ANOTHER LOOK AT SURINAME ARAWAK PHONOLOGY[1]

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0. Over the years a number of investigators have written articles reflecting their conclusions about Arawak phonology—the most comprehensive of these being Douglas Taylor's "A Preliminary View of Arawak Phonology."[2] Although many of the major features of the sound system have been adequately dealt with, several problem areas remain.

In the above-mentioned article, Taylor proposes the phonemes for Arawak shown in table 1. He further states that there are "long or double vowels (VV), free stress (V́), nasalized vowels (Ṽ)." "[u] and [o] are both heard as allophones of a single back rounded vowel...written /o/." "Most (perhaps all) of the apical consonants undergo some palatalization when followed by /i/," "a word or a syllable may begin with any phoneme, but ends only in an oral or in a nasal vowel. There are no consonant clusters...." Elsewhere he adds, "...nasalized vowels occur, but alternate stylistically or otherwise with nasal consonant plus vowel."[3]

TABLE 1

m	n	—	i		
b	d	—		i	o
p	t	k	e		
—	t^h	k^h		a	
p	s	h			
—	l	—			
—	ɾ	—			

Taylor's analysis of the segmentals is essentially correct, except that a retroflexed flap /ɽ/, /y/, /w/, and, probably, glottal stop /ʔ/ need to be added, and more needs to be said about stress, vowel length, palatalization, nasalization, syllable structure, and vocoid clusters.

1. Although Taylor's contention that some informants will accept a tapped [ɾ] for the retroflexed flapped [ɽ] (or [l̆]) is correct, they are here analyzed as separate phonemes for the following reasons.

First, many speakers do contrast [ɾ] and [ɽ] in their speech, as is shown by words such as [hòɾoɾo][4] *swampy* vs. [hòɽoɽo]

[1] Arawak (Lokono) is used by an estimated 700 speakers in the coastal savannahs of Suriname and also, to a lesser extent, in Guyana and French Guiana, and is universally recognized as belonging to the Arawakan language family (see, for example, C. H. de Goeje, *The Arawak Language of Guiana* [Amsterdam, 1928], preface). I collected data for this article during periods of residence in two Suriname Arawak villages, Powakka and Cassipora, between April 1973 and November 1976, under the auspices of the Summer Institute of Linguistics. I began work on this article in Paramaribo during an S.I.L. field workshop in the summer of 1974, under the direction of Stephen Levinsohn.

[2] Douglas Taylor, "A Preliminary View of Arawak Phonology," *IJAL* 35 (1969): 234–38.

[3] Douglas Taylor, "Arawak Grammatical Categories and Translation," *IJAL* 36 (1970): 199.

[4] Primary stress is indicated by the acute accent (´), secondary stress by the grave accent (`).

[*IJAL*, vol. 45, no. 4, October 1979, pp. 323–31]

0020-7071/79/4504-0004$00.88

cloud (vs. [hòlolo] *bald*) and many near minimal pairs such as [ʔúři] *snake* vs. [ʔùřiřóka] *at night*, [hařířa] *white* vs. [kařířo] *dog*, [bářęŋ] *immediately* vs. [bářįŋ] *although*, [bářa] *sea* vs. [nářa] *they (slightly distant)*.

Second, speakers of Arawak who make the [ř]–[ř̩] contrast all use the respective phonemes in the same words. That is, they consistently use [ř̩] in a set of words including the [ř̩] examples above and many others like [nàřikábǫŋ] *they cut it*, and consistently use [ř] in a set of words including the above [ř] examples and others like [kàbadářo] *jaguar* and [dařétʰo] *my wife*. When one takes into consideration how much [ř̩] sounds like [ř] and [l], the sets of words correspond well with transcriptions made by van Renselaar and Voorhoeve[5] and by de Goeje.[6] Thus, there is no evidence of fluctuation in words among those speakers who do distinguish these sounds.

Third, it is generally only speakers of the language thirty or thirty-five years old or younger who underdifferentiate these sounds. Furthermore, when teaching native Arawak speakers to read and write their own language I have found that those who do distinguish the sounds insist that [ř] and [ř̩] be distinguished in the practical orthography, and that those who in their speech do not distinguish the phonemes can very easily be taught to do so—and will then use the correct phoneme in the correct word.

