Minimal recursive feet in Brazilian Portuguese?

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Theoretical background. In pursuit of a restrictive metrical theory with a small set of universal primitives, ternary branching flat feet (e.g. ˈ**σ**$_s$σ$_w$σ$_w$) have traditionally been prohibited in standard theories based on *typological arguments* (e.g. languages with iterative stress tend to show binary alternations, Rice 2011: 1228) and *locality arguments* (phonological rules typically *only count to two*, Hayes 1995: 307). These arguments, together with new stress-related typological facts (e.g. the existence of not only binary but also ternary stress alternations; the universal tendency for a stress window maximally trisyllabic) and several segmental and tonal foot-conditioned distributions, have recently lead scholars to propose that a weak syllable may occasionally be adjoined to a binary foot giving rise to an Internally Layered Ternary (ILT) foot, ((ˈσ$_s$ σ$_w$)$_{Ft}$ σ$_w$)$_{Ft}$ (Davis 2005, Bennett 2012, Kager 2012, Martínez-Paricio & Kager 2015, inter alia). The empirical basis of these proposals is still small, though.

Goal and data. The goal of this talk is to explore the empirical evidence (i) for ternary feet in Brazilian Portuguese (BP), a language with binary rhythmic stress alternations (Magalhães 2016), and (ii) in favour of an internally layered binary structure. To achieve this goal, we will examine the distribution of five different foot-conditioned processes in BP: **(1)** *Dactylic Lowering*, which neutralizes open and closed mid vowels [ɛ, ɔ, e, o] in favor of [ɛ, ɔ] in antepenultimate stressed syllables in nominal forms; **(2)** *Spondaic Lowering*, a similar process which lowers [e, o] in penultimate stressed syllables in words ending in a filled coda, **(3)** *The emergence of an optional high tone* in prosodic words depending on the number of pretonic syllables, **(4)** *The optional post-tonic syncope in proparoxytone words* (attested mostly in popular registers) and **(5)** *The maximal size of truncated forms in BP* (see p.2).

Proposal and analysis. We will argue that the above-mentioned processes provide converging evidence pointing to the presence of ternary feet in BP metrical representations. More importantly, we will argue that (1-4) are best analysed making use of ILT feet, albeit these are claimed to be highly restricted. In particular, we propose that the default foot in BP is non-recursive and maximally disyllabic, but in certain conditions (which generally correspond to BP words with marked antepenultimate and penultimate stress in words ending in a closed syllable, Bisol 2004, Wetzels 2006), a weak syllable (and sometimes a weak mora) is adjoined to an adjacent foot giving rise to a word-final ILT foot. An initial ILT foot will be posited as well in long words with an odd-number of pretonic syllables preceding main stress (3b). We will show that reference to this *marked* ILT foot allows for a unified account of the phenomena described in (1-4). In particular, we claim that *Dactylic* and *Spondaic Lowering* of mid-closed stressed vowels and the optional realization of a high tone in words with a specific number of pretonic syllables are the result of a *strengthening process* targeting the head of an ILT foot. This explains the restricted contexts in which these processes apply and their underlying motivation: the greater inherent strength associated to the head of an ILT foot, which is simultaneously the head of two foot layers, favours the emergence of vowels with a greater degree of sonority (see H1 in 6b, e.g. a ((ˈbɔ. bo) ra), ((ˈmɔ.ve)l)) and the optional docking of a high tone, e.g. ((go^{H}ver)na)(ˈdor)) (3b). On the other hand, the optional processes of syncope in words with antepenultimate stress will be interpreted as a weakening process deleting the V in the weak branch of a non-maximal foot (i.e. a foot not dominated by the prosodic word). The OT analysis put forward makes use of independently motivated foot constraints (Martínez-Paricio & Kager 2015) and proposes that the strengthening and weakening phenomena under investigation are driven by two positional markedness constraints (Zoll 1996, 1998) which favour high sonority vowels and high tones in strong positions (i.e. a syllable with a double-

headed status) and a general markedness constraint militating against segmental material in the weak branch of a foot (McCarthy 2008, based on Gouskova 2003 and de Lacy 2006).

(1) **Dactylic Lowering**: antepenultimate stressed mid V must be [ɛ, ɔ] (Wetzels 1992:32)

Non-derived words	*Derived words*
ab**[ˈɔ]**bora ‘pumpkin’ (*ab[ˈo]ora)	esque[ˈe]to ‘skeleton’
	esquel[**ˈɛ**]tico ‘skeletal’ (*esquel[ˈe]tico)
c**[ˈɛ]**lebre ‘famous’ (*c[ˈe]lebre)	i[ˈo]do ‘iodine’
	i[**ˈɔ**]dico ‘iodiotic’ (*i[ˈo]dico)

(2) **Spondaic Lowering**: penultimate stressed mid V must be [ɛ, ɔ] when the final syllable is closed (Wetzels 1992:39)

m[**ˈɔ**]vel ‘mobile’ (*m[**ˈo**]vel)	proj[**ˈɛ**]til ‘projectile’ (*proj[ˈe]til)
rev[**ˈɔ**]lver ‘revolver’ (*rev[**ˈo**]lver)	del[**ˈɛ**]vel ‘erasable’ (*del[ˈe]vel)

(3) **Greater tendency to realize a high tone** in words that contain at least three pretonic syllables preceding main stress in addition to the pitch accent (signaled here as T*) (Frota & Vigário 2000, Svartman et al. 2017)

a. No initial high pitch accent:
(profe)(ssór)
T*

b. Initial high pitch accent:
((*gover)na) (dór)*
H T*

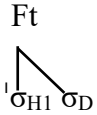
(5) **Optional post-tonic syncope in proparoxytones (Amaral 1999, 2002)**

ár.vo.re > ar.vre ‘tree’	pé.ta.la > pe.tla ‘petal’
nú.me.ro > nu.mro ‘number’	chá.ca.ra > cha.cra ‘farm’

(4) **Truncated forms in BP (Araújo 1992, Scheer 2011, Vilela et al. 2006)**

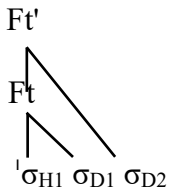
Disyllabic	Trisyllabic
cerva (from *cerveja)*	*recunha* (from *reconhecimento*)
satis (from *satisfação*)	*satisfa* (from *satisfação*)
profi (from *professor*)	*boteco* (from *botequim*)

(6) **a. Standard binary foot**



(ˈbo .lu)
bolo ‘cake’

b. ILT foot



a ((ˈbɔ. bo) ra)
abóbora ‘pumpkin’