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Philological evidence for phonemic affricates and diachronic debuccalization in Early Terena (Arawak)

Evidências filológicas de africadas fonêmicas e debucalização diacrônica em Terena antigo (Arawak)

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Abstract: This paper argues that early Terena ('Guaná') had a contrast between fricative and affricate consonants that has been lost in modern Terena. Evidence for this claim comes from the examination of late 19th century and early 20th century documents on the language. The existence of the relevant phonemic contrast is revealed not only by an analysis of the transcriptions employed in these early sources but, more importantly, by a demonstration that fricatives and affricates were treated differently in the history of the language. It is proposed that, after the early Terena voiceless fricatives were debuccalized, merging with early Terena *h*, the affricates started to include fricative realizations in their allophonic range. This scenario is consistent with descriptions of modern Terena that stress the 'archaic' character of affricate realizations of /ʃ/.

Keywords: Terena. Arawak languages. Sound change. Philology.

Resumo: O trabalho aqui apresentado argumenta que o Terena antigo (Guaná) possuía um contraste entre consoantes fricativas e africadas, o qual se perdeu no Terena moderno. Evidências para essa afirmação vêm do exame de materiais sobre a língua datados da segunda metade do século XIX e do início do século XX. A existência do contraste em questão é revelada não só por uma análise das transcrições utilizadas nessas fontes, mas, em especial, pela demonstração de que fricativas e africadas tiveram comportamento distinto no desenvolvimento histórico da língua. Propõe-se que, após a debucalização das fricativas do Terena antigo e sua fusão com *h*, as africadas passaram a ocorrer como fricativas em parte do seu espaço de realização fonética. O cenário descrito é compatível com descrições do Terena moderno, nas quais se acentua o caráter 'arcaico' das realizações africadas de /ʃ/.

Palavras-chave: Terena. Línguas Arawak. Mudança sonora. Filologia.

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INTRODUCTION

In one of its accepted definitions, philology is concerned with subjecting “records to examination and interpretation in order to gain information about the languages in which these records are cast” (Goddard, 1976, p. 73)¹. In the context of the native indigenous languages of the Americas, very few languages, were, like Quechua, Aymara, Nahuatl or Guaraní, singled out as the object of grammatical description and compilation of vocabularies in early colonial times (Campbell, 1997, p. 30). As a consequence, most native languages of the Americas have no written testimonies to which this kind of philological investigation can be applied in the search for additional historical insights. Perhaps for this reason – and for the emphasis placed on the urgent need to subject living yet rapidly disappearing languages to documentation and description (Goddard, 1976, p. 74-75) –, a rather self-defeating bias emerged in the study of the indigenous languages of the Americas: the belief that examination of early documentary evidence on these languages, where it exists, can be dismissed as virtually uninformative (see Goddard, 1976, p. 74; Wolfart, 1982, p. 403; Campbell, 1997, p. 8 for early diagnostics of this trend). Fortunately, recent work on the historical linguistics of South American languages has countered this trend and has relied extensively and fruitfully on older documents collected by travelers, missionaries or anthropologists, whose data often contribute critically to the understanding of historical developments and to the reconstitution of the early ethnolinguistic diversity characterizing specific areas or particular language groups (see Ramirez, 2001; Viegas Barros, 2013; Michael; O’Hagan, 2016 and Birchall et al., 2016 for some fine examples).

This brief paper addresses existing documentary evidence on early Terena (also called ‘Guaná’ or ‘Chané’; see Carvalho, 2016), which was either the ancestor, or a dialect closely related to the ancestor of Terena (modern Terena), an Arawak language spoken to this day by more than 5,000 people in the Brazilian state of Mato Grosso do Sul². I will in no sense exhaust the potential these sources may have for further enlightening our understanding of the history of these languages. Instead, I will concentrate on a single aspect of the historical phonology of Terena that emerges quite conspicuously from a comparison of these early documents to the data on the modern language. I will show that early Terena had a contrast between fricative and affricate consonants that has been lost in modern Terena. The existence of the relevant phonemic contrast is revealed not only by an analysis of the transcriptions employed in these early sources but, more importantly, by a demonstration that the two phonological classes were treated differently in the history of the language. I will also bring in comparative evidence from closely related Arawak languages, in particular the Mojeño varieties (Ignaciano and Trinitario), to give a clearer and more comprehensive picture of the historical developments discussed and of what are its implications to our understanding of the Terena diachrony.

¹ I assume here Goddard’s (1976, p. 73) concept of philology when describing the analysis of such early documents provided by “external observers” (i.e. non-native speakers) even if other definitions of what counts as “proper” philological analysis abound (say, definitions that focus on the study of cultures through texts, with no particular concern for the language(s) of these texts as an end in itself). Perhaps the term “metaphilology”, used by Wolfart (1982), is more appropriate for what is intended here, but I will set these questions aside in the present paper.

² When working with early, documentary material on a speech variety that is closely related to a modern, extant language, there is understandably an impulse to jump into the conclusion that these stand in an ancestor-descendant relationship. I will explicitly avoid this unsubstantiated (perhaps, indemonstrable) claim, assuming only, as seems to be obviously shown by the existing evidence, that these Guaná documents show a language that is virtually identical to Terena. Some amount of dialectal variation surely existed and aspects of this variation may have been reflected on the existing sources (see Aguirre, 1898 [1793], p. 502; Taunay, 1875) though the extent or nature of these differences remains unknown. Most of the explicit remarks given in Taunay (1868) on the matter of dialectal variation concern lexical differences, in particular those resulting from the adoption of loanwords (say, from Guaraní) by particular Guaná factions or groups (see Carvalho, 2016 for some discussion).

