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# Palatal sonorants in Portuguese-based creoles

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## Abstract

The adaptation results of sounds across languages is a valuable source of information for their theoretical representation. Such research can be especially enlightening when complex or rare sounds are concerned. This study analyses the adaptation of Portuguese palatal sonorants to 19 Creole languages. We assess the strategies used to replace /ʎ/ or /ɲ/, if the creole has no such consonants; and the constraints on their distribution, if the creole language has a palatal sonorant. The main purpose is to find potential clues to the structure of these consonants in Portuguese, concerning their substance and effects. The data is extracted from the APiCS (Atlas of Pidgin and Creole Language Structures) and other doculects. We found that creole speakers either use a phonological equivalent from their substrates [d͡ʒ ɻ] or dismantle the elements of the source consonants into separate features [l n j]. We conclude that the palatal sonorants should not be represented as phonological geminates, but rather as complex segments with a palatal autosegment. Furthermore, the differences in their adaptation suggest that these consonants may not share the same underlying structure.

**Keywords:** Portuguese-based creoles, palatal sonorants, complex segments.

## 1. Introduction

Despite palatalization being one of the most common phonological processes in natural languages (Kramer & Urek 2016), palatal consonants (in IPA, /(j) ʎ ɲ c ɟ ç ʝ /) are mostly absent from their segmental inventories (Moran & McCloy 2019). When they are included in the phonological inventories, they are inherently complex not only from an articulatory perspective (Ladefoged & Maddieson 1996) but also because they display a particular prosodic behavior (Davis 1999; Veloso 2019).

Palatals can be labeled under the feature [CORONAL] within the feature geometry framework (Clements 1985). Carvalho (2013) proposed the same kind of analysis for coronals, i.e. automatic consonants within the oral cavity. However, the feature [CORONAL] is shared by a rather diverse group. Specifically, there is a distinction between apical coronals, which include alveolars, and laminal, which in turn incorporate the palatals. This distinction is based on several differences in their distribution found across many languages (Hamilton 1993). In virtue of their unique behavior, palatals are treated separately, either as part of the dorsals (Ladefoged & Maddieson 1996) or as an entirely different group (Chomsky & Halle 1968).

Complex and theoretically controversial segments are often better evaluated in light of their behavior. Phonologists can assess their distributional proprieties within a language, but acquisition and adaptation strategies are also informative when their theoretical representation is at stake (Paradis & Tremblay 2009). Thus, the study of Pidgins and Creoles constitutes an opportunity for searching for clues to the phonological representation of these sounds. These languages are formed by unique language contact scenarios, where the substrates may lack /ʎ/ or /ɲ/, and these consonants are replaced by their phonological equivalents through multiple adaptation strategies of phonological adaptation (Paradis & LaCharité 1997).

### 1.1 Palatals in the world's languages and in Portuguese Creoles

When it comes to the presence of these palatals in the world's languages, of those sampled in PHOIBLE (Moran & McCloy 2019) /ɲ/ is present in 42% of them, whereas /ʎ/ in only 5%. As far as geographical distribution is concerned, /ɲ/ can be found in languages from all around the world, whereas /ʎ/, at the phonological level, is mostly restricted to North-Eurasian and South American languages (Moran & McCloy 2019). Moreover, their presence within a language implies the presence of a non-palatal coronal counterpart. In the case of /ʎ/, this counterpart can be either /l/ (in most languages) or a rothic (as in Quechua and Cavineña). Regarding /ɲ/, the counterpart is consistently /n/. Moreover, all languages that contain /ʎ/ in their inventories also include /ɲ/ (Silva 2021).

These patterns hold for the phonological inventories of Portuguese-based creoles. According to the information registered in APiCS (Michaelis et al. 2013), and as shown below in table 1, the palatal lateral is completely absent from 11 out of 19 creoles. In the remaining languages, this allophone only appears in recent loanwords and is often classified as a "marginal phoneme" or a "minor allophone". Consequently, none of these languages displays sufficient evidence for considering a phonological /ʎ/ in their inventories. On the contrary, the palatal nasal is quite a frequent allophone in most Creoles (except for 4 of them, which do not seem to include /ɲ/ in their phonological inventories).

**Table 1.** Presence of palatal sonorants and their coronal counterparts in Portuguese-based Creoles

| Region | Language | [l] | [ʎ] | [n] | [ɲ] |
|---|---|---|---|---|---|
| Insular Northwest Africa | CV São Vicente | Yes | Marginal | Yes | Yes |
| | CV Santiago | Yes | Marginal | Yes | Yes |
| | CV Brava | Yes | No | Yes | Yes |
| Continental Northwest Africa | Casamancese | Yes | No | Yes | Yes |
| | Guinea-Bissau Kriyol | Yes | Marginal | Yes | Yes |
| Insular Central West Africa | Santome | Yes | Marginal | Yes | Yes |
| | Principense | Yes | Marginal | Yes | Yes |
| | Angolar | Yes | No | Yes | Marginal[1] |
| | Fa d'Ambô | Yes | No | Yes | Marginal |
| Southern Asia | Diu | Yes | No | Yes | No |
| | Korlai | Yes | No | Yes | No |
| | Sri Lanka Pt. | Yes | No | Yes | Yes |
| South East Asia | Papiá Kristang | Yes | No | Yes | Yes |
| | Batavia | Yes | Marginal | Yes | Yes |

Furthermore, we could verify that all Portuguese-based Creoles containing palatal laterals or palatal nasals, whether phonetically or phonologically, also incorporate their coronal counterparts in their inventories, *i.e.* /l/ and /n/. strategies of phonological adaptation (Paradis & LaCharité 1997).

