

# 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.

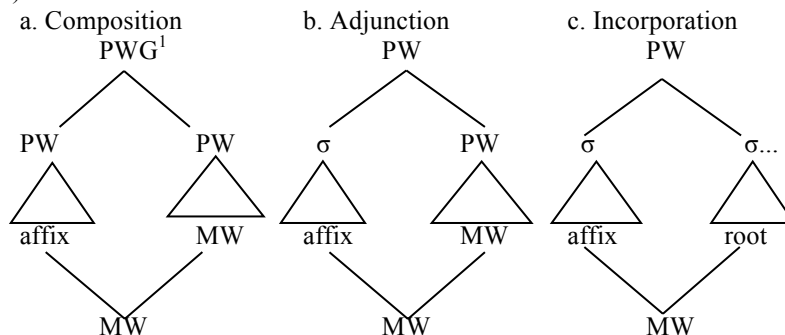
According to Schwindt (2000), Bisol (2004), and others, prosodic words (PW) can be equal, smaller or larger than morphosyntactic words (MW) in BP.

### (1) Domains of prosodic words in BP

a. PW = MW	$\text{casa}]_{\text{PW}, \text{MW}}$	<i>home</i>	isolated word
b. PW < MW	$\text{pre}]_{\text{PW}} \text{carnaval}]_{\text{PW}}]_{\text{MW}}$	<i>pre-carnival</i>	prefixed word
	$\text{café}]_{\text{PW}} \text{zinho}]_{\text{PW}}]_{\text{MW}}$	<i>small coffee</i>	suffixed word
	$\text{cachorro}]_{\text{PW}} \text{quente}]_{\text{PW}}]_{\text{MW}}$	<i>hotdog</i>	compound
c. PW > MW	$\text{me}]_{\text{MW}} \text{espere}]_{\text{MW}}]_{\text{PW}}$	<i>wait for me</i>	clitic

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



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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<sup>1</sup> 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
$[[PW_{AFFIX}]+[PW_{MW}]]PW_{G_{MW}}$	$[\sigma_{AFFIX}+[\sigma...]]PW_{MW}PW_{MW}$	$[\sigma_{AFFIX}+\sigma...-ROOT]PW_{MW}$
pré-carnaval <i>pre-carnival</i>	inescrito <i>unwritten</i>	inscrito <i>registered</i>

### (4) Prosodization of suffixes in BP

a. Composition	b. Adjunction	c. Incorporation
$[[PW]_{MW}+[PW]_{AFFIX}]PW_{G_{MW}}$	$*[[\sigma...]]PW_{MW}+\sigma_{AFFIX}]PW_{MW}$	$[\sigma...-ROOT+\sigma(\sigma)_{AFFIX}]PW_{MW}$
cafezinho <i>small coffee</i>		brevidade <i>brevity</i>

**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
prefixed words	a. p[o]sp[ó]sto <i>postponed</i>	c. pr[é]-carnav[á]l <i>pre-carnival</i>
suffixed words	b. m[e]dic[i]na <i>medicine</i>	d. b[ó]l[i]nha <i>little ball</i>

According to 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.*

- b. \*Maria recalculou os custos e **enviou** os convites. (= reenviou os convites)  
*Mary recalculated the costs and remanded the invitations.*
- (7) a. Ela perdeu peso **rápida** e seguramente. (rápida = rapidamente)  
*She lost weight quickly and safely.*
- b. \*Era uma relação de **bom** e cumplicidade. (bom = bondade)  
*It was a relationship of kindness and complicity.*

(ii) They can instantiate isolatedly in a sentence (depending on some referent).

- (8) a. A cirurgia foi bem, mas ela está sofrendo no **pós**. (pós=pós-operatório)  
*The surgery went well, but she is suffering in postoperative.*
- b. \*João desfez suas malas e Maria **re** as delas. (re = refez)  
*John unpacked his bag and Mary repacked hers.*
- (9) a. Era só um **zinho** falando. (zinho = alguinzinho, pessoazinha)  
*It was just an unimportant person talking.*
- b. \*O primeiro prato era ruim, mas este é realmente **oso** (oso = gostoso)  
*The first dish was bad, but this is really tasty.*

**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.

(10) Adjoined prefixes and PW-boundary processes

	prefixed structure	phrase structure
	re+exame	este exame
	<i>re-examination</i>	<i>this examination</i>
a. final raising	*r[i]exame	est[i] exame
b. degemination	*r[i]xame	est[i]xame
c. initial raising	re[i]xame	este [i]xame
	re+socializar	esta sociedade
	<i>re-socialize</i>	<i>this society</i>
d. initial voicing identity	re[s]ocializar	esta [s]ociedade

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

(11) Incorporated suffixes and PW-boundary processes

	suffixed structure	phrase structure
	apetit(e)+oso	lente opaca
	<i>appetizing</i>	<i>opaque lens</i>
a. final raising	*apetit[i]oso	lent[i] opaca
b. diphthongization	*apetit[jo]so	lent[jo]paca
	en+velh(o)+ecer	olho escuro
	<i>to get old</i>	<i>dark eye</i>
c. initial raising	*envelh(o)[i]cer	olho [i]scuro
	gás+oso	luz
	<i>gaseous</i>	<i>light</i>
d. final [s]	*ga[s]oso	lu[s]#

**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

a. in + [scrito] <sub>ROOT</sub>	inscrito	<i>registered</i>
b. in + [e+scrito] <sub>PW,MW</sub>	inescrito	<i>unwritten</i>
c. des + [struído] <sub>ROOT</sub>	destruído	<i>destroyed</i>
d. des + [e+struturado] <sub>PW,MW</sub>	destruturado	<i>unstructured</i>

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

-al	-ice	-oso
-o a. can+al <i>canal</i>	d. velh+ice <i>old age</i>	g. carinh+oso <i>affectionate</i>
-a b. pen+al <i>penal</i>	e. crianc+ice <i>childishness</i>	h. esponj+oso <i>spongy</i>
-e c. dent+al <i>dental</i>	f. foguet+ice <i>mischief</i>	i. apetit+oso <i>appetizing</i>

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

simple word	hiatus	no epenthesis
a. herói <i>hero</i>	hero-ína <i>heroine</i>	*heroiCina
b. Vasco <i>name of a soccer team</i>	vasca-íno <i>Vasco's fan</i>	*vascoCino
c. canoa <i>boat</i>	cano-eiro <i>boatman</i>	*canaoCeiro
d. óleo <i>oil</i>	ole-oso <i>oily</i>	*oleoCoso

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 / \*preçuoso *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.

PROSODIC HIERARCHY	MORPHOLOGICAL EFFECTS
COMPOSITION	
ALIGN (STRESS; PW), ALIGN (LEX;PW) - affixes are PWs, since they are stressed and considered “lexical” units (in a continuum of lexicality) ALIGN-R(LEX;PPh) - 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)	- limits of PWs ensure full transparency of the morphological units involved, which are plenty productive

ADJUNCTION	
ALIGN (PW;LEX) >> NONRECURSIVITY - main word stress is reassigned resulting in one prominence - affix is not prosodized as a PW since it is not considered a “lexical” unit - recursion of PWs has to be treated as a violable constraint (Selkirk, 1996)	- left edge of PW marks the salience of the base, which allows us to recognize the internal structure of the word - the meaning of the affixes may vary subtly depending on the product of the formation
INCORPORATION	
ALIGN (ROOT;AFFIX) - no special prosodic effects - generalized alignment constraints operate only for concatenating morphemes	- synchronic status of affixation depends exclusively on morphosemantic transparency (no prosodic clues)

#### 4 Final remarks

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.

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