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SELEPET

by

K.A. McElhanon

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All correspondence concerning PACIFIC LINGUISTICS, including orders and subscriptions, should be addressed to:

*The Secretary,
"Pacific Linguistics",
Department of Linguistics,
School of Pacific Studies,
The Australian National University,
Box 4, P.O.,
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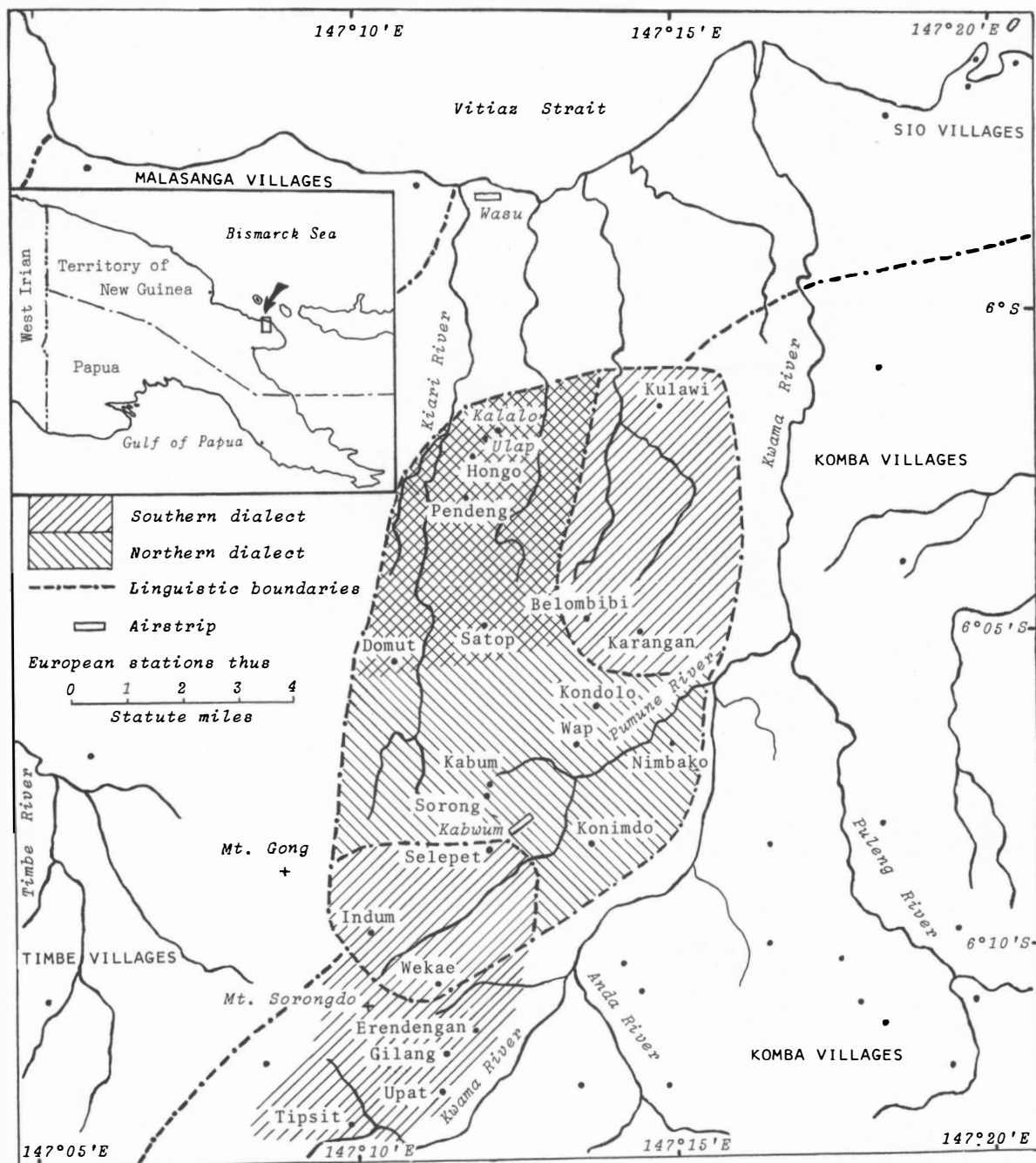
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MAP: SELEPET DIALECTS

SELEPET PHONOLOGY

K.A. McELHANON

0. INTRODUCTION

This paper presents a descriptive analysis of the phonological system of the Selepet language.¹ The theoretical basis underlying this paper is that developed by K.L. Pike.² Selepet phonology is conceived of as a number of phonological layers arranged in a hierarchical order. Each layer may be described in terms of contrasting and variant types of units and distribution of these units in higher and lower layers. To conceive of phonology as a hierarchical layering does not mean that the layers are autonomous. 'The higher layer may condition the lower - or the lower mark or identify the higher' (Pike 1962: 14).

The highest level observed is the rhetorical period. Subsequent layers are the phonological paragraph, the breath group, the pause group, the stress group, the syllable, the phoneme and the phone. A unit from a lower layer may also function as a unit in higher layers. For example, the phoneme *o* may function as a syllable, stress group (word), pause group and breath group depending upon its occurrence with the appropriate features of stress, length, intonation, pause and initial and terminal breath.

1. RHETORICAL PERIOD

Four types of rhetorical periods have been identified: narration, oration, annunciation and conversation. Although these four types generally occur in different social situations there is a certain amount of nesting. The narration type is the most flexible and often includes short bits of the other three, particularly as direct quotations within the narrative structure. When an annunciation occurs embedded within a narration it usually is spoken with a falsetto voice quality. An oration has been observed to frequently include brief narrative bits and rarely includes conversational bits. A conversation among many people may lapse into oration when one speaker insists upon his right

to have his say and desires not to be interrupted. Quite lengthy orations have been observed to interrupt conversational types. Conversations, however, have not been observed to include oratorical bits within the conversational framework. The annunciation is the most rigid type and does not include any other type.

1.1 NARRATION

For ease of description the narrative type of rhetorical period is described first and all other types are described by pointing out their distinguishing features as deviations from the narrative type. In narration the speaker has a relaxed attitude and assumes he will not be interrupted. Generally, the subject matter is a well known myth or a monologue about acts or historical events, e.g., a recounting of the day's events at the evening fireplace. This type is characterised by a slow to medium rate of utterance and a medium to low volume. Speech patterns are usually clear, well enunciated and easily understood. Grammatical patterns are quite regular and deviations from the normal pattern are often corrected. Thus it serves the analyst well as the grammatical norm. A narration of a myth is closed by the word *yawu* 'like that' spoken with a SMOOTH HIGH-LOW intonation contour.

1.2 ORATION

The second type, oration, is usually carried out in a public gathering and no one is permitted to interrupt the speaker. One who seeks to interrupt is usually shouted down while the speaker maintains his rate of utterance. The rate of utterance, although generally stable within a particular oration, varies considerably depending upon the emotional state of the orator. It varies from slow and calm for the purpose of relating the decisions of the community leaders to the general public to rapid and excited for a public defense of one's acts in a local conflict. An oration is characterised by an intense loudness with a high level of pitch. The relative high level of pitch is maintained until the final sentence when it exhibits an extended SMOOTH HIGH-LOW pitch contour accompanied by decrescendo. The rate of utterance and length of the unit seem only to be limited by the endurance of the speaker. The longest observed unit persisted for more than half an hour.

1.3 ANNUNCIATION

The third type of rhetorical period is that of annunciation. This type has little variation and is uttered with a high pitch level which persists until the final pause group, the margin of which exhibits an optional slight rise before a gradually falling contour accompanied by

decrecendo. The intensity through the unit is high and vowels are lengthened. When the unit includes several pause groups each pause group is terminated with a prolonged vowel o.

1.4 CONVERSATION

The final type is that of conversation. The distinguishing feature of this type is that the speaker may be interrupted by other speakers at any time. This factor has a direct effect upon both the phonological and grammatical characteristics of the unit. Whereas the rate of utterance is rather uniform in other types, it varies considerably within any conversational unit. An extremely rapid rate of utterance occurs when others are trying to interrupt the speaker. This rapidity of utterance is accompanied by emphasised intonation contours, brief pauses and gasps substituting for a normal breath. When other speakers are not actively attempting to interrupt the speaker, the rate of utterance reduces to that of the narrative. The speaker, however, still speaks in a manner which makes it easy for him to thwart any attempts by others to interrupt. Final syllables within a pause group may be held unusually long and the final pauses are shortened. Moreover, pauses (/) which in narrative structure usually occur at the end of grammatical clauses are shifted to follow a connective particle or word added to the clause. Thus clauses are often suffixed by -âmâ (â = [ɔ]) with the final vowel lengthened. In this context the particle has no semantic significance.

Example A

kâmgum	nem	tatmuâmâ	/	âo	sâwan
<i>bowing</i>	<i>eating</i>	<i>it-staying</i>		<i>oh</i>	<i>I-said</i>

'Putting its head down it sat and ate and I said "Oh!".'

Example B

inâk	tatmanâmâ	benge	/	mukanâmâ	yukât	ihim	dâlm
<i>just</i>	<i>I stay</i>	<i>then</i>		<i>yesterday</i>	<i>this-for</i>	<i>chewing</i>	<i>pulling</i>
arimâmâ	benge	/	nine	emelan			
<i>going</i>	<i>then</i>		<i>my</i>	<i>house-to</i>			

'I was doing nothing yesterday, and because of this it chewed it and dragged it and then went to my house...'

When a speaker successfully interrupts another speaker, he may add this grammatical suffix to several of the initial words of his utterance until he has control of the conversation.

kâdikumâmâ / luluai orowâmâ / mesik sâtŋeâk
 at first Luluai with sickness teeth

otmu yan gewit gârâmâ /
 do then we came furthermore

*'When at first he was very sick, the Luluai and I came;
 furthermore...'*

Another device to discourage interruption is to speak with non-final intonation contours (HIGH-MID). Thus grammatically independent clauses are frequently spoken with intonation contours usually associated with grammatically dependent clauses. In these circumstances a connective word, e.g., gârâmâ 'however' or benŋe 'then', may be added to the end of the clause. A conversational unit terminates with a SMOOTH HIGH-LOW pitch contour.

2. PHONOLOGICAL PARAGRAPH

The distinguishing features of a phonological paragraph (P-paragraph) are not as pronounced as the features of the other levels. It shares many of the features associated with the next lower level, the breath group, viz., a declination of pitch and similar border phenomena. Many breath groups function also as P-paragraphs.

The P-paragraph consists of one or more breath groups constituting one pitch envelope which is characterised by a general overall declination of pitch. Thus when several intonation contours occur in a single P-paragraph successive contours begin with prenuclear slopes only slightly higher than the preceding postnuclear slope. Accompanying the general pitch declination are features of decrescendo and increasing relaxation of voice quality, so that final segments may be weakened to the point of voicelessness and slurred articulation. Voice quality, which conveys the attitude of the speaker, is in many cases a feature of the P-paragraph. Further study is necessary to determine the relationship between voice quality as a concomitant of P-paragraph structure and voice quality as a concomitant of the intonational features and pause groups.

3. BREATH GROUP

The breath group consists of from one to six pause groups with the average being between two and three pause groups. Inasmuch as its nucleus is indeterminate, the breath group may be more easily defined by border phenomena. The breath group is characterised by an intake of breath at the beginning and an optional short exhalation of breath or breathiness at the end. In a series of breath groups this exhalation of breath or breathiness may be absent and breath intakes alone mark the borders.³ The breath group is bounded by pauses (//) which are relatively longer than the pauses bounding the pause group (/).

