Exceptions to left-dominance? A metrical analysis of light-initial tone sandhi in Suzhou

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I. The claims

1. 'Checked tones' as monomoraic syllables

- Traditionally transcribed as closed syllables with /ʔ/ codas (Qian 1992, Wang 2011)
- No phonetic study has confirmed the existence of coda glottal stops
- Based on my fieldwork acoustic data, they are **plain short vowels in monomoraic (open) syllables**
- First-time phonetic evidence of monomoraic syllables in Chinese languages

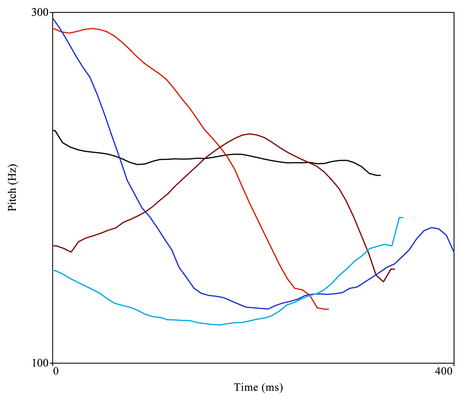
2. 'Exceptional' light-initial sandhi patterns

- The second syllable can influence tone sandhi **only** when the initial syllable is light ('checked') — I refer to this as 'light-initial sandhi'
- Counter to previous descriptions, where only the initial syllable determines the sandhi pitch pattern ('Left dominance') (Duanmu 1999, Shi & Jiang 2013)
- I propose a more refined foot-based analysis to this novel light-initial pattern

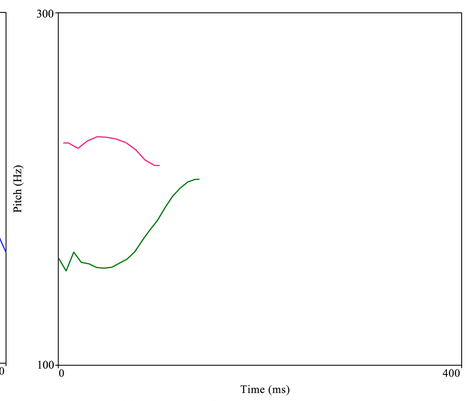
II. Background

1. Lexical tones in Suzhou

- A Northern Wu dialect with seven lexical tones



'Unchecked tones'. Bimoraic.

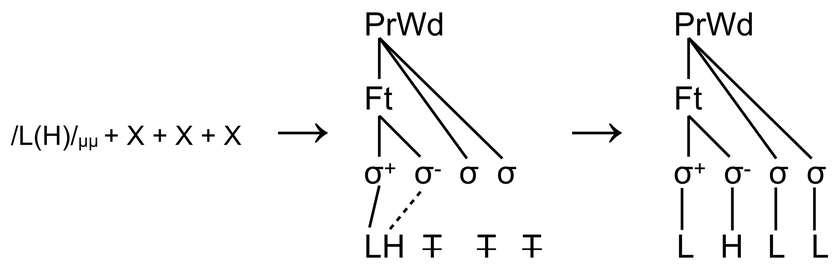


'Checked tones'. Monomoraic

Bimoraic, $T_{\mu\mu}$					Monomoraic, T_{μ}	
[H]	[LH]	[HL]	[HLH]	[LHL]	[H]	[LH]

2. Left dominance: the traditional tone-sandhi analysis

- Assumed for many Wu dialects (Chan & Ren 1989 for Wuxi, Duanmu 1999 for Shanghai, Chan 1995 for Danyang, Shi & Jiang 2013 for Suzhou)
- **Initial syllable determines the surface pitch**; everything else is irrelevant
- Captured by left-aligned, non-iterative syllabic trochees (Shi & Jiang 2013)
- A strong syllable (σ^+) retains its tonal material; a weak footed syllable (σ^-) can receive tone through re-association, but cannot retain its own tone; third & fourth syllables are unfooted and always surface with default L tones.



- **My fieldwork data shows 'exceptions' to this generalization**

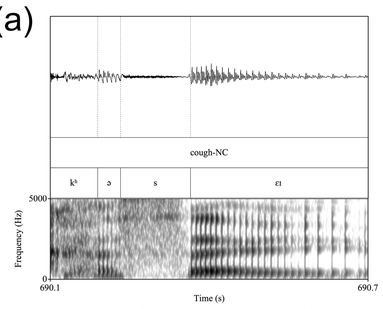
III. Findings of the current study

✦ All phonetic data comes from my fieldwork, mainly consisting of disyllabic nouns elicited in a carrier sentence