2. Palatalization of the apical consonants when immediately followed by /i/ has been found to occur only with /d/ which is heard as [dž], /t/ and /tʰ/ which are both heard as [tš], and /s/ which is heard as [š] in that environment. Taylor mentions the absence of clear contrast between /t/ and /tʰ/ preceding /i/ and explains it in terms of varying degrees of palatalization. However, when one notes that there is no clear contrast between /k/ and /kʰ/ preceding /i/ either, it is more satisfactory to say that the aspirate/nonaspirate contrast is neutralized preceding /i/.

3. Nasalization, hereafter written as /N/ following the vowel that is nasalized, is interpreted as being an independent suprasegmental phoneme. This solution not only avoids adding five vowels to the phoneme inventory, but also simplifies the grammar description, since /N/ itself is often a morpheme. For example, in /kiřiNdaN/ *to tie it* the first /N/ is the subordinating morpheme, and the second /N/ is the bound nonmasculine pronoun *it*. Since no closed syllables occur elsewhere in the language, interpreting /N/ as a consonant seems unattractive.

In normal speech, when /N/ is immediately followed by an obstruent or nasal consonant in the same pause group, it is heard as nasalization of the preceding vowel followed by a lenis nasal consonant homorganic with that following consonant. For example: /d-aNda/[7] [dą́nda] *I arrived*, /wa-bořatiNbiya/[ᵘabòřatímbʲa] *in order that we help*, /miNka kʰo/[mį́nka kʰò] *very*. Pause-group-final /N/ is heard as nasalization of the preceding vowel followed by lenis [ŋ]: /de to yokařařiN/[de to ʲùkařář̩įŋ]

[5] H. C. van Renselaar and J. Voorhoeve, *Bijdragen tot de Taal-, Land, en Volkenkunde* 118, no. 3 (1962): 328–61.

[6] C. H. de Goeje, *The Arawak Language of Guiana* (Amsterdam, 1928).

[7] Although, as stated later, word stress gives the effect of lexical contrast, it is the location of the start of the word stem which determines that stress's position. Consequently, in all phonemic transcriptions in this article, a hyphen is placed between any prefix and the word stem. In examples where all morpheme boundaries are indicated by hyphens, word stem is indicated by small capital letters.

I am a salesman, /ɒiřoN/[ɒířǫŋ] *big*. In all other environments /N/ is simply heard as nasalization of the preceding vowel: /bahiNřo/ [bahį̃řo] *toward the house*, /d-aNsika/ [dą̃šika] *I want* (*it*), /li-simaki-Nyi/ [lišimakį̃ʲ] *he called* (*subordinate*) *him*.

Although the tendency Taylor mentions for nasalized vowels to "alternate stylistically or otherwise with nasal consonant plus vowel" may be true in many cases, in others there are severe restrictions based on discourse structure. For example, although the bound pronoun /-N/ *3d-person sing. nonmasculine* and its free counterpart /no/ with the same meaning, as found in /bahiNkaN/ and /bahiNka no/ which both mean *she is at home*, seem to alternate freely and without meaning differences in normal conversations, in longer texts their distribution parallels that of the other free and bound pronouns of the language. A bound pronoun tends to be used when its antecedent is the last-mentioned pronoun or noun having the same number and gender, whereas a free pronoun tends to be used when its antecedent is not the last-mentioned pronoun or noun with the same number and gender but has nevertheless already been introduced into that section of the text. Free pronouns, in addition to names and nouns, are sometimes also used the first time a participant or prop is mentioned in a noninitial section of a text. Thus, the appropriate use of bound and free pronouns allows speakers of the language to distinguish several participants or groups of participants having the same person, number, and gender.

4. Investigators differ in their opinions about the phonemic status of stress and vocalic length. Some, either implicitly by their omission of stress in the phoneme inventory or explicitly like van Renselaar and Voorhoeve,[8] indicate they believe there are unknown stress placement rules operating, while others such as Taylor analyze stress as "free," that is, as an independent phoneme. The same situation prevails with regard to vocalic length.

