

NOTAS GENERALES SOBRE LA FONOLOGÍA SEGMENTAL Y PROSÓDICA DEL MAROPA, CON MENCIONES ACERCA DE LA SERIE AFRICADA

GENERAL NOTES ON MAROPA SEGMENTAL AND PROSODIC PHONOLOGY, WITH REMARKS ON THE AFFRICATE SERIES

Gabriel Alfredo Gallinate Soliz
gabrielgallinate.acd@gmail.com

Boliviano. Es licenciado en Lingüística Aplicada a la Enseñanza de Lenguas en la Universidad Mayor de San Simón. Actualmente, es doctorante de primer año en Lingüística en la Universidad de Texas en Austin.

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Resumen

Este artículo trata de las propiedades de la fonología segmental y suprasegmental del *maropa*, una lengua *Takana* casi extinta de la Amazonía boliviana. Se describen los procesos principales de las vocales y las consonantes para establecer las reglas de cómo los segmentos interactúan en este idioma. Además, una descripción de la estructura silábica y la asignación del acento revela que las características de los sonidos están relacionadas con dominios prosódicos, morfofonológicos y sintácticos. Asimismo, en el presente documento se explica el origen de dos de las cuatro consonantes africadas en *maropa*, cuya presencia se debe a procesos históricos de asimilación y disimilación, según comparaciones con lenguas emparentadas. Sostendré que estos sonidos evolucionaron de las otras dos africadas preexistentes, y que su desarrollo diacrónico generó contrastes fonémicos entre los fonos.

Palabras clave: Maropa, fonología segmental, prosodia, consonantes africadas.

Abstract

This paper discusses the properties of the segmental and suprasegmental phonology of *Maropa*, an almost extinct *Takanan* language of Bolivian Amazon. The main processes of vowels and consonants are described to provide with rules on how segments interact in this language. Also, a description on syllable structure and stress assignment unveils that their characteristics are related to prosodic, morphophonological and syntactic domains. Likewise, this document deals with the explanation of the origin of two of the four affricate sounds in *Maropa* which are present due to historical dissimilation and assimilation according to comparisons with sister languages. I will argue that these sounds evolved from the other two pre existing affricates, and that their diachronic development generated phonological contrast among phonemes.

Keywords: Maropa, segmental phonology, prosody, affricate consonants.

Resumo

Este artigo trata das propriedades da fonologia segmentar e supra-segmentar da *maropa*, uma língua *Takana* quase extinta da Amazônia boliviana. Os principais processos de vogais e consoantes são descritos para estabelecer as regras de como os segmentos interagem nesse idioma. Além disso, uma descrição da estrutura silábica e da atribuição de acento revela que as características dos sons estão relacionadas aos domínios prosódico, morfofonológico e sintático. Da mesma forma, este documento explica a origem de duas das quatro consoantes africadas no *maropa*, cuja presença se deve a processos históricos de assimilação e dissimilação, de acordo com comparações com idiomas relacionados. Argumentarei que esses sons evoluíram das outras duas africadas pré-existentes e que seu desenvolvimento diacrônico gerou contrastes fonêmicos entre os telefones.

Palavras chave: Maropa, fonologia segmentar, prosódia, consoantes africadas.

1. INTRODUCTION

Maropa is a *Takanan* language spoken in the town of Reyes¹ and its nearby communities, in the Bolivian Amazon. It is at high risk of extinction and only a few elderly speak the language since most of the *Maropa* individuals speak Spanish nowadays. According to Guillaume (Cf. 2010), there were still between 10 and 15 fluent speakers in 2005, although that number has gone down ever since and less than 5 speakers are left today (Cf. GALLINATE, 2018a). There are also many semi-speakers and rememberers among this ethnic group in different communities in the proximities of Reyes. The approximate number of all the linguistic localities is 116 (INE, 2015) out of a total of 4757 members who identify themselves as either *Maropa* or *Reyesano*.

The *Takanan* family² is integrated by five languages *Araona*, *Ese 'ejja*, *Cavineña*, *Tacana* and *Maropa*, which are organised into three main branches. Following Girard's (1971) classification, the branches of the *Takanan* languages are *Kavinik* [*Cavineña*], *Chamik* [*Ese 'ejja*] and *Takanik* [*Araona*, *Tacana* and *Maropa*]. All of them are spoken in Bolivia, but *Ese 'ejja* is also found in Peru (Cf. VUILLERMET, 2012).

We know a few aspects on the phonology of *Maropa* (Cf. GUILLAUME, 2012; GALLINATE, 2018a, 2018b) than we do about its morphological and syntactic features (Cf. GUILLAUME, 2009, 2012, 2018a; GALLINATE, 2019). *Maropa* generally displays a VA/VOS constituent order, but it can vary freely. This language has non-verbal and verbal predicates. The verbal predicate structure in *Maropa* is polysynthetic (Cf. GUILLAUME, 2012) and it is obligatory marked in declarative sentences by the prefix *e-* 'INC', and the circumfixes *a>...<a* 'PST' or *a>...<ti* 'RFL'.

This work has the purpose to expand our knowledge on the phonology of this language. I will talk about the segmental properties of *Maropa* and describe most of its phonological processes. Next, the syllable structure and the accentual system will be addressed in an attempt to give as much information as possible about its prosodic domain. In a second part, I will go over the affricate series, especially the alveopalatal affricate consonants and their hypothetical historical development.

2. METHODOLOGY

The data for this study was mainly collected in the town of Reyes and in the communities of San Cristóbal and San José during different fieldtrips

throughout 2017 (April, July, August and December). I worked closely with two speakers and three semi-speakers, and in a lesser amount with other two rememberers.

My corpus is composed by 900 entries and 10 glossed and translated texts with 261 sentences in *FieldWorks Language Explorer* (Cf. SIL INTERNATIONAL, 2019a). There are also recordings of my elicitation sessions, storyboards, songs and short stories. Some audios of Bible passages for *Maropa* obtained from the *Global Recordings Network*³ were also added to my database. Most of the recordings were phonetically segmented in *Praat* (Cf. BOERSMA & WEENINK, 2019), and transcribed and translated with a practical alphabet in *ELAN* (Cf. 2019).

The phonological description is based on acoustic data from my recordings and on segmental phonological analysis. I also used data of all *Takanan* languages obtained from the available literature and from linguistic archives online, see *section 4*. This was performed to compare my *Maropa* forms with those of sister languages by building lists of cognate terms in Cog (Cf. SIL INTERNATIONAL, 2019b).

3. MAROPA PHONOLOGY

The phonological system of this language does not exhibit a high rate of complex features. However, some of its characteristics are outstanding among *Takanan* languages (e.g. apico-alveolar sounds and a great number of affricates) as we will see in the points below.

