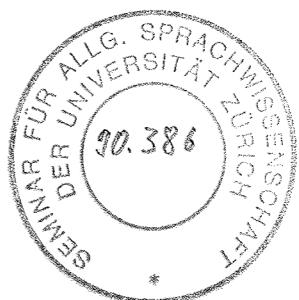


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THE MARKHAM LANGUAGES OF
PAPUA NEW GUINEA

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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 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:

<i>kager go mo-nj</i>	our(I) mouths
cf. <i>kager ga efa-c</i>	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:								
<i>p</i>	<i>b</i>	<i>t</i>	-	<i>s</i>	<i>z</i>	<i>k</i>	<i>g</i>	
<i>mp</i>	<i>mb</i>	<i>nt</i>	<i>nd</i>			<i>ŋk</i>	<i>ŋg</i>	
<i>m</i>		<i>n</i>				<i>ŋ</i>		
								<i>h</i>
			<i>r</i>					
							<i>y</i>	
Vowels:								
<i>w</i>								
<i>i</i>	<i>a</i>	<i>u</i>						

Notes:

1. /g/: [g]~[y] 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:								
<i>p</i>	<i>b</i>	<i>t</i>	<i>d</i>	<i>c</i>	<i>j</i>	<i>k</i>	<i>g</i>	<i>?</i>
<i>mp</i>		<i>nt</i>		<i>nc</i>	<i>nj</i>	<i>ŋk</i>		<i>ŋ?</i>
<i>m</i>		<i>n</i>				<i>ŋ</i>		
<i>f</i>		<i>s</i>		<i>r</i>				<i>(h)</i>
							<i>y</i>	
Vowels:								
<i>w</i>								
<i>a</i>	<i>i</i>	<i>o</i>	<i>u</i>					

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	V?V
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	V?V
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
mp		nt	nc		ŋk	
m		n			ŋ	
		s				h
w		r				
Vowels:	i	a	u	y		

Notes:

- /b/: [b]~[β] word finally.
- /ŋ/: /ŋ/ occurs initially, medially and finally.
- /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'; ŋarujkun 'crow'; marabuik 'k. bushfowl which lays red eggs'. (But 'red' is the expected bui?).
- /r/: [r] alternates freely with [d] and [l] in all positions.
- 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]~[a?a]; [ii]~[i?i], [aa]~[a?aa], e.g. as in baamping? 'coconut', which can also be ba?aamping?, and ?ii 'I think so', which can also be ?i?i.

4.2.4 SUKURUM

Sukurum has three varieties. They are:

- That spoken in Sukurum and Rumrinan;
- That spoken in Gupasa, Waroum and Wangat;
- That spoken in Gabagiap.

The Sukurum language has the following phonemes:

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

Notes:

- /mp,nt,ŋk/: Only the Wangat subvariety of Sukurum has the prenasalised voiceless stops /mp, nt, ŋk/.
- /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].
- /c/: In Wangat, [c] is realised as voiced consonant [j]; it contrasts with [s] which is a separate phoneme.
- /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'.
- /b/: Word finally, [b]~[β].
- /g/: /g/ is always realised as [y], and does not occur word finally.
- /k/: /k/ is always realised as a back velar [k].

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	r			h
w				y		
Vowels:	i	e	a	o	u	

Notes:

- /b/: Word finally, [b]~[β].
- /g,k/: [y] 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 [k].
- /r/: [r]~[d]~[l] freely in all positions.
- /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:

- Danggal, Wawas and Kumwats.
- Maralangko and Dzenemp.

South Watut has the following phonemes:

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

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]~[ž], and [nj]~[nž] freely.
3. /t/: [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:								
<i>p</i>	<i>b</i>	<i>t</i>	<i>d</i>	<i>c</i>	<i>j</i>	<i>k</i>	<i>g</i>	
<i>mp</i>	<i>mb</i>	<i>nt</i>	<i>nd</i>	<i>nc</i>	<i>nj</i>	<i>ŋk</i>	<i>ŋg</i>	
<i>m</i>		<i>n</i>				<i>ŋ</i>		
<i>f</i>		<i>s</i>						
		<i>r</i>						
<i>w</i>				<i>y</i>				
Vowels:								
<i>i</i>	<i>e</i>	<i>a</i>	<i>o</i>	<i>u</i>				

Notes:

1. /t/: [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. *jeningga o foc* ‘my arrow’ where the *o* is in harmony with the *o* in *foc*, and *janggu u* *jeningga* ‘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:								
<i>p</i>	<i>b</i>	<i>t</i>	<i>d</i>	<i>c</i>	<i>j</i>	<i>k</i>	<i>g</i>	<i>?</i>
<i>mp</i>		<i>nt</i>				<i>ŋk</i>		
<i>m</i>		<i>n</i>				<i>ŋ</i>		
		<i>s</i>						
		<i>r</i>						
<i>w</i>				<i>y</i>				
Vowels:								
<i>i</i>	<i>e</i>	<i>a</i>	<i>o</i>	<i>u</i>				

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],[ng],[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:								
<i>p</i>	<i>b</i>	<i>t</i>	<i>d</i>	<i>c</i>	<i>j</i>	<i>k</i>	<i>g</i>	
<i>mp</i>		<i>nt</i>				<i>ŋk</i>		
<i>m</i>		<i>n</i>				<i>ŋ</i>		
<i>f</i>		<i>s</i>						
		<i>r</i>						
<i>w</i>				<i>y</i>				
Vowels:								
<i>i</i>	<i>e</i>	<i>a</i>	<i>o</i>	<i>u</i>				