The apparent unpredictability of stress placement is here accounted for by two partially conflicting stress-placement rules.

(*i*) Each pause group[9] potentially has a primary stress that falls on the penultimate syllable of that group.[10] Secondary stresses fall on alternate syllables moving backward in the pause group. The hypothetical pattern that would result if this were the only rule that applies can be exemplified by: *nàtʰikìta hářokʰáda# we#[11] *if they offer*

[8] Van Renselaar and Voorhoeve, p. 355.

[9] Pause group is characterized by a juncture consisting of potential tense pause, sustained pitch, and primary stress on the penultimate syllable. Although its boundaries are generally coterminous with those of the phrase, it is a unit that expands and contracts depending on the speed of utterance—its limits being the word in very slow speech and the phrase, or perhaps even the clause, in very fast speech. Unless otherwise indicated, all the examples used in the discussion of stress rules reflect a medium-speed speech found in nonclimax sections of taped story texts.

[10] See 5 for analyses of apparent exceptions. One other exception to this rule is that the citation form of verb stems (i.e., the form equivalent to an infinitive or gerund in English, which in Arawak consists of the "verb base" plus an aspect marker plus nasalization) generally receives primary stress on its final syllable. For example, note the last syllables of [šimaką́ŋ] *to yell/yelling*, [šimakį̀ŋ] *to call/calling*, and [dàřidžį̀ŋ] *to run/running*. Whether this stress placement is the result of features of a higher-level unit (e.g., the "citation" phrase or clause) or of the historic reduction of a final syllable consisting of a nasal and a vowel to simple nasalization, remains to be investigated.

[11] Word boundaries are indicated by space. Where it is relevant or thought to be of interest, pause-group juncture will be indicated by #, word stems by small capital letters, and morpheme boundaries by hyphen. In cases where a single Arawak morpheme is translated by more than one English word, an equal sign will be used to connect those words.

us alcoholic beverage; *ʔába# bitʰì kakòtʰi bèřo lóko# wosíha# *in a bus will we go;* *kabìN konóko# bìtʰimáha# *three forests you will pass through.*

(*ii*) Each word potentially has a secondary stress which falls on the first syllable of its stem. The following are the same clauses given in (*i*), marked as if potential word stress were the only stress that applied: *naTʰÌKITA HÀŘOKʰAda WÈ; *ʔÀBA BÌTʰI kaKÒTʰI BÈŘO LÒKO WÒSIha; *KÀBIN KÒNOKO biTʰÌMAha.

In natural speech such as heard in recorded conversations and stories, both rules[12] operate simultaneously in determining the position of actual stress. Generally speaking, pause-group stress tends to be more prominent and at times results in word stress not being realized. This is particularly true in cases where the stress rules come into direct conflict, such as where a syllable potentially receiving word stress is contiguous to one potentially receiving primary pause-group stress. For example, each of the words in the two-pause-group clause /d-OSA-bo BAHI-N-řo/ (*I-go-present=continuous house-location-toward*) *I am going home* potentially receives these respective stresses on its first and second syllables, but in normal speech the clause is usually heard as [dosábo# bahířo#]. In situations where word stress and secondary pause-group stress fall on contiguous syllables, there is considerably more fluctuation. Thus the one pause-group phrase /BAHI LOKO-N-řo/ (*house in-location-toward*) *into the house* which potentially receives word stress on its first syllable and secondary pause-group stress on its second syllable (in addition to the potential word stress on its third syllable and the primary pause-group stress on its fourth syllable which operate as already stated) may be heard both as [bahì lokǫřo] and [bàhi lokǫřo]. Where the rules give one syllable both word stress and primary pause-group stress, such as in the second syllable of /da-KʰABO/ (*my-hand*) *my hand*, that syllable generally receives primary stress—[dakʰábo]. Where one syllable potentially receives both word stress and secondary pause-group stress, as the second syllable in /li-SIMAKA-bo/ (*he-yell/call-present=continuous*) *he is yelling*, that syllable generally receives secondary stress —[lišìmakábo]. A pause group consisting of a single-syllable word generally receives only the secondary word stress—for example, /WEREBE-ka de/(*warm-indicative I*) *I'm hot* [ᵘèřebéka# dè#].

