Towards a unified theory of vowels

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	a		e o		e o		ɪ ʊ
			a		ɛ ɔ		e o
					a		ɛ ɔ
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2. Symbols won't tell: DRESS in Wells (1982) [e] for RP, but [ɛ] for GenAm, yet identical behaviour; articulatory difference miniscule.
3. Articulation won't tell: "vowels classified as high do not have the same tongue height. [[u]] is nowhere near as high as [[i]]" (Ladefoged & Johnson 2010: 21) — also applies to F_1.

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    - tense/lax distinction
    - transparent vowels in vowel harmony (not discussed here)

Reduction as element loss: Correct predictions. . .

1. Brazilian Portuguese (BP) (Cristófaro Alves da Silva 1992; Mateus & d'Andrade 2000; Wetzels 1995):

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2. [e]/[i] merge as [i] (2 → 1): Loss of **A** in unstressed position (Harris 1997; Harris & Lindsey 1995, 2000).

[i] $(\{\ \}\underline{\mathbf{I}})$ [e] $(\{\mathbf{A}\}\underline{\mathbf{I}})$ (2)

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[i] **({ } I̲)**   [e] **({ A } I̲)**   (2)

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3. Key argument to support privative features (Kaye, Lowenstamm & Vergnaud 1985, 1990; Harris 1990, 1994).

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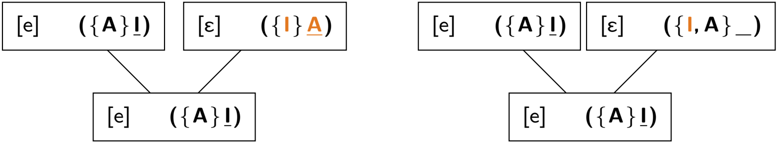

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6. From point of view of formalism not unified.

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5. Eastern Catalan (EC):

strong	*i*	*e*	*ɛ*	*a*	*ɔ*	*o*	*u*
weak	*i*	*ə*			*u*		

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2. Ambitious goal: Address those problems by linking everything to **structure and the arrangement of elements within that structure.**

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5. How to tackle the problem?
    - Length
    - Weird behaviour of **A**

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4. "Differently": **A** seems to interact with (constituent) structure unlike other elements.

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     Nuclei containing **A** by itself can appear before *s*+C even when one of the final consonants does not contain **A**.
   - Vowel makes up for "insufficiency" of cluster; but there have to be two **A**'s around.

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7. Also allows to make sense of vowel reduction.

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Two x-bar structures on top of each other

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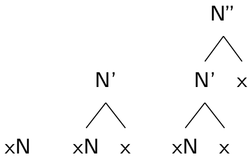

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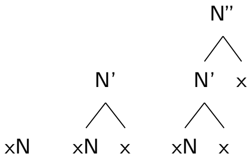
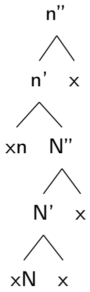


2. Can be embedded by another head (xn), which in turn can project up to twice. Maximal structure:

   Doubled vowel structure also in den Dikken & van der Hulst (2018).

   Meaning of xn, xN: later



Vowel height & annotation

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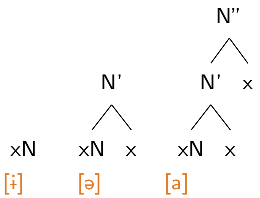

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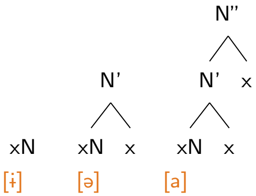

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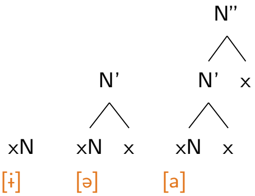

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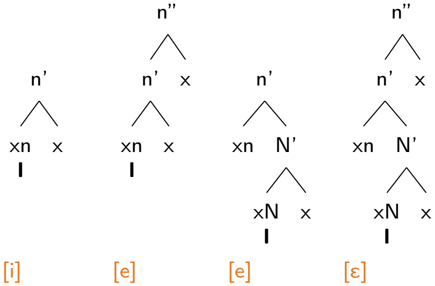
3. Heads can be annotated with elements:



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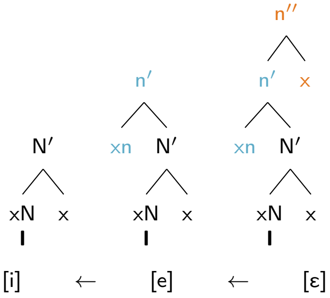

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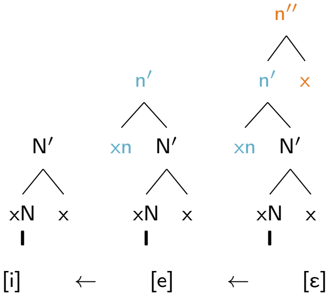

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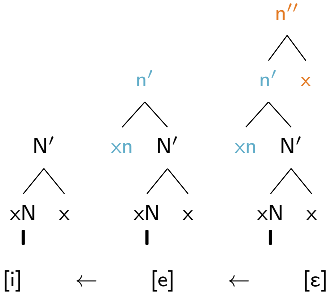

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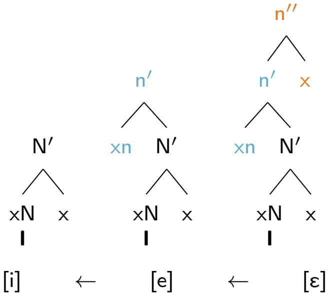

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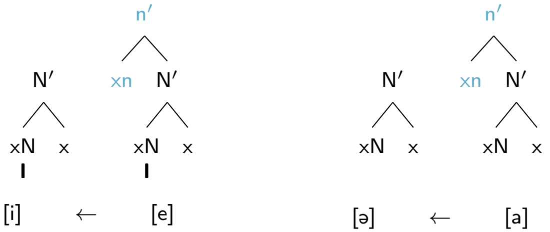
Reduction of [a] parallels [e]

1. 

2. Welcome result as they happen in same context.

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5. Potential problem cases: Polish (Jassem 2003).

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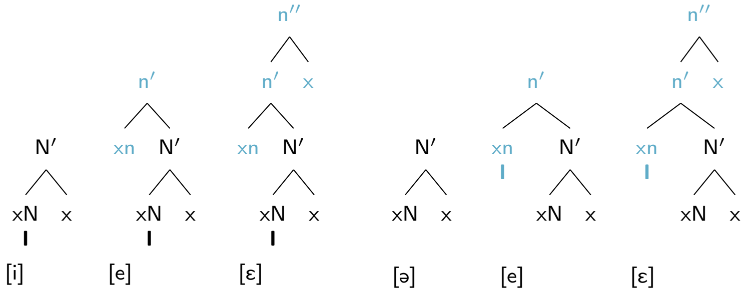

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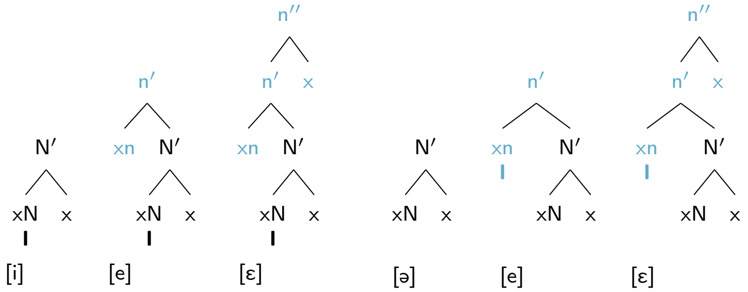

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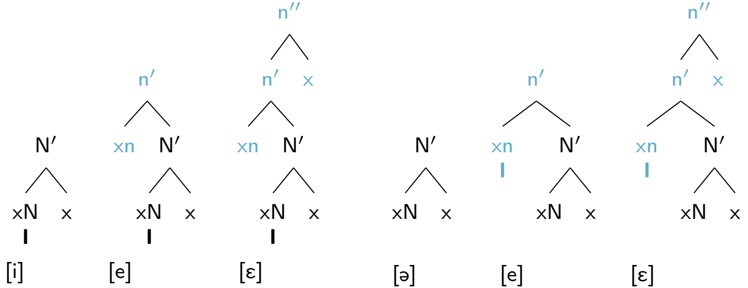

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3. **U** low in both languages, thus the two languages reduce the same.

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3. Triggered by [i] but not by other vowels containing **I**, *i. e.* [e]/[ɛ].

