

## Intonational Phonology of Brazilian Portuguese

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*Although a certain number of studies have already discussed, from an AM perspective, punctual aspects Brazilian Portuguese (BP) intonation – mainly phrasing and the manifestation of narrow focus in declarative sentences [1, 5, 8, 9, 10] – the BP tonal system as a whole is still to be established. This paper is a tentative proposal of such an analysis.*

The intonational grammar of Brazilian Portuguese (BP) can be briefly characterized as follows:

1. Phonological utterances (U) are made up of intonational phrases (IP), which are in their turn made up of phonological phrases ( $\phi$ ); there isn't an intermediate level between these two last constituents.

2. There is always a nuclear accent in the final position of an IP, even if the utterance focus is anticipated, that is, if it is located in a non final position, which entails a dissociation between focal accent and nuclear accent, as in European Portuguese [2] and Italian [3].

3. Nuclear accents are formed by two types of tonal events, pitch accents and boundary tones.

4. Boundary tones are associated basically with the right edge of intonational phrases and are realized on the final poststressed syllable(s), or on the final part of the last stressed syllable, if there aren't poststressed ones; there are no phrase accents.

4.1 There are only two boundary tones, L and H.

4.2 The L% is by far the most common boundary tone in BP, but there are a few cases of contrastive opposition between low and high boundary tones, as observed in *progredient vs. yes/no question intonation patterns*, or between *echo (metalinguistic) wh-questions vs. repeated wh-questions*, what motivates us to postulate the boundary tone.

5. Pitch accents (PA) are associated with stressed syllables; they are only bitonal accents, and present always a leading tone, followed by the starred tone. No trailing tones neither singleton tones are allowed. Leading tones are always realized on the syllable immediately preceding the stressed syllable.

5.1. Different from the poor productivity of the boundary tone, there is a large variety of pitch accents, which means that the intonational contrasts lie specifically on the last stressed syllable and its preceding syllable, specially in the IP final position.

5.2 In order to describe the main melodic patterns of BP, including some usually viewed as attitudinal (irony, warning), we propose eleven pitch accents and their corresponding nuclear contours (cf. table below).

5.3 Prenuclear pitch accents

Although a one-IP utterance containing two phonological phrases presents at its phonetic level two PAs, one nuclear and the other prenuclear, we can assume as a general rule, based on experiments with resynthesized variants [6], that the nuclear contour alone is responsible, in the majority of cases, for the establishment of the intonational meaning of the utterance. Eventual minor differences in the implementation of the prenuclear pitch accent are irrelevant, as the nuclear accent, from a perceptual point of view, overrules it.

5.4 The only exception, so far, is due to the prenuclear contour typical of the first stressed syllable of melodic patterns such as commands, wh-questions and wh-exclamations, when we need, from a contrastive perspective, to take into account a prenuclear pitch accent as well, characterizing a double PA (prenuclear and nuclear) contour.

5.5 From a phonetic point of view, there are basically three possible prenuclear pitch accents, [l + m\*], as in statements; [h + jh\*], as in wh-questions, and [l + l\*], as in statements with disbelief, which could be represented, in the phonological level by /L + H\*/, /H + H\*/ and /L + L\*/, respectively.

5.6 Besides the basic contrast between tones L vs. H on the three final IP syllables (prestressed, stressed and poststressed), which characterize its nuclear contour, the participation of three other parameters is occasionally necessary to render the distinctions between the various patterns observed.

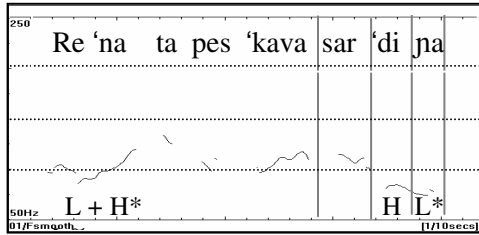
5.6.1 The diacritics ! and j are used not really to indicate a systemic upstep or downstep phenomenon, but rather to make possible the representation of occasional non-binary contrasts.

5.6.2 The temporal alignment of H and L tones in the stressed syllable, indicated by the diacritics < and >, will be sometimes responsible for differentiating the meaning/function of certain patterns [7].

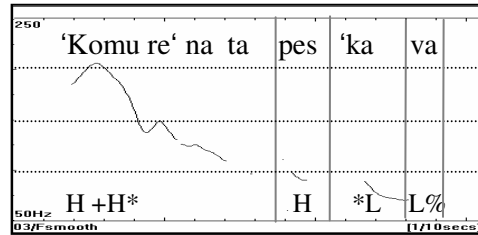
5.6.3 Beside the “simple” PAs from a durational point of view, there are certain melodic patterns, mainly attitudinal, that not only require an important lengthening of the stressed vowel, but also may present a melodic modulation on this lengthened vowel. We will name these PAs “lengthened”, and we will place their starred syllable between square brackets.

