



Sónia Frota
Universidade de Lisboa

How different are we?
Labelling intonational variation
across two Romance languages





Introduction

- The understanding of the intonation system in any intonation language requires:
 - **Prosodic structure** (phrases > edges and heads)
 - **Intonational lexicon**
 - Inventory of pitch accents and edges tones, and the meanings they convey in context / usage
 - **Relevant domain** for pitch accent distribution
 - **Distributional constraints** ('tonotactics')
 - Tonal events that only appear in/are banned from certain positions; that may not co-occur with others
 - **Implementation rules**
 - Early/late alignment; spreading / interpolation; contextual upstep (^) / downstep (!); compression / truncation



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 - Relevant domain for PAD (Frota & Vigário 2003, Hellmuth 2007, Frota in press)
 - **Distributional constraints** (Ladd 1996/2008)
 - Tonal events that only appear in/are banned from certain positions; that may not co-occur with others
 - **Implementation rules** (Ladd 1996/2008)



Introduction

- Main goal: to **compare the intonation systems** of Catalan (Central Catalan, standard variety) and (standard) European Portuguese (EP), which in many respects have been described on the basis of similar methodologies.
- Related goal: to **discuss aspects of the AM framework**, which are challenged by the data and/or the comparative analysis
 - Phrasing (BI): break indexes and edge tones
 - Labelling tonal events as phonological categories (To)
 - Different categories produce the same phonetics (dimension of cross-linguistic diffs not included in Ladd 1996)



Outline

- Intonationally relevant prosodic structure
 - Prosodic constituents and levels of phrasing
- Intonational lexicon
 - *Systemic* analysis (phonologically distinct tune types)
 - *Semantic* differences (different use of identical tunes)
- Domain for PAD
 - Distribution of pitch accents
- Other issues
 - *Phonotactic* (tune structure: post-nuclear accents)
 - *Realisational* / Implementation: compression / truncation, realisation of bitonal accents

Cat: Prieto, Aguilar, Mascaró, Torres-Tamarit, Vanrell; Prieto in press

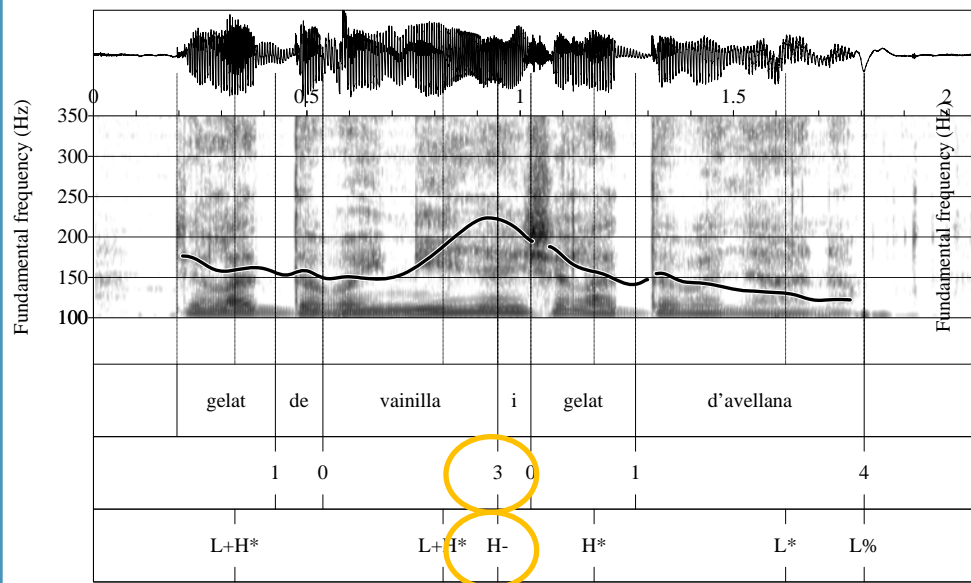
EP: Frota, Vigário, Viana, Cruz, Fernandes, Moniz; Frota in press



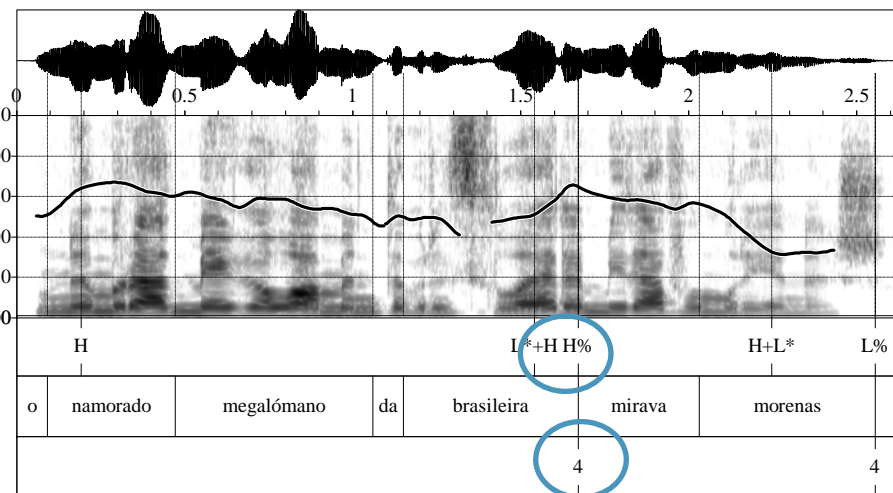
Prosodic structure (relevant to intonation)



Cat



EP



Two levels of constituency (and of phrasing): intermediate phrase and intonational phrase

One level of constituency (but possibly two of phrasing): intonational phrase (compound phrases)



Prosodic structure (relevant to intonation)

■ Intonational phrasing in **Cat**: ip

Initial phrases:

continuation rises

Sentence-initial topics

Arguments:

Tonally marked like the IP, but
not as strongly (**degree**)

Inventory of BT only partially
overlapping with IP

Perceptually two levels of
degree of disjuncture

■ Intonational phrasing in **EP**: IP

Initial phrases (length):

continuation rises

Initial topics, parentheticals

Arguments:

Tonally marked by BT, pre-
boundary lengthening

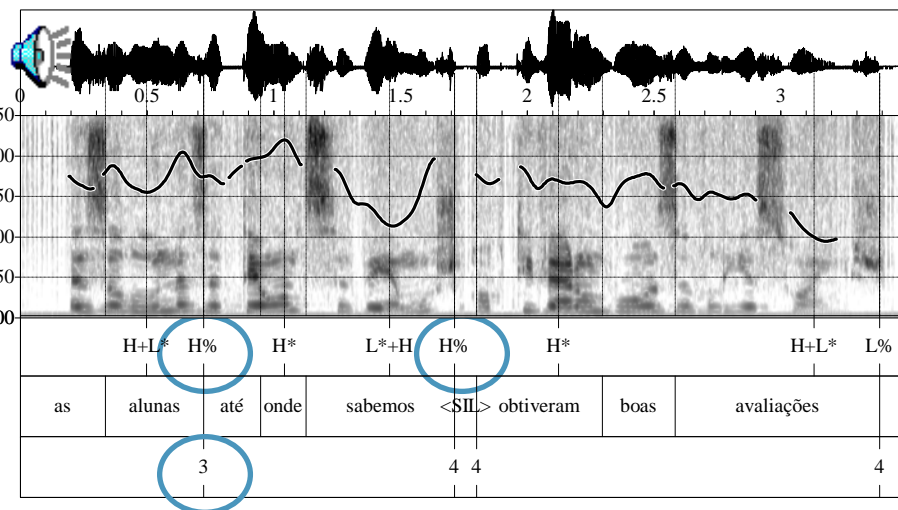
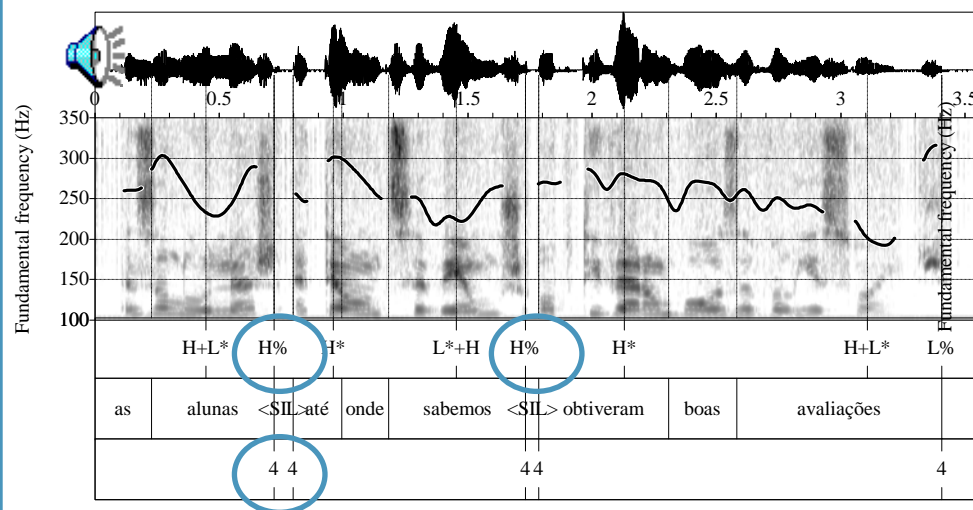
Compound IPs (inner edge
weaker): **degree** of
lengthening, pitch range

Differs BT type: position



Prosodic structure (relevant to intonation)

Compound phrasing (Ladd 1996, Frota 2000, Moniz 2010, a.o)



One type of constituent signalled by the same kind of cues:

Difference in **degree** (compound phrasing). Dissociation between boundary type (constituent) and BI (level of phrasing). More transparent definition of what counts as a prosodic constituent (Frota, in press).



Prosodic structure (relevant to intonation)

■ Intonational phrasing in **Cat**

Deviates from MAE-ToBI

No phrase accent (ip)

ip, IP: one type of BT for both (simple or complex)

ip, IP: difference in the inventory of BTs > position (initial, final)

Final ip in the IP does not get a BT

■ Intonational phrasing in **EP**

Deviates from MAE-ToBI

No phrase accent & no ip

IP: one type of BT (simple or complex)

Compound IPs (inner/outer edge): differences in BT > position

Each IP gets a BT

BI are independent from BT

Distinct prosodic accounts of what seems to be a similar gradient difference in the strength of the same types of properties >>> further analysis

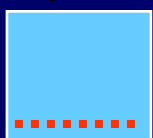


Intonational lexicon

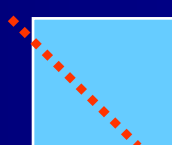
■ Transparent analysis



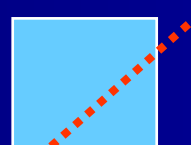
H^*



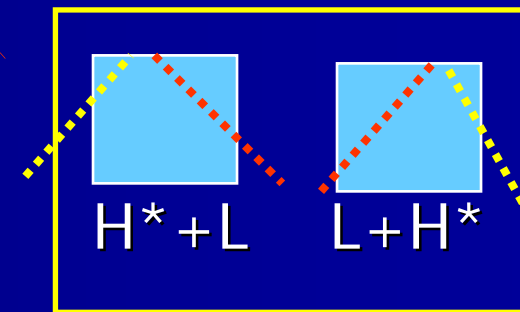
L^*



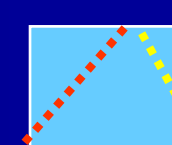
$H+L^*$



L^*+H



H^*+L



$L+H^*$

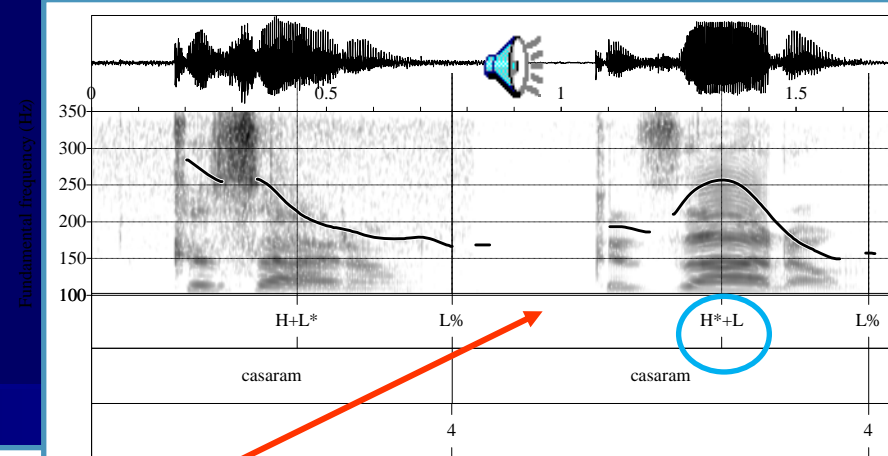
Pitch accent inventory: common set of 4 pitch accents
 $H^*, L^*, H+L^*, L^*+H$