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:								
<i>p</i>	<i>b</i>	<i>t</i>	<i>d</i>	<i>c</i>	<i>j</i>	<i>k</i>	<i>g</i>	
	<i>mb</i>		<i>nd</i>		<i>nj</i>		<i>ŋg</i>	
<i>m</i>		<i>n</i>				<i>ŋ</i>		
		<i>s</i>						<i>h</i>
		<i>r</i>						
<i>w</i>								
Vowels:								
<i>i</i>	<i>e</i>	<i>a</i>	<i>o</i>	<i>u</i>				

Notes:

1. /b/: [b]~[ʃ] 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:								
<i>p</i>	<i>b</i>	<i>t</i>	<i>d</i>	<i>z</i>	<i>k</i>	<i>g</i>	<i>?</i>	
	<i>mb</i>		<i>nd</i>			<i>ŋg</i>		
<i>m</i>		<i>n</i>			<i>ŋ</i>			
<i>f</i>		<i>s</i>						<i>h</i>
		<i>r</i>						
<i>w</i>				<i>y</i>				
Vowels:								
<i>i</i>	<i>e</i>	<i>a</i>	<i>o</i>	<i>u</i>				

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/. /?/ 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 [k] 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 [ʃ] 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*; *fuefueiaq* '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.

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

/ea/	>	/e/	<i>seaq</i>	'quiet'	>	<i>seng</i>
/ua/	>	/u/	<i>muahang</i>	'good'	>	<i>muhang</i>
/ueia/	>	/ue/	<i>fueiaq</i>	'small'	>	<i>fueq</i>
or by progressive assimilation , as in the case of:						
/ei/	>	/i/	<i>yein</i>	'dog'	>	<i>yin</i>
/au/	>	/u/	<i>hakaun</i>	'get'	>	<i>hakun</i>
Or the vowel may be completely changed, e.g.						
/uo/	>	/a/	<i>uot</i>	'man'	>	<i>at</i>

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

<i>raga</i>	DEM	>	<i>ra</i>
If the vowels are non-identical, they may become a diphthong, e.g.			
<i>tagine</i>	'one'	>	<i>taine</i>
<i>kanung</i>	'I saw'	>	<i>kaung</i>
<i>rapung</i>	'want, like'	>	<i>raung</i>

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:								
<i>p</i>	<i>b</i>	<i>t</i>	<i>d</i>	<i>z</i>	<i>k</i>	<i>g</i>	<i>?</i>	
	<i>mb</i>		<i>nd</i>		<i>nj</i>		<i>ŋg</i>	
<i>m</i>		<i>n</i>					<i>ŋ</i>	
<i>f</i>		<i>s</i>					<i>h</i>	
		<i>r</i>						
<i>w</i>						<i>y</i>		
Vowels:								
<i>i</i>	<i>e</i>	<i>a</i>	<i>o</i>	<i>u</i>				

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 [k].
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 ARIWAUNGGA

The Aribwaungga language has the following phonemes:

TABLE 4.14: AIBWAUNGG PHONEMES

Consonants:							
<i>p</i>	<i>b</i>	<i>t</i>	<i>nd</i>	<i>c</i>	<i>j</i>	<i>k</i>	
<i>mp</i>	<i>mb</i>	<i>nt</i>		<i>nj</i>	<i>ŋk</i>	<i>ŋg</i>	
<i>m</i>		<i>n</i>			<i>ŋ</i>		
<i>f</i>		<i>s</i>					<i>h</i>
		<i>r</i>					
<i>w</i>				<i>y</i>			
Vowels:							
<i>i</i>	<i>e</i>	<i>a</i>	<i>o</i>	<i>u</i>			

Notes:

- /mp, nt, nk/: Examples of /mp, nt, nk/ are rare.
- /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].
- /nj/: The prenasalised voiceless affricate [n̥c] occurs in few examples, and always word finally. It is in complementary distribution with [nj], which only occurs initially and medially.
- /k/: Voiceless stop [k] occurs initially and medially, but rarely finally. Glottal stop [?] 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].
- /c, j, nj/: The alveolar affricated stops /c, j, nj/ have palatalised and non-palatalised allophones which alternate freely in all positions.
- /r/: [r]~[l] freely, but [l] is usually realised.
- /h/: /h/ occurs in two words only in the data, *hog* '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.
- Sequences of two or more vowels in Aribwaungg are rare, and occur in words borrowed from neighbouring languages, e.g. *yakui* 'clothes', which is borrowed from Yabêm from *gaköe* '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:								
<i>p</i>	<i>b</i>	<i>t</i>	<i>d</i>	<i>c</i>	<i>j</i>	<i>k</i>	<i>g</i>	<i>?</i>
	<i>mb</i>		<i>nd</i>				<i>ŋg</i>	
<i>m</i>		<i>n</i>			<i>ŋ</i>			
		<i>s</i>						<i>h</i>
		<i>r</i>						
<i>w</i>				<i>y</i>				
Vowels:								
<i>i</i>	<i>e</i>	<i>a</i>	<i>o</i>	<i>u</i>				

Notes:

- The speaker alternates oral and nasal voiced stops. Where Aribwaungg has prenasalised voiced stops, Aribwatsa as a rule has oral voiced stops only.
- /b/: [b]~[β]
- /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:						
<i>p</i>	<i>b</i>	<i>t</i>	<i>d</i>	<i>k</i>	<i>g</i>	
	<i>mb</i>		<i>nd</i>		<i>ŋg</i>	
<i>m</i>		<i>n</i>		<i>ŋ</i>		
		<i>s</i>				<i>h</i>
		<i>l</i>				
<i>w</i>				<i>y</i>		
Vowels:						
<i>i</i>	<i>ɛ</i>	<i>e</i>	<i>a</i>	<i>o</i>	<i>ə</i>	<i>u</i>

