AFFRICATION OF VOICED LABIALS (/B, V/) IN CHANGANA

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Abstract

This article describes and analyses the frication of the voiced labial consonants (/b/ and /v/) in Changana, a Bantu language (S53, in Guthrie's 1967-1971 classification). In the light of the autosegmental phonology (Leben 1973, 1978, 2006; 1973, Goldsmith 1976, 2004; Odden 1986) combined with the Feature Geometry theory, the article discusses phonological processes that turn voiced labials into labial-alveolar affricate [bz]. In this study, we assume that the process of hiatus resolution by gliding is the trigger of the alteration under analysis. That is, when derivative suffixes with low vowel (/a/) and the high front vowel (/i/) in the initial position are attached to words with rounded vowels (/o, u/) in final position in some morphological processes such as diminutivisation and locativisation, the results are undesirable sequences (hiatus). In order to resolve such hiatus, a series of phonological processes such as the turning of the rounded vowel in the word final position into labial-velar glide allowing the adjacency of voiced labials with labial glide which violates the Obligatory Contour Principle (OCP) takes place. The present study analyses the OCP using empirical Changana data collected both in the fieldwork supplemented by data from other sources including bibliographical and introspective data. The article is organised as follows. Firstly, it discusses the theoretical framework; secondly it analyses the Hiatus Resolution in Changana; thirdly, it analyses the data and lastly, it presents the main conclusions of the study.

Keywords: *Affricates, Phonological Processes, Gliding, Autosegmental Theory, Changana*

Introduction

Mozambique is a multilingual country where several languages of Asian origin co-exist alongside languages such as Portuguese, the official language, and many Bantu languages. It is in this last group of languages that we find *Changana*, the language of our study.

Changana is a Bantu language of the S50 group *Tswa-Ronga* (Guthrie, 1967: 15) which covers 4 languages, namely; *Citshwa* (S51), *Xigwamba* (S52), *Xichangana* (S53) and *Xirhonga* (S54) and mostly spoken in the provinces of Maputo, Gaza and *Inhambane*. This language is also spoken in southern Zimbabwe and the South African province of Transvaal (Ngunga and Faquir, 2011). In Doke's classification (1945), *Changana* takes code 60/4, *Shangaana*-Tsonga, (COLE 1961 *apud* NGUNGA and SIMBINE 2012), which refers simultaneously to the language (*Shangaana*) and the group (Tsonga). *Xihlengwe* is a dialect of *Changana*, spoken in ten of the fourteen districts of Gaza Province. *Mandlakazi* is one of the ten districts where *Changana* is spoken in this province.

Our sample was non-probabilistic sample for accessibility and convenience. Three native speakers of *Changana*, aged 45 to 65 years old were used as informants, one being the main informant (*Hlengwe* speaker) and the other two being the controling informants (*Khambani* and *Bila* speakers). This research is a descriptive study of qualitative approach based on an analysis of empirical data collected in the field and other sources such as bibliographic (or philological), ethnographic (main). The following techniques were used during fieldwork: interview, sociolinguistic, linguistic questionnaires and documentation by voice recording. Analysis of empirical data, was based on tabulation and the respective arboreal representation.

This article intends to answer the following question: What triggers of the affrication process of voiced labial consonants in onset of the final syllable, during derivational processes? Possible answer: The trigger of the affrication of the voiced labial consonants is the PCO.

Based on the Autosegmental phonology (Leben, 1973, 1978, 2006; 1973, Goldsmith, 1976, 2004; Odden, 1986) combined with the feature geometry theory (Clements and Hume, 1985) and distinctive feature theory (Chomsky and Halle, 1968). The study aims at: (a) understanding the affrication process of the voiced labial consonants (/b/ and /v/); (b) describing the phonological processes that lead to the alteration of these consonants; and (c) demonstrating how the PCO determines such alterations.

The article, firstly, discusses the theoretical framework; secondly it presents an overview of Hiatus Resolution in Changana; thirdly, it analyses the data; lastly, it presents the main conclusions of the study.

Literature Review

In this section, previous studies focusing on consonant alterations are highlighted. Thus, Herbert (1977) claims that most Southern Bantu languages exhibit the phonological process of palatalisation whereby sequences of labial consonant plus **w** are replaced by labialised (pre)palatal fricatives or affricates, for example, p + w tʃw, b + w → dʒw. Similar alternations also occur before front vowels and the labiality of the palatals cannot be attributed to an underlying **w**. He demonstrates that this complex series of consonant alternations, palatalisations and prepalatalisations, is no longer fully phonological in character. He suggests that these processes are morphophonological in most languages. With passivisation and diminutivisation as main evidence, Herbert (1977) demonstrates that there are certain alternations between labial and palatal (or prepalatal) consonants which occur when the extension -wa is suffixed to a verb stem, but not when an alternate suffix -iwa is used. The alternate suffixes are analysed as formally independent units synchronically; that is -wa is not derived from -iwa via a rule of i-deletion. Further, there are numerous facts which point to the morphophonological status of these consonant alternations in many languages. It may be that conditioning is fully morphological in some languages. Therefore, the morphophonologisation of the passive alternations in the Tsonga group, have generally, been lost through the spread of passivisaiton with -iwa. Herbert (1977) further suggests that such a process is an answer to the segmental fusion as argued for by Stahlke (1976) for whom the alterations of the labial consonants are due to the segmental fusion in the formation of the causative, passive and diminutive as shown in: b + I → dʒw.