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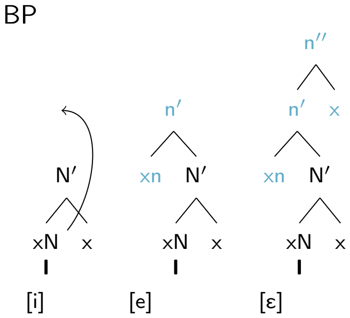

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3. Russian: **I** low (survives reduction) but **U** high (does not).

strong	*ɨ*	*i*	*e*	*a*	*o*	*u*
weak	*ɨ*	*i*		*ə/ʌ*		*u*

Low position of **I** in [e] also backed up by its failure to consistently trigger palatalisation (Timberlake 2004: 58).

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[k'ɛbri]	'break'	[k'ɔlu]	'I glue'
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4. In N/NE-BP, vowel reduction "interage com processos de abaixamento que resultam em [ɛ] e [ɔ]." (Albano 1999: 42)

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4. Only one x-bar structure allowed: 2 layers, *i. e.* classic 5-vowel system.

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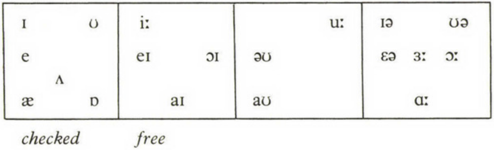

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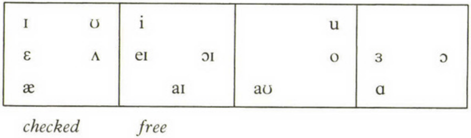

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checked	*free*		

   - “General American” (Wells 1982: 120)

ɪ ʊ ɛ ʌ æ	i eɪ ɔɪ aɪ	u o aʊ	ɜ ɔ ɑ
checked	*free*		

2. Characterisation varies:

free/checked (behaviour, quality)
tense/lax (quality)
long/short; mono-/bimoraic (quantity)

} all problematic (Bauer 1980; Durand 2005)

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4. (More on *th*[iːə]*tre* ∼ *th*[ɪə]*tre* later)

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4. Worse still: [fiːnd], [peɪnt] etc. where neither consonant contributes weight.
5. Ambisyllabicity to allow words like *bitter*, *bigot*, *busy* etc.

What am I trying to do?

1. Structural account proposed here tries to link
    - Behaviour
    - Length
    - (To some extent) quality
2. Key claim: **T-type and L-type are the same and they are not the same.**

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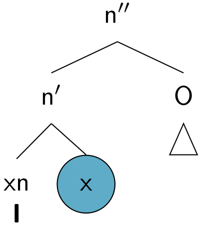

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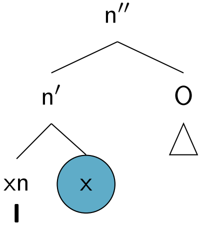

2. Basic scaffold for both [bɪt] *and* [biːt].

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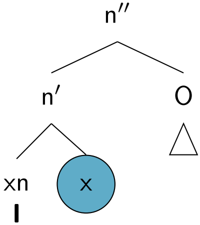

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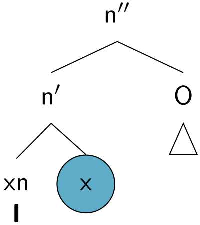

2. Basic scaffold for both [bɪt] *and* [biːt].
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4. Difference in who makes use of the complement (blue).

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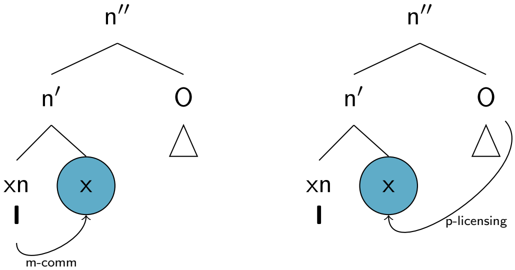

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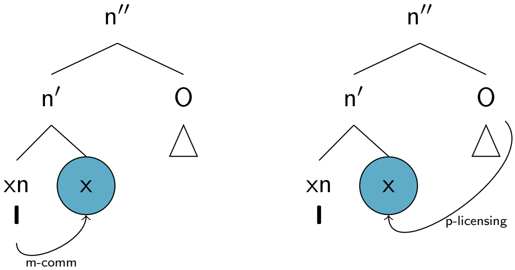

4. Similar proposal by Polgárdi (2012), though not as part of a general theory of vowels.

Consequences (1)

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2. Distribution follows: *[bɪ], */[ɪ]*o* since no C following to p-license complement.
3. Greater duration of T-type *vs.* L-type (ratios of 3:2) follows: T-type = head & complement, but L-type = head only.

