain on the valley floor. At this point too there are more villages to be seen, and the characteristic Adzera beehive-shaped huts appear under coconut palms. More rivers are crossed, the Iroap, the Mangiang, the Garia, the Yafats until the Umi River is reached. This is the upper reach of the Markham. The river enters the valley from the north, flows due south across the plain, and turns sharply east where it hits the foot of the steep mountains to the south, only about 6 kilometres from the Eastern Highlands border at this point. One crosses the deeply-worn course of the Umi River and the valley suddenly narrows, many more villages becoming visible as one draws closer to the mountains. For a while now one has been aware of a very gentle slope upwards, towards the place where the Highlands Highway turns south into the Eastern Highlands via the Kassam Pass. Going on past the highway turn-off and along the valley, the slope increases, and just where the Bibwai River flows out of the mountains on the northern side of the valley, the slope gradually descends once more. This is the Markham-Ramu divide, where the watersheds of the two systems diverge from one another. One is now, without having consciously noticed a division, in the Ramu Valley. The Markham and Ramu Valleys, which are parts of the great Sepik-Ramu-Markham Trough, are separated only by that imperceptible rise and fall. Now on the left to the south-west is seen the beginnings of the Ramu River, flowing westwards through its own valley. There are very few villages now, just one or two small settlements of the Mari people. The mountains to the north-east and south-west are precipitous, and are cut by spectacular fan-shaped formations of alluvial soil where the rivers enter the valley and flow into the Ramu River.



Map 1: Markham Valley and its tributaries: physiography

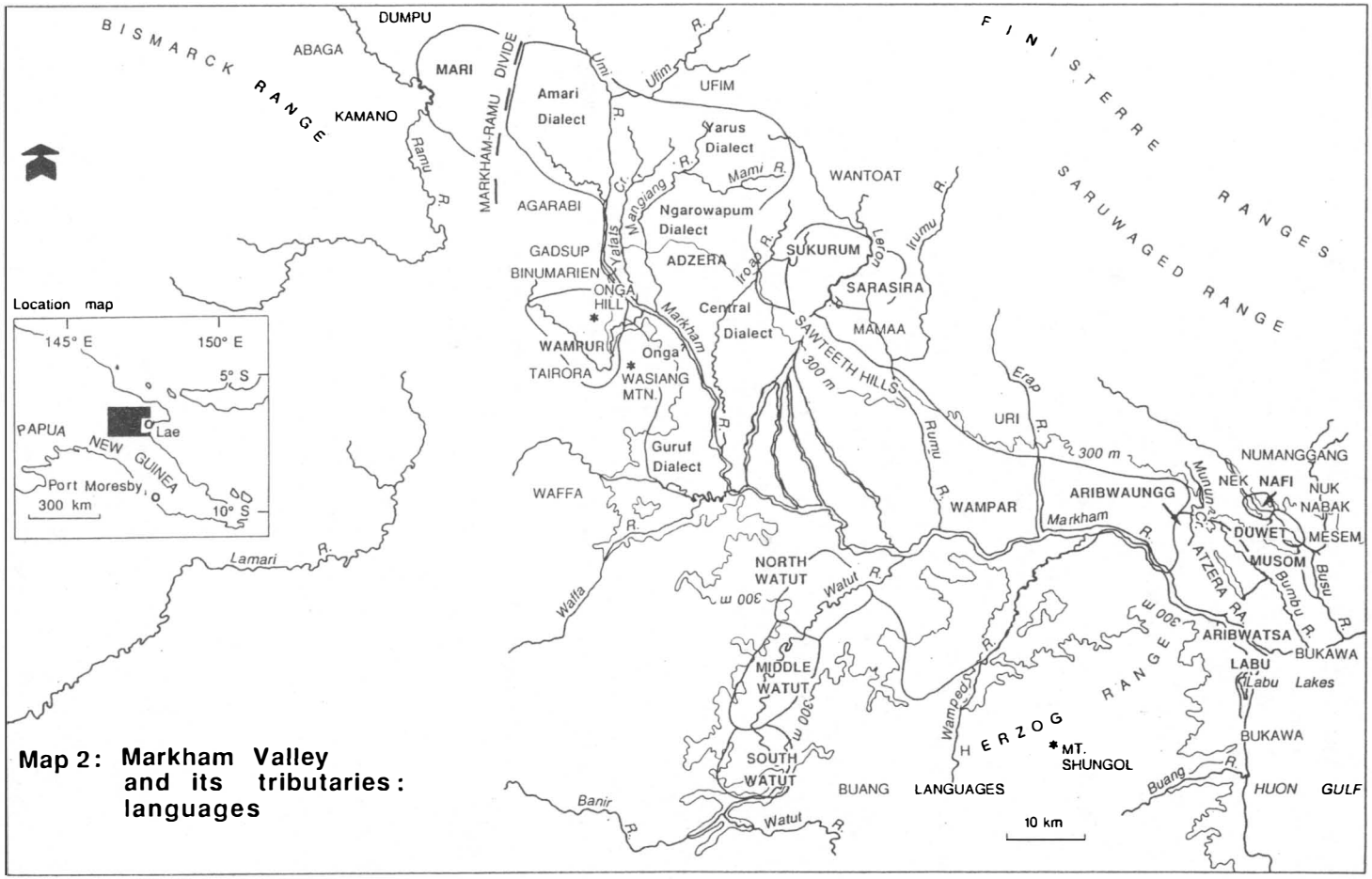
The smaller river valleys to the south and to the north of both the Markham and Ramu Valleys are mostly steep, heavily-forested and some have very rich agricultural soil. The main river valleys, in which language communities of the Markham family live include the valley of the Busu River, which flows from the high parts of the Saruwaged Range south-eastwards and parallel to the Markham into the Huon Gulf about eight kilometres east of Lae. At the head of this river, and in a side valley off it are situated the villages of the Nafi and Duwet languages. Down river towards the coast and in the mountains to the north live the Musom people, most of them in Musom village, some in the mixed Musom-Nabak-Mesem village of Gwabadik and some in another small community called Musom Tale, up the Bungka River from Situm soldier settlement area.

There are two large river valleys to the south of the Markham River, the Wamped and the Watut, whose rivers flow north into the Markham. In the Wamped Valley are several Wampar-speaking communities. In the lower reaches of the Watut River are three language groups – South, Middle and North Watut. In the next large valley on the southern side of the Markham, the Waffa River Valley, are several villages of Papuan-speaking people, the Waffa language group. The next valley in a westerly direction is the Wanton River Valley, and in this area, to the west of the Markham River, live the Wampur speakers, who are bounded on the west, south and north by communities speaking the Papuan languages of Tairora, Gadsup and Binumarien.

On the northern side of the valley are several smaller, populated river valleys. The valleys of the Yafats and the Mangiang Rivers are inhabited by speakers of the Yarus dialect of Adzera. In the valley of the Leron River, further east, live the Sukurum people whose villages are on the west side of the Leron, and the Sarasira people whose villages are on the east side of the Leron.

These tributary rivers are of great importance to the history of this area. As the rivers are narrow, swift and in deeply-cut beds they provide major physical boundaries for human groupings. Their valleys were also the main routes for movement into and settlement within the area. The people settled near rivers because they provided water and because that was where the best agricultural land was. They are all very swift-flowing, as their beds fall very steeply from the mountains to the Markham, and so they were never used for navigation by water craft. Neither were they used significantly as a source of fish. They are considered to be useful but dangerous and unpredictable by the people who live near them. Many stories tell of people being washed away by the rivers, and some malevolent spirits are believed to live in the rivers, or in the big rocks which edge them. They flood and destroy gardens and villages and the gravel beds left after a flood are useless as agricultural land. As well as this they eat away the land and cause landslides, killing people and burying villages. Crocodiles inhabit some of the rivers, such as the Markham and the Watut, and consequently fishing and bathing in them and crossing them is hazardous. Again we strike a paradox, of the river as a benevolent and necessary, but at the same time malevolent and dangerous element of the natural and human environment.

The terrain of the Markham Valley is open, flat and broad. That of the side valleys is narrow, forested and steep except in the lower part of the Watut. The Watut falls steeply in a very narrow bed through the territory of the South Watut language group, until it reaches Mararena village of the Middle Watut group where the river leaves the mountains and widens out, flowing for about 30 kilometres through a broad swampy plain of forest and sago palms to its junction with the Markham.



Map 2: Markham Valley and its tributaries: languages

The dominant vegetation of the Markham plain is savanna, with fire-resistant trees scattered in the *kunai* grass . The foothills are also covered with *kunai,* up to an altitude of between 400 and 600 metres where the lowland hill forest begins. In his study of the Markham Valley grasslands, Garrett-Jones (1979:22) postulates that this grassland is indigenous, and that its existence does not correlate with intensive human occupation of the area, although human activity such as burning and forest clearing has maintained and extended the area of grassland. During the dry season all areas of *kunai* are burnt by those holding traditional rights to do so. The rainfall varies within the valley from 4000mm per annum at the coast near Lae to 1500mm at Erap in the middle of the Markham, with the head of the valley receiving 2000mm per annum. There is a difference in rainfall between the valley and the mountain areas which average 2000mm to 2500mm per annum (Ford 1974:8-9). The Markham Valley is in a rainshadow, and consequently its rainfall is much lower than one would expect. The wet season is from about October to March, and the dry season from April to September, the opposite to that of Lae and the Huon Gulf coast.

3.3 DESCRIPTIONS OF THE MARKHAM LANGUAGE COMMUNITIES

In this section I will present demographic, geographical and some historical information about the 15 language communities which make up the Markham family. I will deal with each one in turn, beginning with the Mari language which is the furthest west in the Ramu Valley, progressing through the communities of the Markham Valley and the tributary valleys in a south-easterly direction, coming finally to Labu on the Huon Gulf coast. Where I have information on the history of a language group, I will refer to it. Population statistics for language groups in Morobe Province are taken from the National Statistical Office, Port Moresby publication *Provincial data system: rural community register* (NSO 1983) because this gives more accurate figures than those in the *1980 national population census, Final figures: census unit populations* (NSO 1982). However, the *Provincial data system: rural community register* was not available for Madang Province, so I have used the 1980 national population census data for Mari, the only language in this study which is in Madang Province.

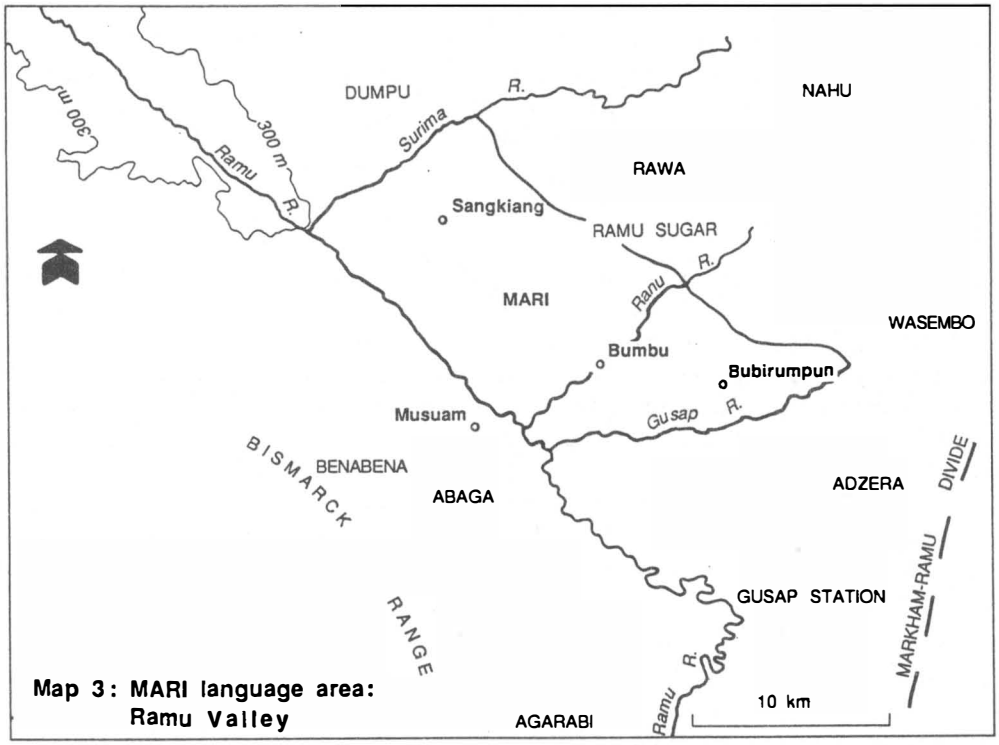
In all the language groups discussed in this section, except for Wampur, Yabêm was used as the Lutheran Mission lingua franca from 1937 until the late 1960s, when Tok Pisin became the official Lutheran Church lingua franca used in their Tok Ples ('Vernacular') schools (Osmers 1981). In most communities, adults over about 30 years of age speak, read and write Yabêm. Wampur had a different history of mission contact from the other language groups, being first contacted and evangelised by Kâte-speaking New Guinean missionaries from Finschhafen, in the 1920s. Thus the Wampur people never learned Yabêm, and now do not know very much Kâte. In all communities in the Markham language area, most people speak Tok Pisin, although not everyone is literate in that language.

3.3.1 MARI

The Mari language has been called by various names – the early Lutheran missionaries and some explorers who first contacted the people called them Garamari, which is a version of the name Garam Mari given to them by their Adzera neighbours. In Hooley (1970) and Hooley and McElhanon (1970) they were called Hop, presumably because the Mari word for 'speech' is *hup.* Hooley (1971; 1976b) and Z'graggen (1975) subsequently referred to the language as Mari.

The name Mari was given to this group of people by the Lutheran evangelists who first settled in the village called Mari (now moved to Musuam) in the early 1920s. These foreigners used the name to refer to the whole group of villages, because they had no name for themselves as a group, just names of individual villages. I will be using the name Mari throughout this account to refer to the group and to the language spoken by this group of people.

The Mari people live in four villages in the Ramu Valley, Madang Province, just inside the Madang-Morobe border, and just beyond the Markham-Ramu divide (see Map 3). The villages and their populations are: Bumbu (166), Bubirumpun (186), Musuam (205) and Sangkiang (249), a total of 806. There is only one speech variety recorded in these villages. Their neighbours speak the Amari dialect of Adzera, in the upper Markham Valley to the south-east, and the Papuan languages, Dumpu (Evapia family, Rai Coast stock, Madang-Adelbert Range subphylum of Trans-New Guinea phylum) to the north-west in the Ramu Valley, Kamano (Kamano subfamily, Eastern family, East New Guinea Highlands stock, Trans-New Guinea phylum) and Abaga (Family Level Isolate, attributed to Finisterre-Huon stock, Trans-New Guinea phylum) in the Bismarck Range to the south-west and south, and Nahu and Rawa (Gusap-Mot family, East New Guinea Highlands stock, Trans-New Guinea phylum) to the north in the Finisterre Range (Wurm, ed. 1981).



Map 3: MARI language area: Ramu Valley

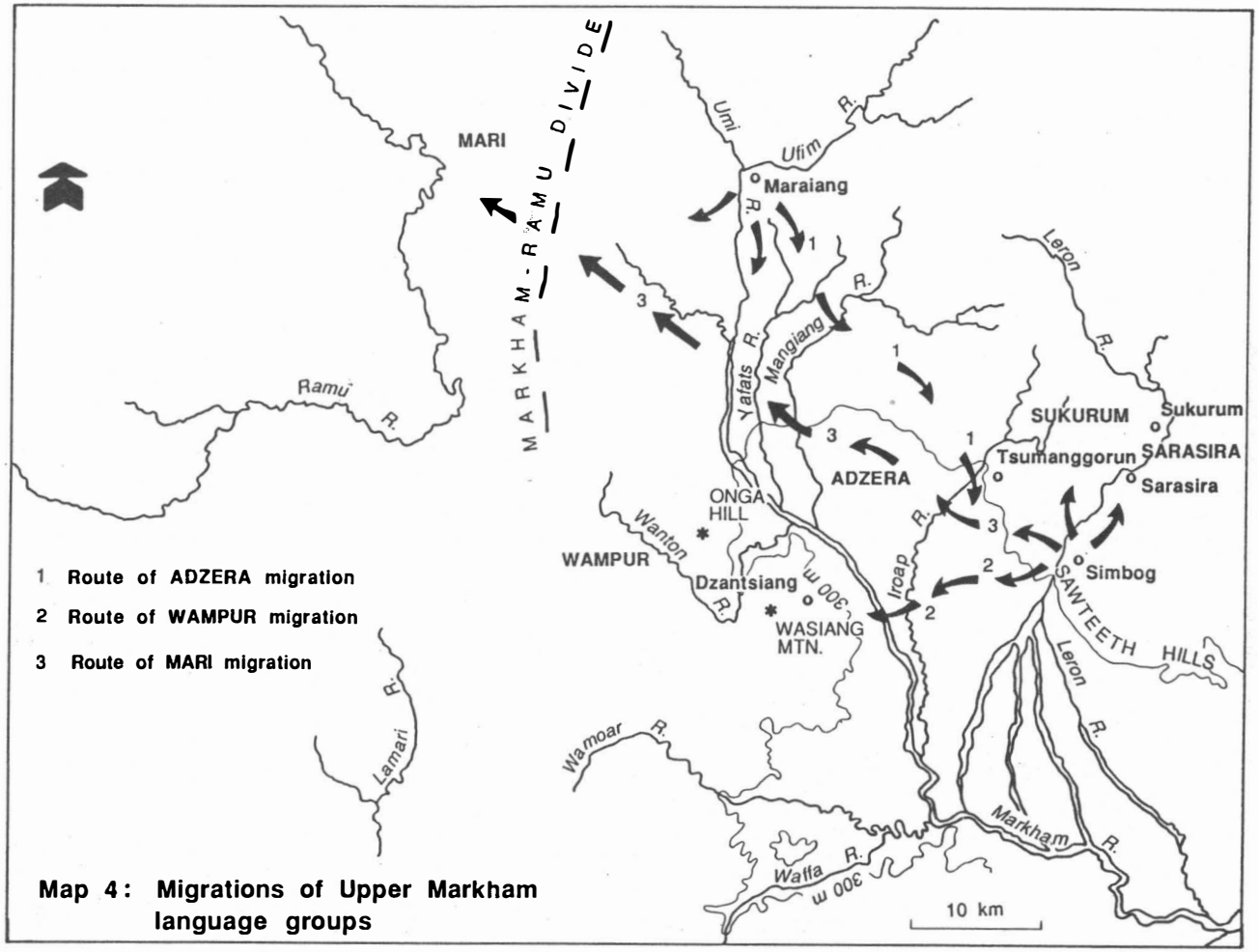
Present-day Mari claim descent from a village called Simbog or Simbong, which they shared with the ancestors of present-day Sukurum and Sarasira speakers, at the foot of the Sawteeth Hills, and near where the Leron River enters the Markham Valley (see Map 4). This story was repeated independently by informants from both Sukurum and Sarasira. The Mari's story is that their ancestors fled from Simbog after a fight, were chased up the Markham Valley (by whom is not clear), and finally settled in two villages, one on the northern side of the Ramu Valley, and the other, old Mari village, on the southern side of the Ramu River. Only after European contact put a stop to warfare (in about 1920) did the northern dwellers come out into the plain and settle where they are today. They had close trading and marriage ties with all their neighbours up until the time of contact. A Lutheran missionary, Leonhard Flierl, reported that in 1926 when he was travelling from Mari up towards the area inhabited by Kamano speakers, he encountered several Mari on their way home after a trading visit with either the Kamano or Abaga people (Flierl 1926-27;1932). There is also evidence that some of the ancestors of the Mari and the Agarabi speakers of the Eastern Highlands shared cultural features, such as pottery manufacture, and may have shared some village sites (C. Ballard personal communication)

Most Mari speak Adzera; the rate of bilingualism among the Mari has accelerated since mission contact by Adzera evangelists and teachers in 1921-1922 (Pietz 1928). To seal the peace established by the missionaries between the Mari and their Adzera neighbours, several families exchanged both male and female children, so that they could learn each others' languages. Some of these people are still alive, and the ties that were established then have endured until today. All Mari speak Tok Pisin, and of all the languages in the Markham family, Mari has been the most severely eroded by Tok Pisin (S. Holzknecht 1985). Very few Mari speak any of the Papuan languages of their neighbours, but some marriages take place between Sangkiang people and the nearest Dumpu village, Mugusgamu.

3.3.2 ADZERA

The name Adzera is commonly thought by non-Adzera to be derived from a Wampar word meaning 'upstream', which was given to the early Lutheran missionaries by the Wampar, to refer to their neighbours upstream. In fact there is no such Wampar word; *dzraʔ* is a word from the Adzera language and means 'to go upstream'. In the past the Adzera had no common term to include all speakers of their language. They recognised and named local 'district groups' (Read 1946/1947; 1948; 1949/1950) which were made up of groups of villages which were allied for certain activities such as warfare, *kunai* burning, and ceremonial occasions. The boundaries of district groups do not coincide with dialect boundaries. The name Adzera has been rendered in various publications as Atsera (Capell 1969), Azera (Schmitz 1955; Hooley 1971), Azira (Milke 1965) and Acira (Grace 1966). In order not to add to this confusion of spelling of the name, I will call the language and the group of people Adzera.

The Adzera form the largest language population in this study. Their villages are in the plain and near the foothills of the Markham Valley, from the Markham-Ramu divide to the Leron River. Some are in the valleys of the Ufim, the Mangiang, the Yafats and the lower Leron Rivers to the north of the Markham Valley, and some are in the lower Wanton and Waffa River Valleys to the south of the Markham River. The total number of speakers is 20,675 (NSO 1983).



Map 4: Migrations of Upper Markham language groups

Within the Adzera language there are several different speech varieties, which I will refer to as dialects or dialect chains (see Map 5). They are as follows:

1. Central chain: this comprises approximately 23 villages from Sangang to Ngarutsaniang in the Markham Valley plain. The dialect chain has a population of approximately 8,250. The eight villages of the Ongaʔ group on the western side of the Markham River, with a population of approximately 1,700, also belong in the Central dialect chain. This makes a total of 9,950 speakers.

2. Amari dialect: the villages from the Umi River to the Markham-Ramu divide belong in the Amari dialect group. This group comprises 14 villages, with a population of 5,350.

3. Ngarowapum dialect: this dialect shares many features with the Amari dialect, and the two should perhaps be considered as one chain. The four Ngarowapum villages are found between the Mangiang and Umi Rivers, on the northern side of the valley. Their total population is 1,200.

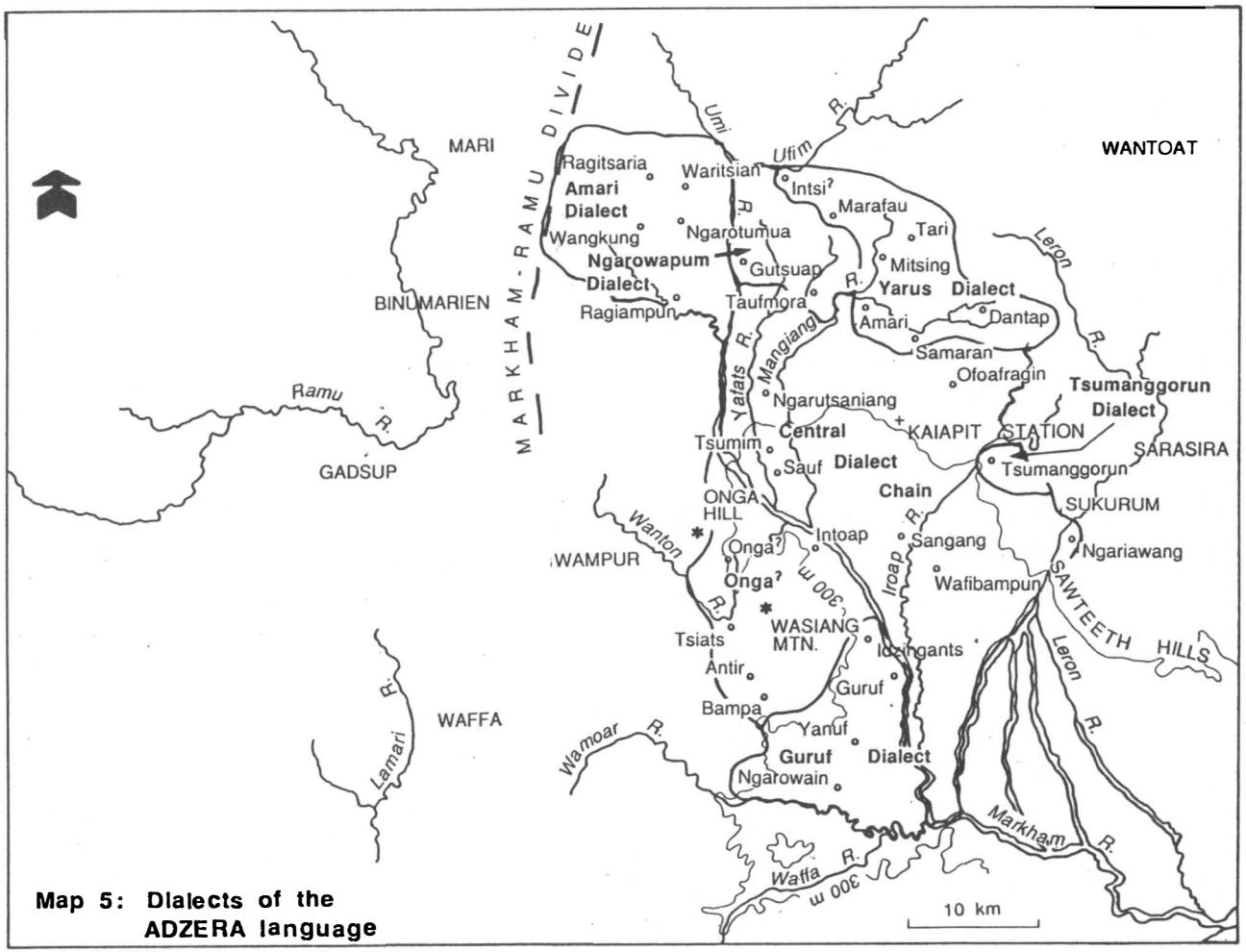
4. Yarus dialect: there are ten Yarus villages in the mountains beside the Mangiang, Mami and Yafats Rivers, to the north of the Markham Valley. Intsiʔ village in the lower Ufim River Valley belongs with this dialect group. The total population is 2,200.

5. Guruf/Ngariawang dialect: the six villages of the Guruf group are found on the western side of the Markham River, between the Waffa River and Idzingants village. Two villages of this dialect group, Antir and Tsiats, are in the mountains above the other villages, behind Wasiang Mountain. Ngariawang village, on the opposite side of the valley and five kilometres up into the Leron River from where it enters the Markham Valley, and its associated village Ngarungkung in the Irumu River Valley, are also members of this dialect group. The dialect group has a total population of 1,550.

6. Tsumanggorun dialect: although within the geographical area of the Central dialect chain, Tsumanggorun village maintains its own speech variety. The population derives from several sources. One section of the population descends from a group from which the Yarus dialect group is also descended. Other sections are made up of descendants of refugees from the Sukurum language, from the Wampur language, and from the Papuan Awara language to the north. They came together in a village near the headwaters of the Iroap River, but have moved relatively recently down to the Markham Valley near the Sangang villages. Tsumanggorun has a population of 400.

In section 4.2.2, Table 4.3 below, the phonological features which distinguish the dialects of Adzera are set out. They are also distinguished by some morphological differences, and by many vocabulary differences. These are discussed in the analysis of the morphosyntax (Chapter 5 below) and lexical innovations (Chapter 6 below) where they are relevant.

It is important to mention here perceptions of differences between the dialects. The folk perceptions of dialectal difference do not always coincide with those of the linguist. The linguistic differences perceived by the speakers were frequently those of intonation, stress, or speed of delivery. They were also sometimes based on a single item of vocabulary, for example the word for 'no'. The boundaries of the 'in-group', that is those who speak 'the same way', were frequently drawn for me by speakers according to the boundaries of ancient political alliances rather than strictly linguistic criteria. Clearly minor linguistic differences are exaggerated in order to express 'in-group' affiliation, and to exclude the 'out-group' population. The 'in-group' is as inclusive or exclusive as an individual or group wants it to be in any given context (see also section 3.4.6 Group consciousness, below).



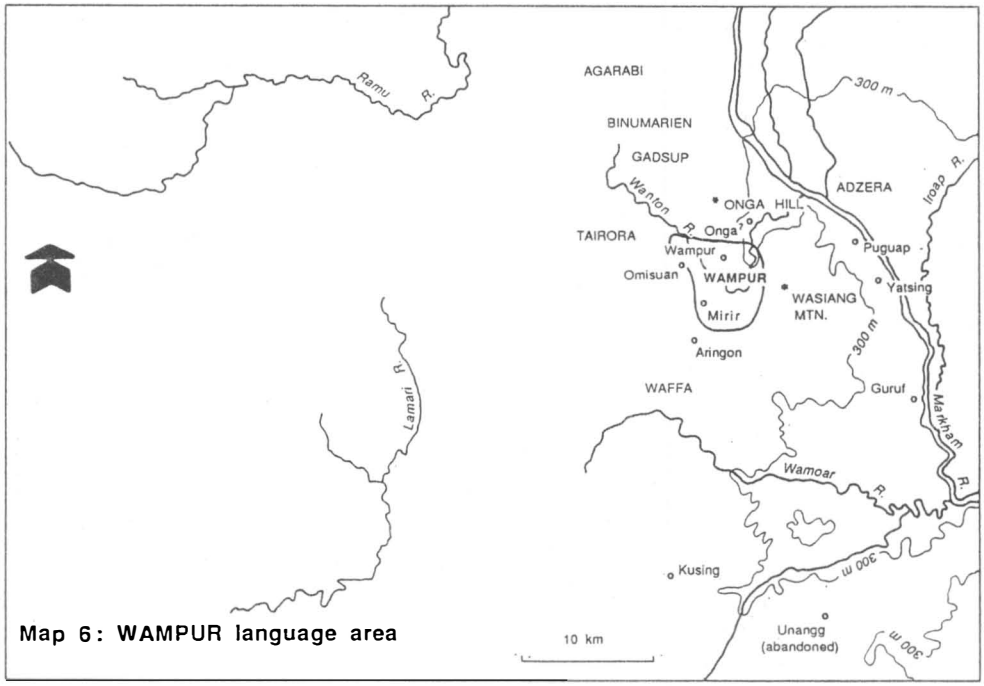
Map 5: Dialects of the ADZERA language

The Adzera do not, as a rule, learn languages other than their own, Tok Pisin and the former mission lingua franca Yabêm. They expect other people to learn their language. However, some populations on the borders of Adzera and other languages, for example Mari, have learned the language of their neighbours.

3.3.3 WAMPUR

The name Wampur is used for the language and people of two villages in the mountains west of the Markham River, on the upper reaches of the Wanton River (see Map 6). Wampur includes the people of Wampur village and Mirir village. Hooley (1970) surveyed the language, but confused it with the Wampar language further down the Markham Valley. Wampur has a total population of 360 speakers.

Present-day Wampur speakers trace their origins to a village called Dzantsiang, which was in the mountains just above Puguap village (within the Onga? group of the Central dialect chain of Adzera). After a fight the clan groups scattered. The ancestors of some of the present-day Wampur fled up into the mountains, some others went down to Puguap and Yatsing villages, and others straight across the Markham Valley and up into the Iroap River, to join the ancestors of the present Tsumanggorun people.



Map 6: WAMPUR language area

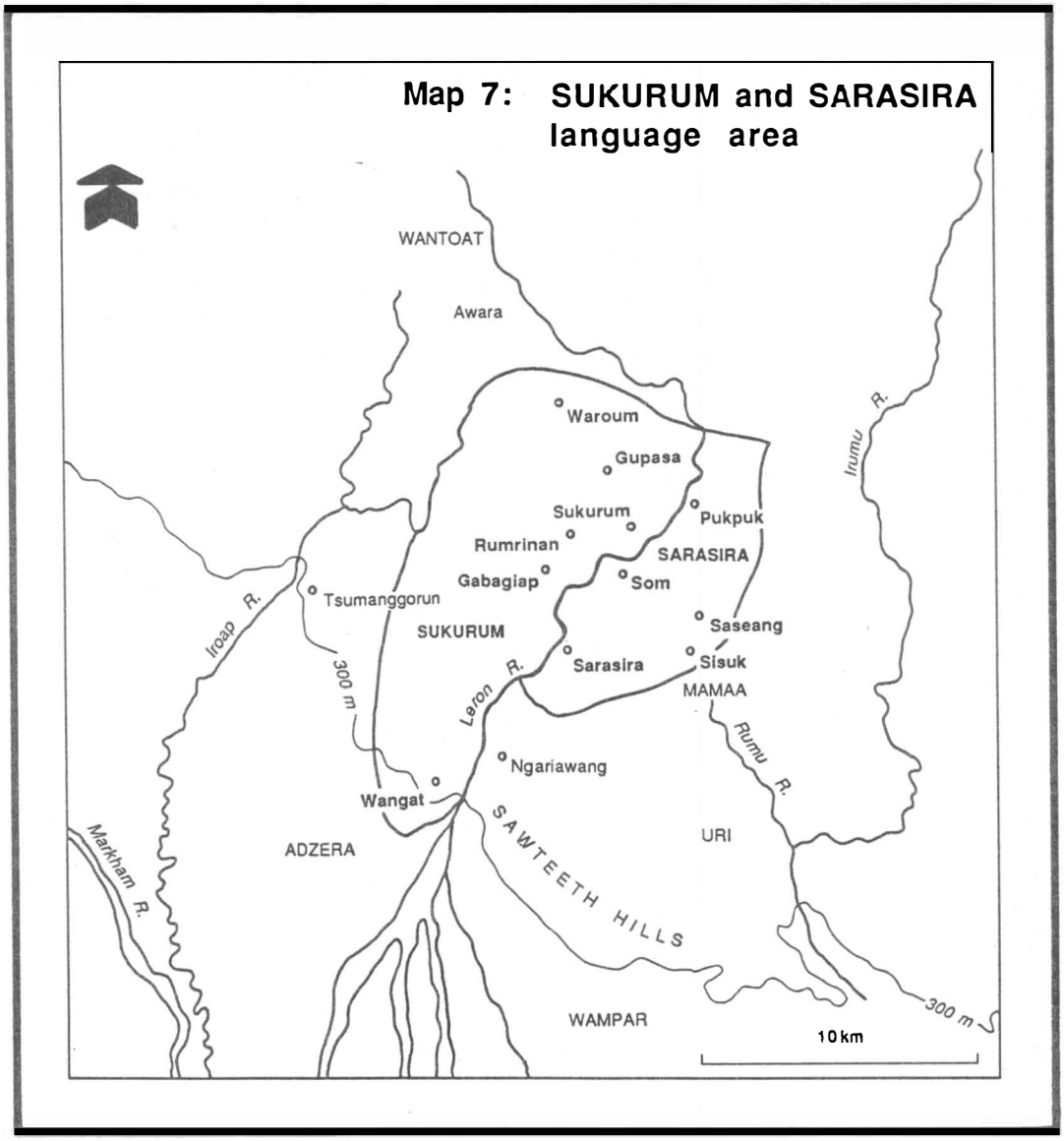
All Wampur also speak Adzera. Some have married into villages of the Ongaʔ and Guruf groups. Others have kinship ties with the neighbouring Papuan Tairora and Waffa speakers. In two nearby villages, Omisuan and Aringon, live mainly Tairora and Waffa speakers respectively, but many people in both villages speak Wampur as well, because of kinship and trading ties (Pataki-Schweitzer 1980:57;64 and personal communication). Many people of Mirir speak Tairora, having extensive kinship ties with Omisuan village. Tok Pisin is spoken by most Wampur, except old women.

As mentioned in the introduction to this section, the Wampur communities have had a somewhat different history of contact with foreigners to that of the other language groups in this study. Wampur was first contacted in the early 1920s by Kâte evangelists from Finschhafen, not by Yabêm evangelists. Kâte evangelists lived in Wampur for several years, although the settlement was considered unsuccessful by the mission authorities. The mission lingua franca in Wampur was the Papuan Kâte language, not the Austronesian Yabêm language. Wampur's nearest central mission station was Raipinka, near Kainantu in the Eastern Highlands, and not Kaiapit in the Markham Valley (see Radford 1986 for a full account of the exploration, mission and goldmining contact in this area). Reinforcing the Kâte presence in Wampur, several families of Kâte-speaking goldminers from the Finschhafen area settled in the Wanton River Valley in the 1950s, and their descendants have only recently left in 1985. However, very few Wampur people speak Kâte, and few claim to read or write it.

There are reports of several small groups of people in the mountainous area near Wampur who speak languages very like Adzera, or Wampur. M. Stringer reports speakers of remnants of languages called Sumanaa (or Tooya) and Meraraa in the Waffa villages of Kusing and Aringon respectively (M. Stringer 1979, and personal communication). Short word lists from these two languages establish them as belonging to the Markham languages, with many similarities to Wampur. K. Pataki-Schweitzer reports that several old people in Kundibasa village, in the Pundibasa area of the Eastern Highlands speak a few words of an old language, possibly related to Wampur, called Basum (Pataki-Schweitzer personal communication). It is probable that these are all remnants of groups which fled from the old Wampur village of Dzantsiang, and who took refuge within Waffa, Tairora and Gadsup villages. Only Wampur has maintained a language descended from the Austronesian language spoken at Dzantsiang.

3.3.4 SUKURUM

The speakers of the Sukurum language do not have a name for themselves as a whole. The name Sukurum is taken from the largest village of the group. The language is spoken in six villages, all on the north-western side of the Leron River. The villages, with their populations, are Sukurum (240), Rumrinan (128), Gabagiap (89), Gupasa (197), Waroum (103) and Wangat (233) (see Map 7). Within the Sukurum language there are three varieties, distinguished by minimal phonological differences only. Sukurum and Rumrinan villages share a variety, Gupasa, Waroum and Wangat another, and Gabagiap has another. The speech variety of Sukurum village is taken as the standard in the present study. Wangat and Waroum have particularly close ties of kinship and marriage with Tsumanggorun, a village of the Adzera language whose population speaks a dialect of Adzera. All the Sukurum villages have close kinship and marriage ties with the nearest villages of the Awara dialect of Wantoat, a Papuan language of the mountains to the north. Some Sukurum people speak Awara.


Map 7: SUKURUM and SARASIRA language area
WANTOAT
Awara
Waroum
Gupasa
Sukurum
Pukpuk
Rumrinan
SARASIRA
Gabagiap
Som
Tsumanggorun
SUKURUM
Saseang
Sarasira
Sisuk
MAMAA
Iroap R.
300 m
Leron R.
Rumu R.
Irumu R.
Ngariawang
Wangat
ADZERA
SAWTEETH HILLS
URI
Markham R.
WAMPAR
300 m
10 km

Most Sukurum men speak Adzera, as a result of being educated in Adzera by mission teachers, from the early 1920s until the late 1960s. All Sukurum people speak Sarasira, a neighbouring language. Sukurum speakers were observed speaking in their own language to Sarasira speakers, who replied in their own language, and informants confirmed that such passive bilingualism was the norm between these two languages.

3.3.5 SARASIRA

The speakers of the Sarasira language do not have a name for the whole language population, so the name Sarasira is taken from the name of the main village. Sarasira was called Sirasira by Hooley (1970, 1971) but the people say that that is how the Adzera people say the name, and that it is not correct. The language is spoken in five villages all located on the south-eastern side of the Leron River (see Map 7). The villages and their populations are Sarasira (115) and Som (234) which share the same speech variety, and Pukpuk, Saseang and Sisuk (combined population 148) which share a speech variety with minimal differences from the other. The total population is 497.

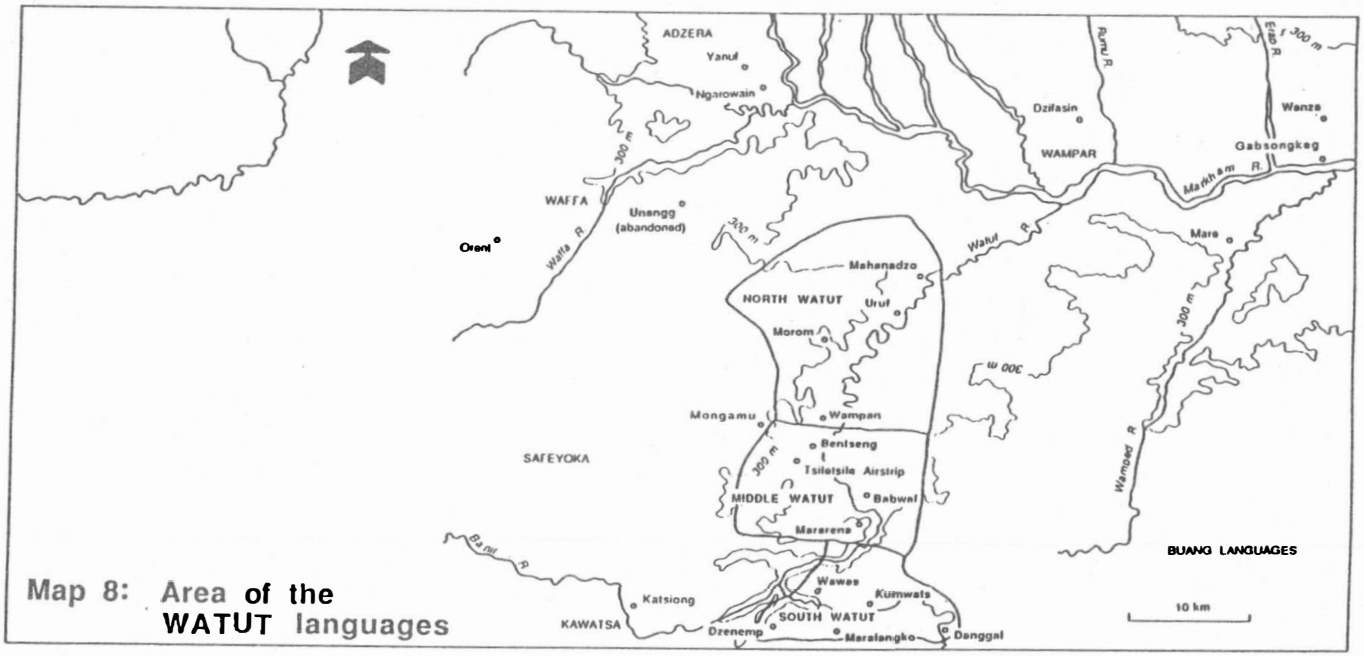
The Sarasira, Sukurum and Mari languages claim to have shared a common ancestral village, which oral tradition places somewhere either behind the Aruf Sisun mountain range, or in the lower Leron River Valley near this range (see Map 4). After a fight, the Mari ancestors left, and the Sarasira and Sukurum people also split up. The Sarasira have close kinship, marriage and trading ties with Sukurum speakers, with Adzera speakers particularly those from Ngariawang in the lower Leron Valley, and with the Papuan speakers from the Irumu headwaters whom they call the Faiang people. These latter are speakers of an Erap family language called Mamaa. All Sarasira speak Sukurum, Adzera and Tok Pisin. Some Sarasira claim to speak Wantoat, and the language of the Faiang people, but this was never observed.

3.3.6 SOUTH WATUT

The language which I refer to as South Watut combines, as one language, Hooley's Dangal and Maralango (Hooley 1970, 1971; Wurm and Dutton 1981:Map 8). Fischer (1963:17) considered this to be a single linguistic unit, with two varieties, and called it 'Südgruppe'. My data support Fischer's decision to consider this as one language. Because the speakers do not have a single name for themselves as a unit, I will use an English version of Fischer's term, South Watut.

South Watut has two varieties, that spoken in Danggal (population 208), Wawas (119) and Kumwats (322) villages, and another spoken in Maralangko (133) and Dzenemp (67) villages. The villages are in the mountains bordering the Watut River, about 40 kilometres south of its junction with the Markham River (see Map 8). There are another 40 people from Danggal, Wawas and Kumwats living at Wanza settlement in the Markham Valley near Nadzab airport, on land belonging to the Gabsongkeg people. The total South Watut language population is 889.

The closest neighbours of the South Watut group are the Middle Watut to the north. To the east are the Buang language groups of Kapin, Galawo, Dumbi, Zenag and Yanta. To the south, and in the Banir River area are the Papuan Agataaha and Susuami speakers, and to the west are more Papuan speakers, the Kawatsa (Wurm and Dutton 1981: Map 8 Morobe Province). A small group of so-called Kukukuku people, originally from Gumi village and speakers of the Angan Hamtai language, live in Danggal village .



Map 8: Area of the WATUT languages

According to all South Watut informants, they speak the Middle Watut language of their neighbours easily and frequently. However, the reverse is not true. Some South Watut people speak Wampar, because Wampar evangelists were the first to enter the area from Gabmatsung mission station in the Markham Valley. The Wampar evengelists entered the area in the 1920s and used Wampar as the mission language until 1937 when Yabêm was introduced as the mission lingua franca in the whole area. The villages are very isolated, and there is no access by road, river or air. Access to the outside world is by walking to Mumeng which is on the Lae-Wau road, or by walking north to the Middle Watut villages on the Watut River, thence by boat to the Markham River.

The South Watut people claim descent from ancestral villages much further south, in the area now occupied by Hamtai and Menya speakers at present-day Aseki and Menyamya and near the headwaters of the Langimar River. The South Watuts also claim that they displaced the ancestors of the Wampar speakers, who now live in the lower Markham Valley. There are now few connections between the South Watuts and their Buang-speaking neighbours to the east, but there are some phonological and morphological features, and many lexical items common to South Watut and the Buang languages. These features indicate closer ties in the past. It is reported (Sinclair 1966) that salt used to be traded from Marawaka in the Eastern Highlands through Menya country into the Watut, and thence to the Buang people to the east of the Watut. There are also several important morphological and lexical features shared by South Watut and the Labu language (see Chapter 6, sections 6.2.4.4 and 6.2.8.1.4, below, for a discussion of these similarities).

3.3.7 MIDDLE WATUT

The language which I will refer to as Middle Watut is called Silisili by Hooley , 'after the name of the local airstrip' (Hooley 1971:97). It had earlier been called Maralinan by Hooley and McElhanon (1970). Fischer calls the language 'Mittelgruppe' (Fischer 1963:18). Because the names Silisili and Maralinan (which should be Mararena, the name of a village in this group) do not represent the whole group, I will use an English equivalent of Fischer's term and call the language and the people Middle Watut.

There are three villages which make up the Middle Watut group, as follows: Babwaf (243), Mararena (488), and Bentseng (Tsiletsile) (262). There is also a group of Kukukuku people called Monggamu living near the Bentseng people (see Map 8). They are counted separately for the census and have a population of 171. The total number of Middle Watut speakers is 993.

McElhanon (1984:18) lists the following villages as belonging to the Silisili language of the Lower Watut: Babwaf, Dunungtung, Maralinan, Morom, Pesen, Tsiletsile and Wuruf

According to my data, and confirmed by that of Fischer (1963:18-20) only the three villages mentioned above, Babwaf (called Madzim by Fischer), Mararena and Bentseng belong to the language unit called Middle Watut. Dunungtung (Dunguntung) is an old name for Wampan village whose population is made up of people from Middle Watut and North Watut. Morom, Wuruf (Uruf) and Pesen (Mahanadzo) belong to the North Watut language group (Fischer's 'Nordgruppe'). The only village here of doubtful linguistic allegiance is Wampan, and its population now speaks mainly the language of the North Watut group.

The three villages of the Middle Watut language group are in the lower Watut River Valley. Mararena and Bentseng are near the Watut River. Babwaf is further south and away from the river.

While the speakers of both South and North Watut claim to understand and speak the language of Middle Watut, few speakers of Middle Watut understand or speak the languages of their neighbours. A small number of Mararena people speak South Watut, because, being geographically closer, they interact with them more than do the other villagers of the Middle Watut group. Communication nowadays between Middle Watut speakers and speakers of other Watut languages is through Tok Pisin, which is spoken by everyone.

The Watut people were evangelised by Lutheran mission personnel from Gabmatsung station, on the Markham River further south. The first contact by Wampar-speaking evangelists was between 1920 and 1925 (Panzer 1921), who used Wampar as the language of church and school until 1937. Consequently many older Middle Watut people understand and speak Wampar. Tok Pisin was introduced very early into the area due to the goldrushes of the 1920s and 1930s, when many Watuts worked as labourers and carriers on the goldfields.

3.3.8 NORTH WATUT

The language group that I am calling North Watut is spoken by people living in the villages of Uruf (74), Mahanadzo (97), Morom (69) and Wampan (225). The total population is 465. Wampan is made up of people from Mahanadzo and from Bentseng (Middle Watut language).

The four villages where this language is spoken are at the northern end of the Watut River, two near where the Watut joins the Markham River and two in the mountains to the west of the river (see Map 8). This language group was called 'Nordgruppe' by Fischer (1963:19). Hooley did not consider this as a separate language, and included some of the villages in his Silisili language (Hooley 1971).

The present population of the North Watut villages traces descent from two sources. A very small number claim descent from the original land-holding clan group which was called Nga Wari. According to informants, these people spoke a different language, but nobody can speak it now. The larger section of the population is descended from villages in the mountains to the north-west, called Puraʔ and Wantsangg, speakers of the language called Unangg (Onank in some publications, for example Hooley 1970, 1971). The original inhabitants, the Nga Wari, had become almost extinct because of disease and warfare, and so the remnants of the population invited the mountain people from the Unangg group to join them, and strengthen them. Successive influxes of these people meant that they, and their language, swamped the old language of Nga Wari. In 1951 Sinclair's patrol found 44 'sick and dispirited people' living in Unangg village (Sinclair 1966:31) and a few people were still left at Unangg in the late 1960s, after the majority had moved closer to the Watut and established the villages of Morom, Uruf, Wampan and Mahanadzo. Informants told me that the old Unangg village is abandoned now, although the descendants of its original population still claim the land there.

Some Unangg people also moved into the Markham Valley, particularly into Yanuf and Ngarowain, which are villages of the Guruf dialect of Adzera. Others joined kinsmen and former allies in Aringon, Orent and Suman villages, in which the Papuan Waffa language is spoken.

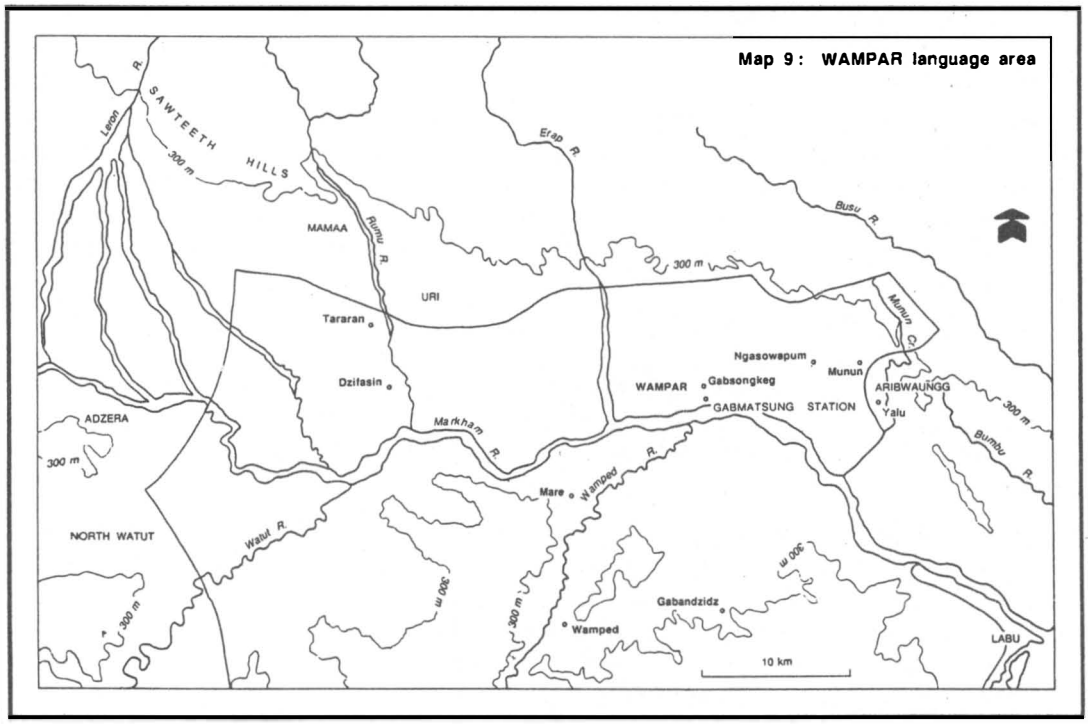
The North Watut villages have only recently moved close to the Watut River, possibly even in the last 60 years (see also Fischer 1963:14). They were formerly mountain dwellers, and all their paths and communications were by land. Now their main route of communication is by water, up and down the Watut River by outboard motor-powered dugout canoes. The techniques for building these

canoes have been learned from a group of Sepik people who have been living near the junction of the Watut and Markham Rivers for about 20 years.

The one language, which I refer to as North Watut, is spoken in all four villages, except in Wampan where the languages of both Middle and North Watut are spoken. Many of the North Watut speakers also speak Middle Watut, although the reverse is not true. Some people, particularly men, speak Wampar, and some speak Adzera. Constant contact is maintained between the North Watut speakers and the Wampar villages of Mare and Dzifasin, and the Adzera villages of Yanuf and Ngarowain. Some older people speak, read and write Yabêm. Everybody speaks Tok Pisin.

3.3.9 WAMPAR

The population of the Wampar language community is the second largest in the Markham family, after Adzera, with 5,150. The Wampar speakers live in eight villages and their associated small hamlets : Dzifasin (population 923), Tararan (370), Gabsongkeg (632), Ngasowapum (383), Munun (750), Mare (630), Gabandzidz (900) and Wamped (562). These villages are found in the lower Markham Valley, and in the lower Wamped River area (see Map 9). The language will be called Wampar in this study. The people and the language were referred to for many years as Laewomba or Lahewomba (Sack 1976). Since publication of the results of Hooley and McElhanon's survey (Hooley 1970, 1971) the name Wampar has been accepted. The people call themselves *Ngaing Wampar* 'Wampar people', and call their language *Dzob Wampar* 'Wampar talk'.



There is only one variety of Wampar, without dialectal variation. The only difference in speech is between that of Dzifasin and Tararan villages and the others, and this is a difference of speed of delivery, the inhabitants of Dzifasin and Tararan speaking more slowly than those people in villages further down the valley.

The recent history of the Wampar is a very violent one. According to oral traditions of both the Wampar and the Watut people, the ancestors of the Wampar used to live in the Watut River Valley, in the area now occupied by speakers of South Watut. Owing to their highly organised warfare strategies, the Wampar succeeded in clearing the lower Watut and lower Markham Valleys of their populations and in displacing many groups, for example the Nga Wari of the lower Watut, the Aribwaungg, the Aribwatsa, the Labu and even the Bukawa people at the coast. This movement into the Markham Valley appears, from genealogical evidence, to have taken place no more than 200 years ago, and was still in progress at the time of first European contact in the late 1890s and early 1900s (Dammköhler 1907/1908, 1909; Fröhlich 1908; K. Holzknecht 1973d,1974; Sack 1976).

The Wampar also fought with their Papuan neighbours, the Uri and the Mamaa people of the Finisterre-Huon stock, and forced other groups to seek refuge with neighbours and kin as far away as possible. This continuous and fierce aggression of the Wampar led to complicated population movements in this lower Markham area which make linguistic and historical reconstructions extremely difficult.

Those Wampar who live close to Adzera, Watut, Aribwaungg or Bukawa villages speak those languages besides their own. Many speak, read and write English.

3.3.10 MUSOM

The name Musom is taken from the name of the village where most present-day speakers of the language live. Another name, Misatik, was given by informants as the language name. The Musom claim descent with the present-day Aribwaungg from a common village in the mountains to the south of Musom. After a fight, the ancestors of some of the Aribwaungg fled down to the range at the edge of the Markham behind present-day Yalu village, and the Musom moved across the Busu River to the present site.

Musom village, with a population of 139, is in the mountains north of Lae, on a tributary of the Busu River (see Map 10). About one third of the population of the neighbouring village of Gwabadik also speaks Musom. The population of Gwabadik, which was established after 1945, comprises speakers of Musom, Nabak and Mesem, the latter two being Papuan languages. Another 45 Musom speakers live in the village of Musom Tale, near the coast. The total number of Musom speakers is approximately 264.

In Musom, there are many people who speak Aribwaungg and Duwet, closely related languages, because of frequent marriages and kinship and trading ties between them. Musom shares many linguistic features with Aribwatsa, a related language which is now virtually extinct. Some Musom speak Nabak and Nek, neighbouring Papuan languages. In Gwabadik village some Musom speakers also speak Nabak and Mesem because of intermarriages and day-to-day contact. Some Gwabadik Musoms also speak Kâte, the Papuan mission lingua franca.

3.3.11 DUWET

The people and language referred to as Duwet in this study have previously been called Waing, for example by Schmutterer (1923:66) who said they were 'the folk at Bargambos,...part of the Mongom or Kwalis people'. Neuhauss (1911:125ff) referred to them as 'the Melanesian Waing'. Capell (1954) also called them Waing. Later surveys called them Guwot (McElhanon 1970:1184, 1186; Hooley and McElhanon 1970:1078, 1079; Hooley 1971:95-98). Hooley (1971:95) was the first to distinguish between Guwot and Duwet. He considered, on the basis of lexicostatistical evidence, that 'Duwet...proved to be a dialect of Guwot', and he decided to call the language Guwot. Hooley (1976b:338) still refers to the language as Guwot. Hooley (1971:98) believed that Guwot was a divergent member, but more likely a 'language isolate' of the Musom subfamily of the Azera Family of Morobe Austronesian languages. The relationship shown by lexicostatistics between Guwot and Sirak (Nafi) and Musom he ascribed to borrowing. Bradshaw (1978a:49) also includes Guwot as 'maybe a divergent member' of the Musom subfamily of Azera languages.

By 1984, McElhanon had changed the name to Duwet (McElhanon 1984:20) and he includes Duwet as a language of the Busu subfamily of the Adzera family. The name Guwot probably arose out of a misunderstanding between the survey-takers and the speakers. The word *guwot* means 'speech' in the language, and the speakers refer to their language as *Guwot Duwet,* 'the speech of Duwet'. The name Duwet is the name by which the speakers wish to be referred to, and so will be used in this study.

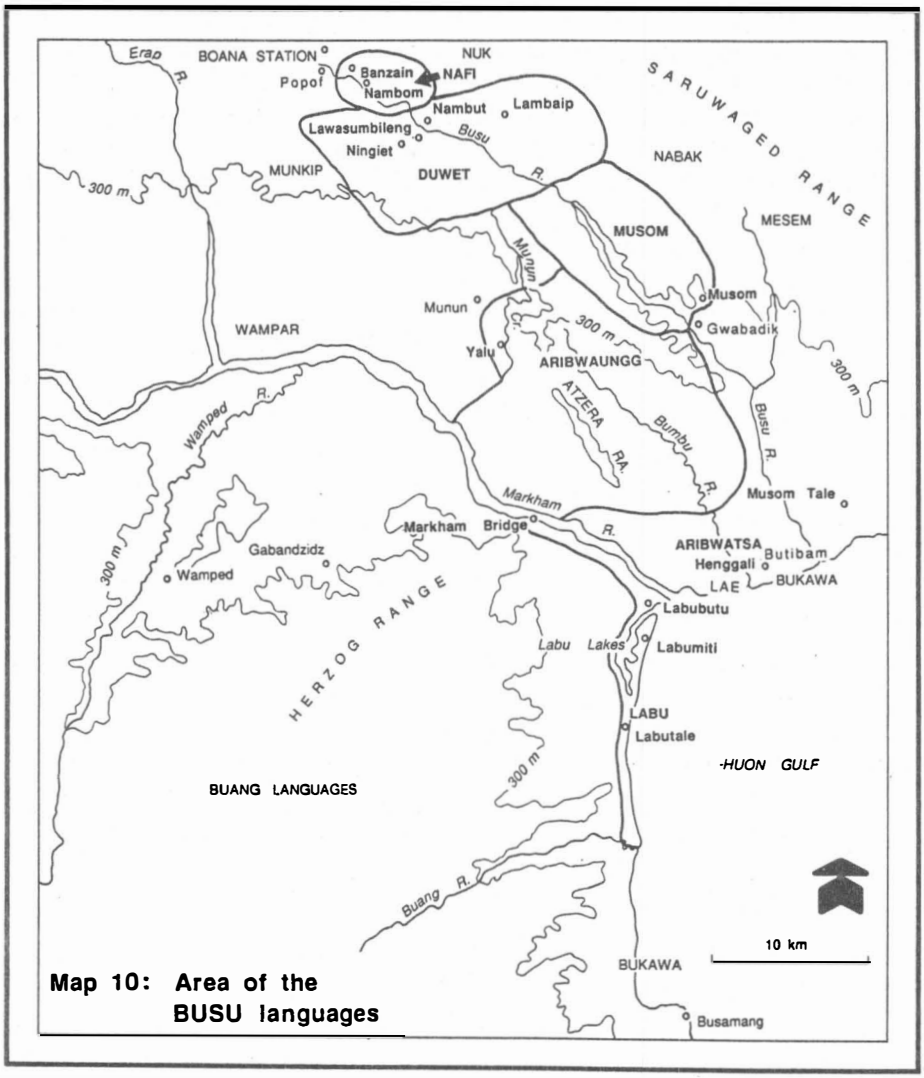
The Duwet people lived formerly in three villages about 600-650 metres above sea-level, above the middle reaches of the Busu River (see Map 10). The three villages and their populations were: Lambaip (204), Lawasumbileng (77) and Ninggiet (117). Recently the Lawasumbileng and Ninggiet people moved to a new village, Nambut, nearer to Boana station.

The neighbours of the Duwet speakers are the Banzain people to the west who speak Nafi, a related language, the Musom to the south-east along the Busu River, the Papuan Nabak to the north east and Nimi and Munkip to the east. Over the high mountains to the south-west and down into the Markham Valley are the Aribwaungg and the Wampar.

According to informants, there are some minor differences between the speech of Duwet, and that of Nambut (formerly Ninggiet and Lawasumbileng).

Multilingualism appears to have been an important feature among Duwet people for a long time. Schmutterer (1923:83) reports meeting a man from Waing (Duwet) who was visiting a wife in Kalau (Nuk language). This particular wife was one of three, all from 'different tribes' and presumably from different languages. So the man most likely spoke at least some of these languages, and the children would have spoken at least two languages each. Present-day Duwet people speak Musom and Nafi, and some speak Nabak. Women from Duwet marry men from all surrounding groups, Austronesian and Papuan. Marriages also take place between Duwets and Aribwaungg and Bukawa speakers.

The Duwet language was recognised by the early German missionaries as being 'Melanesian', and therefore evangelists and teachers from Melanesian-speaking coastal villages were sent there. Yabêm was used as the lingua franca by the mission personnel.



Map 10: Area of the BUSU languages

3.3.12 NAFI

The language which I refer to as Nafi has been called Sirak (Hooley 1970, 1971, 1976b; Wurm and Dutton 1981; Smith 1984). Smith calls the language Sirak but also notes the name Nambom as a group name, being the name of the new settlement near Boana airstrip of former inhabitants of Banzain village. The name Sirak, according to my informants, is a misspelling of their word for 'what', *sira*. They call themselves as a group and their language Nafi, and so I will use the name in this study.

Nafi is spoken in Nambom village, formerly Banzain village, which has a population of 157 (see Map 10). Some of the inhabitants of the nearby Popof village (population 165) are descended from former Banzain families who moved in with the Popof people before European contact. The language now spoken in Popof is Nakama, a Papuan language of the Erap family of the Papuan Trans-New Guinea phylum (McElhanon 1984:55), although some people still understand and speak Nafi. Intermarriages between Popof and Nambom villages frequently occur.

Some Nafi also speak what they call Wain. This appears to be their collective name for the neighbouring Papuan languages Nuk, Nek, Nakama and Munkip, all of the Erap family. Some Nafi people understand Duwet, and some also understand and speak Aribwaungg. A few people claim to be able to understand Wampar, but to be unable to reply.

3.3.13 ARIBWAUNGG

The people of Yalu village refer to themselves as *Aribwaungg*, which means 'the shield up high', and was apparently an exhortation to the young warriors to hold their fighting shields up to protect themselves from their opponents' spears. The people refer to their language as *Anan Aribwaungg* 'Aribwaungg speech'. The name Aribwaungg will be used in this study to refer to the people and language of Yalu village.

Yalu village has a population of 593. The village is in the lower Markham Valley, at the side of Munun Creek (see Map 10). The present village site is very recent. The Aribwaungg trace their ancestry to a village on the coast to the north-east of Lae, near present-day Laulôc. The founding population migrated into the mountains, up either the Bumbu River or the Busu River and established a settlement which they shared with ancestors of the Musom people. A section of the population of this village later moved down to the range behind Yalu. Others came out into the Markham Valley near where the Erap River enters the valley. After being decimated by the Wampar the survivors, with other refugees, fled to the coast and were given refuge by Bukawa-speaking relatives in Kamkumung and other coastal villages. They were still living there, together with the remnants of the related Aribwatsa language group, when the first Europeans came into the area, about 1900 (Dammköhler 1907/1908; Bamler c.1906). The Aribwaungg subsequently returned to their own land, but the Aribwatsa have been absorbed into Butibam and Kamkumung.

The Aribwaungg are a very multilingual population. Because of their recent history, many people speak Bukawa, many older people speak Wampar, and all people over 30 speak, read and write Yabêm. There are some who understand and speak Musom, Duwet and Nafi because of the many intermarriages between the groups. Some people speak 'Wain', by which they mean the Papuan languages of the Erap family, and Nabak, because many marriages take place between Aribwaungg and their Papuan neighbours. Several people speak Adzera. All speak Tok Pisin, and many young people are literate in English.

Many Bukawa words and phrases have been incorporated into Aribwaungg. This is a result of living as refugees among the Bukawa for a long time.

3.3.14 ARIBWATSA

There is only one speaker of the Aribwatsa language still living. She is an old woman of over 80 years of age living in the Henggali (or Ahenggali) section of Butibam village inside the Lae city

boundary (see Map 10). According to her, and to other old people, the Aribwatsa group of three clans lived in the lower Wamped River Valley, near where the Wampar village of Gabandzidz is now. They were chased out by the Wampar, some fleeing to Labu, some southwards to the coast near Buakap, some north-east to relatives in the Bukawa villages, and some to their Aribwaungg relatives. The ones who joined the Aribwaungg subsequently fled to the coast with them, and they were all given refuge by the Kamkumung and Butibam people. After peace was established during the German colonial period, the Aribwaungg returned to their home territory, but the Aribwatsa never did, although they maintain their rights to some of their ancestral land. The Aribwatsa were incorporated into Butibam village, and learned Bukawa. Their own language was lost.

3.3.15 LABU

The name Labu could be an anglicised version of the Bukawa and Yabêm word *làbôc* 'to lie on one's stomach', 'to fall prostrate before someone', or it could be related to another Yabêm word, *làbu* meaning 'below, at the lower end of something, under, underneath' (Streicher 1982:277). The exact derivation of the name Labu is not certain. The speakers of this language call themselves Hapa, but in this study they will be referred to as Labu.

The Labu language is spoken in three coastal villages on the southern side of the Markham River delta, and in one small inland settlement near the Markham Bridge on the Lae-Wau road (see Map 10). The three coastal villages and their populations are Labubutu (called Dusuku by its inhabitants), Labumeti (Ehalo) and Labutali (Kakala). The total population is 1,700. Their neighbours to the west are Mapos Buang speakers, to the north and south Bukawa, and to the north-west Wampar.

Labu has posed a problem of taxonomy for linguists for a long time, as it is very difficult to classify and assign to any subgroup. It is Austronesian, has many features in common with Bukawa and Yabêm, but also has many features in common with languages of the Markham. Hooley (1970, 1971) classified Labu as belonging to the Huon Gulf subfamily of his Siassi family. Bradshaw (1978a:54) said that 'it seems as likely to be a Siassified Azera language as an Azerafied Siassi language'. Ross (1986) classifies Labu as a language of the Markham family.

Most older Labu speak, read and write Yabêm. All Labu speak Tok Pisin, and many are literate in English. A few people speak the neighbouring languages of Wampar and Bukawa.

3.4 ETHNOGRAPHIC BACKGROUND OF THE MARKHAM LANGUAGE COMMUNITIES

3.4.1 INTRODUCTION

In this section I will describe the aspects of Markham societies which relate directly to language, and affect specifically language acquisition, attitudes towards language, language contact and language change. The discussion will be organised according to the broad topics of social organisation, local political organisation, trade, agriculture, group consciousness, multilingualism and mobility. Some topics, such as material culture, warfare, sorcery, religious beliefs and ceremonies will not be discussed in detail because, although they were important in the traditional cultural context, they are peripheral to the argument of this study. Some of these latter topics have been discussed by other writers, for example Read (1946/1947, 1947/1948, 1948, 1949/1950) writing about the Ngarowapum district group of Adzera, H. Holzknecht (1976) on the Amari district group of Adzera, K. Holzknecht (1956, 1957, 1971) on aspects of material culture of the Adzera, Fischer

(1962b, 1963) on the Watut people, and (1975, 1978) on the Wampar, and Schmitz (1955, 1959, 1960a, 1960b) analysing and comparing the cultures of the Huon Peninsula.

The data upon which this section is based are drawn from my own research unless specifically stated otherwise. Anthropological studies have been published about several of the language communities of the Markham, as cited above, and where necessary I will refer to these published sources. Examples will be drawn from specific societies to illustrate generalisations made about all the communities.

Although the observations of social phenomena discussed in this section are valid and relevant, they must be viewed with one reservation. There is no proof that these practices existed in the past exactly as they are recorded and observed now. However, certain enduring cultural patterns can be observed, for example the systems of kinship terminology and their concomitant social observations, and some guarded suggestions can be made about their being continuations of past practices. Some cultural practices such as organised warfare and cannibalism, which were integral parts of the social systems in the past, have disappeared since contact with Europeans. Tied in with these practices were institutions such as the men's house and polygamy which have also disappeared. We are forced to rely on the memories of old people, and on oral tradition for reconstructing the cultures of these communities at any time in the past, and cannot take the appearance of the societies today as being wholly representative of past societies. This is the classic anthropological dilemma, which is embodied in the use of the 'ethnographic present' tense when writing about traditional cultures. I will use the past tense when referring to practices which I know to have been discontinued, and the present tense when discussing practices which have been observed in the present.

