

## The historical phonology of Paunaka (Arawakan) Fonologia histórica do Paunaka (Aruaque)

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**Abstract:** This paper applies the comparative method to unravel the historical development of the segmental phonology of Paunaka, an Arawakan language of Bolivia. Although the Paunaka vowel system features a single back rounded vowel, it is rather simple to show that it derives from a system with two back rounded qualities *\*u* and *\*o*, but that the former segment shifted to a high central unrounded vowel *i*. The language has lost *\*r* unconditionally, implying that Paunaka items with *r* are probable loanwords. Paunaka underwent a spirantization of *\*ts*, thus merging this affricate with the fricative *\*s*. Although Paunaka shares a coronalization of *\*k > s* with Proto-Mojeño, most of the phonological developments that affected Paunaka are either recurrent in the Arawakan language family or only superficially similar to developments in related languages, and thus provide little weight as evidence for subgrouping. An Appendix is also included, with 105 etymologies matching Paunaka lexical and grammatical morphemes with their cognates in Proto-Mojeño, the two extant Mojeño dialects (Ignaciano and Trinitario) and Terena.

**Keywords:** Comparative reconstruction. Sound change. Arawakan languages. Paunaka.

**Resumo:** Este trabalho emprega o método comparativo com o objetivo de elucidar o desenvolvimento histórico da fonologia segmental do Paunaka, uma língua Aruaque da Bolívia. Embora o inventário vocálico do Paunaka tenha apenas uma vogal posterior arredondada, é relativamente simples mostrar que o mesmo se deriva de um inventário com duas qualidades vocálicas posteriores arredondadas, *\*u* e *\*o*, mas que o primeiro desses segmentos se tornou uma vogal central não arredondada *i*. O Paunaka perdeu *\*r* em todos os contextos, um fato que em si sugere que formas contendo *r* sejam empréstimos com entrada na língua em data posterior a essa mudança. O Paunaka foi sujeito a fricativização de *\*ts*, que, assim, têm reflexos idênticos aos de *\*s*. Embora o Paunaka e o Proto-Mojeño apresentem a coronalização *\*k > s*, a maior parte dos desenvolvimentos fonológicos do Paunaka são recorrentes em diversas línguas da família ou possuem apenas uma similaridade superficial com desenvolvimentos ocorridos em outras línguas, não sendo, portanto, muito relevantes para o estabelecimento de uma classificação interna. Por fim, é apresentado no Apêndice um conjunto de etimologias contendo cognatos no Proto-Mojeño e no Terena de 105 morfemas lexicais e gramaticais do Paunaka.

**Palavras-chave:** Reconstrução comparativa. Mudança sonora. Línguas Aruaques. Paunaka.

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## INTRODUCTION

Paunaka (ISO 639-3: pnk) is a severely endangered Arawakan<sup>1</sup> language spoken by less than ten individuals near Santa Cruz de la Sierra, Bolivia (Danielsen; Terhart, 2014). Until recently, all the evidence available on this language consisted of a couple of poorly-transcribed wordlists (Cardús, 1886, p. 319). Fortunately, however, the language has been under documentation by Lena Terhart and Swintha Danielsen, and much more extensive and reliable data on this language has become available in the last few years. Because of this paucity of data, Paunaka has not figured in most comparative investigations of Arawakan languages, apart from a recent study by Jolkesky (2016).

This paper examines comparative evidence to throw further light on the historical development of Paunaka phonology while at the same time addressing issues of broader significance for Arawakan historical linguistics. One central issue in the phonological reconstruction of Proto-Arawakan is the uncertain *status* of the contrast between two back rounded vowels (Payne, 1991, p. 476-478; Aikhenvald, 1999, p. 75-78). As Paunaka is one of the many languages in the family lacking this contrast (see the section ‘An outline of Paunaka phonology’), its inclusion in comparative investigations could provide additional evidence for the absence of the opposition between *o* and *u* in the proto-language. However, it is straightforward to show that the unrounded vowel *i*, which, in this language, contrasts with rounded *u*, is an unconditioned reflex of *\*u*, while *u* derives from *\*o*, thus tracing the Paunaka system to an inventory which, just like Proto-Mojeño and Terena, does contrast two back rounded vowels (see the section ‘Vowel inventory’). For consonants, Paunaka cognates are crucial for showing that a fricative debuccalization change occurred independently in both Terena and Mojeño (see the section on ‘Consonant correspondences’). Concerning the implications of sound change developments for internal classification, vowel correspondences suggest that both Paunaka and Baure show the fronting of a back rounded vowel and that this could potentially constitute a (so far unrecognized) shared innovation. As discussed here, though, the developments inferred for the phonological history of Paunaka offer very little to the problem of internal classification, being either exclusively attested in this language or only superficially similar to developments attested elsewhere. However, before presenting the main developments in the historical phonology of Paunaka, a brief discussion of the internal classification of the language and the sample of languages chosen here for comparison with Paunaka are the topic of the next section.

## SOME ASSUMPTIONS AND THE SCOPE OF THE PRESENT INVESTIGATION

The languages usually taken to be particularly closely related to Paunaka are: Mojeño, with its two extant varieties Ignaciano (ISO 639-3: ign) and Trinitario (ISO 639-3: trn), Baure (ISO 639-3: brg), Paikoneka (no ISO code; Glottocode: paic1240) and Terena (ISO 639-3: ter) (Aikhenvald, 1999, p. 67; Campbell, 1997, p. 181, 2012, p. 75; Danielsen, 2011, p. 517; Danielsen; Terhart, 2014, p. 221). I will focus here on a comparison with Terena and Mojeño, as inspection of cognate sets has suggested that these languages are the most informative as far as Paunaka historical phonology is concerned (as shown in the Appendix, the proportion of shared cognates between Paunaka and Mojeño is particularly impressive). Focusing on a comparison with Mojeño and Terena seems justified for the following reasons: first, Paikoneka can be excluded without loss since it is already extinct and only very superficially attested (Danielsen; Terhart, 2014, p. 222). Second, Modern Baure, the best attested variety of this language, seems to be exceedingly innovative in its phonology,

<sup>1</sup> I will refer to this family of clearly related languages by the label ‘Arawakan’, instead of the competing ‘Arawak’. See Michael and Granadillo (2014, p. 10) for this minor terminological quibble.

so much that cognate identification is many times hampered by vowel losses (mostly apocope) and changes in vowel quality (umlaut). This is illustrated in Table 1 by a comparison of forms from sources on Old Baure (18<sup>th</sup> century; see Adam; Leclerc, 1880) and their correspondents in Modern Baure (data from Danielsen, 2013, p. 288, I retain the source orthography; see Danielsen, 2007, p. 51-55 for further discussion)<sup>2</sup>.

Table 1. Comparison of Old Baure and Modern Baure forms.

	Old Baure	Modern Baure
Woman	<i>eteno</i>	<i>eton</i>
Hand	<i>wejise</i>	<i>-wojis</i>
Ear	<i>chakane</i>	<i>-chokon</i>
Moon	<i>kejere</i>	<i>kijer</i>

Some amount of systematic internal reconstruction comparing different Baure dialects and making full use of the documentation available on Old Baure is necessary before the language can be profitably used for casting light on the development of an apparently more conservative related language (I will come back to Baure, however, in the final section of this paper, where the issue of internal classification will be discussed). A third factor justifying this narrowed comparative focus relates to the extent of the available documentation on Paunaka and to the immediate goals of the present study. Given that our goal of elucidating the historical phonology of Paunaka is necessarily founded on establishing a sizeable number of etymologies matching Paunaka forms and their cognates in other languages, restricting the comparison to particularly closely related languages will certainly yield a higher number of cognates, specially so if the languages brought into comparison happen to be particularly well-documented. Mojeño and Terena fit both desiderata: first, preliminary evidence suggests that Paunaka is particularly closely related to Mojeño (Danielsen; Terhart, 2014; Jolkesky, 2016) and, in addition, that Terena and Mojeño are also closely related (Carvalho, 2017a). On the availability of extensive data, for Mojeño there are three dictionaries: Gill (1993) on the Trinitario variety, Marbán (1701) on 17<sup>th</sup> century Old Mojeño and Ott, W. and Ott, R. (1983) on the Ignaciano variety. These are complemented by a grammar of the Trinitario variety (Gill, 1957), a stream of recent in-depth descriptions of parts of Trinitario phonology, morphology and syntax in Rose (2011, 2014, 2015a), an extensive description of the morphosyntax of Ignaciano (Olza Zubiri et al., 2002) and the grammatical description of Old Mojeño in Marbán (1701). I have also benefited from the Proto-Mojeño (PM) reconstructions of Carvalho and Rose (2018) for comparison with Paunaka. For Terena there are several papers and book-length descriptions authored by Summer Institute of Linguistics (SIL) linguists (Ekdahl; Grimes, 1964; Eastlack, 1968; Bendor-Samuel, 1961), an extremely useful pedagogical grammar in two volumes (Ekdahl; Butler, 1979), an unpublished dictionary (Ekdahl; Butler, 1969) and first-hand, fieldwork data by the author of the present paper. For Paunaka, I rely on Danielsen and Terhart (2014) and Terhart (2014), the former mainly but not exclusively for a description of the phonology and morphology of the language and the latter as a privileged source of lexical data.

## AN OUTLINE OF PAUNAKA PHONOLOGY

The Paunaka inventory of contrastive vowels and consonants is given in Tables 2 and 3, after Danielsen and Terhart (2014).

<sup>2</sup> <j> stands for a glottal fricative *h* and <ch> stands for the affricate *tʃ* in both modern and Old Baure.

Table 2. Paunaka vowels.

	[- Round]		[+ Round]
	Front	Central	Back
High	<i>i</i>	<i>ɨ</i>	<i>u</i>
Mid	<i>e</i>		
Low		<i>a</i>	

Table 3. Paunaka consonants.

