ARAONA SYLLABLE AND STRESS

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INTRODUCTION

The Araonas are a group presently numbering fifty-three persons living at the headwaters of the Manupari River in the Province of Iturralde, department of La Paz in Northwest Bolivia. The present group of Araonas are descendants of two families who escaped from their captors who had taken them to a distant location during the time of the rubber boom shortly after 1900. They were discovered by members of the Summer Institute of Linguistics (SIL) in 1957. Several contact attempts by SIL were unsuccessful. Finally in 1963 a contact was made by members of New Tribes Mission who had lived in the area for two years.

Don and Mary Pitman of SIL joined the contact in 1964 and focused on language study. Contacts were sporadic and progress was slow. By 1970 a phonemic analysis and preliminary write-up of the grammar were done. By 1971, three primers and an easy-reading booklet were produced. Since 1972 the following booklets have been produced in the Araona language: a writing book, four easy-reading booklets, two easy-reading health booklets, and four Bible Story booklets. Three books of the New Testament were translated.

The group is about 20% literate. A bilingual primary school has been set up with an Araona teacher. Two other Araonas have been taught some general skills along with the teacher at the Leadership Training Course at the SIL center in Bolivia and from those three have come most of the ten native-authored booklets produced. There were many problem areas in the language, however, and so the team participated in the workshops that lay the background for this paper.

The progress for Araona was as follows:

1972 -- some work on the phonology, identification of morphemes pertaining to the verbal complex, revising noun phrase.

1973 -- with the help of the computer concordance that was prepared between workshops, the basic verb constituents were identified and analysis begun on clause types and narrative structure.

1975 -- the "Hale Chart" brought further light into the verb-adjective-noun system; verb phrases and their complex relationships partially analyzed.

1976 -- the stress problem was finally cleared up and the paper written; the write-up of a grammatical sketch begun.

KEY TO ABBREVIATIONS

abil.   -   abilitative
adj.   -   adjective
aff.   -   affirmative
C   -   consonant
com.   -   completive
desid.   -   desiderative
fut.   -   future
impv.   -   imperative
inten.   -   intention
intr.   -   intransitive
neg.   -   negative
nlz.   -   nominalizer
pres.   -   present
ptcl.   -   participial
refl.   -   reflexive
rep.   -   repetitive
sign.   -   significant
tr.   -   transitive
V   -   vowel

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1.   The Syllable

1.1.   The syllable in Araona[1] has the following shapes: V, CV, VV, CVV, and CVVV, Syllables within a morpheme do not contain more than two vocoids in sequence and these are dissimilar. All VV sequences within a morpheme are part of a CVV syllable with but one known exception, the morpheme <u>ái</u> 'thing'. Sequences of three vocoids in the same syllable occur only across morpheme boundaries and these tend to be reduced to two vocoids by various means depending on the vocoids involved and their relative order. Not all vocoid sequences form a single syllable. Both within a morpheme and across morpheme boundaries, adjacent vocoids may serve as nuclei of separate syllables. In this paper, when they do, a hyphen is used to mark the boundary between them. In syllables containing more than one vocoid, their quality, position in the sequence, and position in the word determine which is the most prominent. It was found necessary, however, that many vowel sequences be interpreted as being in the same syllable or as constituting a complex syllable nucleus. Only as this was done did the stress patterns emerge.

1.2.   Examples of syllable types within a morpheme:

á	'do'	ái	'thing'	ziopá	'mockingbird'
ak^{w}í	'tree'	bía	'wasp'	walíbao	'rainbow'
zotó	'jaguar'	bái	'lake'	k^{w}awéa	'yuca'

1.3.   Examples of vowel combination possibilities at morpheme boundaries:

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a)   (C)V + V = (C)VV

     a + ibo = áibo   'do-sign.' (tr.)

     po + ibo = poibo   'do-sign.' (intr.)

     po + ani = poani   'do-pres.' (intr.)[2]

b)   (C)V + V = V.V

     a + odi = a-ɓdi   'do-rep.'