Other examples of the interaction of the two stress rules in natural speech transcribed from tape recordings are: [natʰìkita hàřokʰáda# ᵘè#] /na-TʰI-KITA HAŘOKʰA-da WE/ (*they-drink-cause future=conditional-background us*) *if they offer us alcoholic beverage to drink;* [ʔàba bìtši kakùtši bèřo lóko# ᵘosíha#] /ʔABA BITʰI ka-KOTʰI BEŘO LOKO W-OSI-ha/ (*one four attributive-foot nominalizer in we-go-future*) *in a bus will we go;* [kabįŋ konóko# bìtšimáha#] /KABIN KONOKO bi-TʰIMA-ha/ (*three forest you-cross-future*) *you will pass through three forests;* [mótši# ᵘosíha# nékʰebǫ́m-ba#] /MOTʰI W-OSI-ha NEKʰEBO-N-ba/ (*tomorrow we-go-future work-subordinator-motion=away*) *tomorrow we will go working;* [tò ᵘą̀ndįhátʰe# tʰabo# hʰí-da#, ᵘakìřikìtihádąŋ#] /to W-ANDI-N-ha-tʰe tʰABO KʰI-da, wa-KIŘI-KITI-ha-da-N/ (*the we-arrive-subordinator-future-venative it-instrument back=reference-background, we-tie-cause-future-background-it*) *when we arrive back with it thus, we will have it tied.*

In single-word utterances, such as citation of words, and in very precise speech like the sort a speaker uses when dictating

[12] Stress and intonation contours associated with levels of the grammar above the phrase, such as those associated with various contrastive sentence types, also affect the perception of stress and vowel length.

for transcription or when correcting a linguist, word stress tends to predominate. It is in this situation that stress can give the effect of lexical contrast. For example, in precise speech one is likely to hear [daká-bo#] for /da-KA-bo/ (*I-bathe-present = continuous*) *I am bathing*, [dàkabo#] for /d-AKA-bo/ (*I-tell-present = continuous*) *I am speaking/telling*, and [dàka bò#] for /d-AKA BO/ (*I-tell you*) *I told you*, whereas in very fast speech there is a tendency to pronounce all three of these as [dakábo]. Some further precise speech examples are: [daˈé#] /da-YE/ (*my-tongue*) vs. [dàˈe] /d-AYE/ (from /dA/ *my* + /ɨye/ *louse*) *my louse*, [dašìmakábo#] /da-SIMAKA-bo/ (*I-call-present = continuous*) *I am calling/yelling* vs. [dašìmaka# bò#] /da-SIMAKA BO/ (*I-call you*) *I called you*, and [dàkobąŋ] /d-AKOBA-N/ (*I-breathe-subordinator*) *I breathe* vs. [dakóbąŋ] /da-KOBA-N/ (*my-planting = ground-possessed*) *my planting ground*, which in very fast speech tend to be heard as [dáye], [dašìmakábo#], and [dakóąŋ], respectively. It should be pointed out, however, that in each of these cases, it is the position of the start of the word stem that is significant in that it dictates the position of the apparently contrastive stress.

Lengthening of vowels occurs only[13] with those vowels that potentially receive word stress or primary pause-group stress according to the two previously stated rules. Although more work needs to be done to determine specifically when any one, or none, of the potentially stressed syllables has a lengthened vowel, the fact remains that the potential positions of vowel length are predictable and that vowel length alone never indicates lexical contrast. Thus /wa-paŕa-li/ (*we-fight/kill-necessitative*) *we must fight* is sometimes pronounced [wapaŕáli], or [wapàŕa·li], or [wapaŕá·li], and /da-simaka bo/ (*I-call/yell you*) *I called you* is sometimes pronounced [dašìmaká· bo#] or [dašìmaká bò#].

5. The interpretation of vocoid clusters provides the framework for the analysis of the remaining problem areas mentioned in 0.[14]

Vocoid clusters of the form [ˈV] and [ᵘV], as found in words like [ˈaha] *here* and [ᵘą́nda] *we arrived*, in which a nonsyllabic vocoid occurs syllable-initially followed by a syllabic vocoid, are here considered apart from other vocoid clusters, since they are considerably easier to interpret and also because they are involved in the analysis of glottal stop and syllable structure.