As a point of departure for my discussion of the cultures of the Markham societies, and as a theme which will run through this section, I take a quote from Peter Sack which expresses both sides of a paradox which is frequently ignored in discussions of Papua New Guinea societies. Sack says that:

> ...beneath the spectacular surface of bloodshed and treachery ran a quiet but at least equally important undercurrent of friendship and co-operation... (Sack 1976:87).

The paradox, which is one of many, lies in the fact that in the traditional societies people fought, killed and possibly ate other people from groups where they had kinsmen, affines or trade partners and where they could seek refuge if the tides of alliance and warfare changed. The resulting mobility of populations and individuals affected language because at any time there seem to have been 'foreign' refugees living in any community, some speaking another dialect or language and eventually marrying into the local clans. These points will be elaborated upon later in this section.

3.4.2 SOCIAL ORGANISATION

All the communities which comprise the Markham languages consist of small, localised descent groups, whose membership is reckoned patrilineally through common male ancestors. This is an ideal, however, and in practice, in the past and the present the residential group could also include affines, matrilineal kin, and non-kin (see H. Holzknecht 1976 for a detailed discussion of ideal versus real affiliation in local groups). The residential groups were previously small clan-based hamlets. Several clan hamlets would be closely affiliated as a named hamlet-cluster, and were situated very close to each other. These formed the bases for the present-day 'villages' many of which did not exist as such until the European missionaries and administrators forced them together for administrative convenience.

The meanings of the anthropological terms used in this section are as follows:

Affines: people related by marriage.

Exogamous: marriage with partner(s) from outside one's own, defined social unit.

Patri-virilocal: on marriage, the wife resides with the husband in his natal social group.

Sibling: brother or sister.

Classificatory kin: kin who are called by the terms for a biological kin category, and who are classified in that category, e.g. cousins classified as siblings.

Clan: group of people who recognise common descent from one ancestor in either the male or female line.

Patri-clan: Group of people who claim descent from a common ancestor in the male line.

The patri-clans were and still are exogamous. Residence on marriage was patri-virilocal. The preferred type of marriage was, and still is, sister-exchange, or 'sibling set marriage' (Marshall 1983:201). A 'sibling set' is two or more natural siblings, or two or more classificatory siblings in the same generation of the same clan. 'Sibling set marriage' takes the form of exchange of siblings in which a set of natural or classificatory siblings marries a set of siblings of a different clan. As the patri-clans in Markham societies are exogamous, the exchange had to be with a sibling set of another patri-clan, and was frequently, but not always, with a sibling set in a neighbouring clan hamlet within the hamlet-cluster. Once one set of marriage exchanges are made between two clan groups, further marriages are often subsequently arranged in the same direction in order to cement further the alliance thus made. This type of marriage arrangement reaffirms the very strong brother-sister ties which exist in all these societies. If one of the marriages breaks up, there is pressure on the other marriage to dissolve at the same time, in order to redress the balance. If a woman is widowed, she is as likely to return to her brother's hamlet with her children as to stay in her husband's hamlet.

If a marriage is arranged outside the hamlet-cluster, it may be across dialect or language boundaries. Such exchange marriages were contracted in the past to seal peace arrangements between formerly warring groups, for example between the Amari and Ngarowapum district groups of Adzera, between the Sangang hamlet-cluster in the Central dialect of Adzera and the neighbouring Wampar, and between Wampur and their nearest Adzera neighbours in Onga?. Some marriages were also arranged in order to further advantageous trade connections, for example between the Ngarowapum and Yarus dialect groups of Adzera. One consequence of such marriages between clans of different hamlet-clusters, different dialect or language groups was that people had kin in many distant hamlets, outside their own hamlet-cluster. Another consequence was that at any time, some women residing in a hamlet would be from linguistic backgrounds different to that of the hamlet. This situation was most pronounced in hamlets on border areas.

3.4.2.1 ORGANISATION OF KINSHIP SYSTEMS

In all the language groups under consideration, the kinship systems are arranged according to the following governing principles:

1. Generational difference – ego's generation, two ascending and two descending generations are recognised and distinguished in the terms used.

2. Gender difference is marked within ego's generation, and in the first ascending and the first descending generations from ego. It is gender of a person in relation to that of the speaker that is marked rather than absolute gender.

3. The symmetry which results from sister-exchange marriage governs relations, and their terms, in ego's generation, and the first ascending and first descending generations.

4. In some of the language groups, a further principle of relative age within a generation also applies, and order of birth within a sibling set is also marked by special terms.

The principle of affinal avoidance leads to taboos on behaviour, especially name taboos leading to wider language taboos (see also S. Holzknecht 1987). This results in the presence of many doublets for lexical items in all of the languages. It has also most likely caused rapid lexical replacement on a local level, and consequent divergence of dialects and languages on a wider scale.

3.4.2.2 BIRTH-ORDER TERMS

The practice of using a special set of kinship terms within a family for male and female siblings, in order of birth, has been reported in Austronesian languages from as far west as the Malay Peninsula (McKinley 1983). It has also been reported as being in operation in many Manus languages, for example in Ponam (Carrier 1981), Andra (H. McEldowney and L. Panau, personal communication) and Baluan (H. McEldowney personal communication). From within the Huon Gulf languages, Hooley (1972) describes the system as it operates in the Buang languages. I have observed this practice in Bukawa and Kela, which are also Huon Gulf languages.

Within the Markham languages, sets of these birth-order kinship terms were collected from Labu, Nafi, Duwet, Musom, the three Watut languages, and from the Guruf/Ngariawang dialect of Adzera. In other Adzera dialects and in Wampar, there are cognates of the terms used in the other languages, but these are relics and the system no longer operates. In the tables below are listed the terms for male and female siblings collected for the Markham and Huon Gulf languages.

TABLE 3.1: MALE BIRTH-ORDER TERMS : HUON GULF LANGUAGES

	1	2	3	4	5	6	7	8
ADZ(G)	*ŋaro*	*ŋamis*	*wancin*	*ŋaib*	*ŋasap*	-	-	-
ADZ(Ng)	*ŋaru*	*ŋamis*	*ŋaib*	*ŋasap*	-	-	-	-
SWT	*ŋaru*	*mus*	*uŋgwar*	*sasa*	*kwaku*	*kwaniməŋg*	*yus*	*namb*
MWT	*ŋaro*	*ŋomus*	*ŋeŋki*	*[ŋ,s]asaʔ*	*kwako*	*ŋasa*	-	-
NWT	*ŋaru*	*ŋamus*	*ŋaŋkeʔ*	*ŋasaʔ*	*ŋaʔo*	*waniŋg*	*giruʔ*	*ʔa*
MSM	*ŋaru*	*ŋaŋgwe*	-	-	-	-	-	-
DWT	*rei*	*maun*	*guk*	*suwap*	*ragiein*	*(start again at 1)*		
NFI	*ŋaru*	*mwonaʔ*	*ŋguk*	*sawo*	*konjok*	*wus*	-	-
LAB	*aso*	*amwa*	*aŋgi*	*aŋgô*	*ôlôndi*	*aminamu*	*asôlô*	*palôa*
BUK	*aliŋsap*	*aliŋam*	*aŋguaʔ*	*aluŋ*	*dei*	*selep*	*semba*	-
KEL	*alisaʔ*	*aliŋaʔ*	*aŋguaʔ*	*aluŋ*	*dei*	*selep*	*semba*	-
BNG	*aŋguu*	*amon*	*ŋgwee*	*see*	*ŋguu*	*bəwee*	*məɣi*	*dahisooŋ*

TABLE 3.2: FEMALE BIRTH-ORDER TERMS : HUON GULF LANGUAGES

	1	2	3	4	5	6	7	8
ADZ(G)	*ampoa*	*waŋin*	*wantamp*	-	-	-	-	-
ADZ(Ng)	*wampu*	*wayaf*	*waŋin*	*wantamp*	*weinc*	*ɲoc*	-	-
SWT	*kumbwak*	*kwaŋin*	*kwayaf*	*kwandamb*	*yus*	*njinj*	*namb*	-
MWT	*kumpuk*	*kiŋin*	*kwiyof*	*kwantamb*	*kijinj*	*pomasec*	-	-
NWT	*wampoʔ*	*waŋen*	*wayah*	*wantamb*	*wacenj*	*waniŋg*	*giruʔ*	-
MSM	*ambuk*	*kwain*	-	-	-	-	-	-
DWT	*mauk*	*muin*	*wahua*	*damb*	*kahuak*	-	-	-
NFI	*kwambuk*	*kwain*	*kweyep*	*konjok*	*kundemkandoŋ*	-	-	-
LAB	*amê*	*hiya*	*aya*	*êta*	*hênamu*	*aasôlô*	*asôlô*	
BUK	*galiʔ*	*ika*	*ayap*	*dam*	*hop*	*dei*	-	-
KEL	*kaliʔ*	*aiga*	*aiyaʔ*	*dam*	*hop*	*dei*	-	-
BNG	*məwiŋ*	*anii*	*vəlekh*	*dambi*	*sëj*	*tamu*	*pahoov*	*lɛn*

The similarities between the forms used can be seen above. In some cases the forms swap categories in different languages, for example fifth-born male is *ŋasap* in the Guruf dialect of Adzera, but this is the term for fourth-born male in the Ngariawang system. As would be expected, languages which are geographically close have cognate forms for the same categories, for example the Watut languages, and those which are separated by long distances have fewer cognate forms.

There are several interesting observations which can be made about the birth-order systems. Firstly, the system erodes from east to west. That is, those languages near the coast, and in the more easterly areas have full sets, and those further west have either shorter sets, a few relics of the system or have lost the system altogether. For example, the larger dialects of Adzera show only relics of the system, in the use of *ŋaro,* the term for 'first-born son' in most of the other languages, as adjunct to place names or natural species names. Mari and Wampur, the furthest west of the Markham languages, have no traces of the system at all.

The second interesting point to be made is that the system is recorded in several of the Papuan neighbours of the Markham languages. The forms recorded for these Papuan languages are, in several cases, cognate with those in neighbouring Markham languages. The following tables show the terms collected for Nabak, Numanggang and Uri which are to the north of the Markham Valley, and for Waffa, which is to the south of the Markham.

TABLE 3.3: MALE BIRTH-ORDER TERMS : MOROBE PAPUAN LANGUAGES

	1	2	3	4	5	6	7	8
Nabak	*anyu*	*anmwone*	*angwat*	*ansaʃa*	*kaiyak*	*kanjok*	*sinsam*	*anduk*
Numanggang	*tuwo*	*mone*	*gik*	*hawa*	*kasuk*	*kanjok*	-	-
Uri	*tuu*	*giʔ*	*sa*	-	-	-	-	-
Waffa	*ŋàruva*	*ŋamisa*	*yaguààva*		*mmàiràva*		-	-

TABLE 3.4: FEMALE BIRTH-ORDER TERMS : MOROBE PAPUAN LANGUAGES							
	1	2	3	4	5	6	7
Nabak	*moo*	*wene*	*to*	*dambi*	*kwalaŋge*	*wenesaŋan*	
Numanggang	*mok*	*wene*	*kweep*	*dabi*	*baka*	*kasuk*	*kandok*
Uri	*yaŋ*	*kayap*	*dabi*	-	-	-	-
Waffa	*kuabuààva*	*kuáŋeeva*	*kuaafava*	*kuéedava*			

One inference which can be made from this data is that the system of naming children according to birth-order was an ancient, possibly pre-Oceanic custom. Its presence in Manus, and the presence of cognates with Markham items, although they are reversed for male and female, supports the hypothesis that it is of great antiquity. Listed below are the terms recorded for the Manus languages of Ponam and Andra, which are daughter languages of Proto Manus, and for Baluan, which is a daughter language of Proto South-East Admiralty (Ross 1986).

TABLE 3.5: MALE BIRTH-ORDER TERMS : MANUS LANGUAGES								
	1	2	3	4	5	6	7	8
Andra	*mandra*	*pangih*	*cilih*	*so-on*	*capat*	*kupe*	*ku-wam*	*kalai*
Ponam	*tol*	*ŋih*	*selef*	*sepat*	*soʔon*	*kupe*	*kuem*	*kalai*
Baluan	*meme*	*ŋi*	*ŋat*	*aewai*	*kuam*	*yep*	*silip*	-

TABLE 3.6: FEMALE BIRTH-ORDER TERMS : MANUS LANGUAGES								
	1	2	3	4	5	6	7	8
Andra	*aluh*	*asah*	*siwa*	*ndreneu*	*salimet*	*pino-on*	*kahu*	*noni*
Ponam	*aluf*	*asaf*	*siwa*	*driniu*	*salimet*	*noʔon*	*kahu*	-
Baluan	*alup*	*asap*	*ninou*	*maiau*	*nason*	*non*	*sowai*	-

Two of the female terms in all three Manus languages are cognate with two of the male terms in the Markham languages, and some Baluan male terms are cognate with some of the Markham female terms.

It appears from the presence of the system, and the forms exhibited, in the Papuan languages which are neighbours of the Markham languages that these Papuans borrowed the forms from the Austronesians. As the dialect chains developed from the Proto Huon Gulf community, and spread out southwards, northwards and westwards, then broke away from the mother community, the system and the forms became weakened towards the western end.

3.4.3 LOCAL POLITICAL ORGANISATION

The patrilineal descent groups described above were organised around big-men in all of the societies of the Markham family of languages. These were not inherited but achieved positions. As discussed above, the smallest political unit was the clan hamlet. Several hamlets formed a named cluster, and were closely allied by ties of kinship, marriage and economic and ceremonial co-operation. In the largest language group in the Markham family, the Adzera, the widest political units

were 'district groups' (Read 1948; 1949/1950). These were named congeries of hamlet-clusters which allied with each other for warfare, *kunai* burning, ceremonial and agricultural activities, and within which warfare and cannibalism did not, ideally, take place. This was not a feature of the political systems of the other language groups, which were all much smaller, and whose widest political unit was the hamlet-cluster or village, for example Aribwaungg, Wampur, and the Watut communities. An exception to this was the Wampar whose approximately 40 named, patrilineal clans (sagaseg), some of which were totemic, were the widest-reaching political unit, but were not necessarily a residential unit (Fischer 1978:77). Any Wampar clan has members in several villages, and they all recognise their relationships.

Recognition of linguistic similarities and differences were part of the local political organisation. The in-group were, and still are, defined partly according to linguistic criteria.

Configurations of the local political units changed according to the rise and fall of local big-men, among other things. As a new big-man was on the rise, he would try to attract to himself as many loyal supporters as possible. Some of these were drawn from his own local kin groups, others from kin and affinal groups further away, and some from groups with looser kinship and affinal connections. In this way 'foreigners', speakers of other dialects or languages, could be drawn into a local unit, to boost the strength and prestige of a big-man. In many of the communities, the story of fission and fusion is the story of particular big-men. The amity-enmity links between groups were always in flux. A statement by any group now that members of another group were traditional 'enemies' or 'allies' must be taken as referring to the situation obtaining only at a particular time, and cannot be considered as the permanent state of the relationship.

3.4.4 Trade

Traditional trade belongs almost totally to the past. Many of the goods formerly traded are no longer produced, or have lost their value. Trade was usually conducted between individuals in a trading relationship.

Trade partners were either true kin or quasi-kin. The term for trade partner in all of the Markham languages was part of the system of kinship terms. The word was affixed with the same possessive pronoun suffixes used for inalienably possessed nouns such as kin and body parts. Trading partners were frequently inherited by men from their fathers. Trade moved along the routes of marriage and kinship. Conversely, many marriage ties were arranged to further advantageous trade connections, for example across district group boundaries among the Adzera, to gain access to potting clay, finished pots, spears, or stone axes. Such items were specialities of certain groups. There are also stories of children being exchanged between trade partners from different language communities, with one of the purposes being to learn each other's languages and further trade and other links.

The trading ties frequently crossed language boundaries. For example, many Musom people have kin ties with Nabak (Papuan) neighbours, because the trade ties were so advantageous between those two groups. In exchange for mountain food and game from the Nabak, the Musoms gave salt, grindstones for sharpening axes and bamboo for bowstrings.

Trade rarely went beyond the next political unit, but the actual items moved great distances. For example, shells from the Rai Coast (not the Huon Gulf Coast) were reportedly obtained by the Markham communities through a chain of trade links across the Finisterre mountains (K. Holzknecht

1973d; 1975). Salt, originally made in Marawaka in the Eastern Highlands was reported in the lower Watut communities (Sinclair 1966).

3.4.5 AGRICULTURE

The people of the Markham language communities did not ever have large-scale pig husbandry. Neither did the Markham communities participate in the intensified agricultural activity reported as occurring throughout the Highlands several hundred years ago, after the introduction of sweet potato (Garrett-Jones 1979:280). In all communities except those at higher altitudes, the staple crops are bananas and yams. Among all the Markham groups except Sangang and Amari of the Adzera language, gardens were up to recent times only found in the small river valleys or the foothills of the mountains bordering the large valleys. The earliest European explorers in the Markham area remarked on the absence of food gardens in the valley itself until they came to Sangang, and then to Amari (Dammköhler 1907/1908; 1909; Fröhlich 1908; Andexer 1914).

One reason for the movement of small groups of people in the past was to seek and try out new agricultural land. If it was successful and fertile after a season, then a new nuclear colony would be established. New agricultural settlements were usually established in the foothills bordering the larger valleys, and in the smaller side river valleys for several reasons. Firstly, due to the open and vulnerable nature of the Markham Valley, settlements there could not be adequately protected from attack by enemies. A second reason is the low fertility of the open *kunai*-covered soil and the low rainfall in the large Markham Valley. The whole valley area appears to have been relatively arid, since at least 17,000 years B.P. (Garrett-Jones 1979:283). This has made it largely unsuitable as agricultural land for bananas and yams. A third possible reason for not settling in the big valley was disease, as there are low-lying swampy areas near the rivers where disease-carrying mosquitoes breed. A further reason for humans preferring to settle away from the large rivers was the presence, until very recently, of many marauding crocodiles. One reason given by old Mari men for their move away from the middle-Markham area into the Ramu Valley was the loss of many children and pigs to crocodiles, which most likely came up from the Leron River.

3.4.6 GROUP CONSCIOUSNESS

An important marker of group identity in the Markham communities is language. Each small unit is conscious of the similarities of the in-group speech and the differences of the out-group speech. This is frequently expressed in phrases such as: 'we talk straight; they (the neighbours) talk down (or up, or cranky)'. The centrality and superiority of the group's language and culture also expresses itself in origin stories. Many of the Markham communities claim to belong to the original, founding group; all others are mere offshoots or satellites. This in-group consciousness and its linguistic expression leads to divergence between speech varieties. In some instances, there is a definite indication that speech differences are being exaggerated, if not invented, to mark the in-group from the out-group.

There is a certain paradox, however, in this xenophobic view of language. Multilingualism was and is common, and many men, in particular, speak several other languages besides their own. In the past men were multilingual because of trading needs, warfare, and other activities which involved alliances with groups speaking different dialects or languages. Some people were multilingual as a result of their mothers being from a different language community. Women were multilingual due to

marriage outside their own language community. Being proficient in other languages was highly valued in the past, and in certain circumstances language was, and is, viewed as a valued commodity, something which could be traded, and used for gain.

The presence of 'foreigners' in language communities, whether they were women or refugees, led to convergence of linguistic forms and patterns, and cultural patterns in most communities. This can be seen in the diffusion of areal features in the languages and cultures of the Markham people and their neighbours. Consequently, it is often impossible for the linguist to state in which direction a 'borrowing' of form or pattern has taken place. Perhaps 'reciprocal borrowing' would best describe this giving and taking of linguistic forms and cultural features. This convergence of language and culture, and the divergence due to in-group consciousness are two further sides of the Markham paradox.

3.4.7 MOBILITY AND MIGRATIONS

The impression gained from migration and origin stories within the Markham communities is of constant movement in the past. Watson, writing of the neighbouring Highlands area, says 'a fluid personnel is no anomaly but the very lifeblood of many Central Highland New Guinea societies' (Watson 1970:108). This appears to have been the case in the Markham communities as well. Watson cites the example of the Tairora, neighbours of the Adzera and Wampur language groups, and states that many communities are of 'mixed ethnic origin', and are frequently composed of personnel ethnically and linguistically alien to each other.

One can reconstruct many different reasons for groups moving around in the past. The moves were mostly in small groups; movements en bloc appear to have been rare, and as a response to natural disasters such as floods, droughts, earthquakes, volcanic eruptions, or landslides. Small groups moved as a result of internal splits in the parent community. Some reasons for these splits are as follows:

1. Fraternal conflicts; conflicts between internal groups;
2. Attack by an enemy group;
3. Disease and death, epidemics, usually attributed to sorcery;
4. Natural disasters such as drought, flooding, earthquake, landslides;
5. Overcrowding, or perceptions of such;
6. Political pressures, due to the rise of a new big-man;
7. Conflict because of religion, for example an offence against a clan totemic animal;
8. 'Talk' or gossip, particularly between women, leading to conflict;
9. Need for new agricultural land.

When small groups left the parent community, they would either start up a new nuclear unit of their own, and might or might not keep up links with the parent community, or they would move in with another community. The choice of host community for receiving the refugees could be based on kinship ties, trading ties or fighting alliances in the past, the persuasion and promises of an aspiring big-man, or promises of land, women, or protection. The advantages to the receiving community of taking in new members would include strengthening of the manpower of the host group, strengthening the power of a big-man, availability of women for marriage, possible rights to new land which could be taken over by the hosts, support in conflict with other groups, and the bringing of new and more powerful sorcery or religious benefits such as spirits, cults etc.

Conflicts with outside groups were generated for various reasons. These include pay-back from previous conflict, to gain land, women or goods such as weapons, clay pots, wooden bowls and stone axes, redress for an insult or wrong, proof of the power of a fight leader, prestige as warriors, training of young men as warriors, expressions of strength, and to obtain human meat.

These movements of people had an impact on language. The 'stay-at-homes' were affected by the outflow of population, and by the in-flow of immigrants bringing new linguistic influences with them. The people moving out and seeking refuge in another group usually had to conform, at least partially, to their hosts' cultural patterns including language. All these movements led to the reciprocal borrowing and accommodation discussed above.

The geographical and social conditions discussed briefly above were very important influences on the history of the Markham language communities. Sack (1976) compares the unravelling of the history of any one of these groups to peeling an onion – there is always another layer underneath. So, the history of any community has to be peeled back to expose the history of its constituent social units, and within each of these there are multiple layers. The movements of individuals and groups of varying sizes in the past provides the complex detail of these histories. Geographical and climatic conditions both provided the impetus for and imposed restrictions on movements of groups of people. Social patterns predisposed the groups to conflicts and also to their particular modes of resolution, and these resulted in the constant ebb and flow of the populations within the geographical area under consideration.

CHAPTER 4

PHONOLOGY

4.1 INTRODUCTION

In this chapter I first give a brief phonological statement of each of the Markham languages. Full phonological statements are to be published at a later date, with grammar sketches of these languages. The phoneme paradigms presented at the head of the section on each language are arranged in order to represent their language-internal structure. Phonetic alternations of phonemes are discussed in the notes which follow each phoneme paradigm.

In section 4.5 of this chapter I present tables of sound correspondences listed under reconstructions of Proto Markham sounds and then in section 4.6 I present evidence supporting these reconstructions. In setting up the tables of sound correspondences, I give the Proto Oceanic, Proto Huon Gulf and Proto Markham reconstructed antecedents at the top of each list of Markham sounds. Presentation of Proto Markham reconstructed forms at this stage pre-empts the discussion which follows, but for convenience they are given in their historical order here.

In the tables which follow, where the Proto Oceanic or Proto Huon Gulf forms have reflexes which vary initially, medially and finally the Proto Markham is also reconstructed initially, medially and finally. A period in place of a sound, for any language, indicates that no cognate forms were found for that item.

The orthography adopted is a uniform one for all the languages, and is a practical rather than a phonetic orthography (see Chapter 1 section 1.3.1, above, for a list of the symbols used). The languages of the Lower Markham Valley and the Busu Valley have had intensive contact with Yabêm for such a long time that literate informants use the Yabêm orthography when writing their own languages. This has led to the the belief that these languages have a sound system identical to that of Yabêm, with the result that many of my informants stated that their languages have a seven-vowel system like that of Yabêm. This is not the case. None of the Markham languages, except Labu, has more than five vowels, and they are presented in the phonological sketches. Labu, however, does have a seven-vowel system, probably borrowed through intensive contact with Bukawa speakers. Labu also has phonemic tone on its vowels, and is the only Markham language with this feature. Again, this has almost certainly been borrowed from Bukawa. For a full discussion of Labu borrowing from Bukawa, see Chapter 6 section 6.2.8.2, below.

A feature of the Watut languages (South Watut, Middle Watut and North Watut) is the vowel harmony which occurs between noun and verb roots and their preceding morphemes. This is always regressive harmony, that is, the vowel of a morpheme is determined by the first or only vowel of the root form which follows it. For example, in possessive bases and the possessed nouns which follow them, if the first or only vowel of the root is *o*, the vowel of the preceding possessive morpheme is *o*. If the first or only vowel of the possessed noun is any other vowel, the vowel of the possessive morpheme is *a*. For example in Middle Watut:

	kager go mo-nj	our(I) mouths
cf.	*kager ga efa-c*	our(I) sisters-in-law

This will be referred to in Chapter 5 Morphosyntax, when discussing possessive pronoun forms, and subject pronoun prefixes.

4.2 PHONOLOGICAL SKETCHES OF THE MARKHAM LANGUAGES

The languages are discussed in a more or less geographical order, from Mari in the north-west to Labu in the south-east.

4.2.1 MARI

Mari has the following phonemes:

TABLE 4.1: MARI PHONEMES

Consonants:								
p	*b*	*t*	-	*s*	*z*	*k*	*g*	
mp	*mb*	*nt*	*nd*			*ŋk*	*ŋg*	
m		*n*				*ŋ*		
								h
		r						
w				*y*				
Vowels:								
i	*a*	*u*						

Notes:
1. /g/: [g]~[ɣ] word initially and medially. /g/ does not occur word finally.
2. /r/: [r]~[l]~[d] in all positions, with a preference for [r] being observed.
3. /mb, nd, ŋg/: The sounds *mb*, *nd*, and *ŋg* are rare.

4.2.2 ADZERA

The following phonemes are analysed for Adzera:

TABLE 4.2: ADZERA PHONEMES

Consonants:								
p	*b*	*t*	*d*	*c*	*j*	*k*	*g*	*ʔ*
mp		*nt*		*nc*	*nj*	*ŋk*		*ŋʔ*
m		*n*				*ŋ*		
f		*s*						*(h)*
		r						
w				*y*				
Vowels:								
a	*i*	*o*	*u*					

Notes:
1. /o,u/ :The contrast between /o/ and /u/ does not occur in the Amari and Ngarowapum dialects, which have three vowels only : /a,u,i/.

The six dialect areas of Adzera are distinguished from each other by the following phonological features:

TABLE 4.3: DISTINGUISHING PHONOLOGICAL FEATURES OF ADZERA DIALECTS

		-u(a)	*-(i)a*	*-(m)p*	*o/u*	*oi*	*VʔV*
1	Central	*-u*	*-i*	*-p*	*o+u*	*oi*	*VV*
2	Guruf	*-u~ua*	*-i*	*-mp*	*o+u*	*oi*	*VV*
3	Amari	*-u*	*-i*	*-p*	*u*	*ui*	*VV*
4	Ngarowapum	*-u*	*-ia*	*-p*	*u*	*ui*	*VV*
5	Yarus	*-ua*	*-ia*	*-p*	*o+u*	*oi*	*VʔV*
6	Tsumanggorun	*-ua*	*-ia*	*-mp*	*o+u*	*oi*	*VV*

4.2.3 WAMPUR

Wampur has the following phonemes:

TABLE 4.4: WAMPUR PHONEMES

Consonants:							
p	*b*	*t*	*c*	*j*	*k*	*g*	*ʔ*
mp		*nt*	*nc*		*ŋk*		*ŋʔ*
m		*n*			*ŋ*		
		s					*h*
		r					
w				*y*			
Vowels:							
i	*a*	*u*					

Notes:
1. /b/: [b[~[β] word finally.
2. /ʔ/: /ʔ/ occurs initially, medially and finally.
3. /k,ŋk/: There are few examples of /k/ and /ŋk/ in the corpus. In form those recorded appear to be recent borrowings from Adzera, because they are phonologically identical to the Adzera forms, e.g. *buka* 'tobacco'; *kasi* 'scabies'; *ŋaruŋkuŋ* 'crow'; *marabuik* 'k. bushfowl which lays red eggs'.
(But 'red' is the expected *buiʔ*).
4. /r/: [r] alternates freely with [d] and [l] in all positions.
5. The only sequences of vowels are of two like vowels. The two vowels of such a sequence, i.e. /ii/, /aa/ and /uu/ can be interrupted by a glottal stop to preserve a CVCV sequence. For example, [aa]~[aʔa]; [ii]~[iʔi], [aa]~[aʔa], e.g. as in *baamping*ʔ 'coconut', which can also be *baʔamping*ʔ, and *ʔii* 'I think so', which can also be *ʔiʔi.*

4.2.4 SUKURUM

Sukurum has three varieties. They are:

1. That spoken in Sukurum and Rumrinan;
2. That spoken in Gupasa, Waroum and Wangat;
3. That spoken in Gabagiap.

The Sukurum language has the following phonemes:

TABLE 4.5: SUKURUM PHONEMES								
Consonants:								
p	*b*	*t*		*s*	*j*	*k*	*g*	
mp	*mb*	*nt*	*nd*	*ns*		*ŋk*	*ŋg*	
m		*n*				*ŋ*		
f								*h*
		r						
w				*y*				
Vowels:								
i	*e*	*a*	*o*	*u*				

Notes:
1. /mp,nt,ŋk/: Only the Wangat subvariety of Sukurum has the prenasalised voiceless stops /mp, nt, ŋk/.
2. /s/: In the Gabagiap variety of Sukurum,the sound [c] occurs. The other varieties have /s/ corresponding to Gabagiap /c/. Similarly, Gabagiap has the prenasalised counterpart, [nc], while the other varieties have [ns].
3. /c/: In Wangat, [c] is realised as voiced consonant [j]; it contrasts with [s] which is a separate phoneme.
4. /h/: The sound [h] occurs only in the dialect of Sukurum and Rumrinan, and only in very few words, e.g. *han* 'go'; *aha* 'yes'; *bagahat* 'jaw'; *gihab* 'pig'; *gehen* 'half'.
5. /b/: Word finally, [b]~[β].
6. /g/: /g/ is always realised as [ɣ], and does not occur word finally.
7. /k/: /k/ is always realised as a back velar [ḳ].

4.2.5 SARASIRA

The following phonemes occur in Sarasira:

TABLE 4.6: SARASIRA PHONEMES						
Consonants:						
p	*b*	*t*	*c*	*k*	*g*	
	mb	*nd*	*nc*		*ŋg*	
m		*n*			*ŋ*	
f		*s*				*h*
		r				
w			*y*			
Vowels:						
i	*e*	*a*	*o*	*u*		

Notes:
1. /b/: Word finally, [b]~[β].
2. /g,k/: [ɣ]is usually realised for the phoneme /g/, but this can alternate freely with voiced back velar [g]. Similarly, /k/ is usually realised as a back velar [ḳ].
3. /r/: [r]~[d]~[l] freely in all positions .
4. /h/: The phoneme /h/ is very rare and only occurs in a few words in the data. They are: *han* 'go'; *aha* 'yes'; *gihab* 'pig' and *yahat* 'leaf'.

4.2.6 SOUTH WATUT

There are two varieties of South Watut:

1. Danggal, Wawas and Kumwats.
2. Maralangko and Dzenemp.

South Watut has the following phonemes:

TABLE 4.7: SOUTH WATUT PHONEMES								
Consonants:								
p	*b*	*t*	*d*	*c*	*j*	*k*	*g*	*ʔ*
	mb		*nd*		*nj*		*ŋg*	
m		*n*				*ŋ*		
f		*s*						
		r						
w				*y*				
Vowels:								
i	*e*	*a*	*u*					

Notes:

1. /t,c,d,j/: Speakers from Kumwats alternate [t] and [c], and [d] and [j], in all positions. Thus in Kumwats there is no opposition between [t] and [c], and between [d] and [j]; [t] and [c], and [d] and [j] are not phonemically distinct whereas in the other varieties they are phonemically distinct.
2. /c,j,nj/: In both varieties of South Watut, [c]~[č], [j]~[ǰ], and [nj]~[nǰ] freely.
3. /r/: [r]~[l] freely in all positions, with a preference for [l]. However, the phoneme for comparative purposes is represented by /r/.
4. The vowel /e/ occurs in two words only: *jenef* 'centipede' and *awe?* 'yes'. These are both probably borrowings, the former from Buang neighbours, and the latter from Wampar.
5. A prothetic *a* is inserted between words where the first word ends in a consonant and the second word begins with a consonant. The sound has no function except to preserve the preferred syllable structure of CVC.

4.2.7 MIDDLE WATUT

Middle Watut has the following phonemes:

TABLE 4.8: MIDDLE WATUT PHONEMES							
Consonants:							
p	*b*	*t*	*d*	*c*	*j*	*k*	*g*
mp	*mb*	*nt*	*nd*	*nc*	*nj*	*ŋk*	*ŋg*
m		*n*				*ŋ*	
f		*s*					
		r					
w				*y*			
Vowels:							
i	*e*	*a*	*o*	*u*			

Notes:

1. /r/: [r]~[l] freely, but in verb prefixes the sound /r/ is usually realised as [l], whereas in other instances, e.g. in kinship terms, it is usually realised as [r]. An explanation for this is that the sets of verb prefixes are very complex and are features which are not shared with neighbours outside the Watut, and consequently retain an original [l]. However kinship terms are cognate with those of all the neighbours, and their realisation with the [r] allophone is a shared feature.
2. There is prothetic vowel intrusion between consonants, across word boundaries. This prothetic sound is usually *a*, e.g. as in *serok a moroc* 'three', but Fischer (1963:210) says that the prothetic vowel is in harmony with the vowel of the following word, e.g. *jeningg o foc* 'my arrow' where the *o* is in harmony with the *o* in *foc*, and *jangg u mpuk* 'my pig', in which the *u* is in harmony with *mpuk*. These sounds have no semantic or morphological function.

4.2.8 NORTH WATUT

North Watut has the following phonemes:

TABLE 4.9: NORTH WATUT PHONEMES								
Consonants:								
p	*b*	*t*	*d*	*c*	*j*	*k*	*g*	*ʔ*
mp		*nt*		*nc*		*ŋk*		
m		*n*				*ŋ*		
		s						*h*
		r						
w				*y*				
Vowels:								
i	*e*	*a*	*o*	*u*				

Notes:

1. /b,d,g,j/: The oral voiced consonants [b],[d],[g],[j] are in complementary distribution with the prenasalised voiced consonants [mb],[nd],[ŋg],[nj]; the former occur only word initially and medially, and the latter only occur word finally.
2. /k/: The phoneme /k/ only appears rarely in the data, and its presence could be explained as a relatively recent borrowing from the neighbouring Middle Watut or Wampar languages, both of which have a phoneme /k/.
3. /r/: [r]~[l] freely, but [r] is usually realised.
4. Prothetic a is inserted between consonants, across word boundaries.

4.2.9 WAMPAR

The following phonemes occur in Wampar:

TABLE 4.10: WAMPAR PHONEMES							
Consonants:							
p	*b*	*t*	*d*	*c*	*j*	*k*	*g*
mp		*nt*		*nc*		*ŋk*	
m		*n*				*ŋ*	
f		*s*					
		r					
w				*y*			
Vowels:							
i	*e*	*a*	*o*	*u*			

Notes:

1. /c,j,s,nc/: /c,j,s,nc/ have palatalised and non-palatalised allophones which occur in free variation.
2. /r/: [r]~[l] in free variation, with [r] being dominant.
3. Wampar has phonemic vowel lengthening, and this will be written as a double vowel, *aa*, *uu*, etc.
4. Prothetic *a* is inserted between consonants, across word boundaries.

4.2.10 MUSOM

The following phonemes occur in Musom:

TABLE 4.11: MUSOM PHONEMES								
Consonants:								
p	*b*	*t*	*d*	*c*	*j*	*k*	*g*	
	mb		*nd*		*nj*		*ŋg*	
m		*n*				*ŋ*		
		s						*h*
		r						
w								
Vowels:								
i	*e*	*a*	*o*	*u*				

Notes:
1. /b/: [b]~[š] word finally.
2. /mb,nd,ŋg/: When prenasalised voiced stops /mb,nd,ŋg/ occur word finally, they may be realised as nasal only. The homorganic stop is not realised unless there is a vowel following.
3. /nj/: [nj] occurs initially and medially only, and is in complementary distribution with [nc] which only occurs word finally.
4. /r/: [r]~[l] freely, with [l] being usually realised.
5. Prothetic *a* occurs between consonants across word boundaries.

4.2.11 DUWET

The Duwet language has the following phonemes:

TABLE 4.12: DUWET PHONEMES							
Consonants:							
p	*b*	*t*	*d*	*z*	*k*	*g*	*ʔ*
	mb		*nd*			*ŋg*	
m		*n*			*ŋ*		
f		*s*					*h*
		r					
w				*y*			
Vowels:							
i	*e*	*a*	*o*	*u*			

Notes:
1. /mb,nd,ŋg/: When prenasalised voiced stops /mb,nd,ŋg/ occur at the end of a word, only the nasal is realised unless the sound following is a vowel; then the homorganic voiced stop is realised.
2. The following consonants do not occur word finally: /b,d,g,f,z,w,y/. /ʔ/ occurs word initially and finally, but not medially.
3. /p,t,k/: Voiceless stops /p,t,k/ are unreleased word finally.
4. /k/: /k/ is a back velar [ḳ] after /a,ia,ea/.
5. /g/: /g/ is usually realised as a fricative [ɣ].
6. /f/: /f/ does not occur word finally.
7. /s/: Final /s/ may be realised as [h] or [s].
8. /z/: /z/ is realised as [j] when the preceding sound is [t],[d] or [nd].
9. /r/: [r]~[l] in free variation, with [l] being most favoured.
10. /r/: [r] is often articulated in velar position.
11. In unstressed position, the last vowel of a two-, three- or four- vowel sequence becomes [ə], e.g. *siand* 'sun' becomes *siənd; fuefueiaŋ* 'in small pieces' becomes *fue'fueiəŋ.*
12. /ea,ua,ueia,ei,au,uo/: Diphthongs, in fast speech, are frequently reduced to a single vowel. This is done by a process of regressive assimilation, e.g.

/ea/	>	/e/	*seaŋ*	'quiet'	>	*seng*
/ua/	>	/u/	*muahaŋg*	'good'	>	*muhaŋg*
/ueia/	>	/ue/	*fueiaŋ*	'small'	>	*fueŋ*

or by progressive assimilation , as in the case of:

/ei/	>	/i/	*yein*	'dog'	>	*yin*
/au/	>	/u/	*hakaun*	'get'	>	*hakun*

Or the vowel may be completely changed, e.g.

/uo/	>	/a/	*uot*	'man'	>	*at*

13. /n,ŋ,ŋg/: Where /n,ŋ,g/ occur intervocalically, in fast speech they may be lost. If the two vowels are identical, vowel elision occurs, without lengthening, e.g.

raga	DEM	>	*ra*

If the vowels are non-identical, they may become a diphthong, e.g.

tagine	'one'	>	*taine*
kanuŋg	'I saw'	>	*kauŋg*
raŋuŋg	'want, like'	>	*rauŋg*

14. There is prothetic *a* between consonants across word boundaries. This also occurs after a consonant which ends a word, and before a vowel which begins the next word.

4.2.12 NAFI

Nafi has the following phonemes:

TABLE 4.13: NAFI PHONEMES

Consonants:							
p	*b*	*t*	*d*	*j*	*k*	*g*	*ʔ*
	mb		*nd*	*nj*		*ŋg*	
m		*n*				*ŋ*	
f		*s*					
		r					
w				*y*			
Vowels:							
i	*e*	*a*	*o*	*u*			

Notes:

1. /f/: /f/ occurs initially and medially, but rarely in final position. Those words in which -[f] occurs may be more recent borrowings, e.g. *rif* 'sugarcane'. [h] does not occur in other than final position, and is an allophone of /f/. Where /s/ occurs in final position, [s] alternates with [h]. Thus there is phonetic overlap between /f/ and /s/ in word final position, a case parallel to that of Duwet, above.
2. /r/: [r]~[l] freely, with a preference for [l].
3. /k/: /k/ is frequently realised as back velar [ḳ].
4. /b,w/: /w/ occurs initially and medially. Word finally, /b/ becomes [β] which alternates with [w].
5. /mb,nd,ŋg/: When prenasalised stops /mb,nd,ŋg/ occur word finally, they may be realised as nasal only. The homorganic stop is only realised when there is a vowel following.

4.2.13 ARIBWAUNGG

The Aribwaungg language has the following phonemes:

TABLE 4.14: ARIBWAUNGG PHONEMES								
Consonants:								
p	*b*	*t*		*c*	*j*	*k*		
mp	*mb*	*nt*	*nd*		*nj*	*ŋk*	*ŋg*	
m		*n*				*ŋ*		
f		*s*						*h*
		r						
w				*y*				
Vowels:								
i	*e*	*a*	*o*	*u*				

Notes:

1. /mp,nt,ŋk/: Examples of /mp,nt,ŋk/ are rare.
2. /b/: /b/ is usually produced as a bilabial fricative [β] in all positions. This alternates freely with [w]. Younger speakers are tending to realise this sound as a stop [b], whereas older people use [β]~[w].
3. /nj/: The prenasalised voiceless affricate [nc] occurs in few examples, and always word finally. It is in complementary distribution with [nj], which only occurs initially and medially.
4. /k/: Voiceless stop [k] occurs initially and medially, but rarely finally. Glottal stop [ʔ] occurs as a lexically conditioned word final allophone of /k/. Those words in which there is a final [k] e.g. *narutek* 'small', *parasik* 'cricket', are possibly borrowings, perhaps from Aribwaungg's Papuan-speaking neighbours to the north or from the closely-related Musom language, which has a final [k].
5. /c,j,nj/: The alveolar affricated stops /c,j,nj/ have palatalised and non-palatalised allophones which alternate freely in all positions.
6. /r/: [r]~[l] freely, but [l] is usually realised.
7. /h/: /h/ occurs in two words only in the data, *hoŋ* 'all' and *sahi en* 'taste food'. These are both borrowings from Bukawa (from *hong* 'all', and *nsa he* 'taste', 'try'). These must be recent borrowings, as all other cognates of Bukawa items with /h/ are reflected in Aribwaungg as /f/, e.g. Bukawa *ha* 'leg' is cognate with Aribwaungg *fa;* Bukawa *yah* 'fire' is cognate with Aribwaungg *(a)tsif.*
8. Sequences of two or more vowels in Aribwaungg are rare, and occur in words borrowed from neighbouring languages, e.g. *ŋakui* 'clothes', which is borrowed from Yabêm *ŋakôê* 'shirt' or 'dress'; *moin* 'discord' which is borrowed from Wampar *moin* 'bitter', 'sharp'.

4.2.14 ARIBWATSA

Aribwatsa has the following phonemes:

TABLE 4.15: ARIBWATSA PHONEMES								
Consonants:								
p	*b*	*t*	*d*	*c*	*j*	*k*	*g*	*ʔ*
	mb		*nd*				*ŋg*	
m		*n*				*ŋ*		
		s						*h*
		r						
w				*y*				
Vowels:								
i	*e*	*a*	*o*	*u*				

Notes:
1. The speaker alternates oral and nasal voiced stops. Where Aribwaungg has prenasalised voiced stops, Aribwatsa as a rule has oral voiced stops only.
2. /b/: [b]~[β] .
3. /h/: The speaker alternates [f] and [h] in all positions. However, it appears that Aribwatsa probably had [h] only.

4.2.15 LABU

Labu has the following phonemes:

TABLE 4.16: LABU PHONEMES

Consonants:						
p	*b*	*t*	*d*	*k*	*g*	
	mb		*nd*		*ŋg*	
m		*n*		*ŋ*		
		s				*h*
		l				
w			*y*			
Vowels:						
i	*ê*	*e*	*a*	*o*	*ô*	*u*

Notes:
1. /b/: /b/ occurs rarely in the data.
2. /k/: /k/ is realised as [x] before /a/, intervocalically.
3. /d/: When /d/ precedes /i/ it is sometimes heard as [dʸ], voiced palatal stop.
4. /mb/ and /nd/ become devoiced before /o/.
5. All word final syllables in Labu are open. All consonants can occur initially and medially, but only /ŋ/ has been recorded as occurring word finally, and that only in one example, *apaŋ* 'always' which is from Yabêm (and possibly also Bukawa) *ŋapaŋ* 'always'.
6. In contrast to all the other Markham languages, in Labu, single vowels can comprise a word , e.g. *a* 'sun'; *i* 'axe'; *u* 'rain'.
7. Tonal contrasts are phonemic in Labu. There is contrast between high and low tone on vowels (see Siegel, 1984:88-89 for minimal pairs showing tonal contrasts). Tone is not predictable in Labu as it is in Yabêm and Bukawa, and cognates with words in those two neighbouring languages do not always have the same tone.

4.3 RECONSTRUCTIONS OF PROTO OCEANIC PHONOLOGY

Because Proto Markham is a subgroup of Proto Huon Gulf, which in turn is a subgroup of Proto Oceanic, reconstructions of Proto Oceanic and Proto Huon Gulf phonology are dealt with first, in this section, to provide a background for the reconstruction of Proto Markham which follows.

I will discuss first the phonology of Proto Oceanic as reconstructed by Dempwolff, Grace, Blust, Milke and Pawley etc., and the revised Proto Oceanic phonology reconstructed by Ross (1986) which uses much more data from western Melanesian languages than has hitherto been available.

The set of consonant phonemes of POC, as reconstructed by Grace etc. was as listed below. The list is taken from Ross (1986:38 and 40).

TABLE 4.17: PROTO OCEANIC CONSONANTS (TRADITIONAL)

stop		*p*	*t*	j[2]	*k*		*q*
pren'd stop	*ŋp*[1]	*mp*	*nt*		*ŋk*		
trill			*d*				
pren'd			*nd*				
sibilant			*s*				
pren'd			*ns*				
nasal	*ŋm*	*m*	*n*	*ñ*	*ŋ*		
liquid			*l*			*R*	
glide		*w*		*y*			

Notes:
1. This was reconstructed first by Grace (1969).
2. This was reconstructed by Blust (1978).

Ross makes the following revisions to this set of POC reconstructions:

1. Traditional POC **mp* is considered to be a voiced bilabial stop POC **b*.
2. The sound represented in traditional POC as **ŋm* is written **mw* in the new system.
3. POC **nt* becomes voiced alveolar stop **d*.
4. POC **ŋk* becomes voiced velar stop **g*.
   The first, third and fourth amendments to the conventional POC schema are made because 'in almost every Oceanic language, the reflexes of POC **mp*, **nt*, and **ŋk* are voiced, usually [b],[d] and [g].' (Ross 1986:40).
5. POC **d* in the traditional system becomes **r*, and traditional POC **nd* becomes **dr*. This is because the most common reflexes in Oceanic languages are [r], and consequently, 'it is sensible to attribute the value [nr], which naturally becomes [ndr], to POC **nd*' (Ross 1986:40).
6. POC **R* is treated as a post-velar rhotic consonant. This is based on its reflexes inside and outside the Western Melanesian area, and consequently Ross believes that this value of **R* may have been inherited from Proto Eastern Malayo-Polynesian (Ross 1986:41).
7. Ross also proposes in his revision of POC phonology that Milke's 1968 POC **nj* reflects the nasal-grade of POC **s*, and that the reflexes claimed for POC **ns* are better interpreted as lenis grade reflexes of POC **s* (Ross 1986:86).

The schema presented in the table above is calle'Pre-POC' by Ross, and his revision of the traditional POC phonology he calls 'POC'. This is set out in the table below.

TABLE 4.18: PROTO OCEANIC CONSONANTS (ROSS)

	velar bilabial	bilabial		alveolar		palatal		velar		post-velar
stop	*bw*	*p*	*b*	*t*	*d*	*c*[1]	*j*[2]	*k*	*g*	*q*
fricative				*r*	*dr*					
sibilant				*s*						
nasal	*mw*	*m*		*n*		*ñ*		*ŋ*		
liquid				*l*						*R*
glide	*w*					*y*				

Notes:
1. Ross's **c* is Blust's **j*.
2. Ross's **j* is Milke's **nj*.

The five-vowel system of POC is taken by Ross to have remained as outlined in earlier works (Ross 1986:112).

Ross goes on from his revision of conventional POC ('Pre-POC' to 'POC') to outline changes to the phonology of POC which came about after the POC language community began to break up. These changes were as follows:

1. The POC voiceless stops **p, *k* and in some languages at some time, **s* underwent lenition in different daughter languages to [v], [ɣ], and [z] respectively. Many daughter languages have a second set of reflexes of these POC consonants, besides an oral/nasal contrast Ross (1986:58). The grade which is reflected in any given etymon is the same for all languages within any one of the Western Melanesian Oceanic groups proposed by Ross, but this does not always agree across groups . The fortis/lenis distinction is not reconstructible for POC (Ross 1986).
2. The POC stop **t* underwent lenition in only a few, scattered daughter languages. The lenis reflex in these languages is [r] or [l] (Ross 1986).

4.4 PRE-POC, POC AND PROTO HUON GULF

4.4.1 PRE-POC AND POC

Ross' reconstructions of conventional POC ('Pre-POC') as his 'POC' are important for an understanding of the changes which occurred after the break up of the POC language community, and for interpreting the reflexes seen today in languages which are, in part at least, descended from one or more communalects of POC. Ross has reconstructed some features of a lower-order subgroup of Post-POC, Proto Huon Gulf, as the ancestral language of present-day members of the Huon Gulf family. This 'family', in Ross' terms 'a group of communalects which have diversified from a single language by separation, rather than by dialect differentiation' (Ross 1986:10), includes the following members:

a) North Huon Gulf chain
   - i) Yabêm
   - ii) Bukawa
   - iii) Kela

b) Markham family
   - i) Labu
   - ii) Lower Markham network
     - Aribwatsa
     - Aribwaungg
     - Musom
     - Sirak (my Nafi)
     - Duwet
     - Wampar
     - Dangal (my South Watut)
     - Maralango (my South Watut)
     - Silisili (my Middle Watut)
     - Onank (my North Watut)
   - iii) Upper Markham network
     - Adzera
     - Sirasira (my Sarasira)
     - Sukurum
     - Wampur

– Mari

c) South Huon Gulf chain

i) Kaiwa

ii) Hote (inc. Misim and Yamap dialects)

iii) Buang chain

– Vehes

– Mapos Buang (inc. Mambump dialect)

– Mangga Buang

– Mumeng (inc. Patep, Yanta, Zenag, Latep, Dambi and Kumaru dialects)

– Kapin

– Piu

d) Numbami

4.4.2 PROTO HUON GULF

The consonant phonemes of Proto Huon Gulf have been reconstructed by Ross as follows:

TABLE 4.19: PROTO HUON GULF CONSONANTS

stop, vl		*p*	*t*	*c*	*k*	
stop, vd		*b*	*d*	*j*	*g*	
fricative, vd		*v*			*ɣ*	
flap			*r*			
sibilant			*s*			
nasal	*mw*	*m*	*n*	*ñ*	*ŋ*	
liquid			*l*			*ʀ*
glide	*w*			*y*		

(From Ross 1986:162-169).

The unity of the Huon Gulf family is characterised, in all groups, by a set of innovations from POC. These are, as set out by Ross (1986:170):

A. POC **p* always undergoes lenition to PHG **v* medially, and almost always initially.

B. POC **k* splits into (fortis) PHG **k-* and (lenis) PHG **ɣ*. For any etymon, all languages agree on the grade (fortis or lenis) reflected. The large majority of reflexes are lenis.

C. POC **q* merges with the lenis grade of **k* as PHG **ɣ*.

D. A number of etyma acquire an unpredicted final **-c*.

E. POC **boʀok* 'pig' is reflected as PHG **boʀ:* i.e. final **-ok* is unexpectedly lost (PHG did not lose POC final consonants).

F. POC **kami* D:1EP is completely replaced by its alternant POC **kai.*

G. All POC verb-deriving prefixes *(*pa-* causative, **paʀi-* reciprocal, **ma-* stative, **ta-* intransitive*)* are lost.

4.5 THE RECONSTRUCTION OF PROTO MARKHAM

Proto Markham is a direct descendant of Proto Huon Gulf. However, the Markham languages also share certain phonological features which they have not inherited directly from Proto Huon Gulf, and which are the results of local borrowings, both from each other and from Papuan-speaking neighbours. Some of these features occurred at a time before the communalects diverged and

changed in local ways, and other features occurred locally, among the languages which now make up the subgroups. Some changes, for example PMK **f* becoming *h*, occurred independently in some languages of different subgroups, and not in others.

The consonant phonemes of Proto Markham can be reconstructed as in the table below. Following the table, I will give evidence for the reconstruction of each of the items, in the form of tables of sound correspondences. Examples supporting these sets of correspondences will be given following the sets.

4.5.1 PROTO MARKHAM CONSONANTS

TABLE 4.20: PROTO MARKHAM CONSONANTS

	labio-velar	labial	alveolar	alveo-palatal	velar
obst, vl	*kw*	*p*	*t*	*c*	*k*
obst, vd		*b*	*d*	*j*	*g*
obst, nasal		*mb*	*nd*	*nj*	*ŋg*
nasal	*mw*	*m*	*n*		*ŋ*
fricative		*f*	*s*		
flap			*r*		
liquid			*l*		
glide		*w*			

MARKHAM SOUND CORRESPONDENCES: CONSONANTS

In the tables that follow, the sound correspondences for the Markham languages are listed. A reconstructed form for Proto Markham is given at the head of each column of correspondences, and a Proto Oceanic and a Proto Huon Gulf antecedent are also given. The POC forms used are those reconstructed by Ross which were discussed in sections 4.3 and 4.4 above.

TABLE 4.21: MARKHAM LANGUAGES: CONSONANT CORRESPONDENCES

POC	.		**p*	**b-*	**-b-*	.
PHG	**p*	.	**v*(len)	**b-*		
PMK	**p*	**-p*	**f*	**b*		
Adzera	*p*	*-p*	*f*	*b,mb*	*-mp-*	
Mari	*p*	*-p*	*h*	*b,mb*	*-mp-*	
Wampur	*p*	*-p*	*h*	*b,mb*	*-mp-*	
Sukurum	*p*	*-p*	*f*	*b,mb*	*-mb-*	
Sarasira	*p*	*-p*	*f*	*b,mb*	*-mb-*	
South Watut	*p*	*-p*	*f*	*b-*	*-w-*	*-Ø*
Middle Watut	*p*	*-p*	*f*	*b-*	*-w-*	*-Ø*
North Watut	*p*	*-p*	*h*	*b-*	*-b-,-w-*	*-Ø*
Wampar	*p*	*-b,-p*	*f*	*b-*	*-b-,-w-*	*-Ø*
Musom	*p*	*-p*	*h*	*b-*	*-w-*	*-Ø,-b*
Duwet	*p*	*-p*	*f,Ø*	*b-*	*-w-*	*-Ø,-p*
Nafi	*p*	*-p*	*f*	*b-*	*-w-*	*-Ø,-w*
Aribwaungg	*p*	*-p*	*f*	*p-*	*-b-,-w-*	*-Ø,-b*
Aribwatsa	*p*	*-p*	*h*	*b-*	*-w-*	*-Ø,-p,-b*
Labu	*p,-Ø*		*h,-Ø*	*p-*	*-w-*	*-Ø*

TABLE 4.21 *(continued)*

POC	*-b-		
PHG	*-b-		
PMK	*mb-	*-mb-	*-mb
Adzera	mp-	-mp-	-p
Mari	mp-	-mp-	-p
Wampur	mp-	-mp-	-p
Sukurum	mb-	-mb-	-p,-m
Sarasira	mb-	-mb-	-p,-m
South Watut	mb-	-mb-	-mb
Middle Watut	mp-	-mp-	-mb
North Watut	mp-	-mp-	-mb,-m
Wampar	mp-	-mp-	-b~-p
Musom	mb-	-mb-	-mb
Duwet	mb-	-mb-	-mb
Nafi	mb-	-mb-	-mb
Aribwaungg	mb	-mb-	-mb
Aribwatsa	b	-b-	-b
Labu	p-	-p-,-m-	-Ø

POC	*mw		*m	*w
PHG	*mw		*m	*w
PMK	*mw-	*-mw-	*m	*w
Adzera	mw-,mu-	-mw-	m	w,bw
Mari	mw-,mu-,m-	-mw-	m	w,bw
Wampur	mu-,mw-,m-	-mw-,-mu-	m	w,bw
Sukurum	mw-,mu-	-mw-	m	w,bw
Sarasira	mw-,mu-	-mw-,-mu-	m	w,bw
South Watut	mw-,m-	-w-	m	w
Middle Watut	mo-,m-	-w-	m	w
North Watut	mw-,m-,mu-	.	m	w
Wampar	mo-,mu-,m-	-w-,-mo-	m	w
Musom	mu-,mo-,m-	.	m	w
Duwet	mu-,mw-	-w-,-mo-	m	w
Nafi	mu-,mw-,mo-	-w-	m	w
Aribwaungg	mu-,mo-,m-	-w-,-mo-	m	w
Aribwatsa	mu-,mo-,m-	.	m	w
Labu	w-, ŋ-	-mu-	m	w

TABLE 4.21 *(continued)*

POC	.	*t	*d, *dr		*r, *ʀ (non-fin)		*l	*n	
PHG	.	*t	*d		*r		*l	*n	
PMK	*t	*r	*d-	*nd-	*-nd-	*-nd	*l	*n-	*-n
Adzera	t	r	d-	t-,nt-	-nt-	-nt	r,n	n	-n
Mari	t	r	r-	t-,nt-	-nt-	-nt	r,n	n	-n
Wampur	t	r	r-,t-	t-,nt-	-nt-	-nt	r,n	n	-n
Sukurum	t	r	r-	t-,r-,nd-	-nd-	-n	r,n	n	-n
Sarasira	t	r	r-	t-,r-,nd-	-nd-	-n	r,n	n	-n
South Watut	t	r	d-,t-	nd-	-nd-	-nd	r,n	n	-Ø
Middle Watut	t	r	d-	t-,nt-	-nt-	-nt	r,n	n	-Ø
North Watut	t	r	d-,t-	t-,r-,nt-	-nt-	-nt	r,n	n	-Ø
Wampar	t	r	d-	nt-	-d-	-d	n;-Ø-	n	-n
Musom	t	r	d-	nd-	-d-	-nd	n	n	-n
Duwet	t	r	d-	nd-	-nd-	-nd	r,n	n	-n
Nafi	t	r	d-	nd-	-nd-	-nd	n	n	-n
Aribwaungg	t	r	t-	nd-	-nd-	-nd	n	n	-n
Aribwatsa	t	r	d-	d-	-d-	-d	n	n	-n
Labu	t	l	t-	nd-,t-	-t-	-Ø	l;-Ø-	n	-Ø

POC	*s	*-s-	*-s	*j-	*c	.
PHG	*s	*-s-	*-s	*j-	*-c-	*-c
PMK	*s-	*-s-	*-s	*c-	*-c-	*-c
Adzera	s-,y-	-s-,-y-	-s	c-,t-,y-	-c-	-t,-c,-s
Mari	s-,y-	-s-,-y-	-s	s-,z-	-s-	-t,-s
Wampur	s-,y-	-s-,-y-	-s	c-,s-	-s-,-c-	-t,-s
Sukurum	s-,y-	-s-,-y-	-s	s-	-s-	-t,-s
Sarasira	s-,y-	-s-,-y-	-s	s-,c-	-c-	-t,-s
South Watut	s-	-s-	-s	c-,j-,s-	-c-	-c
Middle Watut	s-	-s-	-s	c-,j-,s-	-c-	-c
North Watut	s-	-s-	-s	c-	-c-	-c
Wampar	s-	-s-	-s	c-,s-	-s-,-c-	-c,-Ø
Musom	s-	-s-	-s	s-,c-	-s-	-c,-s
Duwet	s-	-s-	-s~h	s-,y-	-s-	-s~h
Nafi	s-	-s-	-s~h	s-	-s-	-s~h
Aribwaungg	s-	-s-	-s	c-,s-	-s-	-c
Aribwatsa	s-	-s-	-s	c-,s-	-s-	-c
Labu	s-	-s-	-s	s-,y-	-Ø-	-Ø

TABLE 4.21 *(continued)*

POC	*y-	*-j-	.	.	.	*-y-	*ñ
PHG	*y-	*-j-	.	.	.	*-y-	*ñ
PMK	*j-	*-j-	*nj-	*-nj-	*-nj	*-i	*n
Adzera	j-	-j-,-y-	nc,j-	-nc-	-s	-i	n
Mari	z-,t-,s-	-z-	s-	-z-	.	-i	n
Wampur	c-,j-,s-	-j-,-y-	c-,nc-	-nc-	.	-i	n
Sukurum	s-	-s-,-y-	s-,ns-	-ns-	.	-i	n
Sarasira	c-,t-,s-	-c-,-j-	c-,nc-	-nc-	-s	-i	n
South Watut	j-	-j-	nj-	-nj-	-nj	-Ø	n
Middle Watut	c-,j-	-j-,-c-	j-	-nc-	-nc	-Ø	n
North Watut	j-,y-	-j-	j-	-nc-	-nc	-Ø	n
Wampar	j-,y-	-j-	nc-	-nc-	-j,-c	-Ø	n
Musom	j-,c-	-c-	j-	-nj-	-nc	-Ø,-c	n
Duwet	j-,s-	-y-	j-	-j-	-s	-Ø,-s	n
Nafi	j-,s-	-s-	j-	-nj-	-s	-Ø,-s	n
Aribwaungg	c-	-j-	nj-	-nj-	-nc	-Ø,-c	n
Aribwatsa	j-	-j-	j-	-j-	-c,-j	-Ø,-c	n
Labu	s-,y-	-d^y-	s-	-s-	-Ø	-Ø	.

POC	*k		*-q *-r *-R		*k	*q	*g-
PHG	*k(fort)		*-k		*ɣ(len)	*g-	
PMK	*k	*-k-	*-k	*kw-	*-kw-	*g-	*-g-
Adzera	Ø	-ʔ-	-ʔ	w-,Ø/u-	-Ø-	g-	-g-
Mari	k-	-k-	-k	kw-,ku-	-kw-	g-	-g-
Wampur	ʔ	-ʔ-	-ʔ	ʔw-	-ʔw-	g-	-g-
Sukurum	k-	-k-	-k	kw-	-ku-	g-	-g-
Sarasira	k-	-g-	-k	kw-	-ku-	g-	-g-
South Watut	k-	-k-	-k	kw-,k-	-ku-,-Ø-	g-	-g-
Middle Watut	k-,Ø-	-k-	-k	kw-,ko-	-w-,-ku-	g-	-g-
North Watut	ʔ	-k-	-ʔ	ʔw-	-gw-	g-	-g-
Wampar	Ø-	-Ø-	-Ø	w-,Ø-	-Ø-,-w-	g-,Ø-	-g-,-Ø-
Musom	k-	-k-	-k	kw-,Ø-,ku-	-kw-	Ø-,g-	-Ø-
Duwet	k-,Ø-	.	-k	kw-,Ø-,ku-	-kw-	Ø-,g-	-Ø-
Nafi	k-	-k-	-k	kw-,Ø-,ku-	-kw-	Ø-,g-	-Ø-
Aribwaungg	Ø-	-k-	-ʔ	Ø-,Øu-	-ko-,-Ø-	Ø-,k-	-Ø
Aribwatsa	Ø-	-k-	-ʔ	Ø-,Øu-	-ko-,-Ø-	Ø-,g-	-Ø-
Labu	k-	-Ø-	-Ø	w-,Øo-	-w-	Ø-,k-	-Ø-

TABLE 4.21 *(continued)*

POC	*-g-			*ŋ
PHG	*-g-			*ŋ
PMK	*ŋg-	*-ŋg-	*-ŋg	*ŋ
Adzera	ŋ-	-ŋ-	-ŋʔ	ŋ
Mari	ŋk-	-ŋk-	-ŋk	ŋ
Wampur	.	-ŋ-,-ŋʔ-	-ŋʔ	ŋ
Sukurum	ŋg-	-ŋg-	-ŋ	ŋ
Sarasira	ŋg-	-ŋg-	-ŋ	ŋ
South Watut	ŋg-	-ŋg-	-ŋg	ŋ
Middle Watut	ŋk-	-ŋk-	-ŋg	ŋ
North Watut	ŋk-	-ŋk-	-ŋg	ŋ
Wampar	ŋ-,ŋk-	-ŋ-,-ŋk-	-g	ŋ
Musom	ŋg-	-ŋg-	-ŋg	ŋ
Duwet	ŋg-	-ŋg-	-ŋg	-ŋ-
Nafi	ŋg-	-ŋg-	-ŋg	ŋ
Aribwaungg	ŋg-	-ŋg-	-ŋg	ŋ
Aribwatsa	g-	-g-	-g	ŋ
Labu	k-	-k-	-Ø	-ŋ-

4.5.2 PROTO MARKHAM VOWELS

The proto Markham vowel system is reconstructible, but with difficulty as all the languages have irregular reflexes, and are characterised by the presence of vowel sequences.

The POC five-vowel system, with its PAN antecedents, is as follows:

TABLE 4.22: PROTO OCEANIC AND PROTO AUSTRONESIAN VOWELS

POC	PAN	
*a	*a	
*o	*e(ə)	*aw
*i	*i	*uy
*e	*ay	*ey
*u	*u	

The Proto Markham vowels were as below:

TABLE 4.23: PROTO MARKHAM VOWELS

*a
*i
*e
*o
*u

Several of the daughter languages, namely Adzera, Wampur and Mari, have three- or four-vowel systems , all of them having merged **i* and **e* as *i*. Wampur, Mari and two of the dialects of Adzera (Amari and Ngarowapum) have also merged **o* and **u* to *u*. Sarasira and Sukurum have five vowels, and it is possible that the /o/ phoneme has been borrowed with items from Papuan-speaking neighbours, for example Wantoat. South Watut has three vowels, *a, u, i* without *o* and *e* and

appears to have merged PMK *o and *u. Middle Watut, North Watut and Wampar have a five-vowel system. The other languages of the Lower Markham area all have five-vowel systems. Labu has seven vowels, and tonal contrast on vowels as well.

Below are tabulated the sound correspondences for the vowel sounds in the Markham languages.

TABLE 4.24: MARKHAM LANGUAGES: VOWEL CORRESPONDENCES

POC	*a	*i	*e	*o	*u
PHG	*a	*i	*e	*o	*u
PMK	*a	*i	*e	*o	*u
Adzera	a	i	i,a	o,u	u
Mari	a	i	i,a	u	u
Wampur	a	i	i,a	u	u
Sukurum	a	i	i,e,a	o	u
Sarasira	a	i	i,e,a	o	u
South Watut	a	i	i,a	u	u,i
Middle Watut	a,o	e,i	e,a	au,o	o,u
North Watut	a,u	i,e	i,a	au,u	u
Wampar	a,u	e,i	e,i	au,o	o
Musom	a,o	i	e	o	u,i
Duwet	a, ia,ie	i,ai	ia,iə,ei,e,i	ia,o,ei	ei,i
Nafi	a,o	i	e	o	u,i
Aribwaungg	a,o	i	e	o	u,i
Aribwatsa	a,o	i	e	o	u,i
Labu	a	ê	a	o	ô

PMK	*aCi	*i	*u	*aCu	*ai
Adzera	ai	i[a]	u[a]	au,aCu	ai
Mari	ai	ia	ua	au,aCu	ai
Wampur	ai	ia	ua	au, .	ai
Sukurum	e,ai	ia,ie	ua	ao,aCu	e
Sarasira	e,ai	ia,ie	ua	au,aCu	e
South Watut	aCi	i,e	u	aCo	ai
Middle Watut	aCe	i	u	au	ai
North Watut	aCi	e	o	.	ai
Wampar	aCe,ai	i	u	ao	u
Musom	aCi	i,e	i,u	au	u
Duwet	aCai	i,ia,e	iau,u,i	.	ei
Nafi	aCi	i,e	u,i	au,ao	e
Aribwaungg	aCi	i,e	u,i	au	e
Aribwatsa	aCi	i	u,i	au	e
Labu	aCi	i	u,i	aCô	.

4.6 EVIDENCE FOR RECONSTRUCTIONS

The reconstructions of the Proto Markham sound system above are supported by the examples below. Where available the reconstructed Proto Huon Gulf and Proto Oceanic forms will be given.

4.6.1 PMK *p

PMK *p-*, for example as in:

PHG **patac* '(hand) palm' > PMK **pitac* 'palm of hand', 'sole of foot'
ADZ, WPU, SWT *pitat;* MWT *petac;* NWT *pitat;* WPA *petat;* MSM, NFI, AWG *pitat;* ARB *bitat* 'palm of hand', 'sole of foot'.

PMK **pasi[r,k]ik* 'flesh, meat'
ADZ *paya* 'gums'; WPU *paʔiʔ;* SKM, SRA *pakek;* SWT *pasip;* NWT *pasiʔ;* WPA *bese-* 'gums'; MSM, NFI *pasik;* AWG *pasiriʔ;* ARB *basiriʔ;* LAB *(a)pisi* 'flesh, meat'.

PMK **parac* 'green, unripe'
ADZ *pisia;* MRI *pisa;* WPU *pisaʔ;* SWT, MWT, NWT, WPA, MSM, AWG, ARB *parac;* DWT, NFI *paras* 'green, unripe'.

PMK **-p-*, as exemplified by:

PMK **-caparup* 'sneeze'
ADZ, WPU *-caparuʔ;* MRI *-parasuab;* SKM, SRA *-saparuap;* SWT *-tap;* MWT, NWT *-cap;* WPA *-caparo;* MSM *-caparu;* DWT *-sapareip;* NFI *-saparu;* AWG *-capari;* LAB *-asipi* 'sneeze'. (The apparently aberrant Labu item could be the result of metathesis of *sa*.)

POC **kabit-ŋa* > PHG **kapiŋa* 'carry' > PMK **-kapiŋ* 'carry', 'give birth'
ADZ *-apiŋʔ;* SKM, SWT *-kapiŋ;* MWT *-kapeŋ;* NWT *-ʔapiŋ;* WPA *-peŋ* 'carry', 'give birth'.