No contrastive breath group types have been observed although variants occur in relation to the speed and length of utterance. In excited speech, the pauses are shortened and the breath intake is a gasp. Breath intakes are also shorter if taken at pause points other than those at grammatical clause final. Understandably, pauses are longer and breath intakes greater after longer breath groups.

Intonation, however, is not relevant to the breath group and intensity is only relevant to the length of the breath group; i.e., as the breath group is lengthened, intensity diminishes. Intensity does not mark or otherwise signal boundaries. Although the terminal boundary of the breath group generally coincides with the potential pause point following clauses, there is no direct correlation between a breath group and any particular grammatical unit. Thus a breath group may include a final grammatical clause plus the introductory pause group of the following clause. In the following example the first breath group includes four pause groups, of which the first three coincide with temporal and locative phrases and the last with a manner and a predicate tagmeme. The second breath group includes an independent clause followed by its dependent transform embedded in a temporal phrase.

kâdikum emelâk / Indum kapai patoân / Indum yan
at first before Indum village big-at Indum there

kapal tâbânjan orotmeme yawu manbi //
village ancestral-at custom thus they lived

kâdikum Selepet ga tatbi tatmâ yan //
at first Selepet came they-stayed staying then

'Long ago at the very beginning, at Indum village, there
at Indum, at the ancestral village they lived according
to this manner. At first they came and stayed at Selepet.
When they stayed...'

4. PAUSE GROUP

The pause group consists of one to seven stress groups, with the average being three to four stress groups. The speech of one socially well-accepted man contains an average of 2.4 stress groups per pause group. The percentages of occurrence are: 28% of the pause groups exhibited one stress group; 33% exhibited two stress groups; 22% exhibited three stress groups; 8% exhibited four stress groups; 4% exhibited five stress groups; 4% exhibited six stress groups and 1% exhibited seven stress groups.

The pause group is the unit manifesting intonation.⁴ This intonation conveys the attitude of the speaker; it is not considered as a vehicle for grammatical meaning nor as adding 'shades of meaning'.⁵ For descriptive purposes the intonation contours may be described in terms of PRENUCLEAR MARGIN, PRENUCLEAR SLOPE, NUCLEUS, POSTNUCLEAR SLOPE and POSTNUCLEAR MARGIN.⁶ The use of these terms does not imply that the intonation contour is segmentable. Rather, the contour is a continuum with no clearly defined internal boundaries separating the nucleus, slopes and margins. The only distinct boundaries are the external boundaries of the margins which are marked by pause. These terms merely serve as points of reference in the process of description. In short utterances there need not be a differentiation between margin and slope (Pike: 1962: 20). With certain types of intonation contours one finds a single syllable functioning as a pause group and manifesting all the characteristics of margins, slopes and nucleus. For example, amazement or wonder may be simply expressed as o with the appropriate intonational contour.

Unless otherwise noted the terms PRENUCLEAR MARGIN will refer to the initial syllable in the pause group and POSTNUCLEAR MARGIN will refer to the final syllable in the pause group. The margins are characterised by longer syllable length and crescendo or decrescendo. There is a general shortening of syllable length from the margins to the nucleus. Margins are bounded by tentative pause (/), i.e., a shorter pause than that bounding breath groups.

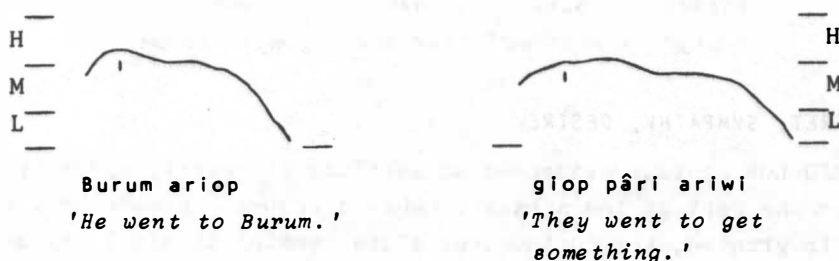
The prenuclear slope is characterised by a rise in intonation accompanied by increasing loudness, decreasing length of syllables and increasing (perceptual) intensity of stresses in the stress groups. The postnuclear slope is the reverse of the prenuclear slope: falling intonation, fading loudness, generally increasing syllable length and generally decreasing intensity of stress in the stress groups. Unstressed syllables or vowels in the postnuclear slope tend to elision nearer the nucleus.

The nucleus is characterised by the greatest stressed syllable in the pause group. 'By the stressed syllable the presence of the waves is identified, and the nucleus of each wave is likewise identified' (Pike, 1962: 10). The peak of the intonation contour usually coincides with this stressed syllable.

Although each distinctive intonation contour is regarded as an emic unit, for purposes of description the terms HIGH, MID, and LOW are used. These terms themselves refer only to a relative level of pitch and it is the differing combinations of these terms which identify the emic units. The term SPIKE is used when the pitch has an abrupt rise and fall of very short duration. Further terms SMOOTH, ABRUPT and SQUARE refer to the shapes of the intonation contours. The following types of contrastive intonation contours have been observed.

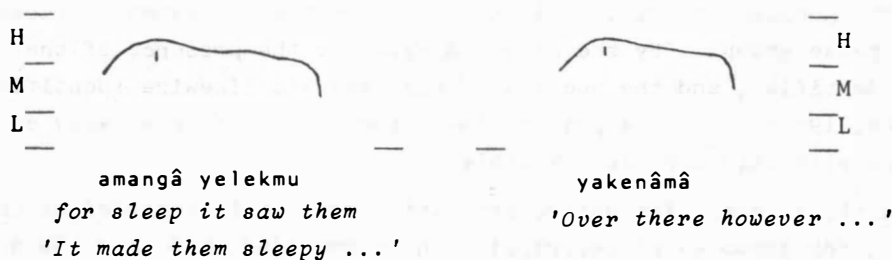
4.1 FINALITY-OF-THOUGHT

The SMOOTH HIGH-LOW contour shows an attitude of finality-of-thought on the part of the speaker. It is a declaration of fact. It has been observed following HIGH-MID, MID-HIGH-MID, and LOW-MID contours. The prenuclear slope is short - never more than two syllables - and begins at low level when the contour occurs in isolation and mid level when it follows another contour. The contour is identified by a long smooth postnuclear slope with a gradually falling pitch and decrescendo. Postnuclear slopes of up to nine syllables in length have been observed.⁷



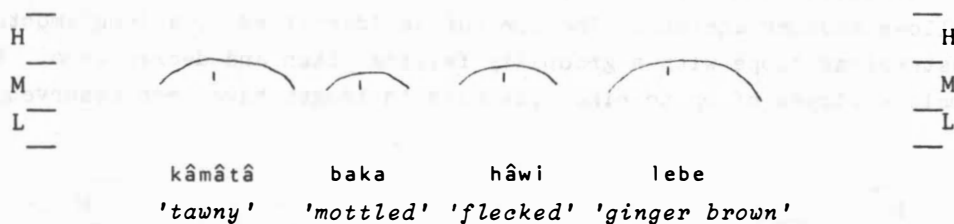
4.2 INCOMPLETENESS-OF-THOUGHT

The HIGH-MID contour reveals an attitude of incompleteness-of-thought on the part of the speaker. Sequences of up to five HIGH-MID contours have been observed. The initial HIGH-MID contour has a prenuclear slope identical with that of the SMOOTH HIGH-LOW contour. The contour is characterised by a level postnuclear slope with an abrupt pitch drop to the mid level on the postnuclear margin. Rapid decrescendo accompanies this drop in pitch.



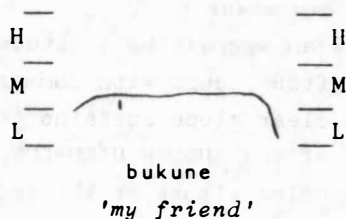
4.3 REPETITION

The MID-HIGH-MID contour indicates that the speaker is repeating the same kind of thought. It is used primarily to list or repeat. The characteristic feature of this contour is that the prenuclear slope is the reverse of the post nuclear slope. When the speaker is listing, the pause groups are short and there is no distinction between slope and margin, inasmuch as the slope occurs within the initial and final syllables. In repetition the pause groups may vary from short to very long. In long examples the nuclear high pitch level is maintained until the final syllable, thereby giving a square pitch contour.



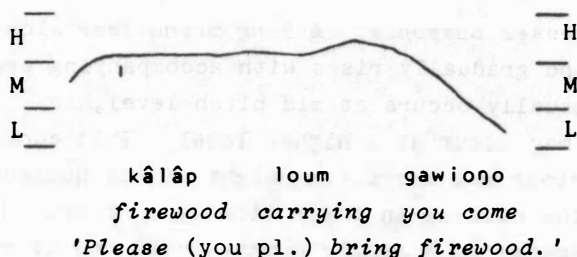
4.4 REGRET, SYMPATHY, DESIRE

The MID-LOW contour evidences an attitude of regret, sympathy or desire on the part of the speaker. When a request is made or permission is granted, the postnuclear slope remains at mid level until the margin when it drops abruptly to the low level. Decrescendo is gradual from the nucleus to the postnuclear margin. In sympathetic expressions the syllables are lengthened and often the expression is preceded by *o* with a MID-LOW contour. Loudness is at a weak level throughout the contour.



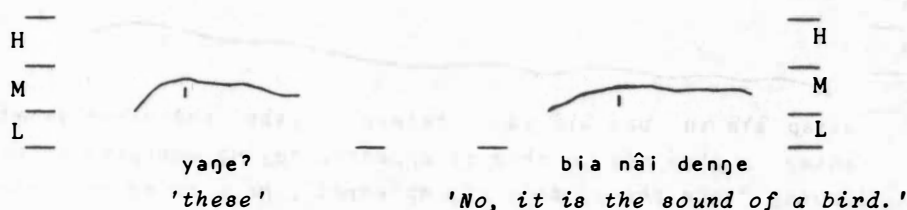
4.5 DISTANT CALLING

The SMOOTH HIGH-(RISE)-LOW contour is used for distant calling and shows a desire on the part of the speaker to be heard over a long distance. The prenuclear margin and slope show a sharp crescendo and pitch rise early in the syllable. The nucleus occurs on the second syllable and the postnuclear slope sustains high pitch until the margin. The vowel *o* is obligatorily suffixed to an utterance ending in a closed syllable and optionally suffixed to one ending in an open syllable. The final vowel (i.e., the margin) manifests an optional crescendo and rise in pitch before a sustained smooth pitch fall with accompanying decrescendo.



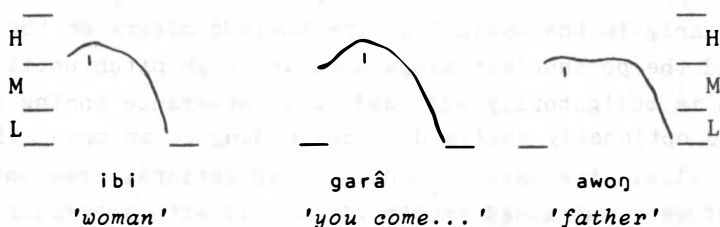
4.6 HESITANCY, DETERMINATION

The MID contour indicates hesitancy by the speaker. The prenuclear margin and slope are very short in pitch height. The nucleus often exhibits only stress as an identificational feature. Mid pitch height is maintained throughout the postnuclear slope which is abruptly terminated by glottal closure. Without glottal closure this contour evidences the attitude of determination or insistence.



