Fernando O. de Carvalho
(Universidade Federal do Amapá, UNIFAP)

Diachronic labial palatalization in Xinguan Arawak

ABSTRACT: The goal of this short paper is to address additional facts related to the diachronic process of full labial palatalization (or coronalization) proposed in Carvalho (2016a) for Yawalapiti, an Arawak language of central Brazil. After discussing the broader theoretical significance of the full palatalization of labials to typology and to the theory of sound change, I will show that the identification of the correspondences supporting the recognition of this development in Yawalapiti can be traced back to Karl von den Steinen's 1894 publication of the earliest available documentation of the Xinguan Arawak languages. Next, I argue that a pattern of allomorphy in the 2sg prefix of Yawalapiti can be understood as a relic of the series of sound changes that mapped a labial stop *p to a coronal consonant in palatalization-prone environments. Finally, I note that this labial coronalization change has the status of a drift-like tendency within the Xinguan Arawak subgroup, a fact underscored by its independent occurrence in Waurá. Furthermore, a relatively late date can be assigned to this development on the basis of a comparison of recent data on this language with the vocabularies found in the von den Steinen material.
Keywords: Yawalapiti; Arawak; Palatalization; Sound Change.

RESUMO: O objetivo desta breve contribuição é o de abordar fatos adicionais relativos ao processo de palatalização (ou coronalização) de consoantes labiais proposto em Carvalho (2016a) para o Yawalapiti, uma língua Arawak do Brasil central. Após discutir a relevância mais ampla dos processos de coronalização de labiais para a tipologia e a teoria da mudança sonora, mostrarei que a identificação das correspondências segmentais que evidenciam este desenvolvimento podem ser traçadas à publicação, em 1894, dos primeiros dados do Yawalapiti e das línguas Arawak do Xingu, registrados por Karl von den Steinen. Argumento ainda que um padrão de alomorfia na realização do prefixo de 2sg do Yawalapiti pode ser explicado como uma relíquia da mudança *p >r. Por fim, noto que a coronalização de labiais possui o aspecto de uma tendência de *drift* histórica, como indicado pela ocorrência independente deste processo em Waurá. Os dados de Von den Steinen são mais uma vez úteis, agora em demonstrar que, no caso do Waurá, tal processo ocorreu mais tardiamente do que em Yawalapiti.
Palavras-chave: Yawalapiti; Arawak; Palatalização; Mudança Sonora.

1. Introduction

Labial palatalization (or coronalization) has attracted theoretical attention not only for being typologically rare (see Bateman 2007: chapter 3), but also, and perhaps more so, due to its implications for a number of core issues in the understanding of sound patterns, such as the proper characterization of the phonetic grounding of regular sound change and the nature of the constraints on the postulation of intermediate stages in the reconstruction of

these diachronic developments (see e.g. Ohala 1978; Thomason 1986; Bateman 2007). In Carvalho (2016a) I presented evidence that one such development, ultimately responsible for a diachronic correspondence mapping *p to r in certain 'palatal' contexts, took place in the history of Yawalapiti, an Arawak language of Central Brazil usually assigned to the Xinguan subgroup of this large family.[1] This hypothesis is supported not only by the existence of synchronic morphophonemic alternations between p and r in Yawalapiti, but also by extensive comparative evidence.

In the present contribution I extend the characterization of this phenomenon in Yawalapiti. Furthermore, I go beyond this single language and discuss how improved description of Waurá suggests that labial palatalization has the characteristic of a drift-like tendency within the Xinguan subgroup of the Arawak family.