3.1. Segmental phonology

In this section, we will go over the segmental phonology of *Maropa*, some principal phonological processes, and the syllabic structure and accentual system of this language. For a detailed description and discussions on every phoneme and sound, see GUILLAUME (2012: 195-198) and GALLINATE (2018a).

Maropa displays a vowel system of 4 phonemes shown in Table 1.

Table 1. Maropa vowel chart.

	FRONT	CENTRAL	BACK
HIGH	i		u
MID	e		
LOW			a

Source: own elaboration, 2020.

Vowels undergo fewer phonological processes with respect to consonants. For instance, the vowel /i/ is realised as [j] according to this rule (/i/ > [j] / _ [a, u] ~ [a, e, u] _) as in /tia/ > [tja] ‘to give’, /‘pohi/ > [‘poj] ‘PURP’ or /‘ʔeiei/ > [‘ʔej.ɛi] ‘traditional beverage’. /e/ goes through a similar operation, except that the resulting phone oscillates between [j ~ ɛ] with the rule being (/e/ > [j ~ ɛ] / _ [a, u]) as in /‘ʔeami/ > [‘ja.mi ~ ‘ʔɛa.mi] ‘meat, body’ or /‘ʔeɔβi/ > [‘ju.βi ~ ‘ʔɛu.βi] ‘water’.

Also, the vowel /u/ is pronounced as [w] according to (/u/ > [w] / _ [a, i, e] ~ [a] _) as in /‘ʔeipe/ > [‘we.pe] ‘to raise’, /‘laʊ/ > [‘law] ‘younger brother among males’ or /pʊ-isa/ > [‘pwi.sa] ‘be-REM.PST’. This same phoneme tends to be realised as [o] when it occurs in word-final unstressed positions as in /‘paku/ > [‘pa.ko] ‘dog’ or /tɛi‘pilʊ/ > [tɛi.‘pi.lo] ‘money’.

All vowels are produced as [+retracted] wherever they appear next to an apico-alveolar consonant. Consider these examples: /mɛtsa‘tsati/ > [mɛtsa‘tsati] ‘I went to search for something’ and /‘dʒʊdʒʊ/ > [‘dʒʊndʒʊ] ‘older sister among females’.

All vowels are produced as [+retracted] wherever they

	BILABIAL	DENTAL ~ ALVEOLAR	APICO-ALVEOLAR	ALVEO-PALATAL ~ PALATAL	VELAR	GLOTTAL
STOP	p b	t			k, k ^w	ʔ
FRICATIVE		s	(s)	ç		h
AFFRICATE		ð	ts dz	tç dz		
NASAL	m	n				
LIQUID		l	ɬ			
APPROXIMANT	β			j		

Source: own elaboration, 2020.

General phonological processes in this language embody the following:

(i) **Prenasalisation** of obstruents occurs when the rule

$$([\text{+voiced}] > [\text{+prenasalised}]) / [\text{+obstruent}] > [\text{+voiced} / \text{+obstruent}] / \text{V}_-$$

takes place. Examples of this are /‘bʊbʊ/ > [‘bʊ.mβʊ] ‘rubbish’, /ʔa‘βadʒa/ > [ʔa.‘wa.ɲdʒa] ‘tapir’ and /ʔe‘dzici/ > [ʔe.‘ɲdzi.ɛi] ‘path’. Not only does this process apply root internally, but it can also be triggered by the obstruent occurring after a vowel which belongs to a different previous lexical item (e.g. /ta ‘bʊβi/ > [ta ‘mβʊ.βi] ‘his cousin’).

(ii) **Syncope** of /β/, /ð/ and /h/ is common in naturalistic speech, which may be due to the voiced qualities of these phonemes when they surface between vowels. For instance, tuwe /‘tʊβɛ/ ‘3SG, that’ may be pronounced as [‘tʊ.βɛ] or [‘twe] merging both vowels in a single syllable. The same happens in /tsi‘ne=ðʊ/ ‘day=LOC’ that can be pronounced as [tsi.‘neʊ], or with /‘tɛuha ‘taɣa/ ‘head-hit’ which is realised as [tɛwa.‘ta.ɣa].

(iii) **Laryngealisation** is attested when the glottal stop is realised weakly at the beginning of a word which is preceded by the final vowel of another lexical item such as in /‘ʔiteʊ ‘ʔanʊ/ ‘that woman over there’ > [‘ʔi.teʊ ‘a.nʊ]. It can also happen root internally, e.g. /ʔe‘heʔe/ ‘yes’ that may be realised as [‘ʔɛ.ɛ] and /sa‘ʔasi/ > [sɛ.‘a.si] ‘coca plant’. In any case, the glottal stop is omitted and laryngealisation is its only trace.

(iv) **Velarization** of /β/ is a matter of distribution according to: (/β/ > [w] / _ [a]), but it remains bilabial in (/β/ > [β] / _ elsewhere). Examples of these rules are /ʔe‘βane/ ‘wife’ > [ʔe.‘wa.ne], /‘ʔeβi/ ‘nose’ > [‘ʔe.βi], /‘kwaβɛ/ ‘manioc’ > [‘kwa.βɛ], and /βʊdʒʊ/ ‘smoke’ > [βʊ.ɲdʒʊ]. /n/ and /h/ may also undergo velarization to become [ŋ] and [x], but it depends on a morphophonological process discussed in §3.2 and 3.3.

3.2. Syllable structure

Syllables in *Maropa* are relatively simple since they display an obligatory vocalic nucleus and consonantal onset underlyingly. Thus, lexical units cannot begin with

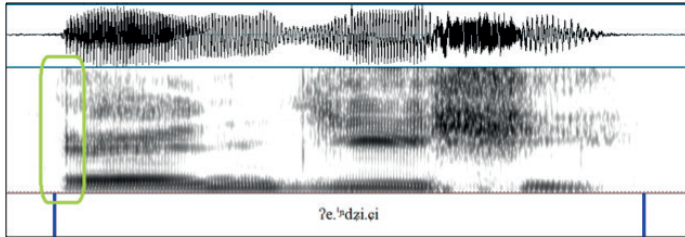
a single nucleus vowel, and must, in turn, be accompanied by a consonant or a glide originated from a vowel to occupy the onset slot.

The glottal stop [ʔ] can also fill the slot for onsets as in *Spectrogram 1*, which may expand as laryngealisation in the vowel that follows, or be pronounced simply as laryngealisation, whose presence supports the idea of strictly having CV syllables in this language.

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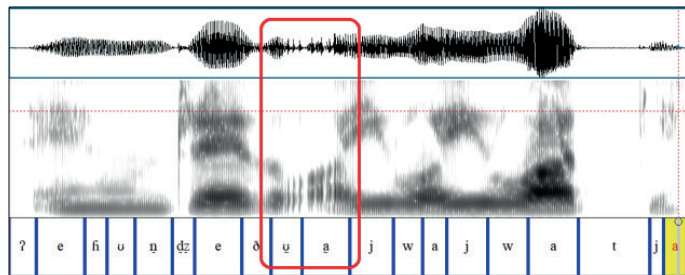
Spectrogram 1. Onset glottal stop in the word ʔeyhishi ‘path’ marked in light green.



