

A PRELIMINARY KORAFE PHONOLOGY

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0 INTRODUCTION

About 2000 people living along the coastal peninsulae of Cape Nelson in Papua's Northern District speak the Korafe dialect of Korafe. The Korafe language areas lie wholly within Tufi Sub-District. Korafe is a Non-Austronesian language belonging to the Binandere family. According to village sources, there are two dialects of Korafe: Mokorua (also called in the literature Yega, Yega, Jega, Jega) is spoken by two pockets of people around Angorogo and Sinei villages with about 666 speakers and the larger dialect, Korafe, spoken from Tumari to Jebo with 1808 speakers (Figures are from Dutton, 1971). There is some admixture of Arifama-Miniafia speakers in the main Korafe area. Probably another 1000-1500 speakers pursuing their careers live elsewhere in Papua New Guinea. The field work for this paper commenced on February 15, 1972 at Baga Village and has continued for ten months. Our principal language teachers have been Michael Mota (50), Kenneth Mota (43), Justus Seko (48), Dunstan Seko (26), Edna Seko (40), Kingsley Seko (44), the wives, husbands, and children of these people and people at random from Baga Village. Most of the men have some education ranging from standard two to standard six. Many of the women have never left the area.

We have only done a preliminary analysis of the levels above the word based on limited text material. We would like to gratefully acknowledge the help of S.I.L. consultant, Miss Anne Cochrane, who spent many hours helping us with analysis.

1 INTERPRETATION

1.1 The status of phones which may be consonant or vowel

1.1.1 The status of [y] versus [i]

The semi-vocoid [y] occurs as the onset of a syllable and [i] occurs as the nucleus or part of the complex nucleus of a syllable.

1.1.2 The status of [w], [u], and [o]

The semi-vocoid [w] occurs as a syllable onset. [o] and [u] function as the nucleus or part of the complex nucleus of a syllable.

1.2 The status of segments which may be either sequences or units.

1.2.1 Aspirated Stops

Korafe has no non-suspect consonant clusters; therefore [t^h] and [k^h] are single segments.

1.2.2 The Affricate [dʒ]

Because there are no non-suspect consonant clusters, the voiced alveopalatal affricate [dʒ] is interpreted as a unit, and it will be written [j].

1.2.3 Prenasalized Obstruents

Since there are no non-suspect consonant clusters, [m[̃]b], [n[̃]d], [n[̃]j], [ŋ[̃]g], and [ŋ[̃]g] are interpreted as prenasalized stops.

1.2.4 Vowel Clusters

Regularized symbolization has been employed for the chart below.

	i-	e-	a-	u-	o-
-i		ei	ai	ui	oi
-e	ie		ae	ue	oe
-a	ia	ea		ua	oa
-u	iu	eu	au		ou
-o	io	eo	ao		

Examples: [a 'riɛ] 'oh!', [i'sia] 'taro', ['yiu] 'sweet potato type', ['biɔ^ˆ] 'hair', [u'bei] 'thumb', ['beasi] 'tired', ['neuse] 'squid', ['beɔ^ˆk^hɔ^ˆ] 'rooster's comb', ['thaima] 'bush', [ma'naɛ] 'old', ['yaura] 'wind', ['k^hao^ˆba] 'banana', ['puithi] 'shell',

[k^ho 'pue] 'banana type', [be'sua] 'thick',
 [k^hɔ[^]'k^hɔ[^]i] 'baby', ['k^hɔ[^]ε] 'name of vine',
 ['k^hɔ[^]ame] 'clam type', [bɔ[^]'nɔ[^]u] 'lizard'.

In considering these vowel clusters, three solutions suggest themselves: (1) They could be vowel glides. (2) They could be the nuclei of two syllables. (3) They could be complex syllable nuclei.

The clusters of two vowels may be interpreted as vowel glides [eⁱ], [aⁱ], etc. Two reasons for rejecting this solution immediately emerge: While there are some words where one of the vowels in the cluster seems to be shorter than the other resulting perhaps from a word level feature, the two vowels are usually of the same length, and stress may occur on either interchangeably. Also, this solution would result in several new phonemes.

As there are univalent vowel clusters, it would be possible to interpret all clusters as sequences; however, there are several problems with this solution. These vowel clusters are one mora in length. Many of them alternate stress from one vowel to the other in different utterances of the same cluster, i.e. [sabúa] and [sabúa] 'slave'. No vowel clusters of three or four vowels or two moras in length exist. A transition consonant [y], [w], or [b] between two vowels occurs when they are two moras, and stress falls on only one or neither of the vowels as in the examples:

['k^hasiyapaŋa] 'taro type' versus [a'sia] 'grass skirt'
 [bu'ba] 'dried up sore scar' versus [sa'bua] 'slave'.

We favor the final solution of considering these vowel clusters complex syllable nuclei for several reasons. It does not increase the phoneme count. It adequately explains why the length of the two segments are equal and why stress perturbation occurs. Therefore, these vowel clusters of one mora in length form complex syllable nuclei.

2 OUTLINE OF PHONEMES

2.1 Phoneme Chart

2.1.1.1 Consonants

		Labials	Alveolar	Velars
Stops	voiceless		/t/	/k/
	voiced	/b/	/d/	/g/
Fricatives	voiceless	/f/	/s/	
	voiced	/v/	/j/	/ɣ/
Prenasalized Obstruents	without friction	/mb/	/nd/	/ŋg/
	with friction		/nj/	/ŋɣ/
Nasals		/m/	/n/	
Flaps			/r/	
Semivowels			/y/	

2.1.2 Vowels

	Front	Central	Back
High	/i/		/u/
Low	/e/	/a/	/o/

2.2 Description of Phonemes

2.2.1 Introduction

2.2.1.1 All Korafe phones are produced with egressive lung air; this feature will not be further noted in the description.