The points discussed in this paper are the following. In section **2** I briefly discuss the relevance and the issues raised by processes of labial palatalization or coronalization. In section **3** I note that the diachronic process of labial palatalization in Yawalapiti was recognized, albeit in a merely suggestive manner, by Karl von den Steinen in his 1894 book *Unter den Naturvölkern Zentral-Brasiliens*, where the earliest documentation of the Xinguan Arawak languages is found. Section **4** discusses the hypothesis that an allomorphy pattern in the person/number prefixes of Yawalapiti can be understood as a relic of this process. Section **5** addresses recent data from Waurá, another member of the Xinguan Arawak subgroup, which seems be subject to an independent development of *p to a coronal segment *tʃ* in palatalization-prone environments. Here as well the earliest registers of the Xingu Arawak languages published by Von den Steinen turn out to be significant, showing that the diachronic labial palatalization attested in Waurá is an independent and posterior development. Finally, section **6** is devoted to the conclusion of the paper.

2. Labial Palatalization

Following Bateman's (2007) typological study of consonant palatalization, I adopt the distinction between '*secondary palatalization*' and '*full palatalization*'. Assuming three consonantal places of articulation for the potential targets of this process, coronal *t*, velar *k* and labial *p*, table 1 below depicts the different outcomes in each of the categories of palatalization:

Table 1

Full Palatalization	Secondary Palatalization
$k \rightarrow \text{tʃ}$	$k \rightarrow k^j$
$t \rightarrow \text{ts}$	$t \rightarrow t^j$
$p \rightarrow r$	$p \rightarrow p^j$

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[1] The Xingu(an) branch of the Arawak family includes the following languages: Waurá, Mehinaku, Yawalapiti and Kustenaú. Waurá and Mehinaku are basically varieties of the same language, though interesting differences exist between the two varieties (one of which will be discussed here; cf. Corbera Mori 2008, 2012 on other points of divergence). Kustenaú is already extinct, the sole existing material on this language being the vocabulary published in von den Steinen (1894).

The main difference between the two categories is, thus, that while full palatalization implies a change in the Place of articulation of the target consonant, no such change occurs in cases of secondary palatalization, where a single palatal off-glide is inserted (see Bateman 2007 for a full justification and exploration of this distinction).

My focus here lies on the shaded cell in table 1, that is, on cases of full palatalization of labials. Bateman (2007) analyzed a world-wide sample of 117 languages from 86 different genetic units. Of these, 58 had some sort of palatalization process described in primary sources. More striking, however, is the fact that full palatalization of labials is typologically rare: only two languages, Romanian (Indo-European) and Tswana (Southern Bantu) showed instances of (apparent) full labial palatalization in her sample (see Bateman 2007: 37-46).

As discussed in Thomason (1986), the existence of diachronic correspondences such as *p > s, mapping a labial stop to a coronal consonant, often with a fricative component, have been seen by many as favoring an acoustic explanation to these change events (see also Ohala 1978 for a classic discussion from the point of view of acoustic phonetics). Thomason also arguments, however, that articulatory accounts of such changes, involving intermediate stages where a palatal glide following the labial stop, as in pj or p^j, is devoiced and produced with some amount of friction, can be sustained as well in particular cases. Bateman (2007) follows this latter course of analysis, claiming that diachronic correspondences such as *p > ts, or synchronic morphophonemic alternations involving these segments, would necessarily involve intermediate steps such as *pj > *pʃ > *ps > *∅s, with loss of the labial segment at some point (*p > ∅) and preservation of the coronal segment as the hardened reflex of an earlier palatal vocoid (see Bateman 2007: chapter 3, for details).

The goal of this section has been to briefly introduce the reader to some of the broader theoretical issues and questions raised by processes of labial palatalization, such as the full palatalization described in Carvalho (2016a) and in the remainder of this paper for the Xinguan Arawak languages, especially Yawalapiti. It remains to be seen whether articulatory or acoustic factors account best for the attested patterns, though this will not concern us in the present contribution. The reader is referred to Carvalho (2016a) where the developments proposed for the Yawalapiti diachronic correspondences are shown to be compatible with current understanding on the role of perceptual and acoustic factors in promoting sound change.