Source: own elaboration 2020.

More evidence for this is found in items in combination in which a term starting with a glottal stop is preceded by another element ending in a vowel, as in *Spectrogram 2*, where the glottal stop is realised as laryngealisation between vowels [ʊ] and [a] surrounded in red.

Spectrogram 2. ʔejurhedu ʔaiwaiwatia ‘she went to town to make a call’.



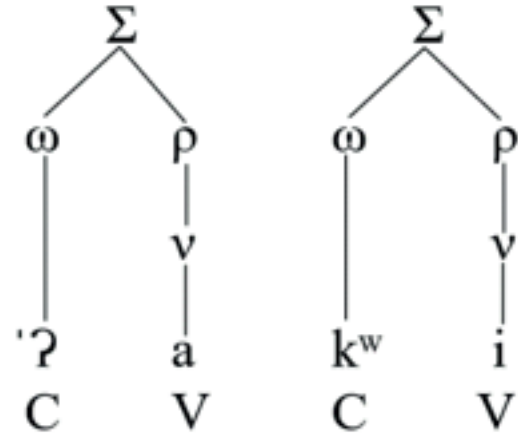
Source: own elaboration, 2020.

Nevertheless, the glottal stop or laryngealisation between vocalic nuclei do not surface when the combination of vowels results in glidization due to their hierarchy. Whenever we get vowel [i] to be combined with either [ʔa, ʔe, ʔʊ], or [a, e, ʊ] followed by [ʔi] in different lexical items, the result will be that the glottal stop will not be able to surface because the glide [j] will satisfy the onset slot for the former combination, and it will become part of the previous nucleus in the latter.

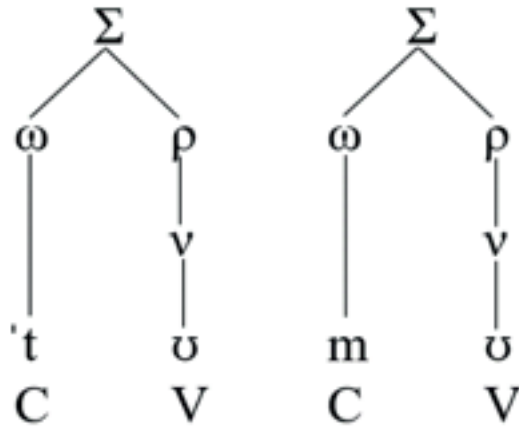
Root internally, we get any of the consonants listed in *Table 2* obligatorily because no internal syllable in Maropa can lack an onset according to our corpus. CV syllable

patterns are shown in the following examples:

(1)



a. ʔakwi ‘tree’



b. tumu ‘stone’

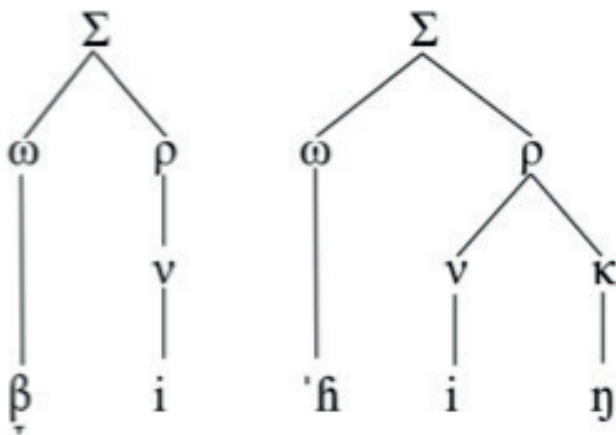
Occasionally, *Maropa* exhibits CVV syllables in which either /i, e/ or /ʊ/ are realised as non syllabic glides /j/ or /w/ respectively, and the other core vowels /a, e, i, ʊ,/ retain their syllabic articulation, with /a/ being always the syllabic nucleus since it cannot be a glide like the other three vowels, see §3.1. From a phonological point of view, the glides behave like onset consonants when no other consonant is present in the syllable to fill this position, but they may act like offglide vowels when there is already a consonant sound in this slot or when happening after the nucleus.

Glottal stops do not manifest if the glides /j, w/ appear root initially before a vowel nucleus because they satisfy the C slot due to their consonantal acoustic nature at a phonetic level, as exemplified in (2).

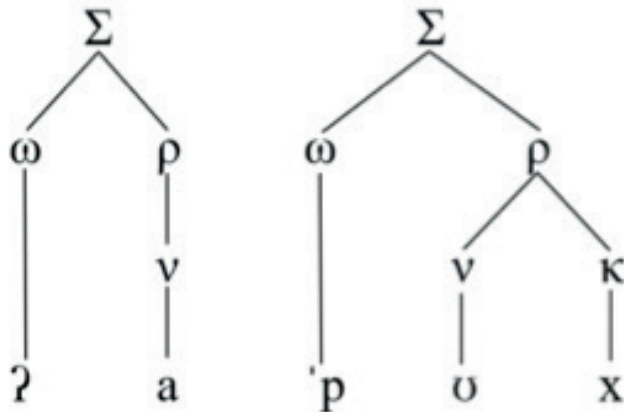
- (2) a. /'ʔea.ɕa/ [ˈja.ɕa] V_gV.CV 'shoulder'
 b. /dʒwi.'ni.ni/ [dʒwi.'ni.ni] CV_gV.CV.CV 'to get angry'
 c. /'ʔeu.βi/ [ˈju.βi]V_gV.CV 'water'
 d. /'seu/ [ˈsew] CVV_g 'how'
 e. /'ʔai/ [ˈʔaj] CVV_g 'what'
 f. /'ʔei.ɛe/ [ˈʔej.ɛe] CVV_g.CV 'alive'

We must mention, however, the presence of surfacing CV(V)C syllables which are produced by a set of two enclitics =ʔin 'INTNS' and =ʔjj 'AUG' (Cf. GALLINATE, 2018b) attaching to a lexical item and modifying its syllabic pattern with a consonant coda. On the one hand, the new CVC syllable can only occur in final position of a phonological word, which is defined and delimited by stress in Maropa. On the other hand, this type of syllables attract accent to their domain (discussed in §3.3), as we can see here below:

CVC syllabic structure in *Maropa*



wiji=ʔin 'big-nosed=INTNS'



ʔapu=ʔjj 'dark=AUG'

CVC syllables due to =ʔin enclitic

- neméin* [ne.'mejn] CV.'CVV_gC 'very painful'
wijín [βi.'fiŋ] CV.'CVC 'very big-nosed'
ʔeyhuyhudáin [ʔe.ʔdzo.ʔdzo.'ðajŋ] CV.CV.CV.'CVV_gC 'it's dripping a lot'