One main difference: **Cat** $L+H^*$ (and $L+>H^*$); **EP** H^*+L

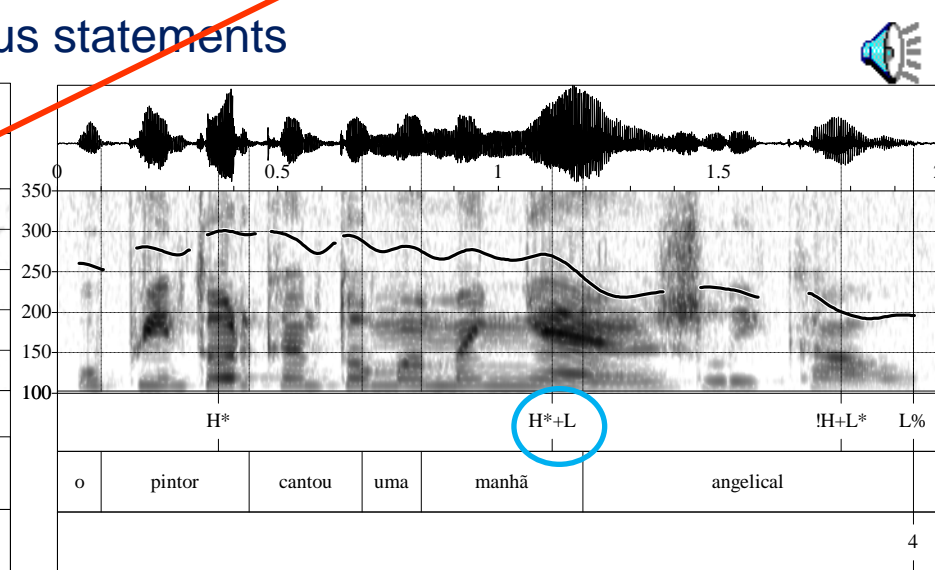
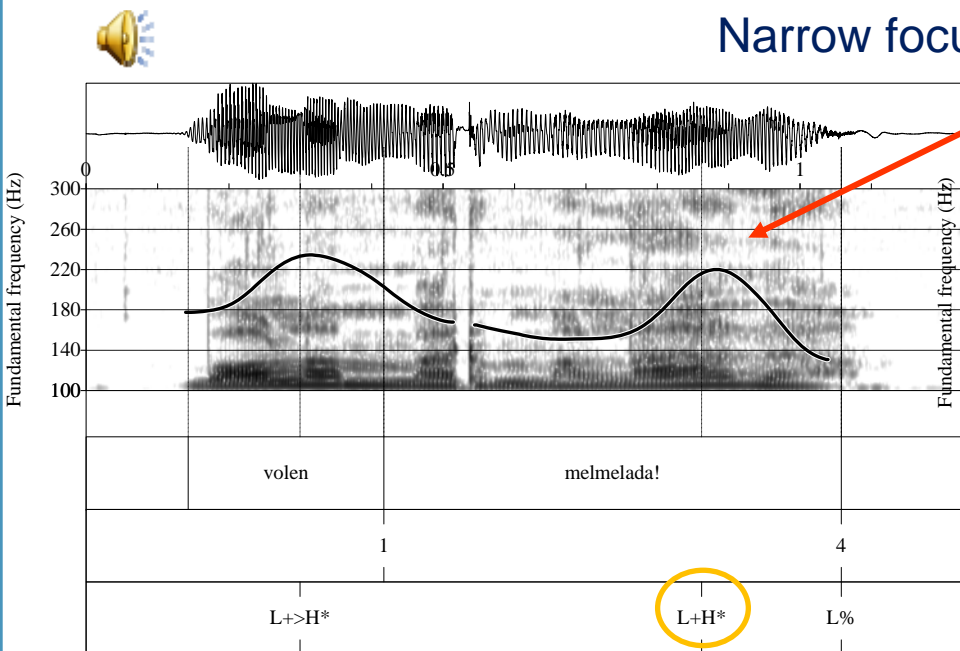
Important systemic difference: most common nuclear accent in
Cat (8 tunes), predominant choice in prenuclear position; EP
 $H+L^*$ is the most common nuclear accent >> **Rising**, **Falling**

Frota et al. 2007: \neq nuclear pitch accent choices (Cat, Sp vs. EP, It)

Intonational lexicon



Narrow focus statements



L+H*: narrow focus statements, questions, calls, requests, imperatives
H*+L: narrow focus statements, imperatives

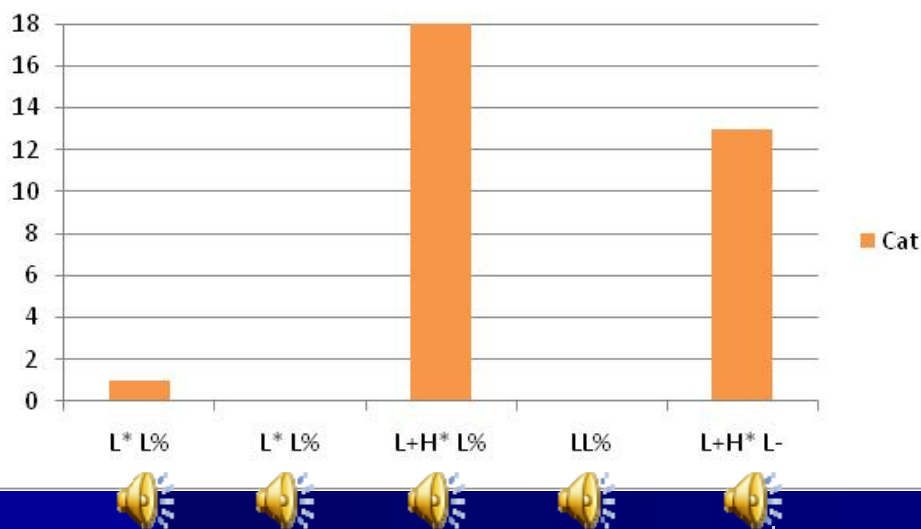
Perception ?