[13] In narrative texts, vowel length equivalent to three or four syllables with high pitch but without stress is often used for emphasis. For example, one text contains the clause [mǫnda·ko tʰà] which under normal circumstances would mean *she was silent*, but which here means *she was completely, totally silent and still.*

[14] Because of the many words in which /h/ appears to fluctuate with its absence or with glottal stop, I was tempted to include it in the discussion of /w/ and /y/ in vocoid clusters. I did not do so, however, since other explanations could be found. Word-stem-initial /h/ fluctuates freely between [h] and [ʾ]. Thus /haloN/ *where* is heard as [hálǫŋ] and [ʾálǫŋ], /hala/ *bench* is heard as [hála] and [ʾála], and /hime/ *fish* is heard as [híme] and [ʾíme]. (It should also be mentioned that these /h/-initial stems cannot be prefixed without undergoing stem changes.) No fluctuation, however, occurs in word stems beginning with glottal stop. Thus /ʾosa/ *go*, /ʾada/ *wood*, and /ʾiři/ *name* are always heard as [ʾósa], [ʾáda], and [ʾíři] when these occur word-initially, that is, without prefixes. The apparent alternation between forms like /da-nale/ *my paddle* and /nalehe/ *paddle*, /ʾada/ *wood/tree* and /adaha/ *wood/tree*, /da-kʰabo/ *my hand* and /kʰaboho/ *hand* is dependent on the *noun generalizer* /-hV/ (in which V is conditioned by the preceding vowel). For obligatorily possessed nouns, such as body parts, the generalized form is the only one that can occur without a prefix. In each of the pairs of examples, the first form refers to a specific item or group of items, whereas the second refers to the same item in a more general or abstract sense.

The most reasonable solution to these vocoid clusters is to interpret them as consonant-vowel sequences. Supporting evidence is of two kinds.

First, the only nonsuspect syllable pattern found in the language is CV. All syllables that might be interpreted as having an initial vowel are a combination of an initial nonsyllabic [i] or [u] followed by another vowel. Compare, for instance, [ᵘą̀ndabo] /w-aNdabo/ *we are arriving* with [bą̀ndabo] /b-aNdabo/ *you are arriving*, [ᵘòsiha] /w-osiha/ *we will go* with [lòsiha] /l-osiha/ *he will go*, and [ˈòˈokąŋ] /yoyokaN/ *it is wet* with [pòpokąŋ] /pòpokaN/ *it is soft*. Other examples are given below.

Second, all word-initial word stems not beginning with a nonsuspect contoid or nonsyllabic vocoid begin with a glottal stop.[15] This follows the above-mentioned syllable pattern and causes some minimal pairs. For example, compare [ʾósa] /ʾOSA/ *went*, [ᵘosa] /w-OSA/ *we went*, and [hósa] /h-OSA/ *you (plural) went;* [ʾóˈo] /ʾOYO/ *mother*, [ˈóˈo] /YOYO/ *wet*, [hóˈo] /h-OYO/ *your (plural) mother*, and [ᵘóˈo] /w-OYO/ *our mother;* [ʾàřihi]/ʾAřɪhi/ *tooth* (from /ʾařɪ/ *tooth* + /-hV/ *noun=generalizer*), [ᵘáři] /w-AŘI/ *our teeth*, and [háři] /h-AŘI/ *your (plural) teeth;* and [ʾɪřihi] /ʾɪřɪhi/ *name* (from /ʾɪři/ *name* + /-hV/ *noun=generalizer*), [ᵘíři] /w-IRI/ *our name*, and hiri /h-IRI/ *your (plural) name(s)*.

Any alternatives to this interpretation of vocoid clusters would involve considering them as vowel sequences.[16] There are, however, some major problems with such a solution. Not only would it ignore the many minimal pairs of words like those just mentioned, but it would also require the establishment of an arbitrary syllable pattern, VV or V.V, for which there is no nonsuspect evidence. Furthermore, any such solution would underrepresent the phonological system of the language and thus create ambiguities in pronouncing phonemically written words.

