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Phonological Syllables and Words in Kaingáng [1])

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1. Introduction

The Kaingáng language exhibits a hierarchical structuring of hyperphonemic units, including the paragraph, the phonological sentence, the phonological word, and the syllable. The latter two units are described in this paper in terms of contrasting structural types and of conditioned variation.

A phonological word is characterized by a stress marking the intensity and intonation peak of the word, as well as by initial and terminal features which mark its boundaries. Words also carry intonation patterns which distinguish ordinary words from those denoting bigness in size or quality, and from onomatopoeic words.

Phonological words are composed of syllables, each of which is characterized by a nucleus, an onset, and an optionally occurring coda.

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[1]) Kaingáng is spoken by about three to four thousand Indians in the four southern states of Brazil. There are four Kaingáng dialects as indicated in the author's paper, «Notes on Proto-Kaingáng: a study of four dialects», soon to be published. In its wider relationships, Kaingáng is probably linked to the Gê languages.

The data for this analysis were collected from September 1958 until April 1959 under the auspices of the Summer Institute of Linguistics and the Museu Nacional, Rio de Janeiro, on the SPI post Interventor Manuel Ribas, Paraná, where the Paraná dialect of Kaingáng is spoken. This analysis is based largely on two tape-recorded texts by Pedrinho Rosário, an Indian over sixty years of age, as well as on data dictated by him and by Maria Tavares, an Indian woman of about the same age.

The description of Kaingáng phonemes is to be published in a separate paper[2]). Only a few details of the phonemic structure which are particularly relevant to the discussion of syllable structure are dealt with here.

Kaingáng has fourteen consonantal phonemes, symbolized in this paper as p, t, k, m, n, nh, g, f, s, v, j, r, h, and ʔ. The «nasal phonemes», m, n, nh, and g, constitute a series which have as allophones both nasal continuants and voiceless stops, as well as combinations of nasal continuants with voiced stops. These allophones and their distributions are described below for m. The other members of the series have a parallel set of allophones.

[m] occurs between nasal vowels. It also occurs following a nasal vowel and preceding a pause, h, ʔ, or a voiced consonant other than the oral allophone of r within the same syllable. In addition, it occurs preceding a nasal vowel and following a pause, a nasal consonant, or an -Rv syllable.

[bm] occurs following an oral vowel (but not an -Rv syllable) and preceding a nasal vowel, a pause, h, ʔ, or a voiced consonant other than the oral allophone of r within the same syllable.

[mb] occurs preceding an oral vowel or the oral allophone of r within the same syllable, and following a pause, a nasal vowel, a nasal consonant, or an -Rv syllable.

[bmb] occurs between oral vowels, or between an oral vowel and the oral allophone of r within the same syllable. It does not occur, however, following an -Rv syllable.

[P] , a voiceless unreleased bilabial stop, occurs between an oral vowel and a voiceless consonant other than h or ʔ.

There are in Kaingáng nine oral vowels, i, y, u, e, á, o, é, a, and ó; and five nasal vowels, ĩ, ũ, ỹ, ẽ, and ã.

The three kinds of stress relevant to the following description are written as ', ", and "'.

2. Syllable

The smallest hyperphonemic unit described here is the syllable, which is distributed into the phonological word. The syllable may be simple or complex.

2.1. A simple syllable is characterized by a nucleus, an onset, and, optionally, a coda. The nucleus is composed of a single vowel which is both the peak of the syllable pulse and a unit of potential stress placement. The onset is composed of a single consonant or a cluster of a bilabial or velar consonant followed by r. The coda, when present, is manifested by a voiceless submember of a nasal phoneme, or by a glottal stop (see Section 2.3.1). Examples of simple syllables are as follows:

ʔã		«you singular»
kri		«on top of»
*'kam*ke	['kaPke]	«to break»
*'krá*gti	['kráKti]	«pig-it»

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[2]) «Kaingáng Phonemics» by Gloria Kindell, being submitted to the Museu Nacional, Rio de Janeiro, for publication.