## 1.2 Palatals in the Portuguese

The Portuguese phoneme inventory comprises 19 consonants, as follows (Mateus & Andrade (2000):

/p b t d k g f v s z ʃ ʒ ɾ ʁ l ʎ m n ɲ /

Palatal sonorants display distributional contrastiveness and semantic distinctiveness in this language, in line with classical criteria for phonological classification (Trubetzkoy 1939):

/soɲu/ "dream" ~ /soʎu/ "wooden floor"
/soɲu/ "dream" ~ /sonu/ "sleep"
/gaʎu/ "branch" ~ /galu/ "rooster"

However, their contrastiveness is highly constrained. For instance, unlike their coronal counterparts, palatals sonorants:

(i) are disallowed word-initially;

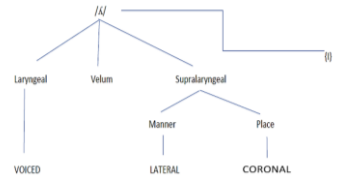
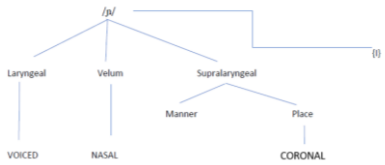
(ii) do not admit complex rhymes at their left (ar[m]a ≠ *ar[ɲ]a);

[1] Marginal according to Bandeira (2017); absent according to Maurer (2013a).

(iii) do not occur in the last syllable of proparoxytones ([tuˈaʎa] ≠ *[ˈtɔaʎa]).

Palatals behave similarly in Italian and Portuguese (Davis 1999). Wetzels (2000; 2007) considers that palatal sonorants can assign weight to the previous syllable. Therefore, he proposed that phonetic [ʎ] and [ɲ] correspond to more than one unit at the phonological level which emerges as a singleton.
This idea was further developed by Veloso (2019) and Pimenta (2019) under different frameworks. The first states that each palatal sonorant corresponds to a phonological coronal attached to a floating palatal autosegment under the feature geometry framework. This hypothesis is corroborated both by the dialectal phenomena of diphthongization - e.g. [iʃˈpɐʎu] -> [iʃˈpejʎu] in Northern European Portuguese dialects *apud* Veloso (2019) - and the typological trends mentioned above. The second follows the same line of thought but proposes different representations for [ʎ] and [ɲ]. For Pimenta (2019), the nasality and the palatality of the latter are in different tiers and establish a hierarchical relationship.

**Table 2.** Summary of the theoretical representations of the palatal sonorants

| **Proposal** | Phonological geminates | Phonological coronal + Floating autossegment | Covert diphthong + Phonological coronal |
|---|---|---|---|
| **Authors** | Davis 1999; Wetzels 2000 | Veloso 2019 | Pimenta 2019, p. 221 |
| **Representation of [ʎ]** | /ʎ. ʎ/ |  |  |
| **Representation of [ɲ]** | /ɲ. ɲ/ |  |  |

Trigo & Silva (2022) found additional evidence in favor of a different representation for the two palatal sonorants. Despite having similar frequency values in several Portuguese corpora, /ʎ/ is typologically less frequent and acquired later by children than /ɲ/ in this language, contrary to other languages (e.g. French) in which it is acquired later (Yamaguchi 2012). In addition, the lateral shows more tolerance to the quality of the vowel on its left than the nasal does. These authors interpret [ɲ] as a complex consonant |N, |I|| and /ʎ/ as a complex glide |A, U, |I||.

### 1.3. Palatals in the Portuguese

This study has a bi-folded purpose. The primary goal of this study is to describe the phonetic form and distributional conditions through which the creoles adapted palatal sonorants. The other goal is to evaluate the theoretical representations above in light of the variation phenomena in these contact languages. To sum up, we will try to answer to the following questions:

1. Are palatal sonorants kept in the Portuguese creoles? If not, what replaces them?
2. Which distributional constraints affect these segments? Are they the same as in Portuguese?
3. Which theoretical structures better integrate the data from Creoles?

## 2. Data and analysis

The fact that some Portuguese-based Creoles did not have /ʎ/ or /ɲ/ in their phonological inventories did not prevent them from including Portuguese words that had these segments. Instead of preserving these palatals, these contact languages in fact take [ʎ] or [ɲ] and reconstruct it in manifold ways by phonologically processing the output, as it happens during language acquisition (Amorim 2014). This process of adaptation generates phonetic outputs that serve as clues to the representation of palatal sonorants in Portuguese. These reconstruction strategies will be henceforth presented and analysed.

### 2.1. Lateral palatal: adaptation, constraints and representation

In Table 3, we present the phonetic outputs for Portuguese palatal /ʎ/ in the Creoles that do not display this consonant at the phonological level:

**Table 3.** Reconstruction strategies for Portuguese palatal lateral

| Language | Allophones | Example | Portuguese | Translation |
|---|---|---|---|---|
| CV São Vicente (Kubová 2014) | [d͡ʒ]<br>[j]<br>[lj]<br>Ø | ˈmid͡ʒ<br>tɾɐˈbaj<br>apaˈrelju<br>oˈɾea | /miʎO/<br>/tɾabaʎO/<br>/apaɾEʎO/<br>/OɾeʎA/ | corn<br>work<br>device<br>ear |
| CV Santo Antão (Baptista 2019) | [j]<br>Ø | mojod<br>oɾea | /mOʎadO/<br>/OɾeʎA/ | wet<br>ear |
| CV Santiago (Baptista 2019) | [d͡ʒ] | muˈd͡ʒɛɾ | /muʎEɾ/ | woman |
| CV Brava (Baptista 2019) | [d͡ʒ] | ˈfid͡ʒu | /fiʎO/ | son |
| CV Fogo (Baptista 2019) | [d͡ʒ] | bɛd͡ʒu | /vEʎO/ | old |
| Casamancese (Biagui & Quint 2013) | [ɲ]<br>[j]<br>[ɟ] | mĩɲjɛɾ<br>wuju<br>ˈbeɟu | /muʎEɾ/<br>/OʎO/<br>/vEʎO/ | woman<br>eye<br>old |