Through the course of time, these alternations have come to be associated with particular morphemes and grammatical categories. It is juxtaposition with a particular morpheme and membership in a certain category which determines the alternation synchronically, although the alternation could be described in a purely phonological terms. In this way, in Herbert's view, the palatalisation arises historically from a general incompatibility of' labial consonants and **w**, so that, in a comparative form such he shows the far-reaching effects which this incompatibility has had among the Southern languages (Xhosa, Se Sutho, Shona, Venda, Tsonga, Lenge), where he notes that a process of 'palatalisation by w' would be extremely unnatural and suspect.

Ohala (1978) combines deductive and inductive methods to analyse palatalisation of labials based on other languages of the world such as Czech, Tai, Tibetan, Spanish, Portuguese, Italian and French, among others. With the inductive method, he demonstrates that the /l/ post-consonatal /l/ first turns into /j/ then passes to the palatal affricate /p(h)j/. In the deductive, based on spectral patterns of palatalised labials compared to Russian labial and dental patterns, he found that the transition to palatalised labial is similar to the dental. In the case of Southern Bantu languages, palatalisation is conditioned by the addition of the suffixes: causative -y, diminutive /-ana/, from passive -wa to verbal radicals and the next w. In the PB reconstruction, these changes are p → t / j, w (Meinhof and Warmelo, 1932 and Guthrie, 1967-1970), due to the dissimilation in the passive (Doke); segmental fusion must occur in the formation of causative, passive and diminutive (Stahlk, 1976); these changes are morphological because they are not phonetically natural, they are applied in morphological environments and show many exceptions and free variations (Herbert, 1977). Both methods showed that the j transform labial to dental and w transform dental and velar into labial.

In this study, it is demonstrated that there is a phonological rule that triggers this morphophonological alteration, the Obligatory Contour Principle (OCP) which prohibits sequences of segments which share identical features.

According to Guy and Boberg (1997), in English, the deletion of the coronal stop is restricted by the anterior segment. Stops and sibilants favour deletion more than liquids and non-sibilant fricatives. This may be a consequence of PCO, which can be seen as a universal inhibitor of similar features sequences.

Although having two favouring features produces significantly more deletion than having only one, it does not matter which two features are present. Stops, sibilants, and nasals are all substantially equal. Also, the laterals and non-coronal nasals and fricatives do not differ significantly from each other. These results suggest that each of the features

[son], [cont], and [cor] has about the same effect on the rule (...). The English prohibition on geminates means that the final /t, d/ can never be preceded by another /t/ or /d/. The syllabic allomorph of the regular past tense suffix which occurs just after a root-final /t/ or /d/ (cf. wanted, sanded vs. the non syllabic suffix in walked, canned, missed). This epenthesis rule (or non deletion of an underlying suffixal vowel) is, in itself, an OCP effect and it occurs just where all three features are shared between target and context. It can be expressed as a categorical absence of final /t, d/ after a preceding /t, d/. In this way, the single explanatory principle of OCP accounts for both categorical and variable conditions on the occurrence and absence of final coronal stops.' (Guy and Boberg, 1997)

Guy and Boberg (op. cit) suggest that one should adopt the inherent variability hypothesis and interpret the PCO as a probabilistic constraint with cumulative effects (more shared traits, more likely to be eliminated).

Neuschrank and Matzenauer (2012) through OCP demonstrate how palatal /j/ transforms consonants /s/, /t/, /l/, /g/ into palatals /ʃ/, /ʒ/, /ɲ/, /ʎ/ from Latin to Brazilian Portuguese today. The palatal /ʃ/ comes from the Latin sequences / kl, pl, fl / in the process consisting of the following: /k, p, f/ + /l/ > /k, p, f/ + /j/ > /tʃ/ > /ʃ/. Or /kj/ > /tj/ > /tʃ/, contour segment, /tʃ/ > /ʃ/. In this case, the first stage of the process consists of the weakening of the liquid consonant, which passes the palatal glide due to the distance in the sound caused by the phenomenon of weakening of the liquid, between the two elements of the onset. The next step consists of transforming the sequence /kj/ in /ʃ/, which can be considered an assimilation of the coronal feature of the glide; at that moment, the internal structure of two contiguous segments (one of them coronal) starts to function, when they occupy the same syllabic position (syllabic onset).

