Enhanced Metrical Theory and Sonority-Driven Stress

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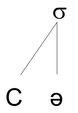
1. Theoretical Proposals

(1) Stress is *never* sensitive to sonority
- *contra* Kenstowicz 1997, de Lacy 2004 etc.

(2) Schwa can be non-moraic ([ᵊ]).



- 'Minor Syllable' (Lin 1998 etc.)
- Short duration
- Realization highly influenced by environment

(3) 'Sonority-driven stress' = when stress avoids moraless syllables

2. Stress avoids moraless schwa

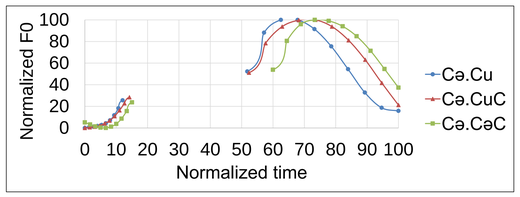
(4) Piuma Paiwan stresses the penult …
[káka] 'sibling'
[tsaʌíŋa] 'ear' (Chen 2009a,b, Yeh 2011)
… **except**: stress avoids [ə]

(5) Stress avoids schwa because …
(A) it has *low sonority* (de Lacy 2004, Yeh 2011, etc.)
vs.(B) schwa is *non-moraic*

(6) Different Predictions
a. Penult schwa + Final full vowel
[kərí] *or* [kᵊrí]? 'small'
[qapədú] *or* [qapᵊdú] 'gall'
b. Penult schwa + Final schwa
[ləʌét] *or* [lᵊʌét] 'lip'
[ʌisəqés] *or* [ʌisᵊqés] 'nit'
- *Which theory is right?*

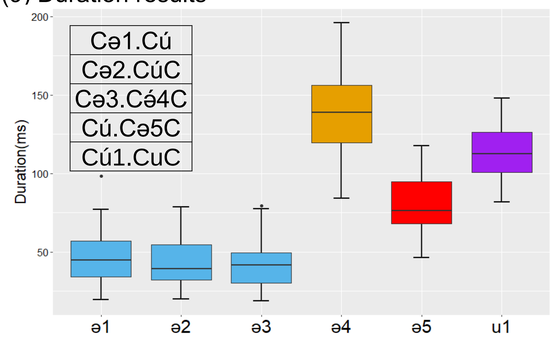
(7) Fieldwork & experiment
a. 2 speakers (48 and 59 years old)
b. /CuCu(C)/, /CəCu(C)/, /CəCəC/, /CuCəC/
c. Two frame sentences
d. Duration, F0, F1, F2, and intensity
e. Linear mixed-effects models

(8) F0



- F0 peaks over final syllable in words with penult schwa

(9) Duration results



(10) Three different schwas:
- Non-moraic schwa in [Cᵊ(Cúᵘᵘ)] & [Cᵊ(CúᵘᵘC)]
- Monomoraic schwa in [(Cúᵘ.CəᵘC)]
- Bimoraic schwa in [Cᵊ(Cə́ᵘᵘC)]

(11) Results accord with non-moraic schwa theory!
- Position of non-moraic schwas was predicted
- Full schwa in stressed syllable predicted
- Bimoraic schwas not predicted, but fits perfectly with the theory!

(12) Analysis (in brief)

/kəri/	FTBIN-μ	*μ/ə	HDσ
☞ a. kᵊ(rí:ᵘᵘ)			*
b. (kə́ᵘ.riᵘ)		*!	
c. (kᵊ.ríᵘ)	*!		

- *μ/ə "No moraic schwas"
- HDσ "Every σ must be headed by a μ."

(13) Stress avoids schwa because it is moraless
- Not because it has low sonority.

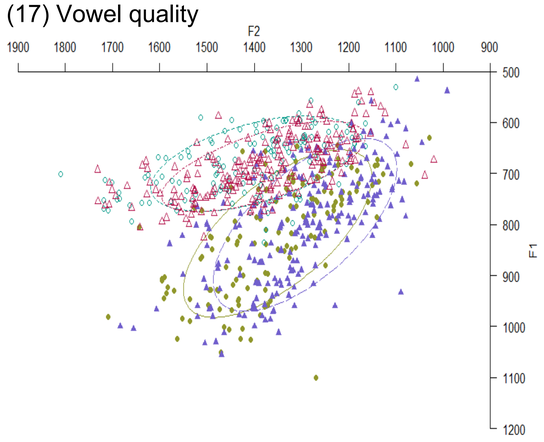
3. Stress is never sensitive to peripheral vowels

(14) What about languages where stress is sensitive to vowels that *aren't* schwa?

(15) Most documented case: Gujarati stress & [a]
[sáɖa] 'plus ½' cf. [ʃikár] 'a hunt'
(e.g. Cardona 1965, de Lacy 2002 and many others)

(16) Experiment
a. 5 speakers (19-24 years old)
b. /CaCa/, /CaCV/, /CVCa/, /CVCV/ {V=o,i,u}
c. Two frame sentences
d. Duration, F0, F1, F2, and intensity
e. Linear mixed-effects models

(17) Vowel quality



• [Cá̲Ca]; ▲ [Cá̲CV]; △ [CVCá̲]; ○ [CáCa̲]

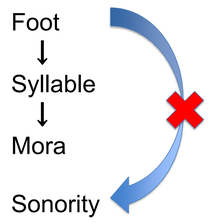
(18) - No difference between putative 'stressed [a]' and 'unstressed [a]'
- Consistent with claim that stress always falls on the penult
- Other acoustic properties do not support the claim that [a] attracts stress.

(19) *But aren't there lots of cases like Gujarati?*
- 14 other languages where stress is sensitive to peripheral vowels.
- ***None*** check out.
- Shih 2018 – *Phonology*
- Shih & de Lacy 2020 – *CatJL*
- Also Bowers 2019, Raisin 2017

4. Theoretical Implications

(20) Implication #1: Prosody is 'myopic'.

Hierarchical Locality (Itô & Mester 2003)
A condition operating at prosodic level C_i has access only to structural information at C_i and at the subjacent level C_{i-1}.



(21) Implication #2: **Vowel reduction** is *never* about reducing sonority
- Constraints that motivate sonority-driven stress necessarily cause vowel reduction (Crosswhite 1999, de Lacy 2006)
- If no constraint motivates sonority-driven stress, then vowel reduction cannot be motivated by the need to reduce sonority in unstressed positions

(22) So what is vowel reduction?
A) Elimination of moras in unstressed positions (also see Crosswhite 1999, 2000)
B) Neutralization of features in unstressed positions (Beckman 1998).

(23) Current research
- Examining the predictions for vowel reduction
- Stay tuned!

5. Selected References

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