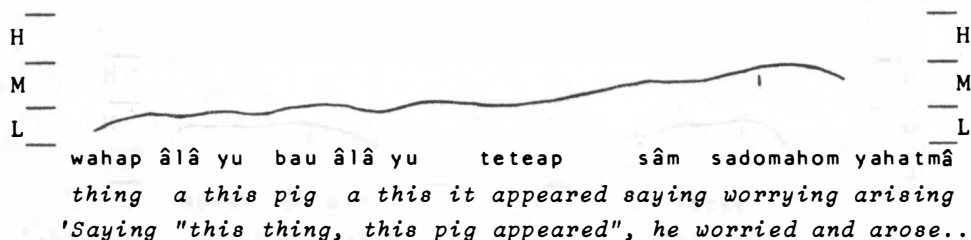
4.7 AGGRESSIVENESS

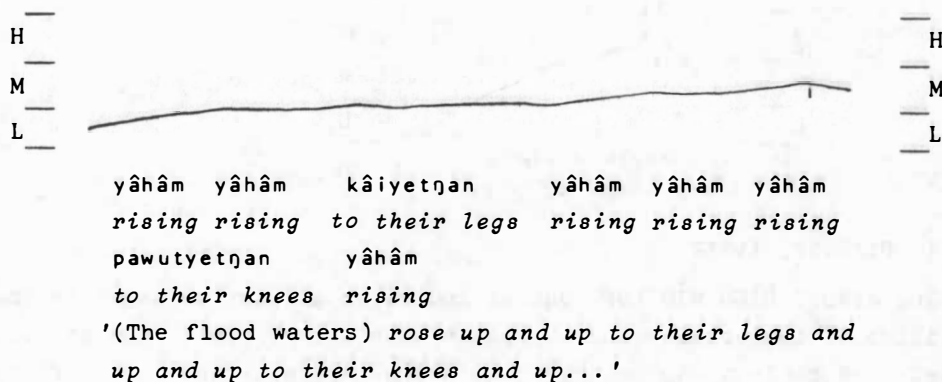
The ABRUPT HIGH-LOW contour indicates an aggressive attitude on the part of the speaker. The contour most often occurs with commands, announcements and petitions. The postnuclear slope sustains the high pitch longer than the postnuclear slope of the SMOOTH HIGH-LOW contour (4.1) and has an abrupt pitch fall commencing either at the end of the penultima syllable or the beginning of the marginal syllable. The contour is similar to the HIGH-MID contour with the exception of the terminal pitch level. When the contour occurs in prayer the syllables are longer and loudness is weaker.



4.8 SUSPENSE

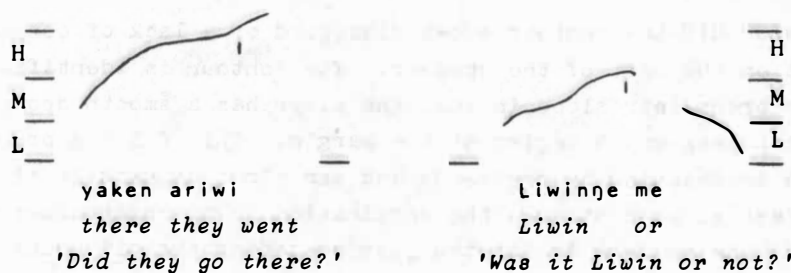
The LOW-MID contour expresses suspense. A long prenuclear slope begins at low pitch level and gradually rises with accompanying crescendo. Although the nucleus usually occurs at mid pitch level, in extremely long contours it may occur at a higher level. This contour always precedes another contour and the pitch height of its nucleus is always lower than that of the nucleus in the following contour. If the speaker desires to show suspense on a single grammatical word he may do it in two ways. If the word is a vowel-final verb root of few syllables he merely repeats the medial verb form which does not indicate identity of actor. The form is verb root plus -m. Other words are said once (rarely twice) and mâne is repeated after it. In either case the prenuclear contour is long. The postnuclear slope and margin coincide and manifest a short, sharp decrescendo and pitch fall. The contour of the postnuclear margin resembles that of the HIGH-MID contour (4.2).





4.9 INQUIRY

The MID-HIGH contour shows that the speaker has an attitude of inquiry or lacks knowledge about the veracity of an otherwise factual statement. Its primary use, therefore, is in certain types of questions. In this contour the normal stress pattern is often perturbed with the result that the stress group manifesting the nucleus may exhibit regressive perturbation of the primary stress. Thus, rather than the primary stress occurring on the initial syllable of the stress group, it may occur on subsequent syllables which usually manifest secondary stresses. When this happens the initial syllable manifests a secondary stress. Whereas the prenuclear slope may be long, the postnuclear slope is usually short and rising and coincides with the margin. If a question is marked by the grammatical question marker *me* 'or', the marker occurs with a low pitch or a short MID-LOW pitch contour.



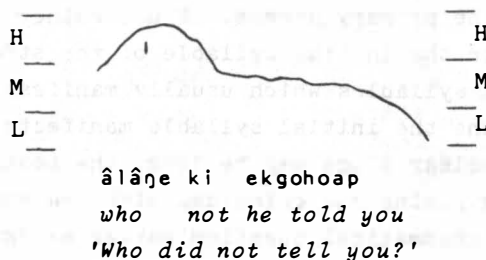
4.10 AMAZEMENT, WONDER

The SPIKE-HIGH-LOW contour shows amazement or wonder by the speaker. The contour has the same shape as the SMOOTH HIGH-LOW contour (4.1) except that a spike occurs in the pitch level at the nucleus.



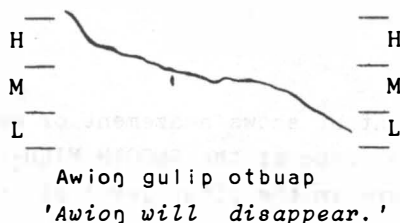
4.11 DISGUST, ANGER

The ABRUPT HIGH-MID-LOW contour indicates disgust or anger in the attitude of the speaker and is spoken with a very rapid rate of utterance. The nucleus may occur on the second syllable and thus perturb stress in that stress group. The postnuclear slope evidences an immediate, abrupt drop in pitch to the mid or low level before levelling off. If the pitch drop is to the mid level the remaining portion of the slope is a smooth drop to low level. This abrupt drop with a sustained lower level identifies the contour. There appears to be a correlation between the disgust of the speaker and the level to which the pitch abruptly drops. The more disgusted the speaker, the lower the level.



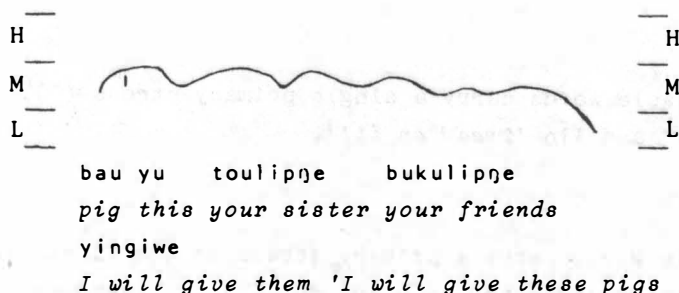
4.12 DISREGARD

The HIGH-MID-LOW contour shows disregard or a lack of concern and interest on the part of the speaker. The contour is identified by a peculiar prenuclear slope in that the slope has a smooth drop from the intonation peak which begins at the margin. This falling prenuclear slope is accompanied by crescendo and sometimes by nasalisation. The postnuclear slope continues the declination in the prenuclear slope. Generally the nucleus is located just preceding the mid point of the total contour.



4.13 SEDUCTION

The MID-LOW UNDULATING contour seems to indicate a seductive attitude in the speaker. The contour is distinguished by an undulating pitch drop from a nucleus occurring on the first syllable. The rate of utterance is usually slow so that overall syllable length is greater. A wavy decrescendo accompanies the pitch drop. The final margin resembles that of the SMOOTH HIGH-LOW contour (4.1).



Certain types of intonation contours have been observed occurring only initially in a breath group when it coincides with a grammatical sentence. These are: HIGH-MID, MID-HIGH-MID, MID and LOW-MID. In conversational material certain intonation contours are more likely to be followed by an interruption by another speaker. For example, the MID contour (hesitation) is more likely to precede interruption than the LOW-MID contour (suspense).

All types of intonation contours thus far identified have been observed in the narrative and conversational rhetorical periods. In oratorical units, however, the following intonation contours have not been observed: SMOOTH HIGH-(RISE)-LOW, LOW-MID, MID-HIGH, HIGH-MID-LOW or MID-LOW UNDULATING. Only four types of intonation contours have been observed in an annunciation unit: HIGH-MID, MID-HIGH-MID, MID and SMOOTH HIGH-(RISE)-LOW.

5. STRESS GROUP (WORD)

A stress group contains one primary stress occurring on the initial syllable followed by secondary stresses occurring on subsequent alternate syllables.⁸ The stress group is bounded by juncture (indicated by a space) and potential pause. Juncture characteristics of the stress group include the following: (a) a stress group final syllable is longer than the following stress group initial syllable; (b) morpho-phonemic changes do not occur across a juncture (see 12.2). Thus the

sequence *lok, ibi* 'men, women' with an intervening juncture indicates men and women but the same sequence *lohibi* without an intervening juncture means 'people'. The stress group has strong and weak variants depending upon its distribution in the phonological phrase. Those stress groups occurring nearer the nucleus of the phonological phrase are stronger variants.

The following stress patterns are found in word stems of up to four syllables in length.

5.1

Single syllable words carry a single primary stress (´). Examples are: *lók* 'man' and *lín* 'Tread on it!'.

5.2

Two syllable words carry a primary stress on the first syllable (syllable division indicated by a low dot (.)). Examples are: *sé.duk* 'crazy' and *pá.to* 'large'.

5.3

Three syllable words carry a primary stress on the first syllable and a secondary stress (˘) optionally occurring on the third syllable. Examples are: *gá.la.gat* or *gá.la.gàt* 'kind of palm tree' and *bó.ko.sòk* 'mud'.

5.4

Four syllable words carry a primary stress on the first syllable and a secondary stress on the third syllable. Examples are: *bú.bu.lè.lí* 'butterfly' and *mé.we.là.kí* 'Unfold it!'.

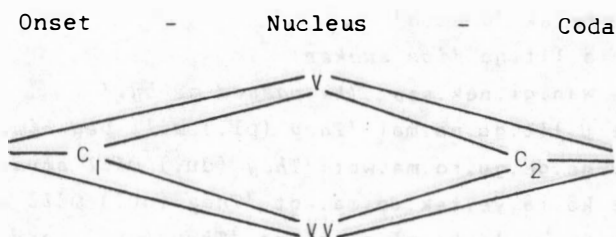
Stress groups with more than four syllables carry optional secondary stresses on alternate odd numbered syllables.

6. SYLLABLE

The syllable consists of a single mora of timing with a simple nucleus of one vowel or a complex nucleus of two vowels comprising one peak, an optional consonant onset and an optional consonant coda.

Figure A presents a schematic diagram of the syllable illustrating the types of syllables: $V, VV, VC_2, VVC_2, C_1V, C_1VV, C_1VC_2$ and C_1VVC_2 .

Figure A: Selepet Syllable Structure



In these syllable types, V represents any vowel (except with restrictions of occurrence in complex nuclei as noted below), C_1 represents any consonant and C_2 represents only voiceless stops or nasals.

These classes of consonants are based upon distribution of consonants within monosyllabic words (stress groups).⁹ Although the phoneme r occurs only intervocally it is classed with Consonant Class C_1 because of its similarities with phoneme l . Both phonemes are liquids (+ consonantal, + vocalic) and neither phoneme occurs syllable finally. Whereas only phoneme l occurs word initially both phonemes occur intervocally.

