Neutralization of non-final post-tonic mid-vowels in Brazilian Portuguese: assimilation or feature deletion?

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Neutralization rules in Brazilian Portuguese reduce its seven oral vowel system in stressed position /i, e, ɛ, a, ɔ, o, u/ to a five vowel subsystem in pre-tonic position /i, e, a, o, u/ (neutralizing the upper-mid and low-mid vowels), and to a three vowel subsystem in word-final position /i, a, u/. The classic approach on neutralization is that this process occurs by feature deletion (Clements, 1995). Wetzels (2011), however, argues that neutralization rules must be understood as a mechanism by which contrastive feature values are replaced with their opposite values. Both proposals can account for the neutralization described above. Nevertheless, words with proparoxytonic stress have a non-final post-tonic position, which can be different from the final weak system depending on the dialect. In southern dialects (SD) this position is filled with upper-mid vowels that tend to neutralize with high vowels (cf. Bisol, 2003). In northeastern dialects (ND), on the other hand, upper-mid vowels are the most frequent case, but they also occur as low-mid vowels or high vowels. Until now, no phonological account was provided for this alternation.

Based on the Feature Geometry´s framework, our aim is to explain the emergence of high and low-mid vowels in non-final post-tonic context and use this process to discuss neutralization as a process of feature deletion or change of the feature value. We analyzed a phonologically balanced corpus of 4720 tokens from 40 subjects in both dialects

The results showed that (i) for both dialects, the emergence of high vowels was correlated with the presence of a high word final vowel that shared the same place of articulation as the non-final post-tonic vowel, i.e., coronal to [ɪ] and labial to [ʊ] (e.g. tíqu[ɪ]t[ɪ] ‘ticket’); and (ii) for ND, the emergence of mid-low vowels was correlated with the presence of the dorsal vowel, therefore low vowel /a/, in word-final position (e.g. ômɛ[g][a] ‘omega’). These results are consistent with the tendency of BP to present regressive feature spreading (e.g. vowel harmony, fricative voicing).

If we assume the classical approach, we cannot explain the fact that high vowels in non-final post-tonic position is correlated with high vowels in word-final position, since [-open2] is required for the production of [ɪ, ʊ] in the first context, but it would have already been dissociated in the word-final position, (as it would have been neutralized). Wetzels’ analysis is straightforward: the values of the relevant features change. Our results show that this change occurs by assimilation of the final vowel’s features.

Our results also show that we need to assume two different processes: in order to capture the fact that the emergence of the high vowels is an association of place of articulation and open feature, the assimilation must be of the vocalic node. On the other hand, for the production of mid-low to occur, there must be an assimilation of [+open3]. Crucially, for this last case, the assimilation cannot be of the vocalic node, otherwise it would assimilate the [dorsal] feature and the vowel would be produced as [a].

References

Bisol, L. (2003). *Neutralização das átonas*. Revista Letras. v.61, p. 273-283.

Clements, George N. & Elizabeth V. Hume (1995). The internal organization of speech sounds. In J. Goldsmith (ed.) *The handbook of phonological theory*. Cambridge, Mass. & Oxford: Blackwell. 245-306.

Wezels, L. (2011) The representation of Vowel height neutralization in Brazilian Portuguese (Southern Dialects). In: Goldsmith, J.; Hume, E.; Wetzels, L. (eds.), Tones and Features. Berlin. Walter De Gruyter, p. 331 – 359.