Intonational lexicon

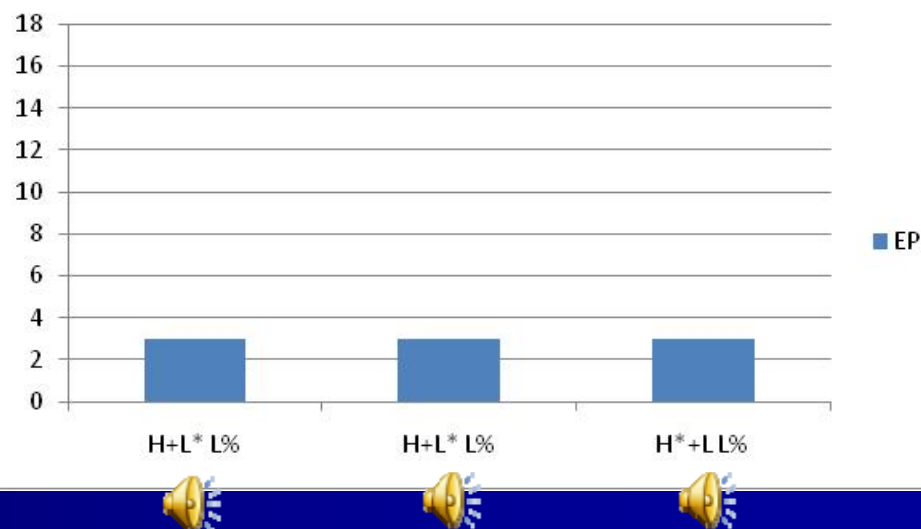
Six EP participants (4 trained) listened to a set of 5 Cat items and 3 EP items: rising or falling?
(3x each, total of 18 responses per item). N° of rising responses.