PMK **-p*, as in the following examples:

PMK **-mbip* 'defaecate'
ADZ *-pip;* WPU *-mpiap;* SRA, SWT, NFI *-mbip;* MWT, WPA *-mpip;* NWT *-mpep;* MSM *-bip;* DWT *-mbipua;* AWG *-(i)mbip;* ARB *-bip;* LAB *-pi* 'defaecate'.

PMK **-rap* 'boil, cook'
ADZ, MRI, WPU, SKM, SRA *-rap;* SWT *-(kuku)rap;* MWT *-(ko)rop;* NWT *-(u)raʔ;* WPA *-rop;* MSM, NFI, AWG, ARB *-rop;* DWT *-riap;* LAB *-la* 'boil, cook'.

PMK **posap* 'white'
ADZ, MRI, WPU, SKM, SRA *sap;* MWT *(m)pos;* MSM, NFI, AWG *posop;* DWT *pisup;* ARB *bosop;* LAB *pisi* 'white'.

4.6.2 PMK *f

Proto Markham **f* reflects the lenis grade of POC **p*. PMK **f* has reflexes in daughter languages in all positions, and in some languages in each of the subgroups PMK **f* is reflected independently as *h*, in all positions.

PMK **f-* is exemplified by the following:

POC **paqal* > PHG **vaɣa* 'thigh' > PMK **faga-* 'leg, foot'
ADZ, SKM, SRA *faga-;* MRI, WPU *haga-;* SWT, MWT *faga-;* NWT *haga-;* WPA *faa-;* MSM *ha-;* DWT *a-;* NFI *fa-* ('footprint'); AWG *fa-;* ARB, LAB *ha-* 'leg, foot'.

POC ** puqu[n]* 'base' > PMK **fugu-* 'base', 'trunk'
ADZ *fugun;* MRI *hugun* ('banana'); WPU *hugun;* SWT *fugu;* MWT *fogo;* NWT *hugu;* WPA *foon;* MSM, ARB *hun;* NFI *fun;* AWG *fun* ('molar tooth'); LAB *(a)hô* 'base', 'trunk'.

POC **panaq* 'bow' > PMK **-faniŋ* 'shoot arrow'
ADZ *-faniŋʔ;* MRI, WPU *-hania;* SKM *-fania;* SWT *-fani;* MWT *-feniŋ;* NWT *-haneŋ;* NFI, AWG *-faniŋ* 'shoot arrow'.

PMK **-f-*, as in the following examples:

POC **paqoʀu* > PHG **vaqu* 'new' > PMK **[wa]fak* 'new'
ADZ *faʔ;* MRI *ha(ri);* SKM, SRA *fak;* SWT, MWT *wafak;* NWT *wahaʔ;* WPA *wafu;* MSM *wahok;* DWT *akei(n);* NFI *wofok;* AWG *wofoʔ;* ARB *wohoʔ;* LAB *haʔu* 'new'.

POC **lopu* 'sibling of opposite sex' > PMK **lafu-* > late PMK **nafu-* 'sibling of opposite sex'
ADZ, SKM, SRA *nafu-;* MRI, WPU *nahu-;* SWT *ni-;* MWT, WPA *nafo-;* NWT *nahu-;* MSM, ARB *nahu-;* NFI, AWG *nafu-;* LAB *nôhô* 'sibling of opposite sex'.

PMK **kwafi* 'crab'
ADZ *wafi;* MRI *kwahi;* WPU *wahi;* SWT *kwafikwafi;* MWT *kwafi;* NWT *wahi;* WPA *wafi;* MSM *kwahi(r);* NFI *gwafi;* AWG *ofi(r);* ARB *hi(radib)* 'crab'.

PMK **-f,* as exemplified in the following:

PMK **jufif* 'march fly'
ADZ *jufif;* MRI *tuhih;* SRA *tufif;* SWT *jifaf;* MWT, WPA *jofef;* NWT *juhih;* MSM *jihih;* NFI *jufih;* AWG *cifif;* LAB *sêhê* 'march fly'.

PMK **ŋguf* 'red paint or dye'
ADZ *(ma)ŋkuf,ŋuf;* MRI *kuh;* WPU *ʔuh;* SKM, SRA *kuf;* SWT *ŋguf;* NWT *ŋkuh;* WPA *ŋof;* MSM *ŋguh;* NFI, AWG *ŋguf;* ARB *guh* 'red paint or dye'. (Mari and Sukurum show irregular reflex of PMK **ŋg-*, without prenasalisation, and Sukurum reflects this as voiceless *k*.)

POC **api* 'fire' > PMK **jaf* 'fire'
ADZ *jaf;* MRI *zah;* SKM *saf;* SRA *caf;* NWT *yah;* WPA *jif;* MSM *cih;* DWT *siaʔ;* NFI *sif;* AWG *(a)cif;* ARB *(a)jih;* LAB *ya* 'fire'.

4.6.3 PMK **b*

PMK **b-* is reflected in the following examples:

PHG **bage-* 'hand' > PMK **baŋgi-* 'arm, hand'
ADZ *baŋi-;* MRI *baŋkia-;* WPU *baŋia-;* SKM, SRA *baŋgia-;* SWT *baŋgi-;* MWT *beŋki-;* NWT *baŋke-;* WPA *baŋi-;* MSM, NFI *bai-;* AWG *paŋgi-;* ARB *bagi-* 'arm, hand'.

PMK **biŋa-* 'name'
ADZ, MRI, WPU, SRA, SWT *biŋa-;* MWT *beŋa-;* NWT, WPA, MSM, DWT, NFI *biŋa-;* AWG *piŋa-;* ARB *biŋa-;* LAB *paŋa* 'name'.

PMK **buman* 'wild'
ADZ, MRI, SKM *buman;* SRA *buniŋ;* SWT *buma;* MWT *boma;* NWT *buman;* WPA *boman;* MSM *biman;* DWT *beim;* NFI *biman;* AWG *piman;* ARB *biman;* LAB *(pi)pô* 'wild'.

PMK **-b-*, as exemplified in the following:

PHG **goluɣic* 'egg' > PMK **kurubic* 'egg'
ADZ *urubit;* MRI *kuruwit;* WPU *ʔurit;* SKM, SRA *kurubit;* SWT *kuruwic;* MWT *korowec;* NWT *ʔurugic;* WPA *rowe;* MSM *kuruwik;* DWT *karageis;* NFI *kuruwik;* AWG *uruwiʔ;* ARB *rowiʔ;* LAB *(a)kulôhô* 'egg'.

PMK **[ga,su]wu-* 'husband'
The prefix *ga-* is a reflex of POC **qa-* personal noun marker. The prefix is no longer productive in the Markham languages. It is difficult to reconstruct a Proto Markham word for 'husband' as *su-* does not appear to have had the same function in the Lower Markham languages as *ga-* has in the Upper Markham.
ADZ *gabu-;* MRI, WPU, SKM, SRA *gabua-;* SWT,NWT *suwa-;* MWT *sowo-;* WPA *suu-;* MSM, DWT, MFI *siwu-;* AWG *sibu-;* ARB *suu-* 'husband'.

PMK **barabin* 'heavy'
ADZ, MRI, WPU, SKM, SRA, NWT, WPA *barabin;* MSM, NFI, ARB *marawin;* DWT *marawain;* AWG *marabin.* (The reflex of PMK **b-* as *m-* in the languages of the Lower Markham group is irregular. It may have developed, however, as an analogy with the still productive *mara-* prefix on adjectives. See Chapter 5, section 5.2.3 Attributive bases, below.)

PMK **-b*, as in the examples below:

PMK **rib* 'fighting shield'
MRI, WPU, SKM, SRA *riab;* MWT *ri;* MSM *rib;* DWT *rip;* NFI *riw;* AWG, ARB *(a)rib* 'fighting shield'. (It is this word which has become part of the name by which the Aribwaungg and Aribwatsa people call themselves, and by which the Musom clans call themselves. The meaning of the word has been extended to mean 'people', and in Adzera the word *rib* exists as third person plural pronoun.)

PMK **-nab* 'scrape coconut'
ADZ, MRI, WPU *-nab;* SWT *-nia;* MWT *-na;* NWT *-nana;* WPA *-nu;* MSM, AWG, ARB *-nob;* DWT *-nap;* NFI *-no;* LAB *-no* 'scrape coconut'.

PMK **maru[b]* '(human)male'
ADZ, MRI, SKM, SRA *marub;* SWT, MWT, NWT *maru;* WPA *maro* 'male'.

4.6.4 PMK **mb*

PMK **mb-* is reflected in the following examples:

PMK **mbu* 'water'
ADZ, MRI, WPU *mpui;* SKM *poi;* SRA *pui;* SWT *mbu;* MWT, WPA *mpo;* NWT *mpu;* MSM, NFI *mbu;* DWT *mbei;* AWG *(a)mbu;* ARB *(a)bu;* LAB *pô* 'water'.

PMK **-mbip* 'defaecate'
ADZ *-pip;* WPU *-mpiap;* SRA, SWT *-mbip;* MWT, WPA *-mpip;* NWT *-mpep;* MSM *-bip;* DWT *-mbiap(ua);* NFI *-mbip;* AWG *-(i)mbip;* ARB *-bip;* LAB *-pi* 'defaecate'.

POC **boʀok* 'pig' > PHG **boʀ* > PMK **mbuk* 'pig'
SWT *mbuk;* MWT *mpuk;* NWT *mpoʔ;* WPA *mpi;* MSM *bik;* DWT *mbauk;* NFI *mbig;* AWG *(a)mbi;* ARB *(a)big;* LAB *mba* 'pig'.

PMK **-mb-* as exemplified in the following:

POC **tubu* 'grandparent/grandchild' > PMK **rumbu-* 'grandparent/grandchild'
ADZ, MRI, WPU *rumpu-;* SKM *gumbu-;* SRA *rumbu-;* SWT *rumbu-;* MWT, WPA *rompo-;* NWT *rumpu-;* MSM *ribu-;* DWT *rimbei-;* NFI, AWG, ARB *rumbu-;* LAB *apô* 'grandparent/grandchild'. (Sukurum g- [ɣ] is an unexpected reflex of PMK **r-*, but the Sukurum *r* is close to velar.)

PMK **wambumb* 'hornet'
ADZ *wampup;* MRI *wampump;* WPU *bwampap;* SWT *wambumb;* MWT *wampomb;* NWT *wampum;* WPA *wampub;* MSM *wabum;* DWT *wambok;* NFI *wambum;* AWG *wambump* 'hornet'.

PMK **bambuŋg* 'twins'
ADZ *bampun;* MRI *bampuaŋk;* WPU *bampuan;* SRA *bambuaŋ;* SWT *bambuaŋg;* MWT *bompoŋ;* NWT *bampumb(-iaŋ);* WPA *boampug;* MSM *babum;* DWT *bambuʔ;* NFI *bambun;* AWG *pambuŋg* 'twins'. (North Watut *-iaŋ* is the gerundive suffix affixed to verbs, and it can give stative verbs adjectival functions.)

PMK **-mb,* as in the examples:

PMK **-kumb* 'dance'
ADZ, WPU *-ŋump;* MRI *-ŋkuamp;* SKM, SRA *-kuam;* SWT, MWT *-kumb;* NWT *-ʔomb;* WPA *-ib;* MSM *-kimb;* NFI *-kim;* AWG *-imb;* ARB *-ib* 'dance'.

PMK **-jumb* 'whistle'
ADZ, MRI *-suamp;* WPU *-juamp;* SKM *-(sibi)suam;* SRA *-cuam;* NWT *-(go)jomb;* WPA *-(mu)jub;* MSM *-(ku)cum;* DWT *-hiaum;* NFI *-(ku)sum;* AWG *-cumb* 'whistle'.

PMK **bapamb* 'croton'
WPU *babarap;* WPA *babap;* MSM *papam;* DWT *bapuam;* NFI *bapamb;* AWG *papamb;* ARB *bapab;* LAB *pôpa* 'croton'.

4.6.5 PMK **mw*

PMK **mw* is a reflex of PHG **mw,* which is in turn a reflex of POC **mw.* However, in some of the Markham languages, particularly those of the Lower Markham group, the single phoneme **mw* has been reinterpreted as **mu* before *a,* leading to *mua,* and subsequent loss of *a.* The first example below illustrates this.

PMK **mw-,* as exemplified in:

POC **mwata* 'snake' > PMK **mwar* 'snake'
ADZ *mwar, mur;* SRA, SWT, NWT *mwar;* MWT, WPA *mor;* MSM *mur;* DWT, NFI *mut;* AWG, ARB *(a)mur;* LAB *ŋu* 'snake'. (The irregular Duwet and Nafi reflexes of POC **t* as *t* are unexplained. The usual reflex of POC **t* in all the Markham languages is *r* but in some etyma Nafi and Duwet reflect it as *t.* This could be a result of borrowing from Bukawa after the split from the Proto Markham community. In Bukawa POC **t* is reflected as *t.*)

PMK **mwik* '(water) dirty, cloudy'
ADZ *(mu)mi;* MRI *mik;* WPU *miʔ;* SKM *muk(urik) ;* SRA *muk(uriak);* SWT *mikimik;* NWT *(muru)miʔ;* WPA *(ro)me;* MSM *(ru)mik;* DWT, NFI *mwaik;* AWG *(ru)miʔ* '(water) dirty, cloudy'.

PMK **-mw-*, as in the following examples:

PMK **samwan* 'sucker', 'shoot', 'planting material'
ADZ, MRI, WPU, SKM, SRA *yamwan;* SWT *siwiʔ;* MWT *sowe;* NWT *sugiʔ;* WPA *sowen;* AWG *suwin* 'sucker', 'shoot', 'planting material'.

PMK **samwaru-* 'young man'
MRI *samwak;* WPU *samuruaʔ;* SKM *samwat;* SRA *samuruak;* DWT *zamorom;* AWG *cumurum* 'young man'.

4.6.6 PMK **m*

PMK **m-*, as exemplified in the following:

POC **mata* 'eye' > PMK **mara-* 'eye', 'face', 'front'
ADZ, MRI, WPU, SKM, SRA, SWT, MWT, NWT, WPA, DWT, NFI, AWG, ARB *mara-;* MSM *ma-;* LAB mala 'eye', 'face', 'front'. (The Musom reflex, *ma-* is used only in compounds for the word 'eye', as in *ma-nitsin* 'eye(ball)'. As 'front' the word is *mara-n*, and as 'face' the word is *mara-n-asun* for first and third person, and *moro-ŋg-asun* for second person.)

PMK **mutun* 'heel of foot'
ADZ , MRI, WPU, SKM, SRA *mutun;* SWT *mutu;* MWT *moto;* NWT *mutuʔ;* WPA *moton;* MSM *mutun;* NFI *mutun;* AWG; *mutun;* ARB *mutun;* DWT *mitein.*

POC **muqa* 'before' > PMK **-muŋg* 'go before, go first'
ADZ, WPU *-muŋʔ;* MRI *(ma)mu(an)* 'formerly, before'; SKM, SRA *-muŋ;* SWT, MWT, NWT *-muŋg;* WPA *-mog;* MSM, DWT, NFI, AWG *-muŋg;* ARB *-mug;* LAB *-mô* 'go before, go first'.

PMK **-m-*, as in the following examples:

POC **tama* 'father' > PMK **rama-* 'father'
ADZ, MRI, WPU, SKM, SRA, SWT, MWT, NWT, WPA, MSM, DWT, NFI, AWG, ARB *rama-;* LAB *ama* 'father'.

PMK **gamik* 'rain'
ADZ *gamiʔ;* MRI, SKM, SRA *gamiak;* WPU *gamiaʔ;* SWT *mik;* MWT *emik;* NWT *meʔ;* WPA *yami;* MSM, DWT, NFI *amik;* AWG, ARB *amiʔ* 'rain'.

PMK **-m*, as in the examples:

POC **quma* 'garden' > PMK **gum* 'garden', 'work'
ADZ, MRI, WPU, SKM, SRA, SWT, NWT *gum;* MWT, WPA *gom;* MSM *um;* DWT *rimb;* AWG *(a)om;* ARB *om;* LAB *ô* 'garden', 'work'. (Duwet's reflex *r* of PMK **g* appears to be irregular, but Duwet *r* is velar rather than alveolar, and the two are in the process of merging.)

POC **dramu* 'lime spatula' > PMK **ndum* 'lime spatula'
ADZ, WPA *ntum;* DWT, AWG *(a)ndum;* NFI *ndom;* LAB *tua* 'lime spatula'.

POC **inu(m)* 'drink'
PMK **-num* 'drink'
ADZ, MRI, WPU, SKM, SRA, SWT, NWT, MSM, NFI, AWG, ARB *-num;* MWT, WPA *-nom;* DWT *-neim;* LAB *-(lu)nu* 'drink'.

4.6.7 PMK **w*

PMK **w-*, as exemplified below;

PMK **waga-* 'father's sister', 'mother's brother's wife'
ADZ, WPU *waga(t)-;* MRI *waga(k)-;* SKM, SRA, SWT, MWT, NWT *waga-;* WPA *waa-;* MSM *awa-;* DWT *wawa-;* NFI, AWG, ARB *wa-;* LAB *awa* 'father's sister', 'mother's brother's wife'. (The final consonant on the Adzera, Mari and Wampur forms are fossilised possessive pronoun suffixes for the second series of inalienably possessed nouns. See Morphosyntax, section 5.2.2.4 below.)

PMK **wambumb* 'hornet'
ADZ *wampup;* MRI *wampump;* WPU *(b)wampap;* SWT *wambumb;* MWT *wampomb;* NWT *wampum;* WPA *wampub;* MSM *wabum;* NFI *wambum;* AWG *wambumb* 'hornet'.

PMK **wa[j,s]ak* 'inside, interior, middle'
ADZ, WPU *wasaʔ;* MRI, SKM, SRA *wasak;* SWT *waju;* MWT *wiju;* NWT *wajo;* MSM *wucin;* AWG *wusin;* ARB *wicin* 'inside, interior, middle'.

PMK **-w-*

POC **kasuari* 'cassowary' PMK **kasuwek* 'cassowary' *(Casuarius bennetti)*
ADZ, SKM, SRA *suwik;* WPA *kuwik;* MSM *suwe;* DWT *kasiwu;* AWG, ARB *suweʔ* 'cassowary'.

PMK **kuwaŋ* 'leatherhead bird' *(Philemon novaeguineae)*
ADZ *uwaŋ;* MRI, SKM, SRA *kuwaŋ;* WPU, NWT *(ŋaru)ʔuwaŋ;* WPA *owaŋ;* MSM, DWT, NFI *kuwaŋ;* AWG, ARB *uwaŋ* 'leatherhead bird'.

4.6.8 PMK **t*

PMK **t*, which has *t* reflexes in all the languages, appears to have a different origin to POC **t*, which is always reflected as PMK **r*.

PMK **t-*, as in the following examples:

PMK **-tus* '(snake) shed skin'
ADZ, SRA *-tus;* SWT *-(faki)tus;* MWT *-tos;* NWT, MSM, NFI, AWG *-tus* '(snake) shed skin'.

PMK **-tuk(tuk)* '(water) drip'
MRI *-tuk;* WPU *-tiʔituʔ;* SKM, SRA *-toktok;* SWT *-tuk;* WPA *-tato;* MSM *-tuk;* AWG *-tuʔ* '(water) drip'.

PMK **tatarik* 'fowl'
ADZ *tatariʔ;* MRI *tariak;* WPU *tatariaʔ;* SKM *tatariak;* MWT *terik;* MSM, DWT *tirik;* AWG, ARB *tiriʔ* 'fowl'.

PMK *-t-, as exemplified below:

PMK *kitamb 'earth, ground'
ADZ *i[n]ta[m]p;* MRI *kitamp;* WPU *?i(n)tamp;* SWT *kitamp;* MWT *etamb;* NWT *?itamb;* MSM, NFI *kitomb;* AWG *itomb;* LAB *uta.* (The prenasalisation of *t* in Adzera and Wampur is unexplained, and is an irregular reflex of PMK *-t-.)

PMK *-fatafat 'whisper'
ADZ, SKM, SRA *-fatafat;* WPU *-hitihat;* SWT *-tufuat;* MWT *-fetaf;* NWT *-tihat;* WPA *-fatafat;* AWG *-fac* 'whisper'.

PMK *-t, as in the following:

PMK *-rat 'tremble, shiver, fear'
ADZ *-ratarat;* MRI *-tatarat;* WPU, SRA *-rat;* SKM *-rararat;* SWT, MWT *-rat;* NWT *-ritiriat;* WPA , DWT, NFI, AWG, ARB *-rat* 'tremble, shiver, fear'.

PMK *nuwat 'tadpole'
ADZ *suwat;* MRI, SWT, NWT *nuwat;* MWT *nuwot;* WPA *nut;* DWT, NFI *(gwa)niwut;* AWG *(ko)niwut* 'tadpole'.

PMK *ndut 'node', 'end', 'knot'
WPU *(mara)ntut;* SKM, SRA *kwat;* SWT *kwatun;* NWT *(mara)duan;* WPA *ntot;* MSM, NFI *ndut;* DWT *ndeit;* AWG *(a)ndut;* ARB *(a)dut* 'node', 'end', 'knot'.
(The Upper Markham forms are prefixed with either *mara-* meaning 'front', or *kwa-* meaning 'neck' or 'joining place'.)

4.6.9 PMK *r

PMK *r is a reflex of POC *t, *ʀ (non-final) and in some etyma from POC *l and *r.

PMK *r- is exemplified as follows:

POC *tama 'father' > PMK *rama- 'father'
This etymon has exactly the same reflex, *rama-*, for each language in the study.

POC *tapi 'dig' > PMK *-raf 'dig'
ADZ, SKM, SRA *-raf;* MRI, WPU *-rah;* SWT, MWT *-raf;* NWT *-rah;* WPA, AWG *-raf;* MSM, NFI, ARB *-rah* 'dig'.

PMK *-riŋun 'hear'
ADZ *-riŋant;* MRI, SKM *-yaŋua;* WPU *-naŋua;* SWT *-ruŋu;* MWT *-riŋu;* NWT *-reŋo?;* WPA *-ruŋum;* MSM *-riŋiŋ;* DWT *-raŋu;* NFI , AWG, ARB *-riŋin;* LAB *-liŋdi* 'hear'. (This etymon is notoriously irregular in many Oceanic languages, and the irregular reflexes of PMK *r- in Mari, Wampur and Sukurum cannot be accounted for.)

PMK *-r-, as in the following examples:

POC *natu 'child' > PMK *naru- 'child'
ADZ, WPU, SKM, SRA *naru-;* MRI *narun* ('small'); SWT, NWT *naru-;* MWT, WPA *naro-;* MSM, NFI, AWG, ARB *naru-;* DWT *narei-;* LAB *nialô* 'child'.

POC **kaʀati* 'bite' > PMK **-garar* 'bite'
ADZ, MRI, WPU *-gara;* SRA *-rar;* MWT *-gar;* NWT *-gar;* WPA *-aar;* MSM, AWG *-rar;* LAB *-kalu* 'bite'.

POC **rua* 'two' > PMK **(s)iru(k)* 'two'
ADZ *iruʔ(run);* MRI *hiruk(aŋkwa);* WPU *iruʔ;* SKM *reruk, roruk;* SRA *iruk;* SWT *suruk;* MWT, WPA *serok;* NWT *siruʔ;* MSM, NFI *siruk;* DWT *seik;* AWG, ARB *siruʔ;* LAB *salu* 'two'.

PMK **-r,* as in the following examples:

POC **mwata* 'snake' > PMK **mwar* 'snake'
ADZ *mur;* SRA, SWT, NWT *mwar;* MWT, WPA *mor;* MSM *mur;* DWT, NFI *mut;* AWG, ARB *(a)mur;* LAB *ŋu* 'snake'.

POC **kiʀam* 'axe' > PMK **gir* 'stone axe'
ADZ, MRI, WPU, SRA *gir;* MWT, WPA *ge;* MSM *ki* 'stone axe'; NFI *geʔ;* AWG, ARB *ger* 'stone knife'.

POC **kuron* 'pot' > PMK **gur* 'clay cooking pot'
ADZ, MRI, WPU, SKM, SRA *gur;* SWT, NWT *gu;* MWT, WPA *go;* MSM *ub;* DWT *aip;* NFI *wu;* AWG *(a)ub;* ARB *ab;* LAB *u* 'clay cooking pot'. (The final bilabial in the Musom, Duwet, Nafi, Aribwaungg and Aribwatsa examples are not reflexes of PMK **-r,* but a reinterpretation of the final *u* with rounding, which is produced as a bilabial, [w], or one of its variants, [β], [b] or [p].)

4.6.10 PMK **d*

PMK **d-*, as in the examples:

PMK **daŋgur* 'hornbill' *(Rhyticeros plicatus)*
ADZ *daŋur;* MRI *raŋkuar;* WPU *taŋuar;* SKM, SRA *raŋguar;* SWT *daŋgur;* MWT *doŋku;* NWT *daŋkor;* WPA *daŋir;* MSM *digir;* DWT *daŋgaut;* NFI *(ro)ndiŋgi;* AWG *tiŋgir;* LAB *tiki* 'hornbill'.

POC **dramis* 'lick' > PMK **-damis* 'lick'
ADZ *-damis;* MRI, WPU, SKM, SRA *-ramias;* MWT *-demis;* NWT *-dames;* DWT *-ndamis;* LAB *-tami* 'lick'.

PMK **-daru* 'chase, drive away'
ADZ *-daru;* MRI, SKM, SRA *-raru;* WPU *-taru;* SWT *-tararu;* MWT, WPA *-daro;* NWT *-tere* 'chase, drive away'.

4.6.11 PMK **nd*

Word initially, PMK **nd-* has two sets of correspondences – one set for nouns, and another set for verbs. As the initial sound on nouns, the prenasalisation is, in some of the languages, not realised unless there is a preceding vowel. As the initial sound on verb roots, the prenasalisation is realised because all verb roots take prefixes of various types, and these prefixes are always of the form *CV-, or *V-.

PMK **nd-* is exemplified in the following:

Nouns:

POC **droman* 'leech' > PMK **ndom[aŋ]* 'leech'
ADZ *tuaman;* MRI, WPU, SRA *tuam;* SKM *tomaŋ;* SWT *ndum;* MWT *tum;* NWT *tom;* MSM *(ga)dim;* DWT *daum;* NFI *(ga)ndim;* AWG *(ka)ndimp;* ARB *(ŋa)dib* 'leech'.

POC **dramu* 'spatula' > PMK **ndum* 'lime spatula'
ADZ, WPA *ntum;* DWT *(a)ndum;* NFI *ndom;* LAB *tua* 'lime spatula'.

Verb roots:

PMK **-ndap* 'appear, come up, grow'
ADZ *-ntoap;* MRI, WPU *-ntuap;* SKM, SRA *-nduap;* WPA *-ntab* 'appear, come up, grow'.

PMK **-ndugu* 'hang down'
MRI, WPU *-tugu;* MSM, NFI *-nduk;* AWG *-ndu?;* ARB *-du?;* LAB *-ndi* 'hang down'. (PMK intervocalic **-g-* has become final *-k* in Musom and Nafi and *-?* in Aribwaungg and Aribwatsa.)

PMK **-nd-* is exemplified as follows:

PMK **-mundiŋ* 'stand, stand up'
ADZ, MRI, WPU, SKM, SRA *-munti;* SWT *-mundik;* WPA *-monteŋ;* MSM *-mbidi;* DWT *-mandai;* NFI, AWG *-mindiŋ;* ARB *-midiŋ;* LAB *-ti* 'stand up'.

PMK **-findi* 'spit'
ADZ *-finti* ('to charm or bless'); MRI *-hinti;* WPU *-hinti(n);* SWT *-findi;* MWT *-finti(mb);* NWT *-hend;* WPA *-fid;* MSM *-hind;* DWT *-andi;* NFI *-findi;* AWG *-find;* ARB *-hid* 'spit'. (Adzera *-finti* involves the spitting of chewed ginger and other magical plants. The reflexes of PMK **-nd-* as NWT *-nd* and WPA and ARB *-d* occur because the sound is in final position, having lost final PMK **-i*. This loss could have occurred before anaphoric referential marker WPA *en* and NWT *ina?*.)

PMK **bundun* 'projection', 'top of tree'
ADZ *buntun;* WPU *buntuan;* SKM *bunduan;* SWT *bundu;* MWT *buntu;* NWT *boanto;* MSM *bidin;* NFI *bindin;* AWG *pundin* 'projection', 'top of tree'.

PMK **-nd,* as in the following examples:

PMK **saŋand* 'flying fox'
MRI, WPU *saŋant;* SKM, SRA *saŋan;* SWT *saŋand;* NWT *saŋant;* WPA *saŋud;* MSM, NFI, AWG *soŋond;* DWT *saŋund;* ARB *soŋod* 'flying fox'.

PMK **dugund* 'smoke of fire'
ADZ *dugunt;* MRI *gaunt;* WPU *ragunt;* SKM, SRA *rugun;* WPA *dood* 'smoke of fire'.

PMK **-rund* 'run', '(river) flow'
ADZ *-runt;* MRI, WPU *-ruant;* SKM, SRA *-ruan;* SWT *-rund;* MWT *-runt;* NWT *-ront;* WPA, ARB *-rid;* MSM, NFI, AWG *-rind;* DWT *-ri;* LAB *-ili* 'run', '(river) flow'.

4.6.12 PMK *n

PMK *n-, as in the following examples:

POC *natu 'child' > PMK *naru- 'child'
ADZ, WPU, SKM, SRA *naru-;* MRI *naru-* ('small'); SWT, NWT *naru-;* MWT, WPA *naro-;* MSM, NFI, AWG, ARB *naru-;* DWT *narei-;* LAB *nialô* 'child'.

POC *nanaq 'pus' > PMK *na[nd,ŋg] 'pus'
ADZ *naŋ?;* MRI, WPU *nant;* SKM, SRA *nan;* SWT *narŋg;* MWT, NWT *naŋg;* WPA *nag;* MSM *(a)naŋg;* DWT *nuanua;* NFI *naŋg;* AWG *(a)naŋg;* ARB *(a)nag;* LAB *(a)na* 'pus'. (The exact identity of the final prenasalised stop is uncertain, as one Upper Markham example, the three Watut examples and the Lower Markham examples show reflexes of PMK*-ŋg, whereas the other Upper Markham and one Lower Markham example reflect PMK *-nd.)

POC *nipon 'tooth' > PMK *nifu- 'tooth'
ADZ, SKM, SRA *nifu-;* MRI *nihua-;* WPU *nihu-;* NWT *neho-;* DWT *niau-;* LAB *nahe* 'tooth'.

PMK *-n-, as exemplified below:

POC *tina 'mother' > PMK *rina- 'mother'
All the languages in the study reflect PMK *rina- 'mother' as *rina-*, except for MWT and WPA which have *rena-*, and LAB which has *ana.*

POC *punu[q] 'hit' > PMK *funu[b] 'dead', 'finished'
ADZ, SKM, SRA *funub;* MRI, WPU *hunub;* MWT, WPA *fono;* NWT *hunu;* MSM *hunu;* NFI, AWG *funu;* ARB *hun;* LAB *hônô* 'dead', 'finished'.

PMK *-n

Where it occurred on inalienably possessed nouns, POC *-n is lost in Proto Markham, as all these nouns take obligatory possessive pronoun suffixes, of which the third person form is PMK *-n (from POC *ña P:3S). Also, nouns which take PMK *-c are in some cases reflections of POC *-n, as PMK *-c is a third person possessive pronoun suffix indicating possession of one noun by another, or a part-to-whole relationship between these nouns. (See Morphosyntax, section 5.2.2.4, below.)

Loss of POC *-n from such nouns is exemplified as follows:

POC *qutin 'penis' > PMK *guri- 'penis'
ADZ, MRI, WPU, SKM, SRA *guri-;* MWT, WPA *ore-;* NWT, MSM, AWG, ARB *uri-;* DWT *uri(mun);* NFI *wuri-* 'penis'.

POC *-n reflected as PMK *-n or *-c is exemplified as follows:

POC *raun 'leaf' > PUMK *yafa[n,c], PWT *naŋkuc, PLMK *linon 'leaf'
ADZ *yafan;* MRI, SRA *yahat;* WPU *yahan;* SKM *yanam;* SWT *anu?;* MWT *naŋkoc;* NWT *naŋkuc;* WPA *yahan;* MSM *inon;* DWT *niən;* NFI *ninon;* AWG, ARB *rinon;* LAB *(a)lo* 'leaf'. (As this item is actually 'leaf of something', e.g. 'tree', 'food plant', etc., the final PMK *-n, *-c mark a possessive relationship, which is borne out by the Sarasira and Mari form *yaha-t* whose possessive suffix *-t* is a reflex of PMK *-c, whereas the other languages in the Upper Markham group have regularised the form as the PMK *-n third person possessive form.)

POC *puqu[n]* > PMK *fugun* 'base', 'trunk'
ADZ *fugun;* MRI *hugun* ('banana'); WPU *hugun;* SWT *fugu;* MWT *fogo;* NWT *hugu;* WPA *foon;* MSM, ARB *hun;* NFI *fun;* AWG *fun* ('molar tooth'); LAB *(a)hô* 'base', 'trunk'.

4.6.13 PMK **l*

As POC **l* shows three different sets of reflexes in the Markham languages, I am reconstructing PMK **l*, even though the reflexes appear to belong with either PMK **r* ,**n* or **Ø*. There appears to have been a regular change **l* to *r*, which was completed, and then a later change of *r* to *n* or zero in some environments. However there is no apparent conditioning discernible for these later changes.

The change PMK **l-* to post-Proto Markham *n-* was completed in the following examples:

POC **lopu-* 'sibling of opposite sex' > PMK **lafu-* 'sibling of opposite sex'
ADZ, SKM, SRA *nafu-;* MRI, WPU *nahu-;* SWT *ni-;* MWT, WPA *nafo-;* NWT, MSM, NFI, ARB *nahu-;* AWG *nafu-;* LAB *nôhô* 'sibling of opposite sex'.

POC **lija(n)* 'seed' > PMK **lijun* 'seed', 'fruit', 'truth', 'essence'
ADZ *nijun;* WPU *nijuan;* SKM *nisuan;* SRA *nicuan;* SWT, MWT *niju;* NWT *nejo;* WPA *nijin;* MSM *nicin;* AWG, ARB *nijin;* LAB *nindʸi* 'seed', 'fruit', 'truth', 'essence'.

The change PMK **l-* to post-Proto Markham *n-* and *r-* was incomplete in the following example:

POC **leja* 'nit' > PMK **linja(n)* 'nit'
(It is possible in this item that final *(-n)* on the Upper Markham forms is a reflex of the third person pronoun possessive suffix PMK **-n* reinterpreted from PMK **-c*, the third person possessive suffix for inalienable (subtype 2), as 'nit' is 'egg of louse' and the item would mean 'its nit'. The presence of *-n* on the Upper Markham examples suggests this interpretation).
ADZ, MRI, WPU, SKM, SRA *risian;* SWT *ŋinj;* MWT *ŋinc;* NWT *renc;* MSM *minc;* DWT *mis;* NFI *(a)minc;* ARB *(a)nic.* (PMK **l-* became initial nasal in the Lower Markham group.)

PMK **-l-*

The change PMK **-l-* to post-Proto Markham *-n-* was complete in the following:

POC **qulu[ŋa]* 'wooden pillow' > PMK **kulub* 'wooden headrest'
ADZ *unub;* MRI, SKM *kunub;* WPU *ʔunub;* SWT *kunu;* MWT *kono;* NWT *ʔunu;* WPA *ono;* DWT *kireip;* NFI *kunu;* AWG *unub;* ARB *unup;* LAB *ini* 'wooden headrest'.

The change of PMK **-l-* to post-PMK *-r-* was complete in the following:

POC **bulan* 'moon' > PMK **bulamb* 'moon'
ADZ, WPU, SWT, NWT *buramp;* MWT *boram;* MSM *(ŋom)burum;* AWG *purumb;* ARB *burup* 'moon'.

POC **solo(p)* 'mix up' > PMK **-calif* 'stir food'
ADZ *-yari,-cari;* WPU *-carih;* SKM *-sarif;* SRA *-carif;* SWT *-ja;* MWT *-caref;* AWG *-carif;* LAB *-yali* 'stir food'.

The incomplete change from PMK **-l-* to post-PMK *-n-*, *-r-* in same etymon is exemplified as follows:

POC **qulu* 'head' > PMK **kulu-* 'head'
ADZ *uru-n* ('skull, i.e. bone of head'); MRI, SRA *kuru(kuan);* WPU *ʔurua-n;* SWT *uru-;* MWT, WPA, ARB *ono-;* NWT *nu-;* MSM, AWG *unu-;* DWT iri-; NFI *(a)nu-* 'head'.

The incomplete change of PMK **-l-* to *Ø* before *-i, -e,* and alternation with *-n-* and *-r-* in post-PMK is exemplified as follows:

POC **qalipan* 'centipede' > PMK **galif* 'centipede'
ADZ *gaif;* MRI *gahih;* WPU *gaih;* SKM, SRA *gef;* SWT *jenef;* MWT, WPA *ganef;* NWT *gahih;* MSM, NFI *ganih;* DWT *garai;* AWG *kanif;* ARB *garih;* LAB *ani* 'centipede'.

PMK **ralaiŋ* 'mushroom'
ADZ *rain;* MRI, WPU *raiŋ;* SKM, SRA *reŋ;* MWT, NWT, WPA *raiŋ;* DWT *taraiŋ;* NFI *tariŋ;* AWG *raŋgi* 'mushroom'.

4.6.14 PMK **k*

PMK **k-*, as in the following examples:

PMK **kijam* 'dog'
ADZ *iyam;* MRI, SKM *kiyam;* WPU *ʔiyam;* SRA *ki[y,j]am;* SWT *kiyam;* MWT *kiyom;* NWT *ʔiyam;* WPA *ijum;* MSM, NFI *kom;* DWT *yein;* AWG, ARB *om;* LAB *iya* 'dog'.

PHG **golu(ɣ)i-c* 'egg' > PMK **kurubi-c* 'egg'
ADZ *urubit;* MRI *kuruwit;* WPU *ʔurit;* SKM, SRA *kurubit;* SWT *kuruwic;* MWT *korowec;* NWT *ʔurugic;* WPA *rowe;* MSM, NFI *kuruwik;* DWT *karageis;* AWG *uruwiʔ;* ARB *rowiʔ;* LAB *(a)kulôhô* 'egg'.

PMK **-k-*, as in the following:

PMK **sikan* 'spear'
ADZ *siŋan;* MRI, SKM, SRA, SWT *sikan;* MWT *sekan;* NWT *siʔan;* NFI *siken* 'spear'.

PMK **-k,* as in the following examples:

PMK **-sik* 'bathe'
ADZ, WPU *-yiʔ;* SRA *-yik;* SWT *-sik;* MWT *-sek;* NWT *-siʔ;* WPA *-se;* MSM, DWT, NFI *-sik;* AWG, ARB *-siʔ;* LAB *-sa* 'bathe'.

POC **tuku* 'descend' > PMK **-ruk* 'descend'
ADZ, WPU *-ruʔ;* MRI, SKM , SRA, SWT *-ruk;* MWT *-rok;* NWT *-ruʔ;* WPA *-ro;* MSM *-ruk;* DWT *-rauk;* NFI *-ruk(wak);* AWG , ARB *-ruʔ* 'descend'.

POC **-gu* P:1S > PMK **-k* first person possessive pronoun suffix, inalienable subtype 2
As an example of the use of this suffix, the forms for 'my brother's wife/my husband's sister (female speaking)' are given for all the languages except Labu, which has lost all final consonants. The forms for Adzera and Mari are fossilised, as there is no longer a full productive set of these suffixes in these languages. (See Chapter 5, section 5.2.2.4, below.)
PMK **fa-k* 'my brother's wife/my husband's sister (female speaking)'
ADZ *afa-ʔ;* MRI *ha-k;* SKM, SRA *fa-k;* SWT *(ya)fa-k;* MWT *(e)fa-k;* NWT *(i)ha-ʔ;* WPA *fa-Ø;* MSM *ha-k;* DWT *ia-k;* NFI *fa-k;* AWG *fa-ʔ;* ARB *ha-ʔ* 'my brother's wife/husband's sister (female speaking)'.

4.6.15 PMK *kw

Most of the examples of PMK *kw* are before *a*.

PMK *kw-*, as in the following examples:

PMK *kwakwa-[n,c]* 'root of tree, plant'
ADZ *waian;* WPU *ʔwaʔian;* SRA *kwagas;* SWT *kakwac;* MWT *kowuc;* NWT *ʔagwac;* WPA *wanac;* MSM *kwac;* NFI *kwas;* AWG, ARB *koc;* LAB *wuwa* 'root of tree, plant'.

PMK *-kwep* 'steal'
ADZ *-wap;* MRI *-kwa;* WPU *-ʔwap;* SKM , SRA *-kweb;* WPA *-wap;* MSM, NFI *-kep;* DWT *-ket;* AWG *-ip;* ARB *-ap* 'steal'.

PMK *kwafi* 'crab'
ADZ *wafi;* MRI *kwahi;* WPU, NWT *ʔwahi;* SWT, MWT *kwafi;* WPA *wafi;* MSM *kwahir;* NFI *gwafi ;* AWG *ofir;* ARB *hir(adib)* 'crab'.

PMK *-kw-*, as in the following examples:

PMK *wakwaf* 'wild kapok'
ADZ *wauf;* MRI *sakwah;* WPU *waʔwah;* SKM *wakuf;* SRA *wakwaf;* SWT, MWT *wakuf;* NWT *wauh;* NFI *wakih;* AWG *waif* 'wild kapok'.

PMK *kwarukwa-* 'bone'
MRI *kurukwan;* WPU *ʔuruʔwan;* MWT *kwarok;* NWT *waruʔ;* WPA *waro;* MSM, NFI *kwaruk;* DWT *kwareik;* NFI *kwaruk;* AWG *aru;* ARB *waru* 'bone'.

4.6.16 PMK *g

Proto Huon Gulf, as reconstructed by Ross (1986:162-180), merged the lenis grade of POC *k and POC *q (non-final) as PHG *ɣ . POC *g was retained as PHG *g. PMK merged the two PHG phonemes *ɣ and *g as PMK *g. However among the daughter languages, some reflect PMK *g as [g] and others reflect it as [ɣ], and through further lenition, some have lost the sound and reflect it as [Ø].

PMK *g-*, as in the examples below:

POC *kani 'eat' > PMK *-gan 'eat'
ADZ, MRI, WPU, SKM, SRA *-ga;* SWT, MWT *-gan;* NWT *-gwa;* WPA, MSM, NFI, AWG, ARB *-an;* DWT *-gan;* LAB *-ya* (third person singular only), *-ŋa* (other subjects) 'eat'.

POC *kutu 'louse' > PMK *gur 'louse'
ADZ *gor;* MRI, WPU, SWT, NWT *gur;* MWT, WPA *gor;* MSM *ur;* DWT *eit;* NFI *wu;* AWG, ARB *(a)ur;* LAB *kul(uku)* 'louse'.

POC *qalipan 'centipede' > PMK *galif 'centipede'
ADZ *gaif;* MRI *gahih;* WPU *gaih;* SKM, SRA *gef;* SWT *jenef;* MWT, WPA *ganef;* NWT *gahih;* MSM, NFI *ganih;* DWT *garai;* AWG *kanif;* ARB *garih;* LAB *an* 'centipede'. (The SWT form exhibits an irregular reflex of PMK *g-. AWG has undergone an independent devoicing of all voiced stops in initial position.)

POC **quma* 'garden' > PMK **gum* 'garden', 'work'
ADZ, MRI, WPU, SKM, SRA, SWT, NWT *gum;* MWT, WPA *gom;* MSM *um;* AWG, ARB *(a)um;* LAB *ô* 'garden', 'work'.

PMK **-g-*, as in the following examples:

POC **paqal* 'thigh' > PMK **faga-* 'leg', 'foot'
ADZ, SKM, SRA *faga-;* MRI, WPU *haga-;* SWT, MWT *faga-;* NWT *haga-;* WPA *faa-;* MSM *ha-;* DWT *a-;* NFI *fa-* ('footprint'); AWG *(a)fa-;* ARB *(a)ha-;* LAB *ha* 'leg', 'foot'.

POC **puki* 'vulva', 'genitals' > PMK **fugi-* 'female genitals'
ADZ, SKM, SRA *fugi-;* MRI, WPU *hugi-;* MWT *foge-;* WPA *foai-;* MSM *hi-;* DWT *uwai-;* NFI, AWG *fi-;* ARB *hi-* 'female genitals'.

POC **taqi* 'excrement' > PMK **ragi-* 'excrement'
ADZ *ragi-;* MRI, WPU, SKM, SRA *ragia-;* SWT *ragi-;* MWT *regi-;* NWT *rage-;* WPA *rai-;* MSM, NFI *(ku)ra-;* DWT *ragi-;* AWG, ARB *(u)ra-* 'excrement'. (The Duwet form, although it appears to be regular, is in fact an irregular reflex, as PMK **-g-* is lost in DWT, and thus the expected form would be ***raai-*. The form given is probably a borrowing from one of the other languages in the Markham.)

POC **puqaya* 'crocodile' > PMK **fugai* 'crocodile'
ADZ, SKM *fugai;* WPU *pugai;* SRA *fugar;* SWT *fuga;* MWT *fugo;* NWT *hugua?;* WPA *foa;* MSM *huc;* DWT *apus;* NFI *fus;* AWG *(a)fuc;* ARB *(a)huc* 'crocodile'. (In this item, the fortis and lenis reflexes of POC **p-* appear to be crossing over. The expected reflex in Wampur is ***hugai,* and in Duwet is ***feis* or ***eis.* The Lower Markham subgroup exhibit PLMK **-c* as a reflex of POC **-y-*, which is reflected in PUMK as **-i, *-Ø/i.* The Wampur and Duwet forms are probably reinterpretations of more recent borrowings from lowland neighbours, e.g. Adzera, in the case of Wampur, and Aribwaungg, in the case of Duwet. As both Wampur and Duwet speakers live in high mountain areas where there are no crocodiles, this is the most likely explanation. The use of [p] for expected Wampur [h] and Duwet [f] may even be conditioned by the more recent influence of Tok Pisin which alternates [p] and [f].)

4.6.17 PMK **ŋg*

The morphophonemics of the individual languages condition the actual forms reflecting PMK **ŋg.* Word initially in Musom, Duwet and Nafi PMK **ŋg-* is reflected as [g], unless there is a vowel occurring before it, when it is produced as [ŋg]. Intervocalically, PMK **-ŋg-* is retained as MSM, DWT, NFI -[ŋg]-, but word finally only the nasal feature -[ŋ] is reflected unless the sound following is a vowel. Then the sound reflects also the stop feature, thus **-ŋg* is reflected as -[ŋg].

PMK **ŋg-*, as in the examples:

PMK **-ŋgara[f,k]* 'snore'
ADZ *-ŋkraf;* SKM, SRA *-ŋgaraf;* SWT *-ŋgwak;* MWT *-gagar;* WPA *-ŋkraf;* MSM, DWT, NFI *-ŋgarak;* AWG *-ŋgara;* ARB *-gura* 'snore'.

PMK **-ŋgiŋg* 'squeeze grated coconut'
ADZ *-ŋiŋ?;* MRI *-ŋkiŋk;* SRA *-ŋgiŋ;* SWT *-ŋgiŋg;* MWT *-ŋkeŋg;* NWT *-ŋkiŋg;* WPA *-ŋkeg;* MSM, NFI, AWG *-ŋgu(mbu);* DWT *-ŋgi(mbei);* ARB *-gu(bu)* 'squeeze grated coconut'. (The final bracketed parts of the forms in MSM, NFI, AWG, DWT and ARB are the words for 'water' in

those languages. The morpheme for 'water' has been fused onto the stem 'squeeze grated coconut', as the action involved is squeezing the liquid from the grated coconut.)

PMK *-ŋg-, as exemplified below:

PMK *daŋgur 'hornbill'
ADZ *daŋur;* MRI *raŋkuar;* WPU *taŋur;* SKM, SRA *raŋguar;* SWT *daŋgur;* MWT *doŋku;* NWT *daŋkor;* WPA *daŋir;* MSM *digir;* DWT *daŋgaut;* NFI *(ro)ndiŋgi;* AWG *tiŋgi* 'hornbill'.

PHG *bage- 'arm', 'hand' > PMK *baŋgi- 'arm', 'hand'
ADZ *baŋi-;* MRI *baŋkia-;* WPU *baʔia-;* SKM, SRA *baŋgia-;* SWT *baŋgi-;* MWT *beŋki-;* NWT *baŋke-;* WPA *baŋi-;* MSM, NFI *bai-;* AWG *paŋgi-;* ARB *bagi-* 'arm', 'hand'.

PMK *-ŋg, as in the following examples:

PMK *-[g,c]iŋg 'sleep, lie down'
> PUMK *-giaŋg > ADZ *-giŋʔ;* MRI *-giaŋk;* WPU *-giaŋʔ;* SKM, SRA *-giaŋ;*
> PWT *-giŋg > SWT, MWT *-giŋg;* NWT *-geŋg;*
> PLMK *-ciŋg 'one person sleep, lie down' > WPA *-i;* MSM *-ciŋg;* DWT *-yik* (with singular subject) *-hiŋgisi* (with plural subject); NFI *-siŋg;* AWG *-ciŋg;* ARB *-cig* 'sleep, lie down'.

PMK *jaŋg 'game, meat'
ADZ *jaŋʔ;* SKM *saŋ;* SRA *caŋ;* SWT *yiaŋg;* MWT *yoŋg;* NWT *jaŋg;* WPA *ji;* MSM *ciŋg* 'game, meat'.

4.6.18 PMK *ŋ

PMK *ŋ-, as exemplified below:

POC *nikit (> *nkit)* 'nest' > PMK *ŋi-c 'nest of bird'
MRI, WPU, SKM, SRA *ŋit;* SWT, NWT *ŋic;* MWT, WPA *ŋec;* MSM *ŋic;* NFI *ŋis;* AWG, ARB *(a)ŋic* 'nest of bird'.

PMK *ŋaro 'first-born son'
ADZ *ŋaro;* SKM, SRA *ŋaru;* SWT, MWT, WPA *ŋaro;* NWT, MSM, NFI *ŋaru* 'first-born son'.

PMK *-ŋ-, as in the following:

POC *taliŋa 'ear' > PMK *liŋa- 'ear'
ADZ, MRI, SKM, SRA, SWT *riŋa-;* MWT *reŋa-;* WPA *nae-;* MSM, NFI, AWG, ARB *riŋa-;* DWT *naŋgi-;* LAB *naŋa.* (There are apparently irregular forms for Wampar, Duwet and Labu for 'ear'. It is likely that PMK *r- reflects the POC *-l- rather than *t- of POC *taliŋa 'ear' as there are other examples where the Markham reflexes of PMK *l are mixed in a single etymon, varying between *r* and *n*, as discussed in 4.6.13 above.)

POC *yaŋo 'yellow' > PMK *juŋujuŋ 'turmeric plant' *(Curcuma sp.),* 'yellow'
ADZ, WPU *juŋujuaŋ;* SKM *suŋusuaŋ;* SWT *jaŋajaŋ;* MWT *ŋojaŋ;* WPA *juŋ;* MSM *coŋcoŋ;* DWT *(ka)soŋ;* NFI *(ko)soŋ;* AWG *(a)cuŋ;* ARB *(a)juŋ;* LAB *yaya* 'turmeric', 'yellow'.

PMK *-ŋ, as in the following examples:

POC *taŋi(s)* 'cry', 'weep' > PMK *-raŋ 'cry'
ADZ, MRI, WPU, SKM, SRA, SWT, MWT, NWT *-raŋ;* WPA *-riŋ;* MSM, NFI, AWG, ARB *-reŋ;* DWT *-riaŋ;* LAB *laŋi* 'cry'.

PMK **ralaiŋ* 'mushroom'
ADZ *rain;* MRI, WPU *raiŋ;* SKM, SRA *reŋ;* MWT, NWT, WPA *raiŋ;* DWT, NFI *taraiŋ;* AWG *raŋ(gi)* 'mushroom'.

4.6.19 PMK **s*

There are two series of reflexes for PMK **s*. One set exhibits [s] in all positions, in all the Markham languages. Another set shows a [y] reflex, initially and intervocalically, for the Upper Markham languages, and [s] in the Lower Markham languages. This could be a result of palatalisation of [s] before [i], and subsequent loss of the fricative feature of [s]. This is borne out by the fact that in Sukurum and Sarasira, both conservative languages of the Upper Markham group, an allophonic variant of /y/ when it occurs before [i] is a voiced palatalised fricative,[dʸ] which could have stood as an intermediate stage between [s] and [y].

The regular series PMK **s-* > PUMK **s-*, PWT **s-*, PLMK **s-* is exemplified as follows:

POC **susu* 'breast' > PMK **sisu-* 'breast'
ADZ, WPU *sisu-;* SWT *sus-;* MWT, WPA *seso-;* NWT *sisu-;* MSM *sisu-;* DWT *sisei-;* NFI *susu-;* AWG, ARB *(a)sus-;* LAB *su* 'breast'.

PMK **saŋand* 'flying fox'
MRI, WPU *saŋant;* SKM, SRA *saŋan;* SWT, NWT *saŋant;* WPA *saŋud;* MSM, NFI *soŋond;* DWT *saŋund;* AWG *soŋont;* ARB *soŋod* 'flying fox'.

The second series, PMK **s-* > PUMK **y-*, PWT **s-*, PLMK **s-* is illustrated by the following examples:

PMK **-sik* 'bathe' > PUMK **-yik,* PWT **-sik,* PLMK **-sik* 'bathe'
ADZ, WPU *-yiʔ;* SRA *-yik;* SWT *-sik;* MWT *-sek;* NWT *-siʔ;* WPA *-se;* MSM,DWT, NFI *-sik;* AWG, ARB *-siʔ;* LAB *sa* 'bathe'.

POC *usu 'nose' > PMK **su-* > PUMK **yu-* , PWT **su-*, PLMK **su-* 'nose'
ADZ, WPU, SKM *yu-;* SWT, NWT *su-;* MWT *(a)so-;* WPA *so-;* MSM, NFI, ARB *su-;* DWT *sei-;* AWG *(a)su-;* LAB *sahô* 'nose'.

POC **sake* 'ascend' > PMK **-sak* > PUMK **-yab,* PWT **-sak,* PLMK **-sak* 'ascend'
ADZ, MRI, WPU, SKM, SRA *-yab;* SWT *-ya;* MWT, WPA *-sa;* NWT *-saʔ;* MSM *-sak;* DWT *-sua;* AWG, ARB *-saʔ;* LAB *-si* 'ascend'.

PMK **-s-*

The series PMK **-s-* > PUMK **-s-*, PWT **-s-*, PLMK **-s-* is exemplified as follows:

PMK **sisu-* 'breast' as above.

POC **kasuari* 'cassowary' > PMK **kasuwek* 'cassowary' (*Casuarius bennetti)*
ADZ, SKM, SRA *suwik;* SWT *sasiak;* MSM, AWG *suwe;* DWT *kasiwu;* ARB *subeʔ;* LAB *sugu* 'cassowary'.

The second series, PMK **-s-* > PUMK **-y-*, PWT **-s-*, PLMK **-s-* is illustrated by the following examples:

PMK **fisiwa-* 'navel' > PUMK **fiyua-*, PWT ** fisu-*, PLMK **fisi-* 'navel'
MRI, WPU *hiwa-;* SKM, SRA *fiyo-;* SWT *susu-;* MWT *pisu-;* NWT *heso-;* WPA, NFI, AWG *fisi-;* MSM, ARB *hisi-;* DWT *sisiau-;* LAB *pase* 'navel'. (The irregular reflex of PMK **f* as [p] in the Middle Watut and Labu forms suggests that this etymon had more than one alternative form, at least at the time of break up of the Proto Markham language community. See Ross 1986:Section 3.4.3 for a discussion of the POC word for 'navel'.)

POC **taci* 'sibling of same sex, younger' > PMK **rasi-* 'sibling of same sex' > PUMK **rayi-* (becoming **rai-* through assimilation of [y] to the following [i]), PWT **rasi-*, PLMK **rasi-* 'sibling of same sex'
ADZ, MRI, WPU, SKM, SRA *rai-;* SWT, NWT *rase-;* MWT, WPA, DWT, NFI, AWG, ARB *rasi-;* MSM *rasai-;* LAB *lasi* 'sibling of same sex'.

PMK **fusik* 'black' > PUMK **fuyik* (as in the example above, becoming **fuik* through assimilation of [y] to [i]), PWT **fusik*, PLMK **fusik* 'black'
MRI *huik;* WPU *hui?;* SKM, SRA *fuik;* MWT *fosek;* NWT *husi?;* WPA *fose;* MSM *husik;* NFI *fusik;* AWG *fusi?;* ARB *husi?* 'black'.

PMK **-s*, as in the following examples:

PMK **wus* 'green leafy vegetables'
ADZ, WPU *bus;* SWT, NWT, WPA *was;* MWT *wos;* MSM, DWT, NFI *wus;* AWG *(a)wus;* ARB *bus* 'green leafy vegetables'.

POC **dramis* 'lick' > PMK **-damis* 'lick'
ADZ *-damis;* MRI, WPU, SKM, SRA *-ramias;* MWT *-demis;* NWT *-dames;* NFI *-ndamis;* LAB *-tami* 'lick'.

PMK **sigus* 'rhinoceros beetle' *(Subfamily Dynastinae)*
ADZ, WPU, SKM *sigus;* SRA *sugus;* MWT *gesegos;* NWT *usugis;* WPA *seos* 'rhinoceros beetle'.

4.6.20 PMK **c*

PMK **c*-is exemplified in the following:

PMK **-caparup* 'sneeze'
ADZ, WPU *-caparu;* SKM, SRA *-saparuap;* SWT, MWT, NWT *-cap;* WPA *-caparo;* MSM *-caparu;* DWT *-sapareip;* NFI *-saparu;* AWG *-capari;* LAB *-asipi* 'sneeze'.

PMK **cicuk* 'midrib of leaflet of coconut frond'
ADZ *cicu?;* MRI *sisuk;* WPU *cici?;* SKM, SRA *sisuk;* MWT *ceco;* AWG *cicu?;* LAB *su* 'midrib of leaflet of coconut frond'

PMK **-c-*, as in the following examples:

PMK **cicuk* 'midrib of leaflet of coconut frond' as above.

PMK **-buciŋg* 'bake (food) on fire'
ADZ *-(ci)ciaŋ?;* MRI *-pus;* SRA *-busu;* SWT *-biciŋg;* MWT *-bucin;* NWT *-pwaceŋg;* WPA *-puciŋ;* MSM, AWG *-mbuciŋg;* DWT *-mbis;* NFI *-mbusuŋ* 'bake (food) on fire'. (The prenasalised reflexes of *PMK *b-* in Musom, Duwet, Nafi and Aribwaungg appear to be the result of

a reinterpretation of PMK **b-* as *mb-* because the verb root always occurs with prefixes and the sound becomes intervocalic. After any vowel, **b* in these languages tends to be prenasalised.)

PMK **-c*

There are two sets of reflexes of the sound which I reconstruct as PMK **-c*. One set occurs suffixed to certain nominal forms, and represents a fossilised relic of a third person possessive suffix, marking nouns which are inalienably possessed by other nouns. This suffix is a subgrouping feature for the languages which are members of the Huon Gulf family. It has previously been analysed as a 'construct suffix' (Ross 1986:170-174). For discussion of the suffix set of which PMK **-c* is a member see Chapter 5, section 5.2.2.4, below. In the Markham languages, the nouns to which reflexes of PMK **-c* are affixed are : 'testicles', 'sweat', 'palm of hand, sole of foot', 'skin', 'tail of any species', 'wing of bird', 'nest of bird', 'egg of bird', 'leaf of plant', 'root of plant' and in the set of kinship terms, third person possessive suffix on 'father'sister/mother's brother's wife', 'husband's sister/brother's wife', 'husband's other wife'.

The following are examples of reflexes of PMK *-c as it is used to mark nouns possessed inalienably by other nouns:

PMK **ŋi-c* 'nest of bird'
ADZ *[ni]ŋi-t;* MRI, WPU, SKM, SRA *ŋi-t;* SWT, NWT *ŋi-c;* MWT,WPA *ŋe-c;* MSM *ni-c;* DWT *rai-s;* NFI *ŋi-s;* AWG *(a)ŋi-c;* ARB *ŋi-c* 'nest of bird'.

PHG **golu(ɣ)i-c* 'egg' > PMK **kurubi-c* 'egg of bird'
ADZ *urubi-t;* MRI *kuruwi-t;* WPU *ʔuri-t;* SKM, SRA *kurubi-t;* SWT *kuruwi-c;* MWT *korowe-c;* NWT *ʔurugi-c;* WPA *rowe;* MSM, NFI *kuruwi-k;* DWT *karagei-s;* AWG *uruwi-ʔ;* ARB *rowi-ʔ;* LAB *(a)kulôhô* 'egg of bird'. (The velar reflexes of PMK **-c* for Musom, Nafi, Aribwaungg and Aribwatsa are not regular, but are reflexes of PMK **-k*, the first person equivalent of the PMK **-c*. There is further evidence for this interpretation in the PMK **-k* ending on the word for 'blood' PMK **wik*, which should belong to the same semantic group as 'sweat', 'skin' etc. However, many of the reflexes of 'blood' have a reflex of **-k* as ending, except for Sukurum *bwat*, and South Watut *wa-c*, which exhibit reflexes of PMK **-c* third person ending.)

PMK **lasu-c* 'testicles'
ADZ, MRI, WPU *yawa-t;* SKM, SRA *yagawa-t;* SWT *(ŋa)su-c;* MWT *(o)su-c;* NWT *(ŋa)si-c;* MSM *isi-t;* DWT *rasau-s;* NFI *asi;* AWG, ARB *(ŋa)si-c* 'testicles'.

PMK **kako-c* 'sweat'
ADZ *uwa-c;* WPU *ʔuʔa-c;* SWT *kaku-c;* MWT *kakau-c;* NWT *ʔau-c;* MSM *kohoko-h;* DWT *kako-s;* NFI *koko-s;* AWG *yo-c;* ARB *iyo-c;* LAB *o* 'sweat'. (The Musom reflex *-h* of PMK **-c* parallels its reflex of PMK **-s*, which varies freely in Musom between -[s] and -[h].)

The second set of reflexes for PMK **-c* occurs in verb roots. The phoneme does not appear to have, or to have had in the past, any morphological significance.

The following examples are of verbs with PMK **-c:*

PMK **-ic* 'hit, strike'
ADZ *-is;* MRI, WPI, SKM, SRA *-ias;* SWT *-(g)ic;* MWT, WPA, MSM, AWG, ARB *-ic;* NWT *-ec;* DWT *-(z)as;* NFI *-is;* LAB *-ʔ* 'hit, strike'.

PMK *-*fic* 'carry on head'
ADZ, SWT, MWT, WPA -*fic;* NWT, MSM, ARB -*hic;* DWT -*is;* NFI -*fis;* LAB -*wisi* 'carry on head'.

4.6.21 PMK **j*

PMK **j-*, as in the following examples:

PMK **jufif* 'march fly' *(Family Tabanidae)*
ADZ *jufif;* MRI *tuhih;* SRA *tifif;* SWT *jifaf* ('sandfly'); MWT, WPA *jofef;* NWT *juhih;* MSM *jihih;* NFI *jufih;* AWG *cifif;* LAB *sihi* 'march fly'.

POC **jiʀi Cordyline, Dracaena* > PMK **jinji Cordyline*
ADZ *jinji;* MWT *jence;* WPA *yance;* MSM, ARB *jiji;* DWT *jijai;* NFI *jinji;* AWG *cinji;* LAB *si Cordyline.*

POC **api* 'fire' > PMK **jaf* 'fire'
ADZ *jaf;* MRI *zah;* WPU *jah;* SKM *saf;* SRA *caf;* NWT *yah;* WPA *jif;* MSM *cih;* DWT *sia?;* NFI *sif;* AWG *(a)cif;* ARB *(a)jih;* LAB *ya* 'fire'.

PMK **-jufun* 'bury'
ADZ *-jufuŋ?;* MRI *-tihun;* WPU *-juhuŋ;* SRA *-sifun;* SWT, NFI *-jufun;* WPA *-jofon;* AWG *-(n)jifun;* ARB *-jihun;* LAB *-suhu (sê)* 'bury'.

POC **yaŋo* 'yellow' > PMK **juŋujuŋ* 'turmeric', 'yellow'
ADZ *juŋujuaŋ;* WPU *jamajaŋ;* SKM *suŋusuaŋ;* SWT *jaŋajaŋ;* WPA *juŋ;* MSM *(ku)juŋ(-aŋ);* DWT *(ka)soŋ;* NFI *(ko)soŋ;* AWG *(a)cuŋ;* ARB *(a)juŋ;* LAB *yaya* 'turmeric', 'yellow'.

PMK **-j-*, as in the following examples:

POC **lija(n)* 'seed' > PMK **lijun* 'seed', 'fruit', 'essence', 'truth'
ADZ *nijun;* WPU *nijuan;* SKM *nisuan;* SRA *nicuan;* SWT, MWT *niju;* NWT *nejo;* WPA *nijin;* MSM *nicin;* NFI *nisin;* AWG, ARB *nijun;* LAB *(a)nindʸê* 'seed', 'fruit', 'essence', 'truth'.

PMK **-(g)ajunj* 'twist string'
ADZ *-ajuŋ?;* WPU *-gajuaŋ?;* SRA *-gajab;* WPA *-jiŋ;* MSM *-njinj;* AWG *-njinc;* ARB *-jij;* LAB *-tindʸi* 'twist string'.

4.6.22 PMK **nj*

PMK **nj-*, is exemplified in the following:

PMK **njuf* 'hole in the ground'
ADZ *ncuf;* MRI *suah;* WPU *cuah;* SKM *suaf;* SRA *cuaf;* SWT *njuf;* WPA *ncif;* MSM *njih;* DWT *njein;* NFI *njun;* AWG *(a)njif;* ARB *(a)jih;* LAB *sê* 'hole in ground'.

PMK **-nj-*, as in the examples:

POC **jiʀi Cordyline, Dracaena* > PMK **jinji Cordyline*
ADZ *jinji;* MWT *jence;* WPA *yance;* MSM *jiji;* DWT *jijai;* NFI *jinji;* AWG *cinji;* ARB *jiji;* LAB *si Cordyline.*

PMK **munjir* 'death adder' *(Acanthopis antarcticus)*
ADZ, WPU, SRA *muncir;* MRI *musir;* SKM *munsir;* SWT, NWT *munci;* MWT, WPA *monce;* MSM, AWG *munjir;* NFI *munjit;* ARB *mujir;* LAB *mêsê* 'death adder'. (The Nafi reflex *-t* of PMK **-r* is irregular but common, and it is possible that this word did not participate in the change from PHG **t* to PMK **r*.)

PMK **mwanjun* 'door of house'
ADZ *mwanci;* MRI *masui;* WPU *mancui;* SWT *nju;* MWT *mwanco;* NWT *mwancu;* WPA *ncon;* MSM, NFI *jun;* DWT *jein;* AWG *(a)njun;* ARB *(a)jun* 'door of house'. (This word could be a compound of reflexes of PMK **mwa-* 'mouth', and PMK **nju-* 'hole in something'. The Lower Markham forms reflect only **nju-*.)

PMK **-nj*, exemplified as follows:

POC **kaija* 'left hand' > PMK **kinj* 'left hand'
ADZ *yas;* MRI *(sa)kiyas;* SKM *koyi;* SRA *kiyas;* SWT *kinj;* NWT *ʔenc;* WPA *aij;* MSM *kinc;* DWT, NFI *kis;* AWG *ainc;* LAB *kê* 'left hand'.

POC **leja* 'nit' > PMK **linja[-n]* 'nit, egg of louse' > PUMK **risian*, PWT, PLMK **[Ns,r]enj*
ADZ, MRI, WPU, SKM, SRA *risian;* SWT *ŋinj;* MWT *ŋinc;* NWT *renc;* WPA *ŋij;* MSM *minc;* DWT *mis;* NFI *mes;* AWG *(a)minc;* ARB *(a)nic* 'nit, egg of louse'. (Final *-n* in the Upper Markham forms is a reflex of third person possessive pronoun suffix PMK **-n*. The Watut and Lower Markham forms have either not regularised this term to conform with the system of nominal possession, or have dropped the final consonant suffix.)

4.6.23 PMK **n* as a reflex of POC **ñ*

There are only two examples of reflexes of POC **...ñ* which has been inherited as PMK **n* through PHG **ñ*. There is no evidence for the reconstruction of PMK **ñ* as a separate sound.

POC **ñamuk* 'mosquito' > PMK **(numbu)namk* 'mosquito'
ADZ *nubunamp;* MRI *bunamp;* SWT *namg;* MWT *noŋg;* NWT *wanaŋ;* WPA *nub;* MSM, NFI *nonom;* AWG *nonomb;* ARB *nonob* 'mosquito'. (According to Ross, the *-mp* ending of the Adzera reflex, and presumably also those of Mari and Lower Markham languages, is the result of assimilation of **-k* to the preceding nasal [m] (Ross 1986:175).)

POC **-ña* > PMK **-n* third person possessive pronoun suffix
ADZ, MRI, WPU, SKM, SRA *-n;* SWT *-ʔ;* MWT *-Ø;* NWT *-ʔ;* WPA, MSM, DWT, NFI, AWG, ARB *-n*. (The final *-ʔ* in SWT and NWT is due to loss of final consonant PMK **-n*, and through stress rules, its replacement with *-ʔ*.)

4.6.24 PMK **a*

PMK **a* has the reflex [a] in monosyllabic words, in the first syllable of disyllabic words, and in the last syllable of disyllabic words. However, there is a set of correspondences of PMK **a*, in which *a* is the reflex in the Upper Markham languages and the series which is usually reflected for PMK **u* is found in the Lower Markham languages. This occurs only in the second syllable of disyllabic words.

The example for monosyllabic words is as follows:

PMK **ma-* 'tongue'
This form has the reflex *ma-* in all the languages in the study, except for Labu which has *ma(ndi)* 'tongue'.

In disyllabic words, the first syllable is reflected as *a*, as in the following example:

PHG **bage* 'hand', 'arm' > PMK **baŋgi-* 'hand', 'arm'
ADZ *baŋi-;* MRI *baŋkia-;* WPU *baʔia-;* SKM, SRA *baŋgia-;* SWT *baŋgi-;* NWT *baŋke-;* WPA *baŋi-;* MSM, NFI *bai-;* AWG *paŋgi-;* ARB *bagi-* 'hand', 'arm'.