| | | | | |
|---|---|---|---|---|
| Guinea-Bissau Kriyol (Kihm 1994; Mendes 2023) | [ɟ]<br>[j]<br>[d͡ʒ] | paja<br>paɟa<br>fidʒu | /paʎA/<br>/paʎA/<br>/fiʎO/ | straw<br>straw<br>son |
| Santome (Araújo & Hagemeijer 2013) | [j]<br>[ɲ]<br>[l]<br>Ø | tlapaja<br>mɔ̃ˈɲa<br>ˈmwala<br>ˈvɛ | /atɾapaʎaɾ/<br>/mOʎaɾ/<br>/muʎEɾ/<br>/vEʎO/ | to disturb<br>to wet<br>woman<br>old |
| Principense (Araújo 2012) | [j]<br>[l]<br>Ø | ˈmojo<br>tabalaˈdo<br>mɔˈa | /mOʎO/<br>/tɾabaʎadoɾ/<br>/mOʎaɾ/ | sauce<br>worker<br>to wet |
| Angolar (Bandeira 2017) | [j]<br>[lj]<br>Ø | fia<br>ɔˈlja<br>ˈvɛ | /fOʎA/<br>/oɾeʎA/<br>/vEʎO/ | leaf<br>ear<br>old |
| Fa d'Ambô (Granda 1986; Bandeira 2017) | [l]<br>[j]<br>Ø | maˈla<br>vɛˈmɛju<br>ˈŋgja | /mOʎaɾ/<br>/vEɾmeʎO/<br>/gɾiʎONE/ | to wet<br>red<br>shackle |
| Diu (Cardoso 2009) | [j]<br>[l] | muˈjɛɾ<br>piol | /muʎEɾ/<br>/pioʎO/ | woman<br>louse |
| Korlai (Clements 1996) | [l] | pal | /paʎA/ | straw |
| Daman (Clements 2012) | [lj]<br>[l] | muljad<br>fol | /mOʎadO/<br>/foʎA/ | wet<br>leaf |
| Kannur (Clements 2012) | [l]<br>[j] | ʊæli<br>pioji | /vEʎO/<br>/pioʎO/ | old<br>louse |
| Sri Lanka Pt. (Clements 2012) | [j] | kanaj | /kanaʎA/ | villain |
| Macau (Fernandes & Baxter 2001) | [l]<br>[lj] | velu<br>fɔlja | /vEʎO/<br>/fOʎA/ | old<br>leaf |
| Papiá Kristang (Baxter & Silva 2004) | [l] | fola | /fOʎA/ | leaf |
| Batavia (Maurer 2013b) | [l] | belu | /vEʎO/ | old man |
| Timor (Baxter 1990) | [j] | muˈjɛr | /muʎEɾ/ | woman |

From these data, the following five different reconstruction strategies stand out:

1. Replacement by a palatal glide ([j]);
2. Replacement by a coronal counterpart ([l]);
3. Replacement by a consonantal cluster ([lj]);
4. Replacement by an affricate ([d͡ʒ]);
5. Deletion.

Strategies 1 and 2 are the most used across the languages from our sample, even as an alternative to other strategies. The outputs generated by these strategies appear in a wide variety of regions which means that they do not seem to be conditioned by the typology or genealogy of the substrate language. For example, both

the Santome and Macau Creoles adopt strategy 1, despite having Edo and Cantonese as their main substrate languages, respectively. These same patterns, along with deletion (strategy 5), are also found in studies on first language acquisition of European Portuguese. According to a sample from Amorim (2014a: 72), the production [j] for the target /ʎ/ is the children's favorite, corresponding to 77,5% of the outputs, followed by deletion (14,3%) and by the production of coronal lateral (8,2%). These outputs suggest that some reconstruction strategies comprise partial or total deletion of this palatal's features. In a study analysing the acquisition of Brazilian Portuguese as a first language, Matzenauer and Miranda (2012) also report the output [j] for /ʎ/. When analysing case studies, they point out a general difficulty in the acquisition of consonants other than plosives and nasals, particularly of liquids (specifically, /r/, /ɾ/ and /ʁ/) and palatal/pre-palatal ones (such as /ʃ/, /ʒ/ and /ʎ/).