Examples of the consonant classes follow:

Consonant Class C_1 ; pat 'news', tat 'You stay!', kat 'Put it!', bem 'story', den 'speech', gem 'coming down', mem 'holding it', nak 'wood', ɲɪŋ 'darkness', wat 'Chase it!', yat 'You are speaking.', hat 'forest', sâp 'time', lok 'man', kara 'sorcery';
 Consonant Class C_2 ; tap 'It is here.', tat 'You stay!', sak 'sand', nem 'eating', nen 'we (pl.)', nen 'coral'.

The first member of a complex nucleus is never i and the second member is never an a or \hat{a} . The following diphthongs occur as complex nuclei: ei , eu , ai , $\hat{a}i$, oi , ui , ae , $\hat{a}e$, oe , ao , au , $\hat{a}o$, $\hat{a}u$ and ou .

All structural syllable types may individually constitute one syllable words. Examples follow:

V	i	'Sleep!'	VV	ai	'Dig!'
CV	be	'taro'	CVV	bau	'pig'
VC	ot	'Do it!'	VVC	$\hat{a}un$	'now'
CVC	tap	'He is here.'	$CVVC$	kaok	'white'

All structural syllable types with the exception of VV have been observed to occur in all syllable positions in polysyllabic words. The syllable type VV has not been observed to occur medially in poly-

syllabic words. Words of up to ten syllables in length have been observed. Examples of these follow:

- 2 syllable he.ak 'breath'
- 3 syllable a.lit.ŋe 'its sucker'
- 4 syllable wan.gi.nek.sap 'He passed me by.'
- 5 syllable u.lit.gu.no.mai 'They (pl.) will beg him.'
- 6 syllable he.ge.gu.ro.ma.wot 'They (du.) will straighten it.'
- 7 syllable kâ.râ.ye.lek.do.ma.wot 'They (du.) will cut them (du.).'
- 8 syllable me.we.la.ki.mi.ni.o.wot 'They (du.) used to fold it.'
- 9 syllable me.dâ.re.yin.gi.mi.ni.o.wot 'They (du.) used to wring
it out for them (pl.).'
- 10 syllable me.we.la.ki.yin.gi.mi.ni.o.wot 'They (du.) used to fold
it for them (pl.).'

Syllable length is determined by several factors. These are:

- a) composition of the syllable in terms of phonemes,
- b) position of the syllable in the word,
- c) position of the syllable in the pause group,
- d) number of syllables in the word and
- e) speed of utterance.

Single and complex vowel nuclei exhibit no significant difference in length. Syllable types with both consonant onset and coda are longer than those types with only one or the other. Syllables with continuant consonants are longer than those with interrupted consonants. Allophonic variations also contribute to differences in syllable length. Shorter allophones occasion shorter syllables. For example, the syllable [ka] is shorter than [ŋgə].

Initial syllables within the word are shorter than non-initial syllables of the same type. The syllables of polysyllabic words are shorter than identically composed syllables in mono- or disyllabic words.

It was noted in Section 4 that syllable length varies greatly from the nucleus to the margin of a phonological phrase. The shorter syllables occur nearer the nucleus. The attitude of the speaker (and therefore, the intonation contour) and the speed of utterance contribute greatly to the length of syllables. Shorter syllables occur in utterances said with anger and disgust simply because these utterances tend to be said with more rapidity. Longer syllables occur with the intonation contour indicating seduction because the seducer tends to speak slowly and softly.

As a result of all of these factors it is difficult to give a precise length for any single type of syllable. Syllables of up to 1.3 seconds duration have been measured: e.g., niŋ 'Give it to me!'. A CV syllable manifesting short phonemes and occurring at the end of a phonological phrase may be considerably longer than a CVC syllable manifesting long phonemes and occurring at the nucleus of a phonological phrase.

Syllable borders are determinate when either preceded or followed by pause or a consonant onset or closure of other syllables. Indeterminacy of borders occurs when the borders are bounded by vowels. Examples of indeterminate syllable borders follow: (voiceless stops) opon 'men's house', kitim 'missing', âkâm 'expectorating'; (voiced stops) tebe 'bow', tado 'post', waga 'canoe'; (nasals) imen 'louse', manam 'banana', aŋun 'stink bug'; (fricatives) awu 'victory plant', meyek 'Hold them!', tuhu 'Work!', gasam 'cassowary'; (vibrant) keram 'rat'; (lateral) balam 'flame'.

An examination of spectrograms does not yield any consistent evidence for dividing the above words into syllables. The indeterminacies with regard to the voiced stops, fricatives, vibrant and lateral may be resolved by resorting to the syllable structure and distribution of phonemes within consonant classes thereby placing the syllable division before the intervocalic phoneme as in the examples: te.be,¹⁰ ta.do, wa.ga, a.wu, me.yek, tu.hu, ga.sam, ke.ram, ba.lam.

Morphological evidence is inconclusive if it is sought for the purpose of substantiating these divisions. Positive evidence would be found in suffixes with consonant-initial sandhi forms. In the following examples morphological boundaries are indicated by a hyphen: {-be} -be ~ -we (1st person, singular, immediate future tense) as in ek-be 'I will see it.', ari-we 'I will go'; {-de} -de ~ -re (1st person, dual, immediate future tense) as in ek-de 'We (du.) will see it.' ari-re 'We (du.) will go.'; {-ge} -ge ~ -he 'your (sg.)' as in apet-ge 'your (sg.) wife', ata-he 'your (sg.) elder brother'; also -yetŋe 'your/their (du.)' and -yeŋe 'your/their (pl.)' as in ata-yetŋe 'your/their (du.) elder brother', ata-yeŋe 'your/their (pl.) elder brother'. Negative evidence is found in forms with consonant-final sandhi forms. In the following examples the syllable division (.) would precede the fricative, vibrant or lateral and the morpheme division (-) would follow them: ne.w-ân 'work at', âsi.r-ak 'scratch-yourself', e.h-op 'saw-it-he' (the verb stem morpheme is Ø), ha.l-ân 'forest-in' and o.l-op 'happened-it'.¹¹

Morphological evidence is useful, however, in the case of indeterminate syllable boundaries involving nasals. In the following examples syllable division and morpheme division coincide and occur before the intervocalic nasal: ata-ne 'elder brother-my', ata-ŋe 'elder brother-

his', ari-mini-op '*go-used to-he*'. Problems in determination do arise, however, as in the case when a nasal-final morpheme is suffixed by a homo-organic nasal-initial morpheme as in hewun- '*wife's mother*' and -ne '*my*' which unite to form hewune '*my mother-in-law*'. One cannot say which of the two nasals reduced.

Although much of the evidence is inconclusive, intervocalic phonemes will be assumed to be the onset of the following syllable nucleus rather than the coda of the previous syllable nucleus.

7. PHONEME

Selepet has fifteen consonant phonemes: p, t, k, b, d, g, m, n, ŋ, w, y, s, h, l and r; and six vowel phonemes: i, e, a, â, o and u. The consonants contrast in manner of articulation as to voiceless and voiced stops, nasals, flat and grooved fricatives, lateral and vibrant. The stops and nasals contrast as to labial, dental and velar points of articulation. The flat fricatives contrast as to labial, alveolar and velar (including glottal) points of articulation. Vowels contrast as to high, mid and low tongue heights and front and back tongue positions. Allophonic variation is conditioned by occurrence of contiguous segments. An articulatory description of the allophones with their acoustical correlates is given in Appendix I.¹² Contrastive pairs illustrating phonemic contrasts are given in Appendix II.

7.1 CONSONANTS

The distribution of contoid phones is shown in Table A. The subscript [̚] indicates an unreleased or held lenis stop, and the subscript [̤] indicates non-syllabicity with vocoids and dental articulation with contoids. The spike fills of voiceless stops occurring in the initial position are longer than those of the phones occurring in the intervocalic positions and thus evidence greater aspiration. The phones [f] and [p̤] occur only rarely fluctuating with [p^h] word initially before high vowels i and u. The syllable final unreleased stops have no spike gap.

/pikyap/ [p^hi k̤i̤ap], [p̤i k̤i̤ap] or [fik̤i̤ap] '*It is full*'.¹³

/pui/ [p^hu i̤] or [p̤u i̤] '*chicken*'

/papato/ [p^hap^hat̤^ho] '*very big*'

/takat/ [t̤^hak^hat̤^j] '*You came.*'

/katap/ [k^hat̤^hap] '*potato*'

TABLE A: CONSONANTAL ALLOPHONIC VARIATION

Phonemes	/p/	/t/	/k/	/b/	/d/	/g/	/m/	/n/	/ɲ/	/w/	/y/	/h/	/s/	/l/	/r/
Word initial	[p ^h]	[t ^h]	[k ^h]	[^m b]	[ⁿ d]	[^ɲ g]	[m]	[_ɲ n]	[ŋ]	[u]	[i]	[h]	[s]	[l]	
	[f]			[b]	[d]	[g]					[z ^y]				
	[p]			[p]	[t]	[k]					[s ^y]				
Inter- vocalic	[p ^h]	[t ^h]	[k ^h]	[^m b]	[ⁿ d]	[^ɲ g]	[m]	[_ɲ n]	[ŋ]	[b]	[i]	[g]	[s]	[l]	[ɣ] [r̃]
Syllable final	[p]	[t̚]	[k̚]				[m]	[_ɲ n]	[ŋ]						
Following consonants				[b]	[d]	[g]	[m]	[_ɲ n]	[ŋ]		[i]				
				[p]	[t̚]	[k]			[ŋ<]		[s ^y]				
									[ñ]		[z ^y]				
											[s]				

The prenasalisation on the voiced stops in word initial position is weak and often absent. It has never been observed to constitute as much as one-half of the phones total length. This contrasts with the intervocalic position where the nasal portion of the phone may be as much as three times the length of the stop portion of the phone. The voiced stop phones tend toward voicelessness following voiceless stops and often reduce following homo-organic stops.¹⁴ The voiced stops exhibit rare occurrences of voiceless unaspirated stop phones in fluctuation in initial position.

/dakera/ [ⁿdak^heʔa], [d^hak^heʔa] or [t^hak^heʔa] 'grass'

/ga/ [^ŋga], [ga] or [ka] 'Come!'

/ekbom/ [εk^hbom] or [εk^hpom] 'I will see it.'

/dodâ/ [ⁿd^oⁿd^o] or [d^oⁿd^o] 'plenty'

/baga/ [^mba^ŋga] or [ba^ŋga] 'kind of breadfruit'

/gaguk/ [^ŋga^ŋguk] or [ga^ŋguk] 'kind of shrub (Zingiberaceae)'

The palatalised velar nasal [ŋ̣] occurs only following phones [ŋ̣] and [ṭ] and the alveopalatal nasal [ɲ̣] occurs fluctuating with [ŋ̣] following phone [ŋ̣].

/kutŋe/ [k^huṭŋ̣e] 'his name'

/esenne/ [εsɛŋ̣ŋ̣e] or [εsɛŋ̣ŋ̣e] 'its leaf'

The phone [ɪ̣] occurs initially preceding back vowels and medially following stops and nasals. Phone [ẓ^y] occurs initially preceding front vowels and medially following stops and nasals. The phone [ṣ^y] fluctuates with phones [ɪ̣], [ẓ^y] and rarely [ṣ] following stops.¹⁵

/yune/ [ɪ̣une] 'this'

/yione/ [ẓ^yione] 'my maternal uncle (mother's brother)'

/ekyongoap/ [εḳɪ̣ŋgoap] or [εḳẓ^yŋgoap] 'He told them (pl.).'