In the second syllable of disyllabic words PMK **a* can be reflected either as *a*, as in the following example:

POC **tina* 'mother' > PMK **rina-* 'mother'
ADZ, MRI, WPU, SKM, SRA, SWT, NWT, MSM, DWT, NFI, AWG, ARB *rina-;* MWT, WPA *rena-* LAB *ana* 'mother'.

Or the second syllable can reflect PMK **a* as PUMK **a* and PLMK **o*

PMK **wafak* 'new' > PUMK **fak,* PWT, PLMK **wafak* 'new'
ADZ *faʔ;* MRI *ha(ri);* SKM, SRA *fak;* SWT, MWT *wafak;* NWT *wafaʔ;* WPA *wafu;* MSM *wahok;* NFI *wofok;* AWG *wofoʔ;* ARB *woho;* LAB *haʔu* 'new'.

4.6.25 PMK **i*

PMK **i* is reflected as *i* in monosyllabic words in all the Markham languages except Middle Watut and Wampar, where its reflex is *e*, and in Duwet where the reflex alternates between *i* and *ai*. As the nucleus of the first syllable of disyllabic words, PMK **i* is retained as *i* in all except Middle Watut, North Watut, and Wampar where *i* alternates with *e*. As the vowel nucleus of the second syllable of disyllabic words, PMK **i* is reflected as *i* except in Middle Watut and Wampar where its reflex is *e*, and in Duwet where it is *ai*.

There is a set of reflexes of PMK **i* which have the form *ia* for all the languages of the Upper Markham group and *i* in Watut and Lower Markham languages. This reflex occurs only as the second or last syllable of words of more than one syllable, and is a local innovation for this group. The reflex does not occur on all etyma with a reflex of PMK **i* as the nucleus of the syllable. Adzera reflexes vary between [i] and [ia], and the innovation has disappeared in all dialects except Yarus, Ngarowapum and Tsumanggorun.

Reflexes of PMK **i* in monosyllabic words are exemplified by the following:

POC **(ni)kit* 'nest' > PMK **ŋi-c* 'nest of bird'
MRI, WPU, SKM, SRA *ŋit;* SWT, NWT *ŋic;* MWT, WPA *ŋec;* MSM *nic;* DWT *rais;* NFI *ŋis;* AWG *(a)ŋic;* ARB *ŋic* 'nest of bird'.

PMK **-sik* 'bathe'
ADZ, WPU *-yiʔ;* SRA *-yik;* SWT *-sik;* MWT *-sek;* NWT *-siʔ;* WPA *-se;* MSM, DWT, NFI *-sik;* AWG, ARB *-siʔ;* LAB *-sa* 'bathe'.

In disyllabic words the reflexes of PMK **i* as nucleus of the first syllable are exemplified as follows:

POC **tini* 'body' > PMK **rini-* 'skin', 'body'
ADZ, MRI, WPU, SKM, SRA *rini-;* SWT, NWT *nini-;* MWT, WPA *rene-;* MSM, ARB *nini-;* DWT *rinai-;* NFI, AWG *rini-;* LAB *nênê* 'skin', 'body'. (The apparently irregular reflex of PMK **r* as *n-* in SWT, NWT, MSM, ARB and LAB are possibly due to a change from PMK **r-* to *n-* by analogy with the incomplete change PMK **l* to *r* and *n* in these languages.)

PMK **kitamb* 'earth, ground'
ADZ *intamp;* MRI, SWT *kitamp;* WPU *ʔintamp;* MWT *etamb;* NWT *ʔitamb;* MSM, NFI *kitomb;* AWG *itomb;* LAB *uta* 'earth, ground'.

As nucleus of the second syllable, reflexes of PMK **i* are exemplified by the following:

PMK **jufif* 'march fly'
ADZ *jufif;* MRI *tuhih;* SRA *tufif;* SWT *jifaf;* MWT, WPA *jofef;* NWT *juhih;* MSM *jihih;* NFI *jufih;* AWG *cifif;* LAB *sihi* 'march fly'.

The series of reflexes of PMK **i* as nucleus of a second syllable, reflected in PUMK as **ia* is shown in the following examples:

POC **pine* 'woman' > PMK **fini-* 'wife' > PUMK **finia-*, PLMK **fini-* 'wife'
ADZ, SKM, SRA *finia-;* MRI, WPU *hinia-;* SWT *(ka)fi-;* MSM, ARB *hini-;* DWT *ini-;* NFI, YLU *fini-;* LAB *hêna* 'wife'.

PMK **gamik* 'rain' > PUMK **gamiak*, PWT, PLMK **amik* 'rain'
ADZ *gamiʔ;* WPU *gamiaʔ;* MRI, SKM, SRA *gamiak;* SWT *mik;* MWT *emik;* NWT *meʔ;* WPA *yami;* MSM, DWT, NFI *amik;* AWG, ARB *amiʔ* 'rain'.

4.6.26 PMK **e*

Mari, Wampur and South Watut, which have three vowels *(a, i, u)* and Adzera which has four *(a, i, o, u),* do not have an /e/ phoneme at all. PMK **e* is reflected as [i] in all positions in these languages. In Sukurum and Sarasira, which have a five vowel system, PMK **e* becomes *e* or *i*. Two of the Watut languages, Middle Watut and North Watut, have a five-vowel system but PMK **e* is reflected in NWT as *i*, and its *e* phoneme is a reflex of PMK **aCi*. In the Lower Markham languages, the reflex of PMK **e* is *e*. Duwet, in some etyma, exhibits a diphthong as reflex of PMK **e*, and this varies between *ia (iə* in unstressed syllables*) ei, e* and *i*.

There is another series of regular sound correspondences, with the Upper Markham and Watut languages having *a* as reflex of PMK **e,* and the languages of the Lower Markham showing *e* reflexes. This is taken to be a second series of reflexes from PMK **e*.

A third series of correspondences, with three of the Upper Markham languages exhibiting *ai* (corresponding to Sukurum, Sarasira and Lower Markham *e*) is also common.

PMK **ai* > PUMK **ai,* PWT **ai*, PLMK **e* is exemplified as follows:

PMK **(re)fain* 'some, several'
ADZ *fain;* MRI, WPU *hain;* SKM, SRA *fen;* SWT *fifi;* NWT *hai;* DWT *arein;* NFI, AWG *refen;* ARB *rehen* 'some, several'.

PMK **faiak* 'net bag'
MRI *haiak;* WPU, NWT *haiaʔ;* MSM *hek;* DWT *agak;* NFI *fek;* AWG *efeʔ;* ARB *aheʔ;* LAB *ha* 'net bag'.

4.6.27 PMK *o

Not all of the languages in the Markham have an /o/ phoneme. In Middle Watut and Wampar *o* is a reflex of PMK *u. In Labu, *ô* is a reflex of PMK *u. In one series of reflexes, the /o/ phonemes of the Lower Markham languages from Musom to Aribwatsa are cognate with *a* reflexes in the Upper Markham and South and North Watut (see PMK *a above). Another series exhibits *u* reflexes in the Upper Markham, *o* in Sukurum and Sarasira, *u* in South Watut, *au* in the other two Watut languages and Wampar, and *o* in the Busu languages.

PMK *a > PUMK *a, PWT *a, PLMK *o, as in the following examples:

PMK *-rap 'boil' > PUMK *-rap, PWT *-rap, PLMK *-rop
ADZ, MRI, WPU, SKM, SRA *-rap;* SWT *-(kuku)rap;* MWT *-(ko)rop;* NWT *-ura?;* WPA *-ru;* MSM, NFI, AWG, ARB *-rop;* DWT *-riap;* LAB *-(ŋa)la* 'boil'.

PMK *o > PUMK *a, PWT *au, PLMK *o:

PMK *kwakoc 'sweat'
ADZ *owac;* WPU *?u?ac;* SWT *kakuc;* MWT *kakauc;* NWT *?auc;* MSM *kohokoh;* DWT *kakos;* NFI *kokos;* AWG *yoc;* ARB *iyoc;* LAB *o* 'sweat'.

4.6.28 PMK *u

Series of identical reflexes of PMK *u as *u* occur in all the Markham languages in words of single syllable with vowel nucleus, and in both first and second syllable of disyllabic words. The exception is Duwet, which has either *ei* or *iau* reflexes in monosyllabic words, *ei* only in the second syllable of disyllabic words, and *i* in the first syllable of disyllabic words. Musom also has *i* reflexes in the first syllable of disyllablic words.

Another regular set of reflexes of PMK *u occurs in some etyma in the Upper Markham languages, exhibiting *ua* when the vowel is the nucleus of the last syllable of the word. It appears to be a local innovation in the languages of the Upper Markham group only. Within Adzera, the dialects of Guruf, Yarus and Tsumanggorun exhibit this reflex, but the other Adzera dialects do not. The reflex in the other Markham languages of PMK *u, in these examples, are *u* in the Watut languages, and *i* in many etyma in the Lower Markham languages.

Reflexes of *u in monosyllabic words are exemplified as follows:

PMK *su- 'nose'
ADZ, WPU *yu-;* MRI *hu(hi)-;* SKM, SRA *ŋu-;* SWT, NWT *su-;* MWT *(a)so-;* WPA *so-;* MSM, NFI, ARB *su-;* DWT *sei-;* AWG *(a)su-;* LAB *sahô* 'nose'.

PMK *-num 'drink'
ADZ, MRI, WPU, SKM, SRA, SWT, NWT *-num;* MWT, WPA *-nom;* MSM, NFI, AWG, ARB *-num;* DWT *-neim;* LAB *-nô* 'drink'.

In disyllabic words, examples of PMK *u reflected as *u* are as follows:

In first syllable:

PMK *fusik 'black'
MRI *huyik;* WPU *huyi?;* SKM, SRA *fuyik;* MWT *fosek;* NWT *husi?;* WPA *fose;* MSM *husik;* NFI *fusik;* AWG *fusi?;* ARB *husi?* 'black'.

PMK **fugun* 'base', 'trunk'
ADZ *fugun;* WPU *hugun;* SWT *fugu;* MWT *fogo;* NWT *hugu;* WPA *foon;* MSM, ARB *hun;* NFI *fun;* LAB *(a)hô* 'base', 'trunk'.

In second syllable:

PMK **naru-* 'child'
ADZ, WPU, SKM, SRA, SWT, NWT, MSM, NFI, AWG, ARB *naru-;* MWT, WPA *naro-;* DWT *narei-;* LAB *(ai)ŋalô* 'child'.

PMK **fugun* 'base', 'trunk', as above.

Reflexes of PMK **u* as second syllable, with PUMK reflex **ua,* PLMK **i:*

PMK **u* > PUMK **ua,* PWT **u,* PLMK **i*

PMK **-nuk* 'be cooked' > PUMK **-nua[k,p],* PWT **-nu,* PLMK **-nik* 'be cooked'
ADZ *-nuaʔ;* MRI *-muap;* WPU, SKM, SRA *-nuap;* SWT, MWT *-nu;* NWT *-no;* WPA *-ŋi;* MSM *-nik;* DWT *-niau;* AWG, ARB *-niʔ* 'be cooked'.

PMK **lijun* 'seed', 'fruit', 'essence', 'truth' > PUMK **nijuan,* PWT **niju,* PLMK **nijin* 'seed', 'fruit', 'truth', 'essence'
ADZ *nijun;* WPU *nijuan;* SKM *nisuan;* SRA *nicuan;* SWT, MWT *niju;* NWT *nejo;* WPA, AWG, ARB *nijin;* MSM *nicin;* LAB *ndʸê* 'seed', 'fruit', 'truth', 'essence'.

4.6.29 PMK **aCi*

A set of regular reflexes of a vowel-consonant-vowel series which can be reconstructed as PMK **aCi* is reflected in PUMK as **ai,* in PWT as **aCi,* and PLMK as **aC[i,e].* It is this vowel series which is the source of the Sukurum and Sarasira ***e***. *C* can be any consonant.

PMK **rasi-* 'sibling of same sex'
ADZ, MRI, WPU, SKM, SRA *rai-;* SWT, NWT, MSM, NFI, AWG, ARB *rasi-;* MWT, WPA *rase-;* DWT *rasai-;* LAB *lasi* 'sibling of same sex'.

PMK **galif* 'centipede'
ADZ *gaif;* MRI *gahih;* WPU *gaih;* SKM, SRA *gef;* SWT *jenef;* MWT *ganef;* NWT, NFI *ganih;* WPA *ganef;* DWT *garai;* AWG *kanif;* ARB *garih;* LAB *ani* 'centipede'. (The South Watut reflex [j] of PMK **g* is unexplained, and the [e] reflexes are also irregular, as South Watut does not have a phoneme /e/. A possible explanation is that the whole word is a borrowing from a neighbouring Buang language, e.g. Yanta, in which an alternative reflex of PHG *g is [j] (Ross 1986:168).)

However, there is also another set of reflexes which occurs frequently, in which PUMK **a-C*(velar) *-i* corresponds to PLMK **ai*

PMK **ragi-n* 'excrement'-P:3 > PUMK **ragia-n,* PWT **ragin,* PLMK **rai* 'excrement'-P:3
ADZ, MRI, WPU, SKM, SRA *ragian;* SWT *ragia* ('belly'); MWT *regi* ('belly'); NWT *ragen;* WPA *rain;* DWT *ragi(ruas);* MSM, NFI *(ku)ra;* AWG, ARB *(u)ra* 'excrement'-P:3.

PMK **-rak(in)* 'praise, honour'
WPU *-raʔ;* SWT *-rakin;* MWT *-raka;* NWT *-raʔ;* WPA *-rai;* NFI *-rain* 'praise, honour'.

4.6.30 PMK **aCu*

There are two sets of regular correspondences which appear to have derived from an original vowel-consonant-vowel series PMK **aCu*. The reflexes in the Upper Markham retain **aCu*, and in the Lower Markham a diphthong of the form *au* or *ao* is the usual reflex. In all the examples available *-C-* is a velar consonant.

This series of reflexes is exemplified as follows:

PMK **tagur* 'house' > PUMK **tagur*, PLMK **tau* 'house'
ADZ *tagur* (Yarus, Tsumanggorun dialects only); MRI, SKM, SRA *tagur* 'inside house'; WPA *tao;* MSM *tau;* NFI *tao* ('inside house'); AWG, ARB *tau* 'house'.

CHAPTER 5

MORPHOSYNTAX

5.1 INTRODUCTION

In this chapter I will discuss the morphosyntax of the Markham languages according to the classes of morphemes which are common to all the languages. I divide them into lexical morphemes or bases, and grammatical morphemes, and discuss each class in turn, using tables to present the actual forms for each class. Following the discussion of each set of forms in the languages, I attempt a subgrouping of the languages based on their morphological similarities and differences, and finally reconstruct the proto-forms for each group, and for Proto Markham.

My use of the terms 'lexical morphemes or bases' and 'grammatical morphemes' follows that of Pawley (1972:32). Bases act as the head of a phrase, whether noun phrase or verb phrase. Grammatical morphemes occur around the bases in a phrase and either modify the base or mark relationships between elements in a sentence. Some forms can belong to more than one class of base. Some forms can act as both base and grammatical morpheme.

The base classes which I will discuss are : common nouns, personal nouns and their proforms, attributive bases, location bases, and verb bases. The grammatical morphemes which will be discussed are: articles, space/time deictic morphemes, conjunctions, prepositions, verb phrase morphemes, and negation. One class of morphemes, the pronominal morphemes, are all treated under 'lexical bases' even though some subclasses are actually grammatical morphemes. Membership of each class is defined as I discuss it. Each class may have one or more subclasses. Some classes and subclasses overlap, for example attributives overlap with verbs, and space/time deictic morphemes overlap with the phonological verb phrase. When this occurs, the sections will be cross-referenced to each other to avoid repetition.

All Proto Oceanic and Proto Huon Gulf reconstructions referred to in this chapter are from Ross (1986) unless specifically noted otherwise.

According to Anttila 'comparative morphology is simply applied phonology' (1972:351). This implies that rules which apply to sets of sound correspondences which have been built up for a group of languages should also apply to comparisons within the morphosyntactic systems of those languages. Subgroupings which have been postulated on the basis of shared phonological innovations should be supported by shared morphological and syntactic innovations. However, this is not always the case in Melanesia, particularly in geographical areas where there has been sustained contact between speakers of Austronesian and Papuan languages. This is so in the Markham area, where what appear to be clear-cut subgroups based on the phonologies are not so clear when one compares the morphosyntactic systems. This problem, if indeed it is a problem, will be taken up later

in this chapter. It may have to be concluded, for the time being anyway, that some innovations have had their origins outside this group of languages and are the result of 'reciprocal borrowing' of features with non-genetically related neighbours sometime in the past. Due to lack of data on these neighbouring languages, however, the source of the innovations often cannot be located. Also, the borrowing may have occurred so long ago that the language communities involved have moved away from each other, some may have been wiped out, or some may have been absorbed by other groups.

5.2 LEXICAL BASES

5.2.1 COMMON NOUNS

The basis for subclassification of nominal bases into 'common nouns' and 'personal nouns' for many languages of Oceania is co-occurrence with articles which mark common or personal, for example as discussed in Pawley (1972; 1973) and Crowley (1983). In the languages of the Markham family there is no such distinction. However, there are several features of nominal classification which are marked morphologically or lexically as discussed below. For purposes of the present discussion I will consider the nominal bases as if they were in the two recognised classes of 'common' and 'personal' nouns.

Common nouns are those which cannot be replaced by a personal pronoun. These nouns are marked in the following ways:

5.2.1.1 POSSESSION CLASSES

The languages of the Markham mark common nouns morphologically for possession class through the use of different sets of possessive pronoun suffixes, preposed possessive pronouns, or a combination of the two. There are at least two classes marked in any language – inalienably possessed nouns and neutral or alienably possessed nouns. A third class of nouns, consumable, is distinguished in the Middle Watut and North Watut languages. Elsewhere this third class is absent. For a full discussion of possession classes and the pronominal forms which are used as possessive morphemes see section 5.2.2.4 Possessive pronouns, below.

5.2.1.2 COVERT NOUN CLASS MARKING

A second principle for marking classes of nominal bases in the Markham languages is animacy. Nouns are marked covertly for being animate or non-animate, and within animate for human or non-human according to which form of the existential verb 'sit, stay, be' they co-occur with. In three of the languages of the Upper Markham group, Adzera, Mari and Sarasira, animate/human nouns co-occur with reflexes of the verb PUMK * *-mba(i)* 'sit, stay, be', and non-animate nouns co-occur with reflexes of PUMK **-min* (but Sarasira has *-ndan*).

In the Lower Markham group, the class distinction is not based on animate-inanimate but on singular versus plural noun subject. Although this is not really a meaningful distinction on which to base classes, nevertheless, these languages appear to have altered the animate/inanimate distinction to one of singular/plural, using reflexes of the same verbs to mark the classes. Singular nouns and pronouns co-occur with reflexes of the verb PLMK **-mbum* 'sit, stay, be', and plural nouns co-occur with reflexes of the verb PLMK **-min.* All other languages of the Markham family have lost these distinctions and use one or other of the forms for all noun subjects. Wampur, Sukurum and all

the Watuts show reflexes of the form PWT **-mba* and Wampar has *-men*. It is not possible to decide now whether animacy or plurality was the underlying basis of noun classification in the proto language. The languages of the Lower Markham group, including Wampar, have several verbs which occur in suppletive forms which co-occur with singular or plural subjects, and obviously plurality of actors in any situation is of concern to the speakers of these languages. On the other hand, plurality of actors is not of concern to the speakers of the Upper Markham languages, but animacy is important in this context. Foley (1986) discusses the existence of very similar covert classification systems in Papuan languages. He says that there are 'many...Papuan languages in which nouns are placed into groups according to the different verb-roots with which they express the concept of existence' (Foley 1986:88). Animacy versus non-animacy is only one of the contrasting features marked in this way. He also discusses alternations in the verbal stem in many Papuan languages according to the person and number of the core argument (Foley 1986:128). Wurm lists this latter feature as a characteristic of languages of the Trans-New Guinea Phylum (Wurm 1982:62-63). As both the features mentioned by Foley and Wurm are common in Papuan languages, and particularly languages of the Trans-New Guinea Phylum, it is likely that the marking of both features in Markham languages in this way was borrowed by the ancestral language from a neighbouring TNGP language (or languages) a long time ago, and the two features have been differentiated and retained in different subgroups. (The use of suppletive verb stems in the languages of the Lower Markham group will be discussed in more detail in 5.2.5.4 Suppletive verbs, below.)

5.2.2 PERSONAL NOUNS AND PRONOUNS

Personal nouns can be divided into two subclasses, 1) personal names and 2) personal pronouns which stand as proforms for animate or human nouns.

5.2.2.1 PERSONAL NAMES

Very little needs to be said here about personal names. The use of meaningful words (that is, common nouns, verbs, attributives) in all these languages as personal names, the processes of naming, and taboos associated with names have been discussed elsewhere (S. Holzknecht 1987). Personal names are not marked morphologically as names. Neither are they marked for gender of the bearer as they are for example in Yabêm and Bukawa, where female names, human nouns and kinship terms are marked by the suffix *-o*. For example in Yabêm *Yaiŋ* is a male personal name, and *Yaiŋo* that of a female. The word *ŋapalê* means 'child', and *ŋapalêo* means 'female child'.

5.2.2.2 PERSONAL PRONOUNS

5.2.2.2.1 PERSON AND NUMBER MARKING

Pronouns in the Markham languages are marked by separate forms for four contrasting personal referents – first exclusive, first inclusive, second and third, and for either two or three numbers – always singular and plural, and in some languages dual. Only Labu has a fourth number, trial. There is a third person plural-marking morpheme PMK **si-* which is reflected now only as a prefix on the numeral 'two' in some languages, for example: MWT *serok*, NWT *siruʔ*, WPA *serok*, MSM *siruk*, AWG *siruʔ*. It also occurs marking all non-singular numerals in Labu.

5.2.2.2.2 SYNTACTIC SLOTS

Pronouns operate in four syntactic slots in the Markham languages. They are: focal pronouns which are free-standing forms and act as subject of verb, object of verb or preposition, and head of a possessive noun phrase; possessive suffixes and preposed possessive morphemes; reflexive pronouns; and subject pronoun prefix markers on verbs. I will tabulate the forms for each of these categories and discuss them in turn.

Although they are not strictly 'lexical bases' but 'grammatical morphemes' the Markham possessive pronoun suffix enclitic forms (5.2.2.4), pronoun object suffix enclitic (5.2.2.7) and subject pronoun prefix proclitic forms (5.2.2.6) are discussed in this section, as well as focal pronouns (5.2.2.3) and reflexive pronouns (5.2.2.5) which are lexical bases. All the pronominal forms are treated together in this section in order to avoid much cross-referencing, and because they have a formal and conceptual similarity to each other.

5.2.2.3 FOCAL PRONOUNS

5.2.2.3.1 FORMS OF THE FOCAL PRONOUNS

The focal pronouns (F) are presented in three separate tables, Table 5.1 Focal pronouns: singular, Table 5.2 Focal pronouns: dual and Table 5.6 Focal pronouns: plural, for ease of presentation. Each table is followed by a discussion of the forms in that table.

TABLE 5.1: FOCAL PRONOUNS: SINGULAR

	F:1S	F:2S	F:3S
Adzera	*ji*	*ago; o*[1]	*araŋan*
Mari	*zi*	*agua*	*Ø*
Wampur	*ji*	*agua; au*[1]	*ai*
Sukurum	*si*	*ago; o*[1]	*Ø nogo*
Sarasira	*ci*	*agu; u*[1]	*Ø*
South Watut	*ciya?*	*kugu; ku*[1]	*rau*
Middle Watut	*ciyo; yo; ya*[2]	*kugu; o*[1]	*rau*
North Watut	*iya*	*?ogo*	*rau*
Wampar	*eja*	*yai*	*gea*
Musom	*wir*	*iŋg*	*in*
Duwet	*ahei?*	*au*	*ei*
Nafi	*wi*	*yi*	*yin*
Aribwaungg	*wir*	*iŋg*	*in*
Aribwatsa	*camag*	*agom*	*gia*
Labu	*ai*	*yê*	*ini*

Notes:
1. The short forms are used as subject only.
2. Alternative forms, for subject or object.

SINGULAR FOCAL PRONOUNS

The POC singular disjunctive (focal) pronouns have been reconstructed by Ross (1986) as follows. I will not retrace his steps in the reconstruction, but give them as he presents them.

**iau, *au*	F:1S
**iko[e], *ko[e]*	F:2S
**ia, *a*	F:3S

First person singular: POC **y-* becomes Proto Huon Gulf **y-*, and this is reconstructed as Proto Markham **j-*, voiced alveolar or alveo/palatal affricated stop, which in turn is reflected in the daughter languages as either voiced or voiceless alveolar affricated stop, *j* or *c* (see table of sound correspondences, Table 4.21 in section 4.5, above). If the POC form for first singular, **iau* could also be interpreted as **yau* with palatal onset, the forms for first person singular focal pronoun in the languages of the Upper Markham and Watut subgroups are reflexes of the POC form. This is borne out by the reflex in Middle Watut, *ciyo,* which has retained the POC final vowel sound, whereas the other languages have lost it. The forms found in the Lower Markham group are not cognate with the Upper Markham and Watut forms.

Second person singular: Forms for second singular, first exclusive and inclusive plural and second plural are preceded by *a-* (Upper Markham) or *ka-* (Watut) which is not directly descended from the POC forms. This form may be a reflex of a former personal marker or pronominal article, possibly POC **qa-* personal pronominal marker. The forms for second singular in the Upper Markham group and Watut group, and for Duwet only in the Lower Markham group can be considered as reflexes of the POC alternative form **ko[e]* F:2S, because POC **k* is reflected regularly as *g* in all the languages of these two groups.

Third person singular: In the Upper Markham group the third singular (and plural as well, see below) is either represented by zero, that is, it is unmarked or is represented by a demonstrative. In the three Watut languages the form for third singular is *rau* which is identical with the form for reflexive pronoun 'himself', 'herself' in that language and there is no separate form for third singular. In the Lower Markham group there is a third singular pronoun form, PLMK **in,* which is not a demonstrative. This form could have derived from the POC form **ia* F:3S, by the regular loss in the Markham languages of POC final vowels on pronouns, and by the cliticisation of a third person possessive form PMK **-n.*

TABLE 5.2: FOC PRONOUNS: DU

	F:1ED	F:1I	F:2D	F:3D
Adzera Mari Wampur Sukurum Sarasira	Dual forms are plural focal pronouns[1] + the word for 'two'[2] in these five languages.			
South Watut	*aŋa* + 'two'	*agi ŋa* + 'two'	*maŋa* + 'two'	'man + 2'
Middle Watut	*aŋa* + 'two'	*gaŋa* + 'two'	*maŋa* + 'two'	'two'
North Watut	*ŋaŋa* + 'two'	*gaŋa* + 'two'	*maŋa* + 'two'	'man + 2'
Wampar	*abid abid*	*yai ri oŋan*	*gea ri oŋan*	
Musom	*sikin*	*suk*	*som sikin*	*is sikin*
Duwet	*auʔ ahahiʔ*	F:1IP + 'two'	F:2P + 'two'	F:3P + 'two'
Nafi	F:1EP +'two'	*suk* + 'two'	F:2P +'two'	F:3P + 'two'
Aribwaungg	F:1S[3] + *isin*	*sur*	F:2S + *isin*	F:3S + *isin*
Aribwatsa	F:1S + 'two'	F:1S + 'two'	'two'	'two'
Labu	*êmalu*[4]	*alu; a*	*yêmôlu*	*êsalu*

Notes:
1. See Table 5.6 below for plural focal pronoun forms.
2. The forms for numeral 'two' are listed in 5.2.3.2 Numerals, below.
3. Note that the Aribwaungg and Aribwatsa base pronoun forms are singular, not plural.
4. The Labu form for 'two' is *salu* which appears to consist of *sa-* plural marker and *lu* 'two'. The term for 'two' is fused to the dual pronoun forms.

DUAL FOCAL PRONOUNS

As can be seen from the table above very few of the languages have separate forms for dual pronouns, but most use the forms for plural and add the numeral 'two'. In the languages of the Upper Markham group this is the only method used for marking dual number. Third person dual can be either the numeral 'two' only, or the word for 'man' plus the numeral 'two'. The Watut languages show forms contrasting for person of referent for dual number which precede the numeral 'two'. These forms are not identical with the forms used for plural number, but contain elements cognate with parts of the plural pronouns and with the subject pronoun prefixes marking plural subject on verbs, for first and second person. Third person dual is either numeral 'two' or the forms for 'man' plus 'two'. Below are shown the Watut focal pronoun forms for first and second person dual and plural, and subject pronoun prefixes for a future tense.

TABLE 5.3: WATUT DUAL AND PLURAL PRONOUN FORMS

	F:1ED	F:1EP	S:1EP	F:1ID	F:1IP	S:1IP	F:2D	F:2P	S:2P
SWT	*aŋa*	*kaga*	*arama-*	*agi ŋa*	*kagir*	*gama-*	*maŋa*	*kagam*	*mama-*
MWT	*aŋa*	*kaga*	*arama-*	*gaŋa*	*kager*	*garama-*	*maŋa*	*kagam*	*marama-*
NWT	*ŋaŋa*	*ŋaga*	*ŋadama-*	*gaŋa*	*ŋa?*	*ŋadima-*	*maŋa*	*magam*	*madama-*

Although the different person and numbers (and tense) marked by these forms are so fused that it is difficult to separate elements, proforms representing the following persons and numbers are as follows:

TABLE 5.4: WATUT DUAL/PLURAL PROFORMS

	1ED/P	1ID/P	2D/P
SWT	*(g)a*	*g(i,a)*	*(k,m)a*
MWT	*(g)a*	*g(e,a)*	*(k,m)a*
NWT	*ŋa*	*(g,ŋ)a*	*ma*

These proforms are highly decayed forms of the POC plural focal pronouns as reconstructed by Ross (1986):

**kami, *kai*	F:1EP
**kita*	F:1IP
**kamu*	F:2P

POC **k-* is regularly reflected as PMK **g-*. PWT **ka-* which precedes all the plural forms does not reflect the initial POC syllable **ka* but is a reflex of the pronominal prefix PMK **ka-* referred to above, and with which members of the Markham family marked pronouns.

The Wampar dual forms are totally unrelated to those of either the Upper Markham, Watut or Lower Markham groups. The form which serves for both 1ED and 1ID is *(a)bi-d*, *(a)* being epenthetic *a* which occurs regularly between consonants, *-d* being a first person possessive pronoun

suffix for inalienably possessed nouns, and the root form *-bi* meaning 'again, do again, repeat', which is usually a verb root. The phrase used for 2D is *yai ri oŋan* which means literally 'you (S) with another' , and similarly the phrase for 3D is *gea ri oŋan,* literally 'he/she with another' . The forms are obviously artificially constructed from forms existing in the language to fill a gap in the pronoun paradigm, and are not reflexes of POC plural forms. Neither are they related to forms in the Upper Markham which include the numeral 'two', nor to dual forms in the Lower Markham.

The dual forms for the Lower Markham group vary between 'true' dual forms in Musom and Aribwaungg to forms made up of the plural forms plus numeral 'two' in Duwet, Nafi and Aribwatsa. The Musom and Aribwaungg forms are tabulated below:

TABLE 5.5: MUSOM AND ARIBWAUNGG DUAL PRONOUNS

	F:1,2,3 ED	F:1ID
MSM	*sikin*	*suk*
AWG	*isin*	*sur*

These forms are cognate, and appear to have incorporated the plural-marking prefix **si-* discussed above, and also discussed in Bradshaw (1978a:58). This is a reflex of the plural subject pronoun prefix **si-* S:3P reconstructed for 'New Guinea Austronesian' by Capell (1969:50). The change in vowel sound, for exclusive/ inclusive distinction could have resulted from lenition of an original form for 'two', PMK **si-ruk,* with Musom becoming *s-uk,* and Aribwaungg becoming *s-ur* through reduction and then metathesis of *r* and *u.*

The other languages show a combination of forms. Duwet has a form *au ʔah ahiʔ* F:1ED, but the underlying forms mean F:1ID + 'you (S)' + 'me'. This could be the result of losing an original dual exclusive form under pressure from Papuan neighbours and bilingualism, and then re-analysing the inclusive form to mean both inclusive and exclusive, as Wampar has done. Then under further pressure from AN neighbours to conform with their contrastive sets, they re-analysed yet again to use the inclusive as exclusive, and used a different form, *aind* + 'two' to distinguish inclusive. The other dual forms in Duwet follow the pattern for Upper Markham, F: +'two'. Nafi has the forms for 1,2,3, EP +'two', but 1IP combines the Musom form *suk* with numeral 'two'. Aribwatsa has simply the plural forms + 'two'.

Aribwaungg, however, has an unusual twist, in that it uses the singular pronoun forms before the dual forms. Unlike all the other languages in the Markham family, which consider dual number to be a type of plural, Aribwaungg seems to consider dual to be an extension of singular number. This is an innovation shared by the Bukawa language also, and it is likely that Aribwaungg has re-analysed its concept of dual number under pressure from its Bukawa neighbours through prolonged contact and bilingualism.

Labu follows the pattern discussed above in the make-up of its dual pronoun forms. The forms for 1,2,3 ED combine the plural pronouns with *-lu* two (Labu *sa-lu* 'two'), and the inclusive form follows this pattern also.

The underlying principle for forming dual number pronouns in all the languages of the Markham seems to have been parallel to that of POC, that is of using the plural number pronouns and adding a numeral 'two', or another morpheme meaning 'two' or 'more than one' (see Pawley 1972:37 for reconstructions of PEO dual forms).

TRIAL FOCAL PRONOUNS

Labu is the only member of the Markham family to have trial number marked in the pronoun set. However, like the forms for dual and plural, the pronoun is made up of a plural pronoun plus a form derived from a numeral. In the case of the trial pronouns, the numeral form is *-di,* derived from Labu *si-di* 'three', and the plural pronouns are actually quadral, consisting of plural pronoun plus *-ha,* from Labu *sô-ha* 'four'. This is cognate with the Bukawa form for 'four' *hale* which reflects PHG **va* 'four'. The Labu forms are thus probably borrowed from Bukawa. Ross's data support the reconstruction of at least four (singular, dual, trial, plural) and probably five (with quadral/paucal) number contrasts in POC pronouns (Ross 1986), the pronouns being constructed from the plural form plus the appropriate numeral, and Labu reflects the four-way contrast.

TABLE 5.6: FOCAL PRONOUNS : PLURAL

	F:1EP	F:1IP	F:2P	F:3P
Adzera	*aga; agai*	*agi*	*agam*	*rib* + DEM
Mari	*agai*	*agi*	*agam*	*Ø*
Wampur	*agai*	*agi*	*agam*	*yaus*
Sukurum	*aga*	*agir*	*agam*	'man' + DEM
Sarasira	*agai*	*agi*	*agam*	*gindoŋ; i ruas*
South Watut	*kaga; kaʔ*[1]	*kagir*	*kagam; kam*[1]	'man' + *rau*
Middle Watut	*kaga*	*kager*	*kagam; am*[1]	*ges*
North Watut	*ŋaga*	*ŋaʔ*	*magam*	'man' + DEM
Wampar	*yaga*	*yaer*	*nuum*	*ges*
Musom	*ce*	*cir*	*com*	*is*
Duwet	*yaga*	*aind*	*yam*	*eis*
Nafi	*semeŋ*	*si*	*som*	*yes*
Aribwaungg	*ce*	*cir*	*com*	*is*
Aribwatsa	*camag ari*	*camag arus*	*agom; com*[2]	*is; gis*[2]
Labu	*êmaha*	*aha*	*yêmôha*	*êsôha*

Notes:
1. The short forms are alternatives in all positions.
2. These are alternative forms, but used inconsistently by the one living speaker. The second alternatives, *com* and *gis,* are borrowings, from Aribwaungg and Wampar respectively.

PLURAL FOCAL PRONOUNS

First exclusive plural: The languages of the Upper Markham and Watut groups share the pronominal marker PMK **ka-* on all plural pronouns except third plural. PMK **k* is lost in the Upper Markham, and is reflected as *k-* or *ʔ* in the Watut languages. The remaining part of the 1EP pronoun forms reflect POC **kai* F:1EP, an alternative reconstruction (Ross 1986:419). The forms for the Lower Markham group, including Wampar, also reflect POC **kai* in the second part of their forms, but the first part is varied, and does not reflect PMK **ka-* pronominal marker. The three languages which have the forms *ce* 1EP, *cir* 1IP and *com* 2P , Musom, Nafi and Aribwaungg, with the two which have the cognate forms *yaga* 1EP, *ya(e,i)r* 1IP and *yam* 2P, Wampar and Duwet, seem to have acquired the initial consonants through a pronominal marker PLMK **cV-*, whose use parallels that of the PUMK **ka-*. They appear to have extended the use of this by analogical levelling to the initial sound of all the plural forms. The plural forms for Aribwatsa are unreliable, because the only informant still living had trouble remembering these words. Labu, as discussed above, adds the

form for 'four' to the plural pronoun form, which seems to reflect the POC **kami* F:1EP alternant rather than the **kai* alternant reflected by the other Markham languages. In this, Labu is set apart from the rest of the Markham languages.

First inclusive plural: As already discussed for the exclusive plural forms, the inclusive forms show, in the Upper Markham and Watut forms, reflexes of the PMK pronominal marker **ka-*, as in for example Adzera *a-gi*, Sarasira *a-gir*, and South Watut *ka-gir*. The remaining part reflects POC **kita* F:1IP. Because PMK **r* is a regular reflex of POC **t*, and loss of a final POC vowel is a regularly-attested reflex in Proto Markham, POC **kita* becomes PMK **ka-gir*. However, the forms for North Watut, Duwet and Labu are not cognate with the forms recorded for the other languages and do not reflect the POC form.

Second plural: PMK **ka-* is also reflected in the forms for second person plural in the Upper Markham and Watut groups, for example *a-gam* F:2P in the five Upper Markham languages, and *ka-gam* F:2P in South and Middle Watut. The second part of the form reflects POC **kamu* F:2P with loss of the POC final vowel. Thus POC **kamu* becomes PMK **ka-gam*. The forms for Wampar, the Lower Markham group and Labu, while being cognate with each other, do not reflect the PMK **ka-* marker, and only the consonant *m* consistently reflects any part of the POC form **kamu*.

Third plural: In the Upper Markham languages (except Wampur) and the Watuts (except Middle Watut) the forms for 3P are either zero, a demonstrative or the word for 'man' plus a demonstrative. There are no pronominal forms for 3P. However, the Lower Markham group, Middle Watut and Wampur all have forms for 3P which include the consonant *s*, which reflects PMK **si-* P:3P . This plural-marking morpheme has been mentioned several times, above, and by Bradshaw (1978a:58) and reflects the initial syllable of the POC reconstructed form **sira* (Wurm and Wilson 1975:216). This form may have been a 3P pronoun form which has become incorporated and levelled by analogy with a 3S form PLMK **i-n* from POC **ia* third person focal pronoun, or POC **i-* third person singular subject pronoun prefix with the third person pronoun possessive enclitic PMK **-n* added.

5.2.2.3.2 Reconstructions of focal pronouns

The reconstructions of sets of focal pronouns below are based on the discussions and analysis in the sections above.

TABLE 5.7: RECONSTRUCTIONS OF SINGULAR FOCAL PRONOUNS

	F:1S	F:2S	F:3S
POC	**iau (*ʸiau ?)*[1], **au*	**iko[e], *ko[e]*	**ia, *a*
PMK	**jiau*	**ka-gu*[3]	**i-n*[5]
PUMK	**ji*	**a-gu*	Ø
PWT	**jia(o)*	**ku-gu*[4]	Ø
PLMK	**wir*[2]	**a-u*[6]; **ying*[7]	**i-n*

Notes:
1. If the onset of the POC form can be interpreted as having a palatalised glide as an alternative, then the reconstruction of reflexes in PMK as **j-* onset are regular.
2. The PLMK form is not a reflex of PMK.
3. Initial PMK **ka-* is a personal pronominal marker.
4. PMK **ka-* > PWT **ku-* by regular vowel harmony before *-gu*.
5. PMK **-n* is third person possessive pronoun enclitic.

6. The PLMK form is reflected in Duwet only, morphologically the most conservative of the Lower Markham languages.
7. The PLMK form *yiŋg* is not a reflex of the POC or PMK forms.

TABLE 5.8: RECONSTRUCTIONS OF DUAL FOCAL PRONOUNS

	F:1ED	F:1ID	F:2D	F:3D
POC	*kami, *kamami, *kai+ *rua[1]	*kita+ *kamiu+ *rua	*kamu, *kau *sira+ *rua	*(k)ira, *rua
PMK	*ka-gai + *si-ruk[2]	*ka-gir + *si-ruk	*ka-gam + *si-ruk	*ci-s + *si-ruk
PUMK	*Øa-gai + *i-ruk	*Øa-gir + *i-ruk	*Øa-gam + *i-ruk	*yV-s, *Ø + *i-ruk
PWT	*ka-ga + *si-ruk	*ka-gir + *si-ruk	*ka-gam + *si-ruk	*Ø + *si-ruk
PLMK	*ca-ga + *si-ruk	*ca-gi(r) + *si-ruk	*co-(g)om + *si-ruk	*ci-s + *si-ruk

Notes:
1. POC *rua 'two'
2. PMK *si-ruk 'two' consists of PMK *si-* plural marker plus *ruk* 'two'.

TABLE 5.9: RECONSTRUCTIONS OF PLURAL FOCAL PRONOUNS

	F:1EP	F:1IP	F:2P	F:3P
POC	*kai, *kami, *kamami	*kita	*kau, *kamiu, *kamu	*sira[1]
PMK	*ka-gai[2]	*ka-gir	*ka-gam	*ci-s[5]
PUMK	*Øa-gai	*Øa-gir	*Øa-gam	*yV-s, Ø[6]
PWT	*ka-ga	*ka-gir	*ka-gam	*Ø
PLMK	*ca-ga[3]	*ca-(g)ir[4]	*co-(g)om[5]	*ci-s

Notes:
1. POC *sira* F:3P seems more likely as a source of the Markham forms than POC *(k)ira.
2. PMK *ka-* is personal pronominal marker.
3. Parallel personal pronominal marker PLMK *cV-*, where *V* represents vowels: *a* = first person, *o* = second person, *i* = third person. Through palatalisation the underlying form *ci-V- > *ca-; *co-; *ci-. Through regular process of lenition POC *-g- > PLMK *-ɣ-, as in Duwet *yaɣa* F:1EP, and is then lost, and then the vowels become assimilated, as in Musom, Aribwaungg *ce*, Nafi *se(meŋ)* F:1EP.
4. Same process as 3. above, resulting in palatalisation of *c before *i*, loss of POC *g intervocalically, and vowel assimilation.
5. Same process as in 3. and 4. above.
6. PUMK forms : PUMK *yV-s reflected only in Wampur *yaus* F:3P. PUMK *y- is a regular reflex of POC *s-/i. All reflexes were lost in all the other languages and replaced by a demonstrative or Ø.

5.2.2.4 POSSESSIVE PRONOUNS

As I discussed in 5.2.1.1 above, the languages of the Markham family mark common nouns morphologically for possession class through use of sets of possessive suffixes, preposed possessive pronouns, and a combination of the two. In this section I will discuss the uses of these sets of possessive pronoun forms, and will reconstruct the forms for the subgroups and for Proto Markham where that is possible. Every language has at least two contrasting noun classes marked in this way – inalienably possessed nouns, and neutral or alienably possessed nouns.

INALIENABLE POSSESSION, SUBTYPE 1

Within the class of inalienably possessed nominal bases are two subtypes, marked by two different sets of possessive pronoun suffixes. The nouns which are possessed inalienably through use of subtype 1 possessive pronoun suffixes (see Table 5.10 and Table 5.11 for the forms used) are most kinship terms, most body parts, some body substances, a person's spirit, name, voice, reflection and shadow. These are all things which are considered to be an integral part of a human being and cannot be separated from the person. The relationship of part-to-whole between two nominal bases is also marked morphologically by subtype 1 possessive morphemes, for example, 'branch of a tree' or 'mouth of a river'; relational locations, particularly those which use terms for body parts such as 'ear' or 'face' are also marked for inalienable possession, such as 'front of the house' or 'edge of the garden'.

INALIENABLE POSSESSION, SUBTYPE 2

The second set of pronominal possessive bases is used only for a closed, very restricted set of nouns (see Table 5.12 for the forms of these suffixes). The nouns are all possessed inalienably, but the relationship between the possessor and the possessed is different to that expressed in subtype 1 inalienable possession. Just what this difference is is now impossible to ascertain. Reflexes of the subtype 2 forms are suffixed to a set of nouns comprising the kinship terms for 'father's sister/mother's brother's wife', 'sister-in-law', and 'husband's other wife'. In three of the languages of the Upper Markham group, Adzera, Mari and Wampur, this set is present in fossilised form only. In all of the other languages of the Markham family there is present a full set of pronoun suffixes for all persons. The kinship terms which are included in this set are terms for male or female kin possessed through a male, usually female speaking, for example 'husband's other wife', 'father's sister/mother's brother's wife', 'husband's sister/brother's wife'.

The form of the inalienable, subtype 2 suffix marking third person is reconstructed as PMK **-c* (see Table 5.16, below, for reconstructed forms). Some nouns which are not kinship terms appear to have attached reflexes of PMK **-c* P:3. These nouns include the words for 'tail', 'wing', 'egg', 'bird's nest', 'testicles', 'sweat', 'palm of hand/sole of foot' and in some languages also 'leaf of tree' and 'root of tree'. However, when these are possessed by first or second person possessor, they are affixed with subtype 1 possessive affixes, for example in Adzera:

ji uwac-aŋʔ	my sweat
u yawat-am	your(S) testicles

Hooley (1970) also remarks on the presence of two sets of possessive pronoun suffixes for inalienably possessed nouns in the Buang languages. There as in the Markham languages one series is the common one, and the second series marks a small set of nouns. The composition of this set has been given a morphophonemic interpretation by Hooley as a 'small group of single syllable nouns having the vowels *o* or *u*' (1970:137). The actual forms of the possessive suffixes in both series in the Buang languages are cognate with those in the Markham languages, and the items which are included in the second Buang set overlap with the Markham items – 'brother-in-law', 'testicles' and 'knee' (1970:138). Moreover, in the word lists provided in Hooley (1970) for the Buang dialects it can be seen that items for 'wing', 'egg', 'nest' also have cognates of the third person Markham suffix.

ALIENABLE POSSESSION

The largest set of common nouns in the Markham languages belongs to the class of neutral, or alienably possessed nouns. In the Upper Markham group (with the exception of Wampur) the noun being possessed is marked morphologically with the same set of possessive pronoun suffixes as those which mark inalienably possessed nouns of subtype 1. This appears to have come about through a process of analogical levelling of the two classes. In the other groups neutral or alienable possession is marked by preposing a set of possessive bases to the noun being possessed. This group corresponds to the type of possessive marking called '**na-* marking' by Pawley (1973:158) and '**na-* 'general'' by Ross (1986). The languages of the Markham which mark alienable possession by preposed possessive morphemes show reflexes of Proto North New Guinea **ne-* which has been reconstructed by Ross (1986) and which existed side-by-side with other nominal class markers including reflexes of POC **na-*. (The 'North New Guinea cluster' is proposed by Ross as a lower-level subgroup of POC, and as the ancestor of the Huon Gulf family. He has reconstructed some forms for Proto North New Guinea).

CONSUMABLE POSSESSION

A third class of nominals is morphologically marked in two languages only, Middle Watut and North Watut. This possession class has been discussed for these languages by Fischer (1963). The class comprises those nouns which refer to things which can be eaten, drunk or consumed by humans, and includes all food and drink items, tobacco, songs, betel nut and its accompaniments lime and pepper. The nouns are marked by a set of preposed possessive pronoun morphemes, which are marked for the person and number of the preceding possessor noun or pronoun. This subclass of nouns corresponds to the class called '**ka-* marking' by Pawley (1973:161) and described by him as 'edible and subordinate possession'.

5.2.2.4.1 FORMS OF THE POSSESSIVE PRONOUNS

INALIENABLE POSSESSION

Below are tabulated the forms for inalienable possessive pronoun suffixes in the Markham languages.

TABLE 5.10: POSSESSIVE PRONOUN SUFFIXES. INALIENABLE. SUBTYPE 1

	P:1	P:2	P:3
Adzera	*-ŋʔ(-gaŋʔ)*	*-m(-gam)*	*-n(-gan)*
Mari	*-ŋ(k)(-gaŋk)*	*-m(-gam)*	*-n(-gan)*
Wampur	*-ŋʔ(-gaŋʔ)*	*-m(-gam)*	*-n(-gan)*
Sukurum	*-ŋ(-gaŋ)*	*-m(-gam)*	*-n(-gan)*
Sarasira	*-ŋ(-gaŋ)*	*-m(-gam)*	*-n(-gan)*
South Watut	*-ŋg*	*-m*	*-ʔ*
Middle Watut	*-ŋg*	*u,o -m*	*-Ø*
North Watut	*-ŋg*	*-m*	*-ʔ*
Wampar	*-g,-d*	*-m*	*-n*
Musom	*-ŋg*	*-m*	*-n*
Duwet	*-ŋg*	*-m*	*-n*
Nafi	*-ŋ*	*-m*	*-n*
Aribwaungg	*-ŋg*	*-m*	*-n*
Aribwatsa	*-g*	*-m*	*-n*
Labu	*nda*	*na*	*na*

Note:
The SWT, MWT, NWT form *-ŋg*, and LAB *nda* mark singular nouns only.

TABLE 5.11: POSSESSIVE PRONOUN SUFFIXES. INALIENABLE. SUBTYPE 1. PLURAL

	P:1EP	P:1IP	P:2P	P:3P
South Watut	*a -m*	*gi -nd*	*ma -m*	*ŋa -ʔ*
Middle Watut	*a,o -m*	*ga,go -nj*	*ma,mo -m*	*-Ø*
North Watut	*ŋa -m*	*ŋa -ʔ*	*ma -m*	*-ʔ*
Labu	*mê*	*la*	*mê*	*sê*

Only the four languages whose plural forms are tabulated in Table 5.11 above, distinguish in form between singular and plural possession. All the other languages have identical forms for singular and plural. All the Watut languages exhibit an additional preposed pronominal form marking plural, possibly to disambiguate the singular and plural suffixes.

On the basis of the possessive forms, the Markham languages can be divided into four groups:

1) Upper Markham group
2) Watut group
3) Lower Markham group
4) Labu

I will discuss the distinguishing features of this type of possessive marking for each group in turn. The features I will concentrate on are person distinction, number distinction, and differences in form.

1) Upper Markham group

Within this group, there is a distinction made between first, second and third person marking. There is no distinction made between first exclusive and inclusive. Singular and plural number are

not differentiated. Possession is always marked through the suffixing to nominal bases of the pronominal morphemes listed. For example, in Mari:

zi haga-ŋ-gaŋk	my foot, my feet

The use of the first morpheme given is obligatory, and the second is optional in all these languages. So, for example in Adzera one can say either:

rina-ŋ? or *rina-ŋ-gaŋ?*	my/our mother(s)

All possessed nominals are preposed with focal pronouns, but this is dropped for the vocative forms. For example, in Sarasira:

agam rumbu-m	your (P) grandparents
rumbu-ŋ	Grandfather!

It is only through these preposed focal pronouns that number is marked.

2) Watut group

The three Watut languages distinguish between first exclusive, first inclusive, second and third persons, and between singular and plural number in the possessive morphemes. They differ from the languages of the other groups in their use of pronominal possessive morphemes preposed before the noun, combined with pronominal suffixes to mark possession. The alternations in the vowels of the preposed morphemes in Middle Watut are phonologically conditioned (sections 4.1 and 4.2.7 above). In the plural morphemes, *o* is used before a noun with *o* as its first or only vowel, *a* is used before all other vowels. In the second singular form, *o* is used before a noun with *o* as its first or only vowel, *u* before all other vowels. For example:

kager go mo-nj	our(I) mouths
kagam ma rase-m	your(P) same-sex siblings
kugu u ma-m	your(S) tongue

Vowel harmony is a distinguishing feature of this group, as will be seen below in section 5.2.2.6 in the discussion of subject pronoun prefixes.

The suffixes used in the Watut languages to mark the different person/number contrasts are grouped differently to those of the other Markham groups. Where in the other groups *-m* is used only for second person marking, in the Watut languages it is also used to mark first exclusive plural.

3) Lower Markham group

This group follows the same pattern as the Upper Markham group in its use of pronoun suffixes to mark possession. However these languages use only one suffix, and do not double the suffix as those of the Upper Markham group do. The languages all distinguish first, second and third persons in the morphemes, and do not use separate forms to contrast first exclusive and first inclusive. Singular and plural number are not contrasted.

Wampar has two different forms for first singular, *-g* and *-d*. This contrast is used to distinguish a small, closed set of nouns only :

	edza rompo-g	my grandparent
	edza anu-g	my mother
	edza yasi-g	my mother's brother
	edza ni-g	my own, mine
cf.	*edza rompo-d*	my grandchild

All other inalienably possessed nouns take *-d* P:1S. The two alternant Wampar forms reflect two first person plural possessive suffixes reconstructed as existing in PMK, * *-ŋg* P:1EP and **-nd* P:1IP and which themselves are reflexes of the POC forms **-gu* P:1S and **-da* P:1IP respectively.

4) Labu

Labu uses only preposed possessive pronoun forms, and has lost all possessive pronoun suffixes. (The loss of all final consonants is a phonological innovation distinguishing Labu from the other languages of the Markham family.) It contrasts only first person with a form which is identical for second and third persons in singular number. For dual/plural Labu contrasts three person forms: first person inclusive, third person and a form which is identical for first person exclusive and second person. Also, Labu does not distinguish between alienable and inalienable possession. The same forms are used for possession of all nouns.

The phonological shapes of the possessive suffixes for all the groups except Labu are cognate. The first person suffix has the form -velar nasal+velar stop. Second person has the form -bilabial nasal. Third person has the form -alveolar nasal, glottal stop or zero. The distinguishing features of these forms are echoed in the suffixes used to mark subtype 2 possession. This is tabulated below in Table 5.12.

RECONSTRUCTION OF POSSESSIVE PRONOUN MORPHEMES. INALIENABLE. SUBTYPE 1

This category of possession of nouns has been called '*Zero-marking (Inalienable possession)' by Pawley (1973:154ff). It is the term used for the type of possession described above for the Markham languages, and which is a common feature of languages which are descendants of POC. The main feature which is common to all languages which have the system is the suffixing of pronominal morphemes directly to the head noun. This marking shows a close relationship between the possessor and the noun possessed and includes all kinship terms, most body parts and other natural part-to-whole relationships. For the Markham languages two complementary and contrasting sets must be reconstructed. These have been called subtype 1 and subtype 2, above. There are indications that this contrast is made in at least one other group of languages which form a subgroup of the Huon Gulf family, apart from the Markham family. These are the Buang languages, and the subtype 2 inalienable possessive system has been described for these languages by Hooley (1970:137). The Buang suffix forms for both subtype 1 and subtype 2 possessive pronoun sets are cognate with those found in the Markham languages. Therefore two subclasses of inalienable possessive pronoun suffixes can be reconstructed for the Huon Gulf family. It is not known whether this contrast is found outside the Huon Gulf languages.

TABLE 5.12: POSSESSIVE PRONOUN SUFFIXES. INALIENABLE. SUBTYPE 2			
	P:1	P:2	P:3
Adzera	-ʔ	(-p)	-t,-c
Mari	-k	(-p)	-t
Wampur	-ʔ	(-p)	-t
Sukurum	-k	-p	-t
Sarasira	-k	-p	-t
South Watut	-k	-p	-c
Middle Watut	-k	-p	-c
North Watut	-ʔ	-p	-c
Wampar	-Ø	-p	-c
Musom	-k	-p	-c
Duwet	-k	-p	-s
Nafi	-k	-p	-s
Aribwaungg	-Ø	-p	-c
Aribwatsa	-ʔ	-b	-c
Labu	-	-	-

Note:
The SWT, MWT and NWT forms mark singular nouns only.

TABLE 5.13: WATUT POSSESSIVE PRONOUN SUFFIXES. INALIENABLE. SUBTYPE 2. PLURAL								
	P:1EP		P:1IP		P:2P		P:3P	
South Watut		-p	gi	-k	ma	-p	ŋa	-c
Middle Watut	a	-p	ga	-c	ma	-p		-c
North Watut	ŋam	-ʔ	ŋa	-ʔ	ma	-p		-c

The Markham languages all show evidence of having had a productive set of these suffixes in the past. In some languages only fossilised forms are detectable. The languages fall into four groups, based on the forms of this set of suffixes.

1) Upper Markham group

In this group only two languages, Sukurum and Sarasira, have productive full sets for subtype 2 inalienable possessive bases. In Adzera, only the following forms in the kinship terms survive:

afa-ʔ	sister-in-law (Vocative)
ji fa-t(-aŋʔ)	my sister-in-law (Referential)
waga-t(-aŋʔ)	my mother's brother
nagi-c(-aŋʔ)	my husband's other wife

One explanation is that although all these forms show traces of the old subtype 2 system, they have had subtype 1 suffixes added to 'regularise' the possessive forms. Another explanation is that originally the two subtypes were distinguishable only by the first suffix, both having the second suffix, and because the subtype 2 was a very restricted set of nouns, this type of suffixing eroded losing in most instances the last suffix which no longer had any contrastive value, in comparison with the first suffix.

Similarly, both Mari and Wampur have further traces of the subtype 2 first and third possessive suffixes, with subtype 1 suffixes added on. In Mari for example one finds:

	zi ha-t-aŋk	my sister-in-law
cf.	*ha-k*	Sister-in-law! (Vocative)

In Wampur:

ji waga-t-aŋʔ	my father's sister

Sarasira and Sukurum have full sets of subtype 2 suffixes still in use, but all have the subtype 1 suffixes added on as well. For example:

Sukurum:	*si waga-k-gaŋ*	my mother's brother
	agu waga-p-gam	your(S) mother's brother
	garam ane waga-t-gan	the man's mother's brother

Sarasira:	*ci fa-k-gaŋ*	my sister-in-law
	agu fa-p-gam	your sister-in-law
	sagat ane fa-t-gan	the woman's sister-in-law

2) Watut group

The Watut languages have preserved a complex subtype 2 system which has different features to those of the Upper and Lower Markham groups. They use the same forms as the other two groups to contrast first, second and third persons in the singular, but the plural is marked differently. As with subtype 1 possession, the Watuts prepose plural possessive morphemes before the noun being possessed, and use suffixes as well. For example, in North Watut, the following examples of these contrasts were recorded:

first person:	*yaŋg waga-ʔ*	my father's sister
	ŋaga ŋam waga-ʔ	our (Ex) father's sister
	ŋaʔ ŋa waga-c	our (In) father's sister
second person:	*ogo waga-p*	your (S) father's sister
	magam ma waga-p	your (P) father's sister
third person:	*rau waga-c*	his/her father's sister
	ŋagogo waga-c	their father's sister

In the Watut languages the forms of the plural preposed possessive morphemes are identical for subtype 1 and subtype 2 sets. The suffixes are different in the two sets, however.

3) Lower Markham group

All the languages of the Lower Markham group except Labu have productive sets of the subtype 2 suffixes still in use, for example in Nafi:

first person:	*fo-k*	my, our (E,I) sister-in-law
second person:	*fo-p*	your (S,P) sister-in-law
third person:	*fa-s*	her/their sister-in-law

In Nafi and the other Lower Markham languages including Wampar, the subtype 2 suffixes are used alone, without adding the subtype 1 suffixes and without preposed possessive pronoun bases. The forms are distinguished for three persons only : first, second and third. They are not contrasted for exclusive and inclusive, nor are they differentiated for number.

4) Labu

Labu does not have any trace of the subtype 2 system.

5.2.2.4.2 RECONSTRUCTIONS OF POSSESSIVE PRONOUNS

The reconstructed proto forms for the subtype 1 possessive bases for the Markham family are listed below.

TABLE 5.14: RECONSTRUCTIONS OF POSSESSIVE PRONOUN SUFFIXES. INALIENABLE. SUBTYPE 1. SINGULAR

	P:1S	P:2S	P:3S
POC	*-*gu*	*-*mu*	*-*ña*
PMK	*-*ŋg*	*-*m*	*-*n*
PUMK	*-*ŋg*	*-*m*	*-*n*
PWT	*-*ŋg*	*-*m*	*-*?*
PLMK	*-*ŋg*	*-*m*	*-*n*

TABLE 5.15: RECONSTRUCTIONS OF POSSESSIVE PRONOUN SUFFIXES. INALIENABLE. SUBTYPE 1. PLURAL

	P:1EP	P:1IP	P:2P	P:3P
POC	*-*ma[m]i*	*-*da*	*-*m[i]u*	*-*dia*
PMK	*-*m*	*-*nd*	*-*m*	*-*n*
PUMK	*-*ŋg*	*-*ŋg*	*-*m*	*-*n*
PWT	**a -m*	**ga -nd*	**ma -m*	*-*?*
PLMK	*-*ŋg*	*-*ŋg*	*-*m*	*-*n*

Below are tabulated the reconstructed forms of possessive pronoun bases for inalienable subtype 2. It would appear that Proto North New Guinea *-*ji* P:3P the alternant form for POC *-*dri* P:3P discussed by Ross (1986) as an innovatory form for the North New Guinea cluster is the ancestral form of the third person possessive suffixes of inalienable subtype 2, as reconstructed below. Some of his supporting evidence is taken from the Buang set for subtype 2 inalienable possession which has the form -*s* P:3S.

TABLE 5.16: RECONSTRUCTIONS OF POSSESSIVE PRONOUN SUFFIXES. INALIENABLE. SUBTYPE 2

	P:1S	P:2S	P:3S	P:1EP	P:1IP	P:2P	P:3P
POC	-	-	-	-	-	-	*-dri
PNNG	-	-	-	-	-		*-ji
PHG	*-k	*-p	*-c	*-k,*-p	*-k	*-p	*-c
PMK	*-k	*-p	*-c	*-k,*-p	*-k	*-p	*-c
PUMK	*-k	*-p	*-t	*-k	*-k	*-p	*-t
PWT	*-k	*-p	*-c	*a -p	*ga -k	*ma -p	*-c
PLMK	*-k	*-p	*-c	*-k	*-k	*-p	*-c

It can be hypothesised that the more commonly-used third person marker PMK *-c P:3 arose first as a reflex of PNNG *-ji P:3P, and subsequently the less commonly-used second and first person markers developed, the forms based on phonological analogy with the subtype 1 forms. All the languages contrast certain distinctive features in the forms used for the subtypes. Each suffix of subtype 2 shares some distinctive features with the form used for the same person marker in subtype 1, as follows:

TABLE 5.17: CONTRASTIVE PHONETIC FEATURES OF SUBTYPE 1 AND SUBTYPE 2 POSSESSIVE PRONOUN SUFFIXES

	P:1	P:2	P:3
Subtype 1:	vd, velar,nasal+stop	vd, bilab.,nasal	vd, alv.,nasal
Subtype 2:	vl, velar,stop	vl, bilab.,stop	vl, alv.,stop

The contrasts are in the features of 'voicing', and 'nasal/stop'. The feature of 'position' is identical. Thus the subtype 2 set arose out of analogy with subtype 1 forms, and contrasting phonologically with subtype 1.

ALIENABLE POSSESSION

In the Upper Markham and Lower Markham groups, and in South Watut, all nouns other than those already discussed above are marked for possession using the neutral or alienable possessive bases. In the languages of Middle and North Watut a third system exists, that of consumable nouns.

In the Table below, N = Noun possessed, N+N = Noun (or Pronoun) possessor + Noun possessed. In all languages, the forms are optionally preposed by the focal pronouns.

TABLE 5.18: POSSESSIVE PRONOUNS. ALIENABLE				
		P:1	P:2	P:3
Adzera		N-*(g)aŋ?*	N-*(g)am*	N-*(g)an*
Mari		N-*(g)aŋk*	N-*(g)am*	N-*(g)an*
Wampur		*gaŋ?* +N	*gam* +N	*gan* +N
Sukurum		N-*gaŋ*	N-*gam*	N-*gan*
Sarasira		N-*gaŋ*	N-*gam*	N-*gan*
South Watut		N+N	N+N	N+N
Middle Watut	*yeniŋg o*	+N	*unim(o)* +N	*eni*+N
North Watut	*yaneŋg*	+N	*onem* +N	*ane*+N
Wampar (a)		N+N	N+N	N+N
(b)	*ni-g*	+N	*ni-m* +N	*ni-Ø*+N
Musom		*a* N	*a* N	*a* N
Duwet		*iə* N	*iə* N	*iə* N
Nafi		*a* N	*a* N	*(in)a*N
Aribwaungg		N+N	N+N	N+N
Aribwatsa		N+N	N+N	N+N
Labu		*nda* N	*na* N	*na* N

TABLE 5.19: POSSESSIVE PRONOUNS. ALIENABLE. PLURAL								
	P:1EP		P:1IP		P:2P		P:3P	
Middle Watut	*enim(o)*	+N	*eni(nj,ŋ)(o)*	+N	*menim(o)*	+N	*eni*	+N
North Watut	*ŋanem*	+N	*ŋane*	+N	*manem*	+N	*ane*	+N
Duwet	*iəs*	+N	*iəs*	+N	N *iəs*	+N	N *iəs*	+N
Nafi	*a*	+N	*a*	+N	N*a*	+N	N *isa*	+N
Labu	*mê*	+N	*la*	+N	N *mê*	+N	N *sê*	+N

The subgroups which are observed according to the way in which alienable possession is marked correspond to those set up for the other types of possession, except that in this feature Wampar belongs with two of the Watut languages, and in structure at least, Wampur belongs with South Watut and some of the languages of the Lower Markham.

1) Upper Markham group

Within the Upper Markham group, all the languages except Wampur mark alienably possessed nouns using the same set of possessive pronoun suffixes as used for inalienably possessed nouns, subtype 1. The suffixes are those which are used as the second, optional suffixes for subtype 1. The actual forms are phonologically conditioned – after a noun stem ending in a vowel, the form PUMK **-gaC* is used (where *C* is the appropriate person-marking suffix consonant). After a noun stem ending in a consonant the form PUMK **-aC* is used. The only exception to this is Wampur, which uses forms as the preposed possessive morphemes between the noun/pronoun possessor and the noun possessed. These possessive morphemes have the same form as the suffixes used in the rest of this group, which is *gaC*. This method of marking alienable possession is probably a borrowing from the Watut group nearest to Wampur, North Watut, with whom the Wampurs have long-established links. Two of the three Watut languages mark alienable possession in this way. Number of the noun/pronoun possessor is not marked by these possessive pronoun bases in this group.

Thus in the Upper Markham languages, neutral or alienable possession is marked by the second possessive suffix. The first suffix marks inalienability.

2) Watut group and Wampar

As indicated above, two of the three Watut languages mark alienable possession as follows:

Noun/pronoun possessor + Possessive pronoun base + Noun possessed.

The possessive pronoun bases are phonologically related, in each language, to both the focal pronoun forms and the possessive pronoun suffixes used to mark inalienable possession. The third Watut group, South Watut, uses simple parataxis to mark alienable possession, and has lost all the possessive pronoun preposed morphemes found in the other two.

3) Lower Markham group, South Watut, and Wampur

Three of these languages, Wampar, Aribwaungg and Aribwatsa, use parataxis of noun/pronoun possessor + noun possessed to mark alienable possession. Wampar, however, has a second type of alienable possessive construction with the form:

Noun possessor + *ni-* Inalienable possessive suffix + Noun possessed

meaning 'N's own N'. The sets of morphemes generated in this set are cognate with the forms found in two of the Watut languages. The other languages of the Lower Markham use simplified forms of the preposed possessive pronoun morphemes found in the two Watut languages to mark this class of possession. The contrasts marked by the morphemes are singular/plural in Duwet and Nafi, first person/non-first person in Nafi, or no contrast at all in Musom, where one morpheme is used for all persons and numbers. Thus, the members of the Lower Markham group do not all share the same method of marking alienable possession. However, a uniform system seems to underlie them all, and one system can be reconstructed for Proto Lower Markham.

4) Labu

Labu does not distinguish between inalienable and alienable possession. Both are marked in the same way, using the same possessive pronoun bases preposed to the noun possessed.

RECONSTRUCTION OF POSSESSIVE PRONOUN BASES. ALIENABLE

This type of possession is called '**na*-marked, dominant possession' by Pawley (1973:158). In the Markham languages this type contrasts with **Zero*-marked inalienable possession, and as in other Oceanic languages, the nouns marked for possession in this way form an open set, and comprise the majority of nouns in the languages. It is the reflex of NNG **ne-* that is found as alienable possessive preposed base in Watut and Wampar languages. The PLMK reconstructed forms are reflexes of the POC **ka*-marked possessive bases. It appears that the two classes of alienable and consumable were collapsed into one marked class in this group, and the whole class marked with reflexes of POC **ka-*. Because the three groups have taken their marking of the alienable class of nouns from three different antecedent POC classes, I have not reconstructed the PMK forms.

TABLE 5.20: RECONSTRUCTIONS OF POSSESSIVE PRONOUNS. ALIENABLE							
	P:1S	P:2S	P:3S	P:1EP	P:1IP	P:2P	P:3P
NNG	**ne-*						
PWT, WPA	**ni-ŋg*	**ni-m*	**ni-Ø*	**ni-m*	**ni-ŋg,-nd*	**ma-ni-m*	**ni-Ø*
PLMK	**a,*e*	**a,*e*	**na,*e*	**a,*es*	**a,*es*	**a,*es*	**(s)a,*es*
PUMK		As for second suffix of inalienable subtype 1.					

CONSUMABLE POSSESSION

The class of nouns which I am calling 'consumable' corresponds roughly to that described for the languages of Eastern Oceania as '**ka*-marked' (Pawley1972) and for some languages of Western Melanesia (Ross 1986). Only two languages in the Markham family, Middle and North Watut, mark this class as different to other nouns. The nouns include all food items and edible animals, all drinkable items, betel nut and its accompaniments lime powder and pepper, tobacco and songs. It does not extend to gardens, plants other than edible ones, or animals other than edible ones. The nouns are marked morphologically by the use of preposed possessive pronoun morphemes which are different in form to those which mark both alienable and inalienable possession. The system is tabulated below.