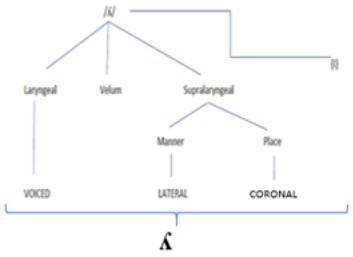
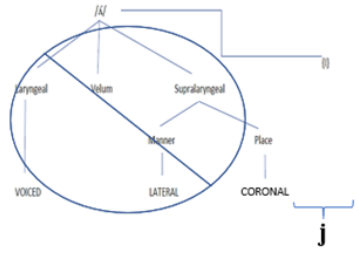
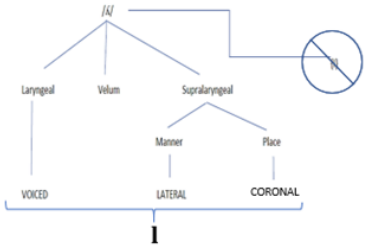
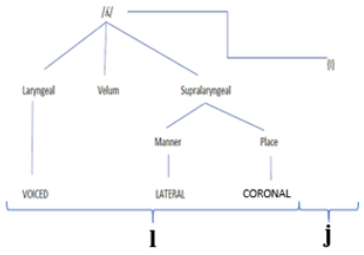
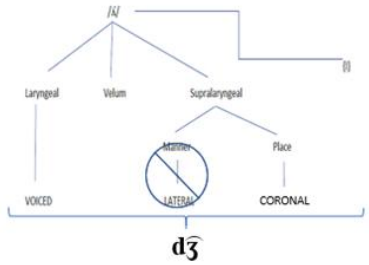
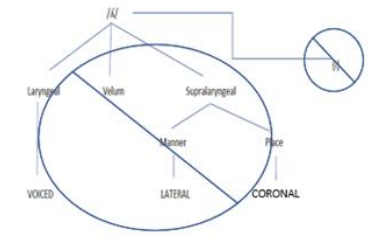
When it comes to strategy 2, the depalatalization of /ʎ/ (e.g. /muʎɛɾ/ → /mulɛ/) is also observed in Northeastern Brazilian Portuguese dialects (Aragão 1999). It is, however, not as common as the glide formation of the same phoneme, which Aragão reports as the most common strategy of /ʎ/ adaption in these varieties.

Then, strategy 3 looks like a reversed sound change. More specifically, on the one hand, the Latin word /fi*lj*us/ has generated the Portuguese word /fiʎO/ "son" (Brocado & Lopes 2016: 2). On the other hand, the Portuguese word /apaɾEʎO/ has generated [apaˈre*lj*u] in the Cape Verdean Creole of São Vicente. This is also corroborated by a similar, cross-regional sound change affecting some dialects of Brazilian Portuguese, in which /ʎ/ is produced as [lj] (e.g. /trabaʎu/ → [trabalju]) (Silva 2003; Aragão 1999).

Both in the Guinea-Bissau and in the Cape Verdean Creoles, we can observe one additional output, i.e. the replacement of /ʎ/ by [d͡ʒ] (strategy 4). As this strategy is located in one particular region, we must admit that it could result from the influence of specific substrates or areal features of that region. Furthermore, although the palatality is maintained here, the lateral manner of articulation seems to be replaced by a more unmarked manner, *i.e.*, the stop, which displays the stridency of the palatal element.

Concerning the theoretical representation of the palatal lateral, all these strategies seem to be coherent with Veloso's and Pimenta's hypothesis, but not with Wetzel's proposal. If we admit that [ʎ] corresponds to /l/ plus a palatal element, then we can explain the outputs found in Portuguese-based creoles by small structural changes, as demonstrated in Table 4.

**Table 4.** Phonological analysis of the reconstruction strategies

| Language | Description | Representation |
|---|---|---|
| Standard Portuguese | No structural changes; Singleton realization. |   |
| Creoles using Strategy 1 | Coronal consonant deletion; Palatal glide realization. |   |
| Creoles using Strategy 2 | Palatal element deletion; Coronal consonant realization. |   |
| Creoles using Strategy 3 | No structural changes; Bi-folded realization. |   |
| Creoles using Strategy 4 | Manner features deletion; Singleton realization. |   |
| Creoles using Strategy 5 | Total deletion |   |

Finally, we analyse the distributional constraints on /ʎ/ and determine whether or not they are violated in the Daman Creole, the only one which seems to retain this consonant at the phonological level. Both in Brazilian and in European Portuguese, /ʎ/ is disallowed in the onset and coda positions (only figuring in loanwords such as *lhano* and *lhama*), appearing solely in between vowels.

Daman is found to violate this main constraint, consistently showing a different behaviour regarding its lexifier (e.g. [paʎ]; [oreʎ]; [vɛʎ]). This difference seems to indicate that there are parametric differences between Daman and Portuguese which might be ascribed to substrate influence: Gujarati, Daman's main substrate language, allows for /l/ in the coda position. This would provide further evidence for the representation of /ʎ/ involving the association of a coronal element with a floating palatal one.

## 2.2. Nasal palatal: adaptation, constraints and representation

In table 5, we register the phonetic outputs for Portuguese palatal /ɲ/ in the Creoles that did not display this consonant at the phonological level:

**Table 5.** Reconstruction strategies for Portuguese palatal nasal

| Language | Allophone | Example | Portuguese | Translation |
|---|---|---|---|---|
| Angolar (Bandeira 2017) | [n] | sun | /sEɲoɾ/ | gentleman |
| Fa d'Ambô (Granda 1986) | [j̃] | sũj̃a | /sOɲaɾ/ | to dream |
| Diu (Cardoso 2009) | [ŋ] | apiˈŋa | /apaɲaɾ/ | to catch |
| Korlai (Clements 1996) | [j̃] | sɔ̃j̃ | /sOɲO/ | dream |

It should be noted that only 4 out of 19 creoles lack /ɲ/ at the phonological level, opting for reconstruction strategies instead. These strategies are mainly:

1. Replacement by a nasal palatal glide ([j̃]);
2. Replacement by a coronal counterpart ([n]);
3. Replacement by a velar nasal ([ŋ]).