The alveolar-palatal fricative /ʒ/ comes from three contexts, the first in which the /g/ first joins the medium /e/: /g/ initial or medium vowel + /e/ or /i/; the second, which consists of the transformation of the high vowel /i/ initial or intervocalic; and the third is that /d/ followed by /i/, preceded by a vowel. These contexts are summarised as follows: [g]> [gj]> [j]> [dʒ]> [ʒ]. Or [g + Vcor]> [gj]> [j]> [dj]> [dʒ]> [ʒ].

The /ʎ/ appears first from two situations: 1º /l/, /ll/ _ /e/, / i / or [j]> / ʎ /; second, where there are the sequences /kl/, /pl/, /gl/, /bl/, /tl/ > /ʎ/. That is, the /ll/ is simplified, resulting in /l/ which, when followed by /i/ or [j], creates a complex segment by spreading the vowel node from the next context to the consonant. From /kl/, the /l/ spreads its root node to the stop and the entire structure immediately shuts down and two identical consonants are formed, violating the PCO; the root features [-voz] of the first /l/ becomes [+voice] a vowel node is inserted giving rise to [j]. From the reorganisation, /ʎ/ emerges. The palatal nasal /ɲ/ comes from three situation: first, [n] + [j]; second, i + [n]; third, [g] + [n]. /nj/ > /ɲ/ by spreading the vowel node to the nasal one. /gn/ > /ɲ/: [gn] > [jn] > [jñ] > [ñ]. Among vowels, /g/ must be coda which violates the syllabification principles. The readjustment consists of transformation: /jn/ > /ɲ/.

This way, we have just seen some previous studies around the phenomenon we are looking at in Changana. In the following chapter, we present the essentials of our theoretical framework.

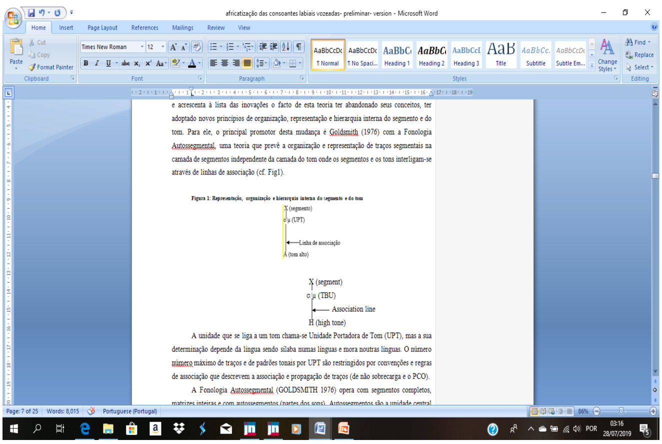
Theoretical Framework

Autosegmental Phonology (AP)

Autosegmental phonology is a nonlinear theoretical model introduced by Goldsmith (1976), inspired in Suprasegmental Phonology (Leben, 1973) from the study of tones of the Igbo language, defend the existence of a hierarchical organisation and internal structure of features of a segment and syllables and their representation in tier. According to Leben (1973), Goldsmith (1976) and Hualde (2005), the theory of autosegmental phonology arises in order to (a) provide correct tone analysis taking into account the contrasting character of the tonal peak position; and (b) to describe cases of segments that can support successive tones, since this implies a multilinear geometry of representation of suprasegments, which makes it impossible to represent it in binary values as was the SPE.

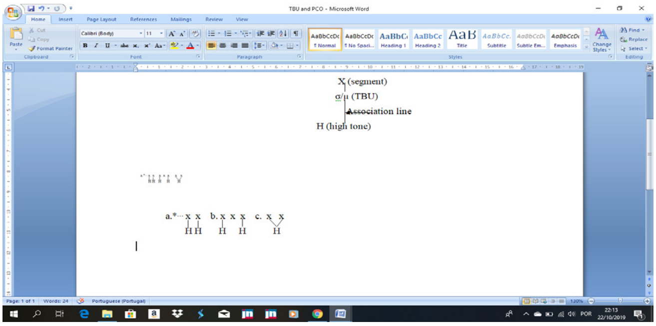
In autosegmental theory, there is no one-to-one relationship between the segment and its features; the features may extend beyond or below a segment; deletion of a segment does not necessarily imply the disappearance of its features, as they may spread to another segment; existence of features that can occur in isolation and features that can occur together; this means that a rule can operate in one tier only.