The Terena data in this paper come from my own fieldwork at the Cachoeirinha reservation, Mato Grosso do Sul, unless noted otherwise. The sources for the early Terena data, Taunay (1868) and Schmidt (1903), are discussed in greater detail in section entitled “Taunay (1868) and Schmidt (1903): sources on Early Terena”.

The paper is organized as follows: in the next section I offer a brief overview of the phonology of modern Terena, noting, among other things, that the language lacks a contrast between fricatives and affricates. Following this discussion of the phonology of the modern language is a presentation of the sources on early Terena data, focusing on the representation of fricative and affricate segments. The section “Phonemic affricates and the loss of fricatives in early Terena” constitutes the core of the paper, where I examine the early Terena data in Taunay (1868) and Schmidt (1903) and show that a comparison of these documents with modern Terena forms presents evidence for the diachronic correspondences $s, f > h$, resulting in a (partial) merger with early Terena h , and $ʈ > f$, which is arguably related and possibly fed by $s, f > h$. A sub-section is devoted to some residual issues in the interpretation of the Taunay (1868) and Schmidt (1903) data, in particular the open issue of whether early Terena also had an alveolar affricate ts . Finally, the article ends with a brief presentation of conclusions and implications of the analyses.

TERENA PHONOLOGY: A BRIEF OVERVIEW

I start this section with a few words on Terena prosody, even though this is a complex and yet poorly understood subject still in need of detailed treatment³. Two diacritic marks, the circumflex mark ‘^’ and the acute mark ‘’’, are usually employed in presenting Terena data (see e.g. Ekdahl; Butler, 1969, 1979; Eastlack, 1967, 1968). Though instrumental and acoustic investigations are necessary to cast further light in the complex prosodic system ‘decoded’ by these diacritics, the following seems to be accepted: these two marks indicate ‘greater prominence’ on the syllable they occur, plausibly interpretable as greater loudness (intensity) as a correlate of main word stress placement. The two diacritics differ, however, in terms of their pitch (tonal) and duration properties. Circumflex accent indicates greater length of the vowel where it occurs, in addition to a descending pitch curve (*tâki* [‘tâ:ki] ‘his/her arm’). The acute accent has no particularly salient pitch contour, and its lengthening effect is realized on the following consonant, not on the vowel above which it occurs (*ásurupi* [‘as:urupi] ‘guts, intestines’). The system is complex in that it has interactions with the morphology and with phrase-level and intonational phenomena, which may cause changes in the ‘basic’ accentual profile of individual words and calls for the identification of a number of ‘melodies’ (e.g. *pâho* ‘his/her mouth’, but *pahóti* ‘someone’s mouth’).

Moving now to the segmental phonology, the Terena consonantal inventory assumed here is given in Table 1. The inventory is broadly consistent with those proposed in published sources on the language (e.g. Harden, 1946; Ekdahl; Butler, 1979; Silva, 2008; Martins, 2009, p. 42) and with my own work in the field. The following points need comment: the opposition between n and $ɲ$ is marginal, though is included here in view of pairs such as *kêno* ‘ear’ and *éno* ‘(his/her) mother’. Martins (2009) phonemicizes [w] and [v] as allophones of /v/, not of /w/. Though the difference is immaterial to the following discussion, I opted here for employing /w/ as the underlying segment.

³ The language is at times described as having a restricted tone system, with the occurrence of a falling contour tone triggering surface vowel lengthening (cf. e.g. Aikhenvald, 1999, p. 79, footnote 7). Alternatively, the language has been described as a stress language in which main stress placement may condition both vowel and consonant lengthening (Harden, 1946, p. 60; Eastlack, 1967) or as a language in which apparent tonal contrasts may be explained as the effects of accentual shifts (cf. Martins, 2009, p. 67). The reader should consult Bendor-Samuel (1961) for the most comprehensive description of Terena prosody to date.

Evidence for this segment being /w/ instead of /v/ comes from its behavior in cases of nasal spreading, associated with the exponence of 1sg in both verbs and nouns. In particular, the segment in question patterns like a sonorant in being transparent to nasal spread: *iwatako* 'he sat', *ĩwãdako* 'I sat' (cf. Ekdahl; Butler, 1979, p. 25). The language's vowel inventory appears in Table 2.

Table 1. Terena consonants.

	Labial	Alveolar	Palatal	Velar	Glottal
Stop	<i>p</i>	<i>t</i>		<i>k</i>	<i>ʔ</i>
Fricative		<i>s</i>	<i>ʃ</i>		<i>h</i>
Nasal	<i>m</i>	<i>n</i>	<i>ɲ</i>		
Lateral		<i>l</i>			
Rhotic		<i>ɾ</i>			
Glide	<i>w</i>		<i>j</i>		

Table 2. Terena vowels.

	Front	Central	Back
High	<i>i</i>		<i>u</i>
Mid	<i>e</i>		<i>o</i>
Low		<i>a</i>	

A conspicuous feature of Terena speech is the fact that both front and back mid vowels are frequently realized as mid-open [ɛ] and [ɔ], respectively. I will, however, follow most existing sources and employ *e* and *o* for representing the relevant phonemes. Harden (1946, p. 61) postulates two back unrounded vowels that she symbolizes as *ĩ* and *ẽ*. Since these are restricted to occur next to a glottal fricative *h*, I assume that Harden's back unrounded vowels correspond to tokens of [ɨ] noted elsewhere in the literature to occur in this exclusive context (cf. Martins, 2009). Souza (2008) found a complementary distribution between [i] and [ɨ] in the Kinikinau variety⁴, thus treating both as allophones of /i/. The status of the restricted occurrences of [ɨ] in Terena – or even whether there is single phone [ɨ] as opposed to the two backed allophones described in earlier sources such as Harden (1946) – remains uncertain. As nothing in the present discussion or in the argument presented here depends on this issue, I will assume the general opinion that the language has no such segment in its phonological inventory (cf. Payne, 1991, p. 421, comment on etymology for 'tail'; also Ekdahl; Butler, 1979, p. 13; Silva, 2008; Martins, 2009; Rosa, 2010, p. 66)⁵.