Strategy 1 is the most recurrent and is also common in Brazilian Portuguese and in some dialects of European Portuguese. Aragão (1999) reports that Northeastern Brazilian dialects display some degree of glide formation for /ɲ/ (e.g. /bẽɲu/ → [bẽj] or [bẽj̃]) and the same has been claimed for Southeastern dialects (e.g. /maɲa/ → [ˈmãj̃a] "trick") (Cagliari 1974: 117). The same strategy is also recurrent in the Madeiran Portuguese dialect, as in /rebaɲO/ → [riˈβẽj̃] "flock" (Nunes et al. 2018: 3). This strategy seems to imply an internal restructuring of /ɲ/ whereby the nasal part does not seem to be not anchored in the skeleton, that is, it may be underspecified for place. According to Pimenta 2019, this might be a major difference between /ʎ/ and /ɲ/ (see table 1).

In the second place, the replacement by [n] (strategy 2) reproduces, on the one hand, the pattern that was shown above in /ʎ/→[l]. On the other hand, this strategy is also found in language acquisition of European Portuguese, as in /kapuˈʃiɲO/→[kɐpuˈʃinu] "little hood" (Amorim 2014b: 129). Essentially, adopting

the perspective of Veloso (2019), the palatal element is deleted, while the coronal consonant is maintained.

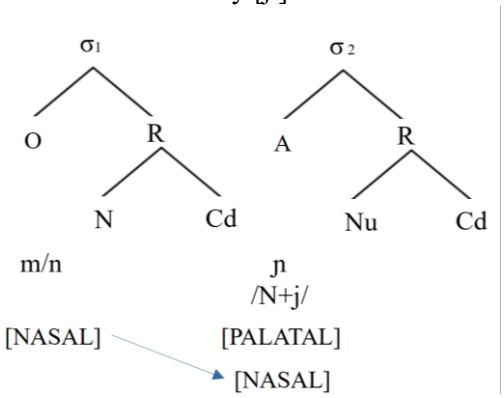
Strategy 3 is particular from Diu Creole. Although we could put the hypothesis of influence from its main substrate language, i.e. Gujarati, this claim seems to be erroneous for two reasons. Firstly, the Creole of Daman, which has the same substrate, retains /ɲ/ and does not reconstruct it. Secondly and most importantly, we have verified that Gujarati does not have velar nasals (Mistry 1997: 658-9). On the contrary, there is evidence that /ŋ/ may have been phonologized within this contact language. According to Cardoso (2009), Diu's Creole favours the deletion of final unstressed vowels. Consequently, in many imported items containing palatal nasal, this consonant ended up being either word-final or intervocalic. On the one hand, the main theoretical and crosslinguistic studies on positional strength confirm that coda and intervocalic positions are the most prone to lenition (Scheer & Ségéral 2008). On the other hand, one of the main displays of lenition is precisely velarization (Carvalho 2013). Thus, Portuguese /ɲ/ must have undergone [ŋ], via positional weakening, and was in turn phonologized as /ŋ/.

In addition, the Portuguese palatal lateral can be replaced by [ɲ], under certain conditions, namely:

1. The Creole's basic reconstruction strategy must be the replacement by [j] (strategy 1);
2. The Creole must have /ɲ/ at the phonological level;
3. The previous onset must have nasal features.

These conditions suggest that [ɲ], which replaces /ʎ/, results from a post-lexical process whereby the nasal features converge with the palatality of [j]. So, for instance, from a lexical /mOja/ emerges [mɔ̃ˈɲa] "to wet" in the Creole of Santome, as we can see in figure 1.

**Figure 1.** Reconstruction by [ɲ] in Santome's Creole




The final chunk of this section is dedicated to the observation of the distributional constraints on /ɲ/ (once this is the only palatal sonorant available in Creole languages at the phonological level). The main goal is to determine if the constraints exhibited by the lexifier language are maintained or not. We compiled the results concerning 8 of the 19 creoles in table 6.

**Table 6.** Distributional constraints on /ɲ/

| Language | Word-initial /ɲ/ | Consonant/glide on the left of /ɲ/ | Proparoxytone word with /ɲ/ in final onset |
|---|---|---|---|
| Portuguese | DISALLOWED | DISALLOWED | DISALLOWED |
| CV São Vicente | Allowed | Disallowed | Disallowed |
| CV Santiago | Allowed | Disallowed | Disallowed |
| Casamancese | Allowed | Disallowed | Disallowed |
| Guinea-Bissau Kriyol | Allowed | Disallowed | Disallowed |
| Santome | Allowed | Disallowed | Allowed |
| Principense | Allowed | Disallowed | Disallowed |
| Sri Lanka Pt. | Disallowed | Disallowed | Disallowed |
| Papiá Kristang | Allowed | Disallowed | Disallowed |

The first striking difference between most Creoles and their lexifier lies in the permission of the palatal nasal word-initially. The lexical items which show an initial /ɲ/ are either lexical items borrowed:

1. From substrate languages, such as [ɲãmberere] “firefly” in Guinea-Bissau Kriyol (≠ Pt. /pirilaNpO/);
2. From the lexifier language that suffered clipping processes (sometimes, also with reduplication), as in /aliɲavaɾ/ → [ɲãˈva] “to tack” (Principense) and /alˈkuɲA/ → [ˈɲuɲa] “nickname” (CV São Vicente).

However, it is undeniable that the phonological constraints of these languages allow /ɲ/ as the initial onset, regardless of the word’s origins.