Notes:

- /b/: /b/ occurs rarely in the data.
- /k/: /k/ is realised as [x] before /a/, intervocally.
- /d/: When /d/ precedes /i/ it is sometimes heard as [d^y], voiced palatal stop.
- /mb/ and /nd/ become devoiced before /o/.
- 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) *gapap* 'always'.
- In contrast to all the other Markham languages, in Labu, single vowels can comprise a word, e.g. *a* 'sun'; *i* 'axe'; *u* 'rain'.
- 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)

		<i>p</i>	<i>t</i>	<i>j²</i>	<i>k</i>	<i>q</i>
stop						
pren'd	<i>ŋp¹</i>	<i>mp</i>	<i>nt</i>		<i>ŋk</i>	
stop			<i>d</i>			
trill			<i>nd</i>			
pren'd			<i>s</i>			
sibilant			<i>ns</i>			
pren'd						
nasal	<i>ŋm</i>	<i>m</i>	<i>n</i>	<i>ñ</i>	<i>ŋ</i>	
liquid			<i>l</i>			
glide		<i>w</i>		<i>y</i>		<i>R</i>

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 **k* 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 called ‘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	<i>bw</i>		<i>p</i>	<i>b</i>	<i>t</i>	<i>d</i>	<i>c¹</i>
fricative					<i>r</i>	<i>dr</i>	
sibilant					<i>s</i>		
nasal	<i>mw</i>		<i>m</i>		<i>n</i>	<i>ñ</i>	
liquid					<i>l</i>		
glide		<i>w</i>			<i>y</i>		<i>R</i>

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 Yampat 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	<i>p</i>	<i>t</i>	<i>c</i>	<i>k</i>
stop, vd	<i>b</i>	<i>d</i>	<i>j</i>	<i>g</i>
fricative, vd	<i>v</i>			<i>y</i>
flap		<i>r</i>		
sibilant		<i>s</i>		
nasal	<i>mw</i>	<i>m</i>	<i>n</i>	<i>ŋ</i>
liquid		<i>l</i>		
glide	<i>w</i>		<i>y</i>	<i>r</i>

(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 **y*. 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 **y*.
- D. A number of etyma acquire an unpredicted final *-*c*.
- E. POC **bork* ‘pig’ is reflected as PHG **bor*: i.e. final *-*ok* is unexpectedly lost (PHG did not lose POC final consonants).
- F. POC **kamid* 1EP is completely replaced by its alternant POC **kai*.
- G. All POC verb-deriving prefixes (**pa-* causative, **pari-* 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	kw	labial	alveolar	alveo- palatal	velar
obst, vl		<i>p</i>	<i>t</i>	<i>c</i>	<i>k</i>
obst, vd		<i>b</i>	<i>d</i>	<i>j</i>	<i>g</i>
obst, nasal			<i>mb</i>	<i>nd</i>	<i>ŋj</i>
nasal	<i>mw</i>		<i>m</i>	<i>n</i>	<i>ŋg</i>
fricative			<i>f</i>	<i>s</i>	<i>θ</i>
flap				<i>r</i>	
liquid				<i>l</i>	
glide				<i>w</i>	

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

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-, Ø-	-mu-	m	w

TABLE 4.21 (continued)

POC	.	*t	*d,*dr	*r,*R(non-fin)	*I	*n
PHG	.	*t	*d	*r	*I	*n
PMK	*t	*T	*d-	*nd-	*-nd-	*I
Adzera	t	r	d-	t,-nt-	-nt-	r,n
Mari	t	r	r-	t,-nt-	-nt-	r,n
Wampur	t	r	r,t-	t,-nt-	-nt-	r,n
Sukurum	t	r	r-	t,-r,-nd-	-nd-	r,n
Sarasira	t	r	r-	t,-r,-nd-	-nd-	r,n
South Watut	t	r	d,-t-	nd-	-nd-	r,n
Middle Watut	t	r	d-	t,-nt-	-nt-	r,n
North Watut	t	r	d,-t-	t,-r,-nt-	-nt-	r,n
Wampar	t	r	d-	nt-	-d-	n;-Ø-
Musom	t	r	d-	nd-	-d-	n
Duwet	t	r	d-	nd-	-nd-	r,n
Nafi	t	r	d-	nd-	-nd-	n
Aribwaungg	t	r	t-	nd-	-nd-	n
Aribwatsa	t	r	d-	d-	-d-	n
Labu	t	l	t-	nd,-t-	-t-	l;-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	s,y-	-s-	-s~h
Nafi	s-	-s-	-s	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-	*i	*n
Adzera	j-	-j,-y-	nc,j-	-nc-	-s	i
Mari	z-,t-,s-	-z-	s-	-z-	.	i
Wampur	c-,j-,s-	-j,-y-	c-,nc-	-nc-	.	i
Sukurum	s-	-s,-y-	s-,ns-	-ns-	.	i
Sarasira	c-,t-,s-	-c,-j-	c-,nc-	-nc-	-s	i
South Watut	j-	j-	nj-	-nj-	-ø	n
Middle Watut	c-j-	-j,-c-	j-	-nc-	-ø	n
North Watut	j-,y-	j-	j-	-nc-	-ø	n
Wampar	j-,y-	j-	nc-	-nc-	-j,-c	n
Musom	j-,c-	-c-	j-	-nj-	-ø,-c	n
Duwet	j-,s-	-y-	j-	-j-	-ø,-s	n
Nafi	j-,s-	-s-	j-	-nj-	-ø,-s	n
Aribwaungg	c-	j-	nj-	-nj-	-ø,-c	n
Aribwatsa	j-	j-	j-	-c,-j	-ø,-c	n
Labu	s-,y-	-d'-	s-	-s-	-ø	.