Catalan



Rising

EP

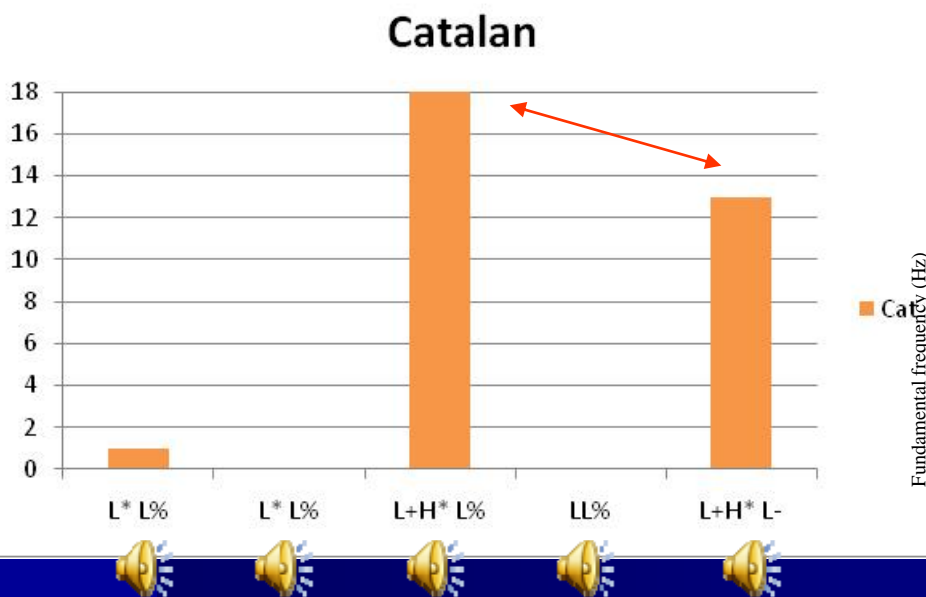


Falling

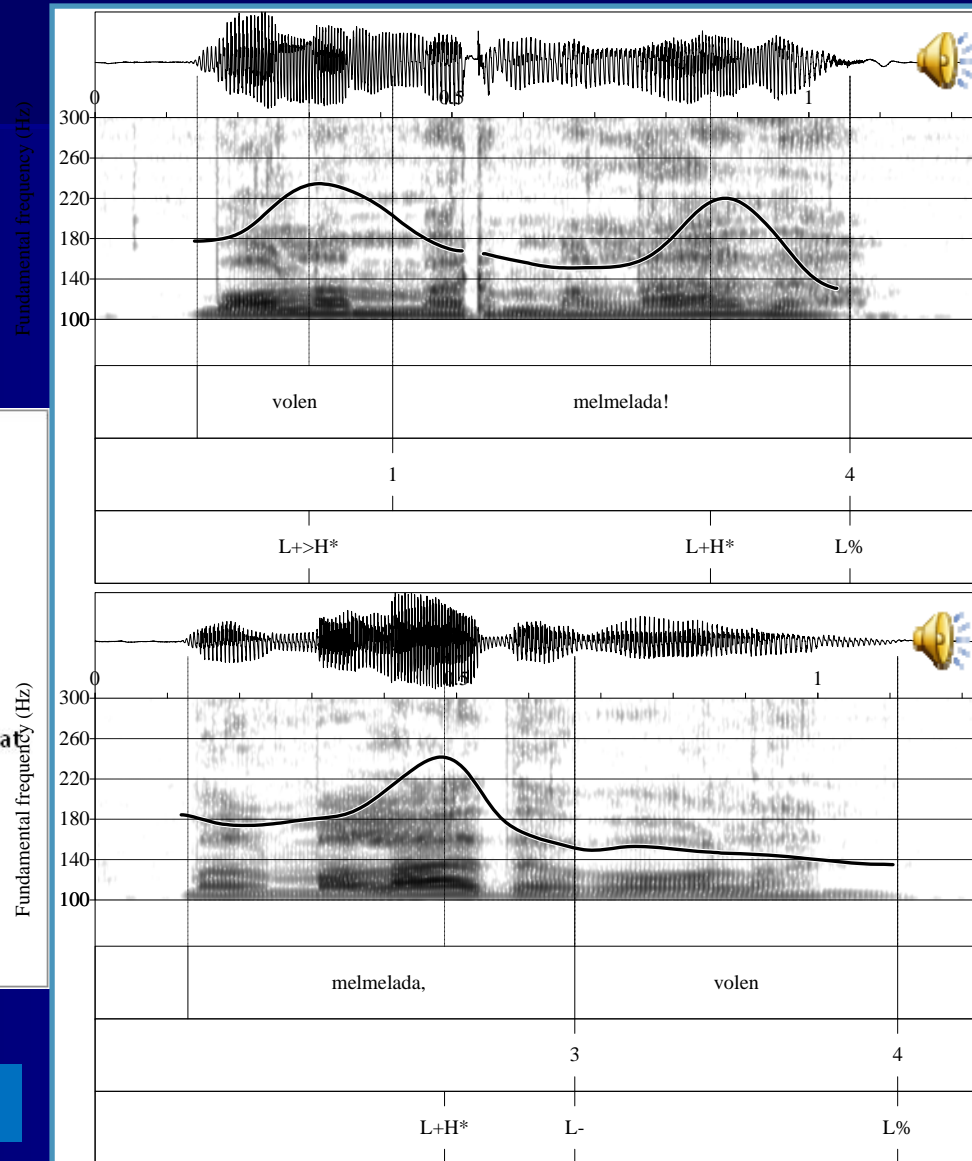


Intonational lexicon

EP participants sensitivity to peak alignment within the stressed syllable



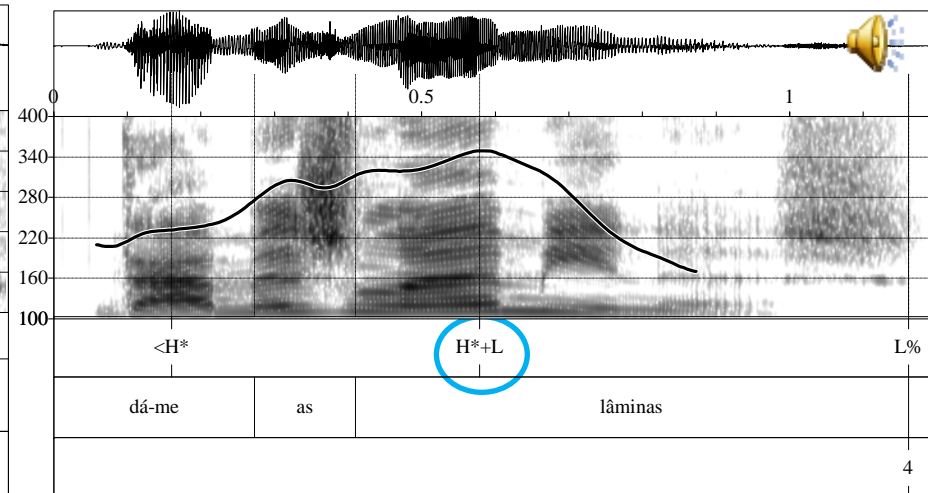
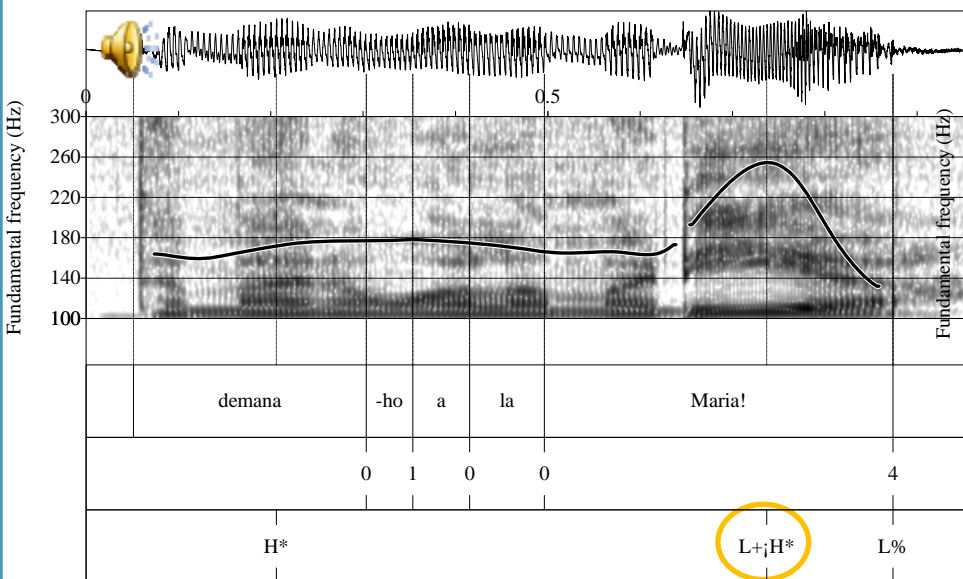
Systemic difference in nuclear accents





Intonational lexicon

Imperatives: (strong) commands (same syntax)



$L+H^*$: narrow focus statements, questions, calls, requests, imperatives

H^*+L : narrow focus statements, imperatives

✓ Systemic difference



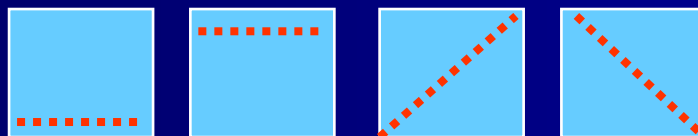
Intonational lexicon

■ Boundary tone inventory

Both languages, one type of BT (simple or complex).

Cat shows a richer inventory of boundary tones (8).

Common set of 4 boundary tones (same phonetic definition): L%, H%, LH%, HL%



Different exploration of the height dimension:

Cat 4 levels: L%, M%, H%, HH%

EP 3 levels: L%, !H%, H%

M% and !H% (systemic difference) ?



Intonational lexicon

■ Boundary tone height in Cat

Growing evidence for a phonological contrast

$L+H^*$ **LM%** / $L+H^*$ **LH%**

(Prieto et al. 2008)

Productive use (vocative, hesitation, disapproval)

Height is independent of syntagmatic reference (previous accents, context)

■ Boundary tone height in EP

No evidence for a contrast (so far)

H% (continuation rise): lower after $H+L^*$, higher after L^*+H (Vigário 1998, Frota 2000)

!H in the accent dimension:

$H+!$ **H*** **H** $+!$ **H*** // H^*+L !H $+L^*$

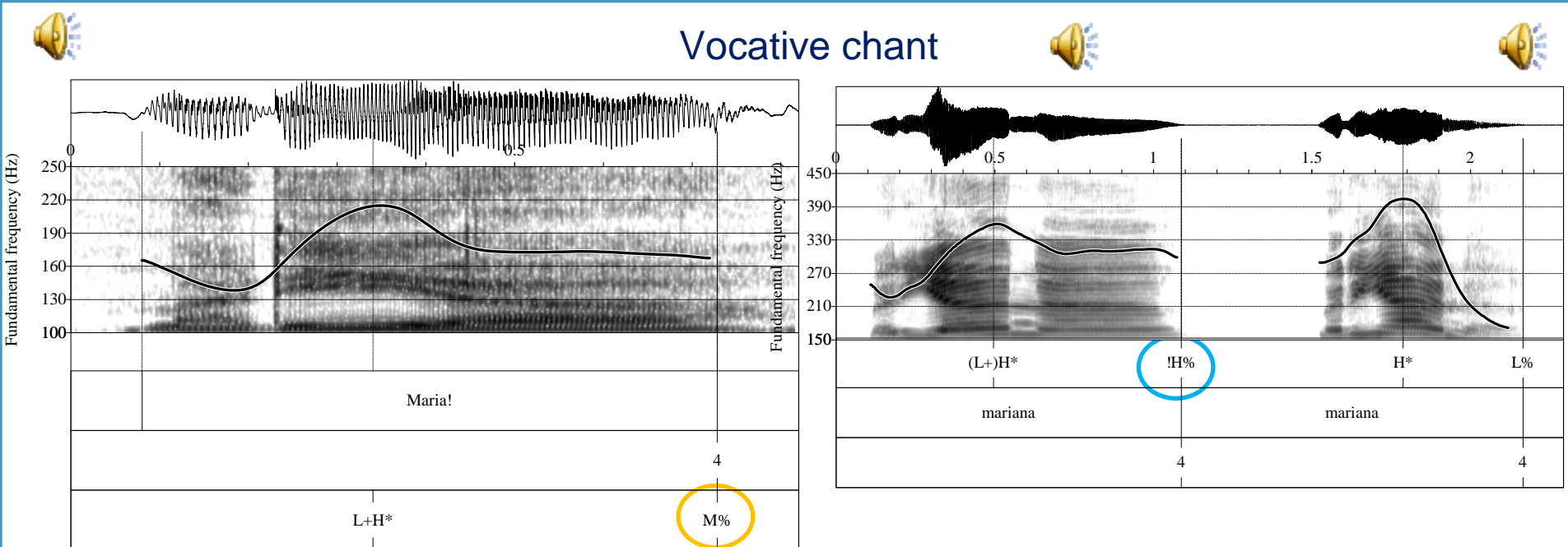
!H% (vocative): H^* !H%

Height depends on syntagmatic reference

Different systems



Intonational lexicon



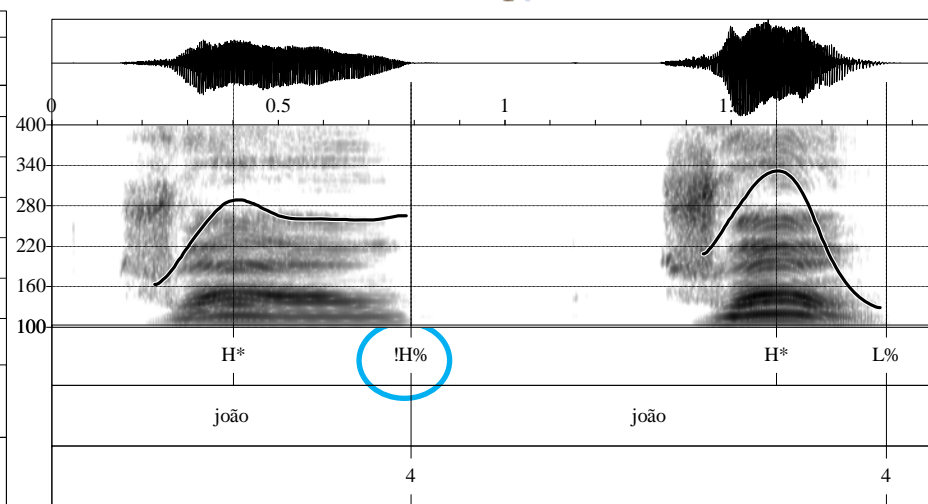
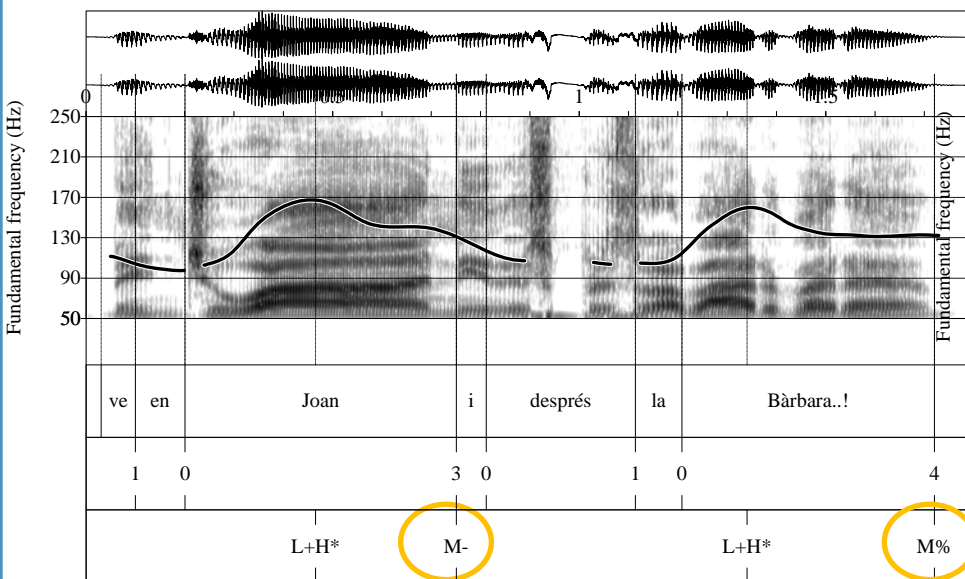
Very similar phonetics: pitch height, spreading, lengthening
Different phonological account !

Systemic
difference?



Intonational lexicon

Hesitation contour / Votive chant



Very similar phonetics: pitch height, spreading, lengthening, vowel split
Different phonological account !

Systemic
difference?

Intonational lexicon



Intonational lexicon

■ Semantic differences/similarities

In most cases, phonologically different tune types:
either PA ($L+H^*$ / H^*+L), or BT (height), or both.