3. Von den Steinen (1894) on Yawalapiti labial palatalization

As noted above, in Carvalho (2016a), I argue, among other things, that a sound change whose effect was to change p into a coronal stop took place during the development of Yawalapiti, a change that I describe as the telescoped result of a palatalization of Pre-Yawalapiti *p to *p^j, the palatalized allophone eventually merging with the reflexes of the rhotic *r (labial palatalization is also attested for Yawalapiti in instances of *m > ɲ). Plenty of synchronic evidence for this development is preserved in modern Yawalapiti in the form of morphophonemic alternations such as puti ~ ruti 'thigh', piɲa ~ riɲa 'house', paka ~ raka 'to sing' and pɨhi ~ rɨhi 'penis', in all cases triggered by the prefixation of a person/

number prefix with a front high (or palatal) vowel *i* (prefixes with non-etymological high front vowels resulting from a shift *i < *i̵* do not condition the appearance of the restricted, 'palatalized' allomorph). The preservation of these morphophonemic alternations in the modern language allows one to internally reconstruct the course of these changes, bringing in addition comparative evidence to validate and support the reconstructed forms and developments (see Carvalho 2016a for details).

What I did not know at the time is that the German explorer and ethnologist Karl von den Steinen, to whom we owe the first documentation of the Xinguan Arawak languages, had already noticed that in many cases a labial stop *p* in Mehinaku, Waurá and Kustenaú corresponded to a coronal consonant, either *t* or *r*, in Yawalapiti (von den Steinen 1894: 532). In his words: '*Es sei auf die interessante Fälle von Lautwandel in Verhältnis zu Mehinakú etc. aufmerksam gemacht. Meh. p erscheint mehrfach als t und r.'*. ['One may note the interesting cases of sound change with regard to Mehinaku revealed by a comparison with the Yawalapiti data. Mehinaku *p* appears many times as *t* and *r*'; my translation]. Before considering the relevance of the Von den Steinen material, it might be fruitful to discuss some aspects of his transcription system. I will rely extensively on Corbera Mori (2008, 2015) for this task.[2] According to von den Steinen's own indications on the phonetic values of the symbols he employs (1894: 523-524), and later interpretations based on the comparison of his material with the data from extant languages described by professional linguists (Corbera Mori 2008, 2015), it can be assumed that symbols like <p>, <t>, <k>, <m>, <n> and <s> have straightforward values similar to those of their IPA equivalents. <y> stands for the palatal glide [j], and <š> for the palatal fricative [ʃ]. In Von den Steinen (1894: 523) one finds the description of <z> as similar to IPA [z], and this seems to be correct for the Waurá data (Corbera Mori 2008: 35). For Mehinaku, however, a comparison between his Mehinaku data and modern materials on the language suggests that, at times, he used this symbol to transcribe a retroflex fricative [ʐ]. The same value [ʐ], which in modern Xinguan Arawak languages consists of a voiced allophone of /ʂ/ can be assigned to von den Steinen's <rz> (see Corbera Mori 2008: 31 on these points). For the interpretation of the Yawalapiti data in particular, it is important to keep in mind that the retroflex fricative implemented as [ʂ] ~ [ʐ] in Waurá and Mehinaku corresponds to a rhotic [r] in Yawalapiti (Carvalho 2016a: 299), a resonant trill often produced with audible frication and which contrasts with a simple tap [ɾ] in the language (Ortega Mujica 1992: 20). I assume that the use of digraphs <rz> and <rh> were von den Steinen's way to code this frication noise that accompanies the production of these 'strong' rhotics. This fricative phase or 'overlay' in the production of trills is, in effect, a feature found in other, more distantly related Arawak languages, such as Achagua (Meléndez Lozano 2011: 3), Wayuunaiki (Captain & Captain 2005: 8) and Wapixana (Santos 2006).

A subset of the items in the Von den Steinen (1894) material that back up his claim of a correspondence between a labial stop in Mehinaku (and Kustenaú) and a coronal consonant in Yawalapiti is given below (the corresponding segments appear in bold):

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[2] In Carvalho (2016c), a historical linguistic study of the Xinguan Arawak languages, I gave some attention to the Von den Steinen materials, though the focus was not at the evidence they provide for labial palatalization in Yawalapiti.

