Prosodic Word and Morphological Derivation in Brazilian Portuguese

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1 Introduction

In this paper, I discuss the prosodic status of words formed by morphological derivation in Brazilian Portuguese (BP). From the description of types of prosodization of prefixed and suffixed words in BP, I seek to problematize some consequences of this typology for the organization of the prosodic hierarchy and its effects on morphological transparency.

According to Schwindt (2000), Bisol (2004), and others, prosodic words (PW) can be equal, smaller or larger than morphosyntactic words (MW) in BP.

(1) Domains of prosodic words in BP
a. PW = MW  casa
           PW
b. PW < MW  prePW carnalPW MW
              PW
              MW
            affix
            MW
            affix
            MW
c. PW > MW  meMW espereMW PW

Words derived morphologically may show the first two domains, depending on if affixes are related to their bases in a structure of prosodic composition, adjunction or incorporation (Booij, 1996; Ito & Mester, 2008; Vigário, 2011).

(2) Prosodic sites for affixes in BP
a. Composition
       PWG
          PW
          MW
          affix
b. Adjunction
          σ
          PW
          MW
          affix
          MW
          affix
          MW
c. Incorporation
          σ
          σ...
          PW
          MW
          root

In (2a), an affix that is primarily stressed and constitutes an independent PW is added to a well-formed PW in a structure of composition. There is no consensus about the superordinate category in this case: if a recursive prosodic word, a clitic group, a phonological phrase or a prosodic word group (Schwindt, 2000; Nespor and Vogel, 1986; Vigário, 2011, among others). In (2b), the affix, as an unstressed structure, is added to a well-formed PW. However, the affix per se does not behave as a PW in this case. This

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1 Since I defend that there is no stress reassignment in prosodic composition, I am assuming tentatively the category “Prosodic Word Group”, proposed by Vigário (2011), instead of the analysis of recursive prosodic words.
configuration requires admitting recursion of PW. In (2c), an unstressed affix is added to a root and forms with it a single PW.

2 Proposal

In this analysis we propose that Brazilian Portuguese prefixes are subject to the three types of prosodization described above, whereas suffixes are subject only to composition and incorporation, not to adjunction. This is exemplified in (3) and (4).

(3) Prosodization of prefixes in BP

a. Composition | b. Adjunction | c. Incorporation
[\([\text{PW}_{\text{AFFIX}}]+[\text{PW}_{\text{MW}}]\)]\(\text{PWG}_{\text{MW}}\) | \([\sigma_{\text{AFFIX}}^+\sigma\ldots]\)[\(\text{PW}_{\text{MW}}\)]\(\text{PW}_{\text{MW}}\) | \([\sigma_{\text{AFFIX}}^+\sigma\ldots\text{ROOT}]\)[\(\text{PW}_{\text{MW}}\)]
pré-carnaval | pre-carnival | inescrito | unwritten | inscrito | registered

(4) Prosodization of suffixes in BP

a. Composition | b. Adjunction | c. Incorporation
\([\text{PW}]\)\(\text{MW}+[\text{PW}]_{\text{AFFIX}}\)[\(\text{PWG}_{\text{MW}}\)] | \(*[\sigma\ldots][\text{PW}]_{\text{MW}}+[\sigma_{\text{AFFIX}}]\)[\(\text{PW}_{\text{MW}}\)] | \([\sigma\ldots\text{ROOT}^+\sigma(\sigma)_{\text{AFFIX}}]\)[\(\text{PW}_{\text{MW}}\)]
cafezinho | small coffee | brevidade | brevity

2.1 Evidences

The main argument to support the classification proposed above comes from the diagnostic of stress assignment. In addition, I examine other phonological processes that occur within words in contrast to processes that occur at word boundaries, as well as the morphosyntactic behavior of the affixes involved. According to these criteria, the analytical proposal can be summarized as follows.

Composition Prefixes and suffixes in BP can be stressed. The main evidence is the non-application of the process that raises lower-mid vowels in pretonic syllables in some prefixed and suffixed words. In addition, these affixes show some syntactic-semantic autonomy.