Concerning the left-adjacency constraint, we found no contact language which violates it. Once again, this evidence seems to corroborate Pimenta’s hypothesis on the Portuguese /ɲ/, i.e., the “covert diphthong” hypothesis. Nonetheless, one problem arises. If we say that [ɲ] has a glide /j/ to its left at the phonological level, then we must admit that there is an empty nucleus on the left edge of words with initial [ɲ], that is, [ɲãˈva] > /Øj.Na.va/. The solution here is to consider the parametric separation proposed by Lowenstamm (1999) as follows:

**Table 7.** Initial $CV_0$ parameter

| **Parameter** | Languages without initial $CV_0$ | Languages with initial $CV_0$ |
|---|---|---|
| **Criteria for identification** | - Rising or falling sonority clusters (*e.g.*, [gr] [rt] [ln] [mg])<br>- Word-initial vowels can alternate with Ø | - Rising sonority clusters only (*e.g.*, [tr] [pl])<br>- Word-initial vowels do not alternate with Ø |
| **Theoretical consequence** | Word-initial C = Intervocalic C | Strong initial C |
| **Language example** | Polish [mgwa] “mist” | Portuguese [pratu] “dish” |

Our hypothesis at this point is that the Portuguese-based Creoles (except for Sri Lanka Portuguese) are typologically different from their main lexifier regarding the prosodic marking of the words’ left edge. Therefore, in related lexical items, the

Creoles may or may not display initial [ɲ] depending on which parameter they follow. For instance, while Papiá Kristang shows both initial falling sonority clusters as in [ntulu] “pile” and initial [ɲ] as in [ɲoŋa] “Chinese woman”, Sri Lanka Portuguese does not display such clusters neither initial [ɲ], as confirmed by [nɔɲə] “single woman”.

On the matter of stress assignment constraints, we could check that most Creoles keep the same constraints as the lexifier language, except for Santome (e.g. [fɛ ˈkõpaɲɛ] “to have sexual relations”. In agreement with our last hypothesis, this exception may be linked to parametric differences between languages.

For Hulst (2014: 13), stress in languages can be (i) bounded or unbounded to the word edges and (ii) weight-sensitive or weight-insensitive, depending on the syllables’ quality beyond word edges. Therefore, for instance, Portuguese is an unbounded and weight-sensitive language (Veloso 2017), but Santome must be an unbounded, but weight-insensitive language. As a result, unlike Portuguese, Santome’s stress system does not count on the difference between closed and open syllables for stress assignment and, consequently, [ɲ] can occupy the final onset of proparoxytone words. Santome has been analyzed as a pitch-accent language, whereas Portuguese is a stress-accent language (Maurer 2008).

Once again, this proves Thomason’s point (2005) that contact languages are not a group with different features from other natural languages. They may be typologically different from their lexifier and typologically different from each other, but they do not display any unnatural patterns.

## 3. Conclusions

This paper aimed to describe how palatal sonorants behave and are distributed in Portuguese-based Creoles to test their phonological representation. From the collected data and respective analysis, our main conclusions are that:

1. The palatal lateral /ʎ/ seems to be more complex than the palatal nasal /ɲ/. Two arguments in favor of this hypothesis are: (i) /ʎ/ is seldom or not at all found in most Creoles and (ii) the reconstruction of /ʎ/ implies the deletion of one, some, or all autosegmental features of this consonant;

2. The reconstruction strategies for /ʎ/ seem to validate Veloso’s proposal, regarding the floating features of the palatal element as in [apaˈrelju] it appears on the right and not on the left of the lateral (for Pimenta (2019) it should always appear on the left);

3. The reconstruction strategies for /ɲ/ are better explained by Pimenta’s representation, once the allophones [ɲ] and [j̃] suggest that the nasal part of the consonant is not attached to the skeleton. In order words, /N/ seems to be underspecified. Furthermore, the fact that no Creole displays any consonants on the left of [ɲ] suggests the presence of a covert diphthong at the phonological level (Pimenta 2019);

4. The violation of the word-initial /ɲ/ constraint, on the one hand, and the violation of the proparoxytone with final /ɲ/ onset, on the other hand, prove that

contact languages display typological differences between each other and the lexifier, as all other natural languages do. Therefore, the differences in the constraints on /ɲ/ must not be ascribed to changes in the representation of this consonant, but rather to more general parametric differences.

To sum up, the data from Portuguese-based Creoles does not confirm the analysis of Davis (1999) and Wetzels (2000), who advocate that palatal sonorants are phonological geminates. Instead, the phonological adaptation of /ʎ/ and /ɲ/ in these contact languages seems to sanction the hypothesis that these consonants phonologically correspond to a palatal element and a coronal consonant. Nevertheless, they do so in a different way from each other, as the proposal from Veloso (2019) appears to be more adjusted to /ʎ/ and the representation from Pimenta (2019) seems to be more appropriate to /ɲ/.

The main limitations of this study are: (i) the lack of analysis of the constraints on /ɲ/ that each substrate language displays, as this might have influenced the constraints that the Creoles follow; (ii) the shortage of large lexical samples (i.e. dictionaries) or the total inexistence of available wordlists, as it is the case of Batavia and Timor; the same can be applied for phonological descriptions of many substrate languages (e.g. Edo, Wolof, Balanta). Therefore, in the future, it would be essential to confirm this data and to check if one can find any counterexamples in enlarged lexical samples of all Portuguese-based Creoles.

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## References

Amorim, Clara. 2014a. Aquisição das consoantes líquidas em português. *Revista de Estudos Linguísticos da Universidade do Porto* 9: 59–82.

Amorim, Clara. 2014b. *Padrão de Aquisição de Contrastes do PE: a interação entre traços, segmentos e sílabas*. PhD thesis, Faculdade de Letras da Universidade do Porto.

Aragão, Maria. 1999. A variação fonético-lexical em atlas lingüísticos do nordeste. pp. 14-20. *Revista Do GELNE*, 1(2).

Araújo, Gabriel & Tjerk Hagemeijer. 2013. *Dicionário Santome-Português / Português-Santome*. São Paulo: Hedra.