     aff.ˆ + po + ani = pɓ-ani   'aff.-do-fut.' (See 3.2.)

     po + ana + ti = po-ánati   'do- or be-elsewhere'

     ti + ana + ti = ti-ánati   'give-elsewhere'

     ba + ana + ti = ba-ánati   'see-elsewhere'

               (bánati, see 3.4.)

c)   (C)VV + V = VV~VVV

     wae + ibo = wǎebo~wáibo   'to sun-sign.'

     po + bea + ibo = pobɛibo~pobɛaibo 'do-toward-sign.'

     heo + ibo = hɛo^{m}bo   'come and take away-sign.'

      (i is elided and prenasalized allophone of b manifested)[3]

d)   (C)VV + V = VV.V

     wae + odi = wae-ɓdi   'to sun-rep.'

     aff.ˆ + cuae + ani = cuáe-ani   'aff.-show-fut.'

     Note: The initial V of -odi and -ani (fut.) never join with

            preceding V to form one syllable.

e)   V + V + V = VVV~VV

     e + a + ibo = ɛaibo~ɛibo   'aff.-do-sign.'

f)   CV + V + V = CV.VV

     pi + a + ibo + ma = pi-áiboma   'neg.-do-sign.-neg.'

     pa + a + ibo = pa-áibo   'inten.-do-sign.'

1.4. Some nouns also have vocoid sequences which are separated by a syllable boundary optionally marked by glottal stop:

niʔɔ́~ni-ɔ́	'tapir'	kʷiñá̃ʔae~kʷiñá̃-ae	'a name'
haeʔí̃~hae-í̃	'a fish'	ehá̃ʔo~ehá̃-o	'boa constrictor'
boní̃ʔi~boní̃-i	'a bird'		

1.5. One-syllable affix morphemes consisting of a single vocoid generally form a VV syllable with the vocoid to which they are joined. In cases where they would be joined to an identical vocoid, however, they are separated by a semi-vowel.

po + a = pɔ́a	'do-recent'
ba + a = bá̃ha	'see-recent'
aff.˘ + walo + i = wá̃loi	'aff.-stir-nlz.'
aff.˘ + bili + i = bílihi	'aff.-cover-nlz.'

When such affixes are joined to morphemes ending in VV, even when the vocoids at the boundary are dissimilar, they are separated by a semi-vowel.

Tadá̃e + a = Tadá̃eza~Tadá̃eya	'Tadae-agent'
Tabá̃o + a = Tabá̃owa	'Tabao-agent'
kʷae + a = kʷá̃eha	'show-recent'

1.6. In some cases the quality of the vocoids involved determines whether V + V = VV or V.V.; i.e., a sequence of two identical vocoids are nuclei of different syllables, dissimilar vocoids generally form a VV syllable:

a + asa = a-á̃sa	'adj. marker-prickly'
a + oli = aolí	'adj. marker-lazy'
a + isi = aisí	'adj. marker-bad'

but note: a + isi = a-ísi 'do-bad' where the only phonological difference from the preceding example is the syllable boundary deter- mined by the stress placement (see 2.2.-2.7.) Grammatically this is a sequence of verb a 'do' + adj. stem isi 'bad' whereas aisí is a sequence of a 'adj. marker' + isi 'bad'.[4]

2. Stress

2.1. The present study of stress is confined to nouns, verbs and
a-prefixed adjectives. We found that stress can be marked by a
variety of phonetic features, namely pitch, loudness and rhythm.
Pitch seems to be the most consistent feature of stress on two-
syllable words--a higher pitch on the last syllable indicating stress
on that syllable and lower pitch on the last syllable indicating
stress on the first syllable. In words longer than two syllables,
pitch is not as contrastive and loudness (sometimes combined with high
pitch) most often marks the stressed syllable.

Sometimes rhythm seems to be important although it was difficult to
establish exactly how. The first syllable of a word is generally
long, whether stressed or non-stressed.