For example, one would not know which vowels are syllabic, or even, how many syllables there are in the following words if they were written as: */ioaia/ which is [ˈòᵘaˈa] /yowaya/ *then*, */dakoioabo/ which is [dakòˈoᵘábo] /da-koyowabo/ *I am returning*, */loioa/ which is [lòˈoᵘa] /l-oyowa/ *his own mother*. Even with a rule such as "unstressed /i/ or /o/ may be nonsyllabic when followed by another vowel in the same word,"[17] there would be problems with a word like /l-oyowa/. One would need to indicate at least two of the syllabic vocoids with stress marks (e.g., *lóióa) or some other means before all ambiguities would be removed.

The remaining vocoid clusters which present difficulties in interpretation are those containing syllable-medial and syllable-final nonsyllabic vocoids in syllables of the form [CˈV], [CᵘV], [CVˈ], and [CVᵘ], as found in words like [šˈòkotši] *young male*, [dakòbořokᵘàtᵘáka] *I thought*, [lišlmakɨˈ] *he called (subordinate) him*, and [liɨpàtadáᵘ] *he hit us*.

The solution adopted here to the problems presented by these vocoid clusters is to recognize in each case an underlying two-syllable form. Thus [CˈV] is a manifestation of /CiyV/, [CᵘV] is a manifestation of /CowV/, [CVˈ] is a manifestation of /CVyi/, and [CVᵘ] is a manifestation of /CVwo/. The above examples rewritten

[15] The question of whether the glottal stop is "inserted" preceding any word-initial word stem starting with a syllabic vowel, or whether it is actually part of such a word stem and is subsequently deleted in certain environments (e.g., /wA-/ *we* and /ʾosa/ *go* combining to form ᵘósa] /w-osa/ *we went*) has not yet been fully determined. The latter assumption, however, has been adopted in this article.

[16] This solution was apparently adopted by Taylor and by van Renselaar and Voorhoeve.

[17] Taylor, "Arawak Phonology," p. 235.

according to this solution appear as: /siyokotʰi/, /da-kobořokowatowaka/, /li-simakiNyi/, /li-patadawo/.

Evidence supporting this hypothesis comes from several sources. The first is structural pressure. The proposed solution produces forms that fit the only non-problem syllable pattern in the language and avoids arbitrarily setting up new syllable patterns not found elsewhere.

The second area of evidence is that there are many cases where the two-syllable underlying form is actually manifested on the surface as an alternate pronunciation. This is particularly true of words where one of the vocoid clusters in question occurs in the word-initial syllable of a polysyllabic word. In these cases, the two-syllable pronunciation is heard as often as its one-syllable variant. For example, /hiyařo/ *female* is heard as [hiˈářo] and [hˈářo], /lo-waya/ *he himself* as [loᵘáˈa] and [ᵘáˈa], and /miyaka/ *tomorrow* as [miˈáka] and [mˈáka].[18] When the above vocoid clusters occur word-medially, there is also considerable fluctuation, though the one-syllable form tends to become the more common one: /lo-kobořokowatowaka/ *he thought* is usually heard as [lokòbořokᵘàtᵘáka], sometimes as [lokòbořòkoᵘàtᵘáka] and [lokòbořokᵘatoᵘaka], and even, though rarely, as [lokòbořòkoᵘàtoᵘáka]; /da-biyaNtʰe/ *my spouse* is usually heard as [dabˈąntʰe] and sometimes as [dabiˈántʰe]; and /da-koyowabo/ *I am returning/leaving* is usually heard as [dakòˈᵘábo] and sometimes as [dakòˈoᵘábo].

Furthermore, although some utterances, such as those containing vocoid clusters in the word-final syllable, are fairly consistently pronounced using the short one-syllable form, they were often written by H. G. E. Sabajo, an Arawak language helper, as the two-syllable form. This becomes significant when considered with the fact that Sabajo had been taught to write syllable-medial and final nonsyllabic vocoids using a CCV, one-syllable pattern —the two-syllable hypothesis being a conclusion reached considerably later. Thus in one of the texts he transcribed I find "wabirābija"[19] for [wabiřąmbˈa] /wabiřaNbiya/ *in order that we play*, "wanisija" for [ᵘaníšˈa] /w-anisiya/ *that which we do*, and "bijā" for [bˈąŋ] /biyaN/ *two*.