2.2. Complex syllables differ from simple syllables in that they have more than one peak. Only the primary peak (i. e., the nucleus) can be stressed, however. Secondary peaks occur on the onset and/or the coda, and are not interpreted as nuclei of separate syllables because they are never stressed and are shorter in duration than the nucleus. Complex syllables include the following patterns:

2.2.1. CVC or CCVC. The coda of syllables of these patterns consists of a voiced allophone of a nasal phoneme, which in turn may be followed by a glottal stop (see Section 2.3.1). The coda constitutes a secondary peak and may serve independently in carrying the intonational pitch pattern.

pa'*fãm* «to nurse»
mág «big»
*'krĩg*ti «star-it»

2.2.2. rV or rVC. The onset of these syllable types is manifested by an allophone of the r phoneme which includes a non-phonemic schwa preceding the flap articulation. The coda, when present, may be any nasal phoneme, with or without a following glottal stop (see Section 2.3.1). The initial schwa of the onset constitutes a secondary peak. Thus a complex syllable of the type rVC has two secondary peaks if the coda consists of a voiced allophone of a nasal phoneme.

The onset does not usually carry intonational pitch, and never does if the coda forms a secondary peak. At the most, two units of pitch occur on complex syllables of the type considered here.

These syllables occur only after a pause or after n:

ró [ᵊró] «fence»
rã [ᵊrã] «sun»
ʔã''ʔĩn*ran* *'rã*mũ [ʔã''ʔĩnᵊradn 'ᵊɽãmũ] «he is entering his (own) house»

2.2.3. CVRv, CCVRv, CVRvC, CCVRvC. The coda of these -Rv syllable types consists of one of three consonants, r, v, or j (represented by R) followed by a short vowel (symbolized by v) which normally has the quality of the nucleus vowel[3]). In fast speech, however, some vowels represented by v vary to a mid central vowel. The reduplicated vowel, v, may in turn be followed by n or nh, and/or by a final glottal stop (see Section 2.3.1).

Intonational pitch is carried by the voiced allophones of n or nh if one of these is present in the coda, otherwise intonation is carried by the reduplicated vowel. At the most, two units of pitch occur with these syllables.

Examples of -Rv syllables are:

kara	«all»	*karan*	«all-it»
pruru	«clean»	*prurun*	«clean-it»
nĩvĩ	«given»	*nĩvĩn*	«given-it»
vyjy	«bow»	*vyjyn*	«bow-it»

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[3]) There are a few close-knit grammatical constructions with the pattern CVRV in which the first syllable is stressed. Like -Rv syllables, these sometimes exhibit the pitch and length characteristics of a single syllable, although the two vowels are not always identical.

'kãra	«in-towards»	(i. e., «inside»)
'hãra	«like-though»	(i. e., «but»)

Of the various types of complex syllables the -Rv syllables are most likely to be interpreted as a sequence of two syllables rather than a single syllable. The interpretation as a single syllable is based on the following factors:

1. The coda -Rv or -RvC is never stressed.
2. The coda -Rv is of shorter duration than the nucleus, while -RvC is of about equal duration.
3. The coda of these syllables is never lengthened under conditions of stress described in Section 2.4.
4. Sequences of syllables within a word normally have successively higher pitches preceding the stressed syllable and successively lower pitches following the stress. The -Rv coda does not act as a separate syllable in this respect; its pitch may be higher than that of a preceding stressed nucleus.
5. Syllable patterns CVRvC and CCRvC result from the addition of -n (the short form of the morpheme ti «he, it») or -nh (the short form of the morpheme ʔinh «I») to CVRv and CCRv syllables. The -RvC elements of these syllables are not comparable to closed syllables resulting from the addition of -n or -nh to a simple open syllable. The former may carry only one unit of pitch (on the final C), while the latter may have two units of pitch (one on the nucleus and the second on the final C). CVRvC and CCVRvC syllables are apparently comparable to those which result from the addition of -n to a closed syllable (see Section 2.3.2).
6. There are strict limitations to the vowels which occur in the v position of -Rv syllables — these are normally identical in quality to the nucleus vowel. This is a limitation that does not apply to vowels in successive syllables.
7. An -Rv syllable, even when ending in an oral vowel, does not condition a following nasal phoneme in the same way that a simple open syllable does. Following a normal oral vowel one finds [bm], [bmb], [P], and corresponding allophones of the other nasal phonemes, while following an -Rv syllable one finds [m] and [mb].
8. -Rv syllables contrast with similar phonemic sequences which, because of their stress pattern, are regarded as composed of two syllables:
   ʼvyiy «bow» (an -Rv syllable)
   jiʼji «name» (two open syllables)
9. A comparison of the Paraná dialect (on which this paper is based) with the southern dialect of Kaingáng reveals that in the latter the vowel following an r in -Rv syllables is usually voiceless and that following a j in this syllable type there is no vowel.