CVC syllables due to =ʔjj enclitic

- najájj* [na.'fiax] CV.'CVC 'too wet'
likájj [li.'kax] CV.'CVC 'too tangled'
ʔapújj [ʔa.'pox] CV.'CVC 'too dark; very late at night'

We can also attest a CVC pattern in the conditional suffix -kwarse 'COND' in (3):

(3)

- a. *mi-baja-kwarse* [mi.'m̩ba.fia.'kʷaɕse] CV.CV.CV.'CVC.CV
 2SG-ask_for-COND
 'You would ask me/if you asked me for something'
 b. *mi-tia-kwarse* [mi.tja.'kʷaɕse] CV.CV_gV.'CVC.CV
 2SG-give-COND
 'I would give you/if I gave you something'

Lastly, a coda consonant can be found in borrowings from Spanish such as *perduna* [per.'ðu.na] 'to forgive' with a CVC.CV.CV pattern, or *suldau* [ˈsul.ðaw] 'soldier' CVC.CVV_g.

3.3. Accentual system

Stress in *Maropa* has been described as to be placed on the penultimate syllable of a lexical item (Cf. GUILLAUME, 2012). It is true that in most roots the stress-bearing unit is placed in the penultimate syllable of a phonological word like the examples in (2); however, some elements display different stress and pitch patterns depending on some morphophonological processes or syntactic relations.

Monosyllabic content words display a high prominence H forming one foot by themselves as in (4a), (4b) and (4c), while monosyllabic function words present L registers as in (4d) (the *te* 'SEP' function word is an exception to this as will be explained further). When some suffixes and enclitics are attached to content words, primary stress may move one syllable to the right, depending on the number of morphemes added to the roots, and the number of syllables of these bound forms as in (5).

(4)

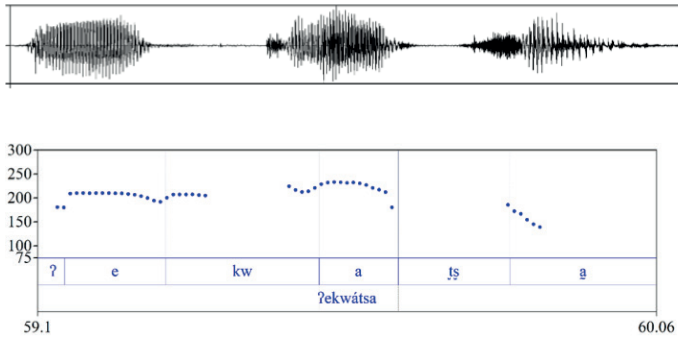
- (H) (H) (H) (L)
 (x) (x) (x) (.)
 a. ʔáj 'what' b. bá 'see' c. té 'garden' d. ta 'his, her'

- (5)
- | | | | |
|----|---------------------|----------------------------|-----------------|
| | (M H L) | (M M H L) | (H L) |
| | (x) (x .) | (x .)(x .) | (x .) |
| a. | ʔaj=fié.ða | ʔa> ^m ba<ti-fie | té=ðu |
| | what=DUB | RFL>see<RFL-IMP | garden=LOC |
| | 'What could it be?' | 'Look' | 'in the garden' |

We can formulate H-L trochaic feet to describe stress in *Maropa* for disyllabic forms as in (5). However, there are some exceptions to this that are found in a couple of roots and expressions such as [ʔe.néj] 'that's true' and [baði] ~ [baɕ] 'really?' which display M-H stress.

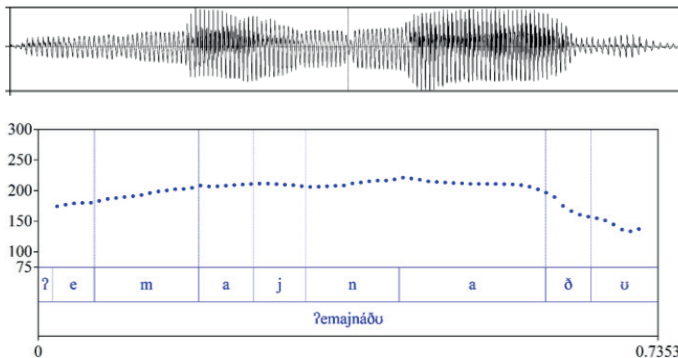
Elements longer than disyllabic tend to show M-H-L patterns and even H-H-L ones as in Figures 1 and 2, and in (6). They are never (L-)L-H-L.

Figure 1. Pitch contour for the word ʔekwatsa 'mouth', with a M-H-L⁸ pitch structure (M=205 Hz, H=222 Hz and L=156 Hz).



Source: own elaboration, 2020.

Figure 2. Pitch contour for the word ʔemajna=du 'mountain=LOC', with a M-H-H-L pitch structure (M=178 Hz, H=208 Hz, H=212 Hz and L=143 Hz).



Source: own elaboration, 2020.

(6)

- | | | |
|----|------------------------|--|
| | (M H H L) | (H H H H L) |
| | (x .)(x .) | (x)(x .)(x .) |
| a. | ʔa-netjána | m-e-eanapá-ða |
| | PST-stand | 1SG-INC-know-HAB |
| | 'He stood up' | 'I know it' |
| | (M M H L) | (M H H H L) |
| | (x .)(x .) | (x)(x .)(x .) |
| c. | ʔek ^w alápa | ʔe ^m bak ^w a- ^u dǰe fia |
| | 'rib' | 'son (lit. child-male)' |

This analysis is problematic since H-H-L phonological words go against HYMAN's (Cf. 2006) *culminativity* criterion for defining a stress system, in which there should only be one syllable to receive the highest metrical prominence within a form. But, if we consider that the stress bearing unit in *Maropa* is the first syllable to receive a high pitch counting from right to left, then the other H syllables can be regarded as not being the locus of primary stress despite their acoustic prominence. Nonetheless, this pattern needs to be studied more deeply to truly verify our hypotheses and M.H.L analysis seems more plausible.

Monosyllabic and some disyllabic function words (e.g. possessive determiners and demonstratives) cannot form feet by themselves in *Maropa* since they have low pitch, so they require a preceding component which can act as core of the metrical unit. In this case, the particle *te*, glossed as a morpheme boundary by GUILLAUME (Cf. 2012), is the main mechanism to build trochaic feet as in (7). This particle's acoustic measures for pitch fluctuate between high and mid calculations which represent the stress-bearing unit when *te* introduces noun phrases.