The Terena continuant obstruents will turn out to be particularly important for the argumentation that follows and merit, for this reason, a more detailed discussion. The language has two oral fricatives, a coronal-alveolar (or more

⁴ 'Kinikinau' appears in some sources as the name of a language distinct from Terena (cf. e.g. Aikhenvald, 1999). A comparison of Terena forms with the Kinikinau material presented in Souza (2008) and in earlier sources gives a clear impression that both constitute close dialectal varieties of what is one and the same language (see Carvalho, 2016 for discussion).

⁵ Though not directly relevant to the present paper, I note that both the non-low central vowels, *ĩ* and *ẽ* in Harden (1946), and the nasal stop *ɲ*, seem to be intermediate between fully contrastive (hence, unpredictable) and fully allophonic (hence, fully predictable) phonological elements. These marginally contrastive segments have not been treated adequately in the existing literature and even their phonetic description seems to be relatively inadequate. Their synchronic and diachronic nature is a matter currently under investigation by the author.

anterior) fricative *s* and a coronal-palatal (or more posterior) *ʃ* (Harden, 1946, p. 62; Ekdahl; Butler, 1979, p. 13; Martins, 2009, p. 35). Their contrast is exemplified by forms such as:

(1) Evidence for a *s-ʃ* contrast in Terena

<i>sêno</i>	'woman'	<i>ʃêne</i>	'path'
<i>sopóro</i>	'maize'	<i>ʃopikóloti</i>	'sickle'

A characteristic that sets these fricatives apart from each other consists in a pattern of 'free' alternation: while *ʃ* alternates freely with an affricate realization *tʃ*, *s* doesn't participate in a similar pattern (Harden, 1946, p. 62; Martins, 2009, p. 38). That is, all sources agree that while [tʃ] exists in surface, phonetic forms in Terena, it is a 'free allophone' of *ʃ* (e.g. Harden, 1946, p. 62, footnote 4; Silva, 2008; Martins, 2009, p. 38; Nascimento, 2012, p. 41).

The glottal fricative has a restricted distribution in many Arawak languages, often occurring as a boundary marker (Aikhenvald, 1999, p. 79) and **h* has a relatively uncertain *status* as a PA segment (at least in part of its distribution; cf. Payne, 1991, p. 455). In Terena, however, the glottal fricative is clearly part of the phonological inventory:

(2) Examples of the distribution of *h* in Terena (author's field data)

<i>pôhi</i>	'duck'	<i>-hiko</i>	'a lot, many'
<i>kohé</i>	'moon'	<i>hêwe</i>	'his/her foot'
<i>ihaku</i>	'container'	<i>háʔa</i>	'his/her father'
<i>pâho</i>	'his/her mouth'	<i>hóʔo</i>	'saliva'

Both oral and glottal fricatives will be at the center of the issues dealt with in the present paper.

Before moving on, it is also necessary to discuss briefly an allophonic process of contextual obstruent voicing and an allomorphy pattern, both related to non-concatenative morphological processes in Terena, since early documentary data often show the effects of these morphophonological adjustments in ways that are not obvious from a simple inspection of accompanying glosses. As seen in Table 1, voicing is not a contrastive feature in Terena phonology. Nevertheless, obstruent consonants are contextually voiced in some contexts, the most important of these being related to the exponence of 1sg subjects (in verbs) and possessors (in nouns). The exponence of 1sg in Terena can be analyzed in terms of a floating [nasal] feature, or a 'nasal prosody' (see Bendor-Samuel, 1961; Eastlack, 1968, p. 4) that attaches to the left edge of a word and spreads rightward unless blocked by an obstruent consonant. In (3) below the root *-éno* 'mother' displays full rightward spread of nasality, while *-kêno* 'ear' displays the effect of the [nasal] feature being blocked by an obstruent, in this case the velar stop *k*. Note the creation of a short nasal on-glide plus the allophonic voicing of *k* as [g].

(3) Realization of 1sg and 2sg possessors/subjects in Terena (author's field data)

<i>-éno</i>	'mother'	<i>-kêno</i>	'ear'
<i>ẽno</i>	'my mother'	<i>ʔgêno</i>	'my ear'
<i>jéno</i>	'your mother'	<i>kîno</i>	'your ear'

Also exemplified above is the realization of a 2sg possessor. In a vowel-initial word, as in *-éno* 'mother' above, 2sg is marked by a prefix *j-*; in a consonant-initial word, however, an ablaut pattern affects the vowel of the leftmost syllable

having a vowel other than *i*, in this case raising the vowel *e* to *i*. We are now in a position to start discussing the existing early Terena sources in some detail.