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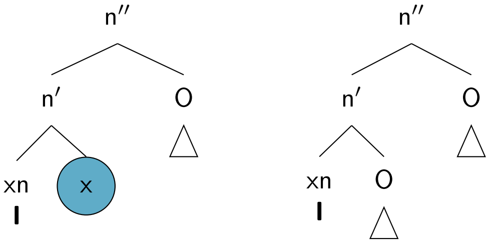
3. 

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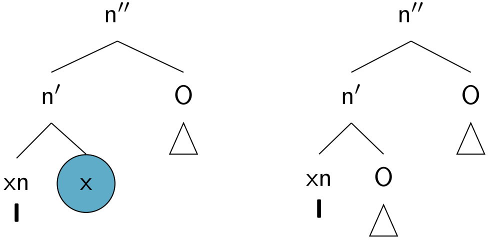
3. 

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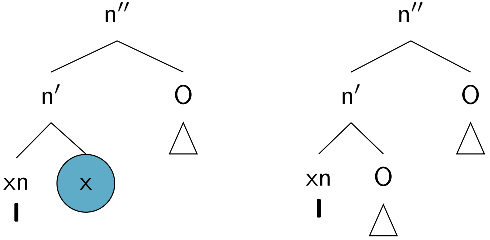
3. 

4. Alveolar clusters can exceed that limit, *e. g.* *fiend*.
5. Pöchtrager (2010): Alveolars have extra room that can be borrowed.

T-type/L-type and height

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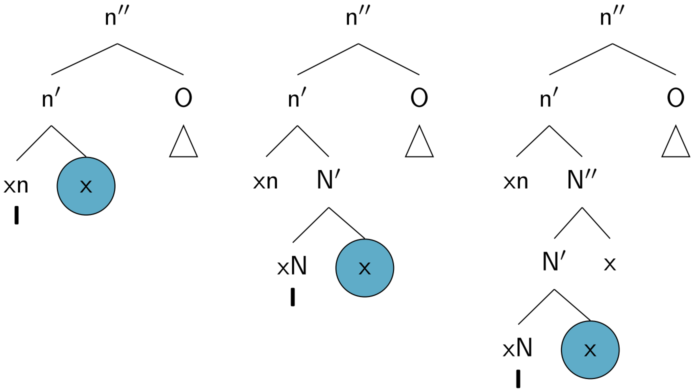

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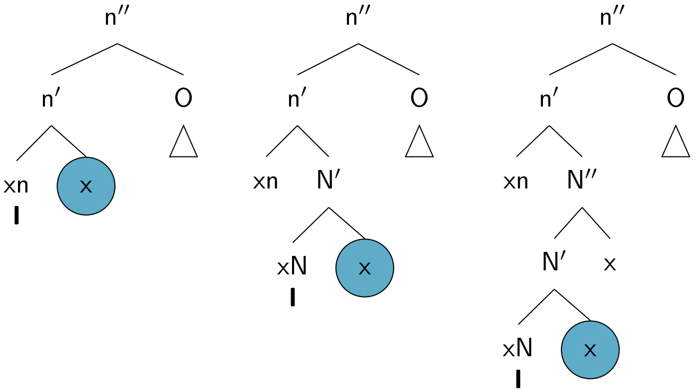

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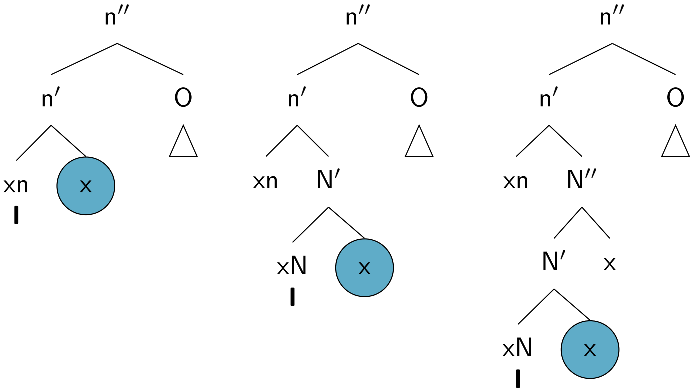

2. System used so far gives us exactly the possibilities we need and allows for T/L-distinction to be integrated.
3. [æ]/[ä] additional unused point whose fate is unclear. (Reason for scarcity of T-type counterpart to [æ]?)