2.2.1.2 There is one major problem in Korafe phonemics which may be explained by several approaches. Pre-nasalized obstruents occur as a syllable onset in utterances with no other nasal in the immediate environment, e.g. ['e^vnda] 'earth', ['a^ŋga] 'point, goal'. However, a voiced stop, fricative, or affricate never directly follows a syllable with a nasal onset /m/ or /n/. Furthermore, when the functors /da/, possessive marker, /dae/, indirect object marker, and /gae/, dual accompaniment marker, combine with /na/ 'I', they form /'nanda/ 'my', /na'ndae/ 'to me', and /na'ngae/ 'we two, with me', evidence that nasals influence the following voiced obstruents.

There are several possible solutions.

1. Explore the possibility of nasalized vowels existing as the conditioning factor for prenasalized obstruents.
2. Posit a limited distribution of the oral or prenasalized obstruents such that one or the other never occurs following a syllable with a nasal onset.
3. Posit neutralization of contrast for voiced obstruents with their prenasalized counterparts immediately following a nasal.

There is no evidence that nasalized vowels exist other than contiguous to nasals or before prenasalized obstruents and they fluctuate with non-nasalized vowels in such environments. Thus, this nasalization of vowels is conditioned by the nasal consonants, and not vice versa. (See 2.3.1.3)

The second solution has two drawbacks. 1. It imposes an unsupported and arbitrary distribution rule. 2. If /ⁿd/ does not occur following a syllable with a nasal onset, then /'nada/ ['naⁿda] 'my' presupposes an additional allophone [ⁿd] of the phoneme /d/. If /d/ does not occur following a syllable with a nasal onset, then /'nada/ ['naⁿda] 'my' imposes a requirement for a double dictionary entry /-nda/, /-da/, possessive marker. This solution demands a distribution rule and either an additional allophone [ⁿd] for /d/ or an extra morpho-phonemic shape for /-da/, and it cannot dispense with the phoneme /nd/.

The third solution, neutralization of contrast, is favored. It does require an additional allophone [^mb, ⁿd, ⁿj, ⁿg, ⁿg] for the voiced obstruents /b, d, j, g, g/, but it dispenses with a distribution rule. See the orthography section for further comment.

- 2.2.1.3 Nasalization of any vowel contiguous to a nasal or before a prenasalized obstruent may occur, but its occurrence is not obligatory and not phonemic. Nasalized allophones of the vowels will not be further mentioned in the formal description.

- 2.2.1.4 In Korafe, non-phonemic length occurs in conjunction with the nucleus of the stressed syllable. Length on a stressed initial or medial syllable tends to be considerably longer than length on a stressed final syllable. Vowel length in conjunction with stress will not be further elaborated in the description of allophones.

2.2.2 Formational Statement of Phonemes

2.2.2.1 Consonants

Phoneme Symbol	Allophone Symbol	Description, Occurrence, Example
/t/	[t ^h]	Voiceless aspirated alveolar stop; occurs in all environments. /tasi/ [t ^h asi] 'jellyfish'
/k/	[k ^h]	Voiceless aspirated velar stop; occurs in all environments. /'kasa/ [k ^h asa] 'coral'
/b/	[^m b]	Voiced prenasalized bilabial stop; occurs immediately following a syllable with a nasal onset. /'mabe/ [ma ^m bɛ] 'threshold'
	[b]	Voiced bilabial stop; occurs elsewhere. /u'bei/ [u'bei] 'thumb'
/d/	[ⁿ d]	Voiced prenasalized alveolar stop; occurs immediately following a syllable with a nasal onset. /'madi/ [ma ⁿ di] 'boy'

Phoneme Symbol	Allophone Symbol	Description, Occurrence, Example
	[d]	Voiced alveolar stop; occurs elsewhere. /'ade/ ['ade] 'single girl'
/g/	[ŋg] "	Voiced prenasalized fortis velar stop; occurs immediately following a syllable with a nasal on- set. /mo'naga/ [mo^naŋga] 'cuttlefish' "
	[g] "	Voiced fortis velar stop; occurs elsewhere. /'aga/ ['aga] 'mountain' "
/f/	[f]	Voiceless labiodental fricative; occurs before front vowels and tends to fluctuate freely with [p] before central vowels. /'fega/ ['fɛga] 'ball' /'afa/ ['afa]. ['apa] 'father'
	[p]	Voiceless bilabial frica- tive; occurs before back vowels and in free fluc- tuation with [f] before central vowels. (See above) /'fona/ ['pɔ^na] 'reef'
/s/	[s]	Voiceless grooved alveolar fricative; occurs in all environments. /'susu/ ['susu] 'stump'

Phoneme Symbol	Allophone Symbol	Description, Occurrence, Example
/v/	[b]	Voiced bilabial fricative occurs word initially before central vowels. /vasa/ ['basa] 'place'
		Occurs intervocalically following back vowels before /a/. /u'va/ [u'ba] 'fish intestinal tract'
		Fluctuates freely with [v] intervocalically following high front vowels before [a] /si'vasiva/ [si'basiba] 'fish type' [si'vasiva]
		Fluctuates freely with [w] between any combination of back vowels. /ko'voro/ [k ^h ɔ ^ʔ ˈbɔ ^ʔ ʔɔ ^ʔ] 'snail' [k ^h ɔ ^ʔ ˈwɔ ^ʔ ʔɔ ^ʔ]
	[v]	Voiced labiodental fricative; occurs before all front vowels. /vi'koko/ [vi.ˈk ^h ɔ ^ʔ k ^h ɔ ^ʔ] 'shell'
		Occurs before central vowels when following low front central vowels. /'gava/ ['gava] 'fish type'
		Fluctuates freely with [b] as explained above.

