

Stress assignment in Brazilian Portuguese: a usage-based approach

Maria Cantoni

Faculty of Letters, Federal University of Minas Gerais, Brazil

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Abstract

The major debate on primary stress assignment in Brazilian Portuguese (BP) concerns whether it is lexically given or predictable by a set of principles. This paper presents a contribution to this debate by suggesting a usage-based approach to stress assignment in BP. It is argued that stress assignment is better accounted for as the result of generalizations over exemplars, and these generalizations are responsible for the main tendencies regarding stress assignment in the language.

Key words: stress. Brazilian Portuguese. usage-based phonology. exemplar model

Introduction

The major debate on primary stress assignment in Brazilian Portuguese (henceforth BP) concerns whether it is lexically given or predictable by a set of principles. This paper presents a contribution to this debate by suggesting a usage-based approach to stress assignment in BP. In the first section, an outline of usage-based models is presented. The second section addresses the main claims about BP stress, which are analysed according to a usage-based approach in the third section. The fourth section presents final conclusions.

Usage-based models

Usage-based models claim that linguistic systems are made out of instances of use, and they contrast with formalistic frameworks for assuming that in the storage of information, a large amount of data is involved, and with great redundancy (Langacker 1987). This paper relies mostly on three relatively recent usage-based approaches that focus on the sonority dimension: Usage-Based Phonology (Bybee 2001), the exemplar model proposed in Pierrehumbert (2001), and Probabilistic Phonology (Pierrehumbert 2003), as well as Langacker's proposal. The models adopted in this paper are briefly outlined below. They share the assumption that there is no clear-cut separation between lexicon and grammar. Morphological and syntactical patterns are viewed as schemas that emerge from real instances of linguistic use. Therefore, frequency of type and token plays an important role, having an impact on productivity of patterns and on lexical strength, respectively. Linguistic units of storage and processing, i.e., the exemplars, are connected in relational networks based on semantic and phonetic similarity. Such

networks, from which general schemas emerge, operate on the basis of probabilistic parameters, yielding a stochastic distribution.

Brazilian Portuguese primary stress

Regarding BP stress assignment, most traditional analyses (cf. Bisol 1992; Cagliari 1999; Câmara Jr. 1970; Lee 1995; Massini-Cagliari 1992; Wetzels 2006, *inter alia*) agree upon two major issues: (1) stress falls on a final three-syllable window; (2) penultimate stress is the most recurrent one. However, there is divergence over a number of related issues, the most important one concerning the differences between stress assignment in nominal and verbal morphology. Whereas the former usually presents penultimate stressed forms, mostly with open syllables, the latter typically presents penultimate stress, mostly with a closed syllable. Further, verbal morphology presents postonic nasal vowels, which do not usually occur in nominal morphology.

It can be argued that stress is lexically contrastive in BP on the basis of minimal pairs such as *sábia* “wise (fem.)”, *sabia* “used to know (1st/3rd sing.)” and *sabiá* “song-thrush” (stressed syllables in bold). However, it is not simple to find minimal pairs in the same word class—e.g., *cara* “face” vs. *cará* “yam”; *comeram* “ate (3rd pl.)” vs. *comerão* “will eat (3rd pl.)”.

In BP, stress is acoustically correlated to an increase in the relative duration and intensity (Massini-Cagliari 1992), and given a word the stressed syllable is to some extent fixed. Actually, in BP phenomena involving stress shift (e.g. *fluido* ~ *fluidido*) are rather rare. Another phenomenon related to stress, in which the stress pattern of a word is changed due to loss of sound material (e.g. *abóbora* ~ *abobra*), seems to be more productive.

A usage-based analysis of stress in BP

The present study relies on the idea that segmental and prosodic patterns interact with morphology in a network model in order to configure the Prosodic Grammar (Bybee 2001). Traditional approaches to BP stress assignment treat generalizations as the ultimate cause of regularity, instead of the result of routinized patterns and categorization processes, as I rather assume. A similar analysis is proposed by Farrell (1990), who applies Langacker’s cognitive model to account for Spanish stress assignment in non-verbs. In my proposal, as in his, lexical stress integrates higher-level schemas, such as morphology and phonotactics, being part of the information conveyed by tokens of experience and stored in representation.

It is argued that if stress is lexically given then a more comprehensive analysis for productiveness of stress patterns is met, both in verbal and non-verbal morphology. To support this claim, a general statistical analysis of stress patterns in verbs vs. non-verbs is presented. Such analysis is based on

information from ASPA (www.projetoaspa.org), which is a statistical database for BP sound patterns. Table 1 presents type frequency in each of the three stress positions, for verbs and non-verbs. Penultimate stress has a significantly higher type frequency, and this can explain why this pattern is more productive than the other two, as is frequently claimed in the studies on BP stress previously mentioned. This is corroborated by the general trend in the stress location of neologisms (cf. those presented in Alves 1994), mostly penultimate-stressed. Token frequency differences among the same groups are not statistically significant and are not addressed in this analysis.

Table 1. Type frequency of stress patterns (χ^2 : 5642.69, $p < 0.0001$ $df=2$).

Stress Position	Antepenultimate		Penultimate		Penultimate	
Verbs	482	1.2%	27,730	71.4%	10,617	27.3%
Non-verbs	11,389	14.6%	52,271	67.1%	14,200	18.2%

Figure 1 represents prosodic schemas emerging from network relations between exemplars, for verbal forms. The particularities identified above between stress patterns of verbs and non-verbs can be attributed to different mechanisms of storage and management of the lexicon (Bybee 1985).

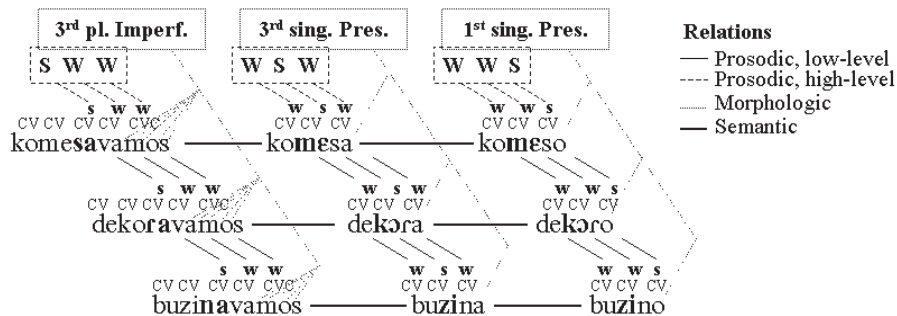


Figure 1. Emergent Prosodic Structure and high-level schemas in verbs.

In BP, verbs present a complex and close-knit morphologic network arising from inflection, that encodes voice, aspect, tense, mood, person and number agreement. Comparatively, inflectional relations in non-verbs are reduced and weaker, encoding only number and sometimes gender. It can be argued that complex and dense inflectional networks are responsible for a greater degree of integration in higher-level schemas. If this is so, it can be easily demonstrated that stress schemas arisen from verbs (but not from non-verbs) tend to be attached to the morphological schemas that parallel them.

Concluding remarks

A number of issues must be raised from the analysis presented in this paper, such as: a) how a statistical analysis of speech offers generalizations related to general tendencies in the language involving sounds and morphological information; b) the relationship between stress assignment and syllabic patterns. It is claimed in this paper that primary stress in BP is lexically specified, and this supports the idea that redundant information is present in mental representations. It is thus argued that stress assignment is better accounted for as the result of generalizations over exemplars, and these generalizations are responsible for the main tendencies related to stress assignment in BP. Further research intends to develop some of the ideas presented in this paper aiming at a probabilistic modeling of stress.

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