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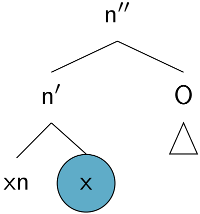
5. Phonological identity of *idea*, *fear*: intrusive *r*.

1. High vowel



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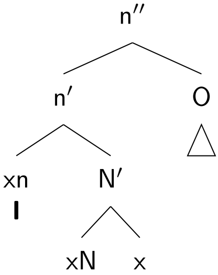

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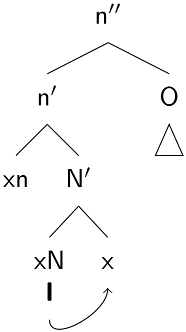

Centring diphthongs

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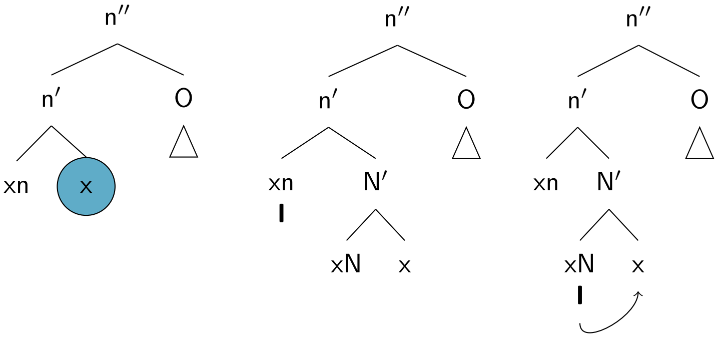

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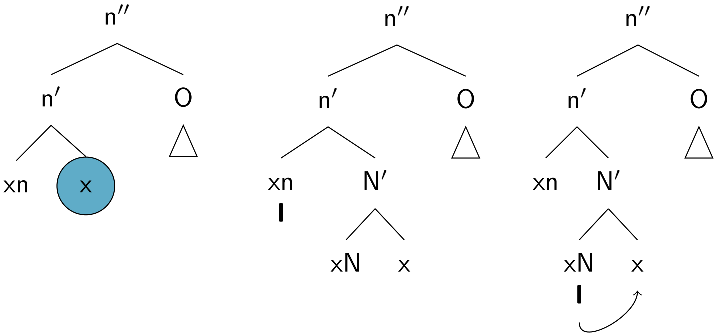

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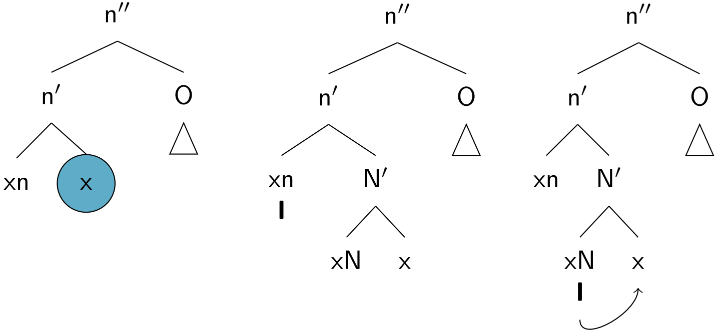

2. [ɪə] basically a high vowel with schwa embedded.
3. Similar to [eː], difference position of **I**.
4. In [ɪə], xn does not m-command anything; xN and its complement get spelled out by Empty Category Principle (Charette 1991; Kaye 1995) as schwa (= 2 positions).

Québec French

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4. Focus on final position, facts most straightforward.