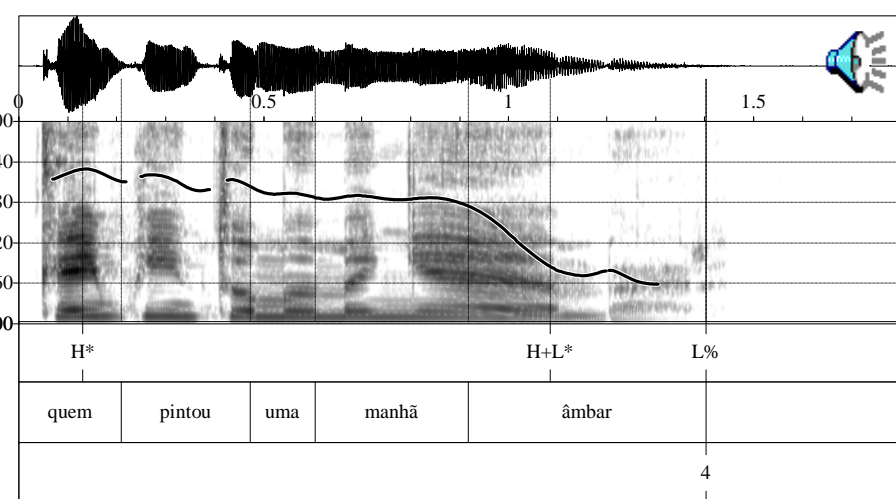
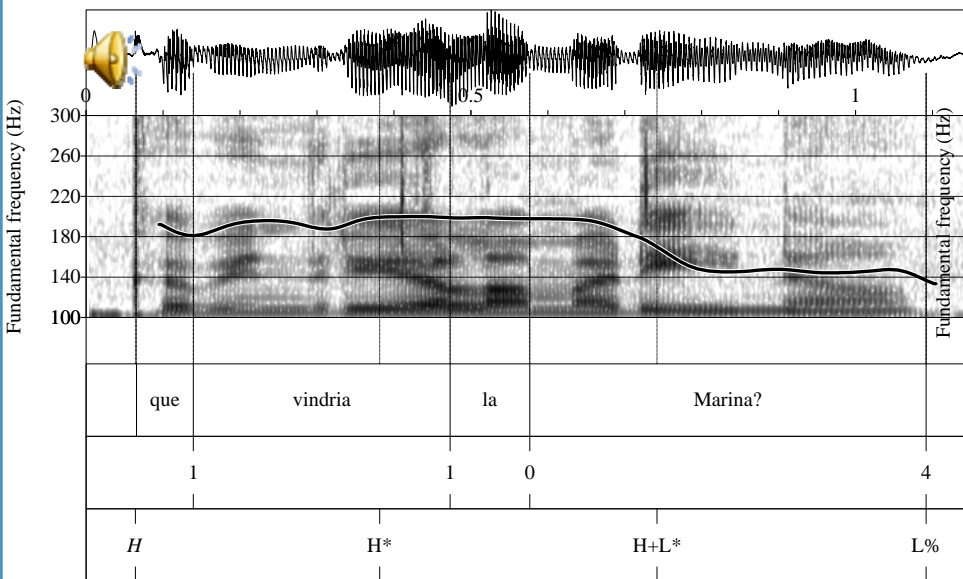
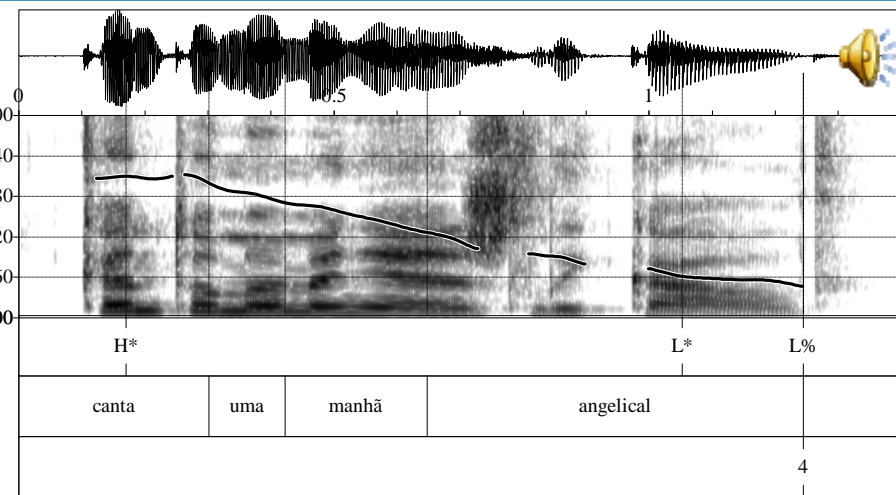
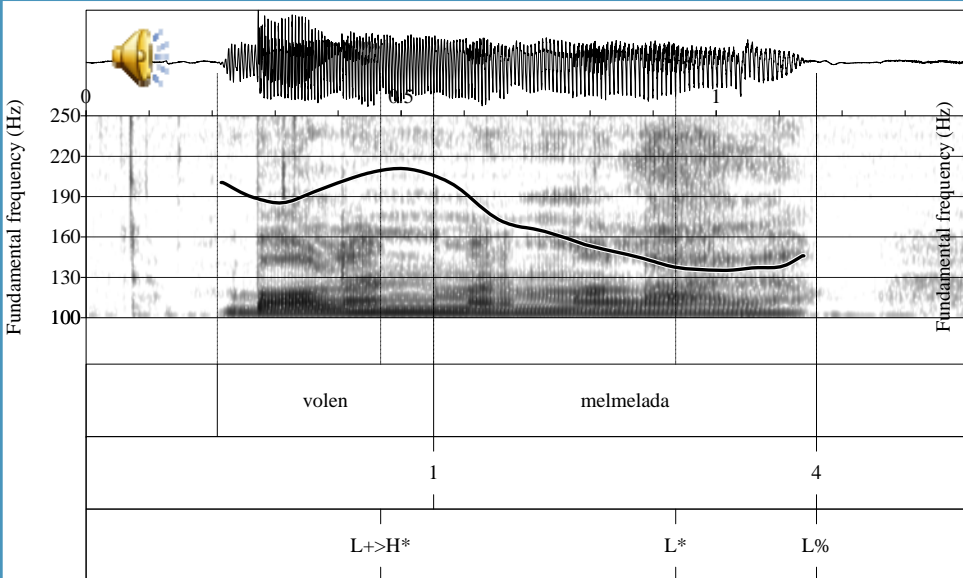
3 cases of different use of identical tunes:

- $L^* L\%$: Neutral statement, wh-question / Request
- $H+L^* L\%$: Yes-no question (falling) / Neutral statement, wh-question
- $H^* L\%$: Focused wh-question / Insistent call

No clear case of similar use of the same tune!