POC	*k	*-q	*-r	*-R	*k	*q	*g-
<hr/>							
PHG	*k(fort)		*-k		*y(len)	*g-	
PMK	*k	*-k-	*-k	*kw-	*-kw-	*g-	*-g-
Adzera	Ø	-z-	-z	w,-Ø/u-	-Ø	g-	-g-
Mari	k-	-k-	-k	kw-,ku-	-kw-	g-	-g-
Wampur	z	-z-	-z?	?w-	-?w-	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	z	-k-	-z?	?w-	-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-	-z?	Ø,Øu-	-ko,-,Ø-	Ø,k-	-Ø-
Aribwatsa	Ø	-k-	-z?	Ø,Øu-	-ko,-,Ø-	Ø,g-	-Ø-
Labu	k-	-Ø	-Ø	w,-Øo-	-w-	Ø,k-	-Ø-

TABLE 4.21 (*continued*)

POC	*-g-			*j
PHG	*-g-			*j
PMK	*ŋg-	*-ŋg-	*-ŋg	*ŋ
Adzera	ŋ-	-ŋ-	-ŋ?	ŋ
Mari	ŋk-	-ŋk-	-ŋk	ŋ
Wampur	.	-ŋ,-ŋ?	-ŋ?	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	
POC	PAN
*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 Wantroat. 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	* <i>a</i>	* <i>i</i>	* <i>e</i>	* <i>o</i>	* <i>u</i>
PHG	* <i>a</i>	* <i>i</i>	* <i>e</i>	* <i>o</i>	* <i>u</i>
PMK	* <i>a</i>	* <i>i</i>	* <i>e</i>	* <i>o</i>	* <i>u</i>
Adzera	<i>a</i>	<i>i</i>	<i>i,a</i>	<i>o,u</i>	<i>u</i>
Mari	<i>a</i>	<i>i</i>	<i>i,a</i>	<i>u</i>	<i>u</i>
Wampur	<i>a</i>	<i>i</i>	<i>i,a</i>	<i>u</i>	<i>u</i>
Sukurum	<i>a</i>	<i>i</i>	<i>i,e,a</i>	<i>o</i>	<i>u</i>
Sarasira	<i>a</i>	<i>i</i>	<i>i,e,a</i>	<i>o</i>	<i>u</i>
South Watut	<i>a</i>	<i>i</i>	<i>i,a</i>	<i>u</i>	<i>u,i</i>
Middle Watut	<i>a,o</i>	<i>e,i</i>	<i>e,a</i>	<i>au,o</i>	<i>o,u</i>
North Watut	<i>a,u</i>	<i>i,e</i>	<i>i,a</i>	<i>au,u</i>	<i>u</i>
Wampar	<i>a,u</i>	<i>e,i</i>	<i>e,i</i>	<i>au,o</i>	<i>o</i>
Musom	<i>a,o</i>	<i>i</i>	<i>e</i>	<i>o</i>	<i>u,i</i>
Duwet	<i>a, ia, ie</i>	<i>i,ai</i>	<i>ia, iə, ei, e, i</i>	<i>ia, o, ei</i>	<i>ei, i</i>
Nafi	<i>a,o</i>	<i>i</i>	<i>e</i>	<i>o</i>	<i>u,i</i>
Aribwaungg	<i>a,o</i>	<i>i</i>	<i>e</i>	<i>o</i>	<i>u,i</i>
Aribwatsa	<i>a,o</i>	<i>i</i>	<i>e</i>	<i>o</i>	<i>u,i</i>
Labu	<i>a</i>	<i>ê</i>	<i>a</i>	<i>o</i>	<i>ô</i>
PMK	* <i>aCi</i>	* <i>i</i>	* <i>u</i>	* <i>aCu</i>	* <i>ai</i>
Adzera	<i>ai</i>	<i>i[a]</i>	<i>u[a]</i>	<i>au, aCu</i>	<i>ai</i>
Mari	<i>ai</i>	<i>ia</i>	<i>ua</i>	<i>au, aCu</i>	<i>ai</i>
Wampur	<i>ai</i>	<i>ia</i>	<i>ua</i>	<i>au, .</i>	<i>ai</i>
Sukurum	<i>e,ai</i>	<i>ia, ie</i>	<i>ua</i>	<i>ao, aCu</i>	<i>e</i>
Sarasira	<i>e,ai</i>	<i>ia, ie</i>	<i>ua</i>	<i>au, aCu</i>	<i>e</i>
South Watut	<i>aCi</i>	<i>i,e</i>	<i>u</i>	<i>aCo</i>	<i>ai</i>
Middle Watut	<i>aCe</i>	<i>i</i>	<i>u</i>	<i>au</i>	<i>ai</i>
North Watut	<i>aCi</i>	<i>e</i>	<i>o</i>	<i>.</i>	<i>ai</i>
Wampar	<i>aCe, ai</i>	<i>i</i>	<i>u</i>	<i>ao</i>	<i>u</i>
Musom	<i>aCi</i>	<i>i,e</i>	<i>i,u</i>	<i>au</i>	<i>u</i>
Duwet	<i>aCai</i>	<i>i, ia, e</i>	<i>iau, u, i</i>	<i>.</i>	<i>ei</i>
Nafi	<i>aCi</i>	<i>i,e</i>	<i>u,i</i>	<i>au, ao</i>	<i>e</i>
Aribwaungg	<i>aCi</i>	<i>i,e</i>	<i>u,i</i>	<i>au</i>	<i>e</i>
Aribwatsa	<i>aCi</i>	<i>i</i>	<i>u,i</i>	<i>au</i>	<i>e</i>
Labu	<i>aCi</i>	<i>i</i>	<i>u,i</i>	<i>aCô</i>	<i>.</i>

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]lik* 'flesh, meat'

ADZ *paya* 'gums'; WPU *pa?i?*; SKM, SRA *pakek*; SWT *pasip*; NWT *pasi?*; WPA *bese-* 'gums'; MSM, NFI *pasik*; AWG *pasiri?*; ARB *basiri?*; LAB (*a*)*pisi* 'flesh, meat'.