Adjunction In certain prefixed words, the left edge of the base is subject to the same processes that simple words undergo. However, the affix per se does not behave as a PW in this case.

Incorporation Certain prefixed and suffixed words are subject to the same phonological processes that apply within non-complex words.

2.1.1 Evidences for prosodic composition

2.1.1.1 Stress Compositional affixes follow the general pattern of stress in BP (which includes monosyllabic words besides trochees).

Neutralization of pretonic vowel In BP, the opposition between upper and lower-mid vowels is neutralized outside the stress position within the limits of PW. As a consequence, in many dialects, lower-mid vowels are restricted to stressed syllables. This process does not apply, however, with certain affixes.

(5) Affixes and neutralization of pretonic vowel in BP

Non-compositional affixes | Compositional affixes
--- | ---
preffixed words | a. p[o]s[p[o]sto | postponed | c. pr[\(\text{c}^\text{c}\)-carnav[\(\text{c}\)] | pre-carnival
suffixed words | b. m[e]dic[i]na | medicine | d. b[\(\text{c}\)]i[n]ha | little ball

According the widespread idea that prosodic words must bear one and only one primary (word) stress, the affixes in (5c) and (5d) are considered independent PWs. This can be confirmed by the presence of lower-mid vowels in positions presumably unstressed of these words.

2.1.1.2 Syntactic-semantic Autonomy Besides the stress, compositional affixes in BP usually show some syntactic-semantic independence.

(i) They can be suppressed when preceded or followed by words with identical affixes.

(6) a. Este é um efeito pós-guerra e crise (crise = pós-crise).

This is an effect of post-war and post-crisis.
### 2.1.2 Evidences for prosodic adjunction: PW-boundary processes

Adjoined prefixes undergo neither processes that apply at the right edge of prosodic words nor juncture processes. However, left edge processes can affect their bases.

<table>
<thead>
<tr>
<th>Process Type</th>
<th>Prefix Structure</th>
<th>Phrase Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adj. Prefixes and PW-Boundary Processes</td>
<td>re+exame, re-examination</td>
<td>este exame, this examination</td>
</tr>
<tr>
<td>a. Final Raising</td>
<td>*r[i]exame</td>
<td>est[i]exame</td>
</tr>
<tr>
<td>b. Degemination</td>
<td>*r[i]xame</td>
<td>est[i]xame</td>
</tr>
<tr>
<td>c. Initial Raising</td>
<td>re[i]xame, re+socializar</td>
<td>este [i]xame, esta sociedade</td>
</tr>
<tr>
<td>d. Initial Voicing Identity</td>
<td>re[s]ocializar</td>
<td>esta [s]ociedade</td>
</tr>
</tbody>
</table>

Unlike, most of suffixed words do not show evidences of PW internal edges, suggesting incorporation instead of adjunction.

### 2.1.3 Evidences for prosodic incorporation: Epenthesis

Like other Romance languages, BP has roots initiated by /sC/ (Collischonn and Schwindt, 2005). This syllabic structure, however, is commonly repaired by epenthesis. Prefixes may be added to the base before or after epenthesis, which permit us to distinguish between incorporation and adjunction.
(12) Epenthesis as an evidence for incorporated/adjoined prefixes in BP

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. in</td>
<td>inscrito</td>
<td>registered</td>
</tr>
<tr>
<td>b. in</td>
<td>inescrito</td>
<td>unwritten</td>
</tr>
<tr>
<td>c. des</td>
<td>destruído</td>
<td>destroyed</td>
</tr>
<tr>
<td>d. des</td>
<td>desestruturado</td>
<td>unstructured</td>
</tr>
</tbody>
</table>

Suffixed words in BP are typically root-based, and vowels that stand after roots are commonly part of the suffixes, since their shape does not necessarily coincide with the final vowel of the non-derived word.

