Lexical and prosodic conditioning of consonant lenition in Loma

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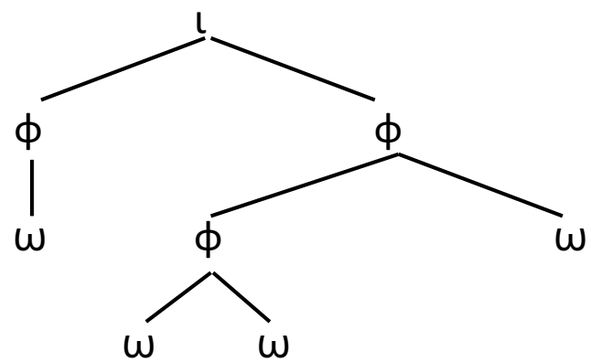
Prosodic phonology

- Utterances can be analyzed into an ordered set of prosodic constituents that define the domains for phonological processes.

ι = Intonational Phrase

ϕ = Phonological Phrase

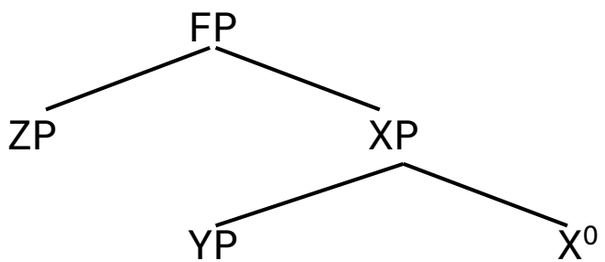
ω = Prosodic Word



(e.g., Hayes 1989; Itô and Mester 2012; Kiparsky 1982; Nespor & Vogel 2007; Pierrehumbert & Beckman 1988; Selkirk 1984, 1986, 2011; also Downing 1999 and Inkelas 1990 on Pstem, and Vogel 2008 on CG)

Mismatches from syntactic structure

- "Interface" categories: derive from, but are not isomorphic to, syntax.



→ [[…]$_{ZP}$ [[…]$_{YP}$ X^0]$_{XP}$]$_{FP}$

(…)$_{ZP}$ ([…]$_{YP}$ (X^0)$_{\phi}$)$_{\phi}$

- Two causes of mismatch
  - phonological constraints (e.g., binarity, weight/size, etc.)
  - non-phonological constraints (e.g., semantic, syntactic, and lexical features)
- Question: which non-phonological constraints are visible to phonology?

Overview

- Consonant lenition in Gizima Loma (Southwestern Mande).
- Previous research shows that lenition occurs after certain lexical items and in certain morpho syntactic contexts (Dwyer 1981; Rude 1983; Sadler 1949/2006)
- **This talk:** I argue the environments for lenition can be unified and constrained via prosodic phonology.
  - The maximal (lexical) *n*P and *v*P forms a ϕ with no internal structure.
  - One inflectional class of lexical stems may alter the default structure.
  - Thus, non-phonological inflectional classes can affect prosodic structure.

Loma language

- Southwestern Mande language (closely related to Mende, Loko, Kpelle, Zialo, Gbandi) spoken in Liberia and Guinea.

- Data comes from a 2023 Field Methods class at Yale University
  - Consultants: Balla Koevogui (BK) and John Dopavogui (JD).
  - Both consultants speak Gizima, a Southern Guinean dialect (glot: sout3340).

Roadmap

1. Intervocalic lenition
2. Lexical conditioning
3. Prosodic conditioning
4. Analysis
5. Discussion

Intervocalic lenition

Intervocalic lenition

- Target: consonants at the left edge of a morpheme
- Context: left edge vs. after a vowel

a. **kʷ**ɔ̀zàgɛ̀
◌̀–**k**ɔ́zà–gɛ̀
1s–tall–PRED
‘I am tall.’ (BK; 2023-02-09)

b. ɔ́ **w**ɔ̀zàgɛ̀
ɔ́ **k**ɔ́zà–gɛ̀
2s tall–PRED
‘You are tall.’ (BK; 2023-02-09)

/k/ → [w]

(Also for noun stems after a possessor prefix – see Jem’s talk next!)