TAUNAY (1868) AND SCHMIDT (1903): SOURCES ON EARLY TERENA

The different sources on early Terena, or Guaná, have been subject to comparison in the past, though this has consisted, in most cases, in the mere juxtaposition of semantically-matched forms (see in particular Schmidt, 1903 and Baldus, 1937). Carvalho (2016) tackles the Guaná data in a more linguistically-informed way, showing that the existing Guaná *corpus* represents a language not significantly distinct from the modern Terena language and provides, therefore, a certain support to the premise of the present work, that is, that the Guaná documents can be profitably and interestingly compared to Terena (and for the alternative labeling of ‘Guaná’ as ‘early Terena’)⁶. As I demonstrate here, however, the existing documents on early Terena – some of which were not addressed in Carvalho (2016), such as Schmidt (1903) – are far richer as to the insights they offer to an understanding of Terena diachrony.

The two early Terena sources can be described as follows:

(4) Early Terena sources

(a) Alfredo d’Escragnolle Taunay (TN). The Guaná records of Alfredo d’Escragnolle Taunay (1843-1899) provide the most extensive documentation of the language’s vocabulary. Taunay was a Brazilian aristocrat, writer, politician and a military engineer of the Brazilian army during the Paraguay war (1864-1870). His Guaná documents were published first in 1868 as part of this book “Scenas de viagem” and later in 1875. As discussed to a certain extent in Carvalho (2016), his data go beyond that of the usual vocabulary lists, offering additional and interesting evidence on morphophonological and grammatical patterns of early Terena.

(b) Max Schmidt (MS). The celebrated German ethnologist Max Schmidt (1874-1950), author of fundamental contributions to the ethnohistorical study of South American indigenous peoples (*cf.* Baldus, 1951), and to our knowledge of the Southern Arawak peoples in particular, published in 1903 a vocabulary of the Guaná language along with some observations on the grammar of the language. He gathered these data near Cuiabá in 1901. While his data are perhaps not as extensive as those of Taunay, his transcriptions seem to be phonetically more accurate and consistent and his observations on the grammar of the language are considerably more sophisticated than those of Taunay.

When presenting Guaná forms from any of these sources I will give these in the original transcription, between angled brackets < > according to standard conventions (Trask, 2000, p. 22), and with an indication of the source by the use of the abbreviations above.

⁶ The core goal of Carvalho (2016) was simply that of casting doubt on what look like overestimates of linguistic diversity in the southern Arawak periphery. Many existing sources list as many as four different Arawak languages in the Upper Paraguay region (Chané, Guaná, Terena and Kinikinau). Analysis of the existing sources (at times reduced to a short vocabulary, as in the case of Chané) reveals, however, a degree of differentiation typical of co-dialects of a single language. It goes without saying that this has nothing to do with past or present ethnic boundaries and identities existing among the peoples of the region.

PHONEMIC AFFRICATES AND THE LOSS OF FRICATIVES IN EARLY TERENA

Although sources on modern Terena unanimously agree that the palatal (or alveo-palatal) affricate [tʃ] occurs in free variation with the (alveo-) palatal fricative [ʃ], and that the latter should be singled out as the 'characteristic allophone' of this phoneme, /ʃ/, this does not seem to be the case in the early Terena sources analyzed here. Both TN and MS employ, consistently, different graphemes for these segments.

The MS transcription system is quite straightforward to deal with, as Schmidt provides an explicit phonetic transcription key to the script he employs in writing his early Terena ('Guaná') forms. Schmidt (1903, p. 332) notes that <š> stands for [ʃ] ("französisches ch"). The symbol <tš> also appearing in MS is clearly interpretable as [ʃ] preceded by a stop phase matching that of <t>, that is, [tʃ].

TN does not provide any transcription key, but his <ch> can be confidently established as representing [ʃ] on the basis of correspondences with both the MS and the modern Terena forms (see below), and given known conventions in writing Brazilian Portuguese that applied at his time. Note that differently from Spanish (Castilian), Portuguese <ch> does not stand for an affricate. Like <x>, <ch> stands for the fricative [ʃ], as *tx* and *f* were merged as *f* in Portuguese around the XVII century (see Teyssier, 1997, p. 64-66). Since <ch> was in regular use for Portuguese, Taunay's native language (and script), it is natural to suppose that <tch>, alien to Brazilian Portuguese writing conventions, was likewise employed to represent a phone which was equally alien to the language, while at the same time having a clear relation to <ch> = [ʃ]. The hypothesis that TN's <tch> = [tʃ] is, therefore, plausible.

For the early Terena fricatives, matters are perhaps simpler. MS notes explicitly that his <s> = [s] ("französisches ç"; Schmidt, 1903, p. 332). For TN, arguments such as those above establish quite clearly that <s> = [s], though, preceding <i> and <e>, [s] is represented by <c> or <ç> in his script, again obviously based on conventions for writing Brazilian Portuguese, even if these conventions are inconsistently applied (cf. e.g. <sêni> 'jaguar'(TN)).

After this preliminary yet necessary discussion of the transcription conventions adopted in TN and in MS, it is now possible to address the linguistic and historical significance of these documents. Note that one might argue that the discussion so far has failed to establish conclusively that early Terena had a contrast between an affricate *tʃ* and the fricative *ʃ*. Early recordings of this kind, produced by non-linguists, often approximate what one could call a systematic phonetic transcription. If all the MS and TN data show is the occurrence of surface [tʃ] = <tch> = <tš> in addition to surface [ʃ] = <ch> = <š>, this would be hardly surprising, in view of our knowledge of modern Terena phonology. However, correspondences existing between MS, TN and modern Terena forms shows that the transcription is systematic and consistent, and this is a first important deviation from the pattern of 'free variation' relating [tʃ] and [ʃ] in modern Terena. These agreements, between early Terena sources in comparison to one another, and between these and modern Terena data, should be considered in separate, for they have different meanings and implications. The systematic correspondences MS <š> : TN <ch>, and MS <tš> : TN <tch> offer additional support to the phonetic interpretations advanced in the paragraphs above, constituting, in effect, an application of the 'phonetic triangulation' applied whenever multiple early sources are available for the reconstitution of a language (see Broadbent, 1957; Goddard, 1976; Dench, 2000). The fact that two independent sources show such a consistent agreement makes it very unlikely that early Terena fricatives and affricates were related to each other as free variants, as seems to be the case in modern Terena.