Table 2. Items in Von den Steinen (1894)

	Yawalapiti	Mehinaku	Kustenaú
Cotton thread	*<kuyari>*	*<kuyapi>*	-
Strainer	*<tuari>*	*<tuapi>*	-
Fish sp.	*<vari>*	*<uvapi>*	-
White clay	*<irhitziki>*	*<epitsiri>*	-
Manioc bread	*<ularzi, ulari>*	*<uläpe>*	*<uläpe>*
Drinking bowl	*<tidza>*	*<pitsa>*	*<pitsa>*
You	*<tezo, tero>*	*<petsü>*	*<pitsü>*
Blue	*<tsirulá, dzirulá>*	*<ipiulá>*	*<ipiulá, pülatirzo>*

It is clear, even from this brief discussion, that Von den Steinen's (1894) remarks should not be dismissed as having 'merely historiographic' interest, as he not only presents forms not discussed in Carvalho (2016a) as evidence for the contextual coronalization of labial stops in Yawalapiti, but also because his data supports the hypothesis that a palatalization-prone environment was the relevant conditioning factor. Note that in the case of the term for 'Blue' in table 2 the palatalization-triggering front vowel is preserved only in the Mehinaku and Kustenaú forms, and is thus equally suggestive of the role of a palatal context in triggering the coronalization of the etymological labial stop. Finally, the form for 'you', that is, the second-person singular personal pronoun, given above in table 2, is particularly relevant for the subject of the next section. In section **5** I will discuss how the material in Von den Steinen (1894) is also relevant to establishing an approximate chronology to the developments discussed here.

4. Allomorphy of the 2sg prefix in Yawalapiti: *ti-* as a Relic Form?

In addition to the evidence provided by the already mentioned language-internal (morphophonemic) and comparative data, including Von den Steinen's, both strongly supporting the hypothesis that Yawalapiti was subject to a labial palatalization change, another allomorphy pattern, ignored in Carvalho (2016a), can be made sense of by invoking the referred process that mapped Pre-Yawalapiti *p*, ultimately, to a coronal segment.

I present here the suggestion that the allomorph *ti* of the 2sg prefix, whose occurrence is restricted to stems beginning in *h* and to the independent 2sg pronoun *tiʂu* (Mujica 1992: 57, 61), Von den Steinen's *<tezo, tero>*, is a relic of the intermediate stages in the coronalization process that I proposed for the development of pre-Yawalapiti *p^j*. What is perhaps the main reason for adopting this proposal is that as far as an explanation of this 'aberrancy' goes there seems to be no better alternative. I know of no other Arawak language having an allomorph of the 2sg prefix that shows a coronal consonant; this prefix appears everywhere with a labial stop and is reconstructed as *pi-* for the Proto-Arawak (PA) ancestral language (Payne 1991: 376; though see Carvalho 2016b for evidence that this prefix's initial consonant was actually voiced *b*). Since extensive independent evidence shows that Pre-Yawalapiti *p* changed to a coronal consonant in the context of a

palatal vocoid (that is, either *i* or *j*), a context met by the conservative form of this prefix, **pi-*, it is natural to subsume an account of this allomorphy pattern under the effects of this regular yet unusual development (though see section **5** for a relativization of this odd character; cf also Thomason 1986). Note that there is no danger of circularity here, as the existence of the allomorph *ti-* alongside *pi-* was not taken into account in the original postulation of a palatalization (or coronalization) change applying to **p*.