/donɣap/ [dɔŋ̣ɪ̣ap] or [dɔŋ̣ẓ^yap] 'It broke.'

/katyeksap/ [k^haṭɪ̣ɪ̣eksap], [k^haṭẓ^yeksap], [k^haṭṣ^yeksap] or

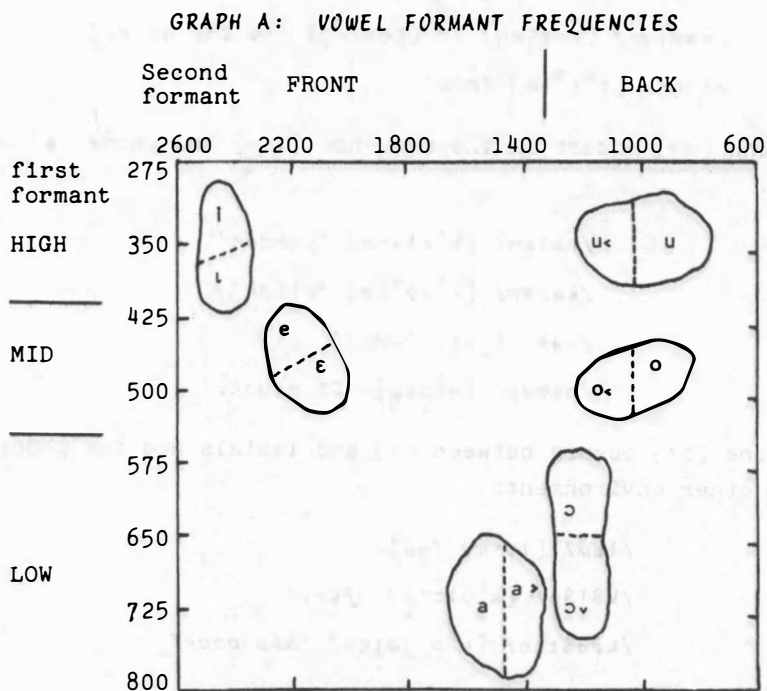
[k^haseksap] 'He dismissed them (pl.).'

The phone [ɾ̣] occurs only rarely fluctuating with phone [ɾ̣].

/porom/ [p^họrom] or [p^họrom] 'Porom ancestral cult'

7.2 VOWELS

The six vowel phonemes are plotted on Graph A according to the frequencies of their first and second formants (given in cycles per second (cps.)). The phoneme target areas are enclosed by a solid line and allophonic variation is shown by internal broken lines. Articulatory designations of front, back, high, mid and low are also indicated.



The phone [ɪ] occurs before nasals and voiced prenasalised stops; phone [i] occurs fluctuating with phone [ɪ] and in other environments.

/gibaŋ/ [gɪ^mbaŋ] 'yellow'

/idup/ [ɪⁿɟup] 'barricade'

/igep/ [ɪⁿgɛp] 'spear'

/piriap/ [p^hiɾiap] 'He washed it'

/ikiwe/ [ik^hiwe] 'Amboina Cuckoo-dove'

/gihitne/ [gigiⁿɛ] 'its root'

The phone [e] occurs before vowels, fricatives and liquids and word finally whereas phone [ɛ] occurs in other environments and fluctuating with [e] before liquids.

/meteâk/ [mɛt^hɛɔk] 'openly'

/kehetɲe/ [k^hɛgɛtɲe] 'egg, seed'

/dewutâ/ [dɛbuɔt^hɔ] 'sun'

/kabene/ [k^ha^mbɛɲe] 'my shoulder'

/emelan/ [ɛmelan] or [ɛmelan] 'in the house'

/tebe/ [t^hɛ^mbe] 'bow'

The phone [a>] occurs in the sequence [l-m] and phone [a] occurs elsewhere.

/kalam/ [k^hala>m] 'garden'

/kapam/ [k^hap^ham] 'stick'

/nak/ [nək] 'wood'

/asoap/ [asoap] 'It stuck.'

The phone [ɔ>] occurs between [l] and labials and the phone [ɔ] occurs in other environments.

/lâm/ [lɔ>m] 'hole'

/kâlâp/ [k^hɔlɔ>p] 'fire'

/kâdâtɲe/ [k^hɔⁿdɔtɲe] 'his back'

/bâlâɲe/ [bɔlɔɲe] 'his calf'

/ârok/ [ɔʔɔk] 'cucumber'

/âkâm/ [ɔk^hɔm] 'expectorating'

/gâit/ [gɔlɛt] 'You carry it!'

The phone [ɔ<] occurs before dentals and phone [o] occurs in other environments.

/hobot/ [ho^mboɔt] 'wild sugar cane'

/ariwot/ [ariboɔt] 'You may go!'

/aslon/ [aslon] 'sneeze'

/tosa/ [t^hosa] 'error'

The phone [u<] occurs before [t̥] and phone [u] occurs in other environments.

/kaiput/ [k^hɔ̌ip^hu< t̥] 'bead necklace'

/amutgen/ [amu< t̥gen] 'underneath'

/keluŋe/ [k^helūŋe] 'its fat'

/use/ [use] 'sore'

/sueŋ/ [sueŋ] 'kind of wild sugar cane'

/duwi/ [dubi] 'kind of animal'

/gurumu/ [guɾumu] 'kind of tree (Moraceae Ficus adenosperma)'

8. DISTINCTIVE FEATURES

The twenty-one Selepet phonemes may be identified by seven distinctive features. These are tabulated in Table B. Abbreviations used are: cons. for consonantal/non-consonantal, voc. for vocalic/non-vocalic, inter. for interrupted/continuant, nas. for nasal/non-nasal, cpt. for compact/diffuse, gr. for grave/acute and ten. for tense/lax. The plus symbol indicates the occurrence of the first feature of a set; the minus symbol indicates the occurrence of the second feature of a set. Redundant features are not indicated.¹⁶

9. MORPHOPHONEMICS

A number of morphophonemic processes have been observed in affixation and compounding and are summarised in the following rules: (C = consonant, V = vowel).

9.1

The initial and final stop phonemes of the morphemes are replaced by their fricative counterparts initially and/or finally if vowels occur contiguously. Thus V + b- → Vw-; V + d- → Vr-; V + g- → Vh-; -p + V → -wV; -t + V → -rV; -k + V → -hV.¹⁷

9.2

Phoneme t reduces before s or l. Thus t + s → s; t + l → l.

TABLE B:: SELEPET DISTINCTIVE FEATURES

Phoneme	cons.	voc.	inter.	nas.	cpt.	gr.	ten.
p	+	-	+		-	+	+
t	+	-	+		-	-	+
k	+	-	+		+		+
b	+	-	+		-	+	-
d	+	-	+		-	-	-
g	+	-	+		+		-
m	+	-	-	+	-	+	
n	+	-	-	+	-	-	
ŋ	+	-	-	+	+		
w	+	-	-	-	-	+	
y	+	-	-	-	-	-	
h	+	-	-	-	+		
s	+	-	-	-	-	-	+
l	+	+	-				
r	+	+	+				
i	-				-	-	+
e	-				-	-	-
a	-				+		-
â	-				+		+
o	-				-	+	-
u	-				-	+	+

9.3

When two identical vowels occur contiguously one reduces. Vowels *a* and *â* act as identical vowels in morphophonemic processes. Thus *a + a → a*; *a + â → a*; *â + a → a*; *e + e → e*; *i + i → i*; *o + o → o*; *u + u → u*.¹⁸

9.4

When two identical consonants occur contiguously one reduces. Thus *k + k → k*; *m + m → m*; *n + n → n*; *ŋ + ŋ → ŋ*; *p + p → p*; *t + t → t*.

9.5

When a nasal is followed by a homo-organic voiced stop the nasal reduces. Thus *m + b → b*; *n + d → d*; *ŋ + g → g*. This rule produces poly-morphemic words which are homophonous with mono-morphemic words.

[ɔ̃ⁿɔ̃] /âdâ/ 'kind of dance done by women'

[ɔ̃ⁿɔ̃] /âdâ/ 'you move' from *ân-* 'to move' and *-dâ*
(2nd person singular, heteropersonal
dependent verbal suffix).

A number of morphophonemic processes are associated with particular morphemes:

9.6

The final vowel of the adjectiviser *-ŋe* or the pronominal elements with a final *e* is replaced by *a* when the morphemes *-ŋe* (subject/instrument-agent clitic) or *-gât* (causal-benefactive/possession clitic) are suffixed. Thus *lok bâleŋe* 'bad men' but *lok bâleŋaŋe* 'the bad men' (as subject) or 'by the bad men' (as agent) and *lok bâleŋahât* 'for the bad men' (as causal-benefactive) or 'the bad men's' (as possession); *baratŋe* 'his daughter' but *baratŋaŋe* 'his daughter' (as subject) or 'by his daughter' (as agent) and *baratŋahât* 'for his daughter' (as causal-benefactive) or 'his daughter's' (as possession); *nine* 'myself' but *ninahât* 'for myself' (as causal-benefactive).

9.7

When the locative clitic *-ân* 'in, at' is suffixed to the adjectiviser *-ŋe* or pronominal elements ending in *e*, the vowels *e* and *â* reduce to *a*. Thus *emetŋe* 'his house' plus *-ân* 'in' yields *emetŋan* 'in his house'; *nine* 'my own' plus *-ân* 'in' yields *ninan* 'with me' (lit. 'at my (place)').

9.8

When the morpheme *-âk* 'only' or (adverbialiser) is suffixed to the morpheme *-ŋe* (adjectiviser/subject clitic/instrument-agent clitic/adverbialiser) or a pronominal element ending in *e*, either of two morphophonemic processes is operative. Usually the final *e* and the *â* reduce to *a* as in *tebene* 'with a bow' plus *-âk* yielding *tebenak* 'only with a bow' or nine 'my own' plus *-âk* yielding *ninak* 'my very own'. In a few pronominal forms, however, the *e* plus the *a* may become *iâ* as in the alternate pronominal form *niniâk* 'I alone' (see McElhanon, 1969b).

10. VOCOID INTERPRETATION

From two to four vocoids have been observed in clusters with the following patterns (a period indicates two moras of timing; absence of a period indicates a single mora of timing; except where pertinent to the interpretation, allophonic variation is not written): Pattern 1 (*ŷŷ*) in which stress may occur only on the first member as in *áŷm* 'digging it' and *gáek* 'Let him come!'; Pattern 2 (*ŷŷ*) in which stress may occur on the second member as in *ŷógo* 'Strike them!' and *ŷát* 'Chase it!'; Pattern 3 (*ŷ.V*) or (*V.ŷ*) in which stress may occur on either member but not on both as in *héak* 'breath' or *tuhuàkbi* 'They did it to one another.'; Pattern 4 (*ŷ.Vŷ*) or (*V.ŷŷ*) in which stress may occur on the first or second member but not on both as in *óaj̄n* 'we became' and *túhuàŷtgât* 'because we (du.) did it'; Pattern 5 (*V.ŷŷ*) in which stress may occur on the third member as in *túhuàkbe* 'I'll do it to them.'; Pattern 6 (*ŷŷ.V*) or (*Vŷ.ŷ*) in which stress may occur on either the first or third member but not on both as in *lóŷâk* 'Let him carry it!' and *hóhâŷàksap* 'It raised itself up.'; Pattern 7 (*ŷŷ.Vŷ*) or (*Vŷ.ŷŷ*) in which stress may occur on the first or third member but not on both as in *lóŷaj̄* 'They carried it.' and *hóhâŷàŷrân* 'at the time we (du.) raised it'; Pattern 8 (*ŷŷ.Vŷ*) or (*Vŷ.ŷŷ*) in which stress may occur on the first or the fourth member but never on both as in *lóŷŷet* 'You (dual) carry it!' and *hóhâŷàksap* 'He lifted them up.'; Pattern 9 (*ŷŷŷ*) in which stress may occur only on the second member as in *ŷáŷ* 'They spoke.'. Pattern 3 alone does not contain non-syllabic vocoids.