Phoneme Symbol	Allophone Symbol	Description, Occurrence, Example
	[w]	Voiced rounded bilabial semi-vocoid. Occurs word initially before back vowels. /'voto/ ['wɔ ^h thɔ ^h] 'net'
		Fluctuates freely with [b] as explained above.
/j/	[ⁿ j]	Voiced prenasalized grooved alveopalatal affricate; occurs immediately following a syllable with nasal onset. /mo'jovu/ [mɔ ⁿ jowu] 'pus'
	[j]	Voiced grooved alveopalatal affricate; occurs elsewhere. /'oje/ ['ɔ ^h jɛ] 'crayfish'
/ɣ/	[ⁿ g] ɣ	Voiced prenasalized lenis velar stop; occurs immediately following a syllable with a nasal onset. /bununu'ɣari/ [bununu' ⁿ gari] 'to wear thin'
	[g] ɣ	Voiced lenis velar stop; occurs before front vowels except following a syllable with a nasal onset. /'ogi/ ['ogi] 'roofing stiffener'
	[ɣ]	Voiced velar fricative; occurs elsewhere. /ga'gara/ [ga'gara] 'dry coconut'
/mb/	[^m b]	Voiced prenasalized bilabial stop; occurs in word medial positions only. /'ambe/ ['a ^m bɛ] 'sago'

Phoneme Symbol	Allophone Symbol	Description, Occurrence, Example
/nd/	[ⁿ d]	Voiced prenasalized alveolar stop; occurs in word medial positions only. /'enda/ [^e ^v ⁿ da] 'earth'
/ŋg/	[^ŋ g] "	Voiced prenasalized fortis velar stop; occurs in word medial positions only. /'a ^ŋ ga/ [^a ^ŋ ga] 'score, goal'
/nj/	[ⁿ j]	Voiced prenasalized grooved alveopalatal affricate; occurs in word medial positions only. /'fonje/ [^f ɔ [^] ⁿ jɛ] 'dust'
/ŋg/	[^ŋ g] ɛ	Voiced prenasalized lenis velar stop; occurs in word medial positions only. /de'ŋgari/ [de ^v ' ^ŋ gari] 'to travel'
/m/	[m]	Voiced bilabial nasal resonant; occurs in all environments. /'mekə/ [^m ɛ·k ^h a] 'ashamed'
/n/	[n]	Voiced alveolar nasal resonant; occurs in all environments. /'nati/ [ⁿ ath ⁱ] 'house'
/r/	[^{r̥}]	Voiced alveolar flap; occurs in all environments but fluctuates with [l] according to speakers idiolect.

Phoneme Symbol	Allophone Symbol	Description, Occurrence Example
	[l]	Voiced alveolar lateral; occurs in free fluctua- tion with [ɾ] /re'reya/ [ɾɛ'ɾɛya] 'fish' [lɛ'lɛya] name'
/y/	[y]	Voiced palatal semi- vocal; occurs in all environments. /'yasi/ ['yasi] 'go!'

2.2.2.2

Vowels

Phoneme Symbol	Allophone Symbol	Description, Occurrence Example
/i/	[i·]	High close front unround- ed lengthened vocal; occurs before /k/ follow- ed by central or back vowel. /'ika/ ['i·ka] 'wood'
	[i]	High close front unround- ed vocal; occurs else- where. /'iji/ ['iji] 'sun'
/e/	[e]	Mid close front unround- ed vocal; occurs be- fore syllables with high vowel nucleus except when those syllables have pre- nasalized obstruent on- set and in the complex syllable nucleus /ei/. /'etu/ ['et ^h u] 'bone' /u'bei/ [u'bei] 'thumb'

Phoneme Symbol	Allophone Symbol	Description, Occurrence, Example
	[e ^v]	Mid close lowered front unrounded vocoid; occurs immediately before prenasalized obstruents. /'enda/ ['e ^v nda] 'earth'
	[ɛ.]	Mid open front unrounded lengthened vocoid; occurs before a syllable with /k/ onset and low central or low back vowel nucleus. /'meka/ ['mɛ.k ^h a] 'ashamed'
	[ɛ]	Mid open front unrounded vocoid; occurs elsewhere. /'esa/ ['ɛsa] 'guest, traveller'
/a/	[a ⁱ]	Low close central unrounded vocoid with a slight offglide to [i]; occurs before /y/. /'aya/ ['a ⁱ ya] 'mother'
	[a]	Low close central unrounded vocoid; occurs elsewhere. /'afa/ ['afa] 'father'
/u/	[u]	High close back rounded vocoid occurs in all environments. /'uvu/ ['uwu] 'water'
/o/	[o]	Mid close back rounded vocoid; occurs before syllables with high vowel nucleus except when the high vowel follows a prenasalized obstruent. /'osi/ ['osi] 'bedbug'

Phoneme Symbol	Allophone Symbol	Description, Occurrence, Example
	[o ^v]	Mid close lowered back rounded vocoid; occurs before prenasalized obstruents. /'nombo/ ['no ^v ^m bo [^]] 'in-law'
	[ɔ [^]]	Mid open back rounded vocoid; occurs elsewhere. /'ogo/ ['ɔ [^] ɡɔ [^]] 'canoe pole'

2.3 Phoneme Contrasts

2.3.1 Consonant Contrasts

There are three emic points of articulation in Korafe: labial, post-dental, and velar.

The stops /t,k,b,d,g/ can be divided into two subsets by a \pm voicing feature. Stops contrast word initially and word initially and word medially.