TABLE 5.21: POSSESSIVE PRONOUNS. CONSUMABLE						
		P:1E(C)	P:1I(C)	P:2(C)	P:3(C)	
MWT	S:	*yaŋg(o)*	*yaŋg(o)*	*oam(o,u)*		*aya*
	D,P:	*am(o,u)*	*anj(o,u)*	*mam(o,u)*	*ges*	*aya*
NWT	S:	*yaŋg*	*yaŋg*	*yam*		*ʔaya*
	D,P:	*ŋam*	*ʔaya*	*mam*		*ʔaya*

In Middle Watut, the choice of vowel in all the forms except 3P is phonologically conditioned. *o* is used before nouns whose first or only vowel is *o*, and *u* is used before all other vowels in the nouns. It is interesting to note that the same set of correspondences in form are marked here as in the inalienable subtype 1, and alienable possession systems. That is, that the forms for 2S and 2P have the same ending, *-m*, as the forms for 1EP. Also, the morphemes used for possession of consumable nouns can be related to the forms for the focal pronouns. The forms used for 3S and 3P in both languages are reflexes of POC **ka-*, as POC **k-* becomes MWT *Ø*, NWT *ʔ* in some etyma.

RECONSTRUCTED FORMS FOR POSSESSIVE PRONOUN MORPHEMES. CONSUMABLE

Because there are only two langauges in the Markham which mark this class of nouns by a special set of possessive morphemes, I will only reconstruct for the Watut group. However, as the class marking is descended from a POC system, **ka*-marked nouns, it is likely that other Markham languages once had such a system but have lost it.

TABLE 5.22: RECONSTRUCTIONS OF PROTO WATUT POSSESSIVE PRONOUNS. CONSUMABLE							
	P:1S	P:2S	P:3S	P:1EP	P:1IP	P:2P	P:3P
POC	*ka-						
PWT	*ka-ŋg	*ka-m	*ka-Ø	*ka-m	*ka-nd	*m-ka-m	*ka-Ø

The *ka- forms can be reconstructed because regular reflexes of POC *k- and PMK *k- are ʔ- in North Watut and Ø- in Middle Watut. The ʔ reflex is present on the third person and first person inclusive forms of North Watut. The reflex is Ø- in Middle Watut, so for example the first singular form *yaŋg(o)* would have the underlying form *ya-Øa-ŋg ((o)* is an epenthetic vowel without meaning*)*. *ya-* is from F:1S. Similarly in North Watut, the first singular morpheme *yaŋg* has an underlying form *ya-ʔa-ŋg*. The ʔ disappears by lenition, and the vowels assimilate to *a*.

5.2.2.5 REFLEXIVE PRONOUNS

5.2.2.5.1 FORMS OF THE REFLEXIVE PRONOUNS

All the languages of the Markham family have a class of pronominal bases which reflects PMK **rau-*, and which marks reflexive and reciprocal functions. The pronoun bases are affixed with the possessive pronoun suffixes for inalienable subtype 1 according to the person and number of the head noun/pronoun of the noun phrase, or of the noun/pronoun subject of the verb phrase. After personal pronoun or noun heads they have an emphatic or restrictive function, glossed as 'own', 'self', 'alone'. After verbs the same forms have a reciprocal function, glossed as 'each other'; the use of a form of **rau-* is obligatory after some verbs in all the languages, having then a reflexive rather than reciprocal function. Some examples of the reflexive and reciprocal uses of these pronominal forms are as follows:

Adzera:

rib igi ro -n-gan
F:3P DEM R -P:3
It is their business.

wa- ga ro -m-gam
IMP- eat R -P:2
Eat yourself!

Nafi:

iŋg iro -m ŋgu- muk
F:2S R -P:2 PAST.S:2- do
Did you do it yourself ?

wi ŋa-an kisin iro -ŋ a ŋgaŋ
F:1S NONPAST.S:1-eat across R -P:1 PREP food
I forbid myself to eat (i.e.I am fasting).

Hooley reports a reflexive pronoun set in the Buang languages with the underlying form **lo-* (Hooley 1970:76, 142) which contrasts with the focal pronoun set. The Buang forms are cognate with the Markham forms. A similar, cognate set is found in the Bukawa language *(dau-)* and also in Yabêm *(tau-)* (Streicher 1982:569) indicating that a set of reflexive/reciprocal pronominal forms

should be reconstructed for the Huon Gulf family. The reflexes of PMK **rau-* descend from PHG **tau-*, and they are ultimately reflexes of POC **tau* 'man'. There is supporting evidence from Papuan Tip languages of reflexes of POC **tau* plus possessive pronoun morphemes being used as reflexive/emphatic pronouns (M. Ross personal communication).

In Table 5.23 and Table 5.24, below, are given the forms for the reflexive pronouns in the Markham languages. Each form has a possessive pronoun suffix indicating person (and in some languages number) of the head noun/pronoun.

TABLE 5.23: REFLEXIVE PRONOUN FORMS

	R:1	R:2	R:3
Adzera	*ro-ŋ'(-gaŋ')*	*ro-m(-gam)*	*ro-n(-gan)*
Mari	*ru-ŋk*	*ru-m*	*ru-n*
Wampur	*ru-ŋ'*	*ru-m*	*ru-n*
Sukurum	*ro-ŋ(-gaŋ)*	*ro-m(-gam)*	*ro-(n,-gan)*
Sarasira	*ro-ŋ*	*ro-m*	*ro-n*
South Watut	*rau-ŋg*	*ru-m*	*rau-Ø*[1]
Middle Watut	*rau-ŋg*	*rau-m*	*rau-Ø*[1]
North Watut	*rau-ŋg*	*rau-m*	*rau-Ø*[1]
Wampar	*era-d*	*era-m*	*era-n*
Musom	*(o)ro-ŋg*	*iro-m*	*ro-n*
Duwet	*iria-ŋg*	*iria-m*	*irie-Ø ta* [2]
Nafi	*iro-ŋg*	*iro-m*	*iro-n*
Aribwaungg	*iro-ŋg*	*iro-m*	*iro-n*
Aribwatsa	*ro-g*	*ro-m*	*ro-n*
Labu	*lo*	*lo*	*lo*

Notes:
1. These forms are also used as F:3S in these languages.
2. This morpheme, *ta,* means 'one'.

TABLE 5.24: REFLEXIVE PRONOUN FORMS. PLURAL

		R:1EP	R:1IP	R:2P	R:3P
South Watut		*a ru-m*	*gi ru-nd*	*a ru-m*	*ŋa rau-Ø*
Middle Watut		*a rau-m*	*rau-nj*	*ma rau-m*	*ku ges* [1]
North Watut		*rau-m*	*rau-'*	*ma rau-m*	*rau-Ø nto*[2]
Musom		*ro-ns*[3]	*roge-ŋg*	*ro-m-em*	*ro-ns*[3]
Duwet	D:	*irie-nd* + '2'	*iria-nd* + '2'	*iria-m-am* + '2'	*irie-'* + '2'
	P:	*irie-nd-aŋg*	*iria-ŋg-aŋg*	*iria-m-am*	*ira-s-aŋg*
Nafi		*iro-ŋg-eŋg*	*iro-ŋg-eŋg*	*iro-m-em*	*iro-s*

Notes:
1. *ku ges* does not fit the reflexive pattern of **rau-*. The morpheme *ku* precedes all the Middle Watut Reflexives as a type of special article. *ges* is F:3P.
2. This morpheme is unexplained, but is most likely a demonstrative.
3. R:1EP and R:3P are identical in form. This is unusual, and unexplained.

The basic form for all the Markham reflexive pronouns is a reflex of PMK **rau-* with a possessive pronoun suffix inalienable subtype 1 suffixed to it. However, the differences lie in the ways in which the languages of the different groups contrast person and number, through the

possessive pronoun suffixes. The forms of the possessive pronoun suffixes are found, as discussed in 5.2.2.4.1 above, but they are modified in some languages. The languages group as follows for the reflexives:

1) Upper Markham group : As described for inalienable possessive pronoun bases, the languages of this group contrast three persons only, first, second and third and not exclusive/inclusive, nor number. The use of the second possessive suffix is optional in some of the languages.

2) Watut group: The three Watut languages contrast the possessive pronoun forms for four persons, first exclusive, first inclusive, second and third, and contrast singular and plural number. Plural forms are marked with preposed possessive pronoun bases, which are used in combination with the possessive pronoun suffixes. Middle and North Watut have *rau-* as the stem form.

3) Lower Markham group: This group is further divided into two subgroups, which show different forms of the reflexive stem, and different types of marking on the possessive morphemes. The subgroups are as follows:

a) Wampar, Aribwaungg and Aribwatsa: these three languages have **(i)r(o,a)-* as the stem form of the reflexive. They use only three possessive suffixes, contrasting first, second, and third persons, and do not mark number or an inclusive/exclusive contrast.

b) Musom, Duwet and Nafi: these three languages reflect the basic form **Vro-* for the reflexive pronoun stem. *V* is usually *i*. The vowel *(V)* is phonologically conditioned by the vowel of the stem in Musom, and *V* is *o*. In Duwet *iro* becomes *iria, iriə* through a regular sound change. In these languages the possessive suffixes mark contrast for four persons, first exclusive, first inclusive, second and third. They also contrast singular and plural number. Duwet has a further number contrast, with dual. In plural number, all three have a second possessive suffix marking person, so the order of the morphemes is:

iro-person marker-number marker

This preoccupation with number marking is seen in all pronoun sets for Musom, Duwet and Nafi, and may be a feature borrowed from Papuan neighbours and incorporated into the nominal, pronominal and verbal class systems. (See also 5.2.2.3 Focal pronouns, 5.2.2.4 Possessive pronouns above, 5.2.2.6 Subject pronoun prefixes and 5.2.5.4 Suppletive verb forms below.)

4) Labu: As Labu has lost all final consonants, it is not possible to reconstruct the possessive pronoun marking it once had on reflexive pronouns. It has, however, preserved the form of the stem as *lo,* and this is used after the focal pronouns for all persons and numbers. Siegel (1984:132) gives two forms in his Labu word list, *lo* glossed as 'reflexive pronoun' and *lô* glossed as 'self' (limiter). It is possible that *lo* is the base form, and *lô* is an inflected form.

5.2.2.5.2 RECONSTRUCTIONS OF REFLEXIVE PRONOUNS

The following are the forms reconstructed for the reflexive pronouns. Proto Lower Markham is reconstructed as two sets, a) and b). As no reflexive form has been reconstructed for POC, and the 'Reciprocal formatives' which have been reconstructed are unrelated (Wurm and Wilson 1975:166), I am reconstructing a form for Proto Huon Gulf based on the evidence for its existence and the phonological shape of the form in Buang (Hooley 1970), Yabêm (Streicher 1982) and Bukawa, and on the examples from the Markham languages.

TABLE 5.25: RECONSTRUCTIONS OF REFLEXIVE PRONOUNS				
	R:1E	R:1I	R:2	R:3
POC	*tau			
PHG	*tau-ŋ	*tau-ŋ	*tau-m	*tau-n,-Ø
PMK	*rau-ŋg	*rau-ŋg	*rau-m	*rau-n
PUMK	*ro-ŋg	*ro-ŋg	*ro-m	*ro-n
PWT	*rau-ŋg	*rau-ŋg	*rau-m	*rau-Ø
PLMK a)	*iro-ŋg	*iro-ŋg	*iro-m	*iro-n
PLMK b)	*iro-ŋg	*iro-ŋg	*iro-m	*iro-n

TABLE 5.26: RECONSTRUCTIONS OF REFLEXIVE PRONOUNS. PLURAL				
	R:1EP	R:1IP	R:2P	R:3P
POC	*tau			
PHG	*tau-m	*tau-nd	*tau- m	*tau-n,-Ø
PMK	*rau-m	*rau-nd	*rau-m	*rau-n,-Ø
PWT	*a rau-m	*gi rau-nd	*ma rau-m	*rau-Ø
PLMK b)	*iro-ŋg-Vŋg[1]	*iro-nd-Vŋg[2]	*iro-m-Vm[1]	*iro-s[3]

Notes :
1. *V* is uncertain.
2. **-nd* is reconstructed as inclusive marking morpheme, by analogy with Proto Watut, and regular reflexes of the POC first inclusive suffix **-da.*
3. **-s* is reconstructed as plural possessive pronoun morpheme (see Table 5.9 Reconstructions of plural focal pronouns, above).

5.2.2.6 SUBJECT PRONOUN PREFIXES

Verbs in the Markham languages are marked by subject pronoun prefixes for person and number of the subject of the verbs. The Upper Markham languages show no differentiation for person or number in their subject pronoun prefixes. Three persons – first, second, third – are marked in singular in the Watut languages and Labu, and four in the plural. In the Lower Markham languages, three persons in both singular and plural are marked, with the exception of Duwet, in which three singular persons and one plural are marked. The subject proform is, in most cases, a single vowel. The consonants or other prefixes which occur before these vowels mark tense, aspect and mode of the verb. The actual vowel morpheme marking the person of the subject may have two variants, which are phonologically conditioned by the first, or only, vowel of the verb root which follows it. This occurs in the three Watut languages, Wampar, and Labu.

5.2.2.6.1 FORMS OF THE SUBJECT PRONOUN PREFIXES

The subject pronoun prefix forms are tabulated in Table 5.27 and Table 5.28, below. It must be remembered, however, that the actual forms of subject pronoun prefixes have become portmanteau morphemes, and consequently the separation of the person/number-marking element is artificial.

TABLE 5.27: SUBJECT PRONOUN PREFIXES

		S:1	S:2	S:3
Adzera		*(g)i-*	*(g)i-*	*(g)i-*[1]
Mari		*gi-,ga-*	*gi-,ga-*	*gi-,ga-*[2]
Wampur		*gi-*	*gi-*	*gi-*
Sukurum		*gi-*	*gi-*	*gi-*
Sarasira		*gi-,ga-*	*gi-, ga-, gu-*	*gi-, ga-*[3]
South Watut	S:	*a-*	*u-*	*i-*
Middle Watut	S:	*a-*	*o-,u-*	*e-,i-*
North Watut	S:	*a-*	*o-,u-*	*e-,i-*
Wampar		*a-*	*o-,u-*	*e-,i-*
Musom		*a-*	*u-*	*i-*
Duwet	S:	*a-*	*u-*	*i-*
Nafi		*a-*	*u-*	*i-*
Aribwaungg		*a-*	*u-*	*i-*
Aribwatsa		*a-*	*u-*	*i-*
Labu	S:	*V-*[4]	*ô-*	*V-*[4]

Notes:
1. Some Adzera dialects have *gi-*, some have *i-* to mark all persons and numbers in realis mode. (Prefixes with *a-* mark irrealis mode. See 5.3.5.1 Tense/aspect/mood marking, below).
2. Mari *gi-* before verb stems with one syllable, *ga-* before stems with more than one syllable.
3. Sarasira *gi-* marks present tense; *i-* marks far past and future; *ga-* marks general past tense, for all person and number of subject; *gu-* marks second person subject in Som village only.
4. Labu has complex vowel harmony rules, and the form of the *V* depends on 1) class of verb root and 2) the vowel of the verb root.

TABLE 5.28: SUBJECT PRONOUN PREFIXES. PLURAL

	S:1EP	S:1IP	S:2P	S:3P
South Watut	*a[r,m]a-*	*[i,a][r,m][a,i]-*	*ma[r,m][a,u]-*	*a[r,m][i,a]-*
Middle Watut	*ara-*	*ama-*	*ma[r,m][o,u]-*	*e-,i-*
North Watut	*a[d,n]a-*	*a[d,n]i-*	*ma[d,n]a-*	*e-,i-*
Duwet	*maŋga-*	*maŋga-*	*maŋga-*	*maŋga-*
Labu	*mV-*[1]	*lV-*[1]	*mô-*	*sV-*[1]

Notes:
1. Labu has complex vowel harmony rules, and the form of *V* depends on 1) class of verb root and 2) the vowel of the verb root.

The Markham languages groups are discussed below on the basis of their marking of subject pronoun. However, the groups do not coincide exactly with those set up for other pronoun sets.

1) Upper Markham group : The languages of this group show a highly eroded system of pronominal person marking on verbs, all person-marking prefixes being reduced to one form which was once the form for third person PUMK **i-*. For example in present-day Adzera:

ji i- fa gum
F:1S S: -go garden
I am going to the garden.

agam i- fa gum
F:2P S: -go garden
Are you (P) going to the garden?

Kisa i- fa gum sib
Kisa S: -go garden COM
Kisa has gone to the garden.

However, a former system is reconstructible, using evidence from some dialects of the languages, and the system appears to have been similar to that reconstructible for the Lower Markham group. There is evidence for reconstruction of a three-way person contrast in the mother language. In one village of the Sarasira language community, Som, a form *gu-* representing second person subject is found. For example, the following was recorded in Som:

ci gi-su i ha-ca	I want to go.
u gu-su i ha-ca	Do you want to go?
ci ga-num pui	I drank the water.

In Mari and Sarasira (including the Som variety) a form, *ga-* contrasts with the form *gi-*. In Mari, *gi-* is used before verb roots of one syllable, and *ga-* before verb roots of more than one syllable, for example:

gihab gi-mpai gum	The pig is in the garden.
gihab ga-gara bampiaŋk	The pig is eating coconut.

In Sarasira *gi-* marks all verbs in realis mode, and *ga-* marks all verbs in irrealis mode. However, these contrasts were most likely based on the person of the subject in the ancestral language. The forms reconstructed for PUMK then are : **a-* first, **u-* second, **i-* third person. Present day reflexes of **(g)i-* are the result of generalising all person marking to the form for third person. Number was not marked, nor was a contrast between first exclusive and inclusive.

2) Watut group : The Watut languages have not only retained full sets of forms marking contrasts between four person subjects and two number subjects, but have complicated the system further with vowel harmony and changes in the consonants possibly as a result of cliticisation of subject pronoun prefix forms with tense/aspect/mood prefix consonants. For example, the following contrasting sentences, all in future declarative tense, were recorded in Middle Watut:

erame- wic mpuk
S:1S.FUT.DEC- hit pig
I will hit the pig.

kager garame- giŋg botikeni
F:1IP S:1IP.FUT.DEC- sleep now
We will sleep now.

ges rimi- kumb
F:3P S:3S.FUT.DEC -dance
They will dance.

However, the basic forms of the subject pronoun prefixes can be discerned. Labu is grouped with the Watut languages because it shares reflexes of the Watut system and of the consonant forms. Labu has also complicated its constituent vowels for subject pronoun prefixes to a great extent.

3) Lower Markham group : The languages of this subgroup share a system which distinguishes three person contrasts – first, second and third – and do not contrast first exclusive and inclusive, nor do they contrast singular and plural number. For example, the following contrasts were recorded in Aribwaungg:

in k- i- ic ambi funu
F:3S PAST- S:3- hit pig dead
He killed the pig.

is Wambar k- i- ic ŋain Aribwauŋg
F:3P Wampar PAST-SPP: 3- hit men Aribwauŋg
The Wampars fought the Aribwauŋg people.

The only exception is Duwet, which contrasts singular with plural. One plural morpheme only is used for all persons, for example:

First person plural:

yaga maŋga- rak a rus
F:1EP S:P- go PREP sea
We are going to Lae (the sea).

Second person plural:

yam seik maŋga-hiŋgisi?
F:2P two S:P-sleep:P
Were you two sleeping?

The vowels used to contrast person of subject are identical with those used in the reconstructed ancestral forms of the Upper Markham group. Of this Lower Markham group, only Wampar changes the vowels of the subject pronoun prefixes in harmony with the vowel of the verb root, in which respect they are similar to the Watut languages.

5.2.2.6.2 RECONSTRUCTIONS OF SUBJECT PRONOUN PREFIXES

In Table 5.29 and Table 5.30, below, are reconstructed the forms of the subject pronoun prefixes. The forms which have been reconstructed for POC are also given. The reconstruction of Proto Western Oceanic **dri-* S:3P is from Ross (1986).

TABLE 5.29: RECONSTRUCTIONS OF SUBJECT PRONOUN PREFIXES. SINGULAR			
	S:1S	S:2S	S:3S
POC	*ku-, (*ya-)	*ko-,(*o-)	*i-
PMK	*a-	*u-	*i-
PUMK	*a-	*u-	*(g)i-
PWT	*a-	*u-	*i-
PLMK	*a-	*u-	*i-

TABLE 5.30: RECONSTRUCTIONS OF SUBJECT PRONOUN PREFIXES. PLURAL				
	S:1EP	S:1IP	S:2P	S:3P
POC	*mi-,*kai-	*ta-	*mu-,*miu-,*kau-	*sira-
PWO				*dri-
PWT	*a(r,m)a-	*a(r,m)i-	*ma(r,m)u-	*Ci-

It is only possible to reconstruct Proto Watut forms for plural subject pronoun prefixes. Duwet *maŋga* S:P bears no formal resemblance to the PWT forms nor to the POC form. The Labu prefixes marking plural subjects resemble the South Watut prefixes in highly eroded form.

5.2.2.7 OBJECT PRONOUN SUFFIXES

Several prepositions occur in all the Markham languages with a cliticised third person object marker which refers back to either the subject or something which has been mentioned before. The phonological form of this marker is usually a reflex of PMK **-n*, which is like the third person possessive suffix which is present in all of the languages. When it is attached to prepositions this marker indicates that there is a third person pronoun object which has either already been mentioned, or is implicit. Before a direct object noun, or a pronoun which is first or second person, the *-n* is not attached. The preposition which always takes this object marker in all the languages of the Markham is PMK **gi-* oblique object, instrument, purposive, causal, benefactive, referential. When there is an incorporated third person pronoun object, it becomes a reflex of PMK **gi-n*. Table 5.31 below shows these reflexes of PMK **gi-n*. The number of the incorporated object pronoun is not marked except in Duwet where the form is *iə-Ø* with singular object and *iə-s* with plural object.

In some of the languages of the Upper Markham group reflexes of PUMK **rua-* comitative, dative preposition also take a third person pronoun object marker PUMK **-t*. In the Watut subgroup PWT **fu-* dative preposition has a reflex in Middle Watut, *(o)fu*, which takes a third person pronoun object marker which is distinguished for singular **-Ø* and plural **-c*. These two object markers, PUMK **-t* and PWT **-c*, are reflexes of the inalienable subtype 2, third person possessive marker PMK **-c*.

The preposition PMK **gi-n* is a reflex of the POC prepositional verb **kini-* instrument, refective. It is not a reflex of POC **qi* locative, which is reflected in the Markham languages as

PMK *i locative, and which does not take a prepositional object (see 5.3.4 Prepositional morphemes, below, for further discussion of the forms and roles of prepositions).

TABLE 5.31: REFLEXES OF PMK *gi-n WITH THIRD PERSON ANAPHORIC OBJECT

	PREP-O:3	cf.	P:3
POC	*kini-		*-ña
PMK	*gi-n		*-n, -ʔ
Adzera	(g)i-n		-n
Mari	gi-n		-n
Wampur	gi-n		-n
Sukurum	gi-n		-n
Sarasira	gi-n		-n
South Watut	i-n		-ʔ
Middle Watut	ge-n		-Ø
North Watut	igi-Ø (CAUS,REF,PURP)		-ʔ
	ina-ʔ (INSTR)		-ʔ
Wampar	e-n		-n
Musom	e-n		-n
Duwet	iə-Ø(S)		-n
	iə-s(P)		-n
Nafi	e-n		-n
Aribwaungg	e-n		-n
Aribwatsa	e-n		-n
Labu	-		-

5.2.3 ATTRIBUTIVE BASES

5.2.3.1 ADJECTIVES AND STATIVE VERBS

The Markham languages have retained the distinction between the two classes of attributives found in POC. The two classes in POC were 'true' adjectives which modified noun bases and did not take verb morphology, and an open class of stative verbs which could be used attributively (Pawley 1973:126; Ross 1986). It has been suggested that in POC, one way of changing these stative verbs so that they could be used attributively was by nominalising the verb, and then making the nominalised verb the head of a NP in which the noun being described becomes the possessor. The POC nominalising suffix *-aŋa has been suggested as the morpheme used to nominalise the verb. The Markham languages all show reflexes of this POC suffix, and of its use to nominalise stative verbs in this way (see 5.3.5.2 Gerundive suffix, below, for discussion of this suffix in the Markham languages). The Markham languages also have a class of 'true' adjectives which do not take a nominalising suffix, or any other verb morphology. However, the etyma representing 'true' adjectives are not always identical in all the languages, and similarly the etyma representing stative verbs used as adjectives are not always identical in all the languages. Also, the stative verbs used in this way can have one of two forms in any language. They can be used as true verbs after the noun being described, taking subject pronoun prefixes, and thus becoming head of a verb phrase or they

can be used as nominals, taking the gerundive suffix, and becoming then the head of a noun phrase. For example, in Sarasira:

'True' adjectives:

garam gagaiŋ
man big
big man

rum misik
house small
small house

Stative verbs used attributively:

garam gi-mbiŋmbiŋ
man S: be fat
The man is fat.

cf. *garam mbiŋmbiŋ -can*
man be fat -GER
The fat man.

ci kua -ŋ gi -marian
F:1S neck -P:1 S: -dry
My throat is dry (i.e. I am thirsty).

cf. *gai marian -can*
ree dry -GER
dry wood, firewood

In Table 5.56 and Table 5.57, below, can be found the forms which the gerundive suffix takes in the Markham languages. In section 5.3.5.2 the derivation of the Markham forms is outlined, including how Sarasira *-can* is derived from POC **-aŋa* nominalising sufix and PMK **-an* gerundive suffix.

There is another class of attributives reflected in some of the Markham languages. This is a class prefixed with the morpheme *mara-*, meaning 'appearance of', 'being like', and deriving from the word *mara-* 'eye', 'face', 'front'. For example, in Adzera one finds the following attributives:

mara-ampi	generous
mara-roro	intelligent, clever
mara-mimi	jealous
mara-aba	mean, not generous

However, this cannot be claimed as an innovation of the Markham family, as a similar class of attributives is reported from Yabêm as for example: *mata-jam (mata-ŋajam)* 'beautiful (of a boar's tusk)', *mata-laŋ* 'insolent, rude, ill-bred, naughty (of children)' (Streicher 1982:352). It is not mentioned by Hooley (1970) as being present in the Buang languages. Outside the Huon Gulf group from the Mutu language of Mandok Island, for example, *mata-aniŋ* 'gluttonous' (A. Pomponio personal communication). The compound form is also found in the languages of Polynesia, for example in Tongan, as in *mata-lelei* 'beautiful, good-looking'. Thus it is evident that the form could be reconstructed for POC, and is not an innovation of the Markham family. However the

innovation among the Markham languages is the expansion of the category prefixed by *mara-* to include, usually, positive attributes of human beings. Negative attributes of human beings are, at least in the Upper Markham subgroup, prefixed with the form PUMK **ragi-* 'excrement'.

The three categories of attributives in the Markham languages are: 1. 'True' adjectives as defined above, 2. Stative verbs used as attributives, and 3. Attributives prefixed with *mara-*. All the languages have examples in all three categories. The only features of use of attributives which can be seen as subgrouping evidence are as follows:

a). In the Upper Markham group there are many items in both 'true' adjective class and stative verb class. In some languages there are two forms with the same meaning, each of which occurs in a different class. For example, in Adzera the following synonyms occur:

'True' adjective	Stative verb	
ŋarobini	*-daum*	good

In the Upper Markham languages, the stative verbs can take either subject pronoun prefixes, or a gerundive suffix. Also in the member languages of this subgroup are many items prefixed with *mara-*, and many of them describing positive human qualities such as 'generous', 'intelligent', 'clever', 'wise'. This form is still very productive. All languages of this subgroup except Mari and Wampur have a class of attributives contrasting with the *mara-* class, prefixed with *ragi-* 'excrement', and referring to negative human qualities such as 'lazy', 'greedy for meat', or superlatives such as 'really big'.

The languages of the Watut group have very few words in the class of 'true' adjectives. Most of the attributives are stative verbs, even colour terms. The stative verbs can take either subject pronoun prefixes or the nominalising suffix. The *mara-* class occurs in all three languages, but with fewer examples than in the Upper Markham languages. In the Watut languages this class refers to positive human qualities, except in North Watut where they refer to descriptions of position only, for example 'front' and 'on the other side'. For use of attributives, Wampar is included with the Watut languages rather than the Lower Markham group.

In the Lower Markham group, excluding Wampar, the largest class of attributives is 'true' adjectives. In two of the languages – Duwet and Nafi – the gerundive suffix *-aŋg* is found as a non-productive relic only on a few stative verbs, for example in Duwet we find only the following:

mwahaŋg	good
ŋaŋaŋg	mad, crazy
raŋgaraŋg	red
mambahaŋg	quiet, slow
ninaŋg	noisy

In Nafi the following were recorded:

nufaŋg	cold
atukaŋg	wet
kakaraŋg	clean
muŋgaŋg	old
pupuŋaŋg	round
mamanaŋg	light, easy

The stative verbs used as attributives in these two languages usually take only the subject pronoun prefixes. In the other languages of the group – Musom, Aribwaungg and Aribwatsa – the largest class is also that of 'true' adjectives, but there is also a substantial class of stative verbs used as attributives, and they can take either subject pronoun prefixes or the gerundive suffix. In all the languages of this subgroup, the class of *mara-* prefixed attributives is either absent or found with only one or two examples. The *ragi*-prefixed class found in the Upper Markham group does not occur.

Labu has most of its attributives in the class of 'true' adjectives, having apparently lost the gerundive suffix altogether. There is one word which reflects a former gerundive suffix, cognate with the ones in use in the other Markham languages, and that is *ha-ia* 'good', in which *-ia* reflects PMK **-aŋ*. Labu has lost all word-final consonants, but the form of the suffix would most likely have been **-ia(ŋ)* in an earlier form of Labu.

5.2.3.2 NUMERALS

All the languages of the Markham family except Labu have binary number systems, having two numerals only – 'one' and 'two'. Numbers above two are made up of compounds of 'two plus...'; five is, in most languages, a phrase with the word for 'hand', ten is 'two hands', and twenty is either 'two hands and two feet' or a phrase that means 'a whole man'. The PMK forms for the two numerals are PMK **nda* 'one' and PMK **si-ruk* 'two'. The words used for 'one' are, in most cases, reflexes of the POC form **ta* indefinite article. The words for 'two' are possibly reflexes of POC **rua* 'two'. Labu is the only language which has retained separate numerals for one to five, and five is derived from the word for 'hand'. Six to ten are compounds of 'five plus...'. There are separate numerals for ten and twenty. These are all probably borrowings from Bukawa. It has been suggested by Smith (1984:112) that the original system which was used by early Austronesian-speaking arrivals in this geographical area had separate numerals for one to five combined with tallying on hands and feet. Under the influence of their Papuan-speaking neighbours the system became eroded to what we find today, a system with two numerals, 'one' and 'two', combined with body tallying. The numerals for 'one', 'two', and 'five' are listed below for all the languages of the Markham.

Only a few of the languages reflect POC **ta* indefinite article as 'one'. All the languages have reflexes of POC **rua* 'two' affixed with the numeral marking prefix PMK **si-*. The languages can be divided into two groups on the basis of their reflexes of PMK **si-ruk*. The Upper Markham languages reflect **si-* as PUMK **Øi-*, and the Watut and Lower Markham languages group together with their retention of PMK **si-* as PWT, PLMK **si-* before PMK **ruk*. The use of this prefix as a plural numerifier is supported by the forms of the Labu numerals above 'one' which are prefixed with *sV-*, where *V* is subject to vowel harmony with the vowel of the numeral to which it is affixed.

TABLE 5.32: NUMERALS OF THE MARKHAM LANGUAGES

	one	two	five
POC	**ta* INDEF ART	**rua*	**lima* ('hand')
PMK	**nda*	**si-ruk*	**baŋgi-* ('hand')
Adzera	*(bi(c,s)i)nta?*	*iru?(run)*	'2'+'2'+'1'
Mari	*(bisi)nta*	*hiruk(aŋkua)*	*baŋkia-n hain*
Wampur	*(bica)ŋua?*	*iru?*	*ba?ia-n marahain*
Sukurum	*(bisa)ndon*	*(r)eruk*	*baŋgi-ŋ maŋan*
Sarasira	*ta(ŋgua)*	*iruk*	*baŋgia-ŋ gafen*
South Watut	*ta(kanaŋg)*	*suruk*	*gi-baŋgi-nd ambufi*
Middle Watut	*moroc*	*serok*	'2'+'2'+'1'
North Watut	*bi?ic*	*siru?*	'2'+'2'+'1'/*baŋke haici?*
Wampar	*oroc*	*serok*	*baŋi-d oŋan*
Musom	*munuc*	*siruk*	*bai-ŋ rehen*
Duwet	*ta(ginei)*	*seik*	*rima-ŋg ari nan*
Nafi	*arus*	*siruk*	*bai-n refen*
Aribwaungg	*uruc*	*siru?*	*paŋgi-ŋg refen*
Aribwatsa	*uruc*	*siru?*	*bagi-g rehen*
Labu	*tôgwatô*	*salu*	*maipi*

Note:
The Labu numerals for 'three' and 'four' are *sidi* and *sôha*.

5.2.4 LOCATION BASES

Location bases can be divided into two types: 1. Place names; and 2. Relational locations.

1. Place names are either proper nouns or common nouns such as 'garden', 'house', 'bush' etc. When they occur as head noun of a phrase, or object noun of a verb phrase or a prepositional phrase after, for example the locative preposition PMK **i*, which is a reflex of POC **qi* locative they are morphologically unmarked as locational nouns.

2. Relational locations are marked, usually becoming the head of a possessive noun phrase. Relational location nouns are frequently expressed as body parts, in all the Markham languages, and this body part is affixed with the third person possessive suffix reflecting PMK **-n*. For example:

Adzera:

mpui riŋa -n
water ear -P:3
side/bank of river

North Watut: I

wajo mara -n
house front -P:3
front of house

Musom:

um	*baru*	*-n*
garden	back	-P:3
back of garden		

The possessed noun becomes the head of a noun phrase of the construction Noun possessor + Noun possessed-P:3 for example 'river its side' or 'garden its back'.

5.2.5 VERB BASES

Verbs in the Markham languages are classified according to their co-occurrence with certain post-verbal modifiers, and according to their collocability with certain subject or object nouns. For convenience of description and comparative analysis, I am discussing verb bases in the following categories: 1. Transitive and intransitive; 2. Reflexive/reciprocal verbs; 3. Stative and active verbs 4. Suppletive verb forms.

5.2.5.1 TRANSITIVE AND INTRANSITIVE VERBS

Transitive and intransitive verbs are distinguished in the Markham languages by the fact that the transitive verbs take either a direct object which follows immediately after the phonological verb phrase, or an oblique object which is marked by a preposition which is a reflex of the POC **kini-* 'instrument'. Certain verbs in all the languages take an obligatory PMK **gin* after a transitive verb and before its direct object, which is moved to the position and status of oblique object by the use of **gin*. When the object of the preposition is a third person pronoun, a reflex of the third person anaphoric object enclitic **-n* is attached to the preposition (See 5.2.2.7 Object pronoun suffixes, above). Examples of transitive verbs taking obligatory **gin* before direct object which thus becomes oblique object are listed below.

TABLE 5.33: REFLEXES OF PMK **gi-n* USED BEFORE DIRECT OBJECT

	swallow	leave	fear sg	ask sne sg	hear
Adzera	*ntap gin*	*taŋ-in*	*rat gin*	*gut gin*	*riŋant gin*
Mari	-	*riti gin*	*guan gin*	*kantui gin*	-
Wampur	*ntap gin*	*raʔ gin*	*pupu gin*	*ʔantu gin*	-
Sukurum	*ntap gin*	-	-	*tag in*	-
Sarasira	*ndab gin*	*rim gin*	-	*tag in*	-
South Watut	*kut in*	*tak in*	-	*kutaŋ in*	-
Middle Watut	*kot a gen*	*tak a gen*	-	*garo gen*	-
North Watut	*rem en*	*taʔ igi*	-	*garu igi*	-
Wampar	*mit en*	*teg en*	-	-	*rem en*
Musom	*tiŋ-in*	*rak en*	*girik en*	-	*riŋ-iŋ*
Duwet	-	-	*mbu in*	-	-
Nafi	*tiŋ-in*	*rak en*	-	-	*riŋ-iŋ*
Aribwaungg	*tiŋ-iŋ*	-	*aŋgiri en*	-	*riŋ-iŋ*
Aribwatsa	*tiŋ-iŋ*	-	*giri en*	-	*riŋ-iŋ*
Labu	-	-	-	-	-

The languages generally agree in the etyma which take the oblique object marker. In a few common forms in some languages the reflex of **gin* has become fused to the verb base, for example the verb 'hear' in Musom, Nafi, Aribwaungg and Aribwatsa, where the form of the verb base has become *riŋiŋ*, and is followed by a direct object. Some examples of the use of the obligatory post-verbal preposition with prepositional object are as follows:

Adzera:

agam	*i-*	*rat*	*gin*	*i*	*wai*
F:2P	S:-	fear	PREP.O	PREP	what

Why are you (P) afraid of it?

Middle Watut:

o-	*yok*	*o-*	*mpa*	*gen*
S:2S-	go	S:2S-	wait	PREP.O

Go and wait for him.

Nafi:

wi	*iro-*	*ŋg*	*ŋga-*	*ruw*	*en*
F:1S	R:-	P:1	PAST.S:1-	lose	PREP.O

I myself lost it.

Intransitive verbs do not take a direct object, and are not followed by the preposition **gin*. They may be stative verbs, as described in 5.2.3 Attributive bases, above. Such stative verbs denote state or condition of the subject, and may , in some of the Markham languages, include colours, numerals, temporal verbs, and locational verbs.

5.2.5.2 REFLEXIVE/RECIPROCAL VERBS

There is a class of verbs in the Markham languages which are transitive and which take a reflexive pronoun, marked for person (and in some languages for number) of the subject, as direct object. Some verbs take this postverbal reflexive as an obligatory marker of the action being in some way performed upon the subject. Crystal (1985:260) defines 'reflexiveness' as 'a verb or construction where the subject and the object relate to the same entity'. This describes the Markham use of reflexiveness. Below are listed some examples of the use of obligatory reflexive/reciprocal pronouns after verbs.

TABLE 5.34: EXAMPLES OF USE OF OBLIGATORY REFLEXIVE/RECIPROCAL PRONOUN AFTER VP

	move	curl up	be open
Adzera	*yut ro(a)-*	*dumuŋʔ ro(a)-*	*tus ro(a)-*
Mari	*risi ru-*	*waŋ gi ru-*	*kazai ru-*
Wampur	*ritu ru-*	-	-
Sukurum	-	*moŋ gi ro-*	*gumb ro-*
Sarasira	-	*mwan gi ro-*	*cab ro-*
South Watut	*ja ru-*	-	-
Middle Watut	*siriro rau*	*tigogo rau*	-
North Watut	*teto rau*	*nuŋku rau*	-

Table 5.34 continued...

...continued

TABLE 5.34: EXAMPLES OF USE OF OBLIGATORY REFLEXIVE/RECIPROCAL PRONOUN AFTER VP

	move	curl up	be open
Wampar	*rutuf era-*	*nonoŋot era-*	-
Musom	*pariwen ro-*	*nuŋgut ero-*	-
Duwet	*ripis irie*	-	-
Nafi	*kuris iro-*	-	*kaʔ iro-*
Aribwaungg	*rumbaŋgen iro-*	-	-
Aribwatsa	-	-	-
Labu	*li lo*	*lake lo*	-

The subject of the verbs listed above can be either singular or plural. However, the subject of a verb which takes an optional reciprocal marker after it is usually plural. The form of the reciprocal pronoun is identical to that of the reflexive pronoun, and consists of a pronominal base with a possessive pronoun suffix which marks person and number identical to that of the subject. The reciprocal can be glossed as 'each other', and can only follow certain transitive verbs. Below are some examples of verbs which take reciprocal pronoun as object.

TABLE 5.35: EXAMPLES OF USE OF OPTIONAL REFLEXIVE/RECIPROCAL PRONOUN AS OBJECT OF VP

	assemble	quarrel with each other
Adzera	*mpruʔ ro(a)-*	*mpiʔ ro(a)-*
Mari	*simub ru-*	*yas ru-*
Wampur	-	*busiŋ ru-*
Sukurum	*gama ro-*	*gabir ro-*
Sarasira	*gama ro-*	*pirik ro-*
South Watut	-	*riŋis ru-*
Middle Watut	*kafo rau*	*ŋis rau*
North Watut	*ceno rau*	*ŋes rau*
Wampar	*cenon era-*	-
Musom	-	*rubu ro-*
Duwet	-	*ndik irie-*
Nafi	*saka iro-*	*ndimb iro-*
Aribwaungg	*njup iro-*	*nis en iro-*
Aribwatsa	-	*ruc iro-*
Labu	*susu lo*	*pe ŋo lo*

All of the reciprocal pronouns in the above examples would be marked for plural in those languages which contrast singular/plural number in possessive pronoun suffixes. For example:

Mari:

garam marauraum gi-yas ru-n
man many S: -hit R:-P:3
Many men were fighting with each other.

Wampar:

afi	*e-*	*cenon*	*era*	*-n*
woman	S:3-	assemble	R:	-P:3

The women assembled.

Duwet:

seik	*ŋi-*	*ndik*	*irie-s*
two	NONPAST-	say	R:-P:3P

The two of them are quarrelling.

5.2.5.3 STATIVE AND ACTIVE VERBS

There is no morphological marking distinguishing active from stative verbs in the Markham languages. The difference is marked by collocation, that is, which subjects can or cannot appear with the class of verb.

Stative verbs denote state or condition of the subject. They may be temporal verbs, stative verbs which can act as attributives, or locational verbs. Active verbs include all transitive verbs. They also include verbs of motion or direction which occur after other verbs of motion or intransitive verbs, and can be followed by an object NP. The following examples from South Watut and North Watut illustrate this:

1. SWT:

ra-	*saʔ*	*ra-*	*ya*	*mus*	*fanda*
S:1S.PRES-	go up	S:1SPRES	-go	coconut	upwards

I climb up the coconut.

2. NWT:

da-	*tus*	*a-*	*yaʔa*	*mpo*	*yo*
S:1S.PAST-	repeat	S:1S-	come	water	DEM

I returned to the river.

5.2.5.4 SUPPLETIVE VERBS

A feature of verbs in some of the languages of the Markham family is the occurrence of suppletive forms for some common verbs. In the Watut languages and in Labu there are no suppletive forms recorded. The only instance of suppletive forms in the Upper Markham languages is in the forms of the existential verb 'to be, live, dwell sit, stay' which are used after animate or non-animate noun subjects. This was discussed in 5.2.1.2 Covert noun class marking, above.

The languages of the Lower Markham group, including Wampar, show several examples of suppletive verb forms. The different forms mark singular and plural subject, and in some cases, singular or plural object. Those verbs recorded as having suppletive forms are tabulated below. Where the verb has only one form for singular and plural subject, or singular and plural object, that form is listed twice for comparative purposes.

TABLE 5.36: SUPPLETIVE VERBS IN LOWER MARKHAM LANGUAGES							
		WPA	MSM	DWT	NFI	AWG	ARB
stay, live,	S:S.	*men*	*bum*	*mahaun*	*mbum*	*mbum*	*bum*
be	S:P.	*men*	*min*	*min*	*min*	*min*	*min*
sleep	S:S.	*i*	*ciŋg*	*yik*	*siŋg*	*ciŋg*	*cig*
	S:P.	*i*	*cici*	*hiŋgisi?*	*sisi*	*cici*	*cici*
sit	S:S.	*buri*	*kapuŋ*	*mahaun*	*kapuŋg*	*puŋg*	*pug*
down	S:P.	*moaf*	*min*	*min*	*mburi*	*mbiri*	*biri*
fall	S:S.	*muru*	*puruk*	*maut*	*puruk*	*ndi*	*di*
down	S:P.	*mosro*	*puruk*	*maut*	*roroŋ*	*ndi*	*di*
throw	O:S.	*rem*	*wimb*	*pu*	*wimb*	*wimb*	*ari*
	O:P.	*rem*	*rawu*	*pu*	*mbarih*	*wimb*	*ari*
get,	O:S.	*on*	*kun*	*hakaun*	*kun, kui*	*un*	*un*
receive	O:P.	*on*	*kun*	*hakaun*	*rik*	*un*	*un*

5.3 GRAMMATICAL MORPHEMES

Grammatical morphemes are those morphemes which occur around the bases discussed in the sections above, and either modify the base in some way or mark relationships between elements in a sentence. Some bases can act as grammatical morphemes, for example the verb base *-fu* 'be with, accompany' in the Watut languages acts as the dative/comitative preposition *fu-* (see 5.3.4 Prepositional morphemes, below) and the reflexive pronoun forms are used as verb prefixes to mark continuous aspect in the Upper Markham languages (see 5.3.5 Verb phrase morphemes, below). The categories of grammatical morphemes which will be discussed in this section are: 5.3.1 Articles, 5.3.2 Space/time deictic morphemes, 5.3.3 Conjunctions, 5.3.4 Prepositional morphemes, 5.3.5 Verb phrase morphemes, and 5.4 Negation.

5.3.1 ARTICLES

5.3.1.1 DEFINITE MARKERS

In most of the Markham languages, there is no definite article marking either singular or plural nouns. Definiteness is in most languages in this study marked by Noun + Ø. Indefiniteness is marked by indefinite particles indicating singular or plural number of the referent (see 5.3.1.2 Indefinite markers, below). However, in a few languages are found some traces of definite articles, for both singular and plural referents. These are as follows:

TABLE 5.37: DEFINITE MARKERS			
	DEF ART.S	DEF ART.P	DEF ART.P(Human)
Adzera	*aro*	*arai*	*ruas*
Mari	*aru*	*ai*	-
Wampur	*ua*	*yaus*	*was*
Sukurum	*Ø*	*Ø*	*was*
Sarasira	*aru*	*Ø*	*ruas*

Table 5.37 continued...

...continued

TABLE 5.37: DEFINITE MARKERS			
	DEF ART.S	DEF ART.P	DEF ART.P(Human)
South Watut	Ø	Ø	*aruc*[2]
Middle Watut	Ø	Ø	*ges*[1]
North Watut	Ø	Ø	*aro*[2]
Wampar	*gea*	Ø	*ges*[1]
Musom	*te*[3]	Ø	*is*[1]
Duwet	*ei*	Ø	*eis*[1]
Nafi	Ø	Ø	*yes*[1]
Aribwaungg	Ø	Ø	*is*[1]
Aribwatsa	Ø	Ø	*is*[1]
Labu	Ø	Ø	*sôa*

Notes:
1. These are all F:3P.
2. These Watut forms are comitative verbs meaning 'accompany'.
3. This form is also used as definite demonstrative, and to bracket relative clauses.

The languages fall into four groups according to how they mark definiteness through articles, and how they mark collective human nouns.

1. Upper Markham group: In three of the languages, Adzera, Mari and Sarasira, singular nouns are marked by a definite article *aru/aro.* In Adzera this marker is found in the form *aro-ani* 'now', which is made up of *aro* definite marker and *ani* demonstrative. Dempwolff (c.1928:12) noted the existence of a set of demonstratives of the form *aro-* plus demonstrative and suggested that *aro-* was a particle marking definiteness. The form used in Adzera as third person singular pronoun, *araŋan,* and a third person plural form now found in restrictive use in the Amari dialect only, *arai,* are also compounds of a former definite marker plus a pronominal form. Mari has retained the latter plural marker in its plural definite marker *ai.*

All the languages of the Upper Markham except Mari have a plural marker which is used to mark collections of humans. This marker is of the form *r(u,o)a-s,* made up of reflexes of the comitative preposition PMK **ro-,* which in PUMK becomes **r(u,o)a-* plus a plural morpheme *-s.* This marker is a reflex of POC **rau* 'man'. The morpheme *-s* on the Upper Markham form is a reflex of the Proto Markham plural possessive marker **-s,* productive reflexes of which are found in the languages of the Lower Markham. Wampur and Sukurum have lost the initial PMK **r-* and show reflexes of PUMK **r(u,o)a-* as *wa-,* i.e. *Øua-.*

2. Watut group: The Watut languages all mark definite singular and plural nouns with *Ø.* However, two of the languages have reflexes of a plural human collective noun marker, in South Watut *aru-c,* and North Watut *aro.* These are both reflexes of the comitative prepositional verb PMK **ro-.* The South Watut form includes a third person pronoun prepositional object enclitic *-c,* which is a reflex of PMK **-c* third person posessive pronoun, inalienable subtype 2.

3. Lower Markham group: Only two of these languages have singular definite articles. They are Musom, which has *te,* and Duwet which has *ei* . It is likely that the Musom form is a borrowing from Yabêm *teŋ* 'one', indefinite article and it appears to have collapsed definite and indefinite marking to this form. The Duwet form is identical to the third singular focal pronoun in that language. All the languages of the Lower Markham group (as well as Middle Watut) mark plural human collective nouns with the third person plural focal pronoun. Reflexes of the comitative prepositon PMK **ro-* are not found in this context.

4. Labu marks both singular and plural nouns with Ø for definiteness. Labu has a marker used only with plural human nouns, *sôa*. This does not appear to be cognate with any forms in the other Markham languages.

RECONSTRUCTIONS OF DEFINITE MARKERS

TABLE 5.38: RECONSTRUCTIONS OF DEFINITE MARKERS

	DEF ART.S	DEF ART.P	DEF ART.P(Human)
PMK	-	-	**ro-s*
PUMK	**aro*	**arai*	**r(u,o)a-s*
PWT	Ø	Ø	**aru-Ø*
PLMK	Ø	Ø	**ci-s* (F:3P)

5.3.1.2 INDEFINITE MARKERS

In all the Markham languages, there are singular and plural indefinite markers. The indefinite singular marker is not equivalent to the numeral 'one' in any of the languages, but is glossed as 'a' The indefinite plural marker is glossed as 'some', and can also mean 'other'. The forms for 'a' and 'some' are tabulated below.

TABLE 5.39: SINGULAR AND PLURAL INDEFINITE MARKERS

	IND ART.S a	IND ART.P some
Adzera	*maŋan*	*fain*
Mari	*maŋan*	*(ha)hain*
Wampur	*maŋan*	*hain*
Sukurum	*maŋan*	*fen*
Sarasira	*maŋan*	*fen*
South Watut	*waŋin*	*fifi*
Middle Watut	*wiŋi*	*fai*
North Watut	*waŋe*	*hahai*
Wampar	*oŋan*	*fun*
Musom	*wenen*	*hun*
Duwet	*aren*	*arein*
Nafi	*wenen*	*refen*
Aribwaungg	*[w,m]enen*	*refen*
Aribwatsa	*weni*	*amoc*
Labu	*àni*	*akô*

There are four groups indicated by the forms used for singular and plural indefinite markers.

1. Upper Markham group: All mark singular with *maŋan* 'a'. This is possibly a form made up of *ma-* indefinite marker and *ŋan* third person pronominal marker. This is a form which is analogical to Adzera *ara-ŋan* third person singular pronoun, made up of definite marker *ara-* and a third person pronominal marker *ŋan*. The form *maŋan* can also be used as an interrogative pronoun meaning 'who?' or 'which?'

The indefinite plural markers are all reflexes of PUMK **fain* 'some'/'other'.

2. Watut group: All singular indefinite markers are reflexes of PWT **waŋi(n)*. This can also be an interrogative pronoun 'who?', 'what?' The plural forms are descended from Proto Watut **(fa)fai*, which is a reflex of POC **pai* 'some'. The reduplication of the syllable is a redundant means of marking plural. This also occurs in Mari whose reflex is *hahain*. The Watut languages are distinguished by loss of final PMK **-n* from the plural form, and from the singular form except in South Watut. This is a common reflex of the third person singular possessive pronoun suffix PMK **-n*.

3. Lower Markham group: The languages of the Lower Markham, excluding Wampar and Duwet, reflect PLMK **[m,w]enen* as singular indefinite marker. It is reconstructed as having *m* and *w* alternating because in Aribwaungg the two forms *wenen* and *menen* are equivalent alternants.

The plural forms are, except for those of Duwet and Aribwatsa, reflexes of PLMK **fen*. This reflects the regular sound correspondence of PMK **ai* which in PUMK becomes **ai;* PWT **ai;* PLMK **e*. In The Lower Markham group the Wampar and Musom reflexes of PLMK **e* as *u* are irregular.

4. Labu: The form for singular indefinite marker *ani* is cognate with the Lower Markham forms, and has been eroded by Labu's regular loss of initial and final consonsnts. The plural form is not cognate with the forms in any of the other Markham languages, nor is it cognate with the forms in the neighbouring Bukawa language *(daêsam, ŋatô* 'some'*)*.

RECONSTRUCTIONS OF INDEFINITE MARKERS

TABLE 5.40: RECONSTRUCTIONS OF INDEFINITE MARKERS

	IND ART.S	IND ART.P
POC		**pai + ña* P:3S
PMK	**[m,w]aŋan*	**fain*
PUMK	**maŋan*	**fain*
PWT	**waŋi(n)*	**(fa)fai*
PLMK	**[m,w]enen*	**fen*

5.3.2 SPACE/TIME DEICTIC MORPHEMES

In the languages of the Markham family, there are several possible ways of expressing a complex underlying psychology of time and space. The relative time-frame of any action is expressed differently in each language, and is marked mainly through the use of verbal prefixes and preverbal and postverbal particles. These are discussed below in 5.3.5 Verb phrase morphemes. Some aspects of time orientation and relative spatial concepts are expressed through the demonstrative adjectives and pronouns. These demonstrative morphemes are discussed in this section.

5.3.2.1. DEMONSTRATIVE ADJECTIVES

The demonstrative adjectives function in all the languages to mark the position of an object or action in space in relation to:

1. the personal focus or referent of the utterance;
2. the distance between the referee and the referent;
3. emphasis and definiteness of the utterance.

One, two, or all three of these functions may be encoded in the actual demonstrative being used in any one context. Any one language may have forms which express any or all of these functions. Each language has from two to four contrasting sets of demonstrative adjectives (see Table 5.41, below). Some of the languages have a separate demonstrative which marks definite location, contrasting with other forms in the same languages which mark indefinite or relative location. For example in Wampur, there are two demonstrative adjectives marking relative location of something being discussed, and contrasting with this there is also a very definite locational demonstrative which locates precisely the thing being discussed, for example:

ji gi -ba gi-yuŋ ni
F:1S S:- come S:-walk DEM.INDEF
I came (and) walked around here.

cf. *agi gi-su bu-ha-ran ʔa yuŋ -a makit ʔaʔi*
F:1IP S: -FUT REP-go-GER and walk -GER market DEM.DEF
We will go and walk around again in that (specific) market.

In the first example above, the demonstrative *ni* marks the location of the action less definitely than the demonstrative used in the second sentence, *ʔaʔi*. The latter form locates the action at a specific place, one particular market.

The minimum number of contrasting demonstrative sets in any language is two, as in Mari, where the demonstrative adjective *ani* 'close to speaker' contrasts with *anai* 'far from speaker'. The maximum number of contrasting sets is four, as for Adzera which contrasts *ani* 'close to speaker', *igi* 'near hearer', *aga* 'further away' and *ogo* 'very far away', 'already mentioned', 'long ago'. The Adzera demonstrative *ogo* marks relative distance from the speaker or focus of the action in either time or space, for example:

wa-fa gamp ogo
IMP-go village DEM
Go to that village over there (far away).

aga tafa -ŋʔ -gaŋʔ ogo i-mpai ani
F:1EP ancestor -P:1 -P:1 DEM S:-stay DEM
Our ancestors lived here.

In the first sentence, the demonstrative *ogo* indicates that the referent, 'village', is far away. In the second sentence *ogo* refers to the 'ancestors' who lived a long time ago.

In those languages which mark relative clauses by bracketing with a demonstrative, either one of the contrasting demonstratives may be used, as in Adzera, or a special form for that purpose may be used, for example as in Musom. The different forms of the demonstrative adjectives are tabulated below for all the Markham languages.

TABLE 5.41: DEMONSTRATIVE ADJECTIVES

	Near speaker	Near hearer	Further	Far away,	Def. Loc'n ref'd to.
	(Ref:1st)	(Ref:2nd)	(Ref:3rd)	(Ref:Indef)	
Adzera	*ani*	*igi*	*aga*	*ogo*	-
Mari	*[a]ni*[1]	-	-	*[a]nai*	-
Wampur	*[na]ni*[1]	-	-	*[nan]aga*	*ʔaʔi*
Sukurum	*an[i,a]*	-	-	*[og]o*	-
Sarasira	*[in]e*	*iŋgo*	*iŋga*	*i:ŋgo;ua*	*in[a,ai,i];i*
South Watut	*nana; [i]ani*	*[ana] iik*	*[i]awaʔ*	-	*ri [ani]*
Middle Watut	*[ana]e*	*[ana]igik*	*ana[i]gio*	-	*[a]na*
North Watut	*ene*	*ageʔ*	*ago*	-	*io*
Wampar	*[a]kani*	*kai*	*[o]kao*	-	-
Musom	*ani[ŋge]*	-	*anuŋgo;ana;o*	-	-
Duwet	*[a]ŋge*	*ra[ga,k];[a]ra[n]*	-	*o[ŋgo];iagaŋ*	*ana*
Nafi	*[i]ŋg[i]e*	*[na]ŋga*	*ŋg[w]o*	-	*ŋgah*
Aribwaungg	*[n]iŋge*	*[n]aŋga*	*[n]oŋgo*	-	-
Aribwatsa	*nige*	*naga*	*nogo*	-	-
Labu	*le[ne]*[2]	*lê[nê]*	*laê*	-	-

Notes:
1. Bracketed forms indicate optional morphemes in long and short forms (except in Labu: see 2. below). Semicolon indicates alternative forms.
2. *lene, lênê* are emphatic forms; *le, lê* are non-emphatic forms. *laê* is both emphatic and non-emphatic.

5.3.2.2 BRACKETING OF RELATIVE CLAUSE WITH DEMONSTRATIVE

Bracketing of relative clauses with demonstratives is a common practice among the languages of the Markham. For example, in South Watut, a demonstrative *tiŋga* can be split to bracket a relative clause, as follows:

Jek i- ra jiyaʔ ri naip a ti ra- gin afu ŋga
Jack S:3S- cut tree INSTR knife DEM S:1S -give DAT DEM
Jack cut the tree with the knife which I gave him.

In Nafi, one demonstrative, *ŋgah,* is used to mark the end rather than the beginning of relative clauses:

kafi siwu -n ŋi- mbak ŋgah ŋi- kapuŋ wom iŋgiŋg
woman husband -P:3 S:3PRES- die DEM S:3PRES- stay house only
A woman whose husband has died only stays in the house.

In some of the languages, e.g. South Watut, any demonstrative can be used, and the choice of form is determined by the context of the reference of the head noun (or noun being qualified). In some languages, e.g. Adzera, the third person referent form *igi* is used no matter what the referent of the head noun is. The forms used in this way are tabulated below.

TABLE 5.42: DEMONSTRATIVES USED FOR BRACKETING RELATIVE CLAUSES	
	DEM used
Adzera	*igi*
Mari	*gubua*
Wampur	*ua*
Sukurum	*ogo;u*
Sarasira	*bua*
South Watut	*ti* + CL + *ŋga*
Middle Watut	*ene;[i]gio;[a]ŋka*
North Watut	*ene ŋka*
Wampar	*uru* + CL +*i akau*
Musom	*te*
Duwet	*ana*
Nafi	*ŋgah*
Aribwaungg	*itin*
Aribwatsa	*Ø*
Labu	*lake*

RECONSTRUCTIONS OF DEMONSTRATIVE ADJECTIVES

TABLE 5.43: RECONSTRUCTIONS OF DEMONSTRATIVE ADJECTIVES					
	Near speaker	Near hearer	Further	Far away	LOC
	(Ref:1st)	(Ref:2nd)	(Ref:3rd)	(Ref:3rd)	(Ref:DEF)
POC	**ni*	**na*	**no*	**no*	**qi-ña*
PMK	**ni*	**na*	**no*	**no*	**i-na*
PUMK	**ani*	**i-gi*	**a-ga*	**o-go*	**na-i*
PWT	**ani*	**i-gik*	**a-go*	**a-go*	**i-an(a,i)*
PLMK	**[n]i-ŋge*	**[n]a-ŋga*	**[n]o-ŋgo*	**[n]o-ŋgo*	**ana*

The features of these forms which reflect demonstrative functions have been reconstructed. The reflexes of a limiter PMK **-ŋgV* 'only' which became accreted to the demonstrative forms has been reconstructed for all forms in Proto Lower Markham, and for all forms except the reflex of 'near speaker' in Proto Upper Markham and Proto Watut.

The demonstratives are reflexes of the POC set which contrasted **ni* 'near speaker', **na* 'near hearer' (which also served as common article), and **no* 'further away'. Changes in the paradigm have taken place and the positions reconstructible for POC have shifted in the Upper Markham and Watut systems, but have been retained in the Lower Markham systems.

The Proto Markham system is reconstructed as having had a three-way contrast between referents – 'near speaker' (first person referent), 'near hearer' (second person referent) and 'further away' (third person referent). Proto Upper Markham split **ni* to refer to both 'near speaker' and 'near hearer' with separate forms, and shifted and displaced **na*, whose reflexes mark 'further away' and **no* whose reflexes mark 'very far away'. Proto Watut has made a similar shift and is

reconstructed as having four separate forms. Wampar shares the innovations of the Watut languages. Proto Lower Markham retained the contrasts marked in the ancestral POC set.

5.3.2.3 DEMONSTRATIVE PRONOUNS

The demonstrative pronouns bear a formal resemblance to the demonstrative adjectives. In some languages the forms for demonstrative pronouns and adjectives are identical, with no marking to distinguish them from each other except context, for example in Aribwaungg. The referents contrasted in the pronoun sets are the same, in any language, as those contrasted in the demonstrative adjectives. The forms can have either a singular or a plural referent, except in Duwet and Nafi which have contrasting sets for singular and plural. The forms are tabulated below.

TABLE 5.44: DEMONSTRATIVE PRONOUNS

		Near speaker (Ref:1st)	Near hearer (Ref:2nd)	Further (Ref:3rd)	Far away (Ref:3rd)
Adzera		*nani*	*nigi*	*naga*	*nogo*
Mari		*nani*	-	-	*nai*
Wampur		*ijun i*[1]	-	-	*ijun na[n,g]a*
Sukurum		*nan[i,e]*[2]	-	-	*nogo*
Sarasira		*ina*	-	-	*iŋgo*
South Watut		*i ani*[3]	*ii*[4]	-	*i awaʔ*
Middle Watut		*ae*	-	*agio*	-
North Watut		*ene*	*ageʔ*	*ago*	-
Wampar		*[a]kani*	*kai*	*[o]kao*	*uru*[5]
Musom		*nani[ŋge]*	-	*nanu[ŋgo]*	-
Duwet	S.	*baŋge*	*bakaŋge*	*bakaŋgo*	-
	P.	*bagahiŋge*	*ba[gah]aŋgo*[6]	*bagahiŋgo*	-
Nafi	S.	*ŋge aŋgah*	*ŋga aŋgah*	*ŋgo aŋgah*	-
	P.	*yeh ŋgah*[7]	-	-	-
Aribwaungg		*niŋge*	*naŋga*	*noŋgo*	-
Aribwatsa		*nige*	*naga*	*nogo*	-
Labu		*ini-ne*[8]	*ini-lê*	-	-

Notes:

1. Wampur *ijun* 'seed', 'spirit', 'truth', 'essence' is used as third person pronominal form. It marks the demonstrative pronoun form as definite and emphatic.
2. Sukurum *nani* is used with realis mode, and *nane* with irrealis mode. These forms are echoed by use of particles *i* at end of realis sentences, *e* at end of irrealis sentences.
3. The locative preposition *i* is preposed to all the South Watut pronominal forms.
4. The form marking a second person reference overlaps with third person reference, and 'far away' (third person reference) overlaps with 'further' (third person reference).
5. Wampar indefinite demonstrative adjective *uru* marking 'far' reference is used here as pronoun. The Wampar demonstrative adjectives and pronouns have identical forms.
6. In Duwet, *baŋgo* is heard in fast speech, *bagahaŋgo* in careful speech.
7. Only one plural form is used for all personal references and distance references in Nafi.
8. Labu *ini-ne* marks 'emphatic', *ini-lê* 'non-emphatic' (Siegel 1984:92). It is possible that Siegel means 'definite/indefinite'.

The demonstrative pronouns have the same three underlying contrastive features in operation as the demonstrative adjectives, with a fourth referential feature of 'definite third person referent'. The pronouns refer to a definite entity with the underlying features of:

1. Personal;
2. Spatial;
3. Emphatic reference.

In each speech event containing a demonstrative pronoun there are three participants:

1. Speaker of the utterance

2. Hearer of the utterance 3. Entity being referred to

1. Personal reference – contrast is marked in the demonstrative forms according to where the entity is located in relation to the person of 1., 2. or 3. Thus demonstrative pronouns are marked as being 'near speaker', 'near hearer', or near a third person object, either close to the speaker or further away. Some of the languages also mark the demonstrative pronoun referent, ('3. entity being referred to') as being singular or plural number.

2. Spatial reference – contrast is marked in the forms according to how far the entity is from the speaker or the listener. The entity can be 'near speaker', 'further away (from the speaker)' or 'far away (from the speaker)'. Some languages do not distinguish between 'further away' and 'far away'.

3. Emphasis – this feature is also to do with definiteness. Some languages mark demonstrative pronouns for emphatic/non-emphatic.

Some of the languages exhibit a contrast in the demonstrative pronoun systems which is based on one feature only, which is the minimal number of contrasts encoded in these pronominal sets. Such languages are Mari, Sarasira and Wampur which contrast on the basis of distance from speaker only, and Labu which contrasts emphatic with non-emphatic only. Some languages contrast on the basis of two features, for example Adzera, South and North Watut which contrast both personal and spatial features. Duwet and Nafi contrast on the basis of three features – personal, number and spatial.

The demonstrative pronoun systems are reconstructed below.

TABLE 5.45: RECONSTRUCTIONS OF DEMONSTRATIVE PRONOUNS

	Near speaker	Near hearer	Further	Far away
POC	**ni*	**na*	**no*	**no*
PMK	**n-ani-ŋgi*	**n-(i,a)gi*	**n-anaŋga*	**n-inoŋgo*
PUMK	**n-ani*	**n-igi*	**n-aga*	**n-ogo*
PWT	**Ø-ani*	**Ø-igik*	**Ø-ago*	**Ø-ago*
PLMK	**n-iŋge*	**n-aŋga*	**n-oŋgo*	**n-oŋgo*

The plural forms found in Duwet and Nafi have not been taken into consideration for reconstruction as they appear to be a local innovation. As these two contrast singular and plural number in many aspects of their languages, it appears likely that the preoccupation with number has been generalised to all sets of nominal and pronominal forms.

The demonstrative pronouns provide a basis for grouping the languages. The groups are as follows:

1. Upper Markham group: all except Adzera show a simplified system of contrasts in the demonstrative pronouns, contrasting only two relative distances from speaker – 'near' and 'far'. Adzera has shifted an original three-way contrast to a four-way contrast. All the languages except Sarasira have reflexes of the third person pronominal prefix PMK **n-* on all forms. Wampur has substituted the pronominal marker *ijun* for the pronominal *n-*.

2. Watut group: none of the Watut languages reflect the pronominal marker PMK **n-*. Instead they mark the demonstrative pronouns with locative marker **i-* because location of the actors in Watut utterances appears to be more of concern than person or number. Wampar uses identical forms for demonstrative pronouns and adjectives and does not mark pronominal forms as being different. The forms are more closely related to the Watut forms than to the Lower Markham forms, so Wampar is grouped with the Watut languages for this feature.

3. Lower Markham group: these languages all exhibit reflexes of the pronominal marker PMK **n-*. Duwet and Nafi are subgrouped together as they share a distinction between singular and plural referent. Plural is marked in Duwet by a morpheme *-agah-* which is inserted between the pronominal marker *ba-* and the demonstrative morpheme. The plural particle is formally related to the plural possessive morpheme recorded for possessive pronouns like, for example, *ra-geis iəs* 'theirs' (IN). (Final *-s* alternates with *-h* in Duwet.) Nafi has one form which covers all plural referents, whatever the person reference is.

5.3.3 CONJUNCTIONS

Conjunctions in the Markham languages have co-ordinating functions, and can join two noun phrases or two verb phrases. The Markham languages have from two to four separate conjunctions, and they function to conjoin two NPs – 'and', 'or' – or two VPs – 'and', 'and then...', 'or', 'adversative'. These conjunctions are as follows:

TABLE 5.46: CONJUNCTIONS

	NP 'and' NP	VP 'and (then)'	VP 'or'	adversative
Adzera	*ru-t* (human) *da* (non-human)	*da*	*ma*	*da bicinta?*
Mari	*ka*	*ka*	*ma*	*in*
Wampur	*ʔa*	*ʔa*	*ma*	*ʔa bisaŋʔua*
Sukurum	*ra*	*gura*	*o*	*ra bisandon*
Sarasira	*te,ta* (human) *ra* (non-human)	*ra*	*o*	*ra*
South Watut	*aru*	*wana*	*ma*	*takanaŋg in*
Middle Watut	*oru*	*[k]a*	*ma*	*a*
North Watut	*-ro*	*a; aro; da*	*ma*	*Ø*
Wampar	*ari* (human) *da* (non-human)	*d[a]*	*ma*	*da*
Musom	*iri* (human) *da* (non-human)	*da*	*ma*	*da*

Table 5.46 continued...

...continued

TABLE 5.46: CONJUNCTIONS				
	NP 'and' NP	VP 'and (then)'	VP 'or'	adversative
Duwet	*mba*	*mba*	*ma*	*mbaʔ ran*
Nafi	*iri* (human) *nda* (non-human)	*nda*	*ma*	*nda aruh*
Aribwaungg	*inisin* (human) *iri* (non-human)	*a*	*ma*	*a*
Aribwatsa	*iri*	*[d]a*	*ma*	*a*
Labu	*sala* (human) *a* (non-human)	*ka* ('and') *[a]tê* ('and then')	*kê*	*tôgwatô mba*

The Markham languages clearly share several features in their co-ordination systems. These features are not isolated within groups, or shared merely by neighbouring languages. They are spread across the whole family. These common features are as follows:

1. The distinction between human and non-human noun phrases. Human noun phrases are conjoined by a comitative preposition, or prepositional verb which is a reflex of PMK **ro-* dative, comitative (see 5.2.2.7 Object pronoun suffixes, above, for a discussion of **ro-;* also see 5.3.4 Prepositional morphemes, below). This occurs in Adzera, all the Watut languages, and all the Lower Markham languages. In some of these languages the comitative preposition takes verbal subject pronoun prefixes agreeing with the subject, e.g. in the Watut languages.