Before proceeding with the presentation of the proposed account of the origin of the allomorph *ti-* I must comment on a potential objection. The diachronic palatalizations which constitute the focus of Carvalho (2016a) targeted root-initial consonants preceded by **i* in person-number prefixes, that is, across a morpheme boundary. In the case at hand, however, the hypothesis deriving *ti-* from intra-morphemic palatalization in an earlier prefix **pi-* would involve no such context. There is no palatalization-triggering element that could precede this person/number prefix. It is therefore fitting to bring up the fact that diachronic palatalization, including **p > r*, *did take place* in non-derived contexts (i.e., tautomorphemically), even if more sporadically, in Yawalapiti. Thus, the pan-Arawak root/nominal classifier **pʰi* (Payne 1991: 384, 414), usually meaning 'neck', 'snake' or functioning as a form-based nominal classifier for slender, snake- or rope-like objects, appears in Yawalapiti as *-ri* (Mujica 1992: 50), and also crystallized in the form for 'neck', *riɲu* (compare Mehinaku *pĩjũ* ; Ignaciano *pikenu*, Paresi *-hino*, with **p > h* as a regular development).[3] The form for 'neck' is attested in Von den Steinen (1894: 533) as *<nurhinyu>*, including the 1sg possessive prefix *<nu->* and with transcription of the fricative character of the rhotic indicated by the digraph *<rh>*. The Von den Steinen data in table 2 also supply additional examples, especially *<tidza>* 'drinking bowl' (cf. [tiʐa] in Mujica 1992: 15) and *<irhitziki>* 'white clay', as some of the other forms might contain the classifier *-ri*. Thus, it seems that diachronic palatalization in Yawalapiti was conditioned either by a preceding palatal element that conditioned a transition off-glide in the target consonant (that is, *ip* → [ipʲ]) or by a following palatal element, whose articulation could plausibly involve the creation of this palatal off-glide (that is, *pi* → [pʲi]).

Proceeding with the discussion, the allomorphs of the 2sg prefix in Yawalapiti are presented below:

(1) *2sg Prefix Allomorphy in Yawalapiti*

    (a) **hi**-*ʧuʂu*   'your head'
        2sg-head

    (b) **p**-*akiɾu*   'your aunt'
        2sg-aunt

    (c) **ti**-*ʂu*   'you'
        2sg-Base

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[3] Moreover, as discussed in Carvalho (2016a), modern Yawalapiti forms showing non-derived (morpheme-internal) instances of [pi] (e.g. *api* 'bone', *pikiri* 'agouti') actually go back to Proto-Arawak forms with etymological **i* and thus do not qualify as exceptions to the hypothesis that **p > r* applied morpheme-internally as well.

According to Mujica's (1992: 60) description, the allomorph *p- ~ pi-* occurs prefixed to vowel-initial roots (1b), while *hi-* and *ti-* occur only preceding consonants (1a, 1c). Though the polymorphism *p- ~ pi-* can be plausibly accounted in simple phonological terms (by reference to well-formed vowel clusters in the language), it is impossible to postulate a single underlying form from which all variants in (1a-c) would result by simple contextual phonological rules. That is, *pi-*, *hi-* and *ti-* have to be recognized as distinct allomorphs, not simple phonological alternants relatable by means of active, synchronic phonological regularities of Yawalapiti.

In Carvalho (2016a: 302-304) I show that the allomorph *hi-* results historically from a morphologically restricted debuccalization process mapping **p* to a glottal aspirate *h* (this development contrasts with unconditioned change **p > h* in Paresi, another member of the Arawak family and arguably closely related to the Xinguan languages). I also claim that the allomorph with a labial stop is synchronically *p-*, not *pi-*, and appears only where a root-initial vowel *historically* caused the elision of the vowel *i*. The sole instance of surface *pi-* given in Mujica (1992: 62), *[piˈua]* is better analyzed as *p-*, with the surface vowel *i* being actually part of the root (compare the 1sg form *[niˈua]* 'my uncle', where the 1sg prefix *nu-* also appears exceptionally with *i*).