	Labial	Alveolar	Palatal	Velar	Glottal
Oral Stop	<i>p</i>	<i>t</i>		<i>k</i>	
Affricate			<i>tʃ</i>		
Fricative	<i>β</i>	<i>s</i>			<i>h</i>
Nasal stop	<i>m</i>	<i>n</i>			
Liquid		<i>r</i>			
Approximant			<i>j</i>		

In its vowel system, Paunaka differs from both Proto-Mojeño and Terena in lacking a contrast between two back rounded vowels and having a contrastive high central vowel *ɨ*. As discussed in ‘Vowel inventory’ though, the Paunaka vowel system is clearly derived from a system with two contrastive back rounded qualities<sup>3</sup>.

The set of contrastive consonants in Table 3 is based on Danielsen and Terhart (2014) but does not include non-contrastive segments or those whose distribution is restricted to obvious loanwords, such as the glottal stop *ʔ* and the palatal fricative *f*.

Paunaka, just like Proto-Mojeño, has a single liquid consonant, a rhotic. Synchronic instances of *r* in the language likely result from borrowing, as comparative data shows that the language has lost *\*r* regularly. The language differs from Proto-Mojeño and from Terena in lacking a contrastive nasal stop *ɲ*, which occurs only as a surface variant in Paunaka (Danielsen; Terhart, 2014), and, also, by lacking an alveolar affricate *ts*, reconstructed for Proto-Mojeño and inferable for earlier stages of Terena (Carvalho; Rose, 2018; Carvalho, 2017c). Finally, like most Arawakan languages, Paunaka organizes its segmental elements in simple CV syllables, eventually tolerating onset-less V syllables in word-initial position and allowing for some amount of tautosyllabic vowel combinations (Danielsen; Terhart, 2014, p. 229). Examples of allowed vowel sequences include: *ai*, in *kupisaire* ‘fox’; *ae*, in the Locative marker *jae* (though here *ae* may be a contextual variant of *ai*<sup>4</sup>); *au*, in *nauku* ‘there’; *ue*, in *kuepi* ‘potato’; *ui*, in *nisuika* ‘I will write’; *ei*, in *tuseina* ‘noon’ and *iu*, in the Demonstrative *tʃiu*. Many of these vowel sequences are found exclusively or frequently across morpheme boundaries only, such as *iu*, in *niuma* ‘my grandfather’. As seen in the next section, many of the vowel clusters result from the historical loss of an intervocalic consonant, either the rhotic *\*r* or the glottal stop *\*ʔ*.

<sup>3</sup> Note that the Paunaka back rounded vowel *u* has a lowered allophone [o] (Danielsen; Terhart, 2014, p. 229). Instances of *o* in available (phonologically transcribed) Paunaka data are restricted to unassimilated Spanish loanwords, such as *comunidad* (Danielsen; Terhart, 2014, p. 249) and *amarillo* (Danielsen; Terhart, 2014, p. 240).

<sup>4</sup> See Danielsen and Terhart (2014, p. 229) for this claim.

## HISTORICAL PHONOLOGY

The segments of the Paunaka inventory appearing in Table 4 have a simple history, being either retentions or the result of phonetic shifts that did not affect previously existing contrasts. Note as well that a glottal stop \*ʔ was unconditionally lost in the language. Both the cognates for each supporting set and the segments in each correspondence are here and elsewhere presented in the order Paunaka, Proto-Mojeño (PM), Terena. For each cognate set a single meaning gloss is given, arguably approximating that of the etymon. The full list of cognate sets given as an Appendix to this paper includes commentaries and notes for those cases where the meaning of one or more cognates deviates from that given in the semantic entry.

Table 4. Correspondence sets.

	Proto-segment	Paunaka	PM	Terena
(a)	*p	p	*p	p
(b)	*m	m	*m	m
(c)	*w	β	*w	w
(d)	*j	j	*j	j
(e)	*n	n	*n	n
(f)	*ʔ	∅	*ʔ	ʔ
(g)	*a	a	*a	a
(h)	*e	e	*e	e
(i)	*i	i	*i	i

Supporting cognate sets for each of the correspondences in Table 4 are given below:

(1) Exemplar cognate sets for each diachronic correspondence

- p* < \**p* : WASH *-kipu* : \**-sipo* : *-kípo*, FEAR *-piku* : \**-piko* : *-píko*,  
BONE *-upe* : \**-ope* : *-ópe*.
- m* < \**m* : EARTH *mute* : \**móte-hi* : *móte*, HUSBAND *-ima* : \**-ima* : *-îma*,  
TAPIR *samu* : \**samo* : *kámo*.
- β < \**w* : BE, STAY *-uβu* : \**-owo* : *-ôwo*, TAKE *-βe-u* : \**-weʔo* : *-wêo*,  
FOOT *-iβu* : \**-iwo-pe*.
- j* < \**j* : WIFE *-jenu* : \**-jeno* : *-jêno*, NIGHT *juti* : \**joti* : *jóti*, HAIR *-hiju* : *-hijo*.
- n* < \**n* : TONGUE *-pe-nene* : \**-nene* : *-nêne*, GO *-junu* : \**-jono* : *-jôno*,  
JAGUAR *isini* : *itfini* : *sîni*.
- ∅ < \*ʔ : HAND *-βui* : \**-woʔu* : *-wôʔu*, HIT *-eu* : \**-eʔo*,  
SOIL *apuke* : \**apókeʔe* : *pokéʔe*.
- a* < \**a* : SUN *satfe* : \**satfe* : *káfe*, EAR *-tfuka* : \**-tfoka*, WORM *kane* : \**kane* : *kâne*.
- e* < \**e* : BREAST *-tfene* : \**-tfene* : *-fêne*, BACK *-keki* : \**-keku* : *-keku*,  
PET *-peu*, \**-pero*, *-pêjo*.
- i* < \**i* : HUSBAND *-ima* : \**-ima* : *-îma*, STONE *mai* : \**mari* : *marîpa*,  
JAGUAR *isini* : \**itfini* : *sîni*.

On the postulated phonetic shift  $*w > \beta$ , note that Paunaka, Mojeño and Terena have a single contrastive consonant whose realization fluctuates between  $[w]$  and  $[\beta]$  (Danielsen; Terhart, 2014, p. 228). Phonological arguments, related to nasality spreading, can be offered for analyzing the Terena consonant in question as underlyingly sonorant, hence  $w$  (Carvalho, 2017b). Though  $w$  and  $\beta$  seem to have become marginally contrastive in the Trinitario dialect of Mojeño, reconstruction of PM  $*w$  is uncontroversial (Carvalho; Rose, 2018). For these reasons, and since a similar pattern is attested far afield in the Arawakan family<sup>5</sup>, I have reconstructed  $*w$  for the common ancestor of Paunaka, Mojeño and Terena, thus implying the minor phonetic shift  $*w > \beta$ <sup>6</sup>.

## VOWEL INVENTORY

Paunaka differs from both Mojeño and Terena in having a single back rounded vowel,  $u$ , while both Proto-Mojeño and Terena show  $u$  and  $o$ . This fact could suggest a simple merger of the two back rounded vowels in Paunaka, a simplification similar to the merger of PM  $*a$  and  $*o$  that took place in the Ignaciano variety of Mojeño (Jolkesky, 2016; Carvalho, 2017a; Carvalho; Rose, 2018)<sup>7</sup>. Comparative data shows, however, that the two non-front, non-low vowels of Paunaka,  $u$  and  $i$ , reflect two back rounded vowels, here reconstructed as  $*o$  and  $*u$  respectively (see Table 5).

Table 5. Correspondence sets.

	Proto-segment	Paunaka	PM	Terena
(a)	$*o$	$u$	$*o$	$o$
(b)	$*u$	$i$	$*u$	$u$

(2) Exemplar cognate sets for each correspondence

(2a) Paunaka  $u$  : PM  $*o$  : Terena  $o$

WING/SHOULDER  $-pu\beta u$  : PM  $*-pawo$  :  $-pôwo$ , MOON  $kuhe$  :  $*kohe$  :  $kohêe$ , NIGHT  $juti$  :  $*joti$  :  $jóti$ ,

WOMAN  $esenu$  :  $*esenø$  :  $sêno$ .

(2b) Paunaka  $i$  : PM  $*u$  : Terena  $u$

HAND  $-\beta u i$  :  $*-wo?u$  :  $-wô?u$ , CLOUD  $iku$  :  $*uko$  :  $úko$ , FIREWOOD  $-jiki-ke$  :  $*-juku-ki$  :  $-júku$ , ANT  $kusi i$  :  $*kotjiru$  :  $kosiu$ .

Jolkesky (2016, p. 17) postulates a third correspondence according to which Paunaka  $u$  would match Mojeño  $u$  as well, thus overlapping with both (2a) and (2b) above (he did not include Terena in his comparative study). This has led Jolkesky (2016) to assign correspondence (2b) above to  $*i$ , since  $*u$  was already reconstructed for this third, identity correspondence. Accordingly, he postulated a merger of two back rounded vowels  $*u$  and  $*o$  in the history of Paunaka and a merger of  $*i$  and  $*u$  in Mojeño (Jolkesky, 2016, p. 30). A critical problem with this proposal is that this putative identity correspondence

<sup>5</sup> See e.g. Mihás (2015, p. 50) for the Alto Perené variety of Ashéninka.

<sup>6</sup> As all the compared languages show the variation  $[w] \sim [\beta]$ , the postulation of this phonetic shift is in a sense contingent on phonological analyses that may contain some element of arbitrariness. It is safer to postulate, however, the existence of a single contrastive unit and to suppose that the same allophony was found at the level of the proto-language.

