Text-tune accommodation processes in the intonation of European Portuguese yes/no questions:

An OT analysis.

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1. Accommodation processes at the text-tune interface

- **Tune and text** are traditionally represented **separately** but empirical evidence has "made it clear that segmental and intonational aspects of speech are inherently connected" (Roettger & Grice 2019).
- **Functional conflicts** (e.g., tonal crowding, segmental material unfit for pitch transmission) have to be negotiated between the tune and the text.
- Resolving these conflicts often consists of **preserving** tune or text while **modifying** the other.

2. The objective

- Provide a **formal representation of phonological tone alignment** that captures the **dual nature of tone association** (Prieto et al. 2005; Ladd 2008) and is **compatible with Optimality Theory**'s (OT) evaluation mechanisms.
- **Define constraints** that are based on said formalization.
- **Model dialectal variation** in text-tune accommodation (TTA) strategy selection on the basis of the aforementioned OT constraints**.** To this aim, we analyze data of y/n-questions with final stress in European Portuguese.

3. The object of the study: European Portuguese (EP)

- EP displays a variety of TTA strategies (Frota et al. 2015a, b; Vigário et al. 2019):
- **Boundary tone truncation** (Braga – Northern EP) (Fig. 1, Tab. 1).
- **Intonationally driven epenthesis** (Castelo Branco – Central EP) (Fig. 2, Tab. 2).
- **Blocking of final [ɨ]-deletion** (Funchal – Southern EP) (Fig. 3, Tab. 3).

Data from the Interactive Atlas of the Prosody of Portuguese obtained my means of a Discourse-Completion-Task (Frota & Cruz 2012-2015).

4. Alignment as a phonological feature

- To account for **contrastive alignment positions** of tonal groups $\{\ldots\}_\alpha$ like pitch accents and boundary tones**,** they will all be represented as **phonological alignment features.** These encode both "primary" (α) as well as "secondary" (β) associations (Ladd 2008; Prieto et al. 2015). **α-features** indicate alignment of the tonal group with higher prosodic constituents, while **β-features** indicate alignment of individual tones with lower prosodic constituents.
- E.g., a pitch accent $\{L^*\}_{\alpha'}$ (Fig. 1) that α-associates with the stressed syllable. Its component tone L* β-associates with the left edge of a vowel ($[_V$) such that (|) the stressed syllable (σ') structurally dominates (>) said edge (__).

$$\begin{bmatrix} \{L^*\}_\alpha \\ \alpha = \sigma' \\ \beta(L^*) \;=\; [_V \mid \sigma' > \_\_ \end{bmatrix}$$

5. Constraints

- **Max-IO(seg):** Assign one violation mark to every segment in the input that does not have a corresponding segment in the output.
- **DEP-IO(seg):** Assign one violation mark to every segment in the output that does not have a corresponding segment in the input.
- ***[ɨ]#:** Assign one violation mark to every [ɨ] at a right word boundary in the output.
- **MAX-IO(β(T)):** Assign one violation mark to every β-feature of T in the input that does not have a corresponding β-feature in the output.
- **RESPECT-IO(β(T)):** Let $\{\beta_{input}(T), \beta_{output}(T)\}$ be a corresponding β-feature pair and let $\{m_1 \ldots m_n\}$ be the set of all metrical positions of the output candidate. Assign one violation mark to every segment that intervenes between $\beta_{input}(T)$'s corresponding metrical position m_k and $\beta_{output}(T)$'s association site m_m.
- **$*\beta(T)_{[-voiced]}$:** Assign one violation mark to every β-association site that coincides with a [-voiced] feature on the segmental level.
- ***CLASH(β):** Assign one violation mark to every β-association that coincides with another at the same structural position in the output.

6. Figures: F0 contours and phonological interpretation

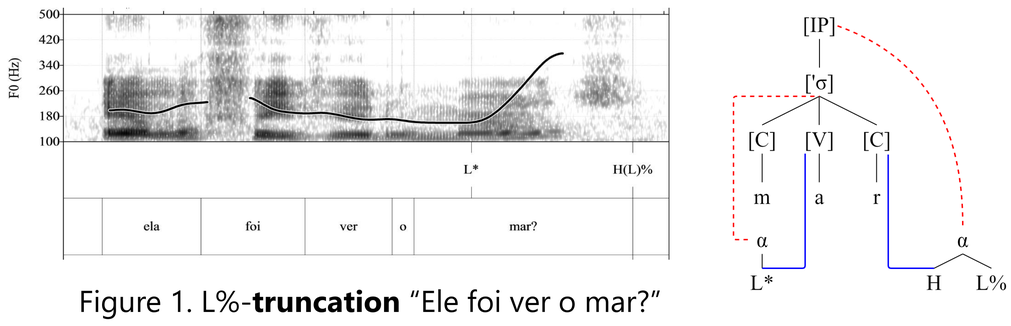

Figure 1. L%-**truncation** "Ele foi ver o mar?"