Figure 2: Segment and Tone Representation, Organisation, and Internal Hierarchy



In this representation, segments and tones interconnect through association lines. The unit that binds to a tone is called the Tonal Bearing Unit (TBU), but its determination depends on the language being syllable in one language and mora in other languages. The number of tonal patterns is limited by conventions and association rules that describe the association and spread of features. However, the maximum number of tonal features for each TBU is limited. The three principles of autosegmental theory restrict the distribution and association of feature across tiers namely; (i) Non-crossing of Association Lines: association of two elements from one layer to another is prohibited if it implies crossing of association lines; (ii) Binding restriction: no overload, restricting the application of a rule to the form represented in it; and (iii) Obligatory Contour (OCP): Adjacency of identical elements is prohibited (Soares and Damulakis, 2007), as in Figure 3.

Figure 3: Configurations Prohibited and Allowed by the OCP



In Figure 3, (a) the adjacency of high tones is not allowed because it violates the OCP. However, in situations such as those in (b) and (c), the OCP is not violated. Indeed, in (b) there is no adjacency of two tones. In (c) there is one tone for two segments.

However, if the adjacency of segments with tone (H) does not coexist with two identical tones, but only with a single tone associated with both segments, as in (c), the OCP is not violated and the sequence in question is allowed. Therefore, these segments do not have two tones, but only one tone associated with the two segments. Therefore, similar sequences before they are represented in (b) and (c) are allowed by the OCP.

The OCP was originally formulated by Leben (1973, 1978) from the study of the tonal system of the Mende language. Over time, it was noted that the high tone was a mere example, as the language strategies in complying with the OCP led to the proposal of a notion of structural adjacency with possible universal validity involving segments according to Soares and Damulakis (2007). Therefore, the OCP has been extended to segments and other unique features or groups of features. McCarthy (1986) stated that the adjacency of identical phonological features of any kind is prohibited (Hagberg, 2006).

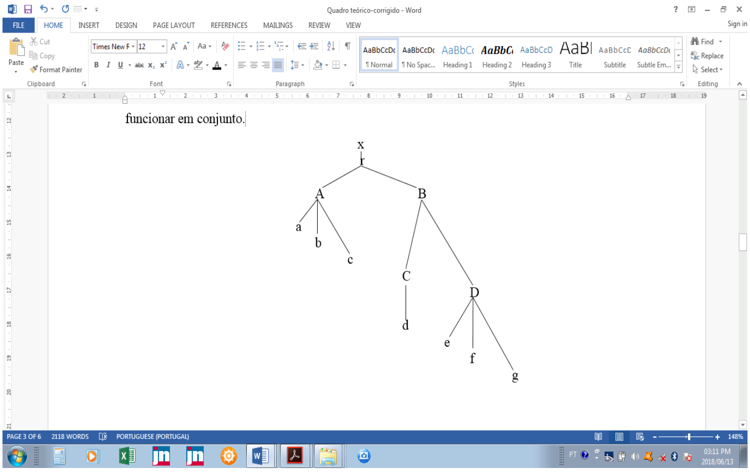
In this sense, the OCP has been reformulated more than once and currently, its conceptions extend to several areas. Thus, the OCP is not limited to lexical representations, but also acts in derivative processes as an element that restricts phonological rules (Soares, and Damulakis, 2007). In addition, another reformulated aspect of the OCP is its concept, which no longer refers to the notion of self-segmentation layer, but now integrates only the notion of sequence of adjacent elements. Like that, we can represent as:*[**αS**] [**αS**].

Obligatory Contour Principle explains the affrication process of voiced labials as a result of hiatus resolution when diminutive and locative derivation affixes are attached.

Feature Geometry (Clements and Hume, 1985)

The role of Clements and Hume (1985) feature geometry model in autosegmental phonology. This model defends the organisation of features in tiers as a formalisation of the feature hierarchy that analyses the internal structure of speech sounds from the point of view of interaction between them in phonological systems (Leal, 2007). The features are adjacent and form a three-dimensional representation: root, larynx and consonant point tiers. In a tree diagram, the segments with an internal organisation are represented in hierarchically ordered nodes, namely; (i) Nodes (a, b, c, d) are phonological features, and (ii) Nodes (A, B, C, D) are class features.

Figure 4: Arboreal Representation of Features of a Segment



In the tree diagram, according to Figure 3, the terminal nodes are phonological features and the intermediate nodes are feature classes. r is the root node (the segment) and is dominated by an abstract unit of time (x). Nodes A, B, C, and D correspond to class nodes that dominate groups of elements that function as units or natural classes in phonological rules (occlusive, nasal, liquid, vowels, and semivowels). Nodes C and D depend on B. Nodes a, b, c, d, e, f, g are phonological features. Capital node and small nodes are linked by association lines.