(13) Vowel-initial suffixes and vowel-final words in BP

<table>
<thead>
<tr>
<th>Suffix</th>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>al-</td>
<td>canal</td>
<td>canal</td>
</tr>
<tr>
<td>d. velh+ice</td>
<td>old age</td>
<td></td>
</tr>
<tr>
<td>g. carinh+oso</td>
<td>affectionate</td>
<td></td>
</tr>
<tr>
<td>-a</td>
<td>penal</td>
<td>pen</td>
</tr>
<tr>
<td>e. crian+ice</td>
<td>childishness</td>
<td></td>
</tr>
<tr>
<td>h. esponj+oso</td>
<td>spongy</td>
<td></td>
</tr>
<tr>
<td>-e</td>
<td>dental</td>
<td>dental</td>
</tr>
<tr>
<td>f. foguet+ice</td>
<td>mischief</td>
<td></td>
</tr>
<tr>
<td>i. apetit+oso</td>
<td>appetizing</td>
<td></td>
</tr>
</tbody>
</table>

Additional data contribute to put in doubt the hypothesis of vowel syncope before suffixation as a strategy to satisfy a CV template or avoid hiatus, contrary to what suggested by Bermúdez-Otero (2007) for Spanish.

(14) Hiatus and epenthesis in BP suffixed words

<table>
<thead>
<tr>
<th>Type</th>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>simple word</td>
<td>heroí</td>
<td>hero</td>
</tr>
<tr>
<td>a. herói</td>
<td>hero-ina</td>
<td>heroine</td>
</tr>
<tr>
<td>b. Vasco</td>
<td>Vasco’s fan</td>
<td>*vascoCino</td>
</tr>
<tr>
<td>canoa</td>
<td>boat</td>
<td>cano</td>
</tr>
<tr>
<td>c. canoa</td>
<td>cano-etro</td>
<td>boatman</td>
</tr>
<tr>
<td>d. óleo</td>
<td>oil</td>
<td>oleoso</td>
</tr>
<tr>
<td>d. óleo</td>
<td>oily</td>
<td>*oleoCoso</td>
</tr>
</tbody>
</table>

Vowels intervening between root and suffix represent a pattern quite exceptional in BP, generally corresponding to fossilized formations. Even in these cases, however, the epenthetic vowel does not necessarily agree with the final vowel of the correspondent simple word (e.g. preço > precioso / *preçooso price > precious).

3 Discussion

Two questions arise from the classification assumed here: (i) what are the consequences of this analysis for the organization of prosodic hierarchy? and (ii) what these structures may say about morphological transparency? Although these issues do not constitute the primary goal of this paper, I present below a summary table of initial insights on these problems. In this discussion, I assume two basic premises: generalized alignment constraints may account for the three types of prosodic constituency considered in the analysis, and coincidence between prosodic and morphological boundaries indicates greater semantic transparency of the morphemes involved.

<table>
<thead>
<tr>
<th>PROSODIC HIERARCHY</th>
<th>MORPHOLOGICAL EFFECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALIGN (STRESS; PW), ALIGN (LEX;PW)</td>
<td>- limits of PWs ensure full transparency of the morphological units involved, which are plenty productive</td>
</tr>
<tr>
<td>- affixes are PWs, since they are stressed and considered “lexical” units (in a continuum of lexicality)</td>
<td></td>
</tr>
<tr>
<td>ALIGN-R(LEX;P;PH)</td>
<td></td>
</tr>
<tr>
<td>- indefiniteness about the superordinate category: analysis as a recursive PW is rejected considering there is no word stress reassignment; similarly to PPh or CG, considering that prosodic compounds are not maximal projections (Ito and Mester, 2008)</td>
<td></td>
</tr>
</tbody>
</table>
This description confirms the assumption that prefixes are less coherent than suffixes in the world languages (Peperkamp, 1997), since they are subject to adjunction besides composition and incorporation. In addition, the analysis seeks to address jointly prosodic and morphological aspects involved in word formation in BP. Residual problems feed the continuity of this research, such as the requirement of levels to deal with cases of epenthesis and resyllabification of adjoined and compositional affixes as well as the need to survey possible acoustic indicators to confirm the presence of one or two stresses per word.

### References


VIGARIO, Marina (2011) Prosodic structure between the prosodic word and the phonological phrase: recursive nodes or an independent domain? The Linguistic Review 27. Walter de Gruyter.