Québec French: Disagreement

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vite	[vɪt]	'fast'	*sotte*	[sɔt]	'idiot'
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4. Both insights part of present approach:
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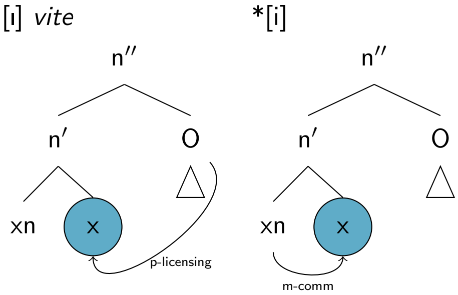

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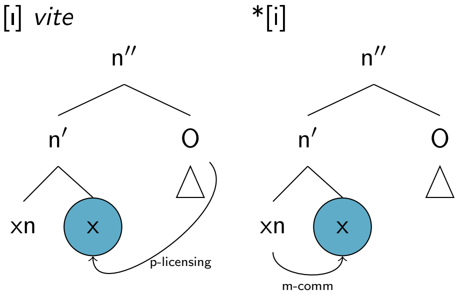

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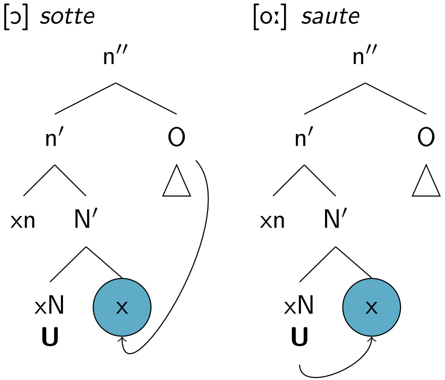
2. Note: Nuclear head not *generally* banned from m-commanding complement; [i] does exist in QF in other contexts.



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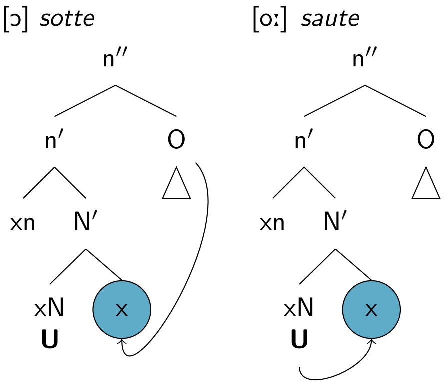

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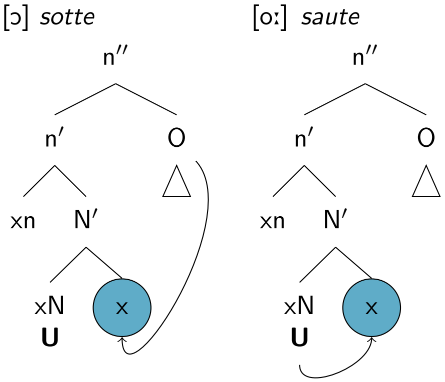

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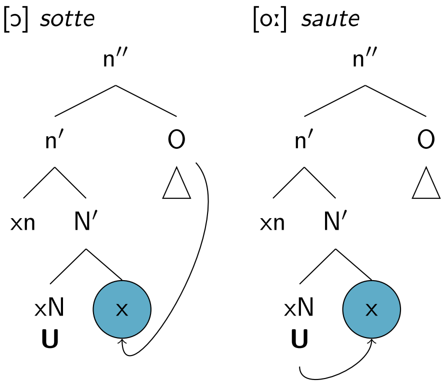

1. Why “nuclear head loses out in the race for its sister”?
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4. Making non-high vowels bigger than high vowels gives us exactly the difference we need for QF.

What do individual bits of the tree represent?

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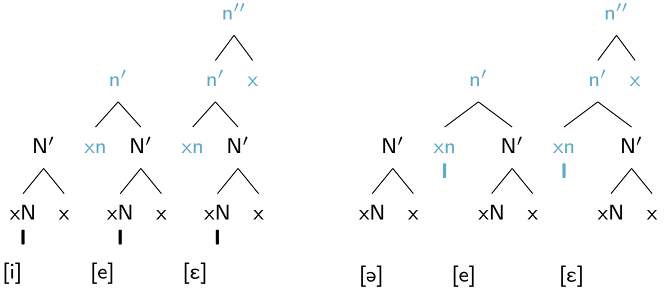

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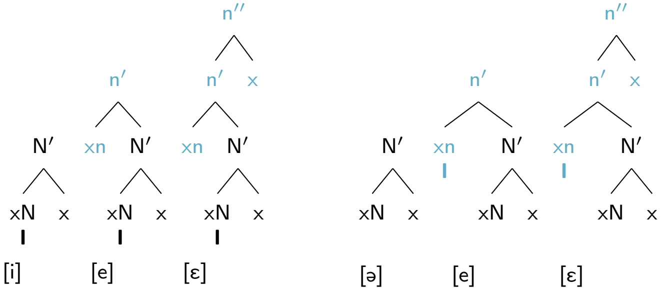