Affrication of voiced labials (/b, v/) in Changana

Affrication of /b/ in Changana

Derivational suffixes: -ana and -ini:

Speakers 1, 2 (Hlengwe and Bila):

1.a) tobo: xi-tobo + **-**ana → tobo**a**na → xito**bw**ana / xitobana 'small melon'

7-melon + Dim. 7-melon-Dim.

tobo: tobo + **-**ini → tobo**i**ni → tobweni/ to**be**ni 'in the melon'

5-melon + Loc. 5-melon-Loc.

b) xigubu: xigubu + **-**ana → xigub**ua**na → xigu**bw**ana/ xigu**ba**na 'small drum'

7-drum + Dim. 7-drum-Dim.

xigubu: xigubu + **-**ini → xigub**ui**ni → xigu**bwi**ni/ xigu**bi**ni 'in the drum'

7-drum + Loc. 7-drum-Loc.

c) nambu:xi-nambu + **-**ana → xinamb**ua**na→ xinam**bw**ana/xinam**ba**na 'stream'

7-river- + Dim. 7-river-Dim.

d) nambu: nambu + **-**ini → namb**ui**ni → nam**bw**eni/nam**be**ni 'in the river'

3-river + Loc. 3-river-Loc.

Hiatus **Deletion/Coalescence**

Speaker 3 (Khambani)

2.a) tobo: xi-tobo + **-**ana → xito**boa**na → xito**bwa**na → xito**bza**na
7-melon + Dim. 7-melon-Dim. 'small melon'

tobo: tobo + **-**ini → to**bo**ini → to**bwe**ni → to**bzi**ni
5-melon + Loc. 5-melon-Loc. 'in the melon'

b) xigubu: xigubu + **-**ana→ xigub**ua**na →xigu**bwa**na → xigu**bza**na
7-drum + Dim. 7-drum-Dim. 'small drum'

xigubu: xigubu + **-**ini → xigub**ui**ni →xigu**bwi**ni → xigu**bze**ni
7-drum + Loc. 3-river-Loc. 'in the drum'

c) nambu:xi-nambu + **-**ana→ xinam**bua**na → xinam**bwa**na → xinam**bza**na
7- river + Dim. 7-river-Dim. 'small drum'

nambu: nambu + **-**ini → nambuini → nambwini → nambzeni
3-river + Loc. 3-river-Loc. 'in the river'

Hiatus **Gliding** **Affrication**

Speakers 1 and 2 resolve the hiatus created by the vowel segment adjacency that violates the OCP. Speaker 1 ends after gliding. But, he violet the OCP for allowing the adjacency of two labial segments, /b/ and /w/.

Speaker 1- Semivolcalisation: V / _σ# → G/_V
[-round]

3.a) tobo + -ana → xitoboana → xitobwana 'small melon'
5-melon + Dim. 7-melon-Dim.

Hiatus **Gliding**
(Application 1 of OCP)

In (3), we find that after adding the diminutive discontinuous morpheme xi-...-ana, which is a morphological process, hiatus is created which is a sequence of two vowels. The sequence of the vowels in the word final position and in suffix initial position, violates the PCO because both share the feature [+syl]. To resolve the hiatus, the speakers 1 and 3 turn the word final rounded vowel (/o/) into a labial-velar glide [w], which is a phonological process. Therefore, as PCO violation continues, the speaker 2 undoes the sequence via coalescence and deletion as we can see in (4):

Speaker 2- Deletion: V/ _σ# →Ø _V

4.a) tobo + -ana → xitoboana → xitobana 'small melon'
5-melon + Dim. 7-melon-Dim.

Hiatus **Deletion**
(Application 1 of OCP)

In *xitobani*, as produced by speaker 2, the deletion of the rounded vowel (/o/) which is the nucleus of the final syllable, and the occurrence of the low vowel (/a/), replacing it as the nucleus of this syllable is shown. This low vowel that occurs in the second word is the initial vowel of the diminutive suffix.

However, in the case of locativisation, in *tobeni*, there is the hiatus resolution through coalescence of round vowel (/o/), the nucleus of the word final syllable/-bo/, and the high vowel /i/ in the locative suffix initial position, as we can see in (5).

Speaker 2- Coalescence: V → V/ _ V
[-low, -high/ +high] [-high, -low] [+high]

5.a) tobo + -ini → toboini → tobeni 'in melon'
5-melon + Loc. 5-melon-Loc.
Hiatus **Coalescence**
(Application 1 of OCP)

In (5), we also demonstrate that the speaker 2 undoes the sequence of segments sharing the same features, although coalescence and, thus, eliminates all unwanted sequences that violate the OCP. Lastly, we notify that the final of diminutivised word varies according to the dialect, a matter that will not be discussed here.