Non-human noun phrases are joined by a different conjunction which is not derived from a verb, but is a simple conjunction. There are reflexes of three different forms for this conjunction – PMK **nda, *ka* and **mba.*

2. Verb phrases can be conjoined by one of two conjunctions meaning 'and'. One is a reflex of any one of the three conjunctions which conjoin non-human NPs. The other occurs in only two languages, North Watut and Labu, and means 'and then...'. It exists as a separate form from the conjunction just mentioned.

3. All the languages except Sukurum, Sarasira and Labu have a reflex of PMK **ma* 'or'. Sukurum and Sarasira have the form *o* for 'or', which may be a Tok Pisin borrowing. The Labu form is not cognate with the forms recorded for the other languages.

4. There are two main types of forms recorded for the adversative conjunction 'but'. One type is a form identical to the form for 'and' in those languages, which are Sarasira, Middle Watut, Wampar, Musom, Aribwaungg and Aribwatsa. The second type is a phrase combining the form for 'and' with the form for the numeral 'one'. Languages with this latter type are Adzera, Wampur, Sukurum, South Watut, Duwet, Nafi and Labu. North Watut exhibits *Ø* for 'but', the appositional sentences being in simple parataxis. Mari has the form *in,* which is a form of the oblique object marking preposition plus third person anaphoric pronoun object.

It is not possible to subgroup the Markham languages on the basis of their conjunction forms, because reflexes of the different types discussed above are scattered throughout the languages. However it is possible to reconstruct several forms for Proto Markham. These are presented in Table 5.47 below.

TABLE 5.47: RECONSTRUCTION OF CONJUNCTIONS	
	Proto Markham
NP(human) 'and' NP(human)	*(S:)-ro
NP(non-human) 'and' NP(non-human)	*nda, *ka
VP 'and' VP	*nda, *ka
NP 'or' NP, VP 'or' VP	*ma
VP 'but' VP	1. *nda, *ka, 2. 'and' + 'one'

5.3.4 PREPOSITIONAL MORPHEMES

The prepositions of the Markham languages are mostly descended from verbs, and some still retain their verbal features, taking verbal subject person pronoun markers, and being marked for tense, aspect etc. They thus become serialised verb constructions. In some languages, for example in Adzera, such a form can take verbal prefixes and thus act as a verb, and act as a preposition as well. All the languages have at least two prepositions with many functions. The two basic prepositions most commonly found are:

1. Preposition marking time, dative, comitative.
2. Preposition marking oblique functions of instrument, purpose, cause, benefactive .

After the two prepositions above, the next most common preposition differentiated is:

3. Locative

Locative may be further differentiated into two separate forms, one marking location of stationary objects, and another marking position of moving objects. The oblique object-marking functions may also be differentiated in some languages, using different prepositional forms to mark instrumental from other functions. Time, dative and comitative may also be differentiated by different forms.

As there are so many different possible prepositional forms in the Markham languages, I will tabulate them in two sets. Set 1 includes dative, comitative, and temporal. Set 2 includes locative (stationary and moving) and oblique object functions of instrumental, causal, purposive, referential and benefactive.

TABLE 5.48: PREPOSITIONAL MORPHEMES. SET 1			
	Dative	Comitative	Temporal
Adzera	*da; rut*[1]	*rut*	*i*
Mari	*i; wat*[1]	*wat*	*wat*
Wampur	*wat*	*wat*	*i*
Sukurum	*ta; ru[a]t*[1]	*ru[a]t*	*i*
Sarasira	*te,ta*[2]	*te,ta*	*i*
South Watut	*fu*	*fu;ru*[3]	*iri*
Middle Watut	*ofu, ofuc*[4]	*[o]ru; se*[5]	-
North Watut	*ho*[6]	*ro*[7]	*aro*

Table 5.48 continued...

continued...

TABLE 5.48: PREPOSITIONAL MORPHEMES. SET 1			
	Dative	Comitative	Temporal
Wampar	*[a]ri*	*[a]ri*	*iri*
Musom	*iri*	*iri*	*iri*
Duwet	*aɣ*	*aɣ*	*[a]na*
Nafi	*iri;a*[1]	*iri*	*ri-*
Aribwaungg	*iri;en*[1]	*iri*	*iri*
Aribwatsa	*iri*	*iri*	*iri*
Labu	*kô;ta*	*hi*	*ame; hêta*[8]

Notes:
1. Forms marked with 1 co-occur with certain verbs only – 'say', 'tell', 'give'.
2. In Sarasira *te* occurs after first and third person subjects, *ta* after second person subject.
3. *fu* is used before moving objects, *ru* before stationary objects.
4. *ofu-Ø* occurs before singular object, *ofu-c* before plural object.
5. *oru* occurs as NP *oru* NP, and clause final with incorporated object. *se* occurs after verb stem, before object.
6. As a verb, *a-ho* is used with first and second person subjects, *e-ho* after third person subjects.
7. As for 6., *a-ro* occurs with first and second person subjects, *e-ro* with third person subjects.
8. In Labu *ame* means 'until', *hêta* 'during', 'at the time of'.

TABLE 5.49: PREPOSITIONAL MORPHEMES. SET 2					
(I=Instrument, P=Purposive, C=Causal, T=Transitive, R=Referential)					
	LOC(stat)	LOC(moving)	OBL1	OBL2	BEN
Adzera	*i*	*i*	*i*	*i*	*i*
Mari	*i*	*i*	*i*	*i*	*wat*
Wampur	*i*	*i*	*i*(I)	*gi*(P,C,T)	*gi*
Sukurum	*i*	*i*	*i*(I,C,P)	*gi*(R)	*gi*
Sarasira	*ibi*	*i;ruat*[1]	*gi*	*gi*	*ruat*
South Watut	*iri*	*iri*	*iri*(I,C)	*in*(P,C,T)	*ci*
Middle Watut	*ana*	*ana*	*ana*(I)	*[a]gen*(P,C,T)	*œ*
North Watut	*inaʔ*	*isi*	*inaʔ*(I)	*igi*(P,C,R)	*igi*
Wampar	*[a]ri*	*ea;en*[2]	*en*	*en*	*en*
Musom	*e*	*ena*	*en*	*en*	*en*
Duwet	*wia*	*aɣa*	*aɣa*	*aɣa*	*[a]ta*
Nafi	*a*	*a*	*a*	*a*	*a*
Aribwaungg	*Ø*	*en*	*en*	*en*	*en*
Aribwatsa	*Ø*	*Ø*	*en*	*en*	*en*
Labu	*ta*	*kô*	*kô*(I)	*kô mba*(P,C,R)	*kô*

Notes:
1. *i* marks location of moving object, *ruat* marks movement towards object (cf. benefactive).
2. *ea* means 'into', *en* marks moving object.

The Markham languages fall into four groups based on the distribution and forms of the prepositions. It seems to be most useful to discuss the groups according to which forms they, as a group, appear to consider a conceptual unit.

1. Upper Markham group: all the languages of this group except Sarasira use one form derived from the comitative verb PUMK **rua-t* 'accompany, be with' as dative and comitative. Mari and Sarasira also use a reflex of this form to mark benefactive. This preposition still retains its verbal functions in all five of these languages. The Sarasira dative/comitative preposition *te,ta* is cognate with the Adzera alternative dative preposition *da,* but in Sarasira has properties of a verb. All five languages use the one form, *i,* a reflex of POC **qi* locative, to mark temporal and locative. The Adzera and Mari mark all the oblique functions of instrument, purposive, causal and referential with *i;* Wampur, Sukurum and Sarasira use a form, *gi,* derived from the same source as *i* instrumental, a reflex of POC **kini-* instrument, refective to mark these latter functions. Benefactive is marked as being the same as dative and comitative in Mari and Sarasira, and as being equivalent to other oblique functions in Adzera, Wampur and Sukurum.

2. Watut group: South Watut shares the Upper Markham bracketing of dative and comitative with one form. In the Watut languages the form is *fu* which is derived from the comitative verb *-fu* 'accompany, be with'. It has verbal properties in this context, and takes subject pronoun prefixes which agree with the person of the subject. Middle and North Watut have this form as well, as dative preposition but mark comitative with a different form. All three mark comitative with a form *ru* related to the Upper Markham PUMK **ruat* dative/comitative. This also has verbal properties in this context. Like the Upper Markham group, South and Middle Watut do not differentiate the functions of temporal, locative, and the oblique function of instrumental. They are all marked with one prepositional form, *iri* in South Watut and *ana* in Middle Watut. North Watut, however, diverges from the others in having different prepositional forms to mark temporal, locative (stationary), locative (moving), instrumental, and one form for purposive, causal, referential and benefactive.

3. Lower Markham group: these languages, including Wampar, use one preposition *iri,* which is the same in all the languages except Duwet, to mark dative, comitative, and temporal. Another form *en* cognate in all languages except Duwet and Nafi, is used to mark all other prepositional functions except locative. Duwet and Nafi use the form *a(ya)* for these functions. Locative is not marked by a preposition in Aribwaungg and Aribwatsa, and is differentiated in the other languages into location of stationary object and location of moving object. Wampar further distinguishes movement towards an object.

4. Labu: some of the prepositions used in Labu are cognate with those of the Watut and Upper Markham languages, and share a similar function. These are *hi* comitative, which is cognate with PWT **fu* comitative and is also a verb meaning 'accompany, be with', and *ta* which is cognate with Adzera *da,* Sarasira *ta,* and marks dative. The other prepositions *kô* dative, locative (moving) *ta* locative (stationary), *ame, hêta* temporal, *kô* instrumental, benefactive, and *kô mba* oblique object are not derived from the same source as the Markham forms for oblique functions, POC **kini,* but from verbs of motion *-kô* 'go, move to', *-ta* 'sit', 'go to', 'be situated at', *eme* 'come' and from the verb (Class 2) *-kô* 'do', 'make' for the instrumental preposition (Siegel 1984:117). The bracketing together of prepositional functions is different for Labu, as are most of the verbal sources for the prepositions.

The verbal derivation of most of the Markham prepositions is still evident in that some, particularly the dative, comitative and benefactive markers still take normal verbal prefixes marking person of subject. Some take verbal enclitics to mark number of the object. The forms for the dative/comitative prepositions in the Watut languages, and in Labu may be reflexes of POC prepositional verb **pani-* dative, motion to an animate being which has been reconstructed by Pawley (1973:144). The forms marking oblique functions, however, do not take verbal morphology in any of the languages, except

to take a third person prepositional object enclitic PMK *-n*. These prepositions are reflexes of the POC prepositional verb **kini-*. The Markham reflexes have all lost POC final **-i*, which Pawley suggests may have been a separate transitive suffix, and appear to have interpreted the now-final *-n* as a third person anaphoric object. The form of this object is identical to the form used to mark third person pronoun possessive suffix. When an object that is not third person pronoun is used, the reflected form loses *-n* in the Upper Markham and Watut languages but retains it before the object in the Lower Markham subgroup. This is reminiscent of the form of the third person pronoun possessive suffix in the Watut languages, whose reflex is PWT **-Ø*.

The prepositional forms deriving from POC **kini* discussed above which mark oblique functions of a verb have merged, in some languages, with the reflexes of the POC locative preposition **(q)i* marking stable position (Pawley 1973:147). The reflexes of this form in the Upper Markham languages is PUMK **i* locative. In two of the Watut languages and two of the Lower Markham languages the reflex is derived from **(q)i*, with other markers accreted. Also the location markers which are accreted to the demonstrative forms are also reflexes of POC **(q)i* locative. These reflexes can be considered as having different origins, and as being different but homophonous forms because the locative markers descended from **(q)i* never take the third person anaphoric object enclitic, whereas the oblique markers descended from POC **kini* do.

5.3.5 VERB PHRASE MORPHEMES

In section 5.2.2.6 Subject pronoun prefixes, above, I discussed the prefixes which are attached to verb bases to show the person and number of the preceding subject. In the present section I will discuss other morphemes which are arranged around the verb base, and which modify the base in terms of tense, aspect and mood. Many of these morphemes are prefixes, as in the case of tense and mood markers; in some languages, preverbal particles indicate tense and mood of the verb. Other morphemes which will be considered are postverbal particles marking aspect and other functions of the verb.

In some of the Markham languages, particularly those of the Watut subgroup, the subject pronoun prefixes have fused with tense and mood markers, resulting in portmanteau morphemes whose constituent parts can only with difficulty now be separated. Some languages, for example the Upper Markham group, have eroded a previously existing system of subject and tense/mood marking to such an extent that the ancestral forms can only be reconstructed by analogy with systems attested in their neighbours' languages, and by using clues found in a few living languages which have preserved remnants of an older pattern. With this erosion of the old pattern of subject and tense/mood marking goes a complication within the new tense/aspect/mood marking. This is evident for example in the many tense/aspect/mood prefix forms found in Adzera, and in the proliferation of preverbal particles in Wampar.

5.3.5.1 TENSE/ASPECT/MOOD MARKING

5.3.5.1.1 TENSE

The groups of the Markham languages differ according to the perceptions of time upon which they base their tense marking.

The Upper Markham languages contrast realis, that is events which are perceived to have actually happened or are happening now, with irrealis, that is, events which are perceived to have not yet happened, are about to happen, may possibly happen or will definitely not happen. This irrealis is what Dempwolff referred to as 'Modus imaginativus', the mood of the imagination. Within realis, which is marked by the all-purpose prefix *(g)i-* in the Upper Markham languages, present and past tense are distinguished, and past is marked by postverbal particles except for Sarasira where it is marked by *ga-*, and far past by *i-*. Future, potential, negative, imperative, continuous, hortative and inceptive are all indicated by verbal prefixes. Other aspectual marking, for completive and resultative, is marked by postverbal particles.

The Watut group contrast future with non-future, through the verb prefixes. Non-future includes both past and present time. This is differentiated using the verb prefixes in South Watut, however in the other two languages past and present are contrasted through the use of postverbal completive particles marking past tense or completed action. Negative, declarative and interrogative moods are also contrasted in all three languages through the verb prefixes.

In the Lower Markham group the tenses contrasted in the verb prefixes are past and non-past. In some of the languages, Aribwaungg, Musom and Aribwatsa, future (as a subdivision of non-past) is also contrasted by alternation of consonants in the verb prefixes. In those languages which do not differentiate future through the prefixes, a future marker is used before the non-past prefix. Musom uses both methods, marking future with both a future preverbal particle and a future-marking consonant on the prefix. Nafi, Musom and Duwet further differentiate between definite and indefinite or potential future, using preverbal particles to mark the difference. Labu also marks this distinction through its preverbal particles.

The particles and prefixes which mark the tense of verbs are tabulated below. The Table is split into three parts for ease of presentation. Prefixes are written as Prefix-VR, suffixes as VR-Suffix, preverbal particles as Particle + VR, and postverbal particles as VR + Particle.

TABLE 5.50.1: TENSE-MARKING MORPHEMES: UPPER MARKHAM

	FUTURE	PRESENT	PAST
Adzera	*[m,b,]uŋʔa*-VR[1] *maʔa*-VR[2] *gi-su* + VR-*dan*[3]	*[g]i*-VR	*[g]i*-VR + *sib*
Mari	*ya*-VR-*[ɣ]aiaŋ* *gi-ni* + VR-*[ɣ]aia*[4]	*gi-,ga*-VR	*gi-, ga*-VR + *sib*
Wampur	*gi-su* +VR-*ran*	*gi*-VR	*gi*-VR + *sib*
Sukurum	*su*-VR-*ian* + *e* *gi-su* + VR-*ian*[5]	*gi*-VR	*gi*-VR + *sib*
Sarasira	*si*-VR-*can* + *i* *gi-su* + *i* + VR-*can*[6]	*gi*-VR	*ga*-VR + *sib*

Notes:
1. *muŋʔa-* ~ *buŋʔa-* in some Adzera dialects.
2. *maʔa-* is from the Yarus dialect of Adzera.
3. *gi-su* + VR-*dan* is from the Tsuma-gorun dialect of Adzera.
4. Mari *gi-ni* + VR-*[ɣ]aiaŋ* is intentional future.
5. Sukurum *gi-su* + VR-*ian* is intentional future.
6. Sarasira *gi-su* + *i* + VR-*can* is intentional future.

TABLE 5.50.2: TENSE-MARKING MORPHEMES: WATUT

	FUTURE		PRESENT		PAST		
SWT	1.*e.[y,r]ama-;*	*arama-*	*ya-,ra-;*	*ara-*	*rimi-;*	*ami-*	
	1.*i.-*	*gama-*	-	*g[i,a]ra-*		*-gimi+nduk*	
	2.*mwa-;*	*mama-*	*ru-;*	*mara-*	*mu-;*	*mamu-*	
	3.*ma-;*	*ŋama-*	*i-;*	*ŋari-*	*mi-;*	*ŋami-*	
MWT	1.*e. eram[a,o]-;*	*aram[a,o]-*	*era-;*	*ara-*			
	1.*i.-*	*garam[o,a]-*	-	*gara-*			
	2.*or[o,u]m[o,u]-;*	*maram[o,u]-*	*r[o,u]-;*	*mar[o,u]-*	VR	+	*nontuk*
	3.*r[e,i]m[e,i]-*		*r[e,i]-*		VR	+	*ece*[1]
NWT	1.*e.ana-;*	*ŋana-*	*da-;*	*ŋada-*			
	1.*i.-*	*ŋan[e,i]-*	-	*ŋadi-*	VR	+	*jumpiŋ*
G.FUT	2.*m[a,e]-;*	*mam[a,u]-*	*d[u,o]-;*	*mada-*	VR	+	*ici*[1]
	3.*m[i,e]-*		*d[i,e]-*				
	1.*e.dama-;*	*ŋadama-*					
I.FUT	1.*i.-*	*ŋad[i,e]ma-*					
	2.*d[u,o]m[u,o]-;*	*madama-*					
	3.*d[i,e]m[i,e]-*						

Notes:

1. These completive particles mean 'completely finished', and can occur either alone, alternating with another preceding particle, or can occur after another particle as an intensifier.

TABLE 5.50.3: TENSE-MARKING MORPHEMES: LOWER MARKHAM

	FUTURE		PRESENT	PAST	
WPA	G.FUT:	*bajin* + Ø-S:-VR	Ø-S:-VR	*w*-S:-VR	+ *raun*
	I.FUT:	*ban* + Ø-S:-VR			+ *ece*[2]
MSM	D:FUT:	*bo-ŋ*-S:-VR	Ø-S:-VR	*g*-S:-VR	+ *apun*
	IN.FUT:	*bi-ŋ*-S:-VR			+ *kici*[2]
DWT	D.FUT:	*mbaʔ* + *ŋ*-S:-VR	*ŋ*-S:-VR	*ŋg*-S:-VR	+ *siʔ*
	IN.FUT:	*mbiʔ* + *ŋ*-S:-VR			+*kisai*[2]
NFI	D.FUT:	*mbana* + *ŋ*-S:-VR	*ŋ*-S:-VR	*ŋg*-S:-VR	+ *apun*
	IN.FUT:	*mba* + *ŋ*-S:-VR			+ *kisin*[2]
AWG		*pa* + *ŋ*-S:-VR	Ø-S:-VR	*k*-S:-VR	+ *raun*
					+ *ici*[2]
ARB		*ba* + *ŋ*-S:-VR	Ø-S:-VR	Ø-S:-VR	+ *raun*
					+ *ici*[2]
LAB		*ŋgwa* + Ns-S:-VR	Ns-S:-VR	C-S:-VR	+ *pasô*
					+ *kêsê*[2]

Notes:

1. In the table above, S: = 1st person: *a-*
   2nd person: *u-,o-*
   3rd person: *i-,e-*
   except in Labu which has vowel harmony between S: and verb roots.
2. All these completive particles mean 'completely finished', and can occur either alone, alternating with another preceding particle, or can occur after a preceding particle as an intensifier.

Tense marking will be discussed and compared below according to four groups.

Upper Markham group: As stated above, the languages of this group contrast realis, which includes present and past, with irrealis, which includes future, potential, negative, and contrary-to-fact. These tenses or moods are marked by verbal prefixes.

Future tense is marked in all the languages of the group by prefixes which are derived from verbs. The most generally used Adzera prefix *buŋʔa-* future, alternates with *muŋʔa-* in some dialects. This is possibly derived from the verb *-muŋʔ* 'go ahead, go before', a reflex of POC **muqa* 'before', combined with an additional prefix *a-*. According to Dempwolff (c.1928:16) the Adzera prefixes which contain the vowel *a-* mark irrealis (and include, besides future, *ma-* potential, *da-* contrary-to-fact) and are in opposition to those which contain *i-* which indicate realis. Another future prefix *maʔa-* is found in the Yarus dialect.

The most common method of indicating future in Mari, Wampur, Sukurum and Sarasira, and in one dialect of Adzera , is through a serial verb construction, or the relic of a serial verb construction using the verb *-so* 'become', 'grow'. The different stages in the development of this future-marking can be exemplified from the languages. The development was as follows:

Stage 1: Serialisation of *-so + main verb,* and main verb becomes subordinated through suffixing of gerundive suffix. This is exemplified in the Tsumanggorun dialect of Adzera, and in Wampur:

1. ADZ (Tsu):	*ji*	*gi-su*	*fa*	*-da*	*gum*
	F:1S	S:-become	go	-GER	garden
	I will go to the garden.				
2. WPU:	*ji*	*gi- su*	*ha*	*-ra*	*gum*
	F:1S	S: -become	go	-GER	garden
	I will go to the garden.				

Stage 2: Movement of *-so* from verb status to prefix status by losing the present tense marker *gi-*, and becoming procliticised to the following verb. The subordinating gerundive suffix is retained and becomes part of the future-marking construction. An unambiguous marker of irrealis may be added to the whole phrase. This is exemplified in Sukurum:

3. SKM:	*si*	*su*	*-fa*	*-ia*	*gum*	*e*
	F:1S	FUT	-go	-GER	garden	IRR
	I will go to the garden.					

Stage 3: Slight phonological change of the prefix to disambiguate it from the form of the verb; the verb is retained in its original form as a verb base in other contexts. This is exemplified in Sarasira. There is a further change in the prefix, and it is no longer recognisable as being derived from the verb *-so,* for example in Mari (where *so- > su- > si- > yi- > yi-a > ya-*).

4. SRA:	*ci*	*si-*	*ha*	*-ca*	*gum*	*i*
	F:1S	FUT-	go	-GER	garden	IRR
	I will go to the garden.					
5. MRI:	*zi*	*ya-*	*ha*	*-gaiaŋ*		
	F:1S	FUT-	go	-GER		
	I will go.					

Stage 4: The subordinating gerundive suffix is dropped in certain contexts, and the prefix achieves full prefix status. For example, in Mari the gerundive is only retained when (a) the object of a transitive verb is a third person pronoun, (b) the verb is intransitive and is the second verb in a serial construction, or (c) either (a) or (b) end a sentence. Otherwise the gerundive suffix is dropped, for example:

6. MRI:

zi	*ya-*	*kab*	*kirigiab*	*bisinta*	*tak*
F:1S	FUT-	distribute	betel nut	one	only

I will distribute only a few betel nuts.

7. MRI:

agua	*gi-*	*ni*	*ya-*	*mpai*	*-aiaŋ*
F:2S	S:	-want	FUT-	stay	-GER

Do you want to stay ?

Stage 5: There occurs a parallel development of a structure expressing desiderative, whose tense is also future, using the verb *-so* as 'want', 'intend', 'like'. This has occurred in Sukurum and Sarasira. The verb *-so* may be replaced with other verbs, for example *-ni* 'say', 'intend', 'want' as in Adzera and Mari.

8. SKM:

si	*gi-*	*su*	*fa*	*-ia*	*Sarasira*	*e*
F:1S	S:-	intend	go	-GER	Sarasira	IRR

I intend to go to Sarasira.

9. ADZ:

ji	*i-*	*ni*	*fa*	*-da*	*gum*
F:1S	S:-	intend	go	-GER	garden

I intend to go to the garden.

Thus the process of a verb becoming a prefix is exemplified in all its stages from the languages which have participated in the innovation. It is likely that the future prefix form used in Adzera, with the irrealis *a-* prefix, is an older form which has been retained from an ancestral Oceanic language. According to Ross (1986) a future or irrealis verb prefix **na-* with its alternant **a-* can be reconstructed for Proto Western Oceanic. It would appear from the Markham data that such a morpheme was incorporated with preceding forms to become a portmanteau morpheme, such as the Adzera future prefix *muŋʔ-a-* and even the Mari future marker *ya-*. This will be discussed below as well, for the Lower Markham group and for Labu.

Non-future marking in these languages does not differentiate past from non-past tense in the prefixes, except in Sarasira. In all five languages past completive is marked by a postverbal completive particle, of which these languages have several alternative forms. Past and present, for all persons and numbers of subject, both take the prefix *[g]i-* (Sarasira has *ga-* past). It appears that at some stage in their common history these languages evolved a system of marking tense with vowel alternation, from a system that marked person of subject with vowel alternation. (For explanation of the underlying subject person marking system, see 5.2.2.6 Subject pronoun prefixes, above.) Subject person marking (which is marked by the subject nouns or pronouns anyway) became redundant, and tense marking took over some of the older contrasts. The former tense contrast marked by consonant alternation, which is reconstructible for the Lower Markham, Watut and Labu languages was eroded in the Upper Markham languages until only the past marker, *gV-* was generalised to all non-future (or realis) tenses. Only Sarasira retains a relic of this in its contrast of past *ga-*, present *gi-*, and far past *i-*.

Watut group: The Watut languages have a set of complex tense/mood marking prefixes which are fused with the subject pronoun prefixes into portmanteau morphemes. However regular sets of person/number marking morphemes can be extracted, and a set reconstructed for the group (see Table 5.50.2 above). What is left is an alternation of CV syllables to mark tense and mood. The main opposition in tense marking is between future and non-future, as in the Upper Markham group. As in the Upper Markham group past and present are distinguished only by the addition of a completive particle after the non-future marked verb (except in South Watut which has incorporated another contrasting syllable to differentiate past and present, although past is still marked with a completive particle after the verb). The form of the future-marking syllable is PWT **-mV-*, and the non-future is marked with PWT **-ØV-*. However it is almost impossible to untangle the tense/mood marking components of these prefixes from the subject-marking components.

Lower Markham group: The languages of this group mark contrasts in tense differently to those of the Watut and Upper Markham groups. Here the basic opposition is between past and non-past, which is marked by alternation of consonants which occur before the subject pronoun prefixes. In Musom, Aribwaungg and Aribwatsa there is a further opposition marked by consonant alternation between future, and present which is marked by *Ø-*. The basic underlying contrast is between reflexes of PLMK **ŋg-* past and PLMK **ŋ-* non-past. Future is marked by a preverbal particle of the form PLMK **mba(C)* definite future, which may be derived from the POC future marker **ba,* and occurring before the non-past prefix PLMK **ŋ-*. Some of the languages further differentiate between definite and indefinite future, using contrasting preverbal particles of the form PLMK **mbi(C)* indefinite future before the non-past prefix **ŋ-*. The forms of these particles used in Wampar are cognate with those of the Lower Markham group.

Labu also contrasts past and non-past. Irrealis or future is marked by a preverbal particle, *ŋgwa.* This is apparently not cognate with the forms found in the Lower Markham languages. However it may have been derived by the same process of incorporation of PWO **-na-* with a preceding morpheme. Past completive is marked with postverbal particles, some of which are cognate with the forms recorded for other Lower Markham languages. The underlying contrastive tense marking system is clearly related to that of the Lower Markham languages, although the consonants which alternate to mark the contrast have been changed by Labu's complex consonant and vowel harmony between roots and affixes.

Below are reconstructions of tense-marking morphemes in the Markham languages.

TABLE 5.51: RECONSTRUCTIONS OF TENSE-MARKING MORPHEMES

	FUTURE	PRESENT	PAST
PMK	*FUT + Ns-S:-VR **mba + ŋ-S:-VR*	*Ns-S:-VR	*C-S:-VR + COM
PUMK	**-so + VR_2	**gi-,ga-VR	**gi-,ga-VR + COM
PWT	**mV-S:-VR	**ØV-S:-VR	**ØV-S:-VR+ COM
PLMK	**mba(C)²+ ŋ-S:-VR **mbi(C)² + ŋ-S:-VR*	**ŋ-S:-VR	**ŋg-S:-VR + COM
Pre-LAB	*ŋgwa* + Ns-S:-VR	Ns-S:-VR	C-S:-VR + COM

Notes:

1. In the Table above, S:= Subject Pronoun Prefix; VR= Verb Root; V=Vowel; Ns=Nasal; C= Non-Nasal Consonant; COM=Completive Particle.

2. **mba(C)* marks definite future and **mbi(C)* contrasts with it and marks indefinite future in Proto Lower Markham.

The Pre-Labu system above shares many features with Proto Lower Markham. The initial sounds cannot now be reconstructed, except as non-specified nasal or non-nasal consonant. Also, the vowels for the Proto Watut prefixes cannot be identified precisely because of the fusion of prefixes in the past, and because of harmony which occurs between the vowels of the prefixes and the verb roots.

Purely tense marking morphemes are difficult to reconstruct because, in some languages, they form portmanteau forms as a result of fusion in the past with mood-marking morphemes. For example, in the three Watut languages, sets of morphemes marking declarative, interrogative and negative moods cross over with each other between the languages, and also cross over with sets marking future and non-future tenses. The aspects and moods which are contrasted are discussed in the next section.

5.3.5.1.2 ASPECT

The aspects of verbs which are marked and contrasted in the Markham languages are continuous, completive, repetitive/habitual/iterative/frequentive, and inceptive. In some languages these aspects are marked by verb prefixes, in others by preverbal or postverbal particles. Not all languages mark for all the possible contrasts. The aspectual marking systems are tabulated below. Prefixes are indicated by Prefix-VR, Particles by Particle + VP, or VP + Particle, serial verb constructions by VP + VP_2 or VP_2 + VP.

TABLE 5.52.1: ASPECTUAL MARKERS: UPPER MARKHAM

	CONTINUOUS	COMPLETIVE	REPET TIVE
Adzera	*ro(ŋʔ)*-VR	VP+COM	*bu*-VR; *-tip* + VP_2
Mari	*ru*-VR	VP+COM	*-tip*+ VP_2
Wampur	*ru*-VR	VP+COM	*bu*-VR
Sukurum	*ro*(P:1,2,3)-VR	*taku*+VP+COM	*bu*-VR; *-tip*+VP_2
Sarasira	*ro*(P:1,2,3)-VR	*ga-, i*-VR+COM	*-tip* + VP_2

TABLE 5.52.2: ASPECTUAL MARKERS: WATUT

	CONTINUOUS	COMPLETIVE	REPETITIVE
SWT	T-S:-DIR-VR+DIR	PAST-S:-*rasura*-VR+COM	VP+*usus*
MWT	*k(o,u)* +T-S:-DIR-VR+DIR	PAST-S:-VR+COM	*-tos*+VP_2
NWT	*pwataʔ* +T-S:-DIR-VR+DIR	PAST-S:-VR+COM	*-tus*+VP_2
WPA	*ter, pat* +T-S:-DIR-VR+DIR	*pat* +PAST-S:-VR+COM	VP+*burid*

TABLE 5.52.3: ASPECTUAL MARKERS: LOWER MARKHAM

	CONT NUOUS	COMPLETIVE	REPETITIVE
MSM	*bute*+T-S:-VR+DIR+CON	PAST-S:-VR+COM	T-S:-VR+RPT
DWT	*awas*+T-S:-VR+DIR+CON	PAST-S:-VR+COM	*mbaʔsa*+T-S:-VR
NFI	*bute*+T-S:-VR+DIR+CON	PAST-S:-VR+COM	*mereŋ*+T-S:-VR+RPT
AWG	*puturon*+T-S:-VR+DIR+CON	PAST-S:-VR+COM	*-tus*+VR_2; VR+*firifiri*
ARB	T-S:-VR+DIR	PAST-S:-VR+COM	-
LAB	T-S:-VR+(DIR,CON)	PAST-S:-VR+COM	*-kadi*+VR_2

Note:
In the three tables above, T=tense marker, DIR=directional particle, CON=continuous particle, COM=completive particle, RPT=repetitive particle.

The aspectual contrasts are similar for the three groups above – between continuous, completive, and repetitive. Adzera and Mari in the Upper Markham group also distinguish inceptive, that is actions which have just now begun or have just now been finished. This is not tabulated because the feature is restricted to these two languages, and represents a purely local development.

The Upper Markham group: In these languages three basic aspects are contrasted, with a fourth in Adzera and Mari. Continuous in all five languages is marked by a verb prefix, declined for person of subject in Sukurum and Sarasira, using the possessive pronoun suffixes for inalienable possession to mark person. Adzera has a relic of this person-marking system in its *roŋʔ-* continuous, first person form which alternates with *ro-* to mark first person subject with continuous aspect, in some dialects. The prefixes in the five languages reflect a form identical to that of the reflexive pronoun base, reconstructed as PMK **rau-* reflexive pronoun (see 5.2.2.5 Reflexive pronouns, above). A verb marked for continuous aspect is optionally followed by a verb of direction, PMK **-fa* 'go', **-ba* 'come' or **-mba* 'stay' as second verb in a serial construction.

Completive aspect is always marked by one of several possible postverbal completive particles. In Sukurum there is a completive particle which occurs optionally before the verb, and in Sarasira the verb is marked by a past tense prefix, either *ga-* general past or *i-* far past.

Repetitive is marked in two ways in this group. A prefix, *bu-* marks repetition of the action in Adzera, Wampur and Sukurum. A serial verb construction can also mark repetitive, in Adzera, Mari, Sukurum and Sarasira. The verb used as first verb in the serial construction is a reflex of PUMK **-tip* 'repeat', 'do again', 'return'. Adzera and Sukurum use both methods, and can combine *bu-* with *-tip* as in, for example, Adzera:

i-	*bu-*	*tip*	*i-*	*ba*	*gamp*
S:-	REP-	return	S:-	come	village

He came back again to the village.

Watut group: For the marking of aspect, Wampar is included in this group, as it shares some features with the Watut languages. The Watut languages and Wampar mark continuous aspect with a preverbal particle which can be translated as 'still', and all have a prefix which comes after the subject pronoun prefix and before the verb root marking direction of the action. There are three direction prefixes, derived from three verbs – 'go', 'come' and 'stay'. It appears that they were once in serial constructions with the main verb as direction markers, and have evolved into prefixes. The direction marked by such a prefix is further reinforced by a serialised directional verb after the verb root. This second verb takes either full tense and subject marking, or, as in the case of North Watut, a separate set of subject pronoun prefixes for second verbs. Some of these directional second verbs are evolving into postverbal particles, unmarked by verb prefixes, for example the allative marker in all the Watut languages. This postverbal marker, of the form PWT **maʔ* allative derives from the verb PWT **-maʔ* 'come', but does not take any subject or tense markers.

Completive aspect in the Watut languages takes the same form as in Upper Markham languages. The verb is marked for past tense by sets of prefixes, and is followed by one of several possible completive particles. Only South Watut has a completive verb prefix which comes between the subject marking prefix and the verb root.

Repetitive aspect is marked in Middle and North Watut by a serial verb construction with the verb *-tus* 'repeat', 'return', 'do again' as the first verb. Both verbs take full tense/subject prefixes. South Watut marks repetitive with a postverbal particle *usus* which may be a reduplication of *-tus*. There are cognates of *-tus* 'repeat', 'return', 'do again' in the languages of the Lower Markham group.

Lower Markham group: Labu is included with this group for some features. The languages all mark continuous aspect with a preverbal particle (except for Labu which marks all aspects post-verbally). The direction of the action expressed in the verb is indicated by a directional verb used as second verb, and taking all tense and subject prefixes. The action of the verb may be further qualified by a postverbal particle, indicating duration of the action, or frequency of the action. Duwet indicates continuous or repetitive action through reduplication of the verb root. This is used in conjunction with preverbal and postverbal markers. Labu distinguishes between continuous static action and continuous non static action by using verb serialisation with the verb *-nda* 'stay' for the former, and a postverbal particle *papa* continuing action for the latter.

Completive aspect is indicated in all the languages including Labu by postverbal completive particles, combined with the past tense markers on the verb.

Repetitive aspect is indicated by using a postverbal particle meaning 'again', or 'repeatedly'. Duwet and Nafi have a preverbal particle marking repetitive aspect. Aribwaungg has two ways of marking repetitive, both similar to the ways used in Adzera. 'Repeatedly' is marked by a postverbal particle *firifiri,* and 'again' is marked by a serial verb construction with the verb *-tus* as second verb. Labu also uses two forms – a serial verb construction meaning 'again' with *-kadi* 'return' as first verb, and a postverbal particle *pepe* to indicate repetitive action.

The aspect marking of the Markham languages can be reconstructed as follows in the table below.

TABLE 5.53: RECONSTRUCTIONS OF ASPECT MARKING

	CONTINUOUS	COMPLETIVE	REPETITIVE
PMK	*CON + T/A-S:-VR+DIR	*PST-S:-VR+COM	*REP+T/A-S:-VR; *-VP(REP)+VP_2
PUMK	**ro*[P:1,2,3]-VR+ [DIR]	VR+COM	**bu*-VR; **-tip*+VP_2
PWT	**pwat[a]*+T/A-S:-DIR-VR+DIR	PST-S:-VR+COM	**-tus*+VP_2
PLMK	**bute*+T/A-S:-VR+DIR+CON	PST-S:-VR+COM	REP+T/A-S:-VR; -VP(REP)+V_2

5.3.5.1.3 MOOD

Mood involves 'attitudes on the part of the speaker towards the factual content of his utterance, e.g. uncertainty, definiteness, vagueness, possibility' (Crystal 1985:198). There are certain moods which are marked by all the Markham languages with verb morphemes, and which can be analysed and compared as a basis for subgrouping. These are potential, and imperative/hortative. Realis and irrealis have already been mentioned with respect to tense marking (see 5.3.5.1.1 Tense, above), and will not be considered here. Definiteness is marked in some languages in contrast to indefiniteness, usually through either tense prefixes or through demonstrative particles. Interrogative is marked through verb morphology in the Watut languages only, where one finds a special set of tense/mood/subject prefixes marking interrogative. Conditional and subjunctive are marked in several languages by preverbal particles, but in most languages this mood is indicated through a co-ordinate sentence structure, or by subordination of one sentence by another. Counter-factual mood is marked in several languages by preverbal morphology. Below are compared and tabulated the forms used to mark potential, imperative and hortative moods only. Imperative is marked for second person subjects only, hortative for first and third. Table 5.54 below is in three parts to facilitate presentation.

TABLE 5.54.1: MOOD-MARKING MORPHEMES: UPPER MARKHAM

	POTENTIAL	IMPERATIVE	HORTATIVE
Adzera	*ma*-VR	*wa*-VR	*na*-VR
Mari	FUT-VR	*wa*-VR	*na*-VR
Wampur	FUT-VR	S. *ya*-VR	1. VR-Part
		P. *Ø*-VR-GER	3. *gi*-VR-GER
Sukurum	*kwa*-VR + *o*	*wa*-VR	*na*-VR
Sarasira	*ki-na-ka*-VR	*wa*-	*na*-VR

TABLE 5.54.2: MOOD-MARKING MORPHEMES: WATUT

	POTENTIAL[1]			IMPERATIVE	HORTATIVE	
SWT	1E.	*[y,r]ama-;*	*arama-*	2S. *mwa-*	1E *[y,r]ama-;*	*arama-*
	1I.		*gama-*	2P. *mama-*	1I. *gama-*	
	2.	*mwa-;*	*mama-*		3. *ma-;*	*ŋama-*
	3.	*ma-;*	*ŋama-*			
MWT	1E.	*eram[a,o]-;*	*aram[a,o]-*	2S. *o-,u*-VR	1E. *ma*-VR; *ma*-VR	
	1I.		*garam[a,o,u,e]-*	2P. *ma[o,u]*-VR	1I. *ga*-VR	
	2.	*or[o,u]m[o,u]-;*	*maram[o,u]-*		3. *me-, [ri]mi-*	
	3.	*r[e,i]m[e,i]-*				
NWT	1E.	*dama-;*	*ŋadama-*	2S. *o-,u*-VR	FUT-VR+*ane*-[P:1,2,3]	
	1I.		*ŋadim[e,a]-*	2P. *ma*-VR		
	2.	*d[o,u]m[o,u]-;*	*madama-*			
	3.	*d[e,i]m[e,i]-*				

Notes:
1. The prefixes marking potential are identical to those marking future in the Watut languages.

TABLE 5.54.3: MOOD-MARKING MORPHEMES: LOWER MARKHAM

	POTENTIAL	IMPERATIVE	HORTATIVE
WPA	*bag*+S:-VR	*w(a)-o,u*-VR	*g*-S:-VR
MSM	*hori+ŋ*-S:-VR	*ŋ*-S:-VR	*ŋ*-S:-VR
DWT	*mbiʔ+ŋ*-S:-VR	S. *ŋ*-S:-VR	S. *ŋ*-S:-VR
		P. *maŋa*-VR	P. *maŋa*-VR
NFI	*mba+ŋ*-S:-VR	*ŋ*-S:-VR+*ndah*	*ŋ*-S:-VR+*ndah*
AWG	*pa+ŋ*-S:-VR	*ŋ*-S:-VR	*ŋ*-S:-VR
ARB	*ba+ŋ*-S:-VR	*ŋ*-S:-VR	*ŋ*-S:-VR
LAB	*ŋgwa*+IRR-S:-VR	S. *nô*-VR	S. *nô*-VR
		P. *mô*-VR	P. *mô*-VR

Upper Markham group: In these languages a distinction between potential, and imperative/hortative is marked by special verb prefixes, which cannot co-occur with reflexes of the realis prefix PUMK **gi-, ga-*. All contain the irrealis-marking prefix *a-*. Imperative and hortative are marked by different prefixes, *wa-* and *na-* respectively, which are the same for all the languages except Wampur. Subject is dropped before imperative, but is retained before hortative.

Watut group: Potential is not distinguished from future marking in any of these languages. Imperative occurs without subject, and the prefixes are marked for singular and plural subject. Hortative can co-occur with subject, and the prefixes are marked for person and number of the subject. South Watut marks all three moods as identical to future.

Lower Markham group: Potential in these languages is marked by a preverbal particle which co-occurs with irrealis prefix. In Duwet and Nafi the preverbal particle is identical with that for indefinite future. In Aribwaungg and Aribwatsa the preverbal particle is identical with that for definite future. In Wampar and Musom potential takes a different particle which contrasts with future particles. Wampar marks imperative with *w(a)-*, which may have been borrowed from neighbouring Adzera. Hortative can be marked with either *n-* dubitative with a question tag occurring sentence finally or with the verb prefix *g-* hortative. All the other languages use the irrealis prefix *ŋ-* to mark imperative and hortative, before the subject pronoun prefixes which are marked for person of subject. Nafi has a postverbal particle *ndah* which co-occurs with the future prefixes to mark imperative/hortative. Labu marks potential with the subordinating preverbal particle *mba,* followed by the irrealis prefix. Imperative and hortative in Labu are not distinguished from each other by the prefixes used, but number of subject is contrasted in these prefixes, which are *nô-* singular imperative/hortative and *mô-* plural imperative/hortative.

Below are reconstructed potential and imperative marking morphemes for the Markham languages.

TABLE 5.55: RECONSTRUCTIONS OF POTENTIAL AND IMPERATIVE MARKING

	POTENTIAL	IMPERATIVE	
PMK	**mba* + FUT	S.	**u-(a-)*VR
		P.	**ma-u-(a-)*VR
PUMK	**kwa-; *ma-*		**w-a-*VR
PWT	FUT	S.	**u-*VR
		P.	**ma-u-*VR
PLMK	**mba* + FUT		FUT

Table 5.55, above, reconstructs a separate potential marker for PMK which is the source of the marker **mba* definite future reconstructed in Table 5.51: Reconstructions of tense-marking morphemes, above, for Proto Lower Markham. The Proto Upper Markham forms for imperative can be analysed as deriving from *ua* which becomes *wa,* from a generalisation of PMK **u-, ku-* S:2S + PUMK **a-* irrealis prefix. The plural-marking **ma-* was lost in Upper Markham languages along with other person and number marking subject pronoun prefixes. It was retained in two of the Watut languages, but only in Duwet in the Lower Markham languages.

5.3.5.2 GERUNDIVE SUFFIX

All the languages of the Markham share a reflex of the POC nominalising suffix **-aŋa.* This suffix has been discussed in section 5.2.3 Attributive bases, above, in the context of nominalisation of stative verbs, which then become the head nominal of a possessive noun phrase. This suffix operates in that way in all the languages except Nafi, Duwet and Labu where its reflexes are found in fossilised form only (see 5.2.3 Attributive bases, above). The gerundive suffix is also affixed to verbs other than statives to make them gerundives, or verbal nouns. It can be used to subordinate a verb which is being governed by another verb or verb phrase, as in the case of relativisation, negation, or second verb of a serial verb construction. The forms of the suffix in the Markham languages are listed below.

TABLE 5.56: FORMS OF THE GERUNDIVE SUFFIX	
Adzera	*-dan*
Mari	*-gaiaŋ*
Wampur	*-ran*
Sukurum	*-ian*
Sarasira	*-can*
South Watut	*-iaŋ*
Middle Watut	*-ioŋ*
North Watut	*-iaŋ*
Wampar	*-eran*
Musom	*-caŋ*
Duwet	*(-aŋg)*
Nafi	*(-aŋg)*
Aribwaungg	*-aŋ*
Aribwatsa	*-aŋ*
Labu	*(-ia)*

TABLE 5.57: RECONSTRUCTION OF GERUNDIVE SUFFIX	
POC	**-aŋa*
PMK	**-aŋ*
PUMK	**-(C)an*
PWT	**-iaŋ*
PLMK	**-aŋg*

The Proto Markham form has been reconstructed without a consonant onset. This is because in two of the daughter languages, Proto Upper Markham and Proto Watut, the suffix began with a sound which did not reflect a part of the POC suffix, but was either an epenthetic sound between vowels, or was another suffix which has been absorbed. The former explanation seems more likely, because in all the living languages which exhibit a consonant onset, the sound is only realised when the preceding verb root ends with a vowel. When it ends with a consonant the suffix has a vowel onset. The Proto Upper Markham suffix ends with *-n*, which does not reflect Proto Markham **-ŋ*. This final PUMK **-n* may have replaced the original PMK **-ŋ* by analogy with the third person possessive suffix PMK **-n*. Because the suffix had the power to give its nominalised forms possessive functions, the two forms, PMK **-n* P:3S and PMK **-(a)ŋ* were merged in PUMK **-n*. Proto Lower Markham final **-ŋ* always has its homorganic stop *g* attached, whether the antecedent is PMK **-ŋ* or **-ŋg*. Most POC suffixes which were retained in the Markham languages lost final vowels. Thus the PMK reconstructed form is **-aŋ*.

5.3.5.3 RESULTATIVES

Resultatives have been defined by Siegel, referring to Labu, as those morphemes which 'follow the verb and indicate the result of the action of the verb, usually upon the object.' (Siegel 1984:103). They are also referred to by Bradshaw (1982a:37) as being common in languages of the Huon Gulf area such as Numbami, Iwal, Yabêm and Bukawa. They are distinguishable from adverbs, which mark time or frequency or manner of an action.

All the languages of the Markham have many resultatives, and the forms are often found to be cognate for particular etyma. Some of them can be traced to POC verbs, and they appear to have existed in earlier stages of the languages as second verbs in serial verb constructions. At some point in time they lost their verbal functions, losing the ability to take verbal morphology, and thus becoming postverbal independent morphemes. In some of the languages, certain resultatives have expanded their lexical meanings or are used idiomatically. In the Upper Markham languages some resultatives have had a suffix of completion added reflecting PUMK *-b completive, replacing final POC consonants.

Below are tabulated some of the more commonly-used resultatives in the Markham languages. Where it is known or identifiable, the POC verb which is the antecedent form is given.

TABLE 5.58: RESULTATIVES

	dead	finished	across, off	broken
POC	*punu(q) hit		*koso(p) cut off	
Adzera	*funub*	*sib*	*ujiab*	*[fa]farab*
Mari	*hunub*	*sib*	*kuciab*	*harab*
Wampur	*hunub*	*sib*	-	*haharab*
Sukurum	*funub*	*sib*	*usiab*	*fafarab*
Sarasira	*funub*	*sib*	-	*[fa]farab*
South Watut	*mar*	*nduk*	-	-
Middle Watut	*fono*	*nontuk; jompeŋ*	*ece*	-
North Watut	*hunu*	*jumpiŋ*	*ici?*	*?on*
Wampar	*fono*	*doŋop; raun*	*ece*	*fucun*
Musom	*hunu*	*apun; arus*	*kici*	*kipi*
Duwet	*miet*	*si?; areis*	*kisai*	*kipi*
Nafi	*funu*	*apun*	*kisin*	*kipi*
Aribwaungg	*funu*	*raun*	*ici*	*fucu*
Aribwatsa	*hunu*	*raun*	*ici*	-
Labu	*hônô*	*pasô;mêna;lê*	*kêsê*	*poso;tuu*

The most consistent set of cognate reflexes is of POC **punu(q)* 'hit' which is reflected as PMK **funu* 'dead'. It is interesting to note here that South Watut and Duwet have either retained or borrowed reflexes of POC **mate* 'die' as 'dead'

The Upper Markham languages all show reflexes of an innovative Proto Upper Markham suffix PUMK **-b*, which appears to mark completive. This has been encliticised to the base, and defines a postverbal modifier class. This suffix is no longer productive, and does not have any reflexes in the other Markham languages. Below are reconstructions of the most commonly used resultatives.

TABLE 5.59: RECONSTRUCTIONS OF RESULTATIVES

	dead	finished	across, off	broken
POC	**punu(q)* hit	-	**koso(p)* cut off	-
PMK	**funu*	-	**kuci*	-
PUMK	**funu-b*	**si-b*	**kucia-b*	**(fa)fara-b*
PWT	**funu*	**nduk;*jumpiŋ*	**ici*	-
PLMK	**funu*	**raun;*aruc*	**kici*	**fucu; *kipi*

5.4 NEGATION

Negation will be discussed under two headings: 5.4.1 Negation of noun phrase, and 5.4.2 Negation of verb phrase.

5.4.1 NEGATION OF NOUN PHRASE.

The negation of any noun phrase in the Markham languages is done through using a negative verb phrase after a noun phrase subject. The verb phrase consists of the negative verb, a reflex of PMK **-mak* 'not be', 'not do', 'no' with appropriate tense and subject pronoun prefixes affixed. Below are tabulated the forms used for negation of noun phrase, with the forms for simple negative 'no', which is a verb phrase using the verb 'not be, not do, no' with an ambient subject. The Proto Markham form is given first. The proto forms for the subgroups are not reconstructed as they are all the same.

TABLE 5.60: NEGATION OF NOUN PHRASE

	NP + Negative	no
PMK	NP + T/A-S:-**mak*	**i-mak*
Adzera	NP + *i-maʔ; namu; ura*[1]	*i-maʔ; namu; ura*
Mari	NP + *miah*	*miah*
Wampur	NP + *amaʔ; pait*	*amaʔ; pait*
Sukurum	NP + *mak*	*mak*
Sarasira	NP + *mak*	*mak*
South Watut	NP + *i-mak*	*i-mak*
Middle Watut	NP + *e-mak*	*e-mak*
North Watut	NP + *i-maʔ*	*i-maʔ*
Wampar	NP + *e-ma*	*e-ma*
Musom	NP + *mak*	*mak*
Duwet	NP + *amuaʔ*	*amuaʔ*
Nafi	NP + *mak*	*mak*
Aribwaungg	NP + *i-maʔ*	*i-maʔ*
Aribwatsa	NP + *i-maʔ*	*i-maʔ*
Labu	NP + *[ŋa-]ki*	*ŋa-ki*

Notes:
1. These Adzera forms for 'negative'/'no' are dialectal variants. The forms *namu* and *ura* are not verb bases.

Most of the languages exhibit reflexes of the Proto Markham negative verb **-mak*. Some languages, for example Mari and Duwet, no longer treat the form as a verb, and do not affix the root with the usual tense and subject prefixes.

5.4.2 NEGATION OF VERB PHRASE

Negation of the verb phrase in these languages is more complex than negation of the noun phrase, as discussed above. There are different methods of negating a verb depending on the tense and mood of the verb. Most languages can optionally employ more than one method for negating verb phrases, and may combine preverbal particles with postverbal particles, or negative prefixes with postverbal

particles. The forms are given below, and are tabulated separately for future tense, present/past tense and prohibitive.

TABLE 5.61: NEGATION OF VERB PHRASE: FUTURE TENSE

Adzera		*anuŋ?*	+	*i*-VR + *o*					
Mari[1]		*ma*	+	*ya*-VR + *amuk*					
Wampur[1]		*ma*	+	*gi-su* + VR-GER	+	*ama?*			
Sukurum[1]		*ma*	+	*su*-VR-GER	+	*e*			
Sarasira		*ma*	+	*gi-saŋ* + VR-GER	+	*e*			
South Watut[1]		FUT-S:-VR	+	*ra?*					
Middle Watut[2]		*kaŋe*	+	1E	*yam[e,a]-;*	*am[e,a]-*			
				1I.		*gam[e,a]-*	VR	+	*[a]na*
				2.	*m[e,a]-;*	*mam[a,u]-*			
				3.	*m[e,i]-*				
North Watut[2]		*oŋo?*	+	1E.	*ana-;*	*ŋana-*			
				1I.		*ŋan[i,e]-ma-*			
				2.	*[u,o]n[u,o]-ma;*	*mama-ma-*	VR	+	*ina?; ima?*
				3.	*[i,e]n[i,e]-ma-*				
Wampar[1]		*Ø*-S:-*mam*	+	VR-GER					
Musom[1]		*bo-,bi-ŋ-*		S:-VR	+	*da mak*			
Duwet[1]		*pa?* + *ŋ-*		S:-VR	+	*mba mua?*			
Nafi[1]	1,3.	*kara* + *ŋ-*		S:-VR					
	2.	*koro* + *ŋ-*		S:-VR					
Aribwaungg[1]		VP_1-GER	+	*ŋ-*	S:-*ma?*				
Aribwatsa[1]		*ŋ*-S:-VP_1	+	*i-ma?*					
Labu[1]		*wa* + T/A-		S:-VP_1	+	T/A-S:-*ki*			

Notes:
1. In all languages marked with [1] the forms of the prefixes used for negative future are identical with those used for future.
2. In the languages marked with [2] a special set of prefixes is used to mark negative future.
3. In those languages which are not marked with [1] or [2], the negative morphemes can co-occur with any tense-marking morphemes.

TABLE 5.62: NEGATION OF VERB PHRASE : PRESENT/PAST TENSE

Adzera		*anuŋ?*	+	*[g]i*-VR		+ *o*			
Mari		*ma*	+	*gi-,ga*-VR		+ *amuk*			
Wampur		*ma*	+	*gi*-VR		+ *ama?*			
Sukurum		*ma*	+	*gi*-VR		+ *e*			
Sarasira		*ma*	+	*gi-,ga-,i*-VR	+	*[ara]*			
South Watut		T/A-S:-VR				+ *ra?*			
Middle Watut		*kaŋe*	+	1E.	*ya[e]-;*	*[a,e]-*			
				1I.		*ga[e]-*	VR	+	*[a]na*
				2.	*[o,u]- ;*	*ma[u]-*			
				3.	*[e,i]-*				
North Watut		*oŋe?*	+	1E.	*ya-;*	*ŋa-*			
				1I.	*ŋi-*				
				2.	*[o,u]-;*	*ma-*	VR	+	*ina?; ima?*
				3.	*[Ø,i]-*				

Table 5.62 continued...

...continued

TABLE 5.62: NEGATION OF VERB PHRASE : PRESENT/PAST TENSE		
Wampar		*Ø-,w*-S:-*mam* + VR-GER
Musom		*Ø-,g*-S:-VR + *da mak*
Duwet		*pa?* + *ŋ-,ŋg*-S:-VR + *mba mua?*
Nafi	1,3:	*kara* + *ŋ-,ŋg*-S:-VR
	2:	*koro* + *ŋ-,ŋg*-S:-VR
Aribwaungg		VR1-GER + *Ø-,k*-S:-*ma?*
Aribwatsa		*Ø*-S:-VR + *i-ma?*
Labu		*wa; mba* + T/A-S:-VR_1 + T/A-S:-*ki*

TABLE 5.63: NEGATION OF IMPERATIVE (PROHIBITIVE)										
Adzera		*ma*-VR	+	*ma?*						
Mari		*wa-ŋkiti*	+	VR-GER						
Wampur		*ma*	+	VR-GER	+	*ama?*				
Sukurum		*ma*	+	*gi-saŋ*	+	*o*	+	VR-GER	+	*e*
Sarasira		*ma*	+	*gi-saŋ*	+	*o*	+	VR-GER	+	*e*
South Watut		*ŋasi*	+	FUT-S:-VR	+	*a ra?*				
Middle Watut	S	*kaŋe*	+	*ma[o,u]*-VR	+	*ana*				
	P	*kaŋe*	+	*mam[o,u]*- VR	+	*ana*				
North Watut	S.	*oŋe?*	+	*[u,o]n[u,o]*-VR	+	*ina?*				
	P.	*oŋe?*	+	*mana*-VR	+	*ina?*				
Wampar		*wa*-S:-*teg*	+	VR-GER						
Musom		FUT-S:-VR	+	*da mak*						
Duwet		*pa?*	+	NONPAST-S:-VR	+	*mba mua?*				
Nafi	1,3:	*kara*	+	NONPAST-S:-VR						
	2:	*koro*	+	NONPAST-S:-VR						
Aribwaungg		FUT-S:-VR -GER					+	*i-min*		
Aribwatsa		VR-GER	+	*i-ma?*						
Labu		*wa; mba*	+	NONPAST-S:-VR	+	NONPAST-S:-*ki*				

As can be seen from the three tables above, negation of the verb phrase in the Markham languages is not analysable as one system, or even as several systems. Neither can one system be discerned for future, present/past or prohibitive. Nevertheless I will discuss negation of the verb phrase within the groups set up on the basis of other morphological features.

Upper Markham group: For negation of future tense, the languages of this group employ two different strategies. The most widespread strategy is through a split morpheme, with a negative pre-verbal particle *ma* before the verb marked with future morphemes, combined with use of a post-verbal negative particle. Adzera uses a split morpheme, but the future marking is dropped from the verb and the tense marker used is realis *i-*. Present/past negation is similar, with split morphemes used before and after the verb which retains its realis marker. Prohibitive in Wampur, Sukurum and Sarasira is marked by using the the same split morpheme as for future and present/past, with the future marking structure on the verb. However the verb *-so* 'become' which is used to mark future becomes *-saŋ* 'be able', 'be enough'. Adzera uses a different pair of morphemes for prohibitive, cognate with the negative morphemes used in the other languages of the group. Mari uses a negative verb *-ŋkiti* 'do not' with *wa-* imperative prefix for prohibitive (cf. Wampar, below).

Watut group: Two of the Watut languages have a special set of tense/mood/subject pronoun prefixes which are used for negation. For negation of future, Middle and North Watut use a special set just for for this purpose. The North Watut set incorporates a negative morpheme *ma-* into the prefixes for plural subject. Before and after the marked verb are split negative morphemes. The same negative morphemes are used for all three types of negation. South Watut does not share in this complicated system. Negation of future is through use of the negative postverbal particle *raʔ* after the verb which retains its future prefixes. Negation of present/past in Middle and North Watut also has a separate set of prefixes, and combines with the same split morphemes as used for future negation to negate the verb in present/past tense. Prohibitive in all three languages is marked through use of a split morpheme before and after the verb, which is itself marked with different prefixes for singular and plural second person subject.

Lower Markham group: The systems of verb negation among these languages are the most varied of all. Wampar uses negative verbs *-mam* to negate all tenses, and *-teg* for prohibitive. No other negative morphemes are used. Musom and Duwet have a postverbal negation particle which means 'and + no', used for all tenses and for prohibitive, and Duwet uses an additional preverbal particle as well as this postverbal morpheme. Nafi uses a preverbal negative particle, affixed with verbal prefixes for person of subject, for all tenses and for prohibitive. Aribwaungg and Aribwatsa negate all tenses with the negative verb *-maʔ* used as second verb in serialisation, with subordination of the first verb by using the gerundive suffix. Aribwatsa uses this method for prohibitive, but Aribwaungg uses a different verb, *-min,* for this purpose. Labu also exhibits a serial verb construction for all negation, with the negative verb *-ki* as second verb. Prohibitive in Labu takes the non-past tense marker on the verb, as it does in Nafi and Duwet.

There cannot be any reconstruction of verb negation for these languages, either at the subgroup level or at a higher level, because the systems employed are so varied. The actual forms of negative morphemes used are not cognate except for the sporadic appearance of reflexes of the reconstructed negative verb, PMK **-mak* as a negating morpheme.

CHAPTER 6

INTERNAL UNITY OF THE MARKHAM LANGUAGES

6.1 INTRODUCTION

In this chapter I will discuss the innovations which support the hypothesis that the Markham languages are genetically a single unit within the Huon Gulf family of Oceanic languages. Within this chapter I will also present the evidence supporting the unity of each of the subgroups which make up the Markham group of languages.

The evidence presented is mainly of regular phonological, morphosyntactic and lexico-semantic development from Proto Huon Gulf and from Proto Oceanic. However, irregular phonological and morphosyntactic innovations from PHG and POC within the Markham group and within the subgroups are also presented as evidence.

In the two preceding chapters the phonology and morphosyntax of Proto Markham, and of its constituent subgroups Proto Upper Markham, Proto Watut and Proto Lower Markham were reconstructed. This presented a procedural problem in that the data were presented in a form that presupposed the subgroupings. In this present chapter the full justification for the subgroupings previously hypothesised will now be presented.

6.2 THE INTERNAL RELATIONSHIPS OF THE MARKHAM LANGUAGES

In this section the evidence establishing the Markham languages as a unit within the Huon Gulf family will be presented as well as the evidence supporting the subgroupings .

6.2.1 THE MARKHAM LANGUAGES AS A GENETIC UNIT

The Markham languages descend from Proto Huon Gulf, and form an internally consistent unit within the Huon Gulf family. The phonological, morphosyntactic and lexical innovations used as evidence to support the hypothesis of Markham genetic unity are not shared by the other groupings of languages within the Huon Gulf family. The other groups within the Huon Gulf family are the North Huon Gulf chain, the South Huon Gulf chain and Numbami. These are as presented by Ross (1986).

I use the term 'family' when referring to the Markham languages to mean a set of languages deriving from a common parent language, which I have been calling Proto Markham. There is an inherent contradiction here in that Ross has also called the higher-level group of languages, to which

the Markham family belongs, the 'Huon Gulf family'. Perhaps the term 'Huon Gulf Chain' could be used when referring to the parental group of languages, thus solving the terminological dilemma.

The groups which are proposed as constituting the Markham family, and the languages of which they are composed are as follows:

1. Upper Markham group:

This group has two subgroups:

1.1 Adzera

1.2 Mountain subgroup

a. Mari
b. Wampur
c. Sukurum
d. Sarasira

2. Watut group

a. South Watut
b. Middle Watut
c. North Watut

3. Lower Markham group:

This group has three subgroups:

3.1 Wampar

3.2 Busu subgroup:

a. Musom
b. Duwet
c. Nafi
d. Aribwaungg
e. Aribwatsa

3.3 Labu

6.2.1.1 PHONOLOGICAL INNOVATIONS OF THE MARKHAM LANGUAGES

This section presents the regular and irregular phonological innovations from Proto Oceanic and Proto Huon Gulf which establish the Markham family as a unit within the Huon Gulf family, and which are shared by all groups within the Markham family. Examples are given for each innovation and follow the statement of the innovation. Only brief examples are given in this chapter since extensive examples and tables of correspondences are given in the two preceding chapters. These are cross-referenced where necessary. Reconstructions follow procedures set up in Chapter 4, and examples are taken from data previously discussed in that chapter.

1. Proto Huon Gulf **t*, **ʀ* and **r* reflect POC **t*, **ʀ* (non-final) and **r* (non-final) respectively. In Proto Markham the three Proto Huon Gulf phonemes merge to become Proto Markham **r:*

POC *t	>	PHG *t		
POC *ʀ (non-final)	>	PHG *ʀ	>	PMK *r
POC *r (non-final)	>	PHG *r		

The merger is exemplified as follows:

a. POC *t > PHG *t > PMK *r

POC *tama 'father' > PHG *tama 'father' > PMK *rama 'father'
All languages of the Markham family reflect PMK *rama 'father' as *rama-* 'father'.

POC *kutu 'louse' > PMK *gur 'louse'
ADZ *gor;* WPU, SWT *gur;* MWT, WPA *gor;* AWG *aur;* LAB *kul(uku)* 'louse'.

b. POC *ʀ (non-final) > PHG *ʀ > PMK *r

POC *kaʀati 'bite' > PMK *-garar 'bite'
ADZ *-gara;* SRA *-rar;* MWT *-gar;* WPA *-aar;* AWG *-rar;* LAB *-kalu* 'bite'.

POC *kiʀam 'axe' > PMK *gir 'stone axe'
ADZ , WPU *gir* 'stone axe'; AWG, ARB *ger* 'stone knife'.

c. POC *r (non-final) > PHG *r > PMK *r

POC *kuron 'clay pot' > PMK *gur 'clay pot'
ADZ, MRI, WPU, SKM, SRA *gur;* SWT, NWT *gu;* MWT, WPA *go;* LAB *u* 'clay pot' (PMK *-r* is regularly lost in the Watut and Lower Markham languages).

2. Proto Huon Gulf *l is reflected as PMK *l which splits into late PMK *r and *n. The split is incomplete, and some etyma show both reflexes in different languages. Proto Markham was a unified language before it diffused into a dialect chain which I refer to as 'late Proto Markham'. Some changes, including Proto Markham *l splitting into late PMK *r and *n, passed along the dialect chain and were manifested differently in different places on the chain. It would appear that the change of PMK *l to *r was manifested in the part of the chain which migrated into the upper Markham, and PMK *l to *n was manifested in the part of the chain which stayed closer to the centre of distribution, and then migrated into the Lower Markham and the Busu. However, the *l to *n change is also present in some etyma in the Upper Markham languages, indicating that contact was maintained with the centre of dispersion after the *l to *n change occurred.

POC *l > PHG *l > PMK *l > late PMK *r / late PMK *n

a. POC *l > PHG *l > PMK *l > late PMK *r

Examples are:

POC *leja 'nit' > PMK *linjan 'nit'
ADZ, SKM *risian;* NWT *renc* 'nit'.

Another example of PHG *l > PMK *l then becoming late PMK *r is exemplified in the forms for 'egg', reconstructed as PHG *goluɣic which became PMK *kurubic. It is not clear whether or not the PHG form reflects POC *qatoluʀ 'egg'. The reflexes in the Markham languages are:

ADZ *urubit;* MRI *kuruwit;* WPU *ʔurit;* SKM, SRA *kurubit;* SWT *kuruwic;* MWT *korowec;* NWT *ʔurugic;* WPA *rowe;* MSM *kuruwik;* DWT *karageis;* NFI *kuruwik;* AWG *uruwiʔ;* ARB *rowiʔ;* LAB *(a)kulôhô* 'egg'.

b. POC **l* > PHG **l* > late PMK **n*

Examples are:

POC **lopu* 'sibling of opposite sex' > PHG **lovu* 'sibling of opposite sex' > PMK **lafu-* > late PMK **nafu* 'sibling of opposite sex'
ADZ, SRA *nafu-;* MRI *nahu-;* MWT, WPA *nafo-;* NFI *nahu-;* AWG *nafu;* LAB *nôhô* 'sibling of opposite sex'.

POC **kuluʀ* 'breadfruit' > PHG **ɣuluʀ* > PMK **guluk* > late PMK **gun[u,i]k*
ADZ *guniʔ;* SKM *gunik;* WPA *gook;* AWG *oŋg;* LAB *ô* 'breadfruit'.

c. In some etyma, PMK **l* is reflected as both *r* and *n* in different languages without any apparent conditioning factors.

Examples are:

POC **qulu* 'head' > PMK **kulu-* 'head' > late PMK **ku[r,n]u-* 'head'
ADZ *uru-n* 'skull' (i.e. 'bone of head'); WPU *ʔurua-n;* SWT *uru-;* MWT, WPA *ono-;* MSM *unu-;* DWT *iri-;* NFI *anu-;* ARB *ono-* 'head'.

POC **(qal)ipan* 'centipede' > PMK **galif* 'centipede' > late PMK **ga[n,r,Ø]if* 'centipede'

In this example, PHG **l* is reflected as late PMK **r* or **n* in some languages, and is lost in others, as follows:

ADZ *gaif;* WPU *gaih;* MWT *ganef;* DWT *garaih;* NFI *ganih;* AWG *kanif;* ARB *garih;* LAB *ani* 'centipede'.

3. Proto Huon Gulf merges the lenis reflex of POC **k* and POC **q* (non-final) as PHG **ɣ*. PHG **ɣ* and PHG **g-* merge as PMK **g*.

POC **k* (lenis) >
POC **q* (non-final) > } PHG **ɣ*
POC **g-* > PHG **g-* } > PMK **g*

a. POC **k* > PHG **ɣ* > PMK **g*

Examples are:

POC **kani* 'eat' > PHG **-ɣan* 'eat' > PMK **-gan* 'eat'
ADZ, WPU *-ga;* SWT *-gan;* NWT *-gwa;* WPA *-an;* DWT *-gan;* NFI *-an* 'eat'.

POC **kutu* 'louse' > PHG **ɣutu* 'louse' > PMK **gur* 'louse'
ADZ *gor;* MRI, SWT *gur;* WPA *gor;* MSM *ur;* AWG *aur* 'louse'.

b. POC **q* > PHG **ɣ* > PMK **g*

Examples are:

POC **quma* 'garden' > PHG **ɣum* 'garden', 'work' > PMK **gum* 'garden', 'work'
ADZ, SKM, SWT *gum;* MWT, WPA *gom;* MSM *um;* AWG, ARB *aum* 'garden', 'work'.

POC **taqi* 'excrement' > PMK **ragi-* 'excrement'
ADZ *ragi-;* MRI *ragia-;* MWT *regi-;* DWT *ragi-;* NFI *(ku)ra-;* AWG *(u)ra-* 'excrement'.

c. POC *g- > PHG *g- > PMK *g

Examples are:

POC *geju 'nape' > PMK *guju- 'head'
ADZ *guju-;* MRI *guzu-;* SKM *gusu-;* SRA *gucu-* 'head'.

4. The lenis grade of POC *p is reflected as PHG *v and devoiced in PMK to *f

POC *p (lenis) > PHG *v > PMK *f

As in the following examples:

POC *paqal 'thigh' > PHG *vaya 'foot' > PMK *faga- 'foot', 'leg'
ADZ, MWT *faga-;* WPU *haga-;* WPA, NFI *fa-;* MSM, ARB, LAB *ha-* 'foot', 'leg'.