<sup>7</sup> With regard to phonetic details, the two mergers are not entirely comparable since the Ignaciano merger would have involved an  $a$  rather close to  $o$ . Phonologically, however, both involve unconditioned mergers of non-front vowels. At any rate, the hypothesis of a merger between  $*o$  and  $*u$  as an explanation for the lack of contrastive back rounded vowels in Paunaka can be rejected.

reflecting *\*u* is an artifact and, actually, does not exist<sup>8</sup>. A look at his comparative data (Jolkesky, 2016, p. 18-24) reveals only two forms for which the correspondence Paunaka *u* : PM *\*u* is attested, and both are problematic. For the existing, attested Paunaka noun *it̥i* 'capybara', Jolkesky (2016, p. 19) presents instead a 'Pre-Paunaka' form *\*ut̥i* for which no motivation or evidence exists. Comparing instead the attested Paunaka form *it̥i* with PM *\*ut̥u* 'capybara' (see Appendix) yields an instance of correspondence (2b) above. The other etymology which apparently supports this third correspondence is PM *\*kot̥iru* : Paunaka *kusi* 'ant'. My inspection of first-hand data on Paunaka from Lena Terhart's work has revealed, however, a different form for 'ant', *kusii*, which is completely consistent with correspondence (2b) above (and with other regular correspondences as well), here reconstructed as a reflex of *\*u* and implying thus a change *\*u > i* for Paunaka.

## CONSONANT CORRESPONDENCES

The following sections address the most difficult problems in Paunaka historical phonology: the development of the coronal obstruents, the reflexes of *\*s* and *\*h*, the *status* of the rhotic *r* and the correspondences involving the velar stop *k*.

## CORRESPONDENCES FOR THE CORONAL STOPS AND AFFRICATES

Below we have correspondence sets for alveolar fricatives and affricates, except those that are clearly reflexes of *\*k* (these will be discussed in the section 'The velar stop and diachronic fronting' since they overlap in a crucial way with the identity correspondence for the velar stop *\*k*).

Correspondences (a), (b) and (c) are here reconstructed as reflexes of *\*ts*. De-affrication of *ts* to *s* is independently supported for Terena<sup>9</sup>. The same development can be postulated for Paunaka, which is consistent with the fact that the language lacks *ts* altogether (Danielsen; Terhart, 2014, p. 227). Though both Terena and Paunaka agree in showing the same reflex for all correspondences (a-c) in Table 6, an alveolar fricative *s*, PM calls for the establishment of the three correspondences attested and the varying PM reflexes must be accounted for somehow. The supporting evidence for each correspondence is given in (3a-3c) below, followed by discussion.

Table 6. Correspondence sets.

	Proto-segment	Paunaka	PM	Terena	Contexts
(a)	<i>*ts</i>	<i>s</i>	<i>*ts</i>	<i>s</i>	___ <i>*e, *i</i>
(b)	<i>*ts</i>	<i>s</i>	<i>*tʃ</i>	<i>s</i>	( <i>*i</i> ) ___ <i>*i</i>
(c)	<i>*ts</i>	<i>s</i>	<i>*s</i>	<i>s</i>	___ <i>*o, *a, *e</i>
(d)	<i>*tʃ</i>	<i>tʃ</i>	<i>*tʃ</i>	<i>t</i>	___ <i>*u</i>
(e)	<i>*tʃ</i>	<i>tʃ</i>	<i>*tʃ</i>	<i>ʃ</i>	___ <i>*o, *e, *u</i>
(f)	<i>*t</i>	<i>t</i>	<i>*t</i>	<i>t</i>	___ <i>*e, *i</i>

<sup>8</sup> Note that this spurious correspondence showing PM *\*u* : Paunaka *u* also includes Baure *u*, while Baure *o* appears in another correspondence. Quite strikingly, however, there is no contrast between *u* and *o* in Baure (Danielsen, 2007, p. 33).

<sup>9</sup> The fact that Terena was possibly once spoken in a region much closer to where the Paunaka live might suggest that the spirantization of *\*ts* could have diffused from one language to the other, instead of being independent events. Documentary evidence on Terena discussed in Carvalho (2017b, 2017c) shows, however, that these developments took place very recently in Terena history, possibly around the turn of the 19th and 20th centuries, at a time when Terena speakers were already living in the eastern bank of the Paraguay river, within the territory of Brazil.

- (3) Correspondences and exemplar cognate sets for *\*ts*
- (3a) Paunaka *s* : PM *\*ts* : Terena *s* /\_\_ *\*e, \*i*  
 GRANDMOTHER *-use* : *\*-otse* : *-ôse*, ASHES *sima-pa* : *\*tsima-pa*,  
 RED *tisi* : *\*titsi*, EYELASH *musipa* : *\*motsi-pa*.
- (3b) Paunaka *s* : PM *\*tʃ* : Terena *s* / (*\*i*) \_\_ *\*i*  
 JAGUAR *isini* : *\*itʃini* : *sîni*, ANT *kosiji* : *\*kotʃiru* : *kosîu*.
- (3c) Paunaka *s* : PM *\*s* : Terena *s* /\_\_ *\*o, \*a, \*e*  
 WEED OUT *-su* : *\*-iso-ʔo* : *-íso*, GARDEN *-asane-ti* : *\*esane-ti* : *isáne*,  
 DEFECATE *-suku* : *\*-soko*, WOMAN *esenu* : *\*eseno* : *sêno*,  
 MOTHER-IN-LAW *-muse* : *\*-ímose* : *-imóse*.

Dealing first with the Mojeño reflexes, if PM *\*-otse* ‘grandmother’ is ignored for a moment, the correspondence in (3c) can be collapsed with (3a) and (3b), as the latter two are restricted to the context of a following *\*i*. A single proto-segment, *\*ts*, can be assumed for all three, *\*ts* > *s* being a development restricted, in PM, to the context /\_\_ *\*o, \*a, \*e* (see correspondence 3c). Correspondences (3a) and (3b) apparently occur in the same environment, a fact that suggests that they contrast and therefore cannot be reduced to reflexes of a single segment; this pattern of contrast is only apparent, however, as I show now. As discussed in Carvalho and Rose (2018), PM had an (word-level) accentuation pattern characterized by left-aligned binary iambs, the exception being bi-syllabic words which instead show word-level accent in the first (word-initial) syllable, due to a general prohibition on accentuating the word-final syllable. With this pattern in mind, the following complementary distribution arises (the accented syllable is marked with an acute mark): for correspondence (3a) the PM reflexes of *\*ts* are all in unaccented syllables *\*tsimápa* ‘ashes’, *\*títsi* ‘red’, *\*-mótsipa* ‘eyelash’ (the latter is an inalienable noun, hence usually preceded by a possessive prefix, as in *\*nu-mótsipa* ‘my eyelash’). For correspondence (3b), however, reflexes of *\*ts* are always in an accented syllable: *\*itʃíni* ‘jaguar’, *\*kotʃíru* ‘ant’. All three correspondences (3a), (3b) and (3c) can be resolved then as reflexes of a single segment *\*ts*, which kept its affricate character in PM only in the context of a following *\*i* and was palatalized to *tʃ* in a subset of this environment, that is, in accented syllables whose nucleus was *\*i*<sup>10</sup>. The form *\*-ótse* ‘grandmother’ is exceptional under this plausible account and is probably explainable by the action of some factor other than sound change. I will leave this to another paper devoted exclusively to the historical phonology of Mojeño<sup>11</sup>.

The reconstruction of *\*ts* for correspondence (3c), an identity correspondence where all three languages agree in showing *s*, is perhaps the most controversial and the reasons for not reconstructing *\*s* should be examined in greater detail.

<sup>10</sup> Dependence of palatalization processes on prosodic structure is reported in Bateman (2011, p. 597) and references therein; see Giavazzi (2012) for the case of Italian.

<sup>11</sup> There are reasons to believe that the exceptional character of this form is due to phonosymbolism or analogy involving vocative or expressive parts of the kinship terminology. As discussed in Carvalho and Rose (2018), palatal ‘strengthening’ of certain vocative and ‘affective’ terms is attested in the development of the Ignaciano variety of Mojeño and in other branches of the Arawakan language family as well. Note also that in Terena there are pairs like *-ôse* ‘grandmother’ but *ôte/otête* ‘granny’, *-ôju* ‘grandfather’, but *ôtu* ‘grandpa’ (also used as an affective address term for male elders in general).



Evidence for reconstructing *\*ts* instead of *\*s* comes, first, from the independently established fact that fricatives were debuccalized to *h* in Terena and that this language's fricatives can be shown to come from affricates (Carvalho, 2017b, 2017c); hence, Terena *s* requires an affricate source. A second fact is that external evidence from other Arawakan languages supports the reconstruction of an affricate for the etymologies in (3a), (3b) and (3c). These are given below in (4) along with documentary evidence on early Terena showing the presence of affricates as well<sup>12</sup>:

(4) External evidence on the phonetic character of *\*ts*

WOMAN: Paunaka *esenu*, PM *\*eseno* and Terena *sêno*.

Palikur *tino* (Launey, 2003, p. 233), Campa (Asháninka and Ashéninka) *tsinane/tjɨnane* (Heitzman, 1973, p. 44), Proto-Arawakan *\*tjina[ru]* (Payne, 1991, p. 426).

cf. Early Terena *<tseenö>* 'Weib' (Schmidt, 1903, p. 570); *<tséno>* 'Frau' (Baldus, 1937, p. 539).

MOTHER-IN-LAW: Paunaka *-muse*, PM *\*-ímose*, Terena *-imóse*.

Waurá *-matɨ* (Richards, 2015), Palikur *-matru* (< *-matu-ru*) (Launey, 2003, p. 234).

cf. Early Terena *<imetse>* 'Schwiegermutter' (Schmidt, 1903, p. 573).

JAGUAR: Paunaka *isini*, PM *\*itjini*, Terena *sini*.

Paresi *tjini* (Rowan, 2001, p. 107), Proto-Arawakan *\*tsini* PA (Payne, 1991, p. 409).

cf. Early Terena *<tsiini>* 'Jaguar' (Schmidt, 1903, p. 578).