(7)

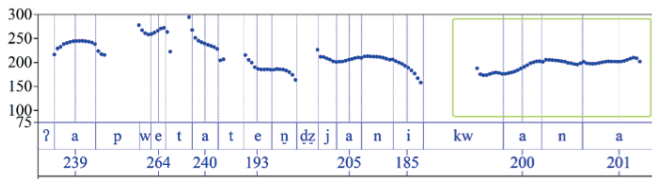
- | | | | | | | |
|----|---|----|--------------|-------|---------|--------|
| | (x .)(x .) | | | | | |
| | [ʔek ^w inatí ^m bu téj ^t eu ʔánu] | | | | | |
| a. | ʔe-kwina-ti-bu | te | ʔichu | ʔanu. | | |
| | INC-leave-DIR-DO&GO | BM | DEM.DIST | woman | | |
| | 'That woman over there was on her way to leave.' arh003 | | | | | |
| | (x .)(x .) | | | | | |
| | [pé ^m bi te ʔanífiwa té ta máca] | | | | | |
| b. | pebi | te | ʔa-niju-a | te | ta | masha. |
| | one | BM | PST-stay-PST | BM | 3SG.GEN | sheep |
| | 'One of his sheep stayed.' mt001.1 | | | | | |

As one can observe in (7b), however, *te* can also precede verb phrases and other categories, but the rules for feet formation and stress assignment for those situations are still not clear. Other root which

needs *te* to build trochaic feet is *ma* ‘NEG’, e.g. *má te mejpááda* ‘I don’t remember it’, where a trochee (x .) is the result of *ma* and *te* combination and stress marked as H-L.

Some types of clauses display idiosyncratic stress qualities in the last of their components in which, instead of getting a H-L pitch for the last two syllables of a form, they are realised as a (M-)M-M pitch sequence as in *Figure 3*. Temporal adverbial and conditional subordinate clauses exhibit such pattern in the last element of their constituents⁹ in (8a), (8b) and (8c).

Figure 3. Pitch measurements (M-M) for *-kwana* ‘PL’ at the end of the adverbial subordinate clause *?apuéta te rhianikwána* ‘when the people went’.



Source: own elaboration, 2020.

(8)

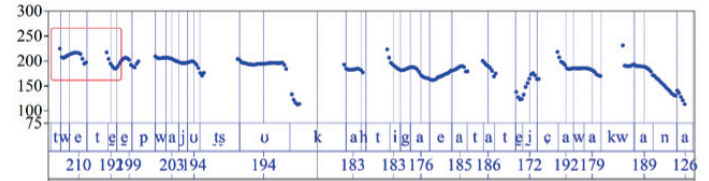
- a. *?a-kwine-ta=be te tuna te ta dupe=du=’*
 PST-arrive-3PL=PFV BM 3PL BM 3SG.GEN pen=LOC=REL
?a-irharha-ta=be te ta ?emetse.
 PST-count-3.ACT=PFVBM 3SG owner
 ‘When they arrived to its pen, its owner counted them (the sheep).’ mt003.1
- b. *?a-pue-ta te rhiani-kwana=’ ?a-kwasi-ta*
 PST-come-3PL BM person-PL=REL PST-have_a_look-3PL
tuna te rara=du.
 3PL BM hole=LOC
 ‘When the people came, they looked into the hole.’ te015
- c. *miwe mi-shanapa-kwarse te ?eme=’ mi-baja-kwarse*
 2SG 2SG-know-COND BM 1SG=REL 2SG-ask_for-COND
te ?eme te ?euwi.
 BM 1SG BM water
 ‘I you knew me, you would ask me for water’ arh013

The main function of the M-M pitch realisation is to mark subordinate clauses of the type we saw in (8), although it is unknown if other dependent structures present such properties.

Another kind of relation between pitch and syntactic domains is that of subject/agent noun phrases which are marked whenever they appear in orders other than the VS/VOA. Thus, the last two syllables of the last element of the S/A noun phrase receive a H-H/M-M pitch if these NPs follow an SV~VAO~A-

VO order. When S/A forms are pronounced as monosyllabic (e.g. *miwe* [‘mi.βe ~ ‘mje] ‘2SG’ or *tuwe* [‘tu.βe ~ ‘twe] ‘3SG’), the *te* particle shows up to satisfy the H-H/M-M composition to form prosodic subject noun phrases. Examples are given in *Figures 4* and *5*, and their glosses in (9a) and (9b) respectively.

Figure 4. Pitch measurement for the subject *twé té* ‘3SG BM’ in an intransitive predicate.



Source: own elaboration, 2020.

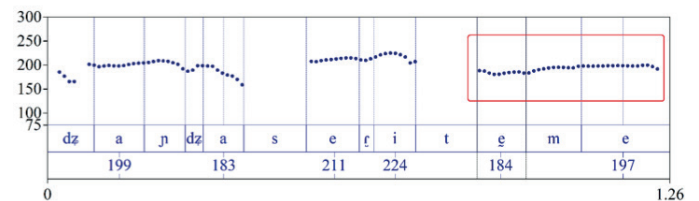
(9)

- (M - M)
 a. [tue]_s te=’ ?e-puayu-tsu=’ kastiga
 3SG BM=NOM INC-come-SS.TMP=REL punish
 ?e-a-ta te ?ishawa-kwana.
 INC-AUX.TR-3.ACT BM devil-PL
 ‘When he comes, he will punish the evil ones.’ te030

- (M-M)
 b. [?eka tata=’]_A k-e-shanapa-didi-ta-da.
 1PL.GEN father=NOM 1PL-INC-know-WELL-3.ACT-HAB
 ‘Our father knows us well.’ te022

It is possible that this prosodic feature is due to the intonational contour in *Maropa* declarative sentences. Nonetheless, there are utterances in which final S/A units display a H-H/M-M pitch, but object NPs always display H-L measurements in the last two syllables of their last constituent as in *Figures 6, 7 and 8*.

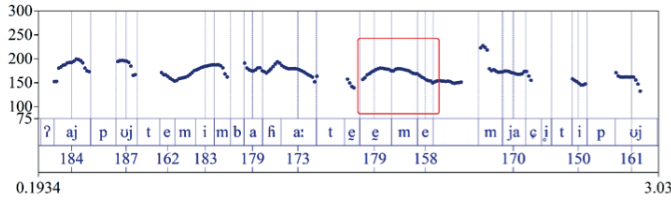
Figure 6. Sentence final M-M pitch for the subject *?émé* ‘1SG.NOM’ in *yhayhaseri te ?émé* ‘I feel like eating’.



Source: own elaboration, 2020.

Figure 7. H-L pitch for the direct object *?eme* ‘1SG’ in *?ai puji te mibajada te ?eme miashitipuji?* ‘Why do

you ask me for something you can drink?’



Source: own elaboration, 2020.

As we saw in §3.2, the enclitics =’in ‘INTNS’ and =’jj ‘AUG’ attract the primary stress to the last syllable of the phonological word to which they attach. The pitch sequence we get is (M)M-H as we will see below.