For descriptive purposes these clusters are considered in sequences of two vocoids at a time. Those sequences which have been observed are tabulated in Table C.

TABLE C:: TWO VOCOID SEQUENCES

i i	i e	i a	i â	i o	i u
e i		e a	e â	e o	e u
a i	a e			a o	a u
â i	â e			â o	â u
o i	o e	o a	o â		o u
u i	u e	u a	u â	u o	u u

All of the above sequences occur with one mora timing except *ea*, *eâ*, *eo*, *oa* and *oâ*. Other sequences which occur with two mora's timing are *i.e*, *i.a*, *i.â*, *i.o*, *i.u*, *e.a*, *e.â*, *e.o*, *o.a*, *o.â*, *u.e*, *u.a*, *u.â* and *u.o*. Any sequence with one mora timing and which begins with *i* or *u* (with the exception of *ïi* and *ÿu*) contrasts with an identical sequence with two mora's timing. Vowel length does not occur and therefore there is no contrast between *ïi* and *i.i* and between *ÿu* and *u.u*. Contrastive examples follow: *ïek* 'Look at them!' and *si.ep si.ep* 'Long plumed False Sun-bird' (*Toxorhamphus illiophus*); *ïai* 'They are speaking.' and *i.ai* 'They are sleeping.'; *ïâk* 'he' and *i.âk* 'Let him sleep!'; *ïongo* 'Strike them!' and *i.on* 'You slept.'; *ïu* 'this' and *pl.u pl.u* 'Mangrove Heron' (*Butorides striatus* (littler1)); *ÿosan* 'where' and *u.on* 'You cooked it.'; *ÿâkâ* 'Sulphur-crested cockatoo' (*Kakatoe galerita* (triton)) and *u.âk* 'Let him cook it!'; *ÿat* 'Chase it!' and *u.at* 'You cooked it.'; *ÿeke* 'ghost' and *lu.e lu.e* *ïap* 'It howled.'; *ÿlglllq* 'kind of grass' (*Gramineae*; *Ischaemum polystachyum*) and *u.ln* 'We cooked it.'.

The writer suggests that the non-syllabic vocoid in these contrastive sets be interpreted as consonants /w/ and /y/ and the corresponding syllabic vocoids be interpreted as vowels /u/ and /i/. By this interpretation the phones [ÿ] and [ï] would be combined with the inter-vocalic phones [b] and [l] respectively to form phonemes /w/ and /y/. The phones [u] and [i] would then be combined with phones [ÿ] and [ï] (which occur as the second member of two-vocoid sequences with one mora timing) to form phonemes /u/ and /i/. This allophonic distribution is given in Table D.

TABLE D: ALLOPHONIC DISTRIBUTION OF w, y, u AND i

Phoneme	Initially	Intervocalically
w	[<u>w</u>]	[b]
y	[<u>i</u>]	[<u>i</u>]
u	[u]	[<u>u</u>]
i	[i]	[<u>i</u>]

This interpretation is preferred to the combination of [w] initially with [w] intervocalically because initial phone [w] contrasts with phone [u] as given above and intervocalic phone [w] contrasts with [b] as in [hɔwɔk] 'Let him spear it!' and [hɔbɔk] 'only a fly'. To combine the two [w] phones would create a third phoneme /v/. These three phonemes would have the following allophonic distribution: /u/ [u] occurs in all syllabic vocoid positions; /w/ [w] occurs word initially and as the second member of a complex nucleus (i.e., following syllabic vocoids); /v/ [b] occurs intervocalically. To combine the initial phone [i] with the [i] phone following syllabic vocoids would force the creation of an extra phoneme /z/ because of similarly existing phonemic contrasts.

An examination of spectrograms confirms the preferred interpretation. The allophones of phonemes /u/ and /i/ all show the distinctive features -consonantal and +vocalic (i.e., they have formant structure). The phones [w] and [i] have the distinctive features of -consonantal and -vocalic (i.e., they have no formant structure) and the phone [b] has +consonantal and -vocalic (i.e., it has no formant structure).¹⁹

The remaining two vocoid sequences of one mora timing (e_i, e_w, a_i, â_i, o_i, u_i, a_e, â_e, a_o, a_u, â_o, â_u, and o_u) are interpreted as complex nuclei and thus constitute one syllable. The sequences of two mora's timing (i.e., i.a, i.â, i.o, i.u, e.a, e.â, e.o, o.a, o.â, u.a, u.e, u.â and u.o) are interpreted as sequences of single nuclei and thus two syllables.

A sequence of two nuclei is distinguished from a complex nucleus by a number of factors:

(a) **Internal membership:** the first member of a sequence of two simple nuclei is never /a/ or /â/ and the second member is never /u/ or /i/; the first member of a complex nucleus is never /i/ and its second member never /a/ or /â/.

(b) **Timing:** a sequence of two simple nuclei is two mora's timing but a complex nucleus is only one mora of timing.

(c) **Stress:** a sequence of two simple nuclei may manifest stress on either of its members (but not both) and a complex nucleus may manifest stress only on the initial member.

(d) **Number of syllable peaks:** whereas a sequence of two simple nuclei occurs with two syllable peaks the complex nucleus occurs with only one syllable peak.

(e) **Glide direction:** the direction of glide from the initial member to the second member of two simple nuclei is down and forward, down, down and backward or backward; but the direction of glide in a complex nucleus is forward, upward and forward, upward or upward and backward.

11. CONTOID INTERPRETATION

11.1

The phones [^mb], [ⁿd], [^ŋg], [p^h], [t^h] and [k^h] are all interpreted as unit phonemes /b/, /d/, /g/, /p/, /t/, and /k/ respectively because there are no non-suspect consonant clusters in word initial position. Consonant clusters occur only across syllable boundaries.

11.2

The syllable final unreleased stops [p̚], [t̚] and [k̚], and the stops [b, p], [d, t] and [g, k] following consonants are in complementary distribution with the word initial and intervocalic phones of phoneme sets /p, t, k/, /b, d, g/ and /w, r, h/.

The voiceless unreleased stops [p̚], [t̚] and [k̚] are interpreted as allophones of phonemes /p, t, k/, and the stops [b, p], [d, t] and [g, k] are interpreted as allophones of phonemes /b, d, g/. This interpretation is most consistent with phonetic similarity and yields the most simplified phonemic orthography. To interpret these phones as allophones of the phonemes /w, r, h/ would yield a phonemic orthography with phonetic complexity. These two interpretations are given in Tables E and F for comparison.

It should be noted, however, that interpreting the phones as allophones of the phonemes /p, t, k/ and /b, d, g/ does yield a complication in morphology and morphophonemic rule no. 1 (see section 9), viz., in affixation or compounding the initial or final stop phonemes of the morphemes are replaced by their fricative counterparts initially and/or

TABLE E: AS ALLOPHONES OF PHONEMES /p, t, k/ AND /b, d, g/

Phoneme	Word initial	Inter-vocalic	Following consonants	Syllable final
/p/	[p ^h]	[p ^h]		[p _j]
/t/	[t ^h]	[t ^h]		[t _j]
/k/	[k ^h]	[k ^h]		[k _j]
/b/	[^m b]	[^m b]	[b, p]	
/d/	[ⁿ d]	[ⁿ d]	[d, t]	
/g/	[^ŋ g]	[^ŋ g]	[g, k]	

TABLE F: AS ALLOPHONES OF PHONEMES /w, r, h/

Phoneme	Word initial	Inter-vocalic	Following consonants	Syllable final
/w/	[w]	[b]	[b, p]	[p _j]
/r/	-	[r]	[d, t]	[t _j]
/h/	[h]	[g]	[g, k]	[k _j]

finally if vowels occur contiguously.²⁰ This complexity is tabulated below in Table G with hypothetical morphemes. The base form of morphemes is that form which is bounded by consonants or occurs in isolation.

TABLE G: MORPHOPHONEMIC ALTERNATION

Vowel preceding the base form	Base form	Vowel following the base form	Vowels bounding the base form
-wep-	-bep-	-bew-	-wew-
-ret-	-det-	-der-	-rer-
-hek-	-gek-	-geh-	-heh-

To interpret the phones as allophones of phonemes /w, r, h/ would simplify the morphology. Those forms listed in the fourth column would appear.

11.3

The phone [w] occurring intervocally in the verbal suffixes {-wuat} [ɥat̚] 'you will' (2nd person singular, immediate future tense) and {-wuap} [ɥap̚] 'he/she/it will' (3rd person singular, immediate future tense) is interpreted as two segments /wu/. Illustrative data are: ariwuat [aʁiɥat̚] 'You will go.', ariwuap [aʁiɥap̚] 'He will go.', gâiwuat [gɔiɥat̚] 'You will cut it.', gâiwuap [gɔiɥap̚] 'He will cut it.' and all similar conjugations based upon vowel final verb stems.

This interpretation is based upon the following: (a) an initial stop phoneme is replaced by its fricative counterpart when a vowel occurs preceding it. Thus b → w, d → r and g → h; and (b) the suffixal forms following consonant final verb stems are -buat and -buap as in katbuat [kʰat̚ɥuat̚] 'You will place it.', katbuap [kʰat̚ɥap̚] 'He will place it.', kunbuat [kʰunɥuat̚] 'You will call him.', kunbuap [kʰunɥap̚] 'He will call him.' and all other similarly conjugated verb stems ending in consonants. Thus the forms [ɥat̚] and [ɥap̚] alternate with the forms [ɥat̚] and [ɥap̚] respectively and the phone [ɥ] may be identified with the phones [bu] and so interpreted as /wu/.

12. JUNCTURE

Juncture (phonological word or stress group boundary) is indicated by a space. Three types of phonological evidence indicate the occurrence of juncture. All types involve morphophonemic processes.

12.1 VOWEL EVIDENCE

When two identical vowels (a and â act as identical vowels in morphophonemic processes) occur contiguously with no intervening juncture, one reduces. When juncture intervenes the second vowel is stressed. Examples are:

[tʰôgop] /tohop/ 'He came' from toho- 'to come' and
-op (3rd person singular, remote
past tense).

[p^hát^hoóap] /pato oap/ 'She became big' from pato 'big',
o- 'to become' and -ap (3rd person
singular, immediate past tense).

12.2 CONSONANTAL EVIDENCE

Consonantal morphophonemic processes do not apply across juncture.
For example:

[lógl^mbi] /lohibi/ 'adults' from lok 'man' and ibi 'woman'.

[lókl^mbi] /lok ibi/ 'man, woman' as used in listing of items.

In the compound lohibi 'adults' there is no juncture between the constituents lok and ibi so that the final k of lok is replaced by h. The compound has all the phonological features of a single stress group (see Section 5). When the items lok and ibi are given in a list, juncture intervenes and the final k or lok remains unchanged. Each item has the phonological features of a single stress group.