Focusing on any one of these features, pitch, loudness and rhythm,
stress could not consistently be identified. The pitch differences,
except in final syllables, are very small. Syllable length is condi-
tioned by such factors as position in the word and syllable pattern.
Loudness is conditioned to some extent by the segments involved.
Minglegraph tracings and sound spectrographs of some texts bear out
these observations. Often it is impossible to establish from the
tracings of pitch and speech power which is the stressed syllable
because variations are slight. Trying to determine which syllable
is the most prominent in terms of the combination of features, without
trying to establish which feature is the main one in any particular
instance, was the easiest way to hear stress consistently.

2.2. The "normal" pattern for the groups of words studied is stress
placement on the second syllable.

Examples:

1-syllable nouns (stress is marked on the first vowel in a multi-vowel
syllable[*])

bõa	'a tree'	nío	'dog'	bía	'wasp'
bãi	'lake'	láo	'heron'	bẽi	'sloth'
hãe	'fish'	nõ	'brother' (female's)		
nõi	'cherry tree'	ãi	'thing'		

2-syllable nouns

ak^{W}í	'tree'	ziopã	'mockingbird'	anõ	'grandmother'
pailẽ	'strainer'	izã	'porcupine'	¢eiñẽ	'day'
zotõ	'jaguar'	k^{W}awẽa	'yuca'	wodõ	'smoke'
dok^{W}ẽi	'deer'	moyẽ	'Brazil nut'	matõa	'alligator'

In isolation these are stressed on the non-last syllable; i.e., first
syllable.

3-syllable nouns

k^{W}adídi	'hummingbird'	maiñõlo	'a bird'
amãha	'a tree'	a¢ãena	'a fruit'
awãda	'tapir'	tedõbai	'a turkey'
mahãna	'stone'	walíbao	'rainbow'

4-syllable nouns

sobẽlele	'baby hat'	polõpolo	'a bird'
boním̃oho	'a tree'	dok^{W}ãdok^{W}a	'a monkey'
hapẽsepe	'goblet'	mamãmamai	'crocodile'

2.3. There is a group of obligatorily-possessed nouns either
Consonant-initial one-syllable or Vowel-initial, that in their free
form have a prefix e-. These also have a second syllable stress.

ebõ	'face'	eonẽ	'umbilical cord'	etõa	'eye'
edoẽ	'relative'	eizãha	'ear'	eiyẽ	'jungle'
eamãha	'molar'	etãe	'house'		

In isolation these, like the two-syllable nouns above, have stress
placed on the non-last syllable.

2.4. Verb cores

bá	'see'	k^wabé¢a	'to fly'	izóa	'wait'
k^wáe	'tell'	hiñébaha	'listen'	hodódo	'run'

2.5. Suffixed verbs

With the adverbial stem affixes such as -pe and -sisa and with the Tense/Mood affixes of at least two fully-syllabic syllables, stress is "normal", i.e., on the second syllable.

k^waepé	'tell-com.'	ponápe	'do-away-com.'
k^waesísa	'tell-night'	ponásisa	'do-away-night'
k^waemáne	'tell-abil.'	ponámane	'do-away-abil.'
k^wae-ódi	'tell-rep.'	poná-odi	'do-away-rep.'
k^waetáme	'tell-polite impv.'	ponátame	'do-away-polite impv.'

2.6. Prefixed verbs

Prefixes of shape CV do not form one syllable with the initial V of stems, but form one word with stem, causing a stress shift, so that the stress occurs on the second syllable of the word.

pa + k^wae + ibo = pak^wáebo	'inten.-tell-sign.'
pa + po + na + ibo = papónaibo	'inten.-go-away-sign.'
pa + izoa + ibo = pa-ízoaibo	'inten.-wait-sign.'
ha + k^wae + ti = hak^wáeti	'refl.-tell-refl.'
ha + hizio + ti = hahízioti	'refl.-skin-refl.'
ha + iǰoi + ti = ha-íǰoiti	'refl.-anoint-refl.'