“Strong” vs. “weak” consonants

Strong

Weak

Weak

Inert

Left edge	Lenited (before unround)	Lenited (before round)
p, (g)b	v ~ ʋ̞ ~ ʊ	w
k, g	ɣ ~ ɯ̟	w
t, d	l	ɭ
kp	ɓ	ɓ
f	v	v
s	z	z
z	j	j
v, ɣ, w, l, …	v, ɣ, w, l, …	v, ɣ, w, ɭ, …
m, n, ŋ	m, n, ŋ	m, n, ŋ

Lexical conditioning

Lexical conditioning

- Lexical items (V, N, A) divided into “strong” and “weak” classes.
- Classes determine suppletive allomorphy of some inflectional suffixes.

	Weak	**Strong**		
a.	-ʊɛ̀	-gɛ̀	stative	(state)
b.	-í	-gì	determiner	(noun)
c.	-à	-gà	perfect	(verb)

State class controls allomorphy

a. **Weak state**

gbɔ́lɔ́**ʊɛ̀**

◌́–gbɔ̀lɔ̀–**ʊɛ̀**

3s–big–PRED

‘It/he is big.’ (BK; 2023-02-09)

b. **Strong state**

kʷɔ́zá**gɛ̀**

◌̀–kɔ̀zá–**gɛ̀**

3s–tall–PRED

‘It/he is tall.’ (BK; 2023-02-09)

Noun class controls allomorphy…

a. **Weak noun**

pɛ́lɛ́**j**
[pɛ́lɛ́]=**í**
house=**DET**
‘house’ (JD; 2023-02-02)

b. **Strong noun**

gízí**gì**
[gízí]=**gì**
hill=**DET**
‘hill’ (JD; 2023-04-13)

Noun class controls allomorphy and lenition

a. **Weak noun** → **Lenition**

pɛ́lɛ́j
[pɛ́lɛ́]=**í**
house=**DET**
‘house’ (JD; 2023-02-02)

pɛ́lɛ́ **w**ɔ̀lɛ̀:
[pɛ́lɛ́ **k**ɔ̀lɔ̀]=í
house small=DET
‘small house’ (JD; 2023-02-02)

b. **Strong noun** → **No lenition**

gízígì
[gízí]=**gì**
hill=**DET**
‘hill’ (JD; 2023-04-13)

gízí **k**ɔ̀lɛ̀:
[gízí **k**ɔ̀lɔ̀]=í
hill small–DET
‘small hill’ (JD; 2023-04-13)

Verb class controls allomorphy…

a. **Weak event**

lìː**á**

lìː=**á**

go=**PRF**

‘has gone’ (Dwyer 1981: 70)

b. **Strong verb**

pɛ́tɛ̀**gà**

pɛ́tɛ̀=**gì**

see=**PRF**

‘has seen’ (Dwyer 1981: 70)

(“past participle” in Dwyer 1981: 70; “recent past” in Sadler 1949/2006: 62)

Verb class controls allomorphy and lenition

a. **Weak event** → **Lenition**

lì꞉**á**	gà꞉ lì꞉**zí**
lì꞉=**á**	gà꞉ lì꞉–**zí**
go=**PRF**	1s go–**PROG**
‘has gone’ (Dwyer 1981: 70)	‘I am going’ (BK; 2023-01-26)

b. **Strong event** → **No lenition**

pɛ́tɛ̀**gà**	gà꞉ pɛ́tɛ́**sè**
pɛ́tɛ̀=**gì**	gà꞉ pɛ́tɛ́–**sè**
see=**PRF**	hill small–**PROG**
‘has seen’ (Dwyer 1981: 70)	‘I see him’ (JD; 2023-04-27)

Interim summary

- Inflectional classes due to *lexical* features (not phonological)
  - e.g. both determiners occur after the same vowels, tones, etc.