Examination of each of the sources in separate reveals the existence of a number of nearly-minimal pairs contrasting fricatives and affricates (e.g. TN: <ucheti> 'tasty' versus <cátche> 'sun' Taunay (1868, p. 136, 142); MS:

<*tšoremoneke*> ‘ashes’ versus <*šoopeno*> ‘bird’; Schmidt, 1903, p. 564, 580). Though an exhaustive listing of such forms could suffice to demonstrate the existence of contrast, I have chosen here a different path of analysis, one that has direct implications to an understanding of the historical development of Terena. The systematic correspondences relating these early Terena consonants with their modern Terena reflexes offer interesting evidence for the phonemic opposition between *tʃ* and *f* in early Terena, as these were treated as separate by sound change (see the next section for the *status* of *s*). Below, in Table 3, I present evidence that early Terena *f* and *s* (cf. ‘yellow’) have been subject to a debuccalization change yielding *h* in modern Terena⁷.

Matching segments in this and the following tables are given in underline, and each early Terena form is followed by a reference to the page number of the original work where it is attested. The only exception to the debuccalization change is the form for ‘black’ recorded by Taunay, showing <*h*> matching modern Terena *h* and Schmidt’s Guaná <*š*>. This could be seen as evidence either of dialect borrowing (see footnote 3) or of lexical diffusion of the debuccalization change as it was starting to gain footing in a few forms.

Given the evidence for the development *f, s* > *h* from early to modern Terena, it is legitimate to question about the origins of the fricatives *s* and *f* attested in modern Terena (see (1)). Again, early Terena evidence turns out to be revealing. As shown in Table 4, the fricatives of modern Terena correspond to affricates in the TN and MS data, and in some cases this is supported as well by evidence from other Arawak languages, represented here by the Ignaciano variety of Mojeño, Chamicuro, Matsigenka (of the Campa branch) and by Proto-Arawak forms, as reconstructed in Payne (1991)⁸.

Table 3. Early Terena evidence for fricative debuccalization.

Gloss	Taunay (1868)	Schmidt (1903)	Terena
Tasty	< <i>uchetí</i> > (p. 136)	-	<i>úh^ueti</i>
Be born	< <i>ipuchicá</i> > (p. 139)	-	<i>ipuhíko</i>
Bathe	< <i>uachicapú</i> > (p. 138)	<i>vašikovotí</i> (p. 585)	<i>wahikapu</i>
I want	< <i>gâcha</i> > (p. 141)	<i>gaša</i> (p. 588)	<i>ʔgáʔaha</i>
Foot	< <i>djêvé</i> > (p. 140)	<i>ševeetí</i> (p. 335)	<i>hêwe</i>
Fingernail	< <i>djiipó</i> > (p. 143)	<i>šipootí</i> (p. 336)	<i>hʔipo</i>
White	-	<i>šopuiti</i> (p. 584)	<i>hopúʔiti</i>
Black	< <i>hahóóti</i> > (p. 139)	<i>šašaotí</i> (p. 584)	<i>haháʔiti</i>
Yellow	-	<i>siaiti</i> (p. 584)	<i>hijáʔiti</i>
Fish	< <i>chojé</i> > (p. 140)	<i>šoooé</i> (p. 576)	<i>hôe</i>
Bird	< <i>chohopennó</i> > (p. 140)	<i>šoopeno</i> (p. 580)	<i>hoʔopéno</i>

⁷ Note that the forms for ‘foot’ and ‘fingernail’ in Taunay (1868) show the effects of the obstruent voicing process resulting from the realization of the [nasa] feature marking a 1sg possessor, as discussed in reference to the data in (3). The forms elicited by Taunay are thus more correctly glossed as ‘my foot’ and ‘my fingernail’. See Carvalho (2016) for the identification of these morphophonological patterns in the early Terena data in Taunay (1868).

⁸ I thank one of the reviewers of this paper for pointing out the relevance of the Campa forms presented in Table 4. I have declined, however, from including Matsigenka *katsink-* in the comparisons above, as it is far from clear to me that it is a cognate of the Terena form *kásati*, though they may share the cognate ‘Attributive’ prefix *k(a)-*, often found in ‘adjectival’ forms or stative predicates throughout the Arawak language family.

Table 4. Evidence for the origin of Terena fricatives in early affricates.