/'tano/	'border'	/'jeta/	'breadfruit'
/'kambo/	'house'	/'mekə/	'ashamed'
/'bangu/	'shell'	/'ebe/	'uncle'
/'dara/	'trouble'	/'reda/	'where'
/'gari/	'to see'	/'sege/	'wash'

The fricatives /f,s,v,j,ɣ/ are also subdivided by \pm voicing and contrast word initially and word medially.

/'faro/	'bed'	/'ofo/	'floor'
/'saga/	'shoulder'	/'osi/	'bedbug'
/'vasa/	'place'	/'ove/	'oh, my'
/'jama/	'fragrance'	/'oje/	'butcher'
/'ɣanda/	'paddle'	/'ogo/	'pole'

Prenasalized obstruents /mb, nd, ŋɡ, nj ŋɣ/ occur and contrast word medially only.

/ba'mbari/	'to get'
/sa'ndari/	'to catch'

/sa'ŋgairi/ ' (he) is an adult'
 /ga'njara/ 'divorcee'
 /bafa'ŋgari/ 'to dent'

Nasals /m, n/ contrast in word initial and word medial position.

/ 'mandi/	'boy'	/ 'tamo/	'body'
/ 'nanda/	'my'	/ 'tano/	'boundary'

Labials /b, f, v, mb, m/ contrast word medially, and word initially except for /mb/.

/ 'bari/	'to fetch'	/ 'daba/	'one'
/ 'faro/	'bed'	/ 'afa/	'father'
/ 'vasa/	'place'	/ 'ava/	object marker
		/ 'ambo/	'last'
/ 'mandi/	'boy'	/ 'amo/	'that'

The alveolar prenasalized obstruents /nd, nj/ contrast with the alveolar phonemes /t, d, s, j, n/ word medially.

/ 'mindi/	'eat!'
/ 'kinji/	'twilight'
/ 'diti/	'eye'
/ 'vide/	'bachelor'
/ 'sisi/	'space in front of house'
/ 'iji/	'sun'
/ 'soini/	'fly'

The alveolar phonemes /t, d, s, j, n, r, y/ contrast word initially and word medially.

/ta'ka/	focus word	/ 'ati/	'string bag'
/da'ŋgio/	'shadow'	/ 'ade/	'single girl'
/sa'bua/	'slave'	/ 'asi/	'string'
/ja'ka/	'betelnut'	/ 'gaje/	'close!'
/na'ka/	plural numer-	/ 'ari/	'to do'
	al marker		
/ra'ria/	'self-growing	/ 'eni/	'some'
	plant'		

/ya'bau/ 'fish' /'aya/ 'mother'

The velars /k, g, ɟ, ŋg, ŋɟ/ contrast word medially, and word initially except for /ŋg, ŋɟ/.

/ka'kara/ 'holy, taboo'	/'mandakori/ '(he) is a boy'
/ga'gara/ 'girl'	/asu'gari/ 'to dress'
/ɟa'ɟara/ 'dry coconut'	/kosu'ɟari/ 'to undress'
	/manu'ŋgari/ 'peace'
	/jofu'ŋɟari/ 'to inhale'

The acoustically similar phonemes /r/ and /ɟ/ contrast word initially and word medially.

/'ruka/ 'husband's sis-	/o'roro/ 'blood'
ter's husband'	
/'ɟumbu/ 'fly!'	/u'togo/ 'sago pith'

2.3.2 Vowel Contrasts

The five phonemic vowels are differentiated as to high versus low and front versus central versus back tongue positions. The vowels contrast word initially, medially, and finally.

/'ivu/ '(you all) go!'	/'gima/ 'rafter'	/'avi/ 'sleep!'
/'eva/ 'ocean'	/'emo/ 'this'	/'ove/ 'oh, my'
/'ava/ object marker	/'tama/ 'body'	/'ava/ object marker
/'ove/ 'oh, my'	/'gomo/ 'grave'	/'ivo/ '(you all) go!'
		(shouted)
/'uvu/ 'water'	/'tumo/ 'belly'	/'evu/ '(you all) do (it)!'

2.4 Phoneme Distribution

2.4.1 Consonant Distribution

Korafe has no non-suspect consonant clusters. Any consonant may fill the syllable onset slot. Syllables have no terminal consonants (see section 5.2.2 for

exceptions). Pre nasalized consonants do not occur word initially. /ɟ/ has not been found before /i/ or /e/ word initially. /ŋɟ/ occurs only at the juncture between verb stem and suffix in some verbs and thus is never found before /o/.

2.4.2 Vowel Distribution

All vowels may precede or follow any consonant except those noted in section 2.4.1. The following vowel clusters occur in all positions: /ei/, /ai/, /ae/, /au/, /ao/, /oi/, and /oe/. The following vowel clusters have not been found in the VV word initial position: /ie/, /io/, /iu/, /io/, /ea/, /eu/, /eo/, /ui/, /ue/, /ua/, /oa/, and /ou/.

3 THE SYLLABLE

A syllable of a single mora of timing consists of a nucleus of one or two vowels preceded by an optional consonant onset, (C) v (V).

3.1 Syllable Types

Korafe manifests four syllable types: V, VV, CV, and CVV. These contrast in the following four words.

V	' <u>e</u>	'this'
VV	' <u>ai</u>	'yes'
CV	' <u>du</u>	'name of fish'
CVV	' <u>noi</u>	'mother'

They also contrast in the following four verbal forms.

V	' <u>i</u>	'go!'
VV	' <u>ae</u>	'not doing'
CV	' <u>fu</u>	'come!'
CVV	' <u>gae</u>	'spear!'

3.2 Distribution of syllable types in relation to the phonological word.

CV and CVV syllable types may occur word initially,

medially, and finally. V and VV syllable types occur only word initially.