1. No phonetic evidence for /ʔ/

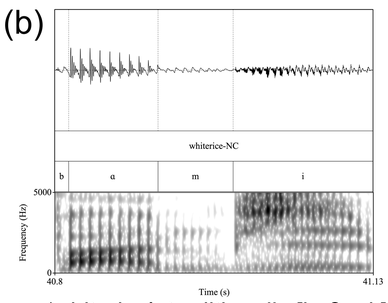
- No coda stop closure for the 'checked tones' (a and b)
- Intervocalic consonant durations are the same for 'checked' / 'unchecked' tones (a vs. c)
- 'Unchecked' vowels (≈250ms in running speech) are more than twice as long as 'checked' ones (≈100ms)

(a)



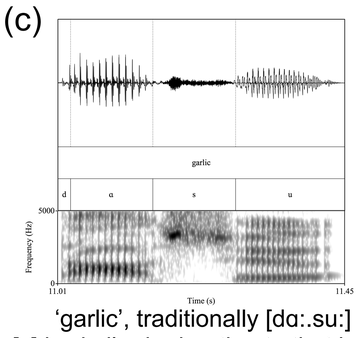
'cough', traditionally [kʰəʔ.sɛɪ]
No closure for 'coda' /ʔ/

(b)



'whiterice', traditionally [bɑʔ.mi:]
No closure for 'coda' /ʔ/

(c)



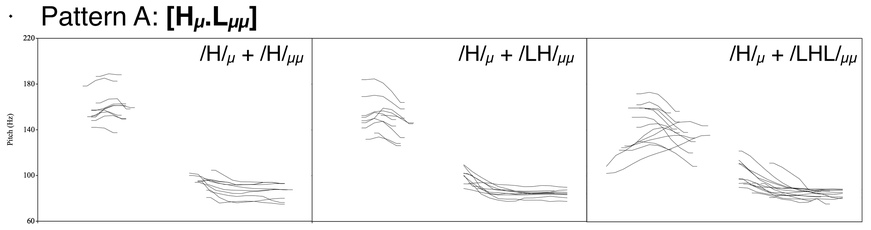
'garlic', traditionally [dɑ:.su:]
[s] is similar in duration to that in (a)

- **Conclusion: 'checked tones' are light monomoraic open syllables (e.g. [kʰə.sɛɪ])**

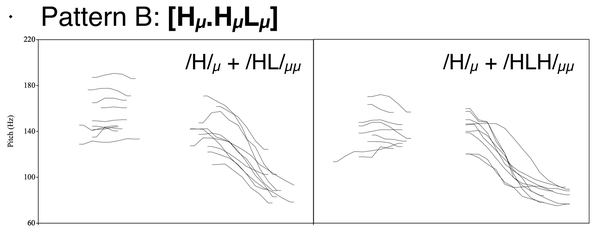
2. Second syllable plays a role in light-initial sandhi forms

✦ What we would expect if the traditional analysis were true: **/H/$_{\mu}$ + T = [H$_{\mu}$.L$_{\mu\mu}$]** and **/LH/$_{\mu}$ + T = [L$_{\mu}$.H$_{\mu}$L$_{\mu}$]**

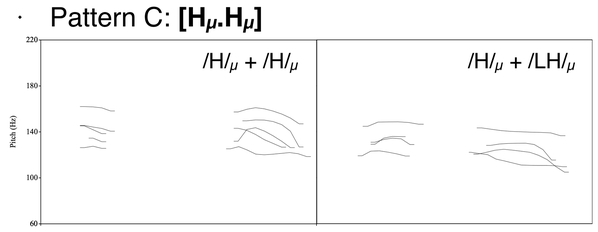
- Pattern A: **[H$_{\mu}$.L$_{\mu\mu}$]**



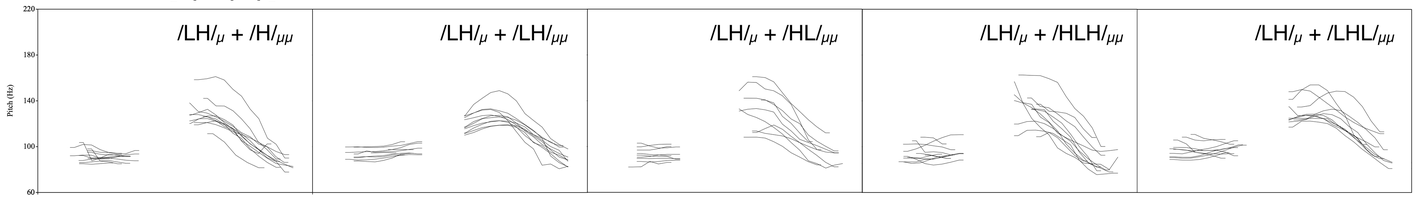
- Pattern B: **[H$_{\mu}$.H$_{\mu}$L$_{\mu}$]**