PMK **parac* 'green, unripe'

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

PMK **p*-, as exemplified by:

PMK *-*caparup* 'sneeze'

ADZ, WPU -*caparu?*; 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-ya* > PHG **kapija* 'carry' > PMK *-*kapij* 'carry', 'give birth'

ADZ -*apij?*; SKM, SWT -*kapij*; MWT -*kaper*; NWT -*?apij*; WPA -*pej* '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*)*ra?*; 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 **vaya* ‘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 -*faniŋ?*; MRI, WPU -*hania*; SKM -*fania*; SWT -*fani*; MWT -*feniŋ*; NWT -*haneŋ*; NFI,
 AWG -*faniŋ* ‘shoot arrow’.

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

POC **paqoru* > PHG **vaqu* ‘new’ > PMK *[*waʃfak*] ‘new’
 ADZ *fa?*; MRI *ha(ri)*; SKM, SRA *fak*; SWT, MWT *wafak*; NWT *waha?*; WPA *wafu*; MSM
wahok; DWT *akei(n)*; NFI *wofok*; AWG *woho?*; LAB *ha?u* ‘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 *juhif*; MSM *jihih*; NFI
jufif; AWG *cifif*; LAB *sêhê* ‘march fly’.

PMK **ŋguf* ‘red paint or dye’
 ADZ (*ma*)*ŋkuf,ŋuf*; MRI *kuh*; WPU ?*uh*; 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 *sia?*; 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 **bangi-* ‘arm, hand’
 ADZ *baŋi-*; MRI *baŋkia-*; WPU *baŋia-*; SKM, SRA *baŋgia-*; SWT *baŋgi-*; MWT *beŋki-*; NWT
baŋke-; WPA *baŋi-*; MSM, NFI *bai-*; AWG *pangi-*; 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 *pajə* ‘name’.

PMK **buman* ‘wild’

ADZ, MRI, SKM *buman*; SRA *bunij*; 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 **goluyic* ‘egg’ > PMK **kurubic* ‘egg’
 ADZ *urubit*; MRI *kuruwit*; WPU ?*urit*; SKM, SRA *kurubit*; SWT *kuruwic*; MWT *korowec*;
 NWT ?*urugic*; WPA *rowe*; MSM *kuruwik*; DWT *karageis*; NFI *kuruwik*; AWG *uruwi?*; ARB
rowi?; 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 *borok ‘pig’ > PHG *bor > PMK *mbuk ‘pig’
 SWT mbuk; MWT mpuk; NWT mpo?; 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 apō
 ‘grandparent/grandchild’. (Sukurum g-[y] 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 *bambung ‘twins’
 ADZ bampun; MRI bampuajk; WPU bampuan; SRA bambuaj; SWT bambuajg; MWT bompoj; NWT bampumb(-iaj); WPA boampug; MSM babum; DWT bambu?; NFI bambun; AWG pambung ‘twins’. (North Watut -iaj 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 -gump; MRI -gkuamp; SKM, SRA -kuam; SWT, MWT -kumb; NWT -?omb; 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 yu ‘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 mi?; SKM muk(urik); SRA muk(uriak); SWT mikimik; NWT (muru)mi?; WPA (ro)me; MSM (ru)mik; DWT, NFI mwaik; AWG (ru)mi? ‘(water) dirty, cloudy’.

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

PMK *samwan ‘sucker’, ‘shoot’, ‘planting material’
 ADZ, MRI, WPU, SKM, SRA yamwan; SWT siwi?; MWT sowe; NWT sugi?; WPA sowen; AWG suwin ‘sucker’, ‘shoot’, ‘planting material’.

PMK *samwaru- ‘young man’
 MRI samwak; WPU samurua?; 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 mutu?; WPA moton; MSM mutun; NFI mutun; AWG; mutun; ARB mutun; DWT mitein.

POC *muqa ‘before’ > PMK *-mung ‘go before, go first’
 ADZ, WPU -mug?; MRI (ma)mu(an) ‘formerly, before’; SKM, SRA -muj; SWT, MWT, NWT -mung; WPA -mog; MSM, DWT, NFI, AWG -mung; 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 gami?; MRI, SKM, SRA gamiak; WPU gamia?; SWT mik; MWT emik; NWT me?; WPA yami; MSM, DWT, NFI amik; AWG, ARB ami? ‘rain’.

PMK *-m, as in the examples:

POC *quuma ‘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 *wasa?*; 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 *suwe?* 'cassowary'.

PMK **kuwaj* 'leatherhead bird' (*Philemon novaeguineae*)

ADZ *uwaj*; MRI, SKM, SRA *kuwaj*; WPU, NWT (*yaru*)*uwaj*; WPA *owaŋ*; MSM, DWT, NFI *kuwaj*; AWG, ARB *uwaj* '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 -*ti?itu?*; SKM, SRA -*toktok*; SWT -*tuk*; WPA -*tato*; MSM -*tuk*; AWG -*tu* '(water) drip'.