#### Nuclear contours in BP intonation

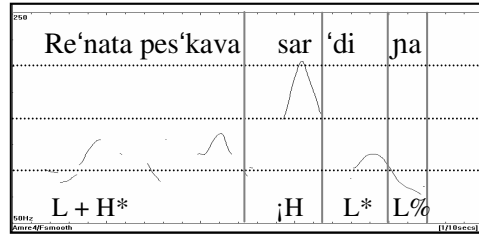
#	Label	Contours	Contexts
1	low fall	H+L* L%	statement, wh-question, command
2	high fall	jH+L* L%	contradiction st., confirmative y/n question
3	medium fall	H + jL* L%	suggestion, self-evident statement
4	rise-fall	L+<H*L%	neutral yes/no question, echo wh-question
5	early rise-fall	L+>H*L%	request, rhetorical yes/no question
6	convex fall	L+ jL* L%	wh-exclamation
7	lengthened fall	H+[LL]* L%	warning
8	lengthened rise	L+[HH]* H%	intensifying emphasis
9	lengthened low level	L+[LL]* L%	disbelief
10	fall-smooth rise-fall	H+[LH]* L%	irony
11	fall-delayed rise-fall	H+[LH]* L%	incredulous yes-no question



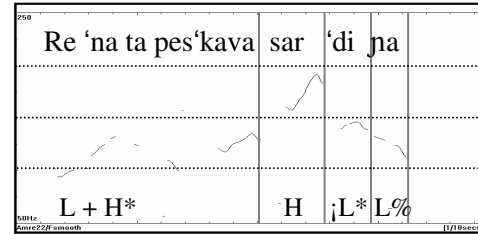
1a Nuclear low fall (statement)



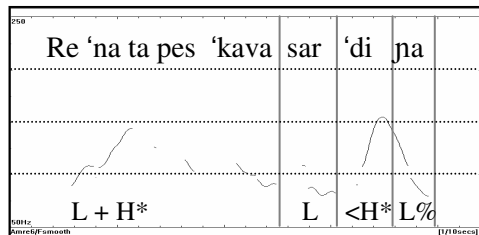
1b Nuclear low fall (wh-question)



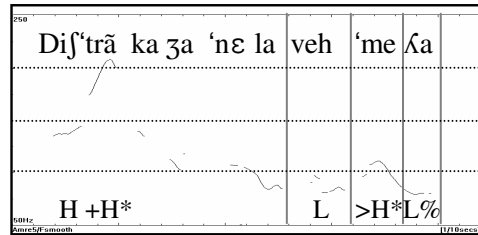
2 Nuclear high fall (contradiction)



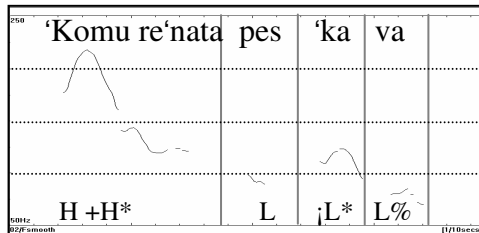
3 Nuclear medium fall (self-evident st.)



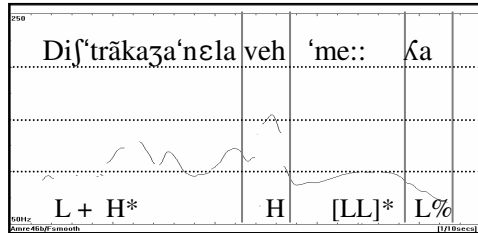
4 Nuclear rise-fall (yes/no question)



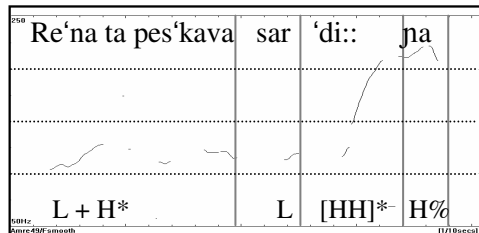
5 Nuclear early rise-fall (request)



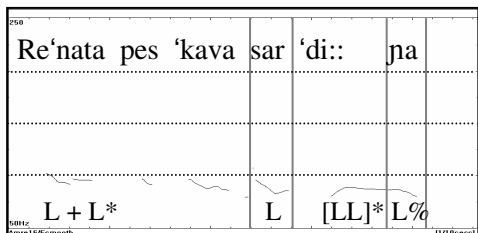
6 Nuclear convex fall (wh-exclamation)



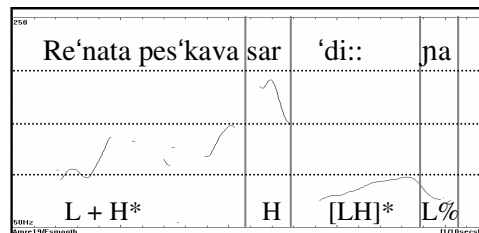
7 Nuclear lengthened fall (warning)



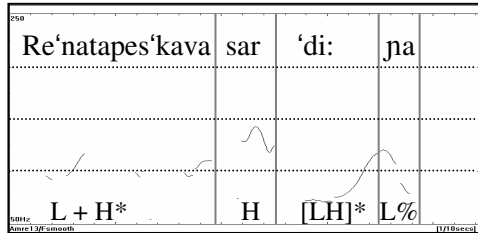
8 Nuclear lengthened rise (emphasis)



9 Nuclear lengthened low level (disbelief)



10 Nuclear fall-smooth rise-fall (irony)



11 Nuclear fall-delayed rise-fall (incredulous q.)

## References

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