As for the allomorph *ti-*, Mujica (1992: 61) describes a very limited distribution: it occurs only preceding nominal roots whose first segment is *h*. Though no relevant examples are offered by the author, this allomorph also appears in one item of great functional importance, one not characterized by the phonological environment described in Mujica (1992). As seen in table 3 below, this allomorph occurs in the 2sg independent personal pronoun (see Postigo 2014: 180 and Mujica 1992: 56-57 for the Waurá and Yawalapiti forms, respectively).[4]

**Table 3.** Waurá and Yawalapiti Independent Personal Pronouns

	Waurá	Yawalapiti
1sg	*natu*	*natu*
2sg	*piʦu*	*tiʂu*
3sg	*ʂa*	-
1pl	*aʦu*	*aʂu*
2pl	*jiʦu*	*iʂu*
3pl	*nala*	-

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[4] Instead of independent 3 person pronouns, Yawalapiti makes use of deictic demonstratives which specify number, gender (in the singular) and position relative to the speaker (Mujica 1992: 58-59): *iɾi* 'masculine, close', *iɾu* 'feminine, close', *itiɾa* 'masculine, far', *iɾutiɾa* 'feminine, far', *inana* 'plural, close' and *inatiɾa* 'plural, far'.

The Yawalapiti 2sg personal pronoun was also documented by Von den Steinen (1894: 534) as *<tezo, tero>*. As with Arawak languages in general (see Aikhenvald 1999: 85; Carvalho 2016b), independent personal pronouns in Waurá and in Yawalapiti are derived (at least historically) by the prefixation, to a pronoun-deriving base or particle, of a person/ number marker, usually identical in form to the prefix that codes possessor in nouns and 'subject' in verbs. The base has a form *-tu* in both languages, subject to phonologically-conditioned variation to [*-ʦu*] (Waurá) or [*-ʂu*] (Yawalapiti) where preceded by a palatal vocoid. In the Yawalapiti 1pl pronoun the alternation is no longer phonetically transparent, though the Waurá form reveals the earlier presence of **j*.

The 2sg personal pronoun in Yawalapiti is therefore analyzable as *ti-ʂu*, showing the restricted allomorph *ti-* of the 2sg prefix which contrasts with the Waurá form, where the etymological labial stop is preserved. The coronal stop *t-* in this case arguably goes back to the outcomes of the first of a series of changes that mapped the palatal allophones of Pre-Yawalapiti **p* to *r*. The two-staged nature of this change is depicted below:

(2) *Labial Palatalization in Yawalapiti*

*[pʲ] > **ʦ, *tʃ* ┈┈┈┈┈┈┈┈┄

*r ─────────────────────────────► r
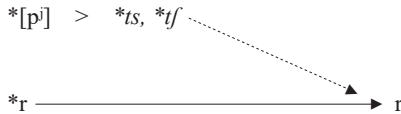
The Pre-Yawalapiti palatalized allophone of **p* first changes to a coronal segment, perhaps an affricate, following some indications in Ohala (1978). At a presumably later stage it merged with the reflexes of **r > r*, implementing therefore a pattern of primary split. The 2sg allomorph *ti-* would be a relic from the intermediate stage preceding the merger with **r*.

Similar retentions of intermediate stages of diachronic correspondences have been proposed for other Arawak languages. For Paresi, for instance, Brandão (2014: 40) and Silva (2009: 181) propose that the low-frequency phoneme ϕ (or *f*) results from the sporadic retention of the intermediate stage in the debuccalization **p > h* that otherwise applied in a general manner in the language. Though my position is that this particular hypothesis on the Paresi fricatives requires further investigation in order to be fully acceptable,[5] the proposal made here for Yawalapiti is in no sense implausible.[6] Indeed, given the general assumption

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[5] An alternative hypothesis, so far not subject to consideration, is that these few instances of Paresi [ɸ] occur in loanwords that entered the language after the debuccalization change. Another possible account would invoke dialect borrowing, that is, loanword adoption from a closely related variety where **p > ɸ* took place though *ɸ > h* did not, that is, an instance of dialect borrowing.