ASHES: Paunaka *sima-pa*, PM *\*tsima-pa*.

Campa (Asháninka, Ashéninka) *tsitsi* 'fire', *tsimenkito/tjimenkito* 'charcoal' (Heitzman, 1973, p. 47-48), Paresi *no-timi* 'my fire' (Rowan, 2001, p. 99), Proto-Arawakan *\*tsima* 'Firewood' (Payne, 1991, p. 403).

Moving on to correspondences (d), (e) and (f) of Table 6, repeated below in (5a-c) with the supporting cognate sets, note that the identity correspondence (5c), pointing to *\*t*, was added due to its overlap with (5a).

(5) Correspondences and exemplar cognate sets for *\*tj* and *\*t*

(5a) Paunaka *tj* : PM *\*tj* : Ter *t* / \_\_ *\*u*  
 HEAD *-tjiti* : *\*-tjuti* : *-túti*.

(5b) Paunaka *tj* : PM *\*tj* : Ter *j* / \_\_ *\*o,\*e,\*u*  
 KNOW *-itju* : *\*-etjo* : *-êfo*, SUN *satje* : *\*sátje* : *káje*, BREAST *-tjene* : *\*-tjene* : *-fêne*,  
 FATHER-IN-LAW *-mutjiku* : *\*-ímotjuko* : *-ímatjuka*.

(5c) Paunaka *t* : PM *\*t* : Ter *t* / \_\_ *\*e,\*i*  
 EARTH *mute* : *\*móte-hi* : *móte*, PAIN *-kuti* : *\*-koti* : *-kôti*, BLOOD *-iti* : *\*-iti* : *-íti*, HEAD *-tjiti*, *\*-tjuti* : *-túti*,  
 NIGHT *juti* : *\*joti* : *jóti*, RED *tisi* : *\*titsi*.

<sup>12</sup> Also in this group one could place Terena *-sêne* : PM *\*-sene-ti* 'urine', not discussed here because a cognate of this form seems not to exist in Paunaka. I take this to be an accidental gap, since cognates of these forms are widely attested elsewhere in the family and this is, to the best of our knowledge, a very stable PA etymon, reconstructed by Payne (1991, p. 424) as *\*tjini*.

Correspondence (5b) is the main set for Paunaka *ɬ* which matches PM *\*ɬ* and Terena *f* in the context of both back and front vowels. These can be understood as reflexes of *\*ɬ*, an interpretation consistent with the already mentioned independent evidence internal to Terena showing that the language changed its affricates to simple fricatives. Correspondence (5a) has to be recognized only for the unexpected correspondence *t* in Terena. If *\*t* is assumed as the source, Paunaka *-ɬiti* and PM *\*-ɬuti* 'head' could be derived from the palatalization of *\*t* triggered by *\*u*, an outcome attested in some languages<sup>13</sup>. However, in all known cases, *\*t > ɬ* triggered by a high back vowel is dependent on a high front vowel such as *\*i* acting as a trigger as well (Bateman, 2011, p. 597) and, as seen in correspondence (5c), *\*i* never triggers *\*t > ɬ* in Paunaka or PM. I opt then for reconstructing *\*ɬ* for correspondence (5a), implying thus sporadic *\*ɬ > t* in Terena.

## THE GLOTTAL AND CORONAL FRICATIVES

Despite their restricted distribution, both correspondences in Table 7 and in (6) below contrast with each other and can be reconstructed as reflexes of distinct proto-segments *\*s* and *\*h*:

Table 7. Correspondence sets.

	Proto-segment	Paunaka	PM	Terena
(a)	<i>*s</i>	<i>s</i>	<i>*h</i>	<i>h</i>
(b)	<i>*h</i>	<i>h</i>	<i>*h</i>	<i>h</i>

(6) Correspondences and exemplar cognate sets for *\*s* and *\*h*

(6a) Paunaka *s* : PM *\*h* : Ter *h* / \_ *\*i*  
 FINGERNAIL *-sipu* : *\*-hipoŋo* : *-hîpo*, TAIL *-ke-isi* : *\*-ihî-ki* : *-ihî*,  
 HORN/SHOULDER *-sii* : *\*-hiʔu*.

(6b) Paunaka *h* : PM *\*h* : Ter *h* / \_ *\*i, \*e, \*u*  
 SUCK *-uhiku* : *\*-ohiko* : *-ohîko*, HAIR *-hiju* : *-hijo-ʔo*,  
 MOON *kuhe* : *\*kôhe* : *kohêe*, BURN *-ihie* : *\*-ihu* : *-ihuwe*, GROW *-hiku* : *\*-huruko*.

The two correspondences in (6a) and (6b) differ only in the segment found in Paunaka. Since both correspondences are attested preceding *\*i*, two proto-segments are reconstructed and Paunaka turns out as more conservative than either PM or Terena, retaining the contrast between *\*s > s* (6a) and *\*h > h* (6b). Early written evidence on Terena is of pivotal importance here for two reasons. First, it shows that where Terena shows *h* in correspondence (6a) Early Terena had coronal fricatives instead, thus strengthening the case for a proto *\*s*. Max Schmidt presents *<šiiipooti>* 'Nagel' (Schmidt, 1903, p. 336), corresponding to modern *hipô-ti* 'someone's fingernail'; also, the name of a fish species given in Taunay (1875, p. 154), *<Araraitti-issi>*, literally 'red tail', is a compound whose first element matches modern *hararâiti* 'red', and whose second element shows a coronal fricative in the form for 'tail', *<issi>* (Modern Terena *-ihî*). Second, given the late date for the operation of the merger between *\*s* and *\*h* in Terena, we know that it was not a shared innovation of Terena and PM<sup>14</sup>.

<sup>13</sup> See e.g. Stubbs (2000) on the Tepiman branch of Uto-Aztecan.

<sup>14</sup> See Carvalho (2017b, 2017c) for details on the Terena developments.

Paunaka forms with *s* in correspondence (6a) above, which we analyze as reflexes of *\*s*, are analyzed in Jolkesky (2016) as coming from *\*h* instead. The author postulated 'Pre-Paunaka' forms showing *\*h*, claiming that the attested modern Paunaka forms would derive from these by means of processes specific to this language. He claims explicitly that *-siɨ* 'horn' would come from Pre-Paunaka *\*-hiɨ* by "[...] assimilation of a coronal feature [...]" (Jolkesky, 2016, p. 19), and a similar development is postulated for *-isi* 'tail', presumably from Pre-Paunaka *\*-ihi*. Though such processes do exist, for instance, as synchronic allophonic realizations of an underlying glottal fricative, as in the well-known case of Japanese, e.g. *hito* 'person' [çito], the problem with applying this to a diachronic account of the correspondences in (6a) and (6b) is that it requires postulating a sporadic change of *\*h* to *s* in the language, applying before *\*i* in some cases (6a), but not in others (6b). Therefore, I reject this conclusion, recognizing instead a contrast *\*s* - *\*h* preserved in Paunaka.

## THE RHOTIC *r*

Danielsen and Terhart (2014, p. 228) describe the rhotic *r* as a native phoneme in the Paunaka vocabulary, as opposed to the other liquid, the lateral *l*, whose occurrence is restricted to obvious loans<sup>15</sup>. Comparative evidence suggests, however, that *r* as well may be restricted to a loan stratum in the Paunaka lexicon, as *\*r* was regularly lost in the inherited lexicon of the language, as seen by the correspondence sets in Table 8.

Table 8. Correspondence sets.

	Proto-segment	Paunaka	PM	Terena	Contexts
(a)	<i>*r</i>	∅	<i>*r</i>	∅	<i>elsewhere</i>
(b)	<i>*r</i>	∅	<i>*r</i>	<i>r</i>	___ <i>*j</i>

(7) Exemplar cognate sets for *\*r* loss in Paunaka

(7a) Paunaka ∅ : PM *\*r* : Terena ∅

PET *peu* : *\*péro* : *pêjo*, RIB *-himunepa* : *\*-hirumonepa* : -,

GROW *-hiku* : *\*-huruko* : -, SWALLOW *-hikup-* : *\*-hiriko-* : -,

BODY *pui* : *\*-poru* : -.

(7b) Paunaka ∅ : PM *\*r* : Terena *r* / \_\_\_*\*j*

STONE *mai* : *\*mári* : *marípa*.

Here, two correspondences (7a) and (7b) are recognized due to the varying reflexes in Terena, since Paunaka shows ∅ in all cases and PM retains *\*r* > *r*<sup>16</sup>. The relevant conditioning factor seems to be the presence of a following *\*j* in accounting for the preservation of *\*r* in Terena. Though correspondence (7b) is attested in a single etymology this limitation stems probably from the relatively limited documentation available on Paunaka and from gaps resulting from lexical innovation, perhaps a result of borrowing. Comparison of Terena and PM cognates further supports the

<sup>15</sup> e.g. *asul* 'blue' < Sp. *azul* 'blue'; Danielsen and Terhart (2014, p. 255).

<sup>16</sup> The reader might ask whether the forms related to PM *\*pero* 'pet' could be loans from Spanish *perro*. This is unlikely, as Payne (1991, p. 392) has shown that these are reflexes of a Proto-Arawakan etymon *\*pira* 'animal, domesticate'.

hypothesis that *\*i* had a role in 'protecting' *\*r* in Terena, though for these no Paunaka cognate exists: Terena *jôu* 'fog': PM *\*joru* 'fog'; Terena *-ôo* 'to fly': PM *\*-oro* 'to fly'; Terena *-póe-* 'root': PM *\*-pore* 'root', but Terena *-kîri* 'nose': PM *\*-siri*; Terena *-ámori* 'grandson': PM *\*-amorí*<sup>17</sup>.