Araújo, Gabriel. 2011. Consoantes com dupla articulação e onsets complexos nas línguas crioulas do Golfo da Guiné. *Estudos Linguísticos (São Paulo)* 40: 316–325.

Araújo, Vanessa. 2012. *Um Dicionário Principense-Português*: Ph.D. thesis, Universidade de São Paulo.

Bandeira, Manuele. 2017. *Reconstrução fonológica e lexical do protocrioulo do Golfo da Guiné*: Ph.D. thesis, Universidade de São Paulo. http://dx.doi.org/10.11606/t.8.2017.tde-05042017-13415 9.

Baptista, Marlyse. 2019. Variation in Creole languages: Insights from a Swadesh list. *Journal of Ibero-Romance Creoles* 9: 251–277.

Baxter, Alan. & Patrick Silva. 2004. *A dictionary of Kristang (Malacca creole Portuguese) - English*. Canberra: Pacific Linguistics.

Baxter, Alan. 1990. Notes on the Creole Portuguese of Bidau, East Timor. *Journal of Pidgin and Creole Languages* 5: 1–38. https: //doi.org/10.1075/jpcl.5.1.02bax.

Biagui, Noel & Nicholas Quint. 2013. Casamancese Creole. In S. Michaelis, P. Maurer, M. Haspelmath & M. Huber (eds.), *The survey of pidgin and creole languages (Vol. II: Portuguese-based, Spanish-based and French-based languages)*. Oxford: Oxford University Press: 40–49.

Brocado, Maria & Célia Lopes. 2016. History and Current Setting. In L. Weltzels, J. Costa & S. Mernuzzi (eds.) *The Handbook of Portuguese Linguistics*. Munich: John Wiley: 1–14.

Cagliari, Luís. 1974. *A palatalização em Português: Uma investigação palatográfica*: Unpublished MA thesis, Universidade Estadual de Campinas.

Cardoso, Hugo. 2009. *The Indo-Portuguese language of Diu.* Utrecht: Landelijke Onderzoekschool Taalwetenschap.

Carvalho, Joaquim B. 2013. Why there is no backness: the case for dismissing both [coronal] and [dorsal]. In J.-L. Léonard & S. Naïm (eds.). *Backing and Backness: Studies in Phonology*. Munich: Lincom: 45–58.

Chomsky, Noam & Morris Halle. 1968. *The sound pattern of English*. New York: Harper & Row.

Clements, George N. 1985. The geometry of phonological features. *Phonology Yearbook* 2. 225–52. doi:10.1017/S0952675700000440.

Clements, George N. 1999. Affricates as noncontoured stops. In O. Fujimura, B. Joseph, B. Palek (eds.) *Proceedings of LP'98: Item order in language and speech*. Prague: Karolinum Press: 271–299.

Clements, J. Clancy. 1996. *The Genesis of a Language: The Formation and Development of Korlai Portuguese*. Amsterdam: John Benjamins.

Clements, J. Clancy. 2012. Notes on the phonology and lexicon of some indo-Portuguese creoles. In H. Cardoso, A. Baxter & M. Pinharanda-Nunes (eds.), *Ibero-Asian creoles: Comparative perspectives, 15–46.* Amsterdam: John Benjamins. doi:10.1075/cll.46.02cle.

Dalgado, Sebastião. 1900. *Dialecto indo-portugês de Ceylão*. Lisboa: Imprensa Nacional.

Davis, Stuart. 1999. On the Representation of Initial Geminates. In *Phonology* 16: 93-104.

Fernandes, Miguel & Baxter, Alan. 2001. *Maquista Chapado: Vocabulário e Expressões do Crioulo Português de Macau*. Instituto Internacional de Macau.

Granda, Germán. 1986. Retenciones africanas en la fonética del criollo portugués de Annobón. In *Revista de Filología Románica* 4: 26-37.

Hamilton, Philip. 1993. *On the internal structure of the coronal node: Evidence from Australian languages*. Unpublished ms., University of Toronto.

Hulst, Harry van der. 2014. Word Stress: past, present and future. In Hulst, H.G. van der (ed.). *Word Stress: Theoretical and typological issues*. — Cambridge: Cambridge University Press: 3-55.

Kehrein, Wolfgang. 2002. *Phonological representation and phonetic phasing: Affricates and laryngeals*. Niemeyer.

Kihm, Alain. 1994. *Kriyol Syntax: The Portuguese-based Creole Language of Guinea-Bissau*. Benjamins.

Krämer, Martin & Olga Urek. 2016. Perspectives on palatalization. *Glossa: A Journal of General Linguistics* 31. http://doi.org/10.5334/gjgl.226

Kubová, Michaela. 2014. *Crioulo de Cabo Verde: caboverdianismos em português*: PhD thesis, University of Brno.

Ladefoged, Peter & Ian Maddieson. 1996. *The sounds of the world's languages*. New Jersey: John Wiley & Sons.

Lowenstamm, Jean. 1999. The beginning of the word. In J. Rennison e K. Kühnhammer (eds.). *Phonologica 1996*: 153–166.

Mateus, Maria Helena; Andrade, Ernesto. 2000. *The Phonology of Portuguese*. Oxford: University Press.

Matzenauer, Carmen L. B., & Miranda, Ana R. M. 2012. A construção do conhecimento fonológico na aquisição da linguagem. Revista De Estudos Da Linguagem, 20(2). https://doi.org/10.17851/2237-2083.20.2.91-124.