As might be expected from the discussion of fluctuation, no evidence has been found anywhere in the language of lexical contrast between [CˈV] and [CiyV], [CᵘV] and [CowV], [CVˈ] and [CVyi], or [CVᵘ] and [CVwo].

The third piece of evidence which supports the underlying two-syllable form is that syllables containing the syllable-final and syllable-medial nonsyllabic vocoids tend to receive stress[20] and thus

[18] In addition to the fluctuation between mono- and bisyllabic pronunciations, some of these words also have pronunciation variants caused by the interaction of the stress rules. Thus /hiyaro/ may also be pronounced [hˈiařo], /miyaka/ as [mˈiaka], etc.

[19] In the practical orthography of that time the tilde was used to indicate nasalization, and "j" was used for /y/.

[20] The only vocoid cluster that is not regularly stressed is pause-group-final [Cˈa] /Ciya/. In that position, this particular vowel cluster is apparently handled as a single syllable in the application of the pause-group stress rule. For example: [lipàtadábˈa] /li-patadabiya/ *in order that he hit* (compared with [lipàtadàbˈáˈ] /li-patadabiyayi/ *in order that he hit him*, which does follow the rule), and [lilasišˈa] /l-ilasisiya/ *that which he split*. I was tempted to posit an extra phoneme, *[ˈa], to resolve this anomaly, but I have not done this, since it would have a unique distribution, occurring only pause-group-finally. Furthermore, because of words like /hiyaro/ [hiˈářo] ~ [hˈářo] ~ [hˈiařo] *female*, and /miyakabowaN/ [miˈàkabᵘąŋ] ~ [mˈákabᵘąŋ] ~ [miˈakábᵘąŋ] *day-before-yesterday*, and the fact that there is no lexical contrast between *[Cˈa] and /Ciya/, I thought it best just to accept this anomaly as a true exception to the pause-group stress rule.

present a large number of apparent exceptions to the application of the pause-group stress rule given in 4. For example, the contiguous stressed syllables in [dakòbořok^{u}àt^{u}ábo] *I am thinking* and [kònok^{u}àř^{i}áda] *from out of the forest* and the final stressed syllables in [lodòkodá^{u}] *he untied us* and [t^{h}iřidàb^{i}á^{i}] *in order that it bite him* are all apparent anomalies in that secondary pause-group stress should fall on alternate syllables and primary pause-group stress should fall on the penultimate syllable of a word. Problems with these forms, however, are eliminated when their respective phonemic forms are recognized as being: /da-kobořokowatowabo/, /konokowařiyada/, /lo-dokodawo/, and /t^{h}i-řidabiyayi/.

Several alternate solutions to the problem of syllable-final and syllable-medial nonsyllabic vocoids were considered in arriving at the above interpretation. Although each of these solutions has certain strengths, I concluded that these strengths were outweighed by their disadvantages.

One possible solution was to postulate a CCV syllable. Although this solution corresponds well to the fact that syllable-initial nonsyllabic vocoids are best interpreted as consonants, it not only creates a new syllable pattern not found elsewhere in the language, but it would force one to set up yet more syllable patterns or phonemes to handle syllable-final nonsyllabic vocoids in words such as [lišîmakį^{i}] *he called (subordinate) him* and [t^{h}àkab^{i}á^{i}] *in order that she tell him.* It would also leave unexplained the tendency of speakers to fluctuate, both in their speech and in their writing, between one- and two-syllable manifestations of the same vocoid sequence. It can further be pointed out that the lack of clear CC clusters is such an observable fact that other investigators[21] of the language have apparently used this as a basis for interpreting aspirated stops as unit phonemes.

Proposing CVV syllables has many of the same problems, in that it also would not explain fluctuations in pronunciation and the apparent anomalies in the application of the pause-group stress rule, and would require the acceptance of an unprecedented syllable pattern. This solution, like the previous one, would require additional syllable patterns, phonemes, or rules to represent adequately words with rather long vocoid sequences like [lo^{i}ó^{u}a] /l-oyowa/ *his own mother* and others cited earlier.