POC *lopu 'sibling of opposite sex' > PHG *lovu > PMK *lafu- > late PMK *nafu-
ADZ, SRA, AWG *nafu-;* MRI, NFI *nahu-;* MWT, WPA *nafo-;* LAB *nôhô* 'sibling of opposite sex'.

5. Proto Huon Gulf *y-, a reflex of Proto Oceanic *y-, becomes Proto Markham *j-, while Proto Huon Gulf *-y- is reflected in Proto Markham as *-i.

POC *y- > PHG *y- > PMK *j-
POC *-y- > PHG *-y- > PMK *-i

Examples are:

POC *yaŋo 'yellow' > PHG *yaŋo 'yellow' > PMK *juŋujuŋ 'turmeric', 'yellow'
ADZ *juŋujuaŋ;* SKM *suŋusuaŋ;* SWT *jaŋajaŋ;* NWT *juŋ;* DWT *kasoŋ;* AWG *acuŋ;* ARB *ajuŋ* 'turmeric', 'yellow'.

POC *puqaya 'crocodile' > PMK *fugai 'crocodile'
ADZ, SKM *fugai;* SWT *fuga;* WPA *foa;* NFI *fus;* AWG *afuc* 'crocodile'.

6. Proto Markham acquired the following new phonemes for which there are generally no known Proto Oceanic or Proto Huon Gulf antecedents: PMK *p, *t and *kw.

a. PMK *p

Examples are:

PMK *pakap 'white ash'
ADZ *paap;* MRI *pakap;* WPU *paʔap;* SRA *kapakap;* WPA *paap;* MSM *kakab(uc)* 'white ash'.

PMK *-mbip 'defaecate'
ADZ *-pip;* WPU *-mpiap;* SRA *-mbib;* NWT *-mpep;* MSM *-mbip;* ARB *-bip* 'defaecate'.

PMK *-pafu 'dream'
ADZ *-puafub;* WPU *-pahub;* SWT *-pwafu;* WPA *-poafu;* AWG *-pafuŋ;* ARB *-pahu* 'dream'.

b. PMK *t

Examples are:

PMK *-tus 'shed skin (snake)'
ADZ, SRA *-tus;* SWT *-(faki)tus;* MWT *-tos;* MSM *-tus;* NFI, AWG *-tus* 'shed skin (snake)'.

PMK *-fatafat 'whisper'
ADZ -fatafat; WPU -hitihat; SRA -fatafat; SWT -tufuat; MWT -fetaf; WPA -fatafat 'whisper'.

PMK *kitamb 'earth, ground'
ADZ i[n]ta[m]p; MRI kitamp; MWT etamb; NWT ʔitamb; MSM kitomb; AWG itomb; LAB uta 'earth, ground'.

c. PMK *kw

Examples are:

PMK *kwakwa-(n,c) 'root of tree'
This noun takes inalienable possession, and is affixed in some of the languages with the inalienable possession subtype 1 suffix PMK *-n P:3 and in others with the inalienable possession subtype 2 suffix, PMK *-c P:3(2).
ADZ waia-n; WPU ʔwaʔia-n; SRA kwagas; SWT kakwa-c; MWT kowu-c; WPA wana-c; MSM kwa-c; NFI kwa-s; AWG ko-c; LAB wuwa 'root of tree'.

PMK *-kwep 'steal'
ADZ -wap; SKM -kweb; WPA -wap; MSM -kep; DWT -ket; NFI -kep; AWG -ip; ARB -ap 'steal'.

PMK *wakwaf 'wild kapok'
ADZ wauf; MRI sakwah; WPU waʔwah; SKM wakuf; SRA wakwaf; SWT wakuf; NFI wakih 'wild kapok'.

6.2.1.2 MORPHOSYNTACTIC INNOVATIONS OF THE MARKHAM LANGUAGES

The morphosyntax of the Markham languages has been described and compared in Chapter 5. Where possible morphosyntax was reconstructed for Proto Markham and for the constituent groups. In this section I will present only those innovations from Proto Oceanic and Proto Huon Gulf which complement the phonological innovations presented in the previous section, and which support the hypothesis of the Markham family as a unit within the Huon Gulf family. Examples will be drawn from the morphosyntactic data given in Chapter 5 above.

The morphosyntactic innovations shared by the languages of the Markham family are as follows:

1. Common nouns are classified into animate/non-animate and are marked by their co-occurrence with one of the two existential verbs meaning 'to be, stay, sit, dwell'. For example:

ADZ: animate nouns co-occur with the verb -mpai 'be, stay, sit, dwell'
non-animate nouns co-occur with the verb -miŋʔ 'be, stay, sit'

SRA: animate nouns co-occur with the verb -mbai 'be, stay, sit, dwell'
non-animate nouns co-occur with the verb -ndan 'be, stay, sit'

ARB: animate nouns co-occur with the verb -bum 'be, stay, sit, dwell'
non-animate nouns co-occur with the verb -min 'be, stay, sit'

2(a). Accretion of Proto Markham *ka- pronominal marker to Proto Oceanic focal pronoun bases. This was accreted to all plural forms except third person, and to second person singular forms. For example:

POC **kai* F:1EP > PMK **ka-gai* F:1EP
ADZ, SRA *agai;* SWT, MWT *kaga* F:1EP

POC **kamu* F:2P > PMK **ka-gam* F:2P
ADZ, WPU *agam;* MWT *kagam;* MSM, AWG *com* F:2P.

2(b). Proto Markham **ka-gu* F:2S reflects the Proto Oceanic alternative form **ko[e]* F:2S, with the accretion of the PMK pronoun marker **ka-*, for example:

POC **ko[e]* F:2S > PMK **ka-gu* F:2S
ADZ *ago;* WPU *agua;* SWT *kugu;* NWT *ʔogo;* DWT *au;* ARB *agom* F:2S.

2(c). Proto Markham **ka-gai* F:1EP reflects the Proto Oceanic alternative form POC **kai* F:1EP with the accretion of PMK **ka-* pronoun marker:

Examples as in 2(a). above.

2(d). Proto Markham **ka-gam* F:2P reflects the Proto Oceanic alternative form **kamu* F:2P, with the accretion of PMK **ka-* pronoun marker:

Examples as in 2(a). above.

3. The POC possessive pronoun suffixes are compared with the PMK possessive pronoun suffixes below:

TABLE 6.1: POC AND PMK POSSESSIVE PRONOUN SUFFIXES

	POC			PMK		
	S	P	1IP	S	P	1IP
1	**-gu*	**-ma[m]i*	**-da*	**-ŋg*	**-m*	**-nd*
2	**-mu*	**-m[i]a*		**-m*	**-m*	
3	**-ña*	**-dr[i]a*		**-n*	**-n*	

In both second and third persons, Proto Markham innovated by merging completely the forms for singular and plural to one form each. In the first person set, however, the merger of singular and plural to the singular form was complete only in the Upper Markham languages. In the Watut languages relics of the POC forms **-ma[m]i* P:1EP and **-da* P:1IP are found, for example:

South Watut:	*a rina-m*	our (E) mother
	gi baŋi-nd	our hand(s)

On the basis of the reflexes in the Watut languages and in Wampar, the PMK first person plural possessive pronoun suffixes are reconstructed as **-m* P:1EP and **-nd* P:1IP. The merging of first person singular and plural to one form PMK **-ŋg* P:1 was a later development, and has reflexes in the Upper Markham and Lower Markham languages.

Proto Oceanic **-ña* P:3S is reflected as Proto Markham **-n* P:3, for both singular and plural number, whereas PMK ***-nd* would have been expected for the plural. POC **-dr[i]a* P:3P has undergone irregular change to Proto Markham **-n* P:3. In all the Markham languages, inalienable possession by a third person noun or pronoun, both singular and plural, is marked by a reflex of PMK **-n* P:3. For example, in Wampar:

gea rama-n	his father
ges a rama-n	their father(s)

4. Proto Markham **ci-s* F:3P reflects Proto Western Oceanic **idri[a]* F:3P which became Proto North New Guinea **iji* F:3P (see Ross 1986 for the derivation of these two forms) and innovated with the accretion of PMK **-s,* third person plural possessive pronoun suffix:

PWO **idri[a]* F:3P > PNNG **iji* F:3P > PMK **ci-s* F:3P
WPU *yaus;* MWT, WPA *ges;* MSM *is;* DWT *eis;* NFI *yes;* AWG *is;* ARB *ges;* LAB *ês(ôha)* F:3P.

5. Proto Oceanic **tau* 'man' is reflected in the Proto Markham reflexive pronoun **rau.* The reference of this morpheme became extended in Proto Markham, with the accretion of PMK **-s* 3rd person plural possessive pronoun, to become PMK **rau-s* definite marker of human collective plural nouns:

POC **tau* 'man' > PHG **tau* reflexive > PMK **rau-s* collective human plural
ADZ, SRA *ruas;* WPU *was;* SWT *arut;* MSM *rons;* DWT *eisaŋg;* NFI *iros;* LAB *sôa* definite collective human plural.

An example of the use of this morpheme in Adzera is as follows:

rama	*-ŋ'*	*ruas*	*ru-*	*mpai*	*ani*
father	-P:1	DEF.ART.P(human)	CON-	stay	DEM

Father and company are still here.

6. Cliticisation of Proto Markham **-n* 3rd person anaphoric pronoun object marker to the prepositional base **gin.* The Proto Oceanic prepositional verb base **kini* instrument, causal, purposive is reflected in PMK through regular sound correspondences as **gin.* This was subsequently reanalysed as **gi-n* by analogy with the possessive PMK **-n.* This includes a third person anaphoric object:

POC **kini* instrument, causal, purposive > PMK **gi-n* instrument, causal, purposive + O:3
ADZ, SKM, SRA *gin;* MWT *gen;* WPA, NFI, AWG *en;* LAB *-i* instrument, causal, purposive preposition with anaphoric third person pronoun object.

In Sarasira, if there is no third person object implied in the instrument/refective preposition, the form used is *gi* + object noun phrase, for example:

bamban	*kus*	*gi-*	*ha*	*Rai*	*gi*	*ŋarak*	*aŋa*
tail	short	S:PRES-	go	Lae	PREP	talk	DEM

The policeman is going to Lae because of that talk.

However, if a third person pronoun object is present, the form used is *gin:*

gindoŋ	*gi-*	*ba*	*i*	*raŋ*	*-ca*	*gin*
F:3P	S:PRES-	come	PREP	cry	-GER	PREP-O:3

They have come in order to cry for him (i.e. at a funeral).

7. Certain verbs in PMK, which in other Oceanic languages would be transitive, took **gin* to mark their direct objects, whereas other verbs did not. For example, in Adzera the verb *-riŋant* 'to hear, listen' takes an obligatory *i* (a morphophonemic variant of *gin*) before a direct object:

ji i-riŋant i ago	I heard you.
araŋan i-riŋant i nan	He heard the talk.
aga i-riŋant gin	We heard about it. (Guruf dialect)
wa-riŋant in	Listen! (to it)

8. Proto Oceanic **tau* 'man' has a reflex in Proto Markham as **rau-* reflexive pronoun, which is used obligatorily after certain verbs to express a reflexive/reciprocal function of the verb on its subject. This reflexive or reciprocal function was marked in Proto Oceanic by the verb prefix **pañi-* reciprocal , which was subsequently lost with other verb prefixes in Proto Huon Gulf (Ross 1986). Other groups within the Huon Gulf family express the reflexive and reciprocal functions by, for example in Buang, repeating the subject focal pronoun after the verb (B. Hooley, personal communication), and only the Markham languages use the reflexive pronoun in this way. In Mari the following examples were recorded:

gihab ga -kutum i run
pig S: -appear PREP R:3
The pig appeared (from out of sight).

masui ga- kazai run
door S:- be open R:3
The door is open.

zi ga- mari ruŋk
F:1S S:- groan R:1
I groaned.

6.2.1.3 LEXICOSEMANTIC INNOVATIONS OF THE MARKHAM LANGUAGES

There are many examples of Markham lexical items which have replaced the expected Proto Oceanic reflexes, and for which cognates are not found elsewhere in Oceanic languages as far as I am aware. These languages are also characterised by semantic shifts from expected reflexes of POC. Only a few examples will be given here.

6.2.1.4 MARKHAM LEXICAL ITEMS WITH NO KNOWN POC OR PHG ANTECEDENTS

1. The Markham forms for 'name' do not reflect POC **qacan* 'name'. The POC form has been replaced by a PMK form which can be reconstructed as **biŋa-* 'name'. It has the following reflexes:

ADZ, MRI, WPU, SKM, SRA *biŋa-;* SWT, NWT *biŋa-;* MWT *beŋa-;* WPA, MSM, NFI, ARB *biŋa-;* DWT *binia-;* AWG *piŋa-;* LAB *paŋa* 'name'.

The Markham form is possibly derived from a verb, PMK **-bi* 'be thus, be', which has become nominalised through the addition of the PMK gerundive suffix PMK **-aŋ* from POC **-aŋa* nominalising suffix. Evidence supporting this derivation can be seen in the parallel development of PMK **faraŋa-* 'namesake', which is possibly derived from the verb PMK **-fa(r)* 'be the same as', affixed with the gerundive suffix PMK **-aŋ*. PMK **faraŋa-* has the following reflexes in the Markham languages:

ADZ, SKM, SRA *faraŋa-;* MRI, WPU *haraŋa-;* SWT, MWT *faraŋa-;* NWT *haraŋa-;* WPA, NFI, AWG *faraŋa-;* MSM, ARB *haraŋa-;* DWT *araŋua-;* LAB *huŋgwa* 'namesake'.

2. Proto Markham does not have a reflex of the expected Proto Oceanic **qate* 'liver' nor **manawa* 'heart', both of which have been replaced by PMK **nugu-* 'liver'. In the Markham languages reflexes of PMK **nugu-*, as well as meaning 'liver', are used in compounds to represent several other internal organs of humans and other animals, for example:

heart	ADZ	*nugu ampi sisun*
	WPU	*nugu buhubuh*
	SRA	*nugu yamu-ca muŋ*
	WPA	*nuu gampig*
	DWT	*niwu makamas*
pancreas	ADZ	*nugu buramp jiap*
	MRI	*nugu raŋkim*
	SRA	*nugu bumbap*
	DWT	*niwu mararaik*

3. A lexical innovation of the Markham languages is the use of a small set of generic verbs which, when used with adjuncts or in serial construction with other verbs, express many different verbal concepts. This is a common feature of Papuan languages (Foley 1986:119), and its presence in the Markham Austronesian languages is probably due to contact with their Papuan neighbours. The generic verbs used in this way in the Markham languages include 'to hit', 'to say', 'to go', 'to come'. For example, reflexes of PMK **-ic* 'to hit' are used to express not only the concept 'to strike something' but also, for example, 'dog bark', 'pig grunt', 'smoke tobacco' and 'sing song':

dog bark	ADZ	*-is gaf*	hit + barking noise
	SKM	*-is kwaf*	hit + barking noise
	DWT	*-zas dah*	hit + barking noise
	NFI	*-is dah*	hit + barking noise
smoke tobacco	ADZ	*-is pau*	hit + tobacco
sing song	ADZ	*-is mint*	hit + song
	SKM	*-is min*	hit + song
	MSM	*-ic min*	hit + song
	DWT	*-zas maind*	hit + song
	AWG	*-ic mint*	hit + song

In any one Markham language are found many abstract concepts expressed through the use of 'to hit' plus another verb or a verbal adjunct. Taking the Wampar language as an example, the following compounds with *-ic* 'to hit' are recorded (Fischer n.d. 83-84):

-ic baŋin raun	to give an example (hit + hand + finished)
-ic fantan en	to help someone (hit + staying + for him)
-ic fucun	to give away a secret (hit + apart)
-ic nenan	to put forth leaves (hit + leaf)
-ic aŋof	to put paint on face (hit + red paint)
-ic ampen	to be without fear (hit + be crazy)
-ic asagaseg	to invoke clan ancestors (hit + clan)
-ic un	to become used to doing something (hit + neck)
-ic areŋ	to make one's arrival known (hit + cry)

In all the examples from Wampar, the meaning of any compund with *-ic* 'to hit' is more than the sum of its constituent parts, and some represent very abstract concepts or metaphors. This extension of meaning is typical of the use of such generic verbs in the other Markham languages as well, and for Papuan languages from which the feature appears to have been borrowed. The forms for the verb 'to hit' are all cognate in the Markham languages.

4. Semantic shifts have occurred in the Markham languages, with the meanings of reflexes of POC items being reanalysed or extended. An example of this semantic rearrangement is the set of forms for mouth, tooth and molar tooth.

Proto Markham **mwa-* 'mouth' may be a reflex of POC **mwa* 'tongue'. In some languages reflexes of this form mean 'mouth'. Other languages have lost this form, and reflexes of POC **nipo(n)* 'tooth', becoming PMK **nifo-* 'tooth', have shifted to mean 'mouth'. For example:

PMK **mwa-* >	ADZ	*mu-*	mouth (in compounds e.g. *mu fufun* 'beard')
	MRI	*mwa-*	mouth
	SWT	*mwa-*	mouth
	MWT	*mo-*	mouth
	AWG	*amu-*	mouth
PMK **nifo-* >	ADZ	*nifo-*	mouth
	WPU	*nihua-*	mouth
	SKM	*nifua-*	mouth
	MSM	*mu ndihi*	mouth (reflects both PMK forms)

Where the languages have a reflex of PMK **nifo-* 'tooth' as 'mouth', another form is needed for 'tooth'. Some languages have dealt with this by using a reflex of PMK **kwarukwa[n]* 'bone' in a whole-part compound with reflexes of PMK **nifo-* 'tooth', meaning 'tooth', for example:

ADZ	*nifo urun*	tooth
WPU	*nihu ʔuruʔuan*	tooth
SKM	*nifu kamakar*	tooth

Other Markham languages have lost reflexes of POC **nipo(n)* 'tooth' and reflect POC **kadi* 'molar tooth' (which becomes PMK **gandi* 'molar tooth') as 'tooth', for example:

MWT	*gontu*	tooth
MSM	*gidi*	tooth
WPA	*ganti*	tooth
AWG	*kandi*	tooth
NFI	*gindi*	tooth

However, 'molar tooth' has to be disambiguated from 'tooth'. This is achieved by using a reflex of PMK **fugun* 'base' (from POC **puqun* 'base') in compounds with reflexes of PMK **gandi* 'molar tooth', for example:

MWT	*gontu fogo*	molar tooth
MSM	*gidi hun*	molar tooth
WPA	*ganti foon*	molar tooth
AWG	*kandi fun*	molar tooth
NFI	*gindi fun*	molar tooth
LAB	*kato hô*	molar tooth

6.2.2 UPPER MARKHAM GROUP

In this section I will discuss the innovations from Proto Markham which distinguish the languages of the Upper Markham as a genetic unit. Within this group of the Markham family are further internal networks of languages which share features exclusively with each other. Wampur, Mari, Sukurum and Sarasira share features which exclude Adzera. Within this subgrouping Sukurum and Sarasira share features exclusively.

It appears from the innovations which are shared among the languages that Proto Upper Markham experienced some changes before the languages broke up into a network. Some of these changes were completed and are shared by all the languages. But it appears from present evidence that other changes were incomplete at the time of breaking up. An example of these incomplete changes is the change of the PMK prenasalised voiced stops to voiceless stops, a change which did not reach the language from which Sarasira and Sukurum are descended.

The Proto Upper Markham community split initially into two language communities. These were the language ancestral to Adzera (Proto Adzera) and a language ancestral to all the other languages, which I have called Proto Mountain. These two language communities were, on oral historical evidence, located in the lower mountains on the north side of the Markham Valley. Proto Adzera remained relatively isolated from the other language community at this time. These lower-level subgroupings will be discussed in 6.2.3 Mountain subgroup, at the end of this section.

6.2.2.1 PHONOLOGICAL INNOVATIONS OF THE UPPER MARKHAM GROUP

The languages of the Upper Markham group share the following phonological innovations which occurred after the break-up of Proto Markham.

1. Proto Markham **s* splits into Proto Upper Markham **y* and **s*, initially and intervocalically. For example:

a. PMK **s* > PUMK **y*

Examples are:

POC **usu* 'nose' > PMK **su-* 'nose' > PUMK **yu-* 'nose'
ADZ, WPU, SKM *yu-* 'nose'.

PMK **-sik* 'bathe' > PUMK **-yik* 'bathe'
ADZ, WPU *-yiʔ;* SKM *-yik* 'bathe'.

b. PMK **s* > PUMK **s*

Examples are:

POC **susu* 'breast' > PMK **sisu-* 'breast ' PUMK **sisu-* 'breast'
ADZ, WPU *sisu-* 'breast'.

PMK **saŋand* 'flying fox' > PUMK **saŋant* 'flying fox'
MRI, WPU *saŋant;* SKM, SRA *saŋan* 'flying fox'.

2. Proto Markham **aCi* loses the intervocalic consonant and becomes PUMK **ai*, for example:

POC **taci* 'younger sibling of same sex' > PMK **rasi-* 'sibling of same sex' > PUMK **rai-* 'sibling of same sex'
ADZ, MRI, WPU, SKM, SRA *rai-* 'sibling of same sex'.

POC **qalipan* 'centipede' > PMK **galif* 'centipede' > PUMK **gaif* 'centipede'
ADZ *gaif;* WPU *gaih;* SKM, SRA *gef* 'centipede'. (SKM and SRA share a further innovation of PUMK **ai > e*).

3. Proto Markham **-c* splits and is reflected as PUMK **-t* and **-s*. Only Adzera reflects PMK **-c* as *-c* in some etyma.

Examples are:

a. PMK **-c* > PUMK **-t*

PHG **goluɣic* 'egg' > PMK **kurubi-c* 'egg' > PUMK **kurubit* 'egg'
ADZ *urubit;* MRI *kuruwit;* WPU *ʔurit;* SKM, SRA *kurubit* 'egg'.

PMK **ŋi-c* 'nest' > PUMK **ŋi-t* 'nest'
ADZ *(ni)ŋit;* MRI, WPU, SKM, SRA *ŋit* 'nest'.

PMK **nagi-c* 'husband's other wife' > PUMK **nagi-t*
ADZ *nagic-;* SKM, SRA *nagi-t* 'husband's other wife'.

b. PMK **-c* > PUMK **-s*

For example:

PMK **-ic* 'hit, strike' > PUMK **-ias* 'hit, strike'
ADZ *-is;* MRI, WPU, SKM, SRA *-ias* 'hit, strike'.

4. Proto Markham **u* in monosyllabic words or as nucleus of a final syllable becomes Proto Upper Markham **ua*. For example:

PMK **-nuk* 'cooked' > PUMK **-nua(k,p)* 'cooked'
ADZ *-nuaʔ;* WPU, SKM, SRA *-nuap* 'cooked'.

PMK **lijun* 'seed', 'essence', 'truth' > PUMK **nijuan* 'seed', 'essence', 'truth'
ADZ *niju(a)n;* WPU *nijuan;* SKM *nisuan;* SRA *nicuan* 'seed', 'essence', 'truth'.

5. Proto Markham **i* in monosyllabic words or as nucleus of final syllable becomes Proto Upper Markham **ia*, for example:

PMK **rib* 'fighting shield' > PUMK **riab* 'fighting shield'
MRI, WPU, SKM, SRA *riab* 'fighting shield'.

PMK **gamik* 'rain' > PUMK **gamiak* 'rain'
ADZ *gami[a]ʔ;* WPU *gamiaʔ;* MRI, SKM, SRA *gamiak* 'rain'.

PMK **ragi-* 'excrement' > PUMK **ragia-* 'excrement'
ADZ *ragi[a]-;* MRI, WPU, SKM, SRA *ragia-* 'excrement'.

6. PMK **w* before *u* is reflected as PUMK **bw*. (The PUMK innovation of PMK **u* becoming PUMK **ua* also applies after **wu*). For example:

PMK **wus* 'green leafy vegetable' > PUMK **bwas* ADZ *bus;* MRI *bwas;* WPU *bwas* 'green leafy vegetable'.

PMK **wu-* 'in-law' > PUMK **bwa-* 'in-law'
ADZ *bu-;* MRI, WPU, SKM, SRA *bwa-* 'in-law'.

PMK **[ga,su]wu-* 'husband' > PUMK **gabwa-* 'husband'
ADZ *gabu-;* MRI, WPU, SKM, SRA *gabwa-* 'husband'.

6.2.2.2 Morphosyntactic innovations of the Upper Markham group

The Upper Markham languages share the following innovations from Proto Markham.

1. Proto Upper Markham lost all reflexes of Proto Markham **i-n* third person focal pronoun. This was replaced by *Ø* in Mari, Wampur and Sukurum, by *araŋan* 3rd person singular human definite marker in Adzera, and by *nogo* demonstrative in Sarasira.

2. Proto Upper Markham marked inalienable possession with reflexes of the Proto Markham possessive pronoun bases, but innovated by adding an additional possessive pronoun suffix of the form PUMK **-gaC* after the possessive pronoun suffix. The form of the consonant *C* is identical with that of the preceding possessive pronoun suffix. The form of PUMK **-gaC* is derived from the POC **ka* marking morpheme used to indicate possession of consumable items. Examples are as follows:

my foot, leg	ADZ	*ji faga-ŋʔ-gaŋʔ*
	MRI	*zi haɣa-ŋk-gaŋk*
	WPU	*ji haɣa-ŋʔ-gaŋʔ*
	SKM	*si faɣa-ŋ-gaŋ*
	SRA	*ci faɣa-ŋ-gaŋ*

In the examples above, the first possessive suffix after the inalienably possessed noun reflects POC **-gu* (becoming PMK **-ŋg* P:1S) and the second suffix reflects PUMK **-ga-ŋk* P:1.

3. A further innovation in the Upper Markham use of the possessive pronoun bases is that all possessed nouns are affixed with one possessive morpheme PUMK **-gaC* but alienable and inalienable are distinguished from each other by the pronoun suffix which occurs before **-gaC*. For example Mari contrasts the two types of possession as follows:

Inalienable possession:	*zi rama-ŋk-gaŋk*	my father
Alienable possession:	*zi tagur-gaŋk*	my house

4. Proto Upper Markham lost inalienable possession subtype 2 as a productive system. The system is regularised by suffixing the inalienable subtype 1 possessive pronoun bases to reflexes of the subtype 2 forms. Proto Markham inalienable subtype 2 possessive pronoun suffixes reflect the forms PMK **-k* P:1, **-p* P:2, **-c* P:3. Adzera for example has the following which reflect the Proto Markham subtype 2 forms, with the subtype 1 possessive suffixes added:

ji fa-t-aŋʔ	my sister-in-law
ji waga-t-aŋʔ	my father's sister
ji nagi-c-aŋʔ	my husband's other wife

5. Proto Markham **rau-* reflexive pronoun is reflected as PUMK **ro-* reflexive pronoun. In PUMK this form became a marker of continuous aspect on verbs. As a verb prefix, the form takes the possessive pronoun markers for person of subject. For example in Sarasira:

agam ro -m- gi- mbai baŋgub iŋgo
F:2P R: -P:2-S: PRES- stay village DEM
Are you (P) still living in that village?

sagat aŋa ga- bariŋ naro -n ra ro- gi- giaŋ
woman DEM S:PAST- give birth child -P:3 and R:3-S: PRES- sleep
The woman has given birth to her child and is still sleeping.

6. The seven Proto Markham subject pronoun prefixes, contrasting first, second and third person and singular and plural subject are lost in Proto Upper Markham. The PMK forms have merged to one form, PUMK **gi-* S:, a reflex of PMK **i-* S:3S. For example, in Adzera, the subject pronoun prefix *i-* S: is used for all subjects, and for all tenses except future:

ji i-ni fa-dan	I want(ed) to go.
agam i-ni wai	What did you(P) say?
araŋan i-ni num-a mpui	He wants to drink water.

7. The PMK morphological marking of the distinction between present, past and future tense through contrasting verb prefixes was lost in Proto Upper Markham. Proto Upper Markham replaced the three-way contrast with a two-way contrast between realis (past and present) marked by PUMK **gi-* S:, and irrealis (future) (see 8. below). For example, in the Yarus dialect of Adzera:

pusi gi-yaiʔ	The cat is crying.
pusi gi-yaiʔ sib	The cat has cried.

8. Proto Markham **mba* future marker was lost in Proto Upper Markham. It was replaced by a serial verb construction using PUMK **-so* 'become, grow', as first verb. For example in Sarasira:

ci gi-su ha-ca Rai	I will go to Lae.

9. The Proto Markham gerundive suffix **-aŋ* became PUMK **-Can* gerundive suffix. The innovations were:

a. Accretion of a morphophonemically conditioned prothetic consonant *C*, which occurs after verb roots ending in a vowel, and which is dropped after verb roots ending in a consonant.

b. The final PMK **-ŋ* is replaced in PUMK by **-n*, by analogy with PUMK **-n* P:3. The use of the final consonant is also morphophonemically conditioned – before a vowel, or at the end of an utterance it is retained, and before a consonant it is dropped.

Examples from Wampur illustrating both the accretion of PUMK **C* and the replacement of PMK **-ŋ* by PUMK **-n* are as follows:

ji gi- su ga-ran
F:1 S:- FUT eat-GER
I want to/will eat.

agi ha-ran intuʔ -a mpui
F:1I go-GER cross -GER water
Let's go and cross the river.

10. Proto Upper Markham resultatives, used after verbs to indicate the result of the action of the verb, acquired a final completion marker, PUMK **-b*. The source of this innovation is not known. For example:

POC **punu(q)* 'hit' > PMK **funu* 'dead', 'completely finished' > PUMK **funu-b* 'dead', 'completely finished' > ADZ, SKM, SRA *funub;* MRI,WPU *hunub* 'dead', 'completely finished'.

PMK **kuci* 'finished', 'across' > PUMK **si-b* 'finished' > ADZ, MRI, SKM, SRA *sib* 'finished'.

11. The Proto Markham numeral **nda* 'one' gained two additional syllables and became Proto Upper Markham **bic[i,a]-nta* 'one'. The source and meaning of these additional syllables is not known. Examples are as follows:

ADZ	*bicinta*	one
MRI	*basinta*	one
WPU	*bicaŋʔua*	one
SKM	*bisandon*	one

6.2.2.3 LEXICOSEMANTIC INNOVATIONS OF THE UPPER MARKHAM GROUP

The lexical innovations shared exclusively by the languages of the Upper Markham group include lexical replacements of Proto Markham forms and semantic shifts of Proto Markham or Proto Oceanic forms.

1. Reflexes of Proto Markham **mbok* 'pig' are lost in Proto Upper Markham, and replaced by PUMK **gifab* 'pig'. This is probably a borrowing from a Papuan neighbour. Reflexes are:

PUMK **gifab* 'pig' > ADZ *ifab;* MRI, WPU, SKM, SRA *gihab* 'pig'.

2. Reflexes of POC **manuk* 'bird' which became PMK **maŋg* 'bird' are lost in PUMK, and are replaced by PUMK **gaciab* 'bird'. Reflexes are:

PUMK **gaciab* 'bird' > ADZ (Yarus), WPU, SRA *gaciab;* MRI *gaziap;* SKM *gasiab* 'bird'.

3. In Proto Upper Markham two alternant reconstructions can be made for 'cassowary', PUMK **suwik* and **bunimp* . The former is a reflex of POC **kasuari* 'cassowary' which became PMK **kasuwik* 'cassowary'. The latter is a borrowing, possibly from Wantoat whose form is *ŋwenemb* 'cassowary'. Reflexes of these two forms are:

PMK **kasuwik* 'cassowary' > PUMK **suwik* > ADZ, SKM, SRA *suwik* 'cassowary'.
PUMK **bunimp* 'cassowary' > ADZ (Yarus), MRI, WPU *bunimp* 'cassowary'.

4. Expected reflexes of POC **topu* 'sugarcane' are lost and replaced by Proto Upper Markham **yait* 'sugarcane'. This is also probably a Papuan borrowing from Wantoat, whose form is *yet.* The reflexes in the Upper Markham languages are:

PUMK **yait* 'sugarcane' > ADZ, MRI, WPU, SRA *yait;* SKM *yat* 'sugarcane'.

POC **topu* became PMK **ruf,* which has the following reflexes in the Watut and Lower Markham subgroups:

MWT *ruf;* NWT *rof;* WPA, NFI, AWG *rif;* MSM, ARB *ruh* 'sugarcane'.

5. Proto Upper Markham lost reflexes of POC **lako* 'go' which became PMK **-rak* 'go'. Instead PUMK **-fa* 'go' reflects POC **pano* 'go', which is not reflected in any other Markham groups. Reflexes of **-fa* are as follows:

POC **pano* 'go' > PUMK **-fa* 'go' > ADZ *-fa;* MRI, WPU, SKM, SRA *-ha* 'go'.

6. Proto Upper Markham **guju-* 'head' reflects POC **geju* 'nape' instead of the expected POC **qulu* 'head'. Proto Markham 'nape' is **ku ntu-* which is a compound of 'neck' and a reflex of the word for 'lime spatula' PUMK **ntum* which reflects PMK **ndum* 'lime spatula'. Examples are:

POC **geju* 'nape' > PUMK **guju-* 'head' > ADZ, WPU *guju-;* MRI *guzu-;* SKM, SRA *gucu-* 'head'.

PMK **ku ntu-* 'nape' > ADZ *u ntu-;* MRI *ku ntu-;* WPU *ʔu ntu-;* SKM *ku ndu-;* SRA *kunu ndu* 'nape'.

6.2.3 MOUNTAIN SUBGROUP

As discussed in the introduction to this section above, the Proto Upper Markham language split into two lower-order languages, Proto Adzera and Proto Mountain. The present day daughter languages of Proto Mountain are Mari, Wampur, Sukurum and Sarasira.

6.2.3.1 PHONOLOGICAL INNOVATIONS OF THE MOUNTAIN SUBGROUP

The Mountain subgroup share certain phonological innovations from Proto Markham.

1. Mari, Wampur, Sukurum and Sarasira share a merger of Proto Upper Markham **d* and **r* as Proto Mountain **r* (which in some etyma becomes Wampur *t*). For example:

PMK **daŋgur* 'hornbill' > PUMK **daŋkuar* 'hornbill' > PM **raŋkuar* 'hornbill'
ADZ *daŋur;* MRI *raŋkuar;* WPU *taŋuar;* SKM, SRA *raŋguar* 'hornbill'.

PMK **-daru* 'chase' > PUMK **-daru* 'chase' > PM **-raru* 'chase'
ADZ *-daru;* MRI, SKM, SRA *-raru;* WPU *-taru* 'chase'.

PMK **-damis* 'lick' > PUMK **-damias* 'lick' > PM **-ramias* 'lick'
ADZ *-damis;* MRI, WPU, SKM, SRA *-ramias* 'lick'.

2. Proto Markham **g* which is retained in Proto Upper Markham as **g* becomes lenited in all positions in the Mountain subgroup to PM **ɣ*. For example:

PMK **ragi-* 'excrement' > PUMK **ragia-* 'excrement' > PM **raɣia-* 'excrement'
ADZ *ragi[a]-;* MRI, WPU, SKM, SRA *raɣia-* 'excrement'.

3. Proto Markham **f* which is retained in Proto Upper Markham as **f* is lenited to PM **h*. This process is not complete in Sukurum and Sarasira, in which commonly used forms such as *gihab* 'pig', *-ha* 'go', and *yahan* 'leaf' reflect the change to PM **h* but all other etyma retain PUMK **f*. This, together with the retention in Sukurum and Sarasira of the PMK prenasalised voiced stops (see 4 below) is evidence that some sound changes which began in the Proto Upper Markham community had not yet been completed when the dialects split into a chain. Sukurum and Sarasira form a lower-level subgroup of the Mountain subgroup, in this and other exclusively shared features. Examples of the incomplete PMK **f* change to Proto Mountain **h* are:

PMK **faga-* 'foot', 'leg' > PUMK **faga-* 'foot', 'leg' > PM **haɣa-* 'foot', 'leg'
ADZ *faga ;* MRI, WPU *haɣa-;* SKM, SRA *faɣa-* 'foot', 'leg'.

PMK **lafu-* 'sibling of opposite sex' > PUMK **nafu-* 'sibling of opposite sex' > PM **nahu-* 'sibling of opposite sex'
ADZ *nafu-;* MRI, WPU *nahu-;* SKM, SRA *nafu-* 'sibling of opposite sex'.

PUMK **-fa* 'go' > PM **-ha* 'go'
ADZ *-fa;* MRI, WPU, SKM, SRA *-ha* 'go'.

PUMK **yafan* 'leaf' > PM **yaha-(n,t)* 'leaf'
ADZ *yafan;* WPU *yahan;* MRI,SRA *yahat* 'leaf'.

PUMK **gifab* 'pig' > PM *ɣihab* 'pig'
ADZ *ifab;* MRI, WPU, SKM, SRA *ɣihab* 'pig'.

4. All PMK prenasalised voiced stops were devoiced in post-PUMK. In Sukurum and Sarasira the voicing is retained in some etyma, and in other etyma the prenasalisation and voicing is lost. This indicates that the change did not reach all etyma at the Sukurum and Sarasira end of the dialect chain which was emerging from the Proto Upper Markham language community. Word-finally, PUMK prenasalised voiced stops become a final nasal in Sukurum and Sarasira, merging with the PMK final nasals.

a. PMK **mb* > PUMK **mp*

For example:

PMK **mbu* 'water' > PUMK **mpui* 'water'
ADZ, MRI WPU *mpui;* SKM *poi;* SRA *pui* 'water'.

PMK **-mbip* 'defaecate' > PUMK **-mpip* 'defaecate'
ADZ *-mpip;* WPU *-mpiap;* SRA *-mbib* 'defaecate'.

PMK **rumbu-* 'grandparent' > PUMK **rumpu-* 'grandparent'
ADZ, MRI, WPU *rumpu-;* SKM *gumbu-;* SRA *rumbu-* 'grandparent' (PMK **r-* > SKM *g-* is explained by the tendency of Sukurum voiced alveolar consonants to become velarised).

PMK **-kumb* 'dance' > PUMK **-ŋkuamp* 'dance'
ADZ, WPU *-ŋump;* MRI *-ŋkuamp;* SKM, SRA *-kuam* 'dance'.

b. PMK **nd* > PUMK **nt*

For example:

PMK **-ndap* 'appear' > PUMK **-ntuap* 'appear'
ADZ *-ntoap;* MRI, WPU *-ntuap;* SKM, SRA *-nduap* 'appear'.

PMK **-findi* 'spit' > PUMK **-finti* 'spit'
ADZ *-finti* 'to charm or put magic spell on something by spitting'; MRI *-hinti;* WPU *-hinti(n)* 'spit'.

PMK **saŋand* 'flying fox' > PUMK **saŋant* 'flying fox'
MRI, WPU *saŋant;* SKM, SRA *saŋan* 'flying fox'.

c. PMK **nj* > PUMK **nc*

For example:

PMK **njuf* 'hole in ground' > PUMK **ncuaf* 'hole in ground'
ADZ *ncuf;* MRI *suah;* WPU *cuah;* SKM, SRA *suaf* 'hole in ground'.

PMK **-njumb* 'finish' > PUMK **-ncump* 'finish'
ADZ, WPU *-ncu(m)p;* SKM *-nsum;* SRA *-ncum* 'finish'.

PMK **munjir* 'death adder' > PUMK **muncir* 'death adder'
ADZ, WPU, SRA *muncir;* MRI *musir;* SKM *munsir* 'death adder'.

d. PMK **ŋg* > PUMK **ŋk*

Examples are:

PMK **-ŋgara(f,k)* 'snore' > PUMK **-ŋkaraf* 'snore'
ADZ *-ŋkraf;* SKM, SRA *-ŋgaraf* 'snore'.

PMK **dangur* 'hornbill' > PUMK **daŋkuar* 'hornbill'
ADZ *daŋur;* MRI *raŋkuar;* WPU *taŋur;* SKM, SRA *raŋguar* 'hornbill'.

PMK **-ŋg* P:1S > PUMK **-ŋk* P:1
ADZ *-ŋʔ;* MRI *-ŋk;* WPU *-ŋʔ;* SKM, SRA *-ŋ* P:1.

6.2.3.2 Morphosyntactic innovations of the Mountain subgroup

As well as sharing innovations from Proto Markham with other Upper Markham languages, the Mountain languages retain some relics of Proto Upper Markham morphosyntactic features. An example of these is the morphological contrast in subject pronoun prefixes of verbs. Proto Markham and Proto Upper Markham are reconstructed as having the following sets of subject pronoun prefixes:

TABLE 6.2: PMK AND PUMK SUBJECT PRONOUN PREFIXES

	S:1	S:2	S:3
PMK	**a-*	**u-*	**i-*
PUMK	**ga-*	**gu-*	**gi-*

As discussed in Chapter 5 (section 5.2.2.6 Subject pronoun prefixes) the tense/aspect morpheme PUMK **g-* became cliticised to preceding focal pronouns, with loss of old subject pronoun prefixes which had thus become redundant. The new cliticised focal pronoun plus tense/aspect marker became the new subject pronoun prefixes PUMK **ga-*, **gu-*, and **gi-*. This contrast was retained in Proto Mountain, but in the resynthesis of Adzera, Wampur and Mari which took place after the break-up of Proto Upper Markham into Proto Adzera and Proto Mountain the contrast was lost, and all forms were eventually merged to the third person form Proto Adzera **gi-* S:. For example, in the Yarus dialect of Adzera:

agi gi-fan	Let's go.
rib igi gi-fa gum	They have gone to the garden.

Mari reinterpreted the person contrast as a purely morphophonemic contrast, and now marks verb stems of one syllable with *gi-*, and verb stems of two syllables with *ga-*, for all subject persons, for example:

zi gi-ha Ramu Suka	I am going to Ramu Sugar.
masui ga-kazai run	The door is open.

Similarly, Sarasira reinterpreted the morphemes contrasting person of subject as marking a contrast between present tense, *gi-* and past tense, *ga-:*

ci gi-num pui	I am drinking water.
ci ga-num pui sib	I drank water.

In one village, Som, of the Sarasira language, a reflex of PUMK **gu-* SPP:2 is found, marking SPP:2 in future tense, for example:

u gu-su i ha-ca gum	Will you go to the garden ?

This evidence further strengthens the hypothesis that the Mountain languages split off from the Proto Upper Markham community. After this split, they retained some features of PUMK, but some changes which had started in the parent language were not complete at the time of the split. In Adzera, a very innovative language, many of the changes were taken to completion, and further innovations occurred.

6.2.4 WATUT GROUP

The Watut group of three languages is more conservative phonologically and morphosyntactically as a group than the other groups of languages, retaining features from Proto Markham which have been lost or changed in the other languages. Hence they constitute a group more through their morphosyntactic innovations than their phonological or lexical innovations. The phonological and morphosyntactic retentions from Proto Markham suggest that the Proto Watut ancestral group migrated away from the parent community very early in the history of the Proto Markham break-up. They most likely went south across the Markham River and up the southern river valleys into the mountains. The movement northwards into the mountains adjacent to the Watut River is very recent. In the case of some village communities it has only occurred since 1945.

The emergence of a dialect chain from Proto Watut is hypothesised, the chain consisting of the language communities ancestral to South Watut, Middle Watut, Nga Wari and Unangg. Nga Wari subsequently disappeared, being incorporated into the Unangg group which moved north to take its place, and is now called North Watut.

6.2.4.1 PHONOLOGICAL INNOVATIONS OF THE WATUT GROUP

The Watut languages are distinguished as a group by the following phonological innovations:

1. The Watut languages share a merger of Proto Markham **-b-* and **-mw-* as Proto Watut **-w-*. These mergers are exemplified as follows:

a. PMK **-b- /u* > PWT **-w-*

PHG **goluɣic* 'egg' > PMK **kurubic* 'egg' > PWT **kuruwic* 'egg' > SWT *kuruwic;* MWT *korowec;* NWT *ʔurugic* 'egg'.

b. PMK *-*mw*- > PWT *-*w*-

PMK **samwan* 'sucker', 'shoot', 'planting material' > PWT **suwi* 'sucker', 'shoot', 'planting material'
SWT *siwi;* MWT *sowe* 'sucker', 'shoot', 'planting material'.

2a. There appears to have been a sporadic change in the Watut languages, from PMK **i* to PWT **e*, for example in the Proto Watut subject pronoun prefix **i*-, **e*- S:3S which reflects PMK **i*- S:3S. Some etyma in the Watut languages have taken part in this change and others have not, for example:

PMK **ŋic* 'nest' > SWT, NWT *ŋic;* MWT *ŋec* 'nest'.

PMK *-*riŋun* 'hear' > MWT *-riŋu;* NWT *-reŋo* 'hear'.

PMK *-*sik* 'bathe' > SWT *-sik;* MWT *-sek;* NWT *-siʔ* 'bathe'.

PMK **ragi*- 'faeces' > SWT *ragi-;* MWT *regi-;* NWT *rage*- 'faeces'.

2b. Proto Markham **u* splits into Proto Watut **u* and **o*, for example the Proto Markham subject pronoun prefix **u*- S:2S has split into Proto Watut **u*-, **o*- S:2S. This is another sporadic change which spread along the Watut chain. However, as for 2a. above, in some etyma the split has occurred and in others not, for example:

PMK **gum* 'garden', 'work' > SWT, NWT *gum;* MWT *gom* 'garden', 'work'.

PMK **daŋgur* 'hornbill' > SWT *daŋgur;* MWT *doŋku;* NWT *daŋkor* 'hornbill'.

PMK **lijun* 'seed', 'truth', 'essence' > SWT, MWT *niju;* NWT *nejo* 'seed', 'truth', 'essence'.

3. Proto Markham *-*b* is lost in Proto Watut. For example:

PMK **rib* 'fighting shield' > PWT **ri* 'fighting shield' > MWT *ri* 'fighting shield'.

PMK *-*nab* 'scrape coconut' > PWT *-*na* 'scrape coconut' > SWT *-nia;* MWT *-na;* NWT *-nana* 'scrape coconut'.

PMK **kulub* 'wooden pillow', 'headrest' > PWT **kunu* 'wooden pillow', 'headrest' > SWT *kunu;* MWT *kono;* NWT *ʔunu* 'wooden pillow', 'headrest.'

4. Proto Markham *-*n* is lost in Proto Watut, for example:

PMK *-*n* > PWT *-*Ø*

PMK **samwan* 'sucker', 'shoot', 'planting material' > PWT **suwi* 'sucker', 'shoot', 'planting material' > SWT *siwi;* MWT *sowe* 'sucker', 'shoot', 'planting material'.

PMK **bundun* 'projection', 'top of tree' > PWT **buntu* 'top of tree' > SWT *bundu;* MWT *buntu;* NWT *boanto* 'top of tree'.

5. Proto Markham initial and intervocalic prenasalised voiced stops are devoiced in Proto Watut. Voicing is retained word finally. The change was proceeding along the chain which developed after the break-up of the parent language community, but it had not reached South Watut which does not participate in this innovation.

a. PMK **mb*-, *-*mb*- > PWT **mp*-, *-*mp*-, for example:

PMK **mbuk* 'pig' > PWT **mpuk* 'pig' > SWT *mbuk;* MWT *mpuk;* NWT *mpoʔ* 'pig'.

PMK **rumbu-* 'grandparent' > PWT **rumpu-* 'grandparent' > SWT *rumbu-;* MWT *rompo-;* NWT *rumpu-* 'grandparent'.

b. PMK **nd-, *-nd-* > PWT **nt-, *-nt-*, for example:

PMK **-nduŋ* 'thunder' > PWT **-ntuŋ* 'thunder' > SWT *-nduŋ;* MWT, NWT *-ntuŋ* 'thunder'.

PMK **bundun* 'projection', 'top of tree' > PWT **buntu* 'top of tree' (as in example in 4. above).

c. PMK **ŋg-, *-ŋg-* > PWT **ŋk-, *-ŋk-*, for example:

PMK **-ŋgiŋg* 'squeeze grated coconut' > PWT **-ŋkiŋg* 'squeeze grated coconut' > SWT *-ŋgiŋg;* MWT *-ŋkeŋg;* NWT *-ŋkiŋg* 'squeeze grated coconut'.

PMK **baŋgi-* 'hand', 'arm' > PWT **baŋki-* 'hand', 'arm' > SWT *baŋgi-;* MWT *beŋki-;* NWT *baŋke-* 'hand', 'arm'.

6.2.4.2 MORPHOSYNTACTIC INNOVATIONS OF THE WATUT GROUP

The Watut languages share the following morphosyntactic innovations from Proto Markham:

1. Proto Watut lost Proto Markham **i-n* F:3S and replaced it with PWT **rau* F:3S and R:3S. PWT **rau* is a reflex of Proto Markham **rau-* reflexive pronoun, and it is an exclusive Watut innovation to use the reflexive in this way.

2. Proto Watut lost reflexes of Proto Markham **ci-s* F:3P and replaced them with PWT **Ø* F:3P.

3(a). In the possessive system, Proto Watut lost reflexes of Proto Markham **-n* P:3S (inalienable subtype 1 possession) and replaced them with an accreted glottal stop PWT **-ʔ* P:3S. For example:

PMK **baŋgi-n* 'her hand' > PWT **baŋki-ʔ* 'her hand' > SWT *baŋgi-ʔ;* MWT *beŋki-ʔ;* NWT *baŋke-ʔ* 'her hand'.

3(b). A Proto Watut retention from Proto Markham appears as the identification morphologically of the forms for 1st person exclusive plural and 2nd person plural possessive pronoun suffixes. PWT **-m* is used for P:1EP and P:2P. This is itself a retention from the Proto Oceanic forms, as follows:

TABLE 6.3: POC, PMK AND PWT POSSESSIVE PRONOUN SUFFIXES

	F:1S	F:1EP	F:1IP	F:2S	F:2P
POC	**-gu*	**-mai*	**-da*	**-mu*	**-m[i]u*
PMK	**-ŋg*	**-m*	**-nd*	**-m*	**-m*
PWT	**-ŋg*	**a -m*	**ga -nd*	**-m*	**ma -m*

In Proto Watut, the two forms are disambiguated by using prenominal possessive morphemes, PWT **a* P:1EP and **ma* P:2P with the possessive pronoun suffix **-m*. For example, in South Watut:

kaga a rina-m	our(E) mother(s)
kagam ma rina-m	your(P) mother(s)

3(c). In the inalienable subtype 2 possessive system, an identification of these two forms parallell to that discussed in 3(b), above, is made. PWT **-p* is used to mark both P:1EP and P:2P. These are

also disambiguated by using the prenominal possessive pronouns PWT **a* P:1EP and **ma* P:2P with the possessive pronoun suffix **-p*. For example, in South Watut:

aŋa suruk a waga-p	our(D.E) father's sister(s)
agam ma waga-p	your(P) father's sister(s)

4(a). Proto Watut also lost the Proto Markham future marker PMK **mba* future, and replaced it with a verb prefix of the form PWT **-mV-* future (where *V* is morphophonemically conditioned). The source of this innovation is not known. For example, in Middle Watut, past/present and future are contrasted as follows:

ela-mpa wiju ni	I stay/stayed in this house.
ela-ma-mpa wiju ni	I will stay in this house.

4(b). A Watut innovation is seen in the complex morphophonemic changes which were applied to the subject pronoun/tense prefixes on the verbs. From being separable morphemes, subject and tense became, in Proto Watut, fused into portmanteau morphemes. As an example, the subject pronoun/tense aspect paradigm for past/present in Middle Watut is given below, compared with that for future. (In Middle Watut, the form of last vowel of the prefix is phonologically conditioned by the first or only vowel of the verb root.

TABLE 6.4: MIDDLE WATUT SUBJECT PRONOUN/TENSE/ASPECT PREFIXES : PAST/PRESENT TENSE AND FUTURE TENSE

		S:T/A:S	S:T/A:1EP	S:T/A:1IP
Past/present:	1.	*[e]la-*	*ala-*	*gala-*
	2.	*l[o,u]-*	*mal[o,u]-*	
	3.	*l[e,i]*	*l[e,i]-*	
Future:	1.	*elam[a,o,u,e]-*	*alam[a,o,u,e]-*	*galam[a,o,u,e]-*
	2.	*[o]l[o,u]m[o,u]-*	*malam[o,u]-*	
	3.	*l[e,i]m[e,i]-*	*l[e,i]m[e,i]-*	

5. Proto Watut innovated from Proto Markham in the inclusion of directional prefixes between the subject pronoun/tense prefix and the verb root. These directional prefixes evolved from Proto Watut directional verbs:

a. PWT **-yak* 'go' > *-yak-* elative prefix
b. PWT **-yaka* 'come' > *-yaka-* allative prefix
c. PWT **-mba* 'stay' > *-mba-* adessive prefix

Examples of the use of these directional prefixes in South Watut are as follows:

a. *-ya-* elative:

kaga arama- ya-gic a ŋarau
F:1EP S:1EP.FUT- EL-hit F:3P
We will go and fight them.

b. *-yaka-* allative

ŋari- yaka- jambir ri batap fanda
S:3P.PRES -ALL- put LOC stone top
They brought (soil) and put it on top of those stones.

c. *-mba-* adessive:

kafikafi	*ŋari-*	*mba-raŋ*	*i-*	*mba*	*ni*
women	S:3.PRES-	AD-	cry	S:3-stay	DEM

The women are still crying there.

The impetus for this innovation may have come from the neighbouring Buang languages. In these languages directional verbs *ya* 'go', *yom* 'come' and *mədo* 'stay' are used as first verbs in serial constructions to indicate elative, allative and adessive respectively (Hooley 1970:203). In Proto Watut the position of the directional verb changed from second verb, which is the Proto Markham order, to first verb which is the Buang order and then to verb prefix in the Watut languages. The verbs lost their verbal functions on becoming prefixes. The order within the serial verb phrase, unusual as it is for the Markham languages, most likely influenced South Watut first, because in this language all three directionals are marked by prefixes. This process is not complete in Middle and North Watut, in both of which reflexes of the verb PWT **-mba* 'stay' are used as a second verb to mark adessive, while allative and elative are marked by the verb prefixes already discussed. In both these languages the two structures co-exist.

6.2.4.3 LEXICO-SEMANTIC INNOVATIONS OF THE WATUT GROUP

The following lexicosemantic innovations are shared exclusively by the Watut languages.

1. The POC item for 'large flying fox', **bega,* has no reflexes in the Markham languages. The Proto Watut form **biampand* 'large flying fox' is not derived from the same source as PUMK **ŋarosap* or PLMK **ŋarosakap* 'large flying fox', which are derived from PMK **ŋarosakap* 'large flying fox'. Reflexes of the PWT form are as follows:

PWT **biampand* 'large flying fox' > SWT, MWT *biampand;* NWT *yampand* 'large flying fox'.

2. The PMK form **rib* has been reconstructed for 'fighting shield', and is reflected as *rib* in Upper Markham and Lower Markham languages. However PWT **fiaŋg* 'fighting shield' does not reflect the PMK form. Watut reflexes are:

PWT **fiaŋg* 'fighting shield' > SWT *fiaŋg;* MWT *fioŋg* 'fighting shield'.

However, *ri* 'fighting shield' exists as an alternative form in Middle Watut, so *ri* is probably inherited from Proto Markham, and the other is most likely borrowed from South Watut, which in turn may have borrowed the form from its Buang neighbours.

3. PWT **waju* 'house' reflects the same source as PLMK **wijin* 'inside, interior of house'. It replaces reflexes of either PMK **tagur* 'house' or PMK **rum* 'house'. Reflexes in Watut languages are:

PWT **waju* 'house' > SWT *waju;* MWT *wiju;* NWT *wajoʔ* 'house'.

4. PMK **-tamu* 'follow' is replaced by PWT **-guc* 'follow'. This is derived from the same source as PWT **guc* 'tail'. Reflexes are:

PWT **guc* 'tail' > SWT, NWT *guc;* MWT *goc* 'tail'.

PWT **-guc* 'follow' > MWT *-goc;* NWT *-guc* 'follow'.

6.2.4.4 Overlaps between Watut and non-Watut languages

Proto Watut separated from the Markham languages early, as proposed in 6.2.4 above. Support for this is seen in the shared retentions from Proto Markham, and also in the innovations from Proto Markham which the Watut languages do not share with the other languages. However, evidently some of the Watut languages came into later contact with non-Watut languages, particularly Wampar and Wampur, individual Watut languages now share certain features with these languages.

1. North Watut and Wampur

North Watut and Wampur (of the Upper Markham group) share the following phonological features:

a. PMK **d* > WPU, NWT *t-*, for example:
PMK **-daro* 'chase away' > WPU *-taru,* NWT *-tere* 'chase away'.

b. PMK **nd-* > WPU, NWT *t-, r-*, for example:
PMK **ndom(aŋ)* 'leech' > WPU *tuam,* NWT *tom* 'leech'.

c. PMK **f* > WPU, NWT *h* in all positions, for example:
POC **puqun* 'base' > PMK **fugun* 'base' > WPU *hugun,* NWT *hugu* 'base'.

d. PMK **k-, *-k* > WPU, NWT *ʔ-, -ʔ*, for example:
PMK **kijam* 'dog' > WPU, NWT *ʔiyam* 'dog'.
PMK **-ruk* 'descend' > WPU, NWT *-ruʔ* 'descend'.

e. PMK **kw-* > WPU, NWT *ʔw-*, for example:
PMK **kwafi* 'crab' > WPU, NWT *ʔwahi* 'crab'.

2. Middle Watut and Wampar

Middle Watut and Wampar (of the Lower Markham group) share some phonological features, as follows:

a. PMK **i* > WPA, MWT *e,* for example:
PMK **ŋic* 'nest' > WPA, MWT *ŋec* 'nest'.

b. PMK **u* > WPA, MWT *o,* for example:
PMK **su-* 'nose' > WPA *so-,* MWT *aso-* 'nose'.

c. PMK **mw-* > WPA, MWT *mo-*, for example:
PMK **mwar* 'snake' > WPA, MWT *mor* 'snake'.

6.2.5 Lower Markham group

This group comprises three lower-order subgroups – Wampar, as the only member of one subgroup, Labu as the only member of another subgroup, and the languages of the Busu subgroup – Musom, Duwet, Nafi, Aribwaungg and Aribwatsa – as members of the third subgroup. While Wampar shares some features with the other languages of the Lower Markham group, it also shares features with Adzera of the Upper Markham group and with Middle Watut of the Watut group (see 6.2.4.4 above). The features shared with the other Lower Markham languages are indicative of a genetic relationship. Those features shared exclusively with Middle Watut indicate contact in the past

which has been obscured by the geographical intervention between Wampar and Middle Watut of the North Watut language group. There is another shared thread running through Wampar and Adzera, and to a less extent Aribwaungg and Aribwatsa, which points to early dispersal, but later contact between these language communities.

On the basis of shared phonological innovations, it is evident that Labu is also genetically related to the Lower Markham group, albeit a very divergent member. Because of its peculiarities, Labu will be considered in a separate section, 6.2.8 below.

All the languages of the Lower Markham group share phonological, morphosyntactic and lexico-semantic innovations from Proto Markham which show their genetic relationship to each other.

6.2.5.1 PHONOLOGICAL INNOVATIONS OF THE LOWER MARKHAM GROUP

1. PMK **-l-* merges with PMK **-n-* as PLMK **-n-*. This change, from PMK **l* to PLMK **n* appears to have been incomplete in the dialect chain which emerged from the PMK community. In those languages which are descended from PMK through PUMK and PWT the change was not complete, and some etyma reflect this change and others reflect the change PMK ***l*** to PUMK **r*. However, in PLMK the change was complete, and all etyma reflect PLMK **n*. Wampar and Labu participated in this change (see also 6.2.1.1, 2 above).

Examples are:

POC **qalipan* > PMK **galif* > PLMK **ganif* 'centipede' > WPA *ganef;* MSM, NFI *ganih;* AWG *kanif* 'centipede'.

POC **qulu* > PMK **kulu-* > PLMK **unu-* 'head' > WPA, ARB *ono-;* MSM, AWG *unu-* 'head'.

POC **qulu[ŋa]* 'wooden pillow' > PMK **kulub* 'wooden headrest' > PLMK **kunub* 'wooden headrest'
WPA *ono;* AWG *unub;* ARB *unup;* LAB *ini* 'wooden headrest'.

2. PMK **-g-* is lost in PLMK. Wampar also participated in this change. Examples are:

POC **paqal* 'thigh' > PMK **faga-* > PLMK **faa-* 'leg', 'thigh' > WPA *faa-;* MSM, ARB *ha-;* NFI, AWG *fa-* 'leg', 'foot'.

POC **puqun* 'base' > PMK **fugun* > PLMK **fuun* 'base', 'trunk' > WPA *foon;* MSM, ARB *hun;* NFI *fun* 'base', 'trunk'.

POC **puki* 'female genitals' > PMK **fugi-* > PLMK **fui-* 'female genitals' > WPA *foai-;* MSM, ARB *hi-;* NFI, AWG *fi-* 'female genitals'.

6.2.5.2 MORPHOSYNTACTIC INNOVATIONS OF THE LOWER MARKHAM LANGUAGES

1. A preoccupation with number of participants in an action is an innovative feature of all Lower Markham languages, including Wampar. This necessity to distinguish singular participant from more than one participant is reflected in morphology and in vocabulary.

1(a) All plural, animate nouns in all the Lower Markham languages are marked by the third person plural focal pronoun, (see Table 5.37 Definite markers, in Chapter 5, above), for example:

Duwet:	*ŋambei*	*-ŋg*	*eis*
	grandparent-	P:1	F:3P
	my grandparents		
Wampar:	*ges*	*ijum*	*i-*	*i*
	F:3P	dog	S:3-	sleep
	The dogs are sleeping.			

1(b). Some common nouns in these languages have different forms for singular and plural, for example in the words for man and men:

	man	men
Musom	*ŋaiŋ*	*oromb*
Nafi	*ari, oromb*	*ŋaiŋ*

1(c). In all the languages of the Lower Markham group, including Wampar, suppletive forms of common verbs are used for singular and plural subjects. In some of the languages suppletive forms of transitive verbs are used to contrast singular and plural objects. In Chapter 5, section 5.2.5.4 above, Table 5.36 Suppletive verbs in Lower Markham languages gives the forms for the more commonly-used verbs with suppletive forms for singular and plural subject, and singular and plural object. The different forms for the verb 'to sit down' are given below as an example:

TABLE 6.5: SUPPLETIVE FORMS FOR VERB 'TO SIT DOWN' IN LOWER MARKHAM LANGUAGES

		WPA	MSM	DWT	NFI	AWG	ARB
sit down	S:	*-buri*	*-kapuŋ*	*-mahaun*	*-kapuŋg*	*-puŋg*	*-pug*
	P:	*-moaf*	*-min*	*-min*	*-mburi*	*-mbiri*	*-biri*

2. The Proto Markham pronominal marker **ka-*, reflexes of which are found on plural focal pronouns in all Upper Markham and Watut languages, became PLMK **cV-* pronoun marker, which is an apparently unmotivated change. This change could have proceeded as follows:

POC **i* personal article + PMK **ka-* pronominal marker > **i-ka* > **i-ca* (through fronting of **k* to **c*) > **ca-* > PLMK **cV-* pronominal marker.

The vowel sound **V* is in harmony with the subject pronoun prefix vowels PLMK **a-* S:1, **u-* S:2 and **i-* S:3. The underlying form is PLMK **ca-V-* and through assimilation the PLMK forms **ca-* 1st person pronoun marker, **co-* 2nd person pronoun marker, and **ci-* 3rd person pronoun marker developed. Examples of reflexes in the Lower Markham languages are as follows:

PMK **ka-gai* > PLMK **ca-gai* F:1EP > WPA, DWT *yaga;* MSM *ce* F:1EP

PMK **ka-gir* > PLMK **ca-(g)ir* F:1IP > WPA *yaer;* MSM, AWG *cir* F:1IP.

PMK **ka-gam* > PLMK **co-om* F:2P > MSM, AWG, ARB *com;* DWT *yam* F:2P

In the last example, PMK **ka-gam* became PLMK **co-om* through the regular loss of intervocalic PMK **-g-*, and assimilation of PMK **a-* to PLMK **o-*.

3. Proto Lower Markham lost the PMK human definite plural marker **ro-s* and replaced it with the plural focal pronoun PLMK **ci-s* which reflects PMK **ci-s* F:3P. In all the Lower Markham languages, human plural nouns are marked by the use of the third person plural focal pronouns (see 1(a) above).

4. In its tense-marking system, Proto Lower Markham retained the opposition between past and non-past reconstructed for Proto Markham. This opposition is marked by alternation of consonant prefixes before the subject pronoun prefix vowels which are affixed to verb roots. The major innovation in the tense-marking morphology in Proto Lower Markham is a split in the future-marking morpheme. Proto Markham **mba* future splits in Proto Lower Markham into **mba(C)* definite future and **mbi(C)* indefinite future. This is exemplified in three daughter languages as follows:

Wampar:	*ges*	*bajin*	*e-*	*rab*	*a*	*jain*	*wasif*
	F:3P	IN.FUT	S:3-	buy		betel nut	plenty
	They will buy plenty of betel nuts.						
cf.	*eja*	*ban*	*a-*	*nom*	*a*	*mpo*	
	F:1S	D.FUT	S:1-	drink		water	
	I will drink water now.						
Musom:	*wir*	*bo*	*ŋa-taka*	*in*	*ena*	*mop*	
	F:1S	D.FUT	S:1-meet	F:3S	LOC	road	
	I will meet him at the road (at a definite time).						
cf.	*ce*	*bi*	*ŋa-cici*				
	F:1EP	IN.FUT	S:1-sleep P				
	We will just go to sleep.						
Duwet:	*ei*	*mbaʔ*	*ŋi-*	*riak*	*gen*		
	F:3S	D.FUT	S:3-	go	now		
	He will go now.						
cf.	*ahei*ʔ	*mbi*ʔ	*ŋa-rak*	*a*	*Mosbi*	*sonda*	*arein*	*ŋgo*
	F:1S	IN.FUT	S:1-go		Moresby	week	next	DEM
	I will go to Port Moresby next week (sometime).							

6.2.5.3 LEXICOSEMANTIC INNOVATIONS OF THE LOWER MARKHAM GROUP

The Lower Markham language communities which are now found in the mountainous area near the head of the Busu River – Musom, Nafi and Duwet – have been influenced by their Papuan neighbours more than the language communities which migrated into the Markham Valley, and share many lexical items and semantic shifts exclusively among themselves. Within this group of three languages, Duwet has many lexical items not shared with the other two; some of these are retentions from Proto Markham which have been lost by other languages of the group, suggesting an early migration of the Duwet group away from the Proto Lower Markham community. Some Duwet lexical items are borrowings from Papuan neighbours, and some are reflexes of Proto Lower Markham which have undergone irregular and unusual phonological and morphophonemic changes as described for Duwet in 4.2.11 above.

Musom, Aribwaungg and Aribwatsa, according to oral historical traditions, share a common ancestry, and since splitting up have had long periods of intensive contact with each other. Consequently they share some lexical items not shared by the other languages of the Lower Markham group. Aribwaungg and Aribwatsa have been influenced by the coastal Bukawa language, among whose communities they lived for many years after being chased out of the Markham and Wamped River Valleys by the Wampar people. In the Aribwaungg and Aribwatsa lexicons are found many

doublets, and further inquiry reveals that in most cases, one item reflects a Proto Markham origin, and the other a Bukawa origin. Because of their geographical position, as neighbouring communities in the easily-traversed Markham Valley, Wampar, Adzera and Aribwaungg share some lexical items which have been borrowed from each other during later periods of contact.

The following are examples of lexical innovations shared by languages of the Lower Markham group including Wampar:

1. The PLMK item for 'tooth' **gandi-* reflects POC **kadri* 'molar tooth'. (This item has been reconstructed by M. Ross (personal commmunication) on the basis of reflexes in the Markham languages, and Proto Central Papuan **ɣadi* 'molar tooth'.) The reflexes of POC **nipo(n)* 'tooth' found in the Upper Markham and Watut groups are lost in Proto Lower Markham, whose languages exhibit the following reflexes of POC **kadri:* WPA *ganti-;* MSM *gidi-;* NFI *gindi-;* AWG *kandi-;* ARB *gadi-;* LAB *kato* 'tooth'.

2. PMK **linja[n]* 'louse egg', a reflex of POC **leja* 'louse egg', is replaced by PLMK **minc,* which is reflected in the Lower Markham languages as follows: MSM *minc;* NFI *mes;* DWT *mis;* AWG *aminc* 'louse egg'.

3. PMK **tuman* 'leech' has an extra syllable accreted in PLMK **gandim* 'leech', which also loses a final syllable. This is reflected in all languages except Duwet, whose reflex *daum* 'leech' directly reflects Proto Markham **ndoma[ŋ]* 'leech':

PMK **ndoma[ŋ]* 'leech' > PLMK **gandim* 'leech' > MSM *gadim;* DWT *daum;* NFI *gandim;* AWG *kandimp;* ARB *ŋandib* 'leech'.

4. The languages of the Lower Markham reflect a common word for 'man', PLMK **ŋaiŋ,* which is not shared by the Watut or Upper Markham languages. Reflexes are :

PLMK **ŋaiŋ* 'man' > WPA *ŋaeŋ;* MSM *ŋaiŋ;* AWG, ARB *ŋain* 'man'.

6.2.6 Innovations of the Busu subgroup which exclude Wampar

Below are listed the phonological, morphosyntactic and some lexical innovations shared by the Busu subgroup of Lower Markham, and not shared by Wampar.

6.2.6.1 Phonological innovations of the Busu subgroup

1. PMK **u* splits in Proto Busu into **u* and **i.* Examples are as follows:

POC **puki* > PMK **fugi-* 'female genitals' > PB **fi-* 'female genitals' > MSM, ARB *hi-;* NFI, AWG *fi-* 'female genitals'.

PMK **mundi-* 'stand up' > PB **-mindiŋ* 'stand up' > NFI, AWG *-mindiŋ;* ARB *-midiŋ;* (WPA *-monteŋ*) 'stand up'.

PMK **gum* 'garden', 'work' > PB ** um* 'garden', 'work' > MSM *um;* AWG, ARB *(a)um* 'garden', 'work'.

2. PMK initial **g-* is lost in some etyma in Busu languages, but retained in Wampar, for example:

POC **quma* 'garden', 'work' > PMK **gum* > PB **um* 'garden', 'work' > MSM *um;* AWG, ARB *aum;* (WPA *gom*) 'garden', 'work'.

POC **kutu* 'louse' > PMK **gur* 'louse' > PB **ur* 'louse' > MSM *ur;* DWT *eit;* AWG, ARB *aur;* (WPA *gor*) 'louse'.