	Terena	Other Arawak	Early written evidence
Manioc	<i>júpu</i>	-	< <i>tchupú</i> > Taunay (1868, p. 131) < <i>tšupũ</i> > Schmidt (1903, p. 575)
Tobacco	<i>jáʔi</i>	-	< <i>tchâhim</i> > Taunay (1868, p. 136)
Arrow	<i>jûme</i>	-	< <i>tšumě</i> > Schmidt (1903, p. 566)
Flute	<i>húfo</i>	-	< <i>hutšooti</i> > Schmidt (1903, p. 569)
Breast	<i>fêne</i>	Proto-Arawak: * <i>teni</i> (Payne, 1991, p. 397)	< <i>džěné</i> > Schmidt (1903, p. 336)
Chest	<i>jáʔa</i>	-	< <i>džaá</i> > Schmidt (1903, p. 336)
Jaguar	<i>sîni</i>	<i>itʃini</i> (Ignaciano, Ott; Ott, 1983, p. 633)	< <i>tsiini</i> > Schmidt (1903, p. 578)
Son-in-Law	<i>sîna</i>	<i>tʃina</i> (Ignaciano, Ott; Ott, 1983, p. 643)	< <i>tšiina</i> > Schmidt (1903, p. 578)
Son, child	<i>jeʔéfa</i>	<i>tʃetʃakama</i> 'baby' (Chamicuro, Parker, 1987, p. 54)	< <i>tšeetšá</i> > Schmidt (1903, p. 571) < <i>tchétchá</i> > Taunay (1868, p. 136)
Brother	<i>ejówi</i>	<i>étʃavi</i> (Ignaciano, Ott; Ott, 1983, p. 566)	< <i>eetšoví</i> > Schmidt (1903, p. 572)
Grandmother	<i>ose</i>	<i>atse</i> (Ignaciano, Ott; Ott, 1983, p. 468)	< <i>ootsé</i> > Schmidt (1903, p. 572)
Grandfather	<i>ofu</i>	<i>aʃu</i> (Ignaciano, Ott; Ott, 1983, p. 468)	< <i>ootšú</i> > Schmidt (1903, p. 572)
Man, person	<i>fâne</i>	<i>aʃane</i> (Ignaciano, Ott; Ott, 1983, p. 569)	< <i>tšaaně</i> > Schmidt (1903, p. 570)
Woman	<i>sêno</i>	Proto-Arawak: * <i>tʃina</i> - (Payne, 1991, p. 426), <i>tsinane</i> (Matsigenka, Snell, 1998, p. 249)	< <i>tseno</i> > Baldus (1937, p. 539) < <i>tseenö</i> > Schmidt (1903, p. 570)
Path	<i>fêne</i>	<i>aʃene</i> (Ignaciano, Ott; Ott, 1983, p. 623)	< <i>otʃene</i> > Baldus (1937, p. 539)
Sun	<i>káʃe</i>	<i>saʃe</i> (Ignaciano, Ott; Ott, 1983, p. 625)	< <i>katšě</i> > Schmidt (1903, p. 562) < <i>cátche</i> > Taunay (1868, p. 142)
Cloud	<i>kapási</i>	-	< <i>kapatsí</i> > Schmidt (1903, p. 564)
Cold	<i>kásati</i>	-	< <i>katšatí</i> > Schmidt (1903, p. 583)
Clean, pure	<i>sasáʔiti</i>	-	< <i>tšatšaiti</i> > Schmidt (1903, p. 583)
Hunt	<i>opósiko</i>	<i>paʃima</i> - (Matsigenka, Snell, 1998, p. 182)	< <i>iapatsika</i> > Schmidt (1903, p. 587)
Give	<i>porífoa</i>	-	< <i>boritšoa</i> > 'Ich gebe' Schmidt (1903, p. 586) < <i>pêrétchá</i> > Taunay (1868, p. 134)

Given the preceding commentary on the plausible values assigned to MS <*tš*> and TN <*tch*>, the data above is virtually self-explanatory. The following comments are necessary, however.

On the phonetic aspects of the comparisons, the affricate character of the consonant in Baldus' <*tseno*> 'woman' is confirmed explicitly by Baldus (1937, p. 529) who comments that his <*ts*> is similar to German <*z*> ("gleicht dem deutschen z" – that is, similar to the German <*z*>).

Of morphological relevance note that word-initial voiced stops, as in the forms for 'chest' and 'breast' in MS, where <*dž*> is found (cf. Schmidt, 1903, p. 332: "ž = französisches j"), indicate that the forms in question actually mean 'my chest' and 'my breast', allophonic voicing being an effect of the realization of 1sg possessors or subjects, as discussed in relation to the data in (3). Compare these forms with the form of the verb 'give' in the MS data: it is a 1sg form, explicitly given as such by the gloss 'Ich gebe' ('I give') and, accordingly, it shows a word-initial voiced

obstruent <*b*>. The word-final vowel, <*a*>, is actually an ‘object marker’ (alternatively glossed as a ‘3sg object suffix’), as in modern Terena *^mborifoa* ‘I give (it)’ (see Eastlack, 1968, p. 4 and Ekdahl; Butler, 1979, p. 35 on this). The TN form, on the other hand, shows a 2sg, Imperative form: this is indicated by fronting of the vowel of the first syllable from *o* to *e* (cf. the MS form for the base <*o*>), expressing a 2sg subject (see the modern Terena data in (3)), and by change of every *o* in the verb form to *a*, a mechanism used in Terena to indicate Irrealis or ‘Potential’ mood (see Eastlack, 1968, p. 5 and Ekdahl; Grimes, 1964, p. 262-263 on these issues). This latter point is also relevant for MS <*iapatsika*> ‘hunt’, which arguably includes the *j*- allomorph of the 2sg prefix (see the discussion of the data in (3) and Eastlack, 1968, p. 4) plus the effects of *o* to *a* ablaut that express the Potential mood, also involved in the expression of imperatives (see Ekdahl; Grimes, 1964, p. 262-263). Finally, for some modern Terena forms for which TN and MS provide no equivalents, it is possible to demonstrate a likely source in a stop consonant with comparative evidence, as in *sêne* ‘urine’ (cf. PA **tʃini*, Payne, 1991, p. 424) and *ásurupi* ‘guts’ (cf. Ignaciano *-turupi*, Ott; Ott, 1983, p. 636).