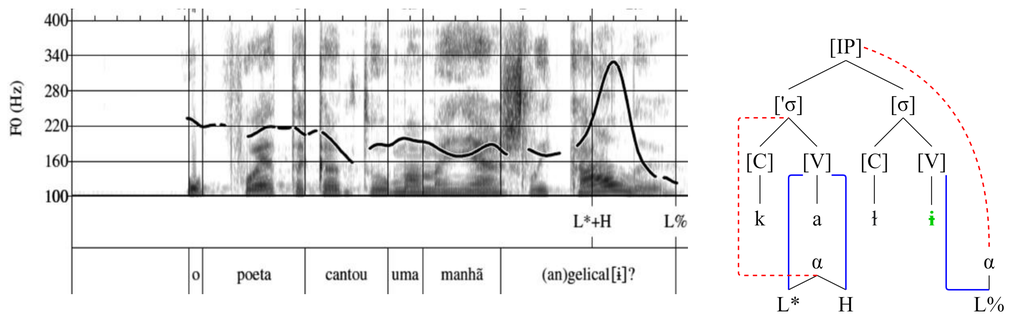

Figure 2. [ɨ]-**epenthesis** "...angelical[ɨ]?"

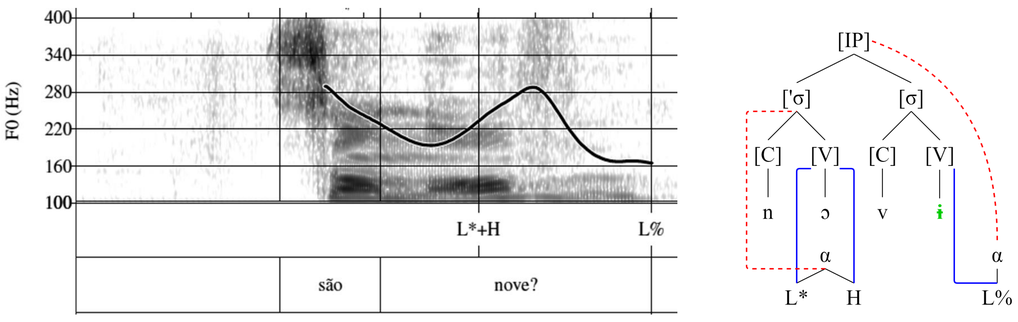

Figure 3. **Blocking** of final /ɨ/-deletion "....nov[ɨ]?".

7. Results: OT analysis

Table 1. L%-**truncation** "...mar?"

/m a r/ [C] [V] [C] $\{L^*\}_\alpha$ $\{HL\%\}_\alpha$	$*\beta(T)_{[-v]}$	MAX(seg)	DEP(seg)	*[ɨ]#	*CLASH(β)	MAX(β)	RESPECT(β)
a ˈ[C] [L*V][C]HL%					*		*
b ☞ ˈ[C][L*V][C]H						*	*
c ˈ[C][L*V][C]						**!	

Table 2. [ɨ]-**epenthesis** "...angelical[ɨ]?"

/k a l/ [C] [V] [C] $\{L^*+H\}_\alpha$ $\{L\%\}_\alpha$	$*\beta(T)_{[-v]}$	MAX(seg)	*CLASH(β)	RESPECT(β)	Max(β)	DEP(seg)	*[ɨ]#
a. k a ɫ [C] [L*V] [C]H					*!		
b. k a ɫ [C][VL*][C] H,L%			*	*			
c. ☞ k a ɫ ɨ [C][L*V] H.[C][V]L%						*	*

Table 3. **Blocking** of final [ɨ]-deletion "...nov[ɨ]?"

/n o v e/ [C] [V] [C] [V] $\{L^*+H\}_\alpha$ $\{L\%\}_\alpha$	$*\beta(T)_{[-v]}$	MAX(seg)	*CLASH(β)	Max(β)	RESPECT(β)	DEP(seg)	*[ɨ]#
a ☞ n ɔ v i ˈ[C][L*V] H.[C][V]L%							*
b n ɔ v ˈ[C][L*V] [C] H, L%			*				
d n ɔ f ˈ[C][L*V] [C] H, L%	**		*				

8. Future research

- **Descriptions of more TTA strategies in other languages** (e.g., lengthening or tonal coalescence).
- Test **typological power** of the proposed contraints on other languages.
- Refine the notions of ***fitness for pitch transmission*** and ***tonal crowding*** from a phonological perspective.

9. Selected references

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