Furthermore, -Rv syllables containing the consonant, v, have apparently lost their coda entirely in the southern dialect. Whereas the Paraná dialect has six patterns for the coda of the -Rv syllable, the southern dialect has only two:

Paraná	-rV	-rVC	-vV	-vVC	-jV	-jVC
Southern	-rV				-j	

2.3. Other Syllables

2.3.1. A glottal stop (-ʔ is a morpheme indicating questions or vocative forms) can occur at the end of any syllable, open or closed. This results in the following syllable patterns:

CVʔ	CVCʔ	CVRvʔ	CVRvCʔ
CCVʔ	CCVCʔ	CCVRvʔ	CCVRvCʔ

These syllable types are always followed by either a pause or by the morpheme ʔe «say, do». The only three-consonant cluster resulting from this construction is thus a Cʔʔ cluster.

The occurrence of the glottal stop in these syllables does not affect other features relevant to the description of hyperphonemic units.

2.3.2. One occurrence has been registered of the morpheme -n «he, it» following a closed syllable in such a way as to form a CVCC syllable not previously described:

'kỹʔag*tógn* kãg" 'mīkỹ . . . «then, as they grabbed him . . .»

Both g and n in this example are manifested by their voiceless allophones. For this reason no conclusions were reached regarding possible occurrences of pitch in this type of sequence.

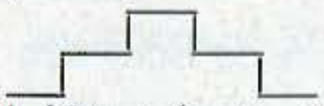
2.3.3. There are three occurrences of syllables of the type CVV in which the first vowel is part of the onset. In each case the first vowel is a and the second vowel (the nucleus) is y. The nucleus constitutes the point of potential stress, while the first vowel forms a secondary peak and serves to carry intonational pitch.

say	«very black»	(cf., sá «black»)
ku'*tay*	«very dark»	(cf., ku'ty «dark»)
ʔ*ayn*	«a bird»	(cf., the variant form, ʔa'jym)

2.4. Conditioned Variants of the Syllable

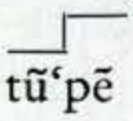
Syllables are conditioned with respect to pitch by their position in the word, and with respect to length by their position relative to word and sentence stress.

2.4.1. Within a word the syllables preceding word stress increase successively in pitch; those following decrease successively in pitch and intensity.



kófãn'tógnĩgtĩ «there was an old man»

If the last syllable of the word is stressed, it rapidly looses its intensity after the stress, but is not lowered in pitch.



tũ'pẽ «not at all»

2.4.2. Length phenomena are described in terms of four phonetic degrees of length. The term «normal length» applies to syllables of one mora, which are unmarked in this paper. «Long» syllables are slightly more than a mora in length and are marked with a single period. «Extra length» refers to syllables of about one and one half moras in length and is indicated by a colon. «Double length» is marked by two periods (. .) and represents two moras or more.

Word stress conditions length of the syllables in the following manner. Open syllables on which word stress falls are long unless followed by the ON or ONO allophones of the nasal consonants (i. e., allophones composed of oral plus nasal and of oral plus nasal plus oral segments, such as [bm] and [bmb]). Under the latter conditions they have normal length. Closed syllables whose codas consist of the ON or ONO allophones of the nasal consonants are never lengthened when stressed. Closed syllables which have other allophones of the nasal consonants as codas, as well as nuclei of -Rv syllables are long when they carry word stress. Both open and closed syllables are long when followed by a stressed syllable the initial consonant of which is not a nasal.

In closed syllables the coda may be lengthened; in other syllables it is the nucleus vowel that is lengthened.

Examples of long syllables in various environments are as follows:

ʾijẽ.n'ky. «my mouth»

ʾijẽ.n'ky 'mágvẽ «my mouth is big»

(In this example the y is followed by the [bmb] allophone of m and is therefore not long.)

tã.'pé.ré «hoe»

pé.'róg «sack»

pé'nũ.nh 'ke or pé'nũnh. 'ke. «kill will»

(In this example the é is followed by the [dn] allophone of n and therefore is not long.)