Rounding up the discussion so far, the crucial insight is that the early Terena evidence in Tables 3 and 4 demonstrates, on the one hand, a regular correspondence between oral fricatives in the MS and TN data matching glottal fricatives in modern Terena (e.g. <*siaiti*> : *hijá?iti* ‘yellow’; <*šoopenó*> : *hoʔopeno* ‘bird’), and, on the other hand, affricates that match modern Terena (oral) fricatives (e.g. <*tsiini*> : *sîni* ‘jaguar’; <*eetšoví*> : *efówi* ‘brother’). It is plausible to suppose that Terena once had a contrast between fricatives and affricates – which is attested in all the closest relatives of Terena within the Arawak family: Baure (Danielsen, 2007, p. 39) and Mojeño (Rose, 2014, p. 377) – but that fricatives were merged with *h* (more on this below) and the remaining affricates were then free to ‘drift’ articulatorily, including fricatives in their realization range. This proposed scenario finds support in Harden’s (1946, p. 62, footnote 4) observation that the realization of *f* as affricate [tʃ] is particularly common, or more frequent, in the speech of older individuals.

This relative chronology, in which *f*, *s* > *h* applied first, and only then the affricates start to overlap with the previous realization range of the early Terena fricatives is of course far from self-evident, even granting the correctness of the early observations on the greater frequency of affricate realization in the speech of older speakers in the early decades of the 20th century, which suggests a rather late date to the generalization of the [ʃ] realizations of *tʃ*. It could be the case, for instance, that early Terena *f* and *tʃ* began to overlap in part of their distribution, with [ʃ] realizing either *f* or *tʃ*, and that only later *f* > *h* took place. If this were the case, it is expected that some early Terena *tʃ* (realized as *f* in at least a few forms/contexts) would correspond to Terena *h*, but I have so far not encountered any pattern of this kind (see the following section for more on this). I conclude, for the time being, that debuccalization of fricatives applied first (I in (5) below), and only then the affricates started to show fricative realizations (II).

(5) Tentative relative chronology of the changes identified

	Early Terena			
I	<i>f</i> < <i>š</i> > < <i>ch</i> >	>	<i>h</i>	
II	<i>tʃ</i> < <i>tš</i> > < <i>tch</i> >	>	<i>f</i> [ʃ] ~ [tʃ]	
	Modern Terena			

As a final note, I would like to address the relation between the glottal fricatives derived from the debuccalization of the early Terena oral fricatives (change I in (5) above) and other glottal fricatives that do not participate in the same

correspondences. As already discussed (see (2)) the glottal fricative *h* is *bona fide* member of the Terena inventory of consonants. It is not the case, however, that all tokens of *h* are reflexes of the fricative debuccalization change; many of these can be traced back to early Terena glottal fricatives, as shown in Table 5.

What the evidence shows is that, as a result of the debuccalization of the early Terena fricatives, a merger was effected: these were no longer distinct from the reflexes of early Terena *h*. Though exploring this matter in detail would divert us from the more parochial concerns of this paper, I note that the merger in question was only partial. Only the voiceless allophones of the early Terena fricatives were subject to debuccalization. The voiced allophones, which appear only in *some* nominal and verbal forms marked for a 1sg possessor or subject (see (3)), were preserved as such. As a consequence, modern Terena has a number of morphophonemic alternations that remain as concrete traces of this early primary split (the two early Terena forms below, between angled brackets, are from Schmidt, 1903, p. 335, 576)⁹.

(6) Morphophonemic alternations in modern Terena

<ševeetĩ>	>	<i>hewêti</i>	'(somebody's) foot'
	but:	<i>ʔzêwe</i>	'my foot'
<šoooé>	>	<i>hôe</i>	'fish'
	but:	<i>ʔzôena</i>	'my fish'

The point of the data in Table 5 is simply that of showing how this early written evidence helps cast light on the fact that *s, f > h* yielded a merger with early Terena *h*. The modern Terena data in (6) above demonstrate that this merger was only partial. A fuller picture of these alternations, including internal reconstruction for modern Terena data and the tracing of the 'life-cycle' of the relevant changes, from their origins in allophonic variation to their eventual morphologization, is dealt with in Carvalho (in press).

Table 5. Evidence for *h* before the operation of *s, f > h*.

Gloss	Taunay (1868)	Schmidt (1903)	Terena
Mouth	< <i>bahó</i> > (p. 132)	< <i>pahotí</i> > (p. 332)	<i>pâho</i>
Palm tree spp.	< <i>hêrena</i> > (p. 133)	-	<i>herena</i>
Forest, woods	-	< <i>hooí</i> > (p. 564)	<i>hôi</i>
Star	< <i>hêquêrê</i> > (p. 135)	-	<i>hékere</i>
Morning, dawn	-	< <i>aharóte</i> > (p. 565)	<i>ihároti</i>
Scabies	< <i>uahati</i> > (p. 142)	-	<i>wáhati</i>
Spindle	-	< <i>hopae</i> > (p. 566)	<i>hupâe</i>
Man	-	< <i>hoiéno</i> > (p. 570)	<i>hójeno</i>
Red	-	< <i>hararaiti</i> > (p. 584)	<i>hararáʔiti</i>
Speak, say	-	< <i>ikoiuhó</i> > (p. 588)	<i>kojúho</i>

⁹ The suffix *-ti* is a marker of 'general possession' used with inalienable nouns. It is possibly a reflex of the Absolute marker **-tʃi* reconstructed by Payne (1991) to Proto-Arawak. The possessed form 'my fish' in (6) carries the genitive suffix *-na*, used whenever independent (alienable) nouns occur in possessive structures.