PMK **tatarik* 'fowl'

ADZ *tatarī?*; MRI *tariak*; WPU *tataria?*; SKM *tatariak*; MWT *terik*; MSM, DWT *tirik*; AWG, ARB *tiri?* '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*, **r* (non-final) and in some etyma from POC **I* 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 *-*rigun* 'hear'

ADZ -*rigant*; MRI, SKM -*yagua*; WPU -*naqua*; SWT -*ruŋu*; MWT -*riju*; NWT -*reŋo?*; WPA -*rugum*; MSM -*rigiq*; DWT -*ragu*; NFI , AWG, ARB -*rigin*; 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 **karati* ‘bite’ > PMK *-garar ‘bite’
 ADZ, MRI, WPU -gara; SRA -rar; MWT -gar; WPA -aar; MSM, AWG -rar; LAB -kalu ‘bite’.

POC **rua* ‘two’ > PMK *(s)*iru(k)* ‘two’
 ADZ *iru?*(run); MRI *hiruk(ajkwa)*; WPU *iru?*; SKM *reruk*, *roruk*; SRA *iruk*; SWT *suruk*; MWT, WPA *serok*; NWT *siru?*; MSM, NFI *siruk*; DWT *seik*; AWG, ARB *siru?*; 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 *gu* ‘snake’.

POC **kiram* ‘axe’ > PMK *gir ‘stone axe’
 ADZ, MRI, WPU, SRA *gir*; MWT, WPA *ge*; MSM *ki* ‘stone axe’; NFI *ge?*; 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 **dangur* ‘hornbill’ (*Rhyticeros plicatus*)
 ADZ *dangur*; MRI *raŋkuar*; WPU *taŋuar*; SKM, SRA *raŋguar*; SWT *daŋgur*; MWT *doŋku*; NWT *daŋkor*; WPA *daŋir*; MSM *digir*; DWT *daŋgaut*; NFI *(ro)ndingi*; AWG *tingir*; 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[aj]* ‘leech’
 ADZ *tuaman*; MRI, WPU, SRA *tuam*; SKM *tomay*; SWT *ndum*; MWT *tum*; NWT *tom*; MSM *(ga)dim*; DWT *daum*; NFI *(ga)ndim*; AWG *(ka)ndimp*; ARB *(ga)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 *-mundiq ‘stand, stand up’
 ADZ, MRI, WPU, SKM, SRA -*munti*; SWT -*mundik*; WPA -*monteq*; MSM -*mbidi*; DWT -*mandai*; NFI, AWG -*mindiq*; ARB -*midiq*; LAB -*ti* ‘stand up’.

PMK *-finti ‘spit’
 ADZ -*finti* (‘to charm or bless’); MRI -*hinti*; WPU -*hini(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 **sajand* ‘flying fox’
 MRI, WPU *sajant*; SKM, SRA *sajan*; SWT *sajand*; NWT *sajant*; WPA *sajud*; MSM, NFI, AWG *sojond*; DWT *sajund*; ARB *sogod* ‘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 *nialō* ‘child’.

POC **nanaq* ‘pus’ > PMK **na[nd,ŋg]* ‘pus’

ADZ *nag?*; MRI, WPU *nant*; SKM, SRA *nan*; SWT *narryg*; 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 *nihu-*; 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 *hōnō* ‘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 suffixes, of which the third person form is PMK *-n (from POC *ñā 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 *nien*; 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)*hō* ‘base’, ‘trunk’.

4.6.13 PMK *I

As POC *I shows three different sets of reflexes in the Markham languages, I am reconstructing PMK *I, even though the reflexes appear to belong with either PMK *r, *n or *∅. There appears to have been a regular change *I 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 *I- to post-Proto Markham n- was completed in the following examples:

POC **lopū-* ‘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 *nōhō* ‘sibling of opposite sex’.

POC **lijā(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 *nind'i* ‘seed’, ‘fruit’, ‘truth’, ‘essence’.

The change PMK *I- 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 *qinq*; MWT *qinc*; MSM *minc*; DWT *mis*; NFI (a)*minc*; ARB (a)*nic*. (PMK *I- became initial nasal in the Lower Markham group.)

PMK *-I-

The change PMK *-I- 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 *?unub*; SWT *kunu*; MWT *kono*; NWT *?unu*; WPA *ono*; DWT *kireip*; NFI *kunu*; AWG *unub*; ARB *unup*; LAB *ini* ‘wooden headrest’.

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

POC **bulan* ‘moon’ > PMK **bulamb* ‘moon’

ADZ, WPU, SWT, NWT *buramp*; MWT *boram*; MSM (*gom*)*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 *-I- 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 ?*urua-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 *raggi* ‘mushroom’.

4.6.14 PMK **k*

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

PMK **kijam* ‘dog’

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

PHG **golu(y)i-c* ‘egg’ > PMK **kurubi-c* ‘egg’

ADZ *urubit*; MRI *kuruwit*; WPU ?*urit*; SKM, SRA *kurubit*; SWT *kuruwic*; MWT *korowec*; NWT ?*urugic*; WPA *rowe*; MSM, NFI *kuruwik*; DWT *karageis*; AWG *uruwi?*; ARB *rowi?*; LAB (a)*kulôhô* ‘egg’.

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

PMK **sikan* ‘spear’

ADZ *sigan*; MRI, SKM, SRA, SWT *sikan*; MWT *sekan*; NWT *si?an*; NFI *siken* ‘spear’.

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

PMK *-*sik* ‘bathe’

ADZ, WPU -*yi?*; SRA -*yik*; SWT -*sik*; MWT -*sek*; NWT -*si?*; WPA -*se*; MSM, DWT, NFI -*sik*; AWG, ARB -*si?*; LAB -*sa* ‘bathe’.