(10)

a. $\begin{matrix} M & M & M & H \\ \text{merhetsad} & \text{áin} & & \end{matrix}$ ‘I’m so full’	b. $\begin{matrix} M & M & M & H \\ \text{jatishaj} & \text{in} & & \end{matrix}$ ‘very thick eyebrowed’
c. $\begin{matrix} M & H \\ \text{bur} & \text{ájj} & & \end{matrix}$ ‘way to tasteless’	d. $\begin{matrix} M & H \\ \text{chir} & \text{ájj} & & \end{matrix}$ ‘too shiny’

The reason for the primary stress assignment to the rightmost syllable of a phonological word is the presence of coda consonants which modifies syllabic weight. Syllables with a CVC structure are heavier than an element with a CV pattern, and therefore, they become the stress-bearing units in a PWd.

We end this section by stating that there are some processes related to stress change and rules which will not be discussed in this paper. But some of them have to do with morphemes that are always stressed, future tense constructions and /h/ apocope which triggers stress displacement either to the right or left syllables.

4. THE AFFRICATE SERIES

We begin this section by highlighting the fact that Maropa has a series of four affricate consonants as we saw in §3.1 /tɕ t ɕ, dz/. The first two are reflexes of *c¹⁰ and *d in *Proto Takana* (Cf. GIRARD, 1971) respectively, and /tɕ/ developed from *y [j], although some roots present the relation of *c > [tɕ], see §4.1. No author has talked about the presence of [dz] in *Maropa*¹¹, so no reconstruction for this phone has been given in the protolanguage; nevertheless, I will provide a hypothesis for identifying its origin in §4.2.

4.1. The alternative development of /tɕ/

This is a voiceless alveopalatal affricate consonant in *Maropa* and, as mentioned before, is a reflex of *Proto Takana* *y [j]. It could be argued that [tɕ] is an allophone of the /tɕ/ consonant in the case

(/tɕ/ > [tɕ] / _ jV[a, e, u]), but [tɕi] combinations are allowed in this language, e.g. [’tsi.ne] ‘day’ and [’me.tɕi] ‘earth’. Some examples of [tɕ] are given in (11):

a. [’?itea] ‘to put’	b. [’tɕofie] ‘to jump, leap’
c. [to’eeeme] ‘strong’	d. [’katei] ‘to bite’

However, some elements contain [tɕ] where /tɕ/ would be expected based on comparisons of other Takanan languages with the same reflexes related to *c GIRARD (Cf. 1971: 32) proposed a case of dissimilation by which *c became a voiceless alveopalatal affricate when followed by a syllable with [ʎ] as coda, and he illustrates this situation with *čondzi* ‘armadillo’ and *ečendzo* ‘chest’ for *Reyesano* and *ečendzu* for *Maropa*¹². When we compare the aforementioned forms with those of sister languages such as *Araona*, *Cavineña*, *Ese’ejja* and *Tacana*, the result is that Girard’s assumptions on *c > [tɕ] change is actually a reality. Examples in (12) will show the *Maropa* phonetic transcriptions on the left compared with those of cognates in other Takanan languages on the right¹³.

(12)

a. ?e’tɕeʎdzʊ ‘chest’	Tac	eʎʎ u ¹⁴	
	Ara	’tseʎdo	
	Ese	?e’sedʎo ~ ?e’kʎa	
b. ’tɕeʎdʎ ‘nine-banded armadillo’	Tac	’tɕudʎ	
	Ara	’tsoʎdi	
	Ese	/so’ʎpa/ ¹⁵	[so’ʎpa]
	Cav	’tsudi	
c. ’tɕeʎdzʊ ‘hiccup’	Tac	’tɕudʎ	
	Ara	’tsoʎdo	
	Cav	tsu’doja	‘to hiccup’
d. ’teiʎdʎ ‘little male brother of a female’	Tac	’tejdi	‘diminutive’
	Ara	’tsiʎdi	‘little’
	Ese	-sisi	‘small, little’
	Cav	-tei	‘diminutive’
e. ’teaʎdʎ ‘scab, wound’	Tac	’teadi	‘scab’
	Ara	’zaʎdi	‘wound’
	Cav	’teadi	‘scab’

The examples from (12a) to (12c), confirm Girard’s statement of the development of [tɕ] before syllables having [ʎ] as an onset. Since dissimilation is a phenomenon “by which one sound becomes more dissimilar to some neighbouring sound (DIXON,

2010: 335)”, we can state that [tɛ] arose instead of [ts] in *Maropa* as an effect of the voiced affricate in the next syllable to be acoustically distinguishable enough. The other languages retained **c* reflexes in those environments most likely because the following syllables do not present affricate onsets but rather stop ones.

On the other hand, (12d) exhibits that *Araona* has retained [ts] but *Maropa* and *Tacana* had an innovation for the presence of [tɛ] before the syllable containing [ɟʒ] and [dʒ] respectively. (12e) shows that *Maropa*, *Tacana* and *Cavineña* converged in the transformation of **c* > [tɛ] in this example but *Araona* has [z] with respect to the proto form.

Although it is not certain when **y* [j] developed into [tɛ] in *Maropa*, it is fair to consider that the (**c* > [tɛ] / _V.[ɟʒ]V) change took place once the voiceless alveopalatal affricate was present in the system (mainly because *Tacana* and *Araona* do not follow the rule).

My data does not show if **c* became alveopalatal when positioned in the first syllable of a trisyllabic root with [ɟʒ] in the onset of the last syllable. It has not been tested if this process only affected [ts] in syllables on the left or if it can also do so in those located on the right.

Nevertheless, this is not the sole case in which a configuration in the articulation of a sound happened in *Maropa*. Next, we will see a situation where **d* reflexes in *Maropa* manifest in two different ways as in the case we reviewed in this section.

4.2. Origin of [dz] in *Maropa*

Now we will look into the instances of the voiced alveopalatal affricate consonant in *Maropa*. This sound has two different correspondences with *Proto Takana* **d* and **j*. Even though **d* reflexes in this language are generally linked to the affricate [ɟʒ], I state they are also related to /dz/.