These correspondences suggest that forms having *r* in Paunaka are the result of borrowing, either from different, unrelated languages or from another dialect not subject *\*r* >  $\emptyset$ . Aside from obvious loans from Spanish, such as *bera* 'candle', *ajurau-tfu* 'to help' and *arusu* 'rice', many verbs, some cultural items and even some body-part terms have *r* and lack obvious cognates in the other languages: *-bururuku* 'to boil', *-beriuk* 'to turn', *-kupuru* 'to get burned', *-arehik* 'to scratch, scrape', *-kurumehik* 'to pierce', *-kerahik* 'to break', *-marik* 'to cut', *-simirike* 'navel', *-kijuraki* 'brain', *kupisairi* 'fox', *ubaramu* 'spider monkey', *upuri* 'snake', *takira* 'hen', *barereki* 'kettle, pot'. It will remain a task for future research to ascertain the source of this layer of loanwords in Paunaka.

## THE VELAR STOP AND DIACHRONIC FRONTING

The three overlapping correspondences in Table 9 provide evidence for the development of *\*k* in Paunaka and its closest relatives.

Table 9. Correspondence sets.

	Proto-segment	Paunaka	PM	Terena	Contexts
(a)	<i>*k</i>	<i>k</i>	<i>*k</i>	<i>k</i>	__ <i>*o, *e</i>
(b)	<i>*k</i>	<i>k</i>	<i>*s</i>	<i>k</i>	__ <i>*i</i>
(c)	<i>*k</i>	<i>s</i>	<i>*s</i>	<i>k</i>	__ <i>*a</i>

(8) Exemplar cognate sets for *\*k*

(8a) Paunaka *k* : PM *\*k* : Terena *k* /\_\_ *\*o, \*e*

SLEEP *-imu-ku* : *\*-imo-ko* : *-imóko*, PAIN *-kuti* : *\*-koti* : *-kôti*,

ANT *kusiji* : *\*kotfiru* : *kosûu*, MOON *kuhe* : *\*kohe* : *kohêe*, SOIL *apuke* : *\*apoke?e* : *poké?e*.

(8b) Paunaka *k* : PM *\*s* : Terena *k* /\_\_ *\*i*

WASH *-kipu* : *\*-sipo-ko* : *\*-kîpo*, TURTLE *kipi* : *\*sipu* : -.

(8c) Paunaka *s* : PM *\*s* : Terena *k* /\_\_ *\*a*

TAPIR *samu* : *\*samo* : *kámo*, SUN *satfe* : *\*satfe* : *káfe*, HEAR *-samu* : *\*-samo* : *-kámo*.

Correspondence (8a) above points unambiguously to *\*k*. Correspondence (8b) shows the retention of *\*k* as a velar stop in both Paunaka and Terena, while *\*k* > *s* took place in PM where *\*i* followed. Though the correspondences in (8) above are complementary and point therefore to the reconstruction of a single ancestral segment *\*k*, correspondence (8c) raises two interesting issues: (1) an issue of phonetic motivation, given that *\*a* is not an expected trigger for

<sup>17</sup> Note that Paunaka *-sisi* 'nose' is not cognate with PM *\*-siri* and Terena *-kîri*, both meaning 'nose' as well. In spite of the overall formal similarity, no regular correspondences support a match of Paunaka *i* and PM *\*i* / Terena *i* or of Paunaka *s* and PM *\*r* / Terena *r*.

palatalizations, and (2) one of chronology, as the outcome is apparently shared between Paunaka and PM. These two independent issues are interrelated<sup>18</sup>.

Comparative evidence from more distantly related Arawakan languages shows that the low vowel *\*a* in (8c) derives from *\*e* or another front vowel, a more natural trigger of palatalizations<sup>19</sup>.

(9) External evidence on palatalization-triggering *\*a*:

- TAPIR: Paunaka *samu*, PM *\*samo*, Terena *kámo*.  
 Bahuana *kema*, Yucuna *hema*, Proto-Campa *\*kemari*, Piapoco *éma*,  
 Mehinaku *teme*, Apurinã *kema*, Maipure <*chièma*>.  
 HEAR: Paunaka *-samu*, PM *\*-samo*, Terena *-kámo*.  
 Palikur *-timap*, Baré *-temuda*, Bahuana *-kimi-ta*, Paresi *-tsema*,  
 Resígaro *-he?mu*, Piapoco *-émia-ka*, Proto-Campa *\*-kema*.

The data above suggests that *\*a* was still a front vowel at some point in the relevant chronology, hence a natural trigger for the palatalization/coronalization *\*k > s*. Later, this vowel merged with the low vowel *\*a*, yielding the seemingly 'odd' phonetic conditioning pattern. Uncovering in detail how this came about and what where the reorganizations of the inherited vowel system that followed from this merger would take us beyond the scope of this paper, whose concern is solely the historical (segmental) phonology of Paunaka.

Finally, the question of whether the development *\*k > s* was shared between Paunaka and PM – occurring, therefore, only once in a common period of development – or whether it took place independently in the two languages is also illuminated by comparisons with more distantly related Arawakan languages. Comparative data such as that in (9) suggests that the fronting/coronalization of *\*k* preceding a front vowel took place many times independently in the Arawakan language family, an impression confirmed by the more general comparative study of Payne (1991), who claimed that the outcome is so general that some kind of allophonic split of *\*k* and *\*kʰ* in this context was a feature of Proto-Arawakan itself (Payne, 1991, p. 440). These facts point, in turn, to the high probability that Paunaka and PM may have innovated *\*k > s* independently and that, therefore, this specific sound change bears little weight in supporting subgrouping arguments. The question of internal classification is the topic of the next section.

## PHONOLOGICAL DEVELOPMENTS AND INTERNAL CLASSIFICATION

Table 10 presents three of the main phonological developments attested in the preceding sections for Paunaka. I compare Paunaka with Proto-Mojeño, Terena and Baure, the languages usually classified along with Paunaka in a close-knit subgroup variously labelled 'Moxo/Moho', 'Bolivia-Paraná' or 'Southern Arawakan' (Loukotka, 1968, p. 142; Kaufman, 1994, p. 59; Campbell, 1997, p. 181, 2012, p. 75; Danielsen, 2011, p. 517; Danielsen; Terhart, 2014, p. 224;

<sup>18</sup> Correspondence (8c) is interesting for yet another reason: in the absence of data from Terena, it is not possible to know whether Paunaka *s* : PM *\*s* is a reflex of either *\*ts* (as in 3c) or of *\*k* (as in 8c). This is relevant, for instance, in the case of Paunaka *samati* : PM *\*samatu* 'spider' (Terena has the non-cognate form *wáhaha* 'spider').

<sup>19</sup> Sources on other Arawakan languages: Maipure (Zamponi, 2003), Yucuna (Schauer et al., 2005), Bahuana (Ramirez, 1992), Palikur (Launey, 2003), Paresi (Rowan, 2001), Resígaro (Allin, 1976), Apurinã (Facundes, 2000), Baré (Aikhenvald, 1995), Piapoco (Klumpp, 1995), Mehinaku (Corbera Mori, 2011), and Proto-Campa (Heitzman, 1973; Michael, 2011).

Carvalho, 2017a). A cell in the table is marked with ‘yes’ anytime the development in question (broadly defined) is attested in the given language<sup>20</sup>.

Table 10. Candidate shared innovations in Bolivia-Paraná historical phonology.

	<i>*r &gt; ∅</i>	<i>*u-fronting</i>	<i>*k &gt; s</i>
Paunaka	yes	yes	yes
Proto-Mojeño	no	no	yes
Terena	yes	no	no
Baure	no	yes	yes

Paunaka shows the effects of the unconditioned loss of *\*r*, while Terena retained *\*r > r* in the context of a following *\*i*. Though the two contexts are clearly different, it is not implausible to suppose that Paunaka may show the end-result of a generalization in the environment of a change that was less general, as seen in Terena. Nevertheless, in the absence of independent evidence that these two languages might be particularly closely related, that is, in the absence of other possible innovations shared by the two languages, it is hard to weigh in on the potential usefulness of this development for internal classification.

The change *\*u > i* underwent by Paunaka, if defined in purely phonetic terms as a fronting shift in the quality of the vowel, finds a parallel in a change that apparently also took place in Baure. Although Baure was not discussed in this paper, Table 11 below presents a very small set of etymologies that illustrates some of the phonological innovations of this language, so that these can be compared to those attested here for Paunaka<sup>21</sup>.

Table 11. Evidence on some Baure phonological innovations.

	Paunaka	Terena	Proto-Mojeño	Baure	PA
Water	<i>ine</i>	<i>úne</i>	<i>*úne</i>	<i>in(e)</i>	<i>*uni</i>
Sky	<i>ani-mu</i>	<i>wanúke</i>	<i>*anu-mo</i>	<i>ani</i>	<i>*jenuh[ki]</i>
Tapir	<i>samu</i>	<i>kámo</i>	<i>*samo</i>	<i>som(o)</i>	<i>*kema</i>
Wash	<i>-kipu</i>	<i>-kîpa</i>	<i>*-sipo</i>	<i>-sipa</i>	<i>*kiba</i>
Pain	<i>kuti</i>	<i>-koti</i>	<i>*-koti</i>	<i>-koti</i>	<i>*katʃi[wi]</i>
Eat	<i>-niku</i>	<i>-nîko</i>	<i>*-niko</i>	<i>-nik(o)</i>	<i>*nika</i>
Go	<i>-junu</i>	<i>-jôno</i>	<i>*-jono</i>	<i>-jon(o)</i>	<i>*jani</i>

Forms in Table 11 present evidence for a change *\*u > i* in Baure (see ‘sky’ and ‘water’). Although this development is phonetically comparable to the *\*u > i* change in Paunaka, phonologically these two diachronic

<sup>20</sup> One might wonder why Baure is excluded from much of the discussion in this article but has returned in the present section. The reason is that two separate issues or problems are at stake. Baure is less interesting than Mojeño or Terena for the task that constitutes the core of this paper – understanding the historical phonology of Paunaka – for reasons discussed above (its innovative character, lack of extensive lexical documentation etc.). For the specific issue addressed in the present section – the internal classification of Paunaka – a comparison with Baure is certainly relevant.