However, the words produced by speakers 1 and 3, after gliding formation continue with unwanted sequences that violet the OCP, as they share the labial feature. Adjacency of identical features after the addition of derivational suffixes consisted of the following:

6.a) xitoboana → b) xitobwani
[+syl] [+syl] [lab] [lab]

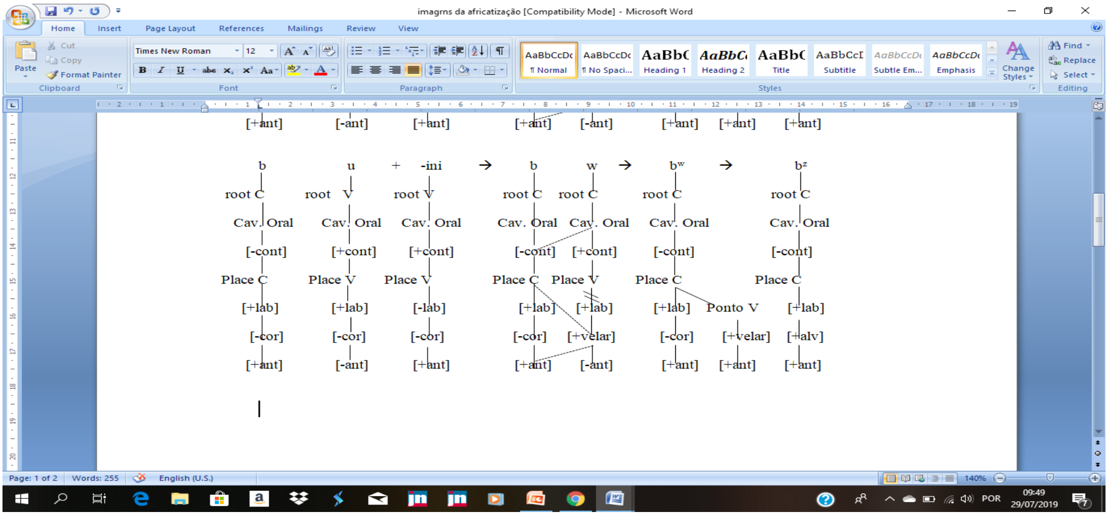
In (6a), we can see the adjacency of two segments that share the feature [+syl] creating a hiatus, which in this case uses the gliding rule to turn the rounded vowel (/o/) into labial-velar glide. In (6b), the hiatus has been resolved, but there is a new OCP violation because of the adjacency of two labial segments, the labial stop and the labial-velar glide.

Here there are two different solutions. That is, speakers 1 and 2 end the derivation at this stage. The third speaker does so, in diminutivisation and locativisation. To resolve the OCP violation, the speaker 3 turns the voiced velarised labial stop (/bw/) into voiced labial-alveolar affricate /bz/, a process whose different stages can be shown as follows:

7.a) tobo + **-**ana → xitob**oa**na → xito**bwa**na → xito**bza**na
5-melon + Dim. 7-river-Dim.
Hiatu **Semivocalization** **Affrication**
(Application 1 of OCP) **(Application 2 of OCP)**

This derivation history can be formalised as in Figure 5:

Fig. 5: Affrication of Bilabial Stop: bo/bu → [bz] / _v [αhigh, -back]



In Fig. 5, we use Feature Geometry theory to show how the OCP is applied to turn /bw/ into /bz/. This process results from a progressive assimilation of the [+front] feature of the voiced bilabial stop /b/ by the labial-velar glide (/w/) and the back rounded vowel (/u/) is changed to during the hiatus resolution process. This progressive assimilation of the [+front] feature turns the glide into the alveolar /z/ fricative that alveolarises the voiced bilabial stop when it occurs as the onset of a syllable in which derivation (diminutivisation). It is important to note that the alveolarisation of this voiced labial stop is a second and final process after the gliding of the rounded vowel (/u/).

The elimination of the unwanted sequences in the two processes of derivation of the word *tobo* resulted in the affrication of the onset of the word final syllable, the pre-nasalised voiced bilabial /mb/ (OCP application 2). Thus, this process culminated in the production of the pre-nasalised voiced labial-alveolar affricate [mb^z], as shown in Figure 5.

Affrication of /v/ in Changana

Derivational Suffixes: -ana and -ini

The data resulting from the diminutivisation and locativisation of /vo, vu/ syllable ending in words as produced by the three informants show that they all observed the OCP. However, this time, not only its application 1, which is the hiatus resolution, but also the application 2 of this principle, as can be seen in 8 below:

Speakers 1, 2 (Hlengwe and Bila)

8.a) xihlovo: xihlovo + **-ana** → xihlov**oa**na → xihlo**wa**na 'small well'
7-well + Dim. 7-well- Dim.

xihlovo: xihlovo + **-ini** → xihlov**oi**ni → xihlo**weni** 'in the well'
7-well + Loc. 7-well-Loc.

b) nkhuvu:xi-nkhuvu + -ana → xinkhuv**ua**na → xinkhu**vana** ‘small party’

7-party + Dim. 7-party- Dim.

nkhuvu: nkhuvu + -ini → nkhuv**ui**ni → nkhu**wini** ‘at the party’

3-party + Loc. 3- party- Loc.