V.CV	' <u>a</u> .fa	'father'
VV.CV	' <u>ao</u> .ri	'spear'
CV.CV	' <u>ko</u> .ro	'older brother'
CVV.CVV	' <u>fui</u> .fui	'white conches'
CV.CV.CV	'to.' <u>ma</u> .ni	'brother-in-law, wife's sister's husband'
CVV.CV.CV	' <u>moi</u> .ta.fe	'name of fish'
CV.CVV.CV	'u.' <u>rau</u> .sa	'name of fish'
CV.CV.CV	'a.ya' <u>koe</u>	'oh, dear mother!'

Usually only one VV or CVV syllable may occur within a word. 'ai.ya.koe 'thank you' (VV.CV.CVV) and a few negative verb forms are the only exceptions noted so far.

4 THE PHONOLOGICAL WORD

4.1 Regular Features

The phonological word in Korafe is a segment of one to eight syllables with one primary phonemic stress. It is bounded by juncture or elision.

There are a number of minimal pairs of words differentiated only by stress.

/'ororo/	'clans'	/'ofofo/	'sweat'
/o'roro/	'blood'	/o'fofo/	'grave'
/'oka/	'fish'	/'joka/	'mercy'
/o'ka/	'lime, lime- pot'	/jo'ka/	'hollow'

Although a considerable number of exceptions occur, there are three general stress rules which apply to most non-verbs. In two-syllable words, stress falls on the first syllable.

/'madi/	'boy' BUT	/fi'ka/	'mustard leaf'
/'nati/	'house'	/ti'ni/	'stomach'

In words of three or more syllables, stress occurs on the second syllable. Three or more syllable words terminating in -ko, -go or -mena disregard their suffixes when fixing the stress on a syllable.

/ga'gara/ 'girl'	BUT	/'gunego/ 'banana name'
/a'tovembo/ 'father-		/'bosivara/ 'porpoise'
in-law'		
/a'varimeta/ 'fish name'		/'beruru/ 'long-nosed reef fish'
		/'biruru/ 'twisted'
		/'kitako/ 'little'
		/'foyago/ 'white'
		/'ajimena/ 'girls'

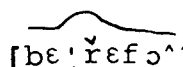
If a non-verb has a VV or CVV syllable, the stress falls on it no matter where it occurs in the word.

/'airoro/ 'wasp'	BUT	/goi'yafe/ 'fish name'
/ta'taugana / 'type of		
lobster'		
/aya'koe/ 'oh, dear		
mother!'		

In verbs, stress usually occurs on the first syllable of the suffix except in the abrupt imperative.

/vi'tarena/ 'I will go up'	/o'jarena/ 'I will butcher'
/'viti/ 'Go up!'	/'oje/ 'Butcher!'

Non-phonemic high pitch and nuclear vowel length co-occur with stress, but in rapid speech, either or both tend to decrease. In tape recorded texts, there are often consecutive pause groups with very little pitch variation.

	/be'refo/ 'ignorant'
[bɛ'ɹɛfoʔ]	/'afa/ 'father'
['a.fɑ]	

4.2 Stress Perturbation

4.2.1 Stress Perturbation with /-da/

When /-da/ 'of, to, at, in, on' suffixes two-syllable words with primary stress on the first syllable, stress sometimes perturbs to the second syllable following the normal stress pattern for three syllable words, and sometimes it does not perturb. Thus, the two-syllable words with initial stress divide into two groups - those that show stress perturbation when terminated by /-da/ and those that do not. To date, no phonological or semantic reason for the coexistence of these two groups has been found. The following examples show that open onset (V) versus closed onset CV syllables do not condition this perturbation.

/'iji/	/i'jida/	'of the sun'	
/'eva/	/e'vada/	'to the sea'	
/'kuta/	/ku'tada/	'of the sweet potato'	
	/'oka/	/'okada/	'of the fish'
	/'igo/	/'igoda/	'of the turtle'
	/'fuka/	/'fukada/	'of the pig'

These examples indicate that vowels do not condition the perturbation.

/'riri/	/ri'rida/	'on the steps'	
/'kuta/	/ku'tada/	'of the sweet potato'	
/'kobu/	/ko'buda/	'of the breadfruit'	
	/'jigi/	/'jigida/	'of the lice'
	/'suka/	/'sukada/	'of the tea'
	/'dobu/	/'dobuda/	'at the hut'

The following words illustrate that perturbation is not conditioned by the initial consonant.

/'regi/	/re'gida/	'to the country'	
/'diti/	/di'tida/	'of the eye'	
	/'rika/	/'rikada/	'of the bird'
	/'dimbu/	/'dimbuda/	'of the cheekbone'

The concluding examples show that the second consonant does not condition perturbation.

/'munju/	/mu'njuda/	'on the egg'
/'kobu/	/ko'buda/	'of the breadfruit'

/'ganje/	/'ganjeda/	'on the under water log'
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/'dobu/	/'dobuda/	'at the hut'
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4.2.2 Stress Perturbation in Verbs

Stress perturbation in verbs is primarily an intonational feature and will be discussed on the phonological phrase level.

4.3 The shape of the phonological word

Phonological words exhibit the following syllable combinations.

One-syllable words.

One-syllable words may utilize any of the four syllable patterns.

V	<u>'a</u>	'that'
VV	<u>'ai</u>	'yes'
CV	<u>'no</u>	'name of snake'
CVV	<u>'kae</u>	'poison'

Two-syllable words

The following patterns exist for two-syllable words.

V.CV	<u>'a.fa</u>	'father'
V.CVV	<u>'a.'via</u>	'grandmother'
CV.CV	<u>'vo.to</u>	'fish net'
CV.CVV	<u>'va.'sai</u>	'trading partner'
CVV.CV	<u>'kai.si</u>	'bandicoot'
CVV.CVV	<u>'fui.fui</u>	'type of banana'

Three-syllable words

The following three-syllable phonological word combinations have been discovered.