Note, however, that the prefix e- 'affirmative' becomes a part of a VV syllable with V-initial stems and does not cause a stress shift.

e + k^wae = ek^wáe	'aff.-tell'
e + izoa = eizóa	'aff.-wait'

2.7. Prefix a- Adjectives

The prefix a- 'adj. marker' functions as a syllable when prefixed to C-initial and /a/ initial stems but as part of a VV syllable when prefixed to V-initial stems with initial vowel other than /a/.

a + ne = anɛ́	'sore'	a + bao = abáo	'long'
a + boa = abóa	'cold'	a + kʷeo = akʷɛ́o	'sharp'
a + asa = a-ása	'prickly'	a + oli = aolí	'lazy'
a + isi = aisí	'icky'	a + bikʷe = abíkʷe	'heavy'
a + beise = abɛ́ise	'healthy'	a + iziña = aizíña	'stingy'
a + halili = ahálili	'big'	a + nimepi = anímepi	'wary'
a + bozeboze = abózeboze	'slow'		

3. Stress in "Non-normal" Position

3.1. Stress is in "non-normal" position on the first syllable of a group of C-initial nouns of two or more syllables. These were a puzzle to us until we realized that they were nouns similar to the group prefixed by e- (see 2.3.) in that they were likely to be obligatorily-possessed. But the e- prefixed nouns are either V-initial or one syllable C-initial stems, whereas these with irregular stress placement are two or more syllable C-initial stems. If we posit an e- prefix on this group of nouns (or reconstruct them with the prefix e- which occurs in other Tacanan languages), the stress follows the regular pattern, i.e., is placed on the second syllable. So, it appears that the e- prefix is deleted on stems of more than one syllable, except the V-initial stems where it forms one syllable with the initial V. The stress, however, remains on what would be the second syllable, becoming the only signal of the presence of the morpheme showing obligatory possession.

Examples:

bákʷa	'child' (contrasts with bakʷá 'snake')		
jóto	'wide spot of river' (contrasts with jotó 'a worm')		
wádi	'mother'	nála	'neck'
háona	'tendon'	máedada	'forehead'
háhi	'nest'	tóne	'tree used in housebuilding'
béwe	'bark, shell'	léle	'village, place'
sáda	'stream'	bésese	'shin bone'
nókʷizi	'armpit' ⎱ (may have 2nd syllable stress in isolation		
mósoho	'heart' ⎰ or read from a list)		

3.2. The V-initial and one-syllable C-initial verbs may occur
with a prefix _e-_ 'affirmative'. This morpheme is signaled by first
syllable stress placement only, just like the noun prefix indicating
obligatory possession, on C-initial verbs which, with or without
suffixes, have two or more syllables.

Examples:

bắna	'aff.-plant' (contrasts with banắ 'plant')
dốnaibo	'aff.-carry-away-sign.' (contrasts with donắibo 'carry-away')
hốdodo	'aff.-run' (contrasts with hodốdo 'run')

Since this "affirmative" morpheme obligatorily co-occurs with the _-ni,_
_-ha_, _-neti_, _-bade_, _-yoa_ and _-ani_ set of the Tense/Mood suffixes, when-
ever any of these suffixes occur, V-initial verbs occur with the _e-_
prefix.

e + a + ni = eanắ	'aff.-do-pres.'
e + izoa + ni = eizốani	'aff.-wait-pres.'

All others occur with the alternate form of this morpheme which is
stress placement on the first syllable.

aff.ˆ + ba + ani = bắni	'aff.-see-pres.'
aff.ˆ + po + na + ni = pốnani	'aff.-go-away-pres.'

3.3. When other Tense/Mood suffixes of less than two syllables are
affixed directly to a verb root of only one syllable, stress falls on
the non-last, i.e., the first syllable. In other words, these
affixes cannot be stressed in final position. Some of these affixes
are mono-syllabic and some begin with a non-syllabic vowel, i.e., a
vowel that with the final vowel of the verb stem forms one syllable.

a + ke = ắke	'do-impv.'	a + hae = ắhae	'do-desid.'
a + me = ắme	'do-ptcl.'	a + iki = ắiki	'do-recent past'
			(first i of iki non-syllabic)
ba + iki = bắiki	'see-recent past'	a + ibo = ắibo	'do-sign.'