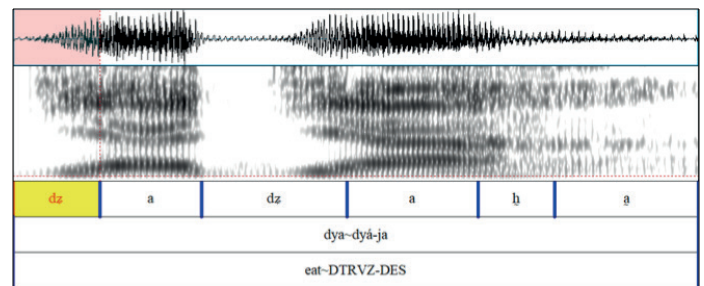
The appearance rate of /dz/ at the lexical level is very low (less than 10 roots and stems) See GALLINATE, 2018a for a discussion on this phone’s acoustic properties, minimal pairs, phonological behaviour and phonological status. Consider the examples below:

(13)

- | | | | | |
|----|---------------------|-------------|-------|---|
| a. | [dza] ¹⁶ | ‘to eat’ b. | [dzu] | ‘to drip, to pour’ |
| c. | [‘dzusu] | ‘god’ | d. | [ʔami- ¹⁷ dziei] ‘vein (blood-path)’ |

All forms for [dz] in (13) evolved diachronically in *Maropa* through different mechanisms. For *yha* [dza] in (13a), the most plausible origin is that of /ɟj-a/ ¹⁷ ‘eat-formative’ (Cf. GUILLAUME, 2018, personal communication) which underwent palatalization of /ɟ/ due to the presence of /a/ in the formative affix (a similar case of word formation is noted for *Araona* in TALLMAN, 2019). The affricate [dz] consolidated its articulation in [dza] (not **[dzja]* nor **[ɟja]*), and the Tacana cognate for this root is also [dza] (Fieldnotes, 2018), as in *Spectrogram 3*.

Spectrogram 3. [dz] in dyadyaja [dza ‘dzaha] ‘He wants to eat’ in Tacana.



Source: own elaboration, 2020.

(13b) shows [dzu] ‘to drip’ which GIRARD (Cf. 1971) reconstructed to **ju* where no palatalization happened for the consonant in question. I will talk about the probable origin of this sound in following paragraphs when comparing it with sister languages.

The root [‘dzusu] ‘god’ is actually a borrowing from Spanish <dios> [‘djos]. Since it was incorporated into *Maropa*, it was adapted to fit phonological criteria in this language. Thus, the closest phoneme to incorporate the Spanish sequence [dj] was /dz/.

The compound noun *ʔamiyhishi* ‘vein’ in (13d) is based on two roots *ʔami* [‘ʔami] ‘blood’ and *ʔeyhishi* [ʔe¹⁷dziei] ‘path’. The [dz] sound in the latter is a clear reflex of **d* which originally represented [ɟʒ] in the language but which went through trans-syllabic assimilation in certain contexts.

The assimilation of /dz/ to become [dz] was motivated by the presence of the voiceless alveopalatal fricative [ɸ] in the onset of the following syllable. This was performed to facilitate an alveopalatal articulation in both syllabic onsets. However, it still

made that both onsets in the two adjacent syllables were different in their voicing and manner of articulation to be perceptually contrasted.

We confirm the trans-syllabic assimilation when we compare the forms of other *Takanan* languages on the right with those of *Maropa* on the left when [dz] precedes the fricative [s] in (14).

(14)

a. ʔe ^h dziei	‘path’	Tac	eḏḏi	
		Ara	‘dizi	
		Ese	ʔe ^h joxi	
		Cav	e ^h dihi	
b. ʔema ^h dziea	‘knee’	Tac	eḏḏat	ewa
		Ara	‘ma ^h daha	
		Ese	ʔekiḃo ^h ʃaxa ¹⁸	~ʔek ^{wi} ʔo ^h ʃaxa
		Cav	eda ^h naka	
c. dzu ^h dziei	‘anus’	Tac	‘ḏḏi	
~‘dzwiei		Ara	do ^h mitsi	
d. dzu	‘to drip, to pour’	Tac	ḏḏoḏḏav	‘drop, to drip’
		Ara	zoja	‘to pour’
		Ese	ʃo	‘to pour’
		Cav	huli	‘to flow, to leak’

For (14a), the reflexes of *d remained [ḏ], [d] and [d] for *Tacana*, *Araona* and *Cavineña* respectively, except in *Maropa* [dz]. Ese ‘*ejja*’ uses [h] as the onset for the syllable which should correspond to the reflex in question, and might be explained by an innovation due to a *closed~open* glottis alternation which may not have allowed the phonetic realisation of ^h[ḏ] to be a glottal stop [ʔ] in */ʔe^hḏjoxi/ > */ʔe^hʔjoxi/ since there was already one word initially in [ʔe^hjoxi] and thus it turned into an open glottis segment [h].

On the other hand, the examples in (14b) show that the languages of the *Takanik* branch have cognates where *Tacana* and *Araona* kept *d reflexes, but *Maropa* displays a trans-syllabic assimilated form due

to [s]. Ese ‘*ejja*’ employs different terms for this set of cognates, and *Cavineña* seems to have underwent metathesis but retained [d].

The items in (14c), nevertheless, exhibit variations among the *Takanik* languages’ cognates. *Yhuyhishi* [dzu^hdziei] for *Maropa* most probably developed from *rhumi* [‘ḏzumi] ‘faeces’ and *ʔeyhishi*

[ʔe^hdziei] ‘path’, which exerted trans-syllabic assimilation in concatenated way leftwards. The voiced apical alveolar affricate of *rhumi* was assimilated into [dz] when composition occurred for this word by effects of the next syllables containing alveopalatal consonants. It has a variant [‘dzwiei] which resembles its *Tacana* cognate [‘ḏḏi], while *Araona* [do^hmitsi] seems to have an origin also in [‘domi] ‘faeces’ and in [tsi], whose meaning is not clear (but an old form of *dizi* ‘path’ would be a possible source).

The last terms in (14d) were reconstructed by GIRARD (Cf. 1971) as *ju only based on evidence from *Tacana*, Ese ‘*ejja*’ and *Cavineña*, so I provided cognates for *Araona* and *Maropa* to expand the sam-

ple. If Girard's reconstruction is accurate, it means that the alveopalatal affricate in [dzu] 'to drip' is the reflex of a proto-phoneme other than *d. The form of this root should then be [su] according to the author's guidelines, but I propose that it dissimilated into [dzu] as a result of the frequent use of its reduplicated form *yhu~yhu* 'to pour~DTRVZ', with an anticausative meaning as in the Tacana example [dɔdɔ]. In such case, it is plausible that /su~su/ was realised as /su~su/ and then as [dzu~su], and thus it consolidated that way in *Maropa* in both its base and reduplicated versions. It consolidated that way in *Maropa* in both its base and reduplicated versions.