V.CV.CV	<u>o.</u> 'fo.fo	'cemetery'
V.CVV.CV	<u>u.</u> 'rau.sa	'name of a fish'
V.CV.CVV	<u>o.to.</u> 'mbae	'not folding'
VV.CV.CV	<u>'ai.ra.ra</u>	'garden returned to bush'
VV.CV.CVV	<u>'ai.ya.koe</u>	'thank you'
CV.CV.CV	<u>da.</u> 'ma.na	'star'
CVV.CV.CV	<u>'kai.re.ga</u>	'small outrigger canoe without platform'
CV.CVV.CV	<u>ta.</u> 'rao.fo	'rainbow'
CV.CV.CVV	<u>ja.ngu.</u> 'tae	'not relaxing'
CVV.CVV.CV	<u>goi.</u> 'ngae.ri	'he did not knock'

Four-syllable words

The following syllable arrangements occur in four-syllable words.

V.CV.CV.CV	<u>a.</u> 'ra.ra.fa	'cuscus'
CV.CV.CV.CV	<u>ma.</u> 'nu.ma.nu	'large ray fish'
CVV.CV.CV.CV	<u>'koi.ki.ro.ro</u>	'name of a fish'
CV.CVV.CV.CV	<u>ta.</u> 'tau.ga.na	'name of a lobster'

Five to eight-syllable words

We have not found any word of more than eight syllables which was not suspect of being two words. Most words over five syllables are verbal forms. Except for a few verbs, VV and CVV syllable types do not occur in five to eight-syllable words. The most common syllable combinations are:

V.CV.CV.CV.CV	<u>a.</u> 'va.ri.me.ta	'name of a fish'
CV.CV.CV.CV.CV	<u>ka.</u> 'va.ya.ba.ra	'name of a fish'
V.CV.CV.CV.CV.CV	<u>a.ve.ri.</u> 'ga.re.na	'I will pour'
CV.CV.CV.CV.CV.CV	<u>jo.ve.re.</u> 'ga.re.na	'I will turn around'
V.CV.CV.CV.CV.CV.CV	<u>a.ve.ri.</u> 'gu.mu.ta.ni	'I poured yesterday'
CV.CV.CV.CV.CV.CV.CV	<u>jo.ve.ri.</u> 'gu.mu.ta.ni	'I turned around yesterday'
V.CV.CV.CV.CV.CV.CV.CV	<u>a.ve.ri.ge.</u> 'ru.mu.ta.ni	'I was pouring yesterday'

4.4 Word Length

Word length is relative to the type of utterance and the mood of the speaker, but except at maximum rapidity of speech (i.e. further speed is impossible), the greater the number of syllables, the shorter they are. Therefore, three-syllable words are almost as short as two-syllable words, and so forth.

['tʰ ɛ p ɔː] 'none, no'
 [b ɛ 'ʔ ɛ p ɔː] 'ignorant'

elapsed time



4.5 Word Tone

Korafe is an intonational language, but residual contrastive word tone has been found on the stressed syllable of two sets of minimal pairs. Efforts to explain the phonological differences that native speakers of the language hear as being determined by stress or length have failed. On the oscilloscope, a falling tone glide seemed to differentiate the minimal pairs. Except for these words, tone seems to be irrelevant.

		Syllable One	Syllable Two
butterfly	['kɔː ʔi]	glide:high-low	mid
yell	['kɔː ʔi]	mid	mid
ray fish	['sɛː kʰa]	glide:high-low	mid
new	['sɛː kʰa]	mid	mid

5 THE PHONOLOGICAL PHRASE

The phonological phrase, or pause group, consists of one or more phonological words bounded by pauses relatively shorter than the pauses bordering a phonological sentence, or breath group, unless the pause group itself adjoins one of the phonological sentence boundaries. Pitch, intensity, nuclear length, loudness, and speed of utterance are the contrastive features of the phonological phrase.

Except for pauses at its margins, an intonational contour is actually a continuum of rising and falling pitch with no clearly defined segments. However, for linguistic description, it is useful to discuss the intonational contour in terms of three components - an optional pre-nuclear slope, nucleus, and an optional post-nuclear slope. A crescendo or ascending pitch glide indicates the presence of a pre-nuclear slope. Relatively high pitch is the dominant characteristic of the nucleus or peak of the phonological phrase, but length and loudness are often contributing factors to the recognition of the nucleus. Usually a decrescendo marks the post-nuclear slope, but it may exhibit variations such as a slight rise and fall (see section 5.1.2) or a decrescendo levelling off to a mid pitch (see section 5.1.4).

5.1 Types of Intonational Contours

Intonational contours often delineate grammatical sentences, convey grammatical significance, and perturb stress on words. The following types of contrastive intonational contours have been observed for Korafe. We have used the terms high, mid, and low to define pitch variations conveniently within a given contour.

5.1.1 Statement, Request, Command

The pre-nuclear slope begins in the mid range and rises sharply to the nuclear peak, which is the word in the phonological phrase which the speaker chooses to emphasize. The pitch then descends with the post-nuclear slope.

Statement

H
M
L



'na 'yarena.

'I will go.'

The general level of the contour may be higher if the speaker is agitated or lower if he is concentrating on the impression he is conveying. It will be higher and more intense if he is emphasizing a point.

Emphatic Statement

H

M

L



ma'kasi!

'That should not have happened!'

Commands may have a general low, mid, or high level intonational contour depending on the relationship of the two people involved, physical distance, and emotional state. Commands or requests can be quite breathy, hushed, intense, or loud depending upon the above conditions.