TWO RESIDUAL ISSUES: MS <ts> AND TN <dj>

Before ending, I will deal briefly with two issues raised by a detailed consideration of the data in Tables 3 and 4.

First, in Table 3, note that two TN forms have <dj>, arguably representing the voiced affricate homorganic of <tch>, that is, [dʒ], but comparison with the MS and modern Terena forms would predict the occurrence of a fricative instead. One explanation for this pattern relies on the cross-linguistically recurrent process of post-nasal occlusivization (or hardening) that commonly targets continuant consonants in the context of a preceding nasal segment (Lavoie, 2001, p. 41-42; Silverman, 2012, p. 48-49). As discussed above (in relation to Table 4; see also Carvalho, 2016) inalienable nouns often show up in the TN data (slightly less commonly in MS) with a word-initial voiced obstruent, which in turn corresponds to a voiceless obstruent in modern Terena and often also in some other early Terena source. These are plausibly 1sg possessive forms, where obstruent voicing results from the nasalization feature that realizes these person-number features and includes, in its realization, the creation of a short nasal stop consonant transition preceding the oral obstruent (e.g. modern Terena *pâho* 'his/her mouth', *mbâho* 'my mouth'; *tâki* 'his/her arm', *ndâki* 'my arm').

The second issue concerns MS <ts>. The discussion in the preceding section has established quite clearly that an opposition between *f* (= <ch>, <ś>) and *tf* (= <tch>, <tś>) existed in early Terena. It is just natural to suppose that *s* was matched as well by an affricate, perhaps *ts*, in the same language. However, the same arguments put forward in support of the opposition *f* : *tf* do not back up as clearly the existence of a comparable *s* : *ts* contrast. Note first that MS <ts> corresponds to TN <s> : <tsiini> 'jaguar' (TN <sêni>, Taunay, 1868, p. 140), <kapatsi> 'cloud' (TN <capaci>, Taunay, 1868, p. 139), <tseenö> 'woman' (<senó>, Taunay, 1868, p. 139). In all these cases, the modern Terena form also has *s* – *sîni* 'jaguar', *kapási* 'cloud' and *sêno* 'woman' – and, as noted before, *ts* is not attested as an allophone of *s* in the modern language. In addition, it is quite unlikely that MS, being produced by a native speaker of German, would fail to distinguish *s* and *ts* and employ a single symbol for both. It is, therefore, safe to assume that <ts> and <s> did in effect represent two separate phones in MS. Beyond that, the data in MS show quite clearly that <s> and <ts> contrast, rather than being simple variants of a single phoneme (see Table 6).

The data in Table 6 is revealing for two reasons. It shows, first, the occurrence of both <s> and <ts> in the context of a following front vowel, <e> (cf. 'woman' and 'wash') or <i>. This makes it quite plausible that early Terena had a contrast between *s* and *ts*. Looking at the forms for 'play', however, shows an instance of early Terena *ts* corresponding

Table 6. Evidence for <s> - <ts> contrast in MS.

	Schmidt (1903)	Modern Terena
Woman	<tseenö> (p. 570)	sêno
Yellow	<sjaiti> (p. 584)	hijá?iti
Vagina	<utsiti> (p. 560)	ûsí-ti
Anus	<hotsisiigé> (p. 560)	osósiko
Cloud	<kapatsi> (p. 564)	kapási
Come	<simoa> (p. 597)	sîmo 'come, arrive'
Play	<comotsití> (p. 588)	komóhiti
Hunt	<iapatsika> (p. 587)	opósiko
Wash	<kiposeati> (p. 584)	kipóhea-ti

to modern Terena *h*. This could be interpreted as evidence that the contrast between *ts* and *s* was not very robust and that some amount of phonemic overlapping existed. That is, fluctuation of *ts* and *s* could explain the odd outcome seen in this form, the sole case of an early Terena affricate corresponding to modern Terena *h*.

Thus, some evidence exists for the existence of a contrast between *s* and *ts*, parallel to that between *f* and *tʃ*, in early Terena, though matters are not completely clear. The later development of early Terena also reveals some interchange between the two fricatives, which helps making the whole picture even murkier: modern Terena 'dream' for instance, with 3sg *hópufo*, appears in the 1sg form with either alveolar or alveopalatal fricatives, *ʔzópufo* or *ʔzópufo* for 'I dream', even though earlier sources show only *f* (e.g. <*chaputchôné*> (TN) 'did you dream?'; Taunay, 1868, p. 142). Some rare and isolated instances show MS <*ts*> corresponding to TN <*tch*>, as in <*tsaí*> 'tobacco' (Schmidt, 1903, p. 575), <*tchâhim*> (Taunay, 1868, p. 136). Though a comparison with modern Terena *faʔi* 'tobacco' suggests <*tchâhim*> as the likely early Terena etymon, the MS form with <*ts*> cannot be simply dismissed.

CONCLUSION

The present paper has established, on the basis of a comparison between two independent attestations of an early chronological stratum of Terena ('early Terena' or 'Guaná'), that the language had a contrast between an alveo-palatal affricate *tʃ*, represented as <*tch*> and <*tš*>, and a fricative *f*, represented as <*ch*> and <*š*>. Regular and systematic correspondences between the forms in these documents and their modern Terena reflexes (or cognates, if no direct ancestor-descendant relation is assumed) show, moreover, that this opposition was lost in the modern language as a consequence of the debuccalization of the fricative, *f* > *h*, a change whose consequence was to allow for *tʃ* to be realized as *f*. The debuccalization change was, in terms of the traditional typologies of phonological change, further characterized as a primary-split, as it merged most, though not all tokens of early Terena *f* with the reflexes of early Terena *h*.

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