Sentence stress conditions the length of certain syllables in the following manner. Open syllables have extra length when stressed with sentence stress, except when they are followed by the ON or ONO allophones of the nasal consonants. In the latter environment they have normal length. Closed syllables with ON or ONO allophones of the nasals as codas are not lengthened when stressed. Closed syllables whose codas consist of other allophones of the nasal consonants are extra long when occurring with sentence stress. The nucleus of an -Rv syllable is long when stressed. Open and closed syllables followed by a stressed syllable in which the initial consonant is a stop are long. Examples of syllables which are conditioned with respect to length due to sentence stress are as follows:

ti'fé.jé kã."pa:ha	«his leaves come out now»
vãn"sá:nfimũ	«she is blackening bamboo»
titỹ"gã.rã pé.'ró.g 'tu.vẽ	«he is carrying corn in a sack»

Since there is no phonemic distinction between normal and long syllables or between normal and extra length, they are not generally indicated in citation forms in this paper. Syllables of double length appear in special types of words such as those described in Sections 3.1.2 and 3.1.3.

3. Word

Syllables are distributed into the phonological word, a unit that carries a single stress. A word may be simple or complex.

3.1. A simple word is characterized by one stressed syllable, as well as by initial and terminal phonological features which mark its boundaries. The placement of word stress is phonemically significant and its occurrence is an obligatory feature of the phonological word. Word stress indicates the peak of intensity in the word, and is accompanied by the lengthening of syllables as described in Section 2.4.

Within sentences the boundaries of words are marked by variations in intensity. A weakening of intensity marks the terminus of a word, while an increase in intensity marks the beginning of a word. This often results in a clear break between words, although the exact point of division may at times be phonologically indeterminate.

Additional phonological features mark the beginning and end of sentences. Although these features also mark the beginning and end points of words at sentence boundaries, they are significant on the sentence level only and are not described in the present paper.

Simple words carry intonation. These contrastive pitch patterns distinguish ordinary words from certain special types of words.

3.1.1. In ordinary words the word stress is accompanied by the highest pitch in the word. The syllables preceding the stress ascend in pitch, while those following the stress descend in pitch (see Section 2.4.1).

3.1.2. Words which, in addition to their lexical meaning, express the idea of bigness in size or quality are marked by a distinctive intonational pattern. The syllable which occurs with word stress is also marked by double length and by a downglide in pitch which starts at the highest point of pitch in the word. The syllables following the downglide have a pitch as low or lower than the low point of the downglide. The actual duration of syllables of double length in these words may vary considerably.

'gã..rã?ẽnẽ «corn-that»

tóg'há..tĩgtĩ «it is good»

3.1.3. Words which figuratively express the sound of an action (i. e., onomatopoeic words) often have double length without a pitch downglide on the stressed syllable. This results in heightening the sound effect. Either the vowel or the consonant may be lengthened in these words.

'ã..ghe[4]) «to yawn»

'hun..ke «to die, give up the ghost»

3.2. Complex words differ from simple words in that the latter have, in addition to their word stress, a «suppressed stress», i. e., they contain an element which in isolation would have a word stress, but which in combination loses its word stress. This stress may be partially suppressed or completely suppressed. When the stress is only partially suppressed it marks a subpeak of intensity.

ti'ne?ã,krẽ?agmỹ «he-subject-his-children-them-to»

This complex word may be divided into two words, which in isolation would be ti'ne and ?ã'krẽ?agmỹ. In combination the stress of the latter word is partially suppressed.

'hãra?ũnsanh «but-oldest» This is a combination of 'hãra and ?ũn'sanh. The stress of the latter word is completely suppressed.

The pitch pattern of complex words generally follows that of ordinary words (see Sections 2.4.1 and 3.1.1).

3.3. Conditioned Variants of the Word

Words are conditioned with respect to intensity and pitch by their position in relation to the sentence stress. There is an increasing intensity on the stressed syllables of successive words preceding the sentence stress, while following the sentence stress there is a successive weakening of intensity.

The relative pitch levels of words within a sentence depend on sentence intonation, the description of which is reserved for a later paper.

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[4]) This is one of four onomatopoeic words which begin with a vowel. The others are: 'ã..he «to talk loudly», a'si «to sneeze», and 'au..he «noise of blowing wind». Apart from the words mentioned in Section 2.3.3, the latter is the only occurrence of a vowel cluster in the language. The u in this word has a breathy quality.

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