Hiatus **Gliding**

In this sense, speakers 1 and 2 resolve the first sequence of segments with identical features, turning the word final rounded vowels into glide to get the words: *xihlovwani*/ *xihlovweni* and *nkhuvwini*. However, after gliding, the labial-dental fricative undergoes deletion with the exception of *xinkhuvani* where the final vowel of *nkhuvu* is deleted in diminutivisation. This is OCP application 2. Thus, these speakers complete the derivation process without sequences with identical features, which complies with the OCP.

9.a) **Elisão: V/ _σ# →Ø _V**

nkhuvu + -ana → xinkhuvuana → xikhuvana ‘small party’

3-party + Dim. 7-party-Dim.

Hiatu **Deletion**

(Application 1 of OCP)

Speaker 3 resolves the hiatus by applying the gliding rule to the word final vowel which results in the following diminutive forms: *xihlovwana*, *xinkhuvwana*. Lastly, to undo the sequence of segments sharing the same features, this speaker also goes to the second OCP application 2, taking the option for the affricating the labial-dental fricative in the next stage of the derivation of these words, which results in the following forms: *xihlobzana / xihlobzeni and xinkhubzana / nkhubzini*.

Speaker 3 (khambani)

10.a) xihlovo: xihlovo + -ana → xihlovwana → xihlobzana ‘small well’

7-well + Dim. 7-well-Dim.

xihlovo: xihlovo + -ini → xihlovweni → xihlobzeni ‘in the well’

7-well + Loc 7-well- Loc.

b) nkuvu: xi-nkuvu + -ana → xinkuvwana xinkubzana ‘small party’

7-party + Dim. 7-party-Dim.

nkuvu: nkuvu + -ini → nkuvwini → nkubzini ‘in the party’

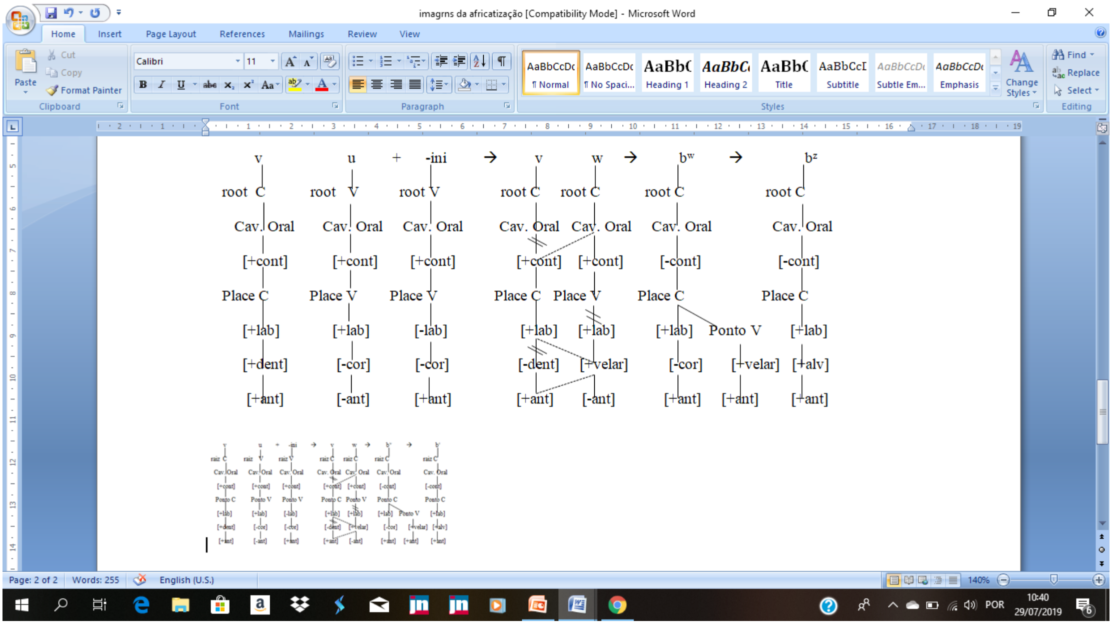
3-part + Loc. 3-party-Loc.

Gliding **Affrication**

(Application 1 of OCP) **(Application 2 of OCP)**

Once again, the 3 speakers resolve the first OCP violation. However, as OCP violation continues through the adjacency of two labial segments (/v/ and /w/), the speakers 1 and 2 delete /v/ after hiatus resolution. Speaker 3 continues to observe the OCP by turning /vo, vu/ inti affricate segments which can be formalised as follows:

Figure 6: Affrication of /v/: vo/vu → [bz] /_v [αhigh, -back].