<sup>21</sup> The Proto-Arawakan (PA) forms are those of Payne (1991).

correspondences are very different: Baure *\*u > i* apparently caused a merger of *\*u* and *\*i*, but the Paunaka shift *\*u > i* preserved a reconstructed contrast. The two changes are therefore clearly independent and have no weight at all in suggesting a closer relation between Paunaka and Baure<sup>22</sup>. Finally, as far as *\*k > s* is concerned, Paunaka and Mojeño, as well as Baure, show this change in the context of a non-front vowel that can, however, be traced back to *\*e*, as discussed in the preceding section. Baure and Mojeño agree, moreover, in showing the effects of *\*k > s* preceding *\*i*. As already pointed out these developments do not offer compelling evidence for subgrouping, as a coronalization/spirantization of *\*k* in the context of a following front vowel took place many times independently in the Arawakan family.

It is legitimate, therefore, to look elsewhere, that is, in the lexicon and in the morphology, for candidate shared innovations, and these should be the focus of future work on the internal classification of Paunaka and its closest relatives. As mentioned before, there is in fact evidence from these domains suggesting that Paunaka and Mojeño, as well as Terena, to a lesser extent, may be particularly closely related. Jolkesky (2016, p. 27) presented several lexemes that seem to be shared between Mojeño and Paunaka, not Baure and Paikoneka, and advanced these as suggestive of a common period of development shared by Mojeño and Paunaka exclusively. As noted by Rose (2015a, p. 251), the third person non-specific prefix *ti-* of Mojeño has a plausible cognate in Paunaka *ti-* and these could be a shared innovation. Paunaka and Mojeño also seem to share a 'relational noun' used for the expression of possession with some nouns that cannot be directly marked by prefixes for possessor person/number, *\*-je?e* in Proto-Mojeño (Rose, 2015b, p. 79; Carvalho; Rose, 2018) and *-jai/-jae* in Paunaka (Danielsen; Terhart, 2014, p. 236-237). While these observations raise the possibility that Mojeño may be the closest relative of Paunaka in the family, other studies have pointed out similarities found in Mojeño and in Terena. Carvalho (2017a, p. 82-83) notices a specific etymon, *\*-paho* 'mouth, opening', that is shared between Terena and Proto-Mojeño but that seems to lack cognates elsewhere in the family, also adding additional observations on a shared pattern in the distribution of inherited roots and on one morphophonological effect of the suffixation of the first person plural suffix that seems to be unattested elsewhere. The overall conclusion of this section is that the phonological developments uncovered here for the history of Paunaka offer little in the way of support for specific hypotheses on the internal classification of this language. Nevertheless, the foregoing observations on certain lexical and morphological similarities involving Paunaka and Mojeño should be enough to make one more optimistic about finding potential shared innovations in these domains.

## SUMMARY DISCUSSION AND CONCLUSION

In this paper I have arrived at certain conclusions about the diachronic development of the segmental phonological system of Paunaka by applying the comparative method to a set of etymologies matching Paunaka forms to their cognates in Proto-Mojeño and in Terena. The relevant diachronic correspondences are given below in Table 12, while the set of etymologies is presented in the Appendix.

<sup>22</sup> It is true, as noted by Swintha Danielsen (personal communication), that a fronting change of the exact type as seen in Paunaka could have operated in Baure, as an intermediate step in the merger between *\*u* and *\*i*. Evaluating this hypothesis requires, however, a deeper investigation of the historical phonology of the Baure language, a topic outside the scope of the present article.

Table 12. Diachronic correspondences for Paunaka segments.

Proto-segment	Paunaka	Proto-segment	Paunaka
*p	p	*r	∅
*t	t	*w	β
*ts	s	*j	j
*tʃ	tʃ	*a	a
*k	k, s	*e	e
*ʔ	∅	*i	i
*s	s	*o	u
*h	h	*u	ɨ

One of the most interesting findings is that the Paunaka vowel system featuring only a single back rounded vowel *u* is the reflex of a system that, just like those of Terena and Proto-Mojeño, was characterized by a contrast between two back rounded vowels \**o* and \**u*. Payne (1991, p. 476) claims that Chamicuro, Terena and Wayuunaiki are the only Arawakan languages with pervasive contrasts between *u* and *o*. Besides having no data at all on Paunaka at the time, Payne (1991) relied mostly on the Ignaciano dialect for his data on Mojeño, exactly the dialect of the language that has lost this opposition by merging PM \**o* and \**a* as *a* (Carvalho, 2017a; Carvalho; Rose, 2018)<sup>23</sup>. More complete cognate sets featuring Paunaka and PM, as well as Terena forms, allow one to demonstrate that such languages share a common ancestor that in fact had two contrastive back rounded vowels, thus showing that this contrast, of uncertain *status* in Arawakan historical phonology, can be reconstructed for an intermediate proto-language in the family.

Differently from PM and (Early) Terena (Carvalho, 2017b, 2017c), Paunaka lacks an alveolar affricate *ts*. Correspondences with these two other languages show that Paunaka merged \**ts* and \**s* in a context-free manner. Analysis of the etymologies addressed here reveals, however, that the contrast between these segments was somewhat limited and that \**s* had a very limited distribution restricted to the context of a following \**i*. Significantly, however, this is not an isolated property of the reconstructed system, as \**t* was also limited to the context of a following front vowel, either \**e* or \**i*. Finally, this agrees with some observations in Carvalho (2017b, 2017c) who, on the basis of documentary evidence on the contrast between fricatives and affricates in early stages of the history of Terena, indicates that while the contrast between *tʃ* and *f* was clear and robust, this was not the case for the contrast between *s* and *ts*. Though segments with limited distributions and only marginal contrastive *status* are a cross-linguistic common feature, it is possible that further documentation of Paunaka may reveal a larger set of cognates that may, in turn, uncover a wider distributional range for these segments.

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<sup>23</sup> A reviewer notes that a similar development took place in the Joaquiniano variety of Baure, as compared to Old Baure. This is surely an interesting topic, once more is known about the historical phonology of Baure and the diversification of its varieties.



shortcomings are my own. Special thanks to Lena Terhart for always being so accessible and willing to answer all of my questions about Paunaka.

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**Appendix.** This Appendix presents 105 etymologies showing Paunaka forms and their cognates in Mojeño, Terena, or, in some cases, in only one of these languages. Of these, 99 are lexical items and 5 are grammatical/functional morphemes. A total of 101 Paunaka forms (96%) have a cognate in PM, while only 78 (74%) have a cognate in Terena. Some Terena forms appear between parentheses or followed by question marks whenever asserting their cognate *status* is less obvious or requires further elaboration in view of the regular correspondences discussed here. Data sources: Paunaka: Danielsen and Terhart (2014), Terhart (2014); Mojeño (Ignaciano): Ott, W. and Ott, R. (1983), Olza Zubiri et al. (2002); Mojeño (Trinitario): Gill (1957, 1993), Françoise Rose (personal communication), Carvalho and Rose (2018); Terena: author's fieldwork data, Ekdahl and Butler (1969, 1979). I have tried to avoid as much as possible items that lie, by their meaning, outside basic vocabulary lists, unless they are particularly stable within the Arawakan family, show widespread cognates and are clearly reconstructible to much older stages, as is the case with many of the zoonyms such as TAPIR, MONKEY, FISH and PACA. For Mojeño, Old Mojeño forms from Marbán (1701) are at times introduced, between angled brackets and followed by OM (= Old Mojeño). Many of the Proto-Mojeño (PM) reconstructed forms below come from Carvalho and Rose (2018), but since the paper in question is not yet published I have included Ignaciano and Trinitario reflexes along with PM forms. Those PM etyma that are not in Carvalho and Rose (2018) are nevertheless entirely consistent with the correspondences identified by these authors and, given the minor differentiation of attested Mojeño varieties, rather obvious to establish. There are some morphological issues with these etymologies that will be skipped over in the present paper, but some commentary is offered in footnotes whenever necessary. As for transcription, all comparanda are entered in their phonological form and the symbols used, with few exceptions, have a standard IPA interpretation. Exceptions include, first, the rhotic, which in both Mojeño varieties and in Terena is usually a simple tap [r] which is here represented as *r*. Also, in Terena, the acute and circumflex diacritics represent different accentual phonemes of the language<sup>24</sup>.