H

M

L



'fu, 'saone!

'Come, I'll tell
(you)!'

H

M

L

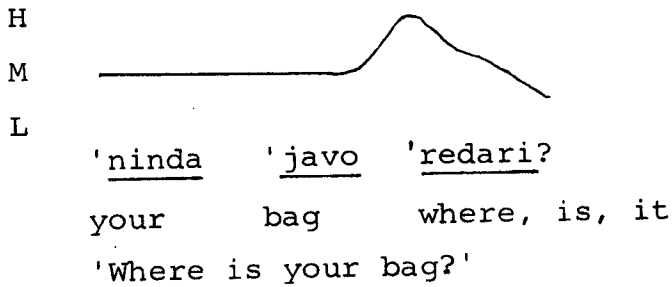
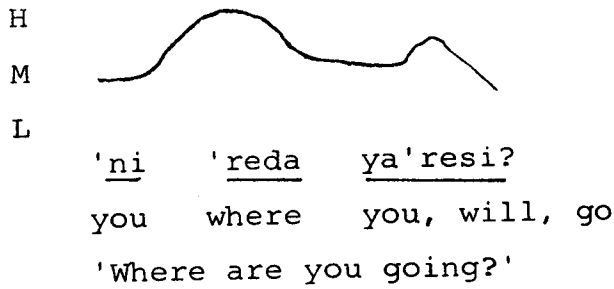


'fuyo!

'Come!' (shouted)

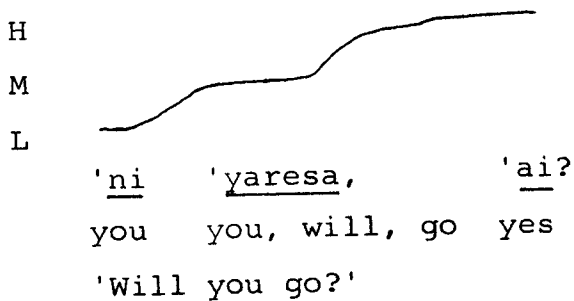
5.1.2 Question

A question intonational contour is similar to a statement contour. A question has a question word which carries the nuclear peak of the intonational contour. A pre-nuclear slope is optional and begins at mid pitch rising to the high nuclear peak. The post-nuclear slope has two variations. Whenever a verb occurs, the slope starts descending, rising again, and then falls. Stress may perturb one syllable earlier in the verb. If a verb does not occur, the post-nuclear slope descends as in the statement.



5.1.3 Interrogative

Only the pre-nuclear slope and the nucleus occur in interrogative phonological phrases. The pre-nuclear slope begins in the low to mid range and rises up to the nuclear peak where the intonational contour concludes.



5.1.4 Anticipation

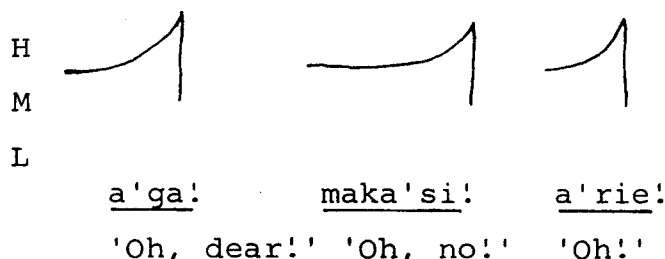
This intonational contour indicates that the grammatical sentence is not finished. It follows the same pattern as the statement except that the post-nuclear slope falls to the mid range where it continues level or rising slightly.



'na 'nanda 'afa 'Motamo 'Maikeroda 'natida ava....
 I my father Mota Michael, of house, at that, one..
 'I my father Mota at Michael's house - that one...'

5.1.5 Excitement, Surprise, Incredulity

The pre-nuclear slope commences at a high mid pitch and rises sharply to a very high nuclear peak. The post-nuclear slope often begins and ends on the same syllable which carries the contour's nucleus and plunges rapidly as the voice fades. The contour resembles a spike in its sharpness. Vocal intensity, loudness, perturbation of stress to the final syllable and a high intonational contour level characterize these utterances.



5.2 Elision within the phonological phrase

5.2.1 Elision of two words

Elision occurs between two phonological words when the second word has no consonant onset. In fast speech, almost any such combination could theoretically elide in the following manner.

$$/ \#XC_1V_1\# / + / \#V_2C_2X\# / \rightarrow / \#XC_1V_2C_2X\# /$$

(X is the rest of the phonological word.)

A phonological word with final syllable $/C_1V_1/$ and word juncture without elision combines with a second phonological word with onset $/V_2C_2/$ so that is completely dropped. In practice, elision is preponderantly

limited to complex verbs where a verb form such as /'ari/ 'to do' is combined with a class of words similar to abstract nouns in English.

/ka'sama + 'ari/	=	/ka'sa'mari/
'understanding' 'to do'		'to understand'
/tu'turo + 'ari/	=	/tu'tu'rari/
'start' 'to do'		'to start'

5.2.2 Abrupt Imperative Elision

Two syllable abrupt imperatives may optionally elide the final vowel and form the only closed syllables in Korafe.

/'fuge/	['fuge]	'throw!'	/'dege/	['dege]	'hit!'
	['fug]			['deg]	
/'fete/	['fet ^h ε]	'wait!'			
	['fet ^h]				

6 THE PHONOLOGICAL SENTENCE

The phonological sentence or breath group encompasses one or more phonological phrases bounded by pauses relatively shorter than those marking the phonological paragraph, but longer than those marking the phonological phrase. Bounded by pauses, it consists of a pre-nuclear margin, a nucleus, and a post-nuclear margin. The post-nuclear margin in phonological sentences of two phonological phrases or more is usually longer than the pre-nuclear margin - the nucleus occurring close to the beginning of the first phonological phrase. When the nucleus occurs at the end of the phonological sentence, this usually indicates the high point or theme of a grammatical paragraph. A level to rising pitch on the post-nuclear margin of the phonological sentence often indicates the conclusion of a grammatical sentence within a paragraph whereas a descending pitch on the post-nuclear margin often marks the end of a grammatical paragraph.

phonological paragraphs may be marked by interruptions of the speech flow through the use of phonological sentences of one to four phonological words. Alternatively, one abrupt phonological sentence may manifest the concluding phonological paragraph.