Maurer, Philippe. 2008. A first step towards the analysis of tone in Santomense. In: Michaelis, Susanne (ed.), *Roots of creole structures*, 25–261. Amsterdam: John Benjamins.

Maurer, Philippe. 2013a. Angolar. In *Michaelis, Susanne Maria; Maurer, Philippe; Haspelmath, Martin; Huber, Magnus. The survey of Pidgin and Creole languages*. Volume 2: Portuguese-based, Spanish-based, and French-based languages. Oxford: Oxford University Press, 131-139.

Maurer, Philippe. 2013b. Batavia Creole. In *Michaelis, Susanne Maria; Maurer, Philippe; Haspelmath, Martin; Huber, Magnus. The survey of Pidgin and Creole languages*. Volume 2: Portuguese-based, Spanish-based, and French-based languages. Oxford: Oxford University Press, 131-139.

Mendes, Ronaldo. 2023. *Variação interna em kriol (crioulo da Guiné-Bissau): Fonologia e aspetos sociolinguísticos*. Universidade do Porto MA dissertation.

Michaelis, S. M.; Maurer, P.; Haspelmath, M.; Huber, M. (eds.). 2013. *Atlas of Pidgin and Creole Language Structures Online*. Leipzig: Max Planck Institute for Evolutionary Anthropology. [https://apics-online.info/].

Mistry, P. J. 1997. Gujarati Phonology. In Kaye, Alan S. (ed.), *Phonologies of Asia and Africa*. Winona Lake: Eisenbrauns: 653-673.

Moran, Steven; McCloy, Daniel (eds.). 2019. *PHOIBLE 2.0.* — Jena: Max Planck Institute for the Science of Human History. [http://phoible.org].

Nunes, Naidea; Rebelo, H.; Saramago, J.; Vitorino, G. 2018. *A criação de gado: o gado bovino, ovino e caprino, o leite e os derivados, o porco e a matança*. — Funchal: Universidade da Madeira, Centro de Linguística da Universidade de Lisboa, Direcção Regional da Cultura.

Paradis, Carole & Antoine Tremblay. 2009. Nondistinctive features in loanword adaptation: the unimportance of English aspiration in Mandarin Chinese phoneme categorization. *In Andrea Calabrese & Leo Wetzels (eds.), Loan phonology*, 211–224. Amsterdam: John Benjamins. doi:10.1075/cilt.307.09par. https://doi.org/10.1075/cilt.307.09par.

Paradis, Carole & Darlene LaCharité. 1997. Preservation and minimality in loanword adaptation. *Journal of Linguistics* 33. 379–430.

Pimenta, Heglyn. 2019. *Nasalité et syllabe: Une étude synchronique, diachronique et dialectologique du portugais européen*. PhD thesis, Université Paris VIII.

Quint, Nicholas. 2003. *Parlons capverdien: langue et culture*. Paris: L'Harmattan.
Rodrigues, Ulisdete. 2007. *Fonologia do caboverdiano: das variedades insulares à unidade nacional*: PhD thesis, Universidade de Brasília, 2007.

Sagey, Elizabeth. 1986. *The representation of features and relations in nonlinear phonology*. PhD thesis, MIT.

Scantamburlo, Luigi. 2013. *O léxico do crioulo guineense e as suas relações com o português: o ensino bilingue português-crioulo guineense*: PhD thesis, Universidade Nova de Lisboa.

Schafer, Robin. Headedness in the representation of affricates. 1995. In *The Linguistic Review* 12: 61–87.

Scheer, Tobias & Philippe Ségéral 2008. Positional factors in lenition and fortition. In J. B. Carvalho, T. Scheer & P. Ségéral (eds.), *Lenition and Fortition*, Berlin: Mouton de Gruyter: 131–172.

Silva, Carlos. 2021. The substance of the palatal segments: a typological approach. *Poznan Linguistic meeting* 2021.

Silva, Thaïs. 1998. *Fonética e Fonologia do Português.* São Paulo: Editora Contexto.

Swolkien, Dominika. 2015. *The Cape Verdean creole of São Vicente: its genesis and structure*. Ph.D. thesis, Universidade de Coimbra.

Thomason, Sarah. 2003. Contact as a Source of Language Change. In *The Handbook of Historical Linguistics*: 687–712. https://doi.org/10.1002/9780470756393.ch23

Topintzi, Nina. 2010. *Onsets: suprasegmental and Prosodic Behaviour*. Cambridge: Cambridge University Press.

Trigo, Luís & Carlos Silva. 2022. Comparing lexical and usage frequencies of palatal segments in Portuguese. *Lecture notes in computer science* 13208: 353–362. https://doi.org/10.1007/978-3-030-98305-5_33.

Trubetzkoy, Nikolai. 1939. *Grundzüge der Phonologie*. Prague: Circle Linguistique de Prague.

Veloso, João. 2017. Palavra Mínima em Português Europeu: a Oralização de Abreviações. *ALFA: Revista De Linguística*, 61(1): 133–168. https://doi.org/10.1590/1981-5794-1704-6

Veloso, João. 2019. Complex Segments in Portuguese: The Unbearable Heaviness of Being Palatal. In I. Zendoia, O. Nazabal (eds.). *Bihotz ahots. M. L. Oñederra irakaslearen omenez*. Bilbao: Universidad del País Vasco, Euskal Herriko Unibertsitatea: 513–526.

Wetzels, Leo. 2000. Consoantes palatais como geminadas fonológicas no Português Brasileiro. *Revista de Estudos da Linguagem* 9 (2): 5–15.

Wetzels, Leo. 2007. Primary word stress in Brazilian Portuguese and the weight parameter. *Journal of Portuguese Linguistics* 5/6: 9-58.