POC **tuku* ‘descend’ > PMK *-*ruk* ‘descend’

ADZ, WPU -*ru?*; MRI, SKM, SRA, SWT -*ruk*; MWT -*rok*; NWT -*ru?*; WPA -*ro*; MSM -*ruk*; DWT -*rauk*; NFI -*ruk(wak)*; AWG , ARB -*ru?* ‘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-?*; MRI *ha-k*; SKM, SRA *fa-k*; SWT (ya)*fa-k*; MWT (e)*fa-k*; NWT (i)*ha-?*; WPA *fa-Ø*; MSM *ha-k*; DWT *ia-k*; NFI *fa-k*; AWG *fa-?*; ARB *ha-?* ‘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 ?*wa?ian*; SRA *kwagas*; SWT *kakwac*; MWT *kowuc*; NWT ?*agwac*; WPA *wanac*; MSM *kwac*; NFI *kwas*; AWG, ARB *koc*; LAB *wuwa* ‘root of tree, plant’.

PMK *-*kwep* ‘steal’

ADZ -*wap*; MRI -*kwa*; WPU -?*wap*; SKM , SRA -*kweb*; WPA -*wap*; MSM, NFI -*kep*; DWT -*ket*; AWG -*ip*; ARB -*ap* ‘steal’.

PMK **kwafi* ‘crab’

ADZ *wafi*; MRI *kwahi*; WPU, NWT ?*wahi*; 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 *wa?wah*; SKM *wakuf*; SRA *wakwaf*; SWT, MWT *wakuf*; NWT *wauh*; NFI *wakih*; AWG *waif* ‘wild kapok’.

PMK **kwarukwa-* ‘bone’

MRI *kurukwan*; WPU ?*uru?wan*; MWT *kwarok*; NWT *waru?*; 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 **y*. POC **g* was retained as PHG **g*. PMK merged the two PHG phonemes **y* and **g* as PMK **g*. However among the daughter languages, some reflect PMK **g* as [g] and others reflect it as [y], 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), -*ga* (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 *ð* ‘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 *fogi-*; 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]. Intervocally, 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 *-*ŋging* ‘squeeze grated coconut’
 ADZ -*ŋjig?*; MRI -*ŋkiŋk*; SRA -*ŋgiŋ*; SWT -*ŋgiŋg*; MWT -*ŋkeŋg*; NWT -*ŋking*; 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 **dangur* ‘hornbill’

ADZ *dajur*; MRI *raŋkuar*; WPU *tagur*; SKM, SRA *raŋguar*; SWT *dangur*; MWT *doŋku*;
 NWT *dajkor*; WPA *dajir*; MSM *digir*; DWT *dangaut*; NFI *(ro)ndinggi*; AWG *tiŋgi* ‘hornbill’.

PHG **bage-* ‘arm’, ‘hand’ > PMK **bangi-* ‘arm’, ‘hand’

ADZ *baŋi-*; MRI *baŋkia-*; WPU *ba'ia-*; SKM, SRA *baŋgia-*; SWT *baŋgi-*; MWT *beŋki-*; NWT
baŋke-; WPA *baŋi-*; MSM, NFI *bai-*; AWG *panggi-*; ARB *bagi-* ‘arm’, ‘hand’.

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

PMK *-[*g,c*]*ŋg* ‘sleep, lie down’

> PUMK *-*giŋg* > ADZ -*giŋ?*; MRI -*giŋk*; WPU -*giŋ?*; SKM, SRA -*giŋ*;

> PWT *-*giŋg* > SWT, MWT -*giŋg*; NWT -*geŋg*;

> PLMK *-*cɪŋg* ‘one person sleep, lie down’ > WPA -*i*; MSM -*cɪŋg*; DWT -*yik* (with singular
 subject) -*hingisi* (with plural subject); NFI -*sing*; AWG -*cɪŋg*; ARB -*cɪg* ‘sleep, lie down’.

PMK **jang* ‘game, meat’

ADZ *jaŋ?*; SKM *saŋ*; SRA *caŋ*; SWT *yiaŋ*; MWT *yong*; NWT *jang*; WPA *ji*; MSM *cɪŋ* ‘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 **līŋa-* ‘ear’

ADZ, MRI, SKM, SRA, SWT *riŋa-*; MWT *reŋa-*; WPA *nae-*; MSM, NFI, AWG, ARB *riŋa-*;
 DWT *naŋgi-*; LAB *naga*. (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 **I* are mixed in a single etymon, varying
 between *r* and *n*, as discussed in 4.6.13 above.)

POC **yago* ‘yellow’ > PMK **juŋjuŋ* ‘turmeric plant’ (*Curcuma sp.*), ‘yellow’

ADZ, WPU *juŋjuŋ*; SKM *suŋsuŋ*; SWT *jaŋjaŋ*; MWT *ŋoŋŋ*; 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 -*riŋ*; LAB *laŋi* ‘cry’.