(Continue)

Cognate sets for Paunaka, Mojeño and Terena						
		Paunaka	Proto-Mojeño	Ignaciano	Trinitario	Terena
1	BODY <sup>25</sup>	<i>-puí</i>	*- <i>poru-mo</i>	<i>-paruma</i>	<i>-prumo</i>	-
2	HEAD	<i>-tʃíti</i>	*- <i>tʃuti</i>	<i>-tʃuti</i>	<i>-tʃuti</i>	<i>-túti</i>
3	BLOOD	<i>-iti</i>	*- <i>iti</i>	<i>-iti</i>	<i>-iti</i>	<i>-iti</i>
4	CHIN	<i>-mama</i>	*- <i>mama</i>	<i>-mama</i>	<i>-mama</i>	-
5	HAND	<i>-βui</i>	*- <i>woʔu</i>	<i>-waʔu</i>	<i>-woʔu</i>	<i>-wóʔu</i>
6	FOOT <sup>26</sup>	<i>-iβu</i>	*- <i>iwo-pe</i>	<i>-iwape</i>	<i>-ijpe</i>	-
7	MOUTH	<i>-niki</i>	*- <i>nuku</i>	<i>-nuku</i>	<i>-nuku</i>	-
8	MOLAR (TOOTH) <sup>27</sup>	<i>-haka</i>	-	-	-	<i>-háka</i>
9	TONGUE	<i>-pe-nene</i>	*- <i>nene</i>	<i>-nene</i>	<i>-nene</i>	<i>-néne</i>
10	WING/SHOULDER <sup>28</sup>	<i>-puβu</i>	*- <i>powo-ki</i>	<i>-pawa-ki</i>	<i>-pow-çi</i>	<i>-pówo</i>
11	HORN/SHOULDER	<i>-sii</i>	*- <i>hiʔu</i>	<i>-hiʔu</i>	<i>-hiʔu</i>	-
12	BREAST	<i>-tʃene</i>	*- <i>tʃene</i>	<i>-tʃene</i>	<i>-tʃene</i>	<i>-tʃéne</i>
13	BACK, LOWER <sup>29</sup>	<i>-tʃupu-keki</i>	*- <i>keku</i>	<i>-keku</i>	<i>-çieku</i>	<i>júju-keku</i>
14	BONE	<i>-upe-hi</i>	*- <i>ope-ra</i>	<i>-apera</i>	<i>-opera</i>	<i>-ôpe</i>
15	RIB	<i>-himunepa</i>	*- <i>hirumonepa</i>	<i>-hirumane</i>	<i>-hiimonepa</i>	-
16	FINGERNAIL	<i>-sipu</i>	*- <i>hipoʔo</i>	<i>-hipaʔa</i>	<i>-hipʔo</i>	<i>-hípo</i>
17	EYELASH	<i>-musipa</i>	*- <i>motsi-pa</i>	<i>-matsi</i>	<i>-motsi-pa</i>	-

<sup>24</sup> See Carvalho (2017b, 2017c) and references therein.

<sup>25</sup> The PM form means 'leather, animal skin'. The classifier *-mo* denotes covering surfaces, so that the root \*-*poru* arguably refers to what is covered by skin or leather.

<sup>26</sup> The change of *w* to *j* in Trinitario, preceding *p*, is a regular process (Gill, 1957, p. 15). Note that the terminus *a quo* for PM \*-*iwope* is ARGUABLY \*-*iwo-pe* 'sole of the foot', as shown by external comparanda such as Paunaka *-ibu* 'foot'. The morpheme *-pe* is a classifier for flat or plank-like objects (Olza Zubiri et al., 2002, p. 275-277).

<sup>27</sup> PM has \*-*haka* 'mouth', not clearly cognate.

<sup>28</sup> PM, Ignaciano and Trinitario forms mean 'arm'. The classifier *-ki* qualifies cylindrical, rigid objects (Olza Zubiri et al., 2002, p. 288-302).

<sup>29</sup> The Terena form means 'kidney'.

Appendix.

(Continue)

Cognate sets for Paunaka, Mojeño and Terena						
		Paunaka	Proto-Mojeño	Ignaciano	Trinitario	Terena
18	HAIR	<i>-hiju</i>	*-hijo-ʔo	<i>-hija-ʔa</i>	<i>-hijo-ʔo</i>	<i>(-puhíʔo)</i>
19	EYE <sup>30</sup>	<i>-βike</i>	*-uki-ʔa	<i>-uki-ʔa</i>	<i>-uç-ʔa</i>	<i>-ûke</i>
20	EAR	<i>-tʃuka</i>	*-tʃoka	<i>-tʃaka</i>	<i>-tʃoka</i>	-
21	TAIL	<i>-ke-isi</i>	*-ihi-ki	<i>-ihi-ki</i>	<i>-ih-çi</i>	<i>-îhi</i>
22	MEAT/FLESH	<i>-etʃe</i>	*-etʃe	<i>-etʃe</i>	<i>-etʃe</i>	-
23	BELLY (INSIDE) <sup>31</sup>	<i>-hie-ki</i>	*-huʔe	<i>-huʔe</i>	<i>-huʔe</i>	-
24	WIFE	<i>-jenu</i>	*-jeno	<i>-jena</i>	<i>-jeno</i>	<i>-jêno</i>
25	HUSBAND	<i>-ima</i>	*-ima	<i>-ima</i>	<i>-ima</i>	<i>-îma</i>
26	BROTHER	<i>-ati</i>	*-ati	<i>-ati</i>	<i>-ati</i>	<i>-âti</i>
27	SON	<i>-tʃiʔa</i>	*-tʃiʔa	<i>-tʃiʔa</i>	<i>-tʃiʔa</i>	<i>-ʃeʔésa</i>
28	DAUGHTER	<i>-hine-pii</i>	-	-	-	<i>-ihíne</i>
29	WOMAN <sup>32</sup>	<i>esenu</i>	*eseno	<i>esena</i>	<i>ʔseno</i>	<i>sêno</i>
30	GRANDMOTHER	<i>-use</i>	*-otse	<i>-atse</i>	<i>-otse</i>	<i>-ôse</i>
31	MOTHER	<i>-enu</i>	*-eno	<i>-ena</i>	<i>-eno</i>	<i>-êno</i>
32	UNCLE <sup>33</sup>	<i>kiku</i>	*(e)kuko	<i>-ékuka</i>	<cuco, necuco> (OM)	<i>-eúko</i>
33	MOTHER-IN-LAW	<i>-muse</i>	*-ímoſe	<i>-ímase</i>	<i>-imse</i>	<i>-imóſe</i>
34	FATHER-IN-LAW	<i>-mutʃku</i>	*-ímoʔfuko	<i>-ímaʔfuka</i>	<i>-imʔfuko</i>	<i>-imóʔfuko</i>
35	WATER	<i>ine</i>	*úne	<i>une</i>	<i>une</i>	<i>úne</i>
36	SKY	<i>ani-mo</i>	*anú-mo	<i>anuma</i>	<i>anumo</i>	<i>wanúke</i>
37	CLOUD/RAIN <sup>34</sup>	<i>iku</i>	*úko-hi	<i>uka-hi</i>	<i>uko-hi</i>	<i>úko</i>
38	MOON	<i>kuhe</i>	*kóhe	<i>kahe</i>	<i>kohe</i>	<i>kohêe</i>
39	SUN	<i>saʔe</i>	*sáʔe	<i>saʔe</i>	<i>saʔe</i>	<i>káʃe</i>
40	NIGHT	<i>juti</i>	*jóti	<i>jati</i>	<i>joti</i>	<i>jóti</i>
41	STONE	<i>mai</i>	*mári	<i>mari</i>	<i>mari</i>	<i>marípa</i>
42	EARTH <sup>35</sup>	<i>mute-</i>	*móte-hi	<i>mátehi</i>	<i>mótehi</i>	<i>móte</i>
43	SOIL	<i>apuke</i>	*apókeʔe	<i>apakeʔe</i>	<i>ʔpócʔe</i>	<i>pokéʔe</i>

<sup>30</sup> Note that the Paunaka form in the etymology for 'eye' offers crucial evidence for \*wu > u in PM. I thank Andrey Nikulin for pointing this out. See also that the etymology for 'mosquito' shows that a glottal stop is the reflex of \*w in intervocalic position.

<sup>31</sup> PM \*-huʔe means 'belly; insides', while Paunaka *-hie-ki* appears as a crystallized modifier meaning 'insides' or 'inside part', as in *-tʃuka-hie-ki* 'inner ear, ear hole', from *-tʃuka* 'ear' (cf. PM \*-tʃoka).

<sup>32</sup> Paunaka *esenu* means 'female animal' (Spanish *hembra*).

<sup>33</sup> PM \*(e)kuko is reconstructed based on Ignaciano *-ékuka* 'uncle' (Ott, W.; Ott, R., 1983, p. 633) and Old Mojeño <cuco>, <necuco> 'my uncle' (Marbán, 1701, p. 346). The Terena form is not obviously cognate because it requires the postulation of a sporadic loss of intervocalic \*k. Crucial evidence exists, however, for the explanation of this as resulting from the analogical generalization of a morphophonemic alternation k ~ Ø. This fact belongs to the recent development of Terena and is not relevant for the present concerns.

<sup>34</sup> Paunaka and Terena forms mean 'rain', in PM and its daughter varieties the meaning is 'cloud'. In PM, Ignaciano and Trinitario, *-hi* is a classifier denoting bulky, soft objects.

<sup>35</sup> See Paunaka *mute-hi* 'earth, mud', but *mute-pa* 'earth, dust'.

Appendix.

(Continue)