In non-final position these affixes can be stressed:

    a + ibo + hae = aibóhae   'do-sign.-desid.'

3.4. Stress occurs on the first syllable of certain **verb** constructions where the initial vowel of the suffix is identical to the final vowel of the verb stem. These two identical vowels may be shortened to one or may remain to represent two syllables.

Examples:

    ba + ana + ti = bánati~ba-ánati   'see-change-elsewhere'
but:
    po + ana + ti = po-ánati   'do-change-elsewhere'

3.5. A few nouns with first syllable stress may have had what was once an initial V syllable, other than prefix e-, or a medial syllable deleted:

zéti	'sun'	is	ideti	in Tacana
		is	ijeti	in Cavineña
		is	ešeki	in Ese Ejja
bábi	'sting ray'	is	ibabi	in Tacana, Cavineña and Ese Ejja
sási	'coca'	is	da?adi	in Tacana

3.6. A few nouns have stress on the first syllable which cannot be accounted for. Some of these have an alternate form with an extra syllable and "normal" stress placement. The complete list of such nouns found to date follows:

    bácawa~bahácawa   'a bird'
    pičala~pišatala   'a tree'
    háwa   'yellow macaw'
    hási   'red macaw'
    nálolo   'a fruit tree'
    házeze   'a small parrot'
    hópoiza   'a type of partridge'

4. <u>Conclusion</u>

Stress is predictable except when indicating presence of noun prefix 'obligatory possession' and verb prefix 'affirmative'. The information load of the noun prefix is low since its occurrence is governed by syntactic rules. That of the verb prefix is low when it occurs with suffixes as described in 3.2. The occurrence of this verb prefix contrasts with "bare" verbs--without any Tense/Mood affixes. The full significance of presence and absence of this prefix in relation to the discourse structure of Araona has not yet been determined.

[1] Araona is a member of the Tacanan language family, the other
members of which are Tacana, Cavineña, and Ese Ejja. The phonemes
of Araona are p, t, k, k^W, ¢, č, d, ǰ, b, s, š, z, m, n, ñ, l, w,
y, h, i, e, o, and a. These are more fully described in Notas.
Lingüísticas de Bolivia, No. 8, La Jerarquia Fonológica de Araona,
published by Instituto Lingüístico de Verano in collaboration with
the Ministry of Education and Culture, Riberalta, Beni, Bolivia
1970. k^W was established as a phoneme following publication of
that description.

[2] The expected stress pattern would be póibo and póani. These
particular combinations, however, normally are pronounced poíbo
and poáni. See also Footnote 4.

[3] The voiced stops /b/ and /d/ have allophones [mb] and [nd] respec-
tively that tend to be manifested in lengthened syllables, follow-
ing vowel sequences or sequences of semi-vowel plus vowel and
following nasal consonant plus vowel. These may also occur in
word-initial position when the word and phrase stresses overlap
such as on a one-word utterance. The phrase stress which is not
the same as word stress has not been extensively studied.

[4] An alternate interpretation of the vowel clusters posits semi-
vowels (S), i.e., consonants, for any non-nuclear vowel, leaving
one vowel only as the syllable nucleus, which would be the vowel
of potential stress placement. The syllables would have the
following shapes: V, CV, SV, VS, CVS, SVS, CSV, VSS, CVSS, SVSS.
For some speakers of Araona, however, stress placement on the
multi-vowel syllables is not completely stable; for others it seems
to be determined by the phonetic shape of the vowel combination and
by the position of the multi-vowel syllable within the word; i.e.,
in final position in two-syllable nouns the non-final vowel is
stressed even though the normal stress placement might be the final
vowel. This, coupled with the observation that positing semi-
vowels and writing these does not resolve all problems of indica-
ting syllable breaks, led to the adoption of the multi-vowel
syllable nuclei interpretation.