12.3 STRESS PATTERN EVIDENCE

When grammatically independent forms occur contiguously and juncture does not intervene, the grammatical forms exhibit a single stress group pattern (phonological word).

[lógl^mbi] /lohibi/ 'adults, people' from

[lókl] /lok/ 'man' and [l^mbi] /ibi/ 'woman'.

13. DISTRIBUTION

In Section 6 the distribution of consonants within the syllable was described. It was noted that any voiceless stop and/or nasal may occur as a syllable coda. The syllable onset following a closed syllable may only be filled by phonemes p, t, k, b, d, g, m, n, ŋ, s and y. Those sequences which occur are indicated in Table H by the symbol x. Table H may be summarised by the following rule: consonant clusters (across syllable boundaries) may not manifest combinations of homo-organic nasals, nasal plus voiceless stop nor nasal plus homo-organic voiced stop. Phoneme r does not occur word initially.

TABLE H: OBSERVED CONSONANT SEQUENCES

		Syllable initial										
		p	t	k	b	d	g	m	n	ŋ	s	y
Syllable final	p		x	x		x	x	x	x	x	x	x
	t	x		x	x		x	x	x	x	x	x
	k	x	x		x	x		x	x	x	x	x
	m					x	x		x	x	x	x
	n				x		x	x		x	x	x
	ŋ				x	x		x	x		x	x

14. FREQUENCY

A frequency count of phonemes in text material which consisted of 129,574 symbols yielded the percentages given in Table I.²¹

TABLE I:: PHONEME FREQUENCY COUNT

Phoneme	Percentage	Phoneme	Percentage	Phoneme	Percentage
l	6.92	t	5.95	ŋ	4.18
e	8.86	k	5.68	w	1.76
a	9.45	b	3.01	y	4.02
â	11.41	d	0.77	h	1.86
o	5.31	g	2.60	l	2.06
u	5.19	m	7.95	r	1.69
p	3.08	n	6.32	s	1.93

APPENDIX I

Articulatory description of the phones with their distribution and acoustical correlates. The asterisk indicates that no sonagram was obtained for that phone.

Consonants

/p/	[p ^h]	A voiceless aspirated bilabial stop.
	[p]*	A voiceless bilabial fricative.
	[f]*	A voiceless labio-dental fricative.
	[p̚]	A voiceless unreleased bilabial stop.
/t/	[t ^h]	A voiceless aspirated dental stop.
	[t̚]	A voiceless unreleased dental stop.
/k/	[k ^h]	A voiceless aspirated velar stop.
	[k̚]	A voiceless unreleased velar stop.

The most noticeable characteristic of the above sounds is the presence of a stop gap. The spike fills of the phones occurring in the initial position are longer than those of the phones in the inter-vocalic position. This difference in length may be significant in that stress is manifested on the initial syllable of stress groups. In slow speech initial spike fills were between .10 and .20 seconds long and medial spike fills between .02 and .12 seconds long. Only rarely were medial spike fills entirely absent. The bilabial, dental and velar phones are most easily differentiated by their influence on contiguous vowel formants. The bilabial phones deflect higher vowel formants downward. The dental phones deflect formants toward the neutral position. The velar phones show little if any deflection of the vowel formants.

Consonants

/b/	[b]	A voiced bilabial stop.
	[^m b]	A voiced prenasalised bilabial stop.
	[p]	A voiceless unaspirated bilabial stop.
/d/	[d]	A voiced dental stop.
	[ⁿ d]	A voiced prenasalised dental stop.
	[t̪]	A voiceless unaspirated dental stop.
/g/	[g]	A voiced velar stop.

The preceding six phones are characterised by the presence of a voice bar during the stop gap and very short spike fills. The spike fills are usually between .01 and .04 seconds long and the longest measured spike fill was .06 seconds. This compares with spike fills of up to .20 seconds in the voiceless cognates. When a prenasalised phone occurs in initial position the prenasalisation is slight and rarely accounts for more than one-half of the phone's length. In intervocalic position, however, the prenasalisation is from one to three times as long as the stop portion of the phone. Generally, phones following nasals and initial phones are .15 to .25 seconds in length, whereas intervocalic phones are from .30 to .40 seconds in length. Like their voiceless counterparts these phones are identifiable by their influence on the formants of contiguous vowels.

Consonants

/m/	[m]	A voiced bilabial nasal.
/n/	[n]	A voiced dental nasal.
/ŋ/	[ŋ]	A voiced velar nasal.
	[ŋ̟]*	A voiced advanced velar nasal.
	[ɲ̟]*	A voiced alveopalatal nasal.

The nasal phones are characterised by a formant structure with weaker formants than those manifested in the vowels. The upper formants are less defined in the nasals with some formants missing, particularly in word final position. The dental phone is identified by a strong formant at about 2900 cps and a weaker formant at 1800 cps. The velar phone manifests a strong formant at 1450 cps with a weaker formant at about 2850 cps. The bilabial phone is distinguished by formants of moderate strength at 1500, 2400 and 3400 cps. All nasals,

however, show a very strong formant at about 350 cps. The bilabial, dental and velar nasal phones have the same influence on contiguous vowel formants as that noted for the voiceless stop counterparts.

Consonants

/w/	[b]	A voiced bilabial fricative.
	[u]	A voiced close high back rounded non-syllabic vocoid.
/s/	[s]	A voiceless alveolar grooved fricative.
/h/	[h]	A voiceless glottal fricative.
	[g]	A voiced velar fricative.
/y/	[i]	A voiced close high front unrounded non-syllabic vocoid.
	[zʷ]*	A voiced alveolar grooved palatalised fricative.
	[sʷ]	A voiceless alveolar grooved palatalised fricative.
	[ʃ]	A voiceless alveolar grooved fricative.

The fricative phones are characterised by a gradual onset and striation. The [s] phone is very strident above 3000 cps. The [h] phone is mellow with weak striations at the frequencies of the contiguous vowel formants. In slow speech [s] varies in length from .30 to .50 seconds whereas [h] varies from .20 to .40 seconds. The phone [sʷ] is considerably shorter - .15 to .20 seconds - and deflects the first formant of contiguous vowels to about 350 cps and the second formant to about 2000 to 2400 cps. The remaining fricative phones all manifest a voice bar at about 500 cps. The [b] phone deflects any contiguous vowel formants below 2400 cps to about 500 to 1400 cps, thus leaving a significant gap in the spectrum between 1500 and 3300 cps. This phone, as well as the [g] phone, may be strident or on the other hand very mellow. The [g] phone does not significantly deflect the formants of contiguous vowels. The phone may be identified by a mellow stridency occurring at the contiguous vowel formant frequencies. The formants are narrowed and weakened considerably during the brief period of the constriction. The phone length of [b] and [g] varies between .10 and .25 seconds.

Phone [i] has formant one and formant two frequencies of 325 cps and 2350 cps respectively. Phone [u] has formant one and formant two

frequencies of 350 cps and 900 cps respectively. In the initial position these phones exhibit a crescendo in intensity with the result that the early portion of the formant may not be evident. The phone [ɨ] in intervocalic position is short - .05 to .10 seconds in length - and sometimes evidences weak striations.

Consonants

- /r/ [r] A voiced alveolar flap.
- [ř]* A voiced alveolar trill.
- /l/ [l] A voiced alveolar lateral.

The 'liquid' phones are characterised by weaker formants than the vowels. They are easily recognised by their formant frequencies. The first formant remains stationary at 400 cps and the third at 2800 to 2900 cps. The identifying feature is the variability of the second formant. The second formant occurs at about 1500 cps contiguous to grave vowels and at about 2000 cps contiguous to acute vowels. The first three formants of the contiguous vowels are deflected to the frequencies of the formants of the liquids. The [l] phone varies from .10 to .40 seconds in length and its formants are characterised by narrowing towards the centre. The [r] phone varies from .05 to .15 seconds in length. Its spectrum is characterised by a short silence or stridency of about .025 seconds long following the formant portion of the phone.

Vowels

- /i/ [ɨ] A voiced open high front unrounded syllabic vocoid.
- [i] A voiced close high front unrounded syllabic vocoid.
- [ɨ̣] A voiced close high front unrounded non-syllabic vocoid.

The first and second formants of phone [ɨ] occur at about 400 and 2350 cps whereas those of phones [i] and [ɨ̣] occur at about 325 and 2425. As an allophone of phoneme /i/ occurring as the second member of complex syllable nuclei, the phone [ɨ̣] is longer than the phone [ɨ] which occurs as an allophone of phoneme /y/. It has no sharp crescendo or decrescendo in intensity and no evidence of striation. Its intensity is weaker than that of [i], especially in unstressed syllables.

Vowels

- /e/ [e] A voiced close mid front unrounded syllabic vocoid.
- [e̥] A voiced close mid front unrounded non-syllabic vocoid.
- [ɛ] A voiced open mid front unrounded syllabic vocoid.

The first and second formants of phones [e] and [e̥] occur at about 400 and 2100 cps whereas those of phone [ɛ] occur at about 500 and 2000 cps. The phone [e̥] generally has less intensity than [e] especially in unstressed syllables. In word final position the upper formants are often missing.

Vowels

- /a/ [ḁ] A voiced open central unrounded retracted vocoid.
- [a] A voiced open central unrounded vocoid.
- /â/ [ɔ̥] A voiced specially open back unrounded vocoid.
- [ɔ] A voiced open back unrounded vocoid.

The first and second formants of [a] occur at about 700 and 1600 cps whereas those for [ḁ] occur at about 700 and 1400 cps. The first and second formants for [ɔ] occur at about 625 and 1150 cps whereas those for [ɔ̥] occur at 700 and 1250. Note that the phones [ḁ] and [ɔ̥] have similar first formants and only about 200 cps separating their second formants.

Vowel

- /o/ [o̥] A voiced close mid back rounded advanced syllabic vocoid.
- [o̥] A voiced close mid back rounded non-syllabic vocoid.
- [o] A voiced close mid back rounded syllabic vocoid.

The first and second formants of phone [o] occur at about 500 and 1000 cps. The advanced phone [o̥] exhibits a second formant advanced to about 1150 to 1200 cps. The non-syllabic phone exhibits weaker formants with upper formants often missing in word final position.

Vowel

- /u/ [u[◌]] A voiced close high back rounded advanced syllabic vocoid.
- [u] A voiced close high back rounded syllabic vocoid.
- [u̥] A voiced close high back rounded non-syllabic vocoid.

The first and second formants for the phones [u] and [u̥] occur at about 350 and 900 cps. The advanced phone [u[◌]] exhibits a second formant advanced to about 1150 to 1200 cps. The non-syllabic phone exhibits weaker formants than [u] with upper formants often missing in word final position.