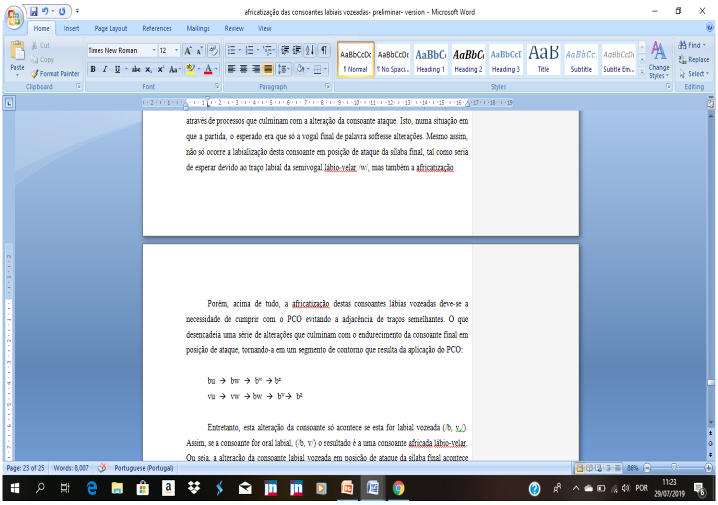


In this case, the application of PCO is clearly evident until a complex segment is formed, the labial-alveolar affricate [bz]. The PCO violation created in the context of locativisation of *nkhuvu*, as presented in (8), is resolved by applying the hiatus resolution rule (application 1 of the PCO) which consists of turning into a glide the word final vowel and then by turning into affricate the labial-dental fricative (application 2). Gliding turns the rounded (/u/) word final vowel into the labial-velar glide /w/ which shares the labial feature with the fricative labial-dental consonant in the onset position.

Thus, the second process of affrication is marked by two major operations: delinking and spread of features, 3 delinking and 3 spreads of features, followed by their assimilation. In fact, the affrication process begins with the delinking of the feature [+cont] of the voiced labial-dental fricative. Its [+cont] feature spreads to the right and is associated by progressive assimilation with the feature [+cont] of the labial-velar glide, remaining, however, with its labial feature. So it continues to violet the OCP. Hence, the labial-velar glide disassociates itself from the labial features by delinking.

Then, the dental feature is delinked from the fricative labial-dental, which is represented by delinking of the respective association line and the [+ labial] feature of the glide spread to the left. By the regressive assimilation, it is associated with the fricative /v/ and combines with its [+labial] feature. Therefore, the fricative becomes a velarised bilabial stop [bw]. Lastly, the [+ant] feature of the former fricative spread to the former labial-velar. This spreading promotes the strengthening of the [+front, +cont] features of the former labial-velar glide, resulting in its hardening that turns it into an alveolar consonant that alveolarises the labial stop to get a contour segment, the voiced affricate labial-alveolar /bz / [b^z].

Fig. 7: Affrication of Voiced Labial Consonants in Changana


através de processos que culminam com a alteração da consoante ataque. Isto, numa situação em que a partida, o esperado era que só a vogal final de palavra sofresse alterações. Mesmo assim, não só ocorre a labialização desta consoante em posição de ataque da sílaba final, tal como seria de esperar devido ao traço labial da semivogal lábio-velar /w/, mas também a africatização

Porém, acima de tudo, a africatização destas consoantes lábias vozeadas deve-se a necessidade de cumprir com o PCO evitando a adjacência de traços semelhantes. O que desencadeia uma série de alterações que culminam com o endurecimento da consoante final em posição de ataque, tornando-a em um segmento de contorno que resulta da aplicação do PCO:

bu → bw → b^w → b^z
vu → vw → bw → b^w → b^z

Entretanto, esta alteração da consoante só acontece se esta for labial vozeada (/b, v,/). Assim, se a consoante for oral labial, (/b, v/) o resultado é a uma consoante africada lábio-velar. Ou seja, a alteração da consoante labial vozeada em posição de ataque da sílaba final acontece

From the discussion above, we can conclude OCP may be dialect sensitive in one language. The examples above have shown that although they are dialects of the same language (Changana), *Khambani* and *Hlengwe* behave differently as far as OCP application in derived contexts is concerned. That is, *Khambani* observes the OCP in derivational processes by adding the diminutive and locative suffixes **-xi-…-ana** and **-ini**, respectively, while *Hlengwe* does not observe OCP in the same context.

Conclusion

In this study, we found that the synthetic perspective of these morphological processes, which materialise through derivational suffixes that begin with vowels, is the one that most affects affrication.

When added to nouns ending in bo/bu and /vo, vu/, derivational suffixes form a sequence of segments sharing the same feature, which violates OCP. This sequence is undone by the hiatus resolution processes, notably the semivocalisation of the word final vowel.

The resulting labial-velar glide /w/ shares the labial feature with those syllable onsets, creating other undesirable sequences, /bw/ and /vw/, which are in turn, resolved through a series of processes that culminate with the affrication of the onset, turning it into a contour segment, the voiced affricate labial-alveolar [bz]. This way, it is confirmed that the trigger of the affrication of the voiced labial consonants in Changana is the OCP.

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