9 TENTATIVE ORTHOGRAPHY

9.1 The Korafe phonemes, their allophones, and a proposed orthography are listed below.

<u>PHONEME</u>	<u>ALLOPHONES</u>	<u>ORTHOGRAPHIC SYMBOLS</u>
/b/	[b]	b, mb
/t/	[t ^h]	t
/d/	[d]	d, nd
/k/	[k ^h]	k
/g/	[g]	g, ng
/f/	[p̥], [f]	f
/v/	[b], [v], [w]	v
/s/	[s]	s
/j/	[dʒ]	j
/ɟ/	[g], [ɟ]	gh
/r/	[r̥], [l]	r
/y/	[y]	y
/m/	[m]	m
/n/	[n]	n
/mb/	[^m b]	mb
/nd/	[ⁿ d]	nd
/nj/	[ⁿ dʒ]	nj
/ŋg/	[^ŋ g]	ng
/ŋɟ/	[^ŋ g], " [ɟ]	ngh
/i/	[i], [i·]	i
/e/	[e], [e·], [ɛ], [ɛ·]	e
/a/	[a], [ai]	a
/u/	[u]	u
/o/	[o], [o ^v], [o [^]]	o
/·/	['] (stress)	NOT WRITTEN
/˘/	[˘] (falling glide)	NOT WRITTEN (see 9.3)

9.2 Symbolization of Voiced Obstruents

In the syllable onset slot of a syllable following a syllable whose onset is a nasal there is neutralization of contrast between the following pairs of full phonemes: /b, mb; d, nd; j, nj; g, ng; ɟ, nɟ/.

Thus in the word, ['ma^mbɛ] 'threshold', we cannot tell whether to write phonemically /mabe/ or /mambe/. For practical purposes we propose writing the prenasalized symbols in all instances. Thus ['ma^mbɛ] 'threshold, ['nuⁿda] 'his would be written orthographically 'mambe, 'nunda, etc.

9.3 Problem Areas in the Orthography

Although Korafe has had no official orthography, Korafe men and women have been writing Korafe for almost thirty years using an adapted English alphabet. They have been writing v before i and e and confusing v and w before a, u and o. We hope the use of one symbol, v, will be accepted. One of our language helpers has suggested that the one symbol will alleviate the confusion. Korafe writers write one symbol, g, for /g/ and /ɟ/, the former they term 'hard g' and the latter 'soft g'. Because of current usage gh may not be acceptable. The Korafe people have never written stress and since it has a low functional load, differentiating only a few minimal pairs, we propose not writing it.

Tone differentiates only two sets of minimal pairs. We propose writing two vowels on the two words where the phonemic high-low glide occurs. Thus we will write:

/'séka/	'ray fish'	as	seeka
/'seka/	'new'	as	seka
/'kóri/	'butterfly'	as	koori
/'kori/	'call'	as	kori

The Korafe people recognize the difference in sound between these two sets of minimal pairs, but have

not known how to differentiate them in their orthography.

9.4 Influence of Other Languages

Korafe speakers have had considerable exposure to Motu, English, Wedau, Maisin, Arifama-Miniafia, Baruga and Notu. Several Korafes also speak Neo-Melanesian Pidgin. With a few exceptions they have adapted their pronunciations of loan words to the Korafe sound system. The English orthography co-exists with the Korafe 'orthography'. Korafe writers recognize the difference between their 'orthography' and the English orthography and use the two orthographies correctly.

9.5 Extra-Systemic Phonemes

/ʼo.mo/ 'adze' contrasts with /ʼomo/ 'that' and native speakers recognize this difference. However this is the only minimal pair in the current dictionary involving a length differentiation. /ʼo.mo/ 'adze,' however, is a Motu word, and this may account for the lengthening.

A few English phonemes are utilized in the pronunciation of English words.

/ə/	and	/z/	in	/ʼtəzde/	'Thursday'
/tʃ/	and	/ʃ/	in	/ʼtʃəʃ/	'church'

9.6 Korafe pronunciation of some English words

[tʰa'ni:kʰyʉ]	'thank you'
[tʰa'wɛ:ʀɔʰ]	'towel'
[si'si:ma]	'steamer'
[fa'ʀaidɛ]	'Friday'
[fara'daisi]	'Paradise'
[kʰa'ra:kʰa]	'clerk'
[ʼba:fɔʰ]	'wharf'
[sifili:tʰi]	'spirits'
[tʰi'ri:]	'three'
[ʼso:fu]	'soap'

erena// 8 'ava 'setiri/ 9 'seteno 'nunda
 I, do that he,said I,said his

au'rida te'raridae 'setiri/ 10 'se
 tape, recorder, into entering he, said saying

re'sena//

I, am, saying.

Free Translation of Tape Text

1. Jim said that I should talk into his tape recorder there about my string bag I'm weaving, so I'm about to explain.
2. I went out a while ago and brought back bark from a tree.
3. I pounded it.
4. I tore it to make string.
5. I put it down, and it stayed.
6. That happened.
7. I am weaving the string bag, and I'm about to make a handle.
8. Thus, he had said.
9. He said it, so I talked into his tape recorder.
10. Thus, I am talking.

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