PMK **ralaij* ‘mushroom’
ADZ *rain*; MRI, WPU *raiŋ*; SKM, SRA *reg*; 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 intervocally, 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, [d^y] 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 **sagand* ‘flying fox’
MRI, WPU *sagant*; SKM, SRA *sagan*; SWT, NWT *sagant*; WPA *sajud*; MSM, NFI *sojond*; DWT *sagund*; AWG *sojont*; ARB *sojod* ‘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 -yi?; SRA -yik; SWT -sik; MWT -sek; NWT -si?; WPA -se; MSM, DWT, NFI -sik;
AWG, ARB -si?; 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 -sa?; MSM -sak; DWT -sua; AWG, ARB -sa?; 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 *sube?*; 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 *fas [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 -*bicing*; MWT -*bucin*; NWT -*pwaceŋg*; WPA -*pucŋ*; 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(y)i*-c 'egg' > PMK **kurubi*-c 'egg of bird'

ADZ urubi-t; MRI kuruwi-t; WPU ?uri-t; SKM, SRA kurubi-t; SWT kuruwi-c; MWT korowe-c; NWT ?irugi-c; WPA rowe; MSM, NFI kuruwi-k; DWT karagei-s; AWG uruwi-?; ARB rowi-?; LAB (a)kulohô 'egg of bird'. (The velar reflexes of PMK *-c for Musom, Nafi, Aribwaung 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 (ya)su-c; MWT (o)su-c; NWT (ya)si-c; MSM isi-t; DWT rasau-s; NFI asi; AWG, ARB (ya)si-c 'testicles'.

PMK **kako*-c 'sweat'

ADZ uwa-c; WPU ?u?a-c; SWT kaku-c; MWT kakau-c; NWT ?au-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 -? '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 tuhuh; SRA tifif; SWT jifaf ('sandfly'); MWT, WPA jofef; NWT juhuh; MSM jihih; NFI jufih; AWG cifif; LAB sihi 'march fly'.

POC **jiri* *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 **yago* 'yellow' > PMK **jugujuŋ* 'turmeric', 'yellow'

ADZ jugujuŋ; WPU jamajay; SKM suqusuŋ; 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 **lij(a)n* 'seed' > PMK **lijun* 'seed', 'fruit', 'essence', 'truth'

ADZ nijun; WPU nijuŋ; SKM nisuŋ; SRA nicuan; SWT, MWT niju; NWT nejo; WPA nijin; MSM nicin; NFI nisin; AWG, ARB nijun; LAB (a)nind'ê 'seed', 'fruit', 'essence', 'truth'.

PMK *-(g)ajunj 'twist string'

ADZ -ajuŋ?; WPU -gajuŋ?; SRA -gajab; WPA -jiŋ; MSM -njinj; AWG -njinc; ARB -jij; LAB -tind'i '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 **jiri* *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 *mêse* ‘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 ?*enc*; 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 *gjinj*; MWT *ginc*; NWT *renc*; WPA *gij*; MSM *minc*; DWT *mis*; NFI *mes*; AWG (a)*minc*; ARB (a)*nic* ‘nit, egg of louse’. (Final -n in the Upper Lower Markham forms is a reflex of third person possessive pronoun suffix PMK *-n. The Watut and 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 *nong*; NWT *wanaj*; 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 *-ñia > PMK *-n third person possessive pronoun suffix

ADZ, MRI, WPU, SKM, SRA -n; SWT -?; MWT -∅; NWT -?; WPA, MSM, DWT, NFI, AWG, ARB -n. (The final -? in SWT and NWT is due to loss of final consonant PMK *-n, and through stress rules, its replacement with -?).

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 **bangi-* ‘hand’, ‘arm’

ADZ *baŋi-*; MRI *baŋkia-*; WPU *ba'ia-*; SKM, SRA *bangia-*; 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 *fa?*; MRI *ha(r)i*; SKM, SRA *fak*; SWT, MWT *wafak*; NWT *wafa?*; WPA *wafu*; MSM *wahok*; NFI *wofok*; AWG *wofo?*; ARB *woho*; LAB *ha?u* ‘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 **gi-c* ‘nest of bird’

MRI, WPU, SKM, SRA *git*; SWT, NWT *gic*; MWT, WPA *gic*; MSM *nic*; DWT *rais*; NFI *gis*; AWG (a)*gic*; ARB *gic* ‘nest of bird’.

PMK *-sik ‘bathe’

ADZ, WPU -*yi?*; SRA -*yik*; SWT -*sik*; MWT -*sek*; NWT -*si?*; WPA -*se*; MSM, DWT, NFI -*sik*; AWG, ARB -*si?*; 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 *nêne* ‘skin’, ‘body’. (The apparently irregular reflex of PMK **r-* to *n-* by **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 **I* to *r* and *n* in these languages.)

PMK **kitamb* ‘earth, ground’
ADZ *intamp*; MRI, SWT *kitamp*; WPU ?*intamp*; MWT *etamb*; NWT ?*itamb*; 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 *juhif*; MSM *jihih*; NFI *jufif*; 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 *gami?*; WPU *gamia?*; MRI, SKM, SRA *gamiak*; SWT *mik*; MWT *emik*; NWT *me?*; WPA *yami*; MSM, DWT, NFI *amik*; AWG, ARB *ami?* ‘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 *haia?*; MSM *hek*; DWT *agak*; NFI *fek*; AWG *efe?*; ARB *ahe?*; 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 -(*ja*)*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 disyllabic 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 *gu-*; 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 *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 *-nua?*; MRI *-muap*; WPU, SKM, SRA *-nuap*; SWT, MWT *-nu*; NWT *-no*; WPA *-ŋi*; MSM *-nik*; DWT *-niau*; AWG, ARB *-ni?* ‘be cooked’.

PMK **lijun* ‘seed’, ‘fruit’, ‘essence’, ‘truth’ > PUMK **nijuan*, PWT **niju*, PLMK **nijin* ‘seed’, ‘fruit’, ‘truth’, ‘essence’

ADZ *nijun*; WPU *nijuan*; SKM *nisuān*; SRA *nicuan*; SWT, MWT *niju*; NWT *nejo*; WPA, AWG, ARB *nijin*; MSM *nicin*; LAB *nind'ê* ‘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 *-ra?*; SWT *-rakin*; MWT *-raka*; NWT *-ra?*; 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’.