3. In a small set of inalienably possessed nouns of two syllables, Proto Busu changed the vowels in one or both syllables from **a* to **o* for second person possession only, for example:

PMK **biŋa-* 'name' > PB **biŋa-* 'name' (first and third person) , **biŋo-m* 'name' (second person).

PMK **mara-* 'eye', 'face' > PB **mara-* 'eye', 'face' (first and third persons), **moro-m* 'eye', 'face' (second person).

6.2.6.2 Morphosyntactic innovations of the Busu subgroup

1. The Proto Markham feature of noun classes based on animacy/inanimacy was changed in Proto Busu to classification on the basis of singular/non-singular (see Chapter 5, section 5.2.1.2 Covert noun class marking, above, for a discussion of this noun classification feature in PMK). The forms for the verb 'to be, sit, stay, dwell', the marker for the noun class distinction in the Proto Markham group are reflected in the Busu languages as follows:

PMK **-mba[i]* 'be', 'stay', 'dwell' with animate noun subjects > PB **-mbum* 'be', 'stay', 'dwell' with singular subjects > MSM *-bum;* NFI, AWG, ARB *-mbum* 'be', 'stay', 'sit', 'dwell'.

PMK **-min* 'be', 'stay', 'dwell' with inanimate noun subjects > PB **-min* 'be', 'stay', 'dwell' with plural noun subjects > MSM, DWT, NFI, AWG, ARB *-min* 'be', 'stay', 'sit', 'dwell'.

2. The languages of the Busu subgroup of the Lower Markham group have lost reflexes of POC **iau* which became PMK **jiau* first person singular focal pronoun. The Proto Busu form **wir* F:1S replaced this after the Busu languages split from Wampar, which does not share this innovation. Wampar *eja* F:1S is a retention of PMK **jiau* F:1S. Reflexes of PB **wir* are:

PB **wir* F:1S > MSM, AWG *wir;* NFI *wi* F:1S.

3. The languages of the Busu subgroup use contrast of verbal prefixes, in the form of velar consonants, to mark past and present tense of verbs. Proto Busu is reconstructed as having **ŋ-* present tense marker and **ŋg-* past tense marker. Reflexes in daughter languages are:

PB **ŋ-* present tense > MSM, AWG, ARB *Ø-;* DWT, NFI *ŋ-* present tense.

PB **ŋg-* past tense > MSM *g-;* DWT, NFI *ŋg-;* AWG *k-* past tense.

6.2.6.3 Lexicosemantic innovations of the Busu subgroup

1. PB **minc* 'louse egg' has somewhat irregular reflexes in all Busu languages. Reflexes of PMK **linjan* 'louse egg' have been lost in the Busu languages. Reflexes of PB **minc* 'louse egg' are: MSM *minc;* DWT *mis;* NFI *mes;* AWG *(a)minc;* ARB *anic* 'louse egg'.

2. Proto Markham made a distinction between the common green leafy vegetable *Abelmoschus manihot* PMK **ajinj* (Tok Pisin *aibika*) and the generic term for all green leafy vegetables PMK **wus.* Proto Busu merged these as PB **wus* 'all green leafy vegetables', including *Abelmoschus manihot.* However Wampar has retained reflexes of the two separate PMK terms, WPA *aid Abelmoschus manihot* and *was* 'leafy greens'.

3. Proto Markham **ragi* 'excrement', a reflex of POC **taqi* 'excrement', was lost in Proto Busu, and replaced by PB **kura* 'excrement'. This has the following reflexes : MSM, NFI *kura;* AWG, ARB *ura* 'excrement'.

4. Proto Busu accreted a final consonant **-c* to its reflex of Proto Markham **fugai* 'crocodile', which became PB **fuc* 'crocodile'. Reflexes in the Busu languages are: MSM *huc;* NFI *fus;* DWT *apus;* AWG *afuc;* ARB *ahuc* 'crocodile'. (In this item only, Duwet reflects POC **p* as *p,* rather than the expected *f* or *h.* This points either to an early split by Duwet from the post-POC language community, before POC **p* became PHG **v* and subsequently PMK **f,* or a later borrowing from a language which did not take part in the lenition of POC **p.* In view of Duwet's clear genetic relationship to the other Lower Markham languages, indicating a common descent from PHG through PMK and PLMK, the latter explanation of a late borrowing seems more likely.)

5. POC **kuron* 'clay pot' is reflected in PMK as **gur* 'clay pot'. This is replaced in PB by **ub* 'clay pot'. The reflexes are: MSM *ub;* DWT *aip;* NFI *wu;* AWG *aup;* ARB *ab* 'clay pot'. Wampar *go* 'clay pot' is a regular reflex of PMK **gur.*

6.2.7 Innovations by Wampar not shared by the Busu subgroup

Wampar has experienced some innovations from PMK and PLMK which are not shared with the Busu languages, suggesting an early divergence. However, later contact with some of these languages, particularly Aribwaungg, and to a certain extent with Aribwatsa, resulted in some similarities.

6.2.7.1 Phonological innovations of Wampar

1. Wampar reflects PMK **u* as *o,* and does not share the innovation of PMK **u* splitting to Proto Busu **u* and **i.* For example:

PMK **fugi-* 'female genitals' > WPA *foai-;* MSM, ARB *hi-;* NFI, AWG *fi-* 'female genitals'.

PMK **mundi-* 'stand up' > WPA *-monteŋ;* NFI, AWG *-mindiŋ;* ARB *-midiŋ* 'stand up'.

2. PMK final prenasalised stops **-mb, *-ŋg, *-nd, *-nj* lose the nasal feature and are reflected in Wampar as voiced stops *-b, -d, -g, -j.* For example:

PMK **-mb* > WPA *-b,* for example:
PMK **-nimb* 'urinate' > WPA *-nib* 'urinate'

PMK **-nd* > WPA *-d,* for example:
PMK **saŋand* 'flying fox' > WPA *saŋud* 'flying fox'.

PMK **-ŋg* > WPA *-g,* for example:
PMK **-ŋg* P:1 S > WPA *-g* P:1.

PMK **-nj* > PLMK **-nj* > WPA *-j:*
POC **kaija* 'left hand' > PMK **kainj* 'left hand' > WPA *aij;* MSM *kinc;* DWT, NFI *kis;* AWG *ainj* 'left hand'.

This feature is shared with Aribwatsa, due to later contact between the two languages. For example:

PMK *-*nimb* 'urinate' > ARB -*nib* 'urinate'.
PMK **saŋand* 'flying fox' > ARB *soŋod* 'flying fox'.
PMK *-*ŋg* P:1S > ARB -*g* P:1.

3. PMK **k* is retained initially and finally as Proto Busu **k*, but is lost in Wampar:

PMK *-*kainj* 'left hand' > PLMK *-*kainj* > WPA -*aij* 'left hand'.
PMK *-*k* P:1 (subtype 2) > PB *-*k* P:1 (subtype 2) ; WPA -*Ø* P:1(subtype 2).

6.2.7.2 MORPHOSYNTACTIC INNOVATIONS OF WAMPAR

1. The forms of the verb PB *-*mbum*, *-*min* 'to be', 'stay', 'dwell' which are reflected in the Busu languages as two separate forms for singular and plural subject have merged in Wampar to one form, -*men* 'be', 'stay', 'dwell'.

2. Wampar exhibits a reflex of PMK *-*nd* P:1IP as WPA -*d*, which is used as the common form of the first person inclusive possessive pronoun suffix for both singular and plural. For example:

eja rompo-d	my grandchild
eja bu-d	my in-law
yaga baŋi-d	our (E) hands

The expected form for the first person possessive pronoun suffix in Wampar is -*g* P:1, reflecting PMK *-*ŋg* P:1S. This reflex does occur, but it is only used to indicate possession of a small, closed set of inalienably possessed nouns, for example:

eja rompo-g	my grandparent
yaga anu-g	our (E) mother

3. The particles used postverbally in all Markham languages to mark completion of action were originally used as verbs in serialisation possibly before Proto Huon Gulf broke up. In present-day daughter languages, these particles have lost their verbal functions. However, the Wampar completive marker *doŋop* 'finished' still has verbal functions, and is analysed as the verb phrase *da e-ŋop* 'and it is finished'. Wampar is alone in exhibiting this feature.

4. Wampar marks present tense with *Ø*- before the subject pronoun prefix, and past tense with the prefix *w*-, and does not share the Proto Busu contrast of velar nasal **ŋ*- present tense with prenasalised velar stop **ŋg*- for past tense. For example:

	eja	*Ø-*	*a-*	*tao*	*mpi*
	F:1S	PRES-	S:1-	see	pig
	I see the pig.				
cf.	*gea*	*w-*	*i-*	*c*	*eja*
	F:3S	PAST-	S:3-	hit	F:1S
	He hit me.				

6.2.7.3 LEXICOSEMANTIC INNOVATIONS OF WAMPAR

1. The kinship term for 'a man's sister's son', reconstructed as PMK **murugu*- 'sister's son' is reflected in PB as **muruwu*- 'sister's son' . Any reflex of this form was lost in Wampar, and replaced with a reflex of PMK **faraŋa*- 'namesake', as WPA *faraŋa*- 'sister's son', 'namesake'.

2. Wampar *jain* 'areca nut' is an irregular reflex of PUMK **ncim* 'areca nut'. Proto Busu **mamin* 'areca nut' has no reflexes in Wampar.

3. Proto Busu **moŋg* 'bird' has no reflex in Wampar. It has the following reflexes in the Busu languages:

PB **moŋg* 'bird' > MSM, NFI *moŋg;* AWG *omoŋg;* ARB *mog* 'bird'.

However, reflexes of PLMK **ciŋg* 'game animal', which is derived from the PMK form **ci-* noun class marker for edible animals, are retained in PB as **cing* 'fish', and in Wampar as *ji mpo* 'fish' ('water animal') and *ji jif-eran* 'bird' ('flying animal').

PMK **ci-* marker of edible animal > PLMK **cing* 'game animal' > PB **ciŋg* 'fish' > WPA *ji mpo;* MSM *ciŋg;* NFI *siŋ;* AWG *aciŋg;* ARB *acig* 'fish'.

For these etyma, Wampar has adopted the forms *ji jiferan* 'bird' and *ji mpo* 'fish', which mean 'flying animal' and 'water animal' respectively. A parallel relexification has occurred in Adzera, in which reflexes of any POC or PHG forms for bird and fish have been replaced by *caŋʔ juf,* or *apo juf* 'bird' ('flying animal') and *apo mpui* 'fish' ('water animal').

6.2.8 LABU

Labu shares some innovations common to all Markham languages. Bradshaw (1978a) was uncertain how Labu is related to the Markham or North Huon Gulf groups, and speculated that it could be either 'Adzerafied Siassi or Siassified Adzera'. Siegel (1984) did not make any statements about Labu's affiliations except to say that it is Austronesian. However, evidence will be presented in this section that shows Labu to be genetically related to the Markham languages, and that it can be grouped with the languages of the Lower Markham on the basis of shared innovations.

It seems likely, from the Labu people's own oral history and that of their present neighbours that the Labu people of today are descended from at least three groups with different linguistic affiliations: some are descended from the original Proto Markham language community, some are descendants of Aribwatsa refugees from the Wamped River Valley, and others are descended from Bukawa-speaking refugees from villages which used to be where Kamkumung and Butibam are today. Some present-day Labu speakers are also possibly descended from speakers of either a Markham language or a Papuan language from the Finisterre Range, but this connection has not yet been confirmed. The Labu, or Hapa, people were living on tiny islands in the Herzog Sea (Labu Lakes) at the time of European contact (Schmutterer 1928, n.d.a) under siege from their Wampar and Buang enemies, and they now live in several villages on the coast south of the Markham River mouth, and in two small settlements near the Markham Bridge on the lower reaches of the Markham River.

6.2.8.1 INNOVATIONS SHARED BY LABU WITH ALL THE MARKHAM LANGUAGES

In this section I will describe the features of Labu which are inherited directly from Proto Markham, particularly those which are shared specifically with the languages of the Lower Markham.

6.2.8.1.1 PHONOLOGICAL INNOVATIONS SHARED BY LABU AND ALL THE MARKHAM LANGUAGES

Labu shares the following phonological innovations from Proto Huon Gulf with all the Markham languages:

1. Proto Oceanic **p* > Proto Huon Gulf **v* > PMK **f* > LAB *h*.

Labu clearly reflects the Proto Markham devoicing of Proto Huon Gulf **v*. For example:

POC **paqal* 'thigh' > PHG **vaɣa-* 'leg' > PMK **faga-* 'leg', 'foot' > LAB *ha* 'leg', 'foot'.

POC **lopu* 'sibling of opposite sex' > PHG **lovu* 'sibling of opposite sex' > PMK **lafu-* 'sibling of opposite sex' (> late PMK **nafu-*) > LAB *nôhô* 'sibling of opposite sex' .

2. POC **t* > PHG **t* > PMK **r* > LAB *l*

Labu shares the change of POC **t* to PMK **r*, which is reflected as *l* in Labu. For example:

POC **natu* 'child' > PHG **natu* 'child' > PMK **naru-* 'child' > LAB *aiŋalô* 'male child', *analô* 'animal young'.

POC **kutu* 'louse' > PHG **kutu* 'louse' > PMK **gur* 'louse' > LAB *kul(uku)* 'louse'.

POC **tau* 'man' > PHG **tau* 'man' > PMK **rau* reflexive pronoun > LAB *lo* reflexive pronoun.

3. Labu has merged reflexes of PMK voiced stops and prenasalised voiced stops as voiceless stops. Voiceless stops are retained initially and medially. Thus:

PMK	**p-, *b-, *mb-*	>	LAB	*p-*
PMK	**-mb-*	>	LAB	*-p-*

For example:

PMK	**biŋa-* name	>	LAB	*paŋa* name
PMK	**mbu* water	>	LAB	*pô* water
PMK	**rumbu-* grandparent	>	LAB	*apô* grandparent

Similarly:

PMK	**t-, *d-, *nd-*	>	LAB	*t-,(nd-)*
PMK	**-nd-*	>	LAB	*-t-*

For example:

PMK	**-damis* lick	>	LAB	*-tami* lick
PMK	**-nduk* bend down	>	LAB	*-tô* bend down
PMK	**dindund* elephantiasis (Filariasis)	>	LAB	*tutu* elephantiasis
PMK	**-mundiŋ* stand	>	LAB	*-ti* stand
PMK	**bundun* projection	>	LAB	*ndi* mountain

Similarly:

PMK	**s-, *c-, *j-, *nj-*	>	LAB	*s-*
PMK	**-nj-*	>	LAB	*-s-*
PMK	**-j-*	>	LAB	*-s- (-d^{y}-* before *i)*

For example:

PMK	**cicuk* coconut rib skewer	>	LAB	*su* coconut rib skewer
PMK	**jinji Cordyline*	>	LAB	*si Cordyline*
PMK	**jufif* march fly	>	LAB	*sihi* march fly
PMK	**njuf* hole in ground	>	LAB	*sê* hole in ground
PMK	**munjir* death adder	>	LAB	*mêsê* death adder
PMK	**lijun-* fruit, truth	>	LAB	*(a)nind^{y}i* fruit, truth
PMK	**-jujun* push	>	LAB	*-susu* push

Similarly:

PMK	**g-, *ŋg-*	>	LAB	*k-*
PMK	**k-*	>	LAB	*Ø-*
PMK	**-k-*	>	LAB	*-Ø-*
PMK	**-ŋg-*	>	LAB	*-k-*

For example:

PMK	**gur* louse	>	LAB	*kuluku* louse
PMK	**kulub* wooden headrest	>	LAB	*ini* wooden headrest
PMK	**gandi* molar tooth	>	LAB	*katô[hô]* molar tooth
PMK	**daŋgur* hornbill	>	LAB	*tiki* hornbill

6.2.8.1.2 PHONOLOGICAL INNOVATIONS SHARED BY LABU AND LOWER MARKHAM LANGUAGES

1. Labu shares the innovation POC **l* > PHG **l* > PMK **l, *n* > PLMK **n*. This is one of the innovations which groups Labu with the Lower Markham languages. For example:

POC **lopu* 'sibling of opposite sex' > PHG **lovu* > PMK **lafu-* > PLMK **nafu-* > LAB *nôhô* 'sibling of opposite sex'.

POC **qalipan* 'centipede' > PMK **galif* > PLMK **ganif* > LAB *ani* 'centipede'.

POC **qulu[ŋa]* 'wooden pillow', 'headrest' > PMK **kulub* (> late PMK **kunub*) > PLMK **unub* > LAB *ini* 'wooden headrest'.

2. Labu shares the loss of initial PMK **k-* and **g-* with languages of the Lower Markham group, for example:

PMK **kijom* 'dog' > PLMK **ijom* > AWG *om*, LAB *iya* 'dog'.

PMK **kulub* 'wooden pillow', 'headrest' > PLMK **unub* > AWG *unub*, ARB *unup*, LAB *ini* 'wooden headrest'.

PMK **kitamb* 'earth' > PLMK **itamb* > AWG *itomb*, LAB *uta* 'earth'.

PMK **-gan* 'eat ' > PLMK **-an* > MSM, NFI, AWG, ARB *-an* 'eat', LAB *-(y)a, -(ŋ)a* 'eat' (irregular verb).

3. Labu also shares the Lower Markham reflex of PMK **u* > PLMK **i*, for example:

PMK **lijun-* 'seed', 'fruit', 'essence', 'truth' > PLMK **nijin* > WPA, AWG, ARB *nijin*, MSM *nicin*, LAB *nind^{y}i* 'seed', 'fruit', 'essence', 'truth'.

PMK **jufif* 'march fly' > PLMK **jifif* 'march fly' > MSM *jihih,* AWG *cifif,* LAB *sihi* 'march fly'.

6.2.8.1.3 MORPHOSYNTACTIC INNOVATIONS SHARED BY LABU AND ALL THE MARKHAM LANGUAGES

This section discusses the morphosyntactic innovations from Proto Huon Gulf or Proto Oceanic which Labu shares with all Markham languages.

1. Reflexes of POC **kini* instrumental, purposive, causal prepositional verb > PMK **gin* instrument, purposive, causal preposition are used obligatorily in all daughter languages after certain verbs and before their direct objects (see 6.2.1.2, 6 above). Labu reflects this PMK innovation as a verbal enclitic *-i* which has become accreted to certain verbs. This morpheme is not a reflex of the POC transitive suffix **-i,* because all phonological rules established for Proto Markham dictate that this final vowel must have disappeared in Proto Markham.

Labu *-i* is no longer an independent morpheme, and is no longer productive. The verbs which exhibit this reflex correspond to those which take this obligatory postverbal preposition in the other Markham languages. Examples are:

LAB	*-ndindi*	to dream (about something)
	-laŋi	to cry (about something)
	-lindi	to hear
	-sali	to look for (something)

The following examples contrast the use of the productive morpheme *(g)in* instrument, refective in Adzera, and the non-productive morpheme *-i* in Labu:

ADZ:	*ji*	*i-riŋant*	*in*
	F:1S	S:-hear	INST.O:3
	I heard (it).		
LAB:	*ai*	*yê-*	*lindi*
	F:1S	S:1S-	hear it
	I heard (it).		

2. The gerundive suffix PMK **-aŋ* is reflected in the Labu suffix *-ia* (interpreted by Siegel (1984) as *-ya*). This suffix is now found as a fossilised accretion on certain nouns which are nominalised forms of verbs, for example:

molo to fear	>	*molo-ia* fear
sôhô to build	>	*sôhô-ia* a builder
sêni to plug up	>	*sêni-ia* a plug

3. The class of PMK postverbal modifiers called 'resultatives' has several members in Labu. Many of Labu's resultatives are clearly reflexes of reconstructed Proto Markham forms, for example:

PMK	**funu* dead	>	LAB	*hônô* dead
PMK	**kuci* across, off, through	>	LAB	*kêsê* across, through
PMK	**tuku* broken	>	LAB	*tuu* broken off

6.2.8.1.4 SHARED MORPHOSYNTACTIC FEATURES OF LABU AND THE WATUT LANGUAGES

1. The Labu subject pronoun prefixes and possessive morphemes are identical in form. This identification of the two forms is not shared by any other languages in the area, however the Labu subject pronoun prefix forms for plural subjects, excluding third plural, are cognate with those found in South Watut, as follows:

TABLE 6.6: LABU AND SOUTH WATUT PLURAL SUBJECT PRONOUN PREFIXES

	S:1EP	S:1IP	S:2P
SWT	*ama-*	*ara-*	*mamu-*
LAB (Class 2)	*ma-*	*la-*	*mô-*

This shared retention with South Watut suggests a common period of development at an early stage before the break-up of the Proto Markham language community. It is possible that Proto Labu and Proto Watut were in close proximity at the end of the late Proto Markham dialect chain south of the Markham River. However, when the Proto Watut community moved inland, the Proto Labu community stayed near the coast.

2. Labu also shares with the Watut languages the morphological identification of the possessive forms for first person exclusive plural and second person plural, as follows:

TABLE 6.7: POC, LABU AND WATUT POSSESSIVE PRONOUN SUFFIXES: 1EP AND 2P

	P:1EP		P:2P	
POC	**-mai*		**-m[i]u*	
SWT	*(a)*	*-m*	*(ma)*	*-m*
MWT	*(a,o)*	*-m*	*(ma,mo)*	*-m*
NWT	*(ŋa)*	*-m*	*(ma)*	*-m*
LAB		*mê*		*mê*

This is a shared retention from Proto Oceanic, as discussed in 6.2.4.2, 3(b) above.

6.2.8.1.5 LEXICOSEMANTIC INNOVATIONS SHARED BY LABU AND THE MARKHAM LANGUAGES

Labu shares lexical innovations from PHG, or POC, with other Markham languages.

1. The PMK replacement form **biŋa-* 'name', (which is not a reflex of POC **qacan* 'name') is reflected in Labu *paŋa* 'name'. Similarly, the PMK item **faraŋa-* 'namesake' has a Labu reflex *huŋgua* 'namesake'.

2. Reflexes of certain PMK kinship terms are shared by Labu with other Markham languages, for example:

PMK **mundu-* 'brother-in-law' (male speaking) > LAB *môtô* 'brother-in-law'.
PMK **fa-* 'sister-in-law' (female speaking) > LAB *ha(hêna)* 'sister-in-law'.

3. Labu shares some reflexes of PMK lexical items with the Watut languages. These are retentions from a common period spent together. Some examples of these exclusively-shared items are as follows:

PWT **su buntu* 'mountain' (which is a reflex of PMK **su-* 'nose' + PMK **bundun* 'projection') > MWT *su buntu;* NWT *su bonto;* LAB *ndi* 'mountain'.

PWT **-cukum* 'wrap' > SWT *-sukum;* MWT *-cekom;* NWT *-cuʔum;* LAB *-sôô* 'wrap food for cooking'.

PWT **-kiri* 'bore hole' > SWT *-kiri;* MWT *-kere;* NWT *-ʔirit;* LAB *-kiliki* 'bore hole'.

4. There are many lexical items shared between Labu and Lower Markham languages. Some semantic innovations noted for Proto Lower Markham are also reflected in Labu, for example the 'irregular' verb stems discussed by Siegel (1984:100) are reflexes of PLMK suppletive verb stems. The verb 'to hit' in Labu has different forms according to person, number of subject, and mode and tense of the verb. The paradigm for 'to hit', for irrealis, non-past realis and past tense is as follows:

TABLE 6.8: PARADIGM FOR LABU IRREGULAR VERB 'TO HIT'

	IRR		NONPAST.R		PAST	
1S	*ndê-*	*na*	*nda-*	*ŋa*	*yê-*	*gi*
2S	*Ø-*	*môa*	*ŋô-*	*môa*	*ô-*	*gi*
3S	*Ø-*	*na*	*ŋa-*	*ŋa*	*Ø-*	*ya*
1EP	*mê-*	*na*	*ma-*	*ŋa*	*mê-*	*gi*
1IP	*lê-*	*na*	*la-*	*ŋa*	*lê-*	*gi*
2P	*mô-*	*môa*	*mô-*	*gi*	*mô-*	*gi*
3P	*sê-*	*na*	*sê-*	*ya*	*sê-*	*gi*

The form of the verb root changes, not only for mode and tense, but also unsystematically for number and person of subject. Thus Labu reflects the system of suppletive verb forms which has been reconstructed for PLMK.

5. Another example of a semantic innovation shared by Labu and the Lower Markham languages is the metaphoric use of reflexes of PLMK **rai- /*na- gura* 'belly' with the verb PLMK **-fiŋ* 'to be with, accompany' to express the concept 'to want, like'. In Labu this is reflected as the phrase *lita -hi,* literally 'belly be with', and meaning 'to want, like', for example:

ai	*nda*	*lita*	*na-*	*hi*	*ni*
F:1S	P:1S	belly	S:3S-be	with	coconut

I want a coconut.

6.2.8.2 THE BUKAWA INFLUENCE ON LABU

The features of Labu which are directly inherited from the Proto Markham ancestral language have been outlined and exemplified in the preceding sections. In the present section the borrowings from Bukawa, which have had a profound influence on Labu, will be presented. Labu and Bukawa share many phonological, morphosyntactic and lexical features which were borrowed by Labu from Bukawa during periods of intensive contact between the two language communities.

6.2.8.2.1 PHONOLOGICAL FEATURES BORROWED BY LABU FROM BUKAWA

1. Labu and Bukawa share a seven-vowel system. Proto Markham's five vowels **i, *e, *a, *o, *u* split in Labu into *i, ê, e, a, o, ô, u* in imitation of the Bukawa system. However, recognisable cognates indicate that the splits were irregular. For example:

PMK	**i*	>	LAB	*i:*
PMK	**jinji* Cordyline	>	LAB	*si* Cordyline
PMK	**rasi-* sibling of same sex	>	LAB	*lasi(nala)* younger sister of female
PMK	**i*	>	LAB	*ê:*
PMK	**fina-* female	>	LAB	*hêna* female
PMK	**rini-* skin, body	>	LAB	*nênê* skin, body
PMK	**u*	>	LAB	*u:*
PMK	**gur* clay pot	>	LAB	*ù* clay pot
PMK	**-fuŋg* blow	>	LAB	*-hu* blow
PMK	**u*	>	LAB	*ô:*
PMK	**mundu-* brother-in-law	>	LAB	*môtô* brother-in-law
PMK	**-muŋg* go first, ahead	>	LAB	*-mô* go ahead
PMK	**u*	>	LAB	*i:*
PMK	**-ruk* go down	>	LAB	*-li* downwards (bound postverbal morpheme)
PMK	**jufif* march fly	>	LAB	*sihi* march fly

Labu items which have Bukawa cognates do not necessarily agree in the vowels. These items appear to have been borrowed into Labu directly from Bukawa, and do not reflect Proto Markham innovations from Proto Huon Gulf. For example:

	Labu	Bukawa	PMK
spit	*-kusu*	*-sôp*	**-findi*
eagle	*mumbu*	*(ma?)mpôŋ*	**ŋaro unduŋ*
owl	*lulupô*	*kululu?mboŋ*	**wambun*

As the tonal systems of Bukawa, Yabêm and Kela are not found outside the North Huon Gulf grouping, their adoption almost certainly postdates the break-up of Proto Huon Gulf (see Bradshaw 1978b). Similarly, the split of the Proto Huon Gulf vowel system (a five-vowel system inherited from Proto Oceanic) into the seven-vowel systems found in both Bukawa and Yabêm appears to post-date the break-up of Proto Huon Gulf. Consequently, it can be hypothesised that Labu's seven-vowel system is a more recent borrowing from Bukawa.

2. Labu has phonemic tone on vowels, as found in Bukawa and Yabêm. However, the tones are not predictable (Siegel 1984:89) as they are in Bukawa and Yabêm. Furthermore, cognates with Bukawa do not always have the same tone applied to the vowels, for example:

Labu	Bukawa
ô (low tone) crab	*galu?* (neutral tone) crab
ù (low tone)garden	*ôm* (high tone) garden
à (low tone)tree	*á* (high tone) tree
ii (neutral tone)raft	*ìì* (low tone) raft

It would appear that Labu adopted the application of tonal phonemic contrast to the vowels, without the underlying principles which determine the pitch of the tone in Bukawa. The principles which determine tone of vowels in Bukawa are set out in Bradshaw (1978b) and Capell (1949-50).

3. Labu has borrowed items from Bukawa which exhibit the retention of POC **t* > PHG **t*, for example:

POC **taqi* 'faeces' > PHG **taqi* 'faeces' > BUK *taʔ* 'faeces', LAB *ta* 'faeces'.
POC **qate* 'liver' > BUK *ŋatê* 'liver', LAB *anatê* 'liver'.
POC **katimun* 'cucumber' > BUK *gatim* 'cucumber', LAB *êti* 'cucumber'.
POC **topu* 'sugarcane' > BUK *tê*, LAB *dì* 'sugarcane'.

However, these are comparatively rare, and POC **t* is regularly reflected as Labu *l*.

6.2.8.2.2 MORPHOSYNTACTIC BORROWINGS BY LABU FROM BUKAWA

Labu and Bukawa share several significant morphosyntactic features, but insofar as related forms can be identified, Labu's morphosyntactic features are mostly descended from those of Proto Markham. The features shared with Bukawa are as follows:

1. Labu and Bukawa both have a system of verb classes based on morphophonemic relationships between the verb roots and the subject pronoun prefix forms. However, the bases for the classification of the verbs are different. In Bukawa, verb roots are classified according to number of syllables in the root and the initial sound of the root which in turn determines the tone on the following vowel in the root, another feature of classification. These are similar to the features of the Yabêm verb class system (Streicher 1982:633-634). In Labu the phonological shape of the root does not appear to be the feature by which roots are classified (see Siegel 1984:98-100). Membership in one of the two classes is signalled purely by the co-occurrence of a root and one of the two sets of subject pronoun prefixes. The first vowel sound in the verb root determines the vowel of the subject pronoun prefix.

2. Labu has borrowed many Bukawa verb roots, but the Bukawa borrowings in any one Labu class are borrowed from all Bukawa classes. The following exemplify verbs which have similar forms in Labu and Bukawa; the class to which the item belongs is shown in brackets beside it:

	Labu	Bukawa
drink	*-nô* (1)	*-nôm* (2)
swallow	*-taŋgô* (2)	*-kôŋ* (1)
push	*-sôsô* (1)	*-suŋ* (2)
have a fit	*-si* (1)	*-sim* (2) (be sick because of magic)

Thus it would appear that Labu has borrowed Bukawa verb roots indiscriminately into its own class system without borrowing the class affiliation of the individual verbs. Borrowings are into both Labu classes.

Some Bukawa verbs have been borrowed by Labu with a common subject pronoun prefix attached and reanalysed as being part of the root. The Labu subject pronoun prefixes are then attached. For example, the Bukawa verb *-lêlê* 'be great', 'be plenty' is usually used in Bukawa with the third person singular subject pronoun prefix *kê-*, becoming *kê-lêlê* 'it is great', 'plenty'. Labu has borrowed this as the root form, and attaches its own third person singular prefix, and the form becomes *nê-kêlêlê* 'it is plenty'.

3. Another morphosyntactic feature shared by Bukawa and Labu is the identification of the forms for second singular and third singular in both the subject pronoun prefixes. This is not found

elsewhere in the Markham languages or the Huon Gulf languages. However, the actual Labu and Bukawa forms for these morphemes are not cognate. The Labu form is a calque of the Bukawa form:

TABLE 6.9: LABU AND BUKAWA SUBJECT PRONOUN PREFIXES: S:2S AND S:3S

	S:2S	S:3S
LAB	*na-; nV-*	*na-; nV-*
BUK	*kê-; Ø-*	*kê-; Ø-*

4. Labu focal pronouns for dual, trial and plural/paucal number are related to the Labu numerals for 'two', 'three' and 'four'. The forms consist of a pronominal base plus a numeral marker. The numeral markers for 'two', 'three' and 'four' are borrowed from Bukawa. The forms in Labu and Bukawa are as follows:

TABLE 6.10: LABU DUAL, TRIAL AND PAUCAL FOCAL PRONOUNS AND NUMERALS 2 - 4 COMPARED WITH BUKAWA NUMERALS 2 - 4

		Dual		Trial		Plural/Paucal	
Labu pronoun:	1E	*êma*	*-lu*	*êmi*	*-di*	*êma*	*-ha*
	1I	*a*	*-lu*	*êsi*	*-di*	*a*	*-ha*
	2	*yêmô*	*-lu*	*yêmô*	*-di*	*yêmô*	*-ha*
	3	*êsa*	*-lu*	*êsi*	*-di*	*êsô*	*-ha*
Labu numeral:		*salu*		*sidi*		*sôha*	
Bukawa numeral:		*lu*		*tô*		*hale*	

6.2.8.2.3 LEXICOSEMANTIC FEATURES BORROWED BY LABU FROM BUKAWA.

1. Labu and Bukawa share a common reflex of POC **qate* 'liver', Labu *anatê* and Bukawa *ŋati* 'liver'. POC **qate* is not otherwise reflected in Markham languages, which reflect PMK **nugu-* 'liver'.

2. Labu shares part of the Bukawa classification of bird, animal and fish species by the use of a generic term as class marker preposed to species names. For example, in Bukawa the names of birds and large flying creatures such as bats and flying foxes are preposed with the class name *mbaʔ* 'bird', as in *mbaʔ gandø* 'seagull', *mbaʔ sôm* 'small bat', *mbaʔ saŋam* 'large flying fox'. Creatures considered to belong to the class 'fish' in Bukawa are prefixed with the class marker *i* 'fish', for example *i wako* 'crayfish', and *i wà* 'crocodile'. Labu has adopted this system of using generic names as class markers but has not adopted all Bukawa members of any class. Some items also lack a class marker, and the specific name reflects a Proto Markham rather than a Bukawa origin. For example:

Labu class *ma* 'bird'	*ma pêsê*	small bat
	ma lisa	large flying fox
but	*kali*	large bush fowl

considered to be in the *mbaʔ* 'bird' class by Bukawa is not in the Labu *ma* class.

Labu class *ê fish*	*ê sadi*	shrimp
	ê ku crayfish	
but	*ùpa*	crocodile

classified as *i* 'fish' in Bukawa is not classed as *ê* 'fish' in Labu.

3. Labu shares forms with Bukawa for many maritime items which have no cognates in the other Markham languages. For example:

	Labu	Bukawa
fish	*ê*	*i*
crayfish	*ê ku*	*i wako*
paddle	*hi*	*hêʔ*
island	*lundu*	*ndu*ʔ
coral	*pôa*	*ho*ʔ *bo*ʔ

Labu and Bukawa also share terms for common foods and cultural items, for example:

Areca nut	POC **buaq*	>	Labu *pô;*	Bukawa *bu*ʔ
sago	POC **rabia*	>	Labu *apì;*	Bukawa *apih*
coconut	POC **niu*	>	Labu *nê;*	Bukawa *ndip*
house	POC **panua*	>	Labu *hanu;*	Bukawa *andu*

All of these items have clear Proto Oceanic antecedents which have no direct reflexes in the other Markham languages. They have been inherited directly by Bukawa, and then borrowed by Labu from Bukawa.

4. The Labu numerals appear to have been borrowed from Bukawa. Labu has two counting systems. One is a base-five system, for digits of the hands and feet, with separate words for '1' to '5'. Some of the numeral words are related to the words for 'hand' *ma-* and 'foot' *ha-*. The expected system, inherited from Proto Markham, would have been a base-two system (see Table 5.32 Numerals of the Markham languages, in Chapter 5, above). The Labu numerals, except for '1', are related to the Bukawa forms as follows:

		Labu	Bukawa
one		*tôgwatô*	*daŋ*
two		*salu*	*lu*
three		*sidi*	*tô*
four		*sôha*	*hale*
five		*maipi*	*limdaŋ*
seven		*maipi anêndi salu*	*ŋandôlu*
	or	*haipi anêndi salu*	
	or	*maipa salu*	
ten		*nômusu*	*sahu*
twenty		*asamôni*	*ŋgaʔ sambu*

The second system is a base-twenty system, the base word *asamôni* meaning 'whole man', i.e. the digits of a whole man. This is cognate with the Bukawa term for 'twenty', *ŋgaʔ sambu,* also meaning 'whole man'. It is not derived from the Labu word for 'man' *amêna,* although 'whole' *samô* is cognate with the Bukawa form. The numeral is used in Labu and in Bukawa to count in

twenties, as in for example Labu *asamô salu* 'two twenties/forty'. This was introduced very recently, in order to count money. Thus 'one pound' (twenty shillings) in the old Australian currency was *asamôni,* 'two pounds' *asamô salu,* and so on.

CHAPTER 7

CONCLUSION

This chapter presents, in summary, the findings of the previous chapters, and outlines a scenario of the history of the Markham peoples based on those findings. It also presents some views on methodological and theoretical issues which were encountered during the study of these languages.

7.1 FINDINGS OF THE STUDY

This study set out to test the proposition that the Austronesian languages of the Markham Valley and its tributaries constitute a genetically related unit descended from Proto Oceanic, through Proto Huon Gulf. The findings of the study support this proposition. The genetic unity was established by the application of the comparative method through examination of extensive data from all the languages. The evidence for considering them as a unit consists of many shared innovations which developed after the break-up of Proto Huon Gulf. These innovations, shared by all the Markham languages, are phonological, morphosyntactic and lexicosemantic.

Phonological innovations shared by the Markham languages include regular sound changes from PHG and POC, for example POC **t* becoming PMK **r*, POC **p* becoming PMK **f*. The Markham languages also share the generation or borrowing of three innovative phonemes to fill gaps in the consonant paradigm after POC **t* and **p* were reassigned. Two of these new phonemes, PMK **t* and **p* occur in items which have no known cognates outside the Markham languages. Another new phoneme, PMK **kw*, was adopted by the common ancestral language.

Shared morphosyntactic innovations constitute a large body of evidence for the unity of the Markham languages. These include common changes in the pronoun systems, reassignment of verbal morphemes, the reinterpretation of POC verbs and prepositional verbs as verbal particles. Some of the changes which occurred in the PMK language community or communities can be ascribed to early borrowing from Papuan neighbours, for example the use of generic verbs, suppletive verb forms, and many lexicosemantic adjustments.

Lexicosemantic innovations are many and varied, and only a few examples could be given in the text of this study. It appears from the lack of terms for maritime objects and activities that the Markham languages moved away from the sea early in their history. Any words for fish, sea animals, canoes, etc. which are now found in the languages are either recent borrowings from more sea-oriented neighbours, or calques based on other terms. The only recognisably Proto Huon Gulf maritime reflex still found with cognates in most of the Markham languages is the word for 'sea'

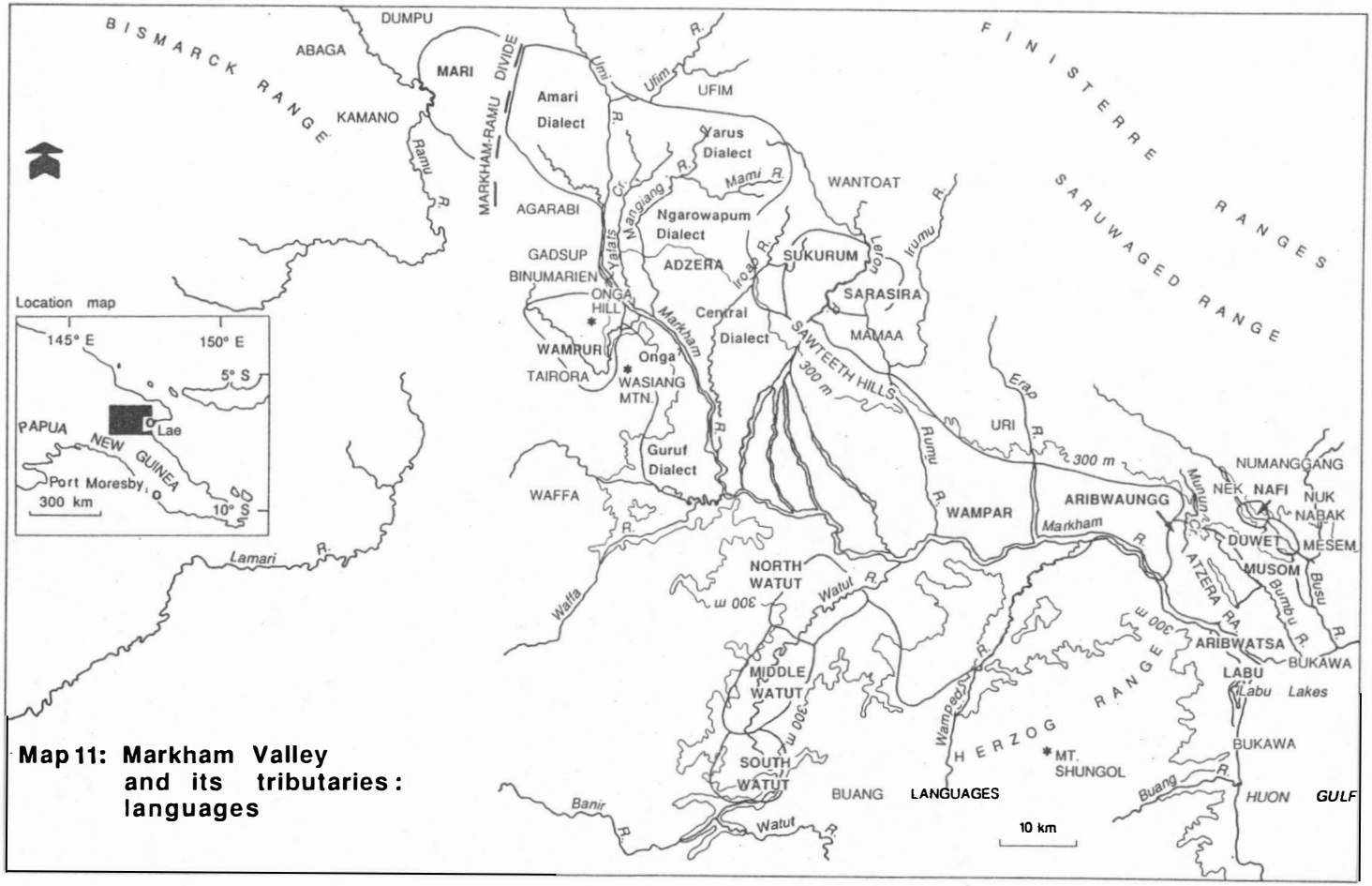
itself. PHG **aruji* 'beach' has reflexes in ADZ *uruc;* SWT, MWT, NWT, WPA *ruc,* MSM, AWG, ARB *aruc,* and DWT, NFI *rus* 'sea'. However, it seems that some of the language communities, for example the Busu subgroup and Labu, retained contact with their relatives near the sea, and this is reflected in their richer maritime vocabularies.

The study also set out to delineate the internal subgroupings of the Markham languages. This was achieved, comparing phonological, morphosyntactic and lexicosemantic data. It was found that there are three first-order subgroups within the Markham languages, Upper Markham, Watut and Lower Markham. Upper Markham has two lower-order subgroups, Adzera as the only member of one group, with Mari, Wampur, Sukurum and Sarasira as members of the other subgroup, which I have called the Mountain subgroup. The Watut group has three members – South Watut, Middle Watut and North Watut. Lower Markham has three lower-order subgroups. The largest is the Busu group comprising Musom, Nafi, Duwet, Aribwaungg and Aribwatsa. The other two subgroups, Wampar and Labu, have one member each.

There is a large body of evidence which points to contact between the related languages of the Markham after the original community broke up. As would be expected, the most intensive of these contacts were with close neighbours, and in time many areal features developed as a result of these contacts. An example of this is the similarity between Wampar, Adzera and Aribwaungg, which, though from two different and divergent subgroups of the Markham languages, nevertheless share many features not shared with the other languages with which they are more closely related. These features can only be attributed to later borrowings after ancestors of the three groups migrated away from their parent communities, and moved into close contact in the Markham Valley itself. Some of the areal features, in language and in other areas of culture, are attributable to contact with languages which were not members of the genetically-related Markham group. Some closely-related communities were separated geographically and lost contact for a period, for example Aribwaungg and Aribwatsa, but came together to face a common enemy, the Wampar.

Other groups have been lost altogether, and these links can never be traced except by inference and supposition. The speakers of some of these 'lost' languages were driven by conflicts and natural disasters far into the mountains, and took refuge within linguistically unrelated communities. Their own languages survive as only a few words, and a few remembered stories. Examples of these are the Sumanaa and Meraraa languages whose descendants now live with the Papuan Waffa communities deep in the mountains to the south of the Markham River. The only people who remembered a few words are all probably dead by now, and those links are lost forever. How many other such 'missing links' are now lost? We will never know, and have to make what we can of the existing evidence.

The borrowing between the Austronesian Markham languages and their Papuan neighbours was not only in one direction. There is evidence, albeit limited as yet, that the Papuan linguistic communities borrowed extensively from their Austronesian neighbours. An example of this borrowing is the set of birth-order kinship terms, collected for all the Markham and some Huon Gulf languages, and which have parallel and cognate sets in neighbouring Papuan languages (see Chapter 3 above). There is strong evidence that the ordering of a set of siblings in this way existed in the Proto Oceanic society, and was perhaps even a Proto Austronesian phenomenon, and is thus a retention in the Markham languages and a borrowed feature in the Papuan languages.



Map 11: Markham Valley and its tributaries: languages

7.2 HISTORY OF THE MARKHAM LANGUAGES

In this section, I will present a reconstruction of the history of the dispersals and migrations of the Markham language communities. The geographical features referred to are on Map 11: Markham Valley and its tributaries: languages, which is Map 2, reproduced on the previous page for convenience of reference. The evidence used to arrive at the conclusions is largely linguistic evidence, in the form of shared innovations, and some shared retentions. Where there is any evidence from oral traditions, or from anthropological or geomorphological studies this will be presented as well. There has been no archaeological work done in the Markham, except for two very superficial studies of surface finds of pottery (Fischer 1962b; Specht and Holzknecht 1971).

Ross (1986:214) postulates that two 'pieces' broke off from the North New Guinea cluster, a group of communalects descended from Proto Oceanic. These were Proto Schouten which departed first, and Proto Huon Gulf whose speakers migrated the short distance from the postulated homeland in the New Britain area to settle first in the south of the Huon Gulf coast. Ross' evidence for considering this as the home territory of Proto Huon Gulf is the fact that it is the centre of greatest linguistic diversity among the Huon Gulf languages, containing both Numbami, itself a first-order Huon Gulf subgroup and probably the stay-at-home community, and also the most diverse part of the South Huon Gulf chain. Oral traditions of the Bukawa speakers, the Kela speakers, and the Yabêm speakers on the north coast of the Huon Gulf support the suggestion of a south-to-north migration, and subsequent back-migrations north to south. Ross suggests also that the Proto South Huon Gulf community, ancestor of present-day Buang languages, moved away from the parent community northwards into the mountains.

My proposition is that the speakers of Proto Markham also migrated northwards. Whether they settled first to the north or the south of the Markham River is debatable, but the fertile, wide coastal plain area north of the Markham, between the Bumbu and Busu Rivers presents itself as a likely home base. South of the Markham is inhospitable swampland, and a very narrow coastal plain which could not have supported many people, and was, and still is, a dangerous place to live because of crocodiles. The linguistic evidence points to a spreading-out in a dialect chain of the groups, in a post-Proto Markham period. The incomplete change of PMK **l*, a reflex of PHG **l*, to *r* and *n* started at this time. The groups in which PMK **l* became *r*, and only in some words became *n*, moved away before the change had reached all words in all the dialects. In the dialect which seems to have remained at 'home' longer than the others, Proto Lower Markham, this change from PMK **l* to PLMK **n* was completed after the other groups moved away. The evidence for this is presented in Chapter 6, above.

The post-Proto Markham dialect chain spread out, possibly along the coast to the north, and some perhaps south of the Markham River. At one end of the chain, the southern end, was the communalect which became Proto Watut, the language ancestral to the present-day Watut languages. This communalect was very conservative, retaining phonological and morphosyntactic features of Proto Markham. As some of these features are also found in Labu, it is suggested that the ancestral Labu community, although being part of the Lower Markham group, was at that time in close contact with the Proto Watut communalect. It is suggested that the Proto Watut community did not spread out into a chain at this stage, but migrated westwards as a group into the mountains south of the Markham, via the valley of perhaps the Buang River. Some present-day speakers of South Watut, the southernmost language of this group, have traditions that their ancestors moved from the head of the Langimar River, a tributary of the Watut, and thence into the mountains to the south and west of the Watut River. This points to a lengthy period in the mountains, probably under constant pressure

from other language groups such as the Buangs to the south and east, and the Angan language groups to the west and south west. According to Fischer (1963) the communities speaking languages ancestral to the present-day Watuts moved north-east from the Kraetke Mountains, down the Banir River, and thence into the ranges to the north and south of the Watut River. Involved in this movement were the ancestors of the Unangg communalect. Under severe pressure from Angan groups, they all moved closer to the Watut River, and there the chain seems to have spread out and the languages diverged into South Watut, Middle Watut, Nga Wari, and Unangg. Nga Wari has disappeared, and its place, at the mouth of the Watut River, has been taken by descendants of the Unangg people, who abandoned their villages to the north-west of the Watut. This is the language I have called North Watut.

Each of the Watut groups has been influenced, phonologically, morphosyntactically and in the lexicon by its nearest neighbours. Thus, South Watut and the Buang language closest to it have common features, Middle Watut and Wampar have many features in common because of a period spent in close contact, and North Watut (formerly Unangg) has many features in common with the Wampur language of the Upper Markham group. These have been set out in detail in Chapter 6. There is evidence that the communalects were in contact. Some innovations shared by all the Watut languages, for example the use of directional verb prefixes, possibly started in South Watut under influence from their Buang neighbours, and moved northwards along the chain, but is incomplete in Middle and North Watut.

The movement of Watut communities towards the Watut River is a very recent phenomenon. Some communities have only moved there since World War II.

The part of the Proto Markham communalect chain which was ancestral to the Upper Markham languages probably left the coastal homeland next. There was a period of shared development away from the other PMK communalects, evidence for this being the fact that the Upper Markham languages share many innovations not found in either the Watut languages nor the Lower Markham languages. Some of these changes were completed, and are shared by all the languages, for example the split of PMK **s* into PUMK **s* and **y* and the accretion of the pronominal marker PUMK **ka-* to all plural focal pronouns.

The Proto Upper Markham community split initially into two parts, separated geographically. These were the language ancestral to Adzera (Proto Adzera) and a language ancestral to all the others which I have called Proto Mountain. This is proposed on the evidence of several innovations shared by the languages in the Mountain group – Mari, Wampur, Sukurum and Sarasira – in which Adzera did not take part. Adzera also underwent changes in which the others did not participate. Some of the changes began at this time but were not completed at the time of splitting, for example PMK **f* to *h*, which is incomplete in some descendants of Proto Mountain.

It would appear from oral traditions, that these two communities were located in the mountains to the north-east of the Markham Valley. The ancestral community of the Adzera language was called *Maraiang*, and was in the lower Ufim/Umi River Valley; the ancestral community of the Mountain group was called *Simbo[ŋ]g*, and seems to have existed either behind the Sawteeth Mountains, or in the Leron River Valley near these mountains. Proto Adzera remained isolated from the other communalects at this time. A feature of PMK, the contrast of three persons in the subject pronoun prefix paradigm, was retained in the Proto Mountain community, but was lost in the Proto Adzera communalect.

The Proto Adzera group moved down towards the Markham Valley, splitting into smaller dialect groups and moving through the valleys of the Ufim, Umi, Mangiang, Yafats, and Mami Rivers. The ancestors of the present-day Yarus dialect group remained in the mountains, and the Yarus dialect, whose speakers still live in the mountains near the Yafats, Mangiang and Mami Rivers, is today the most conservative of all the Adzera dialects. The others split up and spread north-west, across to the opposite side of the valley, up into the upper Markham Valley, and down the valley towards the Leron River.

After the break-up of Proto Mountain, a resynthesis of Adzera, Wampur and Mari seems to have taken place. This most likely coincided with the move across the Markham Valley by speakers of Wampur, the move through the Markham Valley into the Ramu Valley by the Mari speakers, and the move into and across the Markham Valley by the Adzera speakers. The Sukurum and Sarasira group, at that time one communalect, stayed in the mountains near the Leron River, and split into two communalects later. Evidence for this resynthesis is found for example in the assignment of the marked third person subject pronoun prefix PMK **(g)i-* to all persons, a feature shared by Adzera, Mari and Wampur but not by Sukurum and Sarasira.

The language ancestral to the Lower Markham languages was the last to leave the homeland, and its speakers maintained contacts with coastal relatives whereas the others lost these contacts over time. The communalect split into at least three separate linguistic units – Proto Busu, the dialect which became Wampar, and that which became Labu.

The history of the ancestral Wampar language is still something of a mystery, but the group, and a very small group at that, appears to have migrated into the lower Watut area which is now the homeland of the South Watut language communities. The route of this migration is not known, but the Wampar speakers were pushed out of their niche there by the advance of the South Watuts, who were themselves being pressured by Angan (Papuan) people expanding inland. The Wampar then began their very rapid move out of the Watut, and their spread into the Markham Valley. This entry into the Markham seems, on genealogical evidence from Wampar and neighbouring groups, to have taken place less than 200 years ago.

Labu was a member of the original Proto Lower Markham communalect chain. One tradition has it that the speakers of Labu stayed close to the homeland on the coast, accepting immigrants from Aribwatsa, Bukawa, and other groups. Another strong tradition says that the Labu were actually a community in the Busu River Valley, whose home village was destroyed by landslide and a flood. The survivors were washed down the Busu River clinging to logs, and the strong currents swept them across the mouth of the Markham to come ashore near their present villages. The language of this original community, placed somewhere near Karau village on a tributary of the Busu, is not known. If it had been the Papuan language, Nuk, which is the language of the people in that area today, there is no trace of it at all in present-day Labu. It is possible that it was a communalect of the Busu subgroup, in which case the present-day Labu language is a direct descendant of that Lower Markham language.

The ancestors of the Busu subgroup, speakers of Proto Busu, moved away from the coast, up through the Bumbu or Busu River Valleys, and settled in the mountains between these two rivers. In this area the founding communalect spread out into a dialect chain. Duwet, being the most aberrant of all the Busu languages, probably moved away first, establishing communities in a tributary valley to the north of the Busu River. Speakers of the language ancestral to Nafi moved westwards, and the communalect which was the common ancestor of the Musom, Aribwaungg and Aribwatsa languages

stayed in the mountains between the Busu and the Bumbu Rivers. Then they too split, Musom moving across the Busu and into the mountains on the north-eastern side, Aribwaungg moving down into the Adzera Range to the south-west and Aribwatsa across the Markham Valley and up the Wamped River Valley. After the Proto Busu community split up, Musom, Aribwaungg and Aribwatsa had long periods of close contact with each other. Consequently they share some lexical items not shared by the other Busu languages. Aribwatsa and Aribwaungg have been heavily influenced by the Bukawa language. After being chased out of their respective homes by the Wampar, the survivors of both language groups were given refuge in Bukawa-speaking villages near the coast, and they were living there at the time of first European contact in the late 1880s. Aribwaungg retains some of the Bukawa borrowings, and Aribwatsa has been so influenced that the descendants of the original language group now speak only Bukawa. Duwet and Nafi, being the earliest to split away from the parent group, have had longer periods of contact with their Papuan neighbours. This influence is seen for example in their alternation of final *-s* and *-h,* a feature borrowed directly from their Papuan neighbour Numanggang. Duwet shows influence of its Papuan neighbours in its tendency now towards SOV word order, a feature which is gradually moving through the original SVO syntactic system of the language.

The scenario presented above is very simplistic, and hypotheses put forward here are of necessity generalisations. The hypothesis that the migrations proceeded up small river valleys, into and through the mountains north and south of the Markham, and only recently down to the valley is supported by oral traditions from all groups. It is postulated that the Markham Valley has been a very arid place for many thousands of years, and not able to support intensive agriculture. It would also have been a very insecure environment for small groups of immigrants, as any settlement in such an open plain would be difficult to defend. These propositions are supported by the geomorphological evidence, for example that put forward by Garrett-Jones (1979). In his work he found that the Markham grassland area is most likely not anthropogenic, but a natural grassland which has been extended and is maintained under present conditions by human agency, particularly through the use of fire. He also claims that the Markham has been too arid to support close forest since at least 1,700 years ago and that a vegetation pattern similar to that existing today became established by 1,500 to 2,000 years ago (1979:284). Thus, it can be argued that the open valley area has been too arid for at least 1,500 years to support intensive agricultural activity.

There is evidence, linguistic and otherwise, that the Austronesian Markham communities have had a lot of contact with each other, and with their Papuan neighbours on all sides. The 'onion analogy' applies again, in the multi-layered nature of any Markham community. Many movements have taken place, up and down the mountains and river valleys, and across the main Markham Valley. Some groups have survived, others have been lost, others have been incorporated into different linguistic communities. But an unbroken tradition and common heritage is still evident, and that common Markham nature is what underlies these languages.

7.3 SOME METHODOLOGICAL AND THEORETICAL CONSIDERATIONS

As stated in Chapter 2, previous studies of Markham languages have had several shortcomings. Those studies of individual languages have ignored the relationships between all these languages. By taking, for example, Adzera as the iconic Markham language, the common Oceanic heritage was not recognised because Adzera is the most innovative of the languages. Only by seeing that language in the context of the whole group can its real roots be seen, and the common threads between the

languages be traced. Surveys of the languages have failed to trace all these common threads because of the limitations of their data. The present study has its own limitations, for example in not expanding the study into the neighbouring Buang languages or the immediate Papuan neighbours. But it is hoped that this will be remedied either by myself or by other research workers interesting themselves in the fascinating field of 'mixed' languages, and the processes by which different languages actually accommodate themselves to each other.

The family tree model was found to be inappropriate in this study. The common and unbroken Oceanic heritage was discernible, and that can be represented by a tree diagram. But the reciprocal borrowings between the related languages, and between unrelated languages could not be accommodated by this genetic model. Other models, for example Grace's wave model (Grace 1985) were looked at, but this also did not seem to fit the case. Grace's basic proposition, the 'principle of shortest moves' does not fit the Markham situation. It is perfectly adequate as a model for migrations between islands but is not valid as a basis for tracing movements of language groups inside a large land mass. Watson's principle, based on his study of the Papuan-speaking Tairora society, of moving 'the next group but one' is more applicable in the Markham situation (Watson 1970). According to Watson's model of migration, refugees or migrants do not move into the closest next-door-neighbours' community. They tend to avoid their nearest neighbours, and move in with a group further away in order to avoid the inevitable problems which arise between groups which are very familiar with each other.

Future studies of the languages of western Melanesia should perhaps not divide the linguistic universe there into 'Austronesian' and 'Papuan', and then concentrate on one or the other. A potentially more profitable approach is to look at a 'culture area', in which common elements and differences are recorded within a geographical area. The linguistic data collected should be supplemented by data on the cultures of the societies. The cultural complexes of communities can tell us a lot about why their languages change, and exactly how they change. The genetic relationships between languages can, of course, still be elucidated where they exist, but those common features which are borrowed, and reborrowed, and shared among languages and cultures of an area will tell us more about the nature of language change, and specifically about the nature of language change in this rich and fascinating Melanesian context.

APPENDIX

GLOSSARY OF RECONSTRUCTED FORMS

POC	*a	F:1S
	*-aŋa	nominalising suffix
	*api	fire
	*au	F:1S
	*banic	wing
	*boʀok	pig
	*buaq	Areca nut
	*bulan	moon
	*-da	P:1IP
	*dramis	lick
	*dramu	lime spatula
	*-dria	P:3P
	*droman	leech
	*geju	nape
	*-gu	P:1S
	*ia	F:3S
	*iau	F:1S
	*iko[e]	F:2S
	*inum	drink
	*jiji	meat
	*jiʀi	Cordyline, Dracaena
	*ka	and
	*ka-	P: consumable
	*kabit-ŋa	carry
	*kadi	molar tooth
	*kai	F:1EP
	*kami	F:1EP
	*kamu	F:2P
	*kani	eat
	*kaʀati	bite
	*kasuari	cassowary
	*katimun	cucumber
	*kini-	instrument, causal, purposive prepositional verb
	*[k]ira	F:3P
	*kiʀam	axe
	*kita	F:1IP
	*ko[e]	F:2S
	*koso[p]	cut off
	*kuluʀ	breadfruit
	*kuron	pot
	*kutu	louse
	*leja	nit
	*lako	go
	*lija(n)	seed
	*lima	hand; five
	*lopu	sibling of opposite sex
	*ma	and
	*madriʀi	stand
	*-ma[mi]	P:1EP
	*manawa	heart
	*manuk	bird
	*maŋa	mouth
	*mata	eye
	*-m[i]u	P:2P
	*-mu	P:2S
	*muqa	before
	*mwa	tongue
	*mwata	snake
	*na	DEM: near hearer
	*na	common article
	*na-	P: alienable
	*nanaq	pus
	*natu	child

*ni	DEM: near speaker
*nikit(>*nkit)	nest
*nipo(n)	tooth
*niu	coconut
*no	DEM: further away
*-ña	P:3
*ñamuk	mosquito
*pai	some
*panaq	bow
*pani-	motion to animate being; dative prepositional verb
*panua	house
*pine	woman
*paqal	thigh
*paqoʀu	new
*paʀi-	reciprocal prefix
*puki	vulva, female genitals
*punuq	hit
*puqaya	crocodile
*puqun	base
*qa	personal pronominal marker
*qalipan	centipede
*qacan	name
*qate	liver
*qi	locative preposition
*qulu	head
*qulu[ŋa]	wooden pillow
*quma	garden
*qusan	rain
*qutin	penis
*rabia	sago
*raun	leaf
*rua	two
*sake	ascend
*sira	F:3P
*solo(p)	mix up
*susu	breast
*ta	indefinite article
*taci	sibling of same sex, younger
*taliŋa	ear
*tama	father
*taŋi(s)	cry, weep
*tapi	dig
*taqi	excrement
*tau	man
*tina	mother
*tini	body
*topu	sugarcane
*tubu	grandparent
*tuku	descend
*usu	nose
*yaŋo	yellow
PHG *aruji	beach
*bage	hand, arm
*bu	water
*ɣan	eat
*goluɣic	egg
*ɣuluʀ	breadfruit
*ɣum	garden, work
*ɣutu	louse
*kapiŋa	carry
*lovu	sibling of opposite sex
*-m	P:2
*-n	P:3
*-ŋ	P:1
*patac	(hand) palm
*tau-	R:
*vaɣa	foot; leg
*va	four
*vaqu	new
PMK *a-	S:1S
*ajinj	green leafy vegetable (*Abelmoschus manihot*)
*-aŋ	gerundive suffix
*bambuŋg	twins
*bani-c	wing
*bapamb	Croton
*baŋgi-	hand, arm
*barabin	heavy
*-bi	be, be thus
*biŋa-	name
*-buciŋg	bake on fire
*bulamb	moon
*buman	wild
*bundun	top of tree, projection
*-c	P:3 (inalienable subtype 2)
*-caparup	sneeze
*-carif	stir food
*ci-	marker of edible animal, bird, fish
*cicuk	midrib of leaflet of coconut frond; coconut skewer
*ci-s	F:3P

*-[c,l]up	vomit
*-damis	lick
*daŋgur	hornbill *(Rhyticeros plicatus)*
*-daru	chase; drive away
*dindund	elephantiasis *(Filariasis)*
*dugund	smoke of fire
*-fa	go
*fa-	foot, leg
*fa-	brother's wife/husband's sister (female speaking)
*faiak	netbag
*fain	indefinite article: plural
*-faniŋ	shoot arrow
*faraŋa-	namesake
*-fatafat	whisper
*-fic	carry on head
*-findi	spit
*fina-	female
*fini-	wife
*fisiwa-	navel
*fugai	crocodile
*fugi-	female genitals
*fugun	base; trunk
*funu	dead; finished
*fusik	black
*-[g]ajunj	twist string
*galif	centipede
*gamik	rain
*-gan	eat
*gandi-	molar tooth
*-garar	bite
*[ga,su]wu-	husband
*(g)i-	S:3S
*gi-n	instrument, causal, purposive preposition
*-[g,c]iŋg	sleep; lie down
*gir	stone axe
*gom	garden; work
*gu-c	tail
*guju-	head
*gur	clay cooking pot
*gur	louse
*guri-	penis
*i-	S:3S
*-ic	hit; strike
*in	F:3S
*i-na	locative demonstrative
*jaf	fire
*jaŋg	game; meat
*jiau	F:1S
*jinji	Cordyline
*jufif	march fly (Fam. *Tabanidae*)
*-jufun	bury
*-jujun	push
*-jumb	whistle
*juŋujuŋ	yellow; turmeric *(Curcuma spp.)*
*-k	P:1 (inalienable subtype 2)
*ka	and
*ka-	pronominal marker
*ka-gai	F:1EP
*ka-gam	F:2P
*ka-gir	F:1IP
*ka-gu	F:2P
*-kapiŋ	carry; give birth
*kasuwek	cassowary *(Casuarius bennetti)*
*kijam	dog
*kinj	left hand
*kitamb	earth, ground
*kuci	across; off
*kulu-	head
*kulub	wooden headrest
*kuluk	breadfruit
*-kumb	dance
*ku-ntu	nape
*kurubi-c	egg
*kuwaŋ	leatherhead *(Philemon Novaeguineae)*
*kwa-	neck
*kwafi	crab
*kwakwa-[c,n]	root
*kwako-c	sweat
*kwarukwa[n]	bone
*-kwep	steal
*lafu-	sibling of opposite sex
*lijun	seed, fruit, essence, truth
*liŋa-	ear
*linja[n]	nit; egg of louse
*-m	P:2 ; P:1EP
*ma	or
*ma-	tongue
*-mak	not be; not do; no
*mara-	eye, face, front

*maru[b]	(human)male
*ma-u-[a]-	imperative prefix: plural
*-mundiŋ	stand up
*mundu-	sister's husband; wife's brother (male speaking)
*murugu-	man's sister's son
*mutun	heel of foot
*-muŋg	go before, go first
*munjir	death adder *(Acanthopis antarcticus)*
*mba	and
*mba	definite future
*-mbip	defaecate
*mbu	water
*mbuk	pig
*[m,w]aŋan	indefinite article: singular
*mwa-	mouth
*mwanjun	door of house
*mwar	snake
*mwik	(water) dirty, cloudy
*-n	P:3
*na	demonstrative: near hearer
*-nab	scrape coconut
*na[nd,ŋg]	pus
*n-ana-ŋga	demonstrative pronoun: further away
*n-ani-ŋgi	demonstrative pronoun: near speaker
*naru-	child
*ni	demonstrative: near speaker
*nifo-	tooth
*n-[i,a]gi	demonstrative pronoun: near listener
*-nimb	urinate
*no	demonstrative: further away
*nugu-	liver
*-nuk	cooked
*-num	drink
*(numbu)namg	mosquito
*nuwat	tadpole
*-nd	P:1IP
*nda	and
*nda	one
*-ndap	arrive; come up to
*ndoma[ŋ]	leech
*-ndugu	hang down
*-nduk	bend down
*ndum	lime spatula
*-nduŋ	thunder
*ndut	node; end; knot
*nju	hole
*-njumb	finish
*njuf	hole in ground
*ŋaro	first born son
*ŋaro unduŋ	eagle
*ŋi-c	nest
*-ŋg	P:1S
*-ŋgara[f,k]	snore
*-ŋgiŋg	squeeze grated coconut
*ŋguf	red paint; dye
*ŋgunuŋgun	sky
*-ŋgV-	only
*-p	P:2 (inalienable subtype 2)
*-pafu	dream
*pakap	white ash
*parac	green; unripe
*pasi(r,k)ik	flesh
*pita-c	palm of hand; sole of foot
*posap	white
*-raf	dig
*ragi-	excrement
*-rakin	praise; honour
*ralaiŋ	mushroom
*rama-	father
*-raŋ	cry
*-rap	boil
*rasi-	sibling of same sex
*-rat	tremble; shiver, fear sg
*rau-	R:
*(re)fain	some, several
*rib	fighting shield
*rina-	mother
*rini-	skin; body
*-riŋun	hear
*ro-	continuative prefix
*ro-	dative, comitative preposition
*ro-s	definite article: plural (human)
*ruc	sea
*-ruk	descend
*rumbu-	grandparent; grandchild
*-rund	run; (river) flow
*-sak	ascend

**samwan*	shoot; sucker; planting material
**samwaru-*	young man
**saŋand*	flying fox
**sigus*	rhinoceros beetle (Sub Fam. *Dynastinae*)
**-sik*	bathe
**sikan*	spear
**siruk*	two
**sisu*	breast
**su-*	nose
**tagur*	house
**-tamu*	follow
**tatarik*	fowl
**-tuktuk*	drip
**tuku*	broken
**-tus*	(snake) shed skin
**u-[a]-*	imperative prefix: singular
**ulu-n*	skull; bone of head
**[wa]fak*	new
**waga-*	father's sister; mother's brother's wife
**wajak*	middle; inside
**wambumb*	hornet
**wik*	blood
**wu-*	in-law
**wus*	green leafy vegetable

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Abbreviations:

AJPA	*Australian Journal of Physical Anthropology*
APAO	*Archaeology and Physical Anthropology in Oceania*
ASAO	Association of Social Anthropologists in Oceania
ASDNG	*Amtsblatt für das Schutzgebiet Deutsch Neu Guinea*
BSOAS	*Bulletin of the School of Oriental and African Studies*
BKI	*Bijdragen tot de Taal-, Land-, en Volkenkunde*
CAnthr	*Current Anthropology*
DK	*Deutsches Kolonialblatt*
IJAL	*International Journal of Anthropological Linguistics*
JPH	*Journal of Pacific History*
JPS	*Journal of the Polynesian Society*
JRAI	*Journal of the Royal Anthropological Institute*
LLM	*Language and Linguistics in Melanesia*
MDS	*Mitteilungen aus den Deutschen Schutzgebieten*
MWA	Missionswerk Archiv der Evangelischen Lutherischen Kirche in Bayern: Neuendettelsau
NSO	National Statistical Office, Port Moresby
OL	*Oceanic Linguistics*
PL	*Pacific Linguistics*
SJA	*Southwestern Journal of Anthropology*
SIL	Summer Institute of Linguistics
WPLUH	*University of Hawaii Working Papers in Linguistics*
ZAOS	*Zeitschrift für afrikanische und ozeanische Sprachen*
ZEthn	*Zeitschrift für Ethnologie*
ZES	*Zeitschrift für Eingeborenen-Sprachen*
ZGEB	*Zeitschrift der Gesellschaft für Erdkunde zu Berlin*

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