A third possible interpretation is to consider [C^{u}V] and [C^{i}V] as labialized and palatalized consonants followed by vowels: */C^{w}V/ and */C^{y}V/, and to consider [CV^{u}] and [CV^{i}] as consonants followed by vowel glides (in effect labialized and palatalized vowels): */CV^{u}/ and */CV^{i}/. Although this solution is quite attractive because it creates no new syllable patterns, this attractiveness is outweighed by the fact that it more than doubles the number of vowel and consonant phonemes, it does not take into account the fluctuations in pronunciation and lack of contrast between the syllable forms that fluctuate, and it has the problems with regard to the stress rules mentioned previously. One other factor to be considered in evaluating this solution is that it considerably complicates the grammar description. It would require the establishment of large numbers of allomorphs to handle morpheme-boundary phenomena in words like /li-patada-wo/ (*he-hit-us*) *he hit us* which would be written */li-patada^{u}/; /l-oyo-wa/ (*his-mother-reflective*) *his own mother* which might be written as */loy^{w}a/, */lo^{i}wa/, or even */lo^{iu}a/; /t^{h}i-simaka-yi/ (*she-shout/call-him*) *she called him* which would be written */t^{u}i-simaka^{i}/; and the subordinate form of

[21] See the works by Taylor and by van Renselaar and Voorhoeve (nn. 2, 3, 5).

the preceding word which is /tʰi-simaki-N-yi/ (*she-call shout-subordinate-him*) *she called him* which would be written */tʰi-simakɨˈ/.

A variation of this interpretation is to posit vowels with on- or offglides. This, however, has the same drawbacks as listed above.

The fourth possible solution considered was that all syllable-medial and final nonsyllabic vocoids be interpreted as vowels, and that syllable-initial nonsyllabic vocoids be interpreted as consonants. Thus one could write */loaya/ for /lowaya/ [loʷáˈa] *he himself*, */lo-kobořokoatoaka/ for /lo-kobořokowatowaka/ [lokòbořokʷàtʷáka] *he thought*, and */hiařo/ for /hiyařo/ [hiˈářo] *female*. One could then include a rule in the phonological description to insert [w] or [y] optionally in the correct environments—that is, [w] between V and o in a /Vo/ or /oV/ cluster, as in */loaya/ to give [lo(w)áˈa], and [y] between V and i in a /Vi/ or /iV/ cluster, such as in */hiařo/ to give [hi(y)ářo].

Although I view this solution as a viable alternative to the one adopted in this article, insofar as it allows one to move unambiguously between the phonetic and phonemic forms, I nevertheless believe that it is less desirable. The main disadvantage is that it, in effect, sets up V syllables for which there is no structural evidence in the language. Absolutely all occurrences of vocoid clusters contain a nonsyllabic /i/ or /o/. As can be seen in the many examples already cited, there are no cases of /a/ and /e/,[22] /e/ and /i/, or /a/ and /i/ occurring together in the same vocoid cluster without a syllabic[23] or nonsyllabic /o/ or /i/ separating them. A solution which accepts this structural fact sometimes, by setting up syllable-initial /y/ and /w/, but not at other times seems unattractive. This is especially true when one realizes that apparently the questionable V syllable would be found only in those places where actual fluctuation in pronunciation occurs.

The multisyllabic solution for syllable-medial and syllable-final nonsyllabic vocoids proposed here, then, appears to be the most satisfactory. It confirms informant reaction and does not require the unnecessary establishment of CCV, CVV, or V syllable patterns, or a large number of extra palatalized and labialized consonants and vowels with on- or offglides. In addition, it takes into account fluctuations in pronunciation between long and short forms in a way that eliminates anomalies in the distribution of stress that an interpretation which fails to recognize the two-syllable underlying form would produce.

[22] Van Renselaar and Voorhoeve have recorded "hemelea-ka-n," which I hear as [hemelˈakaŋ] /hemeliya-ka-N/ (*new-indicative-it*) *it is new*.

[23] Syllabic /o/ and /i/ can be interpreted as /wo/ or /ow/ and /yi/ or /iy/, respectively, in this environment.