Systemic differences dominate > few cases of identical tunes with a different semantics



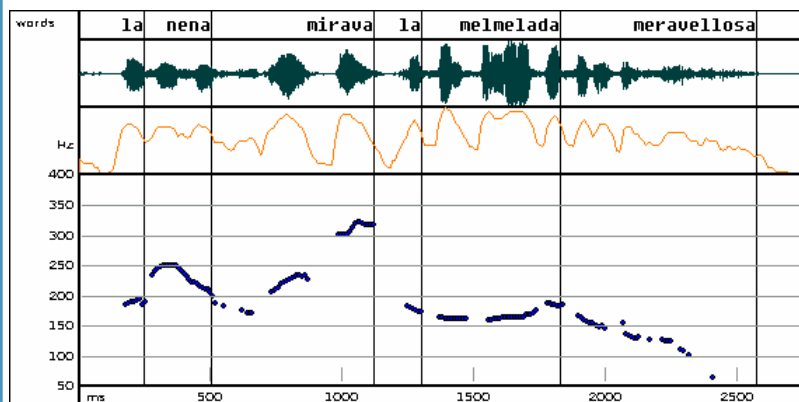




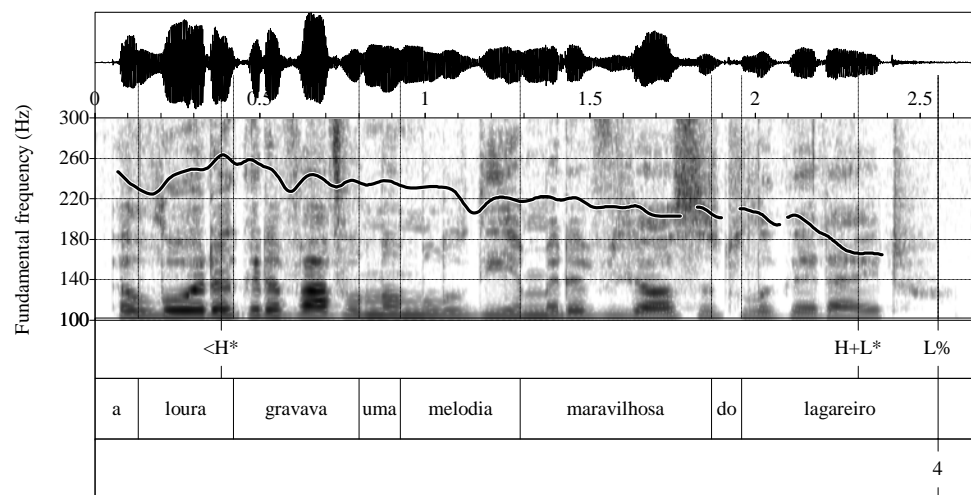
Domain for pitch accent distribution



Cat



EP



the blond girl recorded a wonderful song from the olive-pressman

Close relation between number of stressed syllables and number of accents

Sparseness of pitch accents (typically, nuclear syllable and 1st syllable)



Domain for pitch accent distribution

■ PAD in **Cat**

Generally, stressed syllables are accented

Strong connection between prominence and accentuation

- Stress clash resolution by deaccenting (Prieto et al. 2001)
- Emphatic stress > pitch accent (Prieto in press)

■ PAD in **EP**

17% of IP-internal stressed syllables are accented (3-8 PWs, Vigário & Frota 2003)

Weak relation between prominence and PAs

- Stress clash resolution by lengthening of S1 (Frota 2000)
- Emphatic stress > prominence with no PA (Vigário 2003)

Symmetrical distribution of stressed & accented, stressed not accented



Domain for pitch accent distribution

■ PAD in **Cat**

Generally, stressed syllables are accented

Prosodic domain relevant to PAD (Hellmuth 2007)

Prosodic word

Relevant dimension for the characterization of sentence types: some types of questions (Prieto 2002)

■ PAD in **EP**

17% of IP-internal stressed syllables are accented (3-8 PWs, Vigário & Frota 2003)

Prosodic domain relevant to PAD: **IP** (Frota, in press)

Same domain for the different sentence types (declaratives, questions, imperatives...)

Important difference in pitch accent distribution !



Other issues

Similar

■ Cat

Tune structure: post-nuclear accent (Prieto, in press)

L^* (neutral statement)

Realisation of bitonal accents (Prieto, in press) :

Leading tone aligns to a segmental landmark ($H+L^*$)

But not trailing tones

Compression (lengthening)

■ EP

Tune structure: post-nuclear accent (Frota 2000)

$H+L^*$ (neutral statement)

Realisation of bitonal accents (Frota 2002)

Leading tone aligns independently of T^* ($H+L^*$); trailing tone aligns relative to T^*

Compression (epenthesis)



Summary

- Intonationally relevant prosodic structure
 - One boundary type, two levels: elaborate on the analysis (ip?)
- Intonational lexicon
 - Important *systemic* differences in PA and BT inventories:
 - $L+H^*$ / H^*+L Exploration of height (M% / !H%)
 - Few cases of identical tunes show *semantic* differences
- Domain for PAD
 - *Relevant dimension*: EP a larger domain/ Cat a smaller domain
- Other issues
 - *Phonotactic* (post-nuclear accents, default accent)
 - *Realisational* / Implementation: *compression* (strategies for extending the segmentals – Iberian-Romance?), realisation of bitonal accents (leading \neq trailing – Romance?)



Moltes
gràcies

Conclusion

- How different are we ?
 - **Similar** in the intonationally relevant p-structure, in main tune structure architecture, in implementation (\neq English)
 - **Different** in the intonational lexicon and PAD
- Careful comparision highlights the dimensions where we differ, and raises questions about aspects of the AM framework and of the ToBI labelling system
 - Prosodic structure: **BI** >> dissociate BI from edge tone type
 - Definition of tonal categories: **To** >> phonological labels
 - Phonetic transparency + (cross-language) perception + system as a whole (way categories relate to each other)
 - **Different categories** may produce the **same phonetics** (also in intonation)



Acknowledgments

Laboratório de Fonética

www.fl.ul.pt/LaboratorioFonetica/

Marina Vigário, Pilar Prieto, Marisa Cruz,
Helena Moniz, Raquel Jordão

FLUL, CLUL

Intonational Phrasing in Romance Project
Atlas Prosódico do Português Europeu
SILC project



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sonia.frota@mail.telepac.pt