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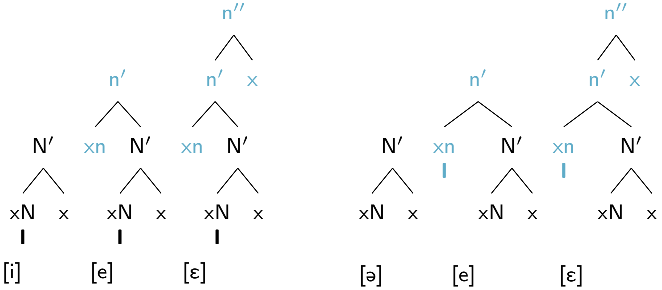

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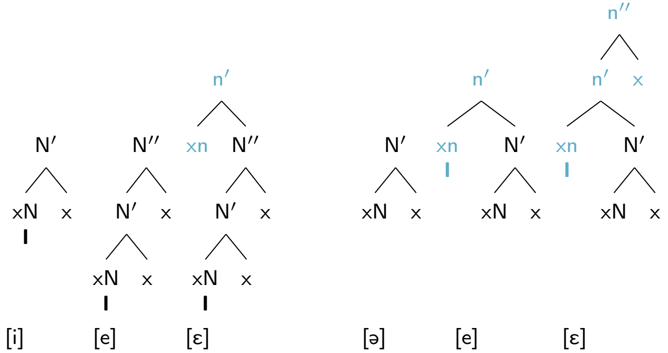

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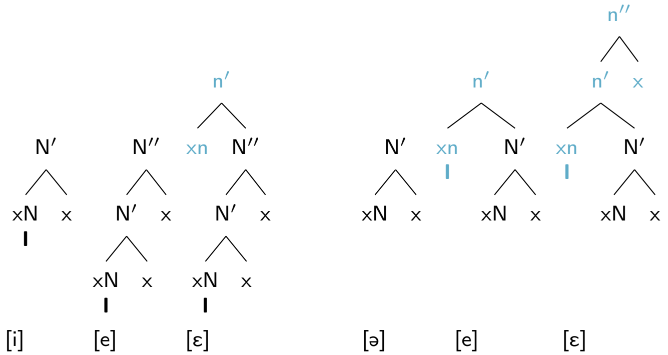

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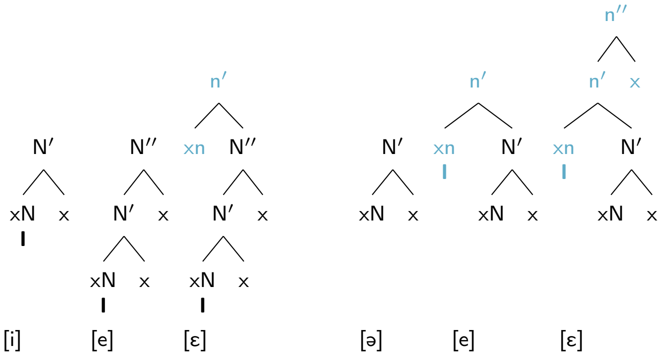

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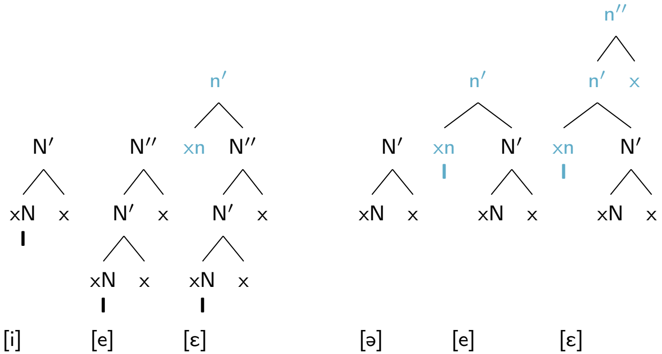

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5. Plus potential complication with culminativity (Hayes 1995).

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5. Formal expression of stress still an issue.

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3. Are there three x-bar structures in total? If yes, what are they?

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6. Hopefully one step closer to a general theory of vowels.

Thank you!
Köszönöm szépen!

References I

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