Vowel Reduction and its Effect on the European Portuguese Syllable Structure

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The purpose of this paper is the description of the Portuguese syllable structure. The shape of the syllable in European Portuguese (the so-called "Lisbon norm", which is the standard southern and central dialect) is said to be identical in both careful and casual speech, in spite of the productive process of unstressed vowel deletion in the latter.

This view is challenged in this paper on the grounds of the recognised Portuguese process of Vowel Nasalisation. It is argued that within the skeletal theory of syllable it is impossible to maintain the same syllabic structure of the two speech variants.

The analysis is based on the data and generalisations in Mateus & d'Andrade (2002), who use the skeleton and the rule-based framework. Therefore, the same model is applied in this paper.

The authors argue that there are certain limitations in terms of possible shapes of syllable constituents in Portuguese, e.g. onsets have to comply with the Sonority Sequencing Generalisation (SSG; Jespersen 1904) and the Minimal Sonority Distance (MSD) principle, which they call the Dissimiliarity Condition.

However, they point out that a large number of words, such as *psicologia* [psikulu`ʒiɐ] 'psychology', seem to violate one or both principles. It is observed that in child language, colloquial speech and certain dialects, the MSD-offending *ps-* cluster does not behave on a par with admissible onsets, such as *pr-* in *prato* [`pɾatu] 'dish'.

Crucially, while in some speech variants in the former case a vowel is inserted ([pisikulu`ʒiɐ] in Brazilian Portuguese, [pɨsikulu`ʒiɐ] in child language and colloquial speech), the word *prato* is universally bisyllabic.

This argument, as well as a number of others (e.g. blocked voice assimilation across unlicensed clusters), led Mateus & d'Andrade to postulate empty nuclei to retain the syllable structure and deal with unlicensed clusters. They argue that the word *psicologia* has a phonetically empty syllable nucleus to spread the *ps-* onset into two separate singleton onsets.

Bearing this claim in mind, it is reasonable to assume that empty nuclei replace vowels which are deleted and thus give rise to unlicensed clusters. For example, in *destruir* [dɨʃtɾu`iɾ] 'to destroy', the first vowel is often deleted, especially in casual speech. This results in the MSD-violating cluster *ds-*, which is accounted for by postulating and empty nucleus spreading the two consonants. (Note that there is no voice assimilation.)

An analogous approach is expected in the word-final position, where the vowel [ɨ] is dropped even in careful speech. Thus, a word such as *parque* [`paɾk] 'park' does not contain a branching coda, which is not admitted in Portuguese, but rather a word-final empty nucleus.

This paper takes issue with the aforementioned claims. The critique is based on the process of Vowel Nasalisation which states that a syllable-final nasal consonant coalesces with the

preceding vowel, as demostrated by the pair of indefinite articles: the feminine *uma* [umɐ] and the masculine *um* [ũ]. (A discussion of why it is coalescence rather than nasalisation followed by deletion is presented later in the paper.)
Coalescence is not expected in forms such as *fome* [`fomɨ] 'hunger', as – according to the analysis presented above – the nasal consonant [m] belongs to the onset of the second syllable even after ɨ-deletion applies.

However, in fact the word *fome* very often shows an effect analogous to *um*, namely that the preceding vowel merges with the nasal consonants.

It is particularly apparent in frequent utterances, such as *tenho fome* 'I am hungry', which in isolation is rendered as [`teɲu `fomɨ], as opposed to [`tẽ `fõ] in casual speech. (Note that the transcription is simplified: it omits certain aspects irrelevant for this presentation in order to illustrate the issue in question in a more lucid manner.)

Obtaining the latter form without deleting the word-final empty nucleus would entail an irregular syllable division. Since nasalisation occurs, the nasal consonant [m] crucially belongs to the coda of the first, rather than to the onset of the second syllable. As a result, the required syllabification is CVC.V.

This is detrimental to the limitations on the coda, show in *parque* 'park' above. An analogous analysis would assign [k] to the coda of the first syllable, which in turn would result in an unlicensed branching coda. A similar example is *gato* [`gat] 'cat', where the [t] would end up in the coda, which only admits the sounds [ɬ ɾ ʃ ʒ].

It is argued that Mateus & d'Andrade's (2002) analysis is untenable, unless it is only limited to careful pronunciation which excludes vowel deletion.

Coetzee (2004) proposes an optimality-theoretic approach to the issue of vowel deletion. His analysis fails to mention the problem of nasalisation, but it is possible to account for the data basing on his work and a number of standard OT constraints put forward by Prince & Smolensky (1993), as well as McCarthy and Prince (1994).

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