APPENDIX II

Phonemes	Phonemic contrasts
/b/ and /p/	/bereden/ 'torn' /pereden/ 'spreading' /kebâ/ 'pigeon' /kepâ/ 'arrow point binding'
/d/ and /t/	/dopnan/ 'enough' /topnan/ 'to its base' /kadî/ 'temporarily' /katip/ 'banana leaf'
/d/ and /r/	/odop/ 'another' /orop/ 'with'
/t/ and /r/	/katap/ 'potato' /karap/ 'He cut it.'
/g/ and /k/	/gebâ/ 'back from' /kebâ/ 'pigeon' /sogo/ 'animal' /soko/ 'You carry it.'
/g/ and /h/	/gat/ 'You came.' /hat/ 'forest' /hâgâ/ 'You pick it!' /hâhâ/ 'You make it!'
/b/ and /w/	/bâtne/ 'his hand' /wâtne/ 'his strength' /ebun/ 'below' /ewun/ 'above'
/p/ and /w/	/pat/ 'news' /wat/ 'Chase it!'
/t/ and /s/	/tât/ 'post' /sât/ 'tooth' /ketu/ 'eel' /kesun/ 'frog'
/k/ and /h/	/kep/ 'dance' /hep/ 'blood' /matakû/ 'Chew it!' /matahu/ 'Mimic him!'
/m/ and /n/	/mem/ 'holding' /nem/ 'eating' /nem/ 'eating' /nen/ 'we'
/n/ and /ŋ/	/niŋ/ 'Give it to me!' /ŋiŋ/ 'darkness' /atane/ 'my elder brother' /atane/ 'his elder brother' /bon/ 'right side' /boŋ/ 'boundary'

/l/ and /r/	/olop/ 'It happened.'	/orop/ 'with'
/y/ and /r/	/houyek/ 'Spear them.'	/houre/ 'We (dual) will spear it.'
/w/ and /u/	/wat/ 'Chase it!'	/uat/ 'You cooked it.'
/y/ and /i/	/yat/ 'You spoke.'	/lat/ 'You slept.'
/b/ and /m/	/be/ 'taro'	/me/ 'Hold it!'
	/tâbâ/ 'ancestor'	/tâmâ/ 'eyewax'
/g/ and /ŋ/	/ga/ 'Come!'	/ŋaŋa/ 'infant'
	/apetge/ 'your wife'	/apetŋe/ 'his wife'
/d/ and /n/	/dâi/ 'Pull it!'	/nâi/ 'bird'
	/kude/ 'We (dual) will hit it.'	/kune/ 'my head'
/h/ and /y/	/hahat/ 'You worked'	/yahat/ 'Stand up!'
/g/ and /h/	/gom/ 'kind of lizard'	/hom/ 'intestinal worm'
	/sogo/ 'animal'	/soho/ 'thigh'
/i/ and /e/	/niŋ/ 'Give it to me!'	/neŋ/ 'coral'
/a/ and /â/	/howan/ 'walking stick'	/howân/ 'on the rack'
/â/ and /o/	/tâpŋe/ 'his spittle'	/topŋe/ 'its base'
/o/ and /u/	/oap/ 'He did it.'	/uap/ 'He cooked it.'

N O T E S

1. The Selepet people live on the northern slopes of the Saruwaged Mountains in the Morobe District, Territory of New Guinea. Their language belongs to the Western Family of the Huon Peninsula Stock of languages (see McElhanon 1969a). There are two dialects of the language, 88% lexicostatistically related. The northern dialect is spoken by about 3,000 people living in ten villages (Domut, Hongo, Kabum, Kondolo, Konimdo, Nimbako, Pendeng, Satop, Sorong and Wap) located in the lower Pumune River valley and on the seaward side of the coastal ridge (see map). The southern dialect is spoken by about 2,500 people living in three villages (Indum, Wekae and Selepet) in the upper Pumune valley and three villages (Belombibi, Karangan and Kulawi) located near the coast. These latter three villages represent a migration from the upper Pumune valley about a century ago. Also as a result of this migration the speech of the people living in Domut, Satop, Pendeng and Hongo shows influence from the southern dialect. The southern dialect is also spoken by an undetermined number of bilingual Komba people living in four villages (Erendengan, Gilang, Upat and Tipsit) with a total population of over 2,000. The data upon which this description is based were collected primarily in Indum village during 1964-69 while the writer was under the auspices of the Australian National University and the Summer Institute of Linguistics. I am indebted to D. James for suggestions in the presentation of this paper.

2. In particular see Pike (1967) for a treatment of tagmemic theory and an extensive bibliography.

3. On the indeterminacy of borders see Pike (1959, 1962 and 1964).

4. The analysis of intonation was aided by use of the Frøkjær-Jensen trans-pitch meter and the Brush oscillograph.

5. This contrasts with American English for which Pike (1945: 20-1) states that some intonation contours serve a 'mechanical function' and others add 'shades of meaning'. Pence (1964) states that for Kunimaipa, a non-Austronesian language of New Guinea, intonation contours add shades of meaning. Other descriptions of intonation contours for New Guinea languages are found in Franklin (1965), May and Loeweke (1965) and Swick (1966).

6. Terminology is adapted from Pike (1962).

7. The four horizontal lines dividing the pitch envelope into LOW, MID and HIGH levels indicate - from the bottom to the top - 100, 180, 240 and 300 cycles per second. The nucleus of the pause group is indicated by the verticle mark.

8. Perturbation of the normal stress pattern may occur with certain intonation contours associated with the pause group (see 4.9 and 4.11).

9. See Haugen 1956 for syllables based upon distribution of phonemes.

10. In the case of voiced stops, phonetic syllable division occurs between the nasal portion and the stop portion so that the nasal portion acts as a closure for the preceding syllable and the stop portion acts as a release for the following syllable. The interpretation of phonemes, however, regards this nasal portion as subphonemic.

11. These sandi forms are described by the writer in McElhanon (1967a) and alternate solutions are given a fuller treatment in McElhanon (1968).

12. Terminology relating to acoustic phonetics comes from Potter, Kopp and Green (1947).

13. In examples given to illustrate a particular feature, only phonetic variation relevant to the feature illustrated is given. Since stress is predictable it is left unmarked.

14. This reduction is in accord with morphophonemic rule No. 4 (see Section 9) which states that when identical consonants occur contiguously one of them reduces. After such reduction the remaining stop phoneme may exhibit phonological characteristics not usually

associated with a stop phoneme in the intervocalic position; i.e., it occurs unaspirated rather than with slight aspiration. Thus [k^hu_ɬɔ] rather than [k^hu_ɬ^hɔ] k^hutdâ 'famous' from kut 'name' and -dâ 'with'. Only very rarely do voiced stops vary to their voiceless aspirated counterparts (i.e., phonemes at the corresponding point of articulation) when following hetero-organic voiceless stops and this phenomenon is probably idiosyncratic: thus [ɛk^hp^hom] rather than [ɛk^hbom] or [ɛk^hpom] ek^hbom 'I will see it.'.

15. When the phone [s] occurs following t the t reduces.

16. For a definitive statement on the spectrographic detail and distinctive feature correlates see Jakobson *et al.* (1965).

17. There are a number of exceptions to this rule. Firstly, in a few cases the final t is replaced by l rather than r when followed by a vowel-initial suffix. This phenomenon appears to be morphologically conditioned: t → l when followed by the locative clitics -âbâ 'out of' as in nengâlâbâ 'out from among us', -ân 'at' as in sâlân 'at the teeth', -ângen 'towards' as in halângen 'towards the forest', -ângebâ 'from' as in yegâlângebâ 'from their (place)'; the restrictive morpheme -âk 'only' as in yukâlâk 'only for this'; the 3rd per. sg. inchoative future tense morpheme -âk 'let him' as in talâk 'let him be'; certain remote past tense (rpt.) morphemes, viz., -on '2s, rpt.' as in kalon 'you put it', -op '3s, rpt.' as in kalop 'he put it', -owot '2-3d, rpt.' as in kalowot 'you/they (dual) put it'; and the verbaliser -e as in lohole- 'to become weak' from lohot- 'weak'; t → r when followed by class III reflexive pronoun -aho 'oneself' as in siwira^hoap 'it rolled itself up'; benefactive pronominal suffix -agi 'for one another' as in karagim 'putting for one another'; and -âmâ 'however' as in nengârâmâ 'for us, however'. When the class I reflexive pronoun -ak '(for) oneself' occurs, the final t is usually replaced by r although in a few cases it is replaced by l, viz., gâl^hakmâ 'carrying for oneself', hâgulakmâ 'blowing on oneself', hagalakmâ 'dressing oneself', duwalakmâ 'tearing itself' and pidilakmâ 'freeing oneself'. That the replacement of t by l rather than t by r is considered the exception to the rule is based upon the replacement of the initial stop d by r, never by l, when preceded by a vowel. Thus the r replacement is regarded as predominant.

The second exception is that the initial b phoneme of the contrary-to-fact verbal suffixes and the future tense habitative mode suffixes is not replaced by its fricative counterpart w when preceded by a vowel:

otbâp 'He should have done it' and aribâp 'He should have gone' (not ariwâp); otbisâp 'He will always do it' and aribisâp 'He will always go' (not ariwisâp).

18. In the sequence â + â vowel reduction does not occur; rather the second â dissimilates to e, i.e., â + â → âe. For example, bârâen 'in the forest' from bârâ 'forest' and -ân 'in'; sâhâek 'Let him tie it!' from sâhâ 'to tie it' and -âk '3rd per. sg., inchoative future tense'. When -âk 'only' is suffixed to ya 'that' the resulting form is either yaek or yaok 'only that'.

19. For alternate solutions to the problem of vocoid clusters see McElhanon (1967b).

20. See note 17.

21. This frequency count is from a concordance of 25,191 words of text material collected mainly in the southern dialect of Selepet. This concordance, which also proved useful in the formulation of the morphophonemic rules, was made on the IBM 1410 computer at the University of Oklahoma by the Linguistic Information Retrieval Project of the Summer Institute of Linguistics and the University of Oklahoma Research Institute, and sponsored by Grant GS-934 of the National Science Foundation.

BIBLIOGRAPHY

FRANKLIN, JOICE

- 1965 Kewa II: Higher Level Phonology, *Anthropological Linguistics*, 7(5): 84-88.

HAUGEN, EINAR

- 1956 The Syllable in Linguistic Description, *For Roman Jakobson*, 213-221.

JAKOBSON, R., C.G.M. FANT, and M. HALLE

- 1965 *Preliminaries to Speech Analysis* (Sixth Printing). Cambridge, The M.I.T. Press.

MAY, JEAN and EUNICE LOEWEKE

- 1965 The Phonological Hierarchy in Fase, *Anthropological Linguistics*, 7(5): 89-97.

McELHANON, K.A.

- 1967a Preliminary Observations on Huon Peninsula Languages, *Oceanic Linguistics*, 6(1): 1-45.
- 1967b Selepet Vowoid Clusters, *Pacific Linguistics*, A(12): 1-18.
- 1968 Stops and Fricatives: non-unique solutions in Selepet, (to appear in *Linguistics*), ts. 26 pp.
- 1969a Lexicostatistics and the Classification of Huon Peninsula Languages, (to appear in *Oceania*), ts. 33 pp.
- 1969b Selepet Pronominal Elements, (to appear in *Pacific Linguistics*, A(25)), ts. 35 pp.

PENCE, ALAN

- 1964 Intonation in Kunimaipa (New Guinea), *Linguistic Circle of Canberra Publications*, A(3): 1-15.

PIKE, K.L.

- 1945 *The Intonation of American English*. University of Michigan Publications, Linguistics, 1. Ann Arbor, U. of Michigan Press.

- 1959 Language as Particle, Wave and Field, *The Texas Quarterly*, 2(2): 37-54.
- 1962 Practical Phonetics of Rhythm Waves, *Phonetica*, 8: 9-30.
- 1964 On the Grammar of Intonation, in *Proceedings of the Fifth International Congress of Phonetic Sciences*. Basel, S. Karger. 105-119.
- 1967 *Language in Relation to a Unified Theory of the Structure of Human Behavior*. The Hague, Mouton & Co.
- POTTER, RALPH K., GEORGE A. KOPP and HARRIET C. GREEN**
- 1947 *Visible Speech*. New York, D. Van Nostrand Co.
- SWICK, JOYCE**
- 1966 Chuave Phonological Hierarchy, *Pacific Linguistics*, A(7): 33-48.

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