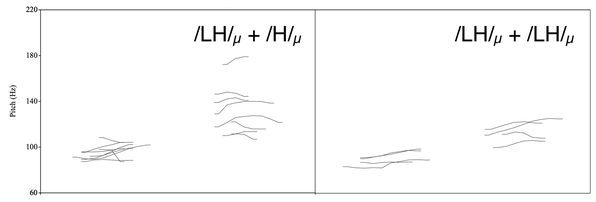
- Pattern C: **[H$_{\mu}$.H$_{\mu}$]**



- Pattern D: **[L$_{\mu}$.H$_{\mu}$L$_{\mu}$]**



- Pattern E: **[L$_{\mu}$.H$_{\mu}$]**



Rows: initial tone Columns: second tone	/T/$_{\mu}$ + /T/$_{\mu\mu}$					/T/$_{\mu}$ + /T/$_{\mu}$		Traditional Account
	/H/$_{\mu\mu}$	/LH/$_{\mu\mu}$	/HL/$_{\mu\mu}$	/HLH/$_{\mu\mu}$	/LHL/$_{\mu\mu}$	/H/$_{\mu}$	/LH/$_{\mu}$	
/H/$_{\mu}$	A	A	**B**	**B**	A	**C**	**C**	A
/LH/$_{\mu}$	D	D	D	D	D	**E**	**E**	D

A: [H$_{\mu}$.L$_{\mu\mu}$]
B: [H$_{\mu}$.H$_{\mu}$L$_{\mu}$]
C: [H$_{\mu}$.H$_{\mu}$]
D: [L$_{\mu}$.H$_{\mu}$L$_{\mu}$]
E: [L$_{\mu}$.H$_{\mu}$]

- **Conclusion: When the initial syllable is light in a disyllabic word, the second syllable influences the sandhi form**

IV. Analysis for the light-initial sandhi

1. Tones

- Underlying tones with brackets (T) are floating
- Surface tones with underlining [T] are short (monomoraic) in duration

Bimoraic, $T_{\mu\mu}$					Monomoraic, T_{μ}	
/(H)/$_{\mu\mu}$	/L(H)/$_{\mu\mu}$	/HL/$_{\mu\mu}$	/H(LH)/$_{\mu\mu}$	/L(HL)/$_{\mu\mu}$	/H/$_{\mu}$	/(L)H/$_{\mu}$
[H]	[LH]	[HL]	[HLH]	[LHL]	[H]	[LH]
μ μ H	μ μ L H	μ μ H L	μ μ H L H	μ μ L H L	μ H	μ L H

2. Relevant metrical structure

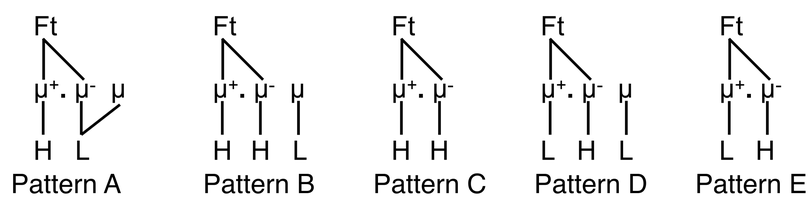
- In light-initial sandhi, the relevant metrical structure is a **left-aligned bimoraic trochee** (see above)
- Violates syllable integrity, but ensures that the head (monomoraic) is *not lighter in quantity* than the dependent (Head-Dependent Asymmetries)

(Kager 1993, Kager & Martínez-Paricio 2018, Dresher & van der Hulst 1998)

(μ$^+$.μ$^-$)μ	(μ$^+$.μ$^-$)
PrWd Ft μ$^+$. μ$^-$ μ σ σ	PrWd Ft μ$^+$. μ$^-$ σ σ

3. Basics of the OT analysis

- TBU = μ; Tones surface with full contours in isolation — T→μ, μ→T, ALIGN-R-CONTOUR
- Tone sandhi: association is one-to-one, left-to-right — ALIGN-L-TONE
- Every mora has to have a tone; toneless moras receive a default L — SPECIFY >> DEP-T (Anttila & Bodomo 2000, Yip 2002, Zhang 2002b, Gussenhoven 2004)
- All tonal material from the initial morpheme must be preserved — MAX-T-INITIAL (Shi & Jiang 2013)
- Unfooted (third) moras never carry H tones on the surface — *NON-FT/H (Breteler 2017)
- Pre-associated tones are preserved; floating ones can be deleted — MAX-LINK >> MAX-T (Morén 2001)
- Tones cannot spread across syllables — NOSPREAD-σ (Köhnlein 2011)



(See handout for a detailed OT analysis)