[6] It is clear that instances of the apparent retention of intermediate stages in certain forms can be found in the phonological history of every major language family. In Dravidian, for instance, Krishnamurti (2003: 124) notes the general loss of the Proto-Dravidian laryngeal **H* in Old Tamil except 'in some relic forms of restricted distribution', including a few deictic bases (Krishnamurti 2003: 198-199). In other languages, such as Kurux-Malto and Toda-Kota, these laryngeals **H* are preserved as the glide *j* (Krishnamurti 2003: 411, fn. 7) which could be a remnant of an intermediate stage in the ultimate loss of **H* (cf. Krishnamurti 2003: 95 for a derivation such as **aHn > *ayn, *eyn, *iyn*). For Japanese, Hamano (2000) shows that while the chain of changes **p > *b > *ß > w* applied intervocalically throughout the Sino-Japanese and native strata of the language's lexicon, the reflex of **p* remained 'stuck' as *b*, without further lenition, in words pertaining to the stratum of mimetic expressions.

that diachronic correspondences such as *p > r should be emphatically distinguished from statements of sound changes (understood as the emergence of innovative forms or variants; see Janda & Joseph 2003: 207-208 on this point) this is all the more likely. Individual correspondences may actually subsume several *independent* changes, as is the case with (3). Once Pre-Yawalapiti *p has been fully palatalized to a coronal, the subsequent merger of these segments with r (< *r) may fail to affect all eligible targets for different reasons. Therefore, such retained relics are not necessarily intermediate stages in the operation of 'one and the same sound change', but consist simply in the reflexes of earlier changes that were later followed, in other contexts, by independent change events.

At the moment we lack sufficient data to address the extent to which lexical diffusion might be responsible for the retention of such relics of earlier changes, a hypothesis naturally arising when dealing with cases like these (see e.g. Krishnamurti 2003: 123, 139 and references therein for some Dravidian cases). It might be enough to point out that, elsewhere in Arawak languages, person/number prefixes are associated with parochial or sporadic developments not subsumable under more general 'sound laws' or correspondences. I have already noticed the debuccalization *p > h which is restricted to the 2sg prefix in Yawalapiti (a point also argued for in Carvalho 2016a). According to Santos (2006: 63), the opposition between oral and nasal vowels in Wapixana is restricted to the paradigm of person-number prefixes, where the 1sg prefix, *ũ-*, is distinguished from the 3sg Feminine prefix *u-*. In Terena, rather drastic processes of phonetic erosion apparently targeted the person/number prefixes specifically - neither word-initial position nor prefixes were affected in general - to the point that 1sg and 2sg prefixes have been reduced to suprasegmental features (nasalization, 'palatality') realizing the relevant morphological categories (see Eastlack 1968: 3-4; Ekdahl & Butler 1979: 21, 25-26). The sporadic retention of the coronal stop t in the 2sg prefix of Yawalapiti, where Pre-Yawalapiti *p has been elsewhere mapped to r by a primary split process might as well be one such morphologically-restricted development. The phenomenon - so far as I can tell, unnoticed in the published literature on comparative Arawak - surely deserves further attention.

5. Labial Palatalization in Waurá and Cognate Recognition

In Carvalho (2016a) I assume that both Mehinaku and Waurá agree in showing secondary palatalization of p to pʲ, differing thus from Yawalapiti where full palatalization of p to t͡ʃ is attested instead. Though this is a correct description of the Mehinaku facts (see Corbera Mori 2014: 161), recent evidence from Waurá (see Postigo 2014), shows that Waurá also innovated coronal segments from labial stops.