It is still uncertain whether the palatalization of [dz] as in *yha* 'to eat' took place before developing /dz/ as a phoneme in *Maropa* or it was the trans-syllabic assimilation of the voiced apical alveolar affricate which allowed more terms to follow an alveopalatal pronunciation. Evidence from *Tacana* and *Araona* unveil that this could have been a marginal sound in the *Takanik* branch. In *Tacana*, we attest the forms *dya*¹⁹ [dza] 'to eat', *dyusu* [ˈdʒusu] 'god' and *buendya* [bweɲˈdza] 'good morning', where *dya* displays the same pronunciation as its *Maropa* cognate according to my fieldnotes in 2018. One of the processes of palatalization of /d/ in *Araona* produces a voiced palatal affricate and the rule for that is (/d/ > [dʒ] / i _), as in *pi=di=ma* 'NEG=eat=NEG' (Cf. EMKOW, 2006: 70) which is pronounced as [piˈdʒima]. The question is if *Maropa* might have undergone a similar process to get the voiced alveopalatal affricate as a phoneme. However, this innovation was the beginning for this language to adapt borrowings into its lexicon such as *yhusu* [ˈdʒusu] 'god' and *yhusulupae* [dʒusuluˈpaj] 'thank you'.

It is more likely that the *Proto-Takanik* reconstruction for 'to eat' was *di and the alveopalatal form of *Maropa* and *Tacana* arose in one of these two and spread to the other due to geographical proximity.

5. CONCLUSIONS

The main purpose of this paper dealt with describing the segmental and prosodic system of *Maropa*. The vocalic and the consonantal phonological processes were addressed to provide a general view on the segments of this language. The syllable structure allows all consonants in onset position, but only /n/, /h/ and /ʃ/ can occupy the coda slot in a few cases. The

syllabic nucleus can be composed by any of the four vowels, and glides (which are underlyingly vowels) can also be positioned before and after the nuclei.

Stress features in *Maropa* embody different characteristics and functions not only at a merely prosodic domain, but also at a prosody-syntax interface. Primary stress is assigned to the penultimate syllable of a phonological word phonetically marked by a high pitch, while the last syllable bears a low pitch, and other syllables have a mid/high pitch in cases of trisyllabic or longer elements. M-M pitch contour can mark adverbial relative clauses and give information that an NP is the subject/agent of a sentence whenever the VS/VOA order is changed. Finally, we saw that stress is sensitive to weight because codas modify syllables by making them heavier and attracting primary stress.

A secondary aim of this text was to explain the series of affricates in *Maropa*, especially the alveopalatal consonants /tɕ/ and /dʒ/. The origin of the first can be understood as a reflex of Proto-Takana *y according to GIRARD (Cf. 1971), but it can appear in items where reflexes of *ç should, based on comparisons of cognates with sister languages. Girard's observations on this case were helpful to identify a process of dissimilation which was produced by a syllable containing an affricate [dʒ] which turned the [tɕ] onset of a preceding syllable into [tɕ].

In an inverse fashion, a trans-syllabic assimilation mechanism triggered the development of /dʒ/, which is a reflex of *d and *j, originated from [dʒ] whenever it was followed by a syllable displaying [ɕ] as onset. This phenomenon is no longer productive in this language and only less than 10 roots present the voiced alveopalatal affricate. However, this phoneme caused by assimilation was helpful to adapt Spanish borrowings into *Maropa* turning [dj] into [dʒ] but not into *[dʒj].

The existence of both alveopalatal affricates as distinct segments from the apical alveolar ones was proven to have happened diachronically affected by dissimilative and assimilative operations. The former's main function was to differentiate as much as possible contiguous sounds within a lexical element, so they evolved into opposing phonemes in such contexts. The latter dealt with making it easier to pronounce a sequence of alveopalatal sounds instead

of an apical alveolar affricate into an alveopalatal fricative consonant.

ABBREVIATIONS

1, 2, 3	1 st , 2 nd , 3 rd person	INTNS	intensifier
A	transitive subject	LOC	locative
ACT	active	NEG	negative
AUG	augmentative	NOM	nominative
AUX.TR	transitive auxiliary	O	object
BM	boundary marker	PFV	perfective
C	consonant	PL	plural
COND	conditional	PST	past
DEM	demonstrative	PURP	purposive
DES	desiderative	REL	relative
DIR	directional	REM.PST	remote past
DIST	distal	RFL	reflexive
DRTVZ	detransitivizer	S	intransitive subject
DUB	dubitative	SG	singular
GEN	genitive	SS	same subject
HAB	habitual	TMP	temporal subordinator
IMP	imperative	V	vowel, verb
INC	incompletive	V _g	glidized vowel

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Notes

¹That is why this language has the alternate name of Reyesano in both local communities and in academic instances.

²The term for the linguistic family will be written with <k> Takanan throughout the text, and the name of the language will be written Tacana with <c> as an essential distinction to avoid possible confusions on the senses of what is being described.

³<http://globalrecordings.net/es/language/rej>.

⁴In this case, the fricative /h/ is elided as a common phenomenon in Maropa.

⁵[ɣ] is a marginal phoneme only present in Spanish borrowings.

⁶In the case of /h/, when it is pronounced between vowels, it tends to become voiced [ɦ] (see GALLINATE, 2018a for a detailed review of this allophone).

⁷I will use H for high pitch and stress instead of x, M for mid pitch and L for low pitch because these are the three different possibilities in which syllables manifest stress in Maropa. M and L stand for syllables which do not receive primary stress.

⁸Longer units also have a M-M-H-L stress structure, but an M pitch is more common in the first syllable of longer than trisyllabic elements, e.g. M-H-H-L, although H-H-H-L occurrences are also possible.

⁹I use a morpheme boundary =´ to represent the stress quality change of these clauses.

¹⁰*ç has a retroflex phonetic value [tʃ] for this author.

¹¹Jesús CÁCERES (2012) actually gives entries containing this sound in his dictionary, but he uses the same orthographic representation for [j] and [dʒ], namely <y>, and nothing is said about the difference of this sounds throughout the text.

¹²He differentiates between Reyesano and Maropa, although such distinction does not exist at the present time.

¹³Abbreviations for languages will be Ara=Araona, Cav=Cavineña, Ese=Ese ´ejja and Tac=Tacana.

¹⁴The phonetic transcriptions are mine, based on the literature available on the phonology of these languages (CAMP & LICCARDI, 1989 and GUILLAUME, 2008 for Cavineña; VUILLERMET, 2006, 2012 for Ese ´ejja; PITMAN, 1981 and EMKOW, 2006 for Araona; MEEPB et al., 2011 and GUILLAUME, 2018b for Tacana) and my fieldnotes and analysis for Tacana and Ese ´ejja thanks to VUILLERMET, 2018.

¹⁵This actually means ‘giant armadillo’.

¹⁶I do not mark stress in the transcriptions of verb roots because they are bounded and therefore sensitive to change the stress locus when affixes or clitics are added.

¹⁷It is more accurate to state that Maropa had a stop [d] in early stages of its history which became an affricate [dʒ] at some point.

¹⁸The form ʔekwiʔoʔfaxa belongs to the Ese ´ejja Madidi dialect and ʔekiʃoʔfaxa to the Sonene variant (VUILLERMET, 2012).

¹⁹I use <dy> according to the alphabet designed by the Tacana Language and Culture Institute of Tumupasa.

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