Cognate sets for Paunaka, Mojeño and Terena						
		Paunaka	Proto-Mojeño	Ignaciano	Trinitario	Terena
44	PATH	<i>-utʃene ~ -tʃene</i>	<i>*-otʃene ~ -tʃene</i>	<i>atʃene</i>	<i>ʔtʃene</i>	<i>-oʃéne, ʃéne</i>
45	ASHES <sup>36</sup>	<i>sima-pa</i>	<i>*tsima-pa</i>	<i>tsima-pa</i>	<i>tsma-pa</i>	-
46	FOREST	<i>kimenu</i>	<i>*simeno</i>	<i>simena</i>	<i>smeno</i>	-
47	FIREWOOD (FIRE)	<i>jiki-ke</i>	<i>*juku-ki</i>	<i>juku-ki</i>	<i>jkuçi</i>	<i>juku</i>
48	GARDEN	<i>asane-ti</i> 'field'	<i>*esane-ti</i>	<i>ésane-ti</i>	<i>ésane</i>	<i>isáne</i>
49	POTATO <sup>37</sup>	<i>kuepi</i>	<i>*koere</i>	<i>kaere</i>	<i>kaere</i>	<i>koʔéé</i>
50	MANIOC	<i>kíhi-pi</i>	<i>*kuhu</i>	<i>kuhu</i>	<i>kuh-pa</i>	-
51	PET	<i>-peu</i>	<i>*-pero</i>	<i>-pera</i>	<i>-pero</i>	<i>-pêjo</i>
52	FISH	<i>himu</i>	<i>*himo</i>	<i>hima</i>	<i>himo</i>	-
53	SNAKE	<i>ketʃue</i>	<i>*kitʃore</i>	<i>kitʃare</i>	<i>ççiore</i>	<i>koéfoe</i>
54	TURTLE	<i>kipi</i>	<i>*sipu</i>	<i>sipu</i>	<i>sipu</i> (Rose, personal communication)	-
55	TAPIR	<i>samu</i>	<i>*sámo</i>	<i>sama</i>	<i>samo</i>	<i>kámo</i>
56	CAPYBARA	<i>itʃi</i>	<i>*utʃu</i>	<i>utʃu</i>	<i>utʃu</i>	-
57	MONKEY	<i>iju</i>	<i>*ijo</i>	<i>ija</i>	<i>ijo</i>	-
58	PACA	<i>jupu</i>	<i>*jopo</i>	<i>japa</i>	<i>jopo</i>	-
59	JAGUAR	<i>isini</i>	<i>*itʃíni</i>	<i>itʃíni</i>	<i>ʔtʃíni</i>	<i>síni</i>
60	DUCK	<i>upuhi</i>	<i>*upóhi</i>	<i>upahi</i>	<i>ʔpohi</i>	<i>póhi</i>
61	WASP	<i>hane</i>	<i>*háne</i>	<i>hane</i>	<i>hane</i>	<i>háne</i>
62	BEE, WAX <sup>38</sup>	<i>ipiti-umu</i>	<ypiti> (OM)	-	-	<i>píti ~ -ípiti</i>
63	MOSQUITO	<i>aniβi</i>	<i>*aniʔu</i>	<i>aniʔu</i>	<i>ʔniʔu</i>	<i>níu</i>
64	LOUSE	<i>ine</i>	<i>*-iɲe</i>	<i>-iɲe</i>	<i>-iɲe</i>	<i>ɲá-ti</i>
65	ANT	<i>kusii</i>	<i>*kotʃíru</i>	<i>katʃíru</i>	<i>ktʃíru</i>	<i>kosíu</i>
66	SPIDER	<i>samati</i>	<i>*samatu</i>	<i>samatu</i>	<i>smatu</i> (Rose, personal communication)	-
67	BAT	<i>βite</i>	<i>*wíte</i>	<i>wite</i>	<i>wite</i>	<i>witête</i>
68	WORM	<i>kane</i>	<i>*kane</i>	<i>(utʃepi)</i>	<i>kane</i>	<i>káne</i>
69	BE, STAY	<i>-uβu</i>	<i>*-owo</i>	<i>-owo</i>	<i>-owo</i>	<i>-owo</i>

<sup>36</sup> The suffix *-pa* is a classifier for powder-like objects (Olza Zubiri et al., 2002, p. 256-266).

<sup>37</sup> It is probable that an etymon *\*koe-* 'potato' can be reconstructed and the Paunaka reflex shows the addition of the classifier *-pi* fossilized as part of the root. The cognate classifier in Mojeño also occurs many times with the nouns referring to plants (see *api-pi kuhu* 'two yucas', Olza Zubiri et al., 2002, p. 193). See also Paunaka for 'Manioc'.

<sup>38</sup> Though a cognate of Paunaka *ipiti* is found, among Mojeño varieties, only in Old Mojeño, this constitutes likely a result of chance obsolescence/loss in the two extant varieties. An etymon close to *\*ipiti* can be assumed for PM on the grounds of external evidence, from Paunaka, Terena and more distantly related branches such as the Campa languages.

Appendix.

(Continue)

Cognate sets for Paunaka, Mojeño and Terena						
		Paunaka	Proto-Mojeño	Ignaciano	Trinitario	Terena
70	SPEAK	<i>-ketʃu</i>	-	-	-	<i>-kíʃo</i>
71	TELL	<i>-kuetea</i>	*-koʔe	<i>-kaʔe</i>	<i>-koʔe</i>	<i>-kôʔe</i>
72	EAT	<i>-niku</i>	*-niko	<i>-nika</i>	<i>-niko</i>	<i>-níko</i>
73	SUCK <sup>39</sup>	<i>-uhiku</i>	*-ohiko	<i>-áhika</i>	<i>-ohko</i>	<i>-ohíko</i>
74	LAUGH	<i>-ku</i>	*-eko-wo	<i>-ékawa</i>	<i>-ekowo</i>	<i>-éko-wo</i>
75	CRY	<i>-ju</i>	*-íʃo-ʔo	<i>-íʃa-ʔa</i>	<i>-íʃoʔo</i>	<i>-íʃo</i>
76	SWALLOW	<i>-hikup-u</i>	*-hiriko	<i>-hirika</i>	<i>-hiiko</i>	<i>-hui-ri-ko</i> (??)
77	PAIN/HURT	<i>-kuti</i>	*-koti	<i>-kati</i>	<i>-koti</i>	<i>-kôti</i>
78	RIPE	<i>-ju</i>	*-jo-ʔo	<i>-jaʔa</i>	<i>-joʔo</i>	-
79	RED	<i>tisi</i>	*titsi-	<i>titsi-</i>	<i>titsi</i>	-
80	HIT	<i>e-u</i>	*-e-ʔo	<i>-eʔa</i>	<i>-eʔo</i>	-
81	FALL	<i>-βenupu</i>	*-wenopo	<i>-wenapa</i>	<i>-wenopo</i>	-
82	GRIND	<i>-jiβaika</i>	*-juwa-ko	<i>-juwaka</i>	<i>-juwako</i>	<i>júʃu</i> 'mortar'
83	GO	<i>-junu</i>	*-jono	<i>-jana</i>	<i>-jono</i>	<i>-jono</i>
84	GROW	<i>-hiku</i>	*-huruko	<i>-huruka</i>	<i>-huuko</i>	-
85	SWELL	<i>-amu</i>	*-amo	<i>-ama</i>	<i>-amo</i>	<i>-momoʔo-fo</i>
86	KILL	<i>-kupa-ku</i>	*-kopa-ko	<i>-kapa-ka</i>	<i>-kopa-ko</i>	-
87	BURN, CATCH FIRE <sup>40</sup>	<i>-ihie</i>	*-íhu	<i>-ihu</i>	<i>-ihu-ko</i> 'arder'	<i>-íhuwe</i>
88	WEED OUT (V.)	<i>-su</i>	*-iso-ʔo	<i>-ísaʔa</i>	<i>-ísoʔo</i>	<i>-íso</i>
89	DIG	<i>-seku</i>	*-seko	<i>-seka</i>	<i>-seko</i>	-
90	KNOW	<i>-itʃu</i>	*-eʃo	<i>-eʃa</i>	<i>-eʃo</i>	<i>-êʃo</i>
91	WANT, LIKE	<i>-satʃ-u</i>	-	-	-	<i>-haʔáʃo</i>
92	FEAR	<i>-piku</i>	*-piko	<i>-pika</i>	<i>-piko</i>	<i>-píko</i>
93	SEE <sup>41</sup>	<i>-imu</i>	*-imo-ʔo	<i>-ímaʔa</i>	<i>-imʔo</i>	<i>-komómo</i>
94	HEAR	<i>-samu</i>	*-samo	<i>-sama</i>	<i>-samo</i>	<i>-kâmo</i>
95	SLEEP	<i>-imu-ku-</i>	*-imo-ko	<i>-imaka</i>	<i>-ímoko</i>	<i>-imóko</i>
96	TAKE	<i>-βe-u</i>	*-weʔo	<i>-weʔa</i>	<i>-weʔo</i>	<i>-wêo</i>
97	STEAL <sup>42</sup>	<i>-umei-ku</i>	*-ome-ʃo	<i>-ametʃa</i>	<i>-ómetʃo</i>	<i>-omé-fo</i>
98	WASH	<i>-kipu</i>	*-sipo-ko	<i>-sipa-ka</i>	<i>-sip-ko</i>	<i>-kípo</i>
99	BATHE	<i>-ku-βu</i>	*-ko-wo	<i>-kawa</i>	<i>-kowo</i>	<i>-áhiko-wo</i>

<sup>39</sup> Terena *-ohíko* 'to nurse (a child)' is given in Ekdahl and Butler (1979). In my corpus the same root appears as meaning simply 'to suck'.

<sup>40</sup> Paunaka final *-e* and Terena *-we* are not clearly cognate. Note for Terena, however, *-íhufoa* 'to light fire for light' (Ekdahl; Butler, 1969), where *-fo* is the thematic suffix and *-a* is an Object suffix, thus showing that *-íhu-* is synchronically segmentable.

<sup>41</sup> The Terena form shows the presence of a verbalizer/transitivizer prefix *ko-* and the effects of reduplication applied to a base *\*(i)mo* (see Rose, 2014 on reduplication in Mojeño).

<sup>42</sup> See the different thematic suffix in the languages: Terena and PM agree in showing reflexes of *\*-ʃo*, while Paunaka has a reflex of *\*-ko* (see cognate sets 102 and 103).

Appendix.

(Conclusion)

Cognate sets for Paunaka, Mojeño and Terena						
		Paunaka	Proto-Mojeño	Ignaciano	Trinitario	Terena
100	DEFECATE	<i>-suku</i>	*-soko	<i>-saka</i>	<i>-soko</i>	-
101	PRON.BASE	<i>-ti</i>	*-ti	<i>-ti</i>	<i>-ti</i>	<i>-ti</i>
102	ABSOLUTE.SUFFIX	<i>-ti</i>	*-ti	<i>-ti</i>	<i>-ti</i>	<i>-ti</i>
103	THEMATIC.SUFFIX1	<i>-ku</i>	*-ko	<i>-ka</i>	<i>-ko</i>	<i>-k-o-</i>
104	THEMATIC.SUFFIX2	<i>-tʃu</i>	*-tʃo	<i>-tʃa</i>	<i>-tʃo</i>	<i>-f-o-</i>
105	RECIPROCAL	<i>-kuku</i>	*-koko	<i>-kaka</i>	<i>-koko</i>	<i>-koko</i>