(3)   *Evidence of full palatalization of the labial stop in Waurá*

(a) *putɨ-i*	*[puti]*	'leg'	(Postigo 2014: 114)
pi-putɨ	*[pit͡ʃutɨ]*	'your leg'	
(b) *it͡ʃehɨ*		'capybara'	(Postigo 2014: 101-174)

On the lexical item in (3b), cognates elsewhere in the family show the presence of a labial stop: Mehinaku *ipehɨ*; Corbera Mori (2014: 162); Iñapari *hipetʃĩ*; Parker (1995: 33); perhaps Baure *peri* 'agouti' as well, see Danielsen (2007: 48). Moreover, the Waurá data in Von den Steinen (1894: 532) includes a form <*ipiehü*> 'capybara', attesting thus the relatively late data and independent character of this development *vis-à-vis* the Yawalapiti labial palatalizations, already fully attested in the Von den Steinen material. Note the presence of the palatalization-triggering high front vowel following *p*, setting therefore the conditions for the palatalization discussed in section **2** above.

The existence of morphophonemic alternations (3a) suggests that this is an intrinsic development of the language, and that the diachronic labial palatalization instantiated in isolated lexical forms such as (3b) cannot be explained away as the result of borrowing from Yawalapiti or some other Xinguan Arawak dialect. Though the phenomenon of palatalization in Waurá clearly deserves an in-depth study, the main goal here has been simply that of highlighting the fact that the Xinguan branch of the Arawak family presents at least two separate instances of labial full palatalization, a remarkable drift-like trend given the rarity of diachronic correspondences, or of resulting morphophonemic alternations, involving labial stops such as *p* and coronal segments such as *tʃ* (see Thomason 1986; Bateman 2007: 44-46).

The data in the Von den Steinen (1894) materials are once more relevant for a historical understanding of palatalization in the Xinguan Arawak languages. Von den Steinen's Waurá data show the occurrence of full palatalization of velars, <*nukate*> '(my) shin' vs. <*pitšyati*> '(your) shin', and of coronals, <*nutulú*> '(my) ear' vs. <*pitsulu*> '(your) ear', while labials display only secondary palatalization, as in <*numái*> '(my) skin' vs. <*pimiyái*> '(your) skin'. This is the same pattern described for Mehinaku and Waurá (see Carvalho 2016a: 301), prior to the appearance, for Waurá, of data such as that in (3) above. A comparison of the earliest (1894) and latest (early 2010's) materials on Waurá supports the reasonable assumption that secondary palatalization is an intermediate stage in the diachronic correspondences mapping labial stops to coronal reflexes and that labial palatalization took place much earlier in Yawalapiti.

As a final note, it is important to discuss how the relatively unfamiliar change mapping labial stops to coronal consonants in a palatal context, once identified, helps solve potential problems in the identification of cognate morphemes for comparative reconstruction. In their unpublished[7] attempt at reconstructing aspects of the phonology and the lexicon of the Proto-Xinguan (PX) language, the common ancestor of the languages making the Xinguan branch of the Arawak family, Seki & Aikhenvald (1992) discuss one cognate set where the relevant correspondence is found: Waurá *kapi* Yawalapiti *kari* 'coati'. The authors suggest that the Yawalapiti cognate is 'dubious' and that the final syllable, *-ri*, may actually be a separate morpheme. In view of the correspondences discussed here, in Carvalho (2016a) and identified by Von den Steinen (see table 2), the forms can be considered straightforward cognates, reflexes of Proto-Xinguan **kapi* (see Carvalho 2016c for the identification of obscure, that is, semantically-shifted cognates in Xinguan Arawak).

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[7] I was able to get a copy of this unpublished study with the help of Bruna Franchetto, to whom I express my gratitude.

6. Synthesis and conclusions

I have dealt here with a few facts which, in the manner of short yet important footnotes, further enrich the understanding of diachronic palatalization and its synchronic consequences in the Xinguan Arawak languages, explored in greater detail in Carvalho (2016a). I show that the vocabulary lists appearing in Von den Steinen (1894) offer fascinating early evidence bearing on the labial palatalization that took place in Yawalapiti and, independently and at a later date, in Waurá as well. Finally, labial palatalization in Yawalapiti is invoked as a way to explain an unusual allomorphy pattern described for the Yawalapiti 2sg person/number prefix.

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