- Assume: allomorphy determined by pre-phonological spellout rules
  - Such as Vocabulary Insertion in Distributed Morphology (e.g., Halle 1997)

    D ⇔ -gè / [+strong] __

    D ⇔ -í

Prosodic conditioning

Lenition is blocked: To the right of the determiner

To the right of the subject

…but not between the Object and Verb

No lenition to right of determiner

	N =D	PL	
a.	pɛ́lɛ́j	**t**ìà / ***l**ìà	**Weak noun**
	[pɛ́lɛ́]=í	**t**ìà	
	house=DET	**PL**	
	‘houses’ (JD; 2023-02-02)		

	N =D	PL	
b.	gízígì	**t**ìà/ ***l**ìà	**Strong noun**
	[gízí]=gì	**t**ìà	
	hill=DET	**PL**	
	‘small hill’ (JD; 2023-04-13)		

No lenition to the right of the subject

- No lenition between a subject and a following verb

	S	V
a.	gà:	**p**ɛ́tɛ́sè / ***v**ɛ́tɛ́sè
	gà:	◌́–**p**ɛ́tɛ́–sè
	1s.nPST	3s–see–IPFV
	‘I see him’ (JD; 2023-04-27)	

- No lenition between a subject and a following object

	S	O	V
b.	gà:	**g**ízí=gì / ***ɣ**ɨ̀zɨ́=gì	vɛ̀tɛ̀–sè
	gà:	**g**ízí=gì	pɛ́tɛ̀–sè
	1s .nPST	hill=DET	see–IPFV
	‘I see a mountain.’ (JD; 2023-04-13)		

Lenition is allowed between object and verb

- Objects typically cause the verb to lenite

	S	O	V
a.	gè	é	**v**ɛ̀tɛ̀nè
	gè	é	**p**ɛ́tɛ̀–nè
	1s	2s	see–PFV
	‘I see you’		(JD; 2023-04-13)

- But a strong class object blocks lenition

	S	Neg	O	V
b.	gè	lɛ̀	gízí	**p**ɛ̀tɛ̀sè
	gè	lɛ̀	gízí	**p**ɛ̀tɛ̀–sè
	1s	NEG	hill	see–IPFV
	‘I don’t see a mountain’			(JD; 2023-04-13)

Interim summary

Lenition triggered by phonological and lexical criteria

Lenition does not occur:

- At the left edge of utterance
- After a “strong” class morpheme
- After a determiner with the DP
- After a subject

Lenition occurs:

- After pronouns (intervocalic context)
- After a “weak” class morpheme
- Between nouns and adjectives
- Between objects and verbs (and aspects)

Analysis

Basic idea

- These environments are united under a Prosodic Phonology analysis:
  - consonants lenite within a phonological phrase (but not at the left edge).
  - strong lexical words must be final in their phonological phrase.
  - this causes mismatches from the default prosodic structure.

*(Strong Weak)$_{\phi}$ ← strong not right in the phrase ☹

*((Strong)$_{\phi}$ Weak)$_{\phi}$ ← strong is right ☺ but recursion ☹

((Strong)$_{\phi}$ (Weak)$_{\phi}$)$_{\phi}$ ← result: extra structure

Which XP is parsed into a ϕ?

- Nouns: [N A n^0]$_{nP}$ PL …]$_{DP}$
- Maximal "lexical" XP
- Excludes higher heads in DP
- Assume n^0 = determiner
  - Weird? Maybe.
  - See Suchman (yesterday) for args that D encodes belief of existence

- Verbs: Mod … [O V-Asp]$_{vP}$ … PP
- Maximal "lexical" XP
- Excludes higher modifiers, adjuncts, etc. within the CP
- Includes object

Noun Phrase (NP): maximal NP parsed to ϕP

a. (pɛ́lɛ́j)$_{\phi P}$ **(t**ìà)$_{\phi P}$
[pɛ́lɛ́]$_{nP}$=**í** **t**ìà
house=**DET** **PL**
'houses' (JD; 2023-02-02)

b. (pɛ́lɛ́ **w**òlè:)$_{\phi P}$
[pɛ́lɛ́ **k**òlò=í]$_{nP}$
house small=DET
'small house' (JD; 2023-02-02)

Noun Phrase (NP): strong class stands right

a. **((**gɬźɬ **)$_{\phi P}$ (k**ɔ̀lɛ̀ː **)$_{\phi P}$)$_{\phi P}$**

[gɬźɬ **k**ɔ̀lɔ̀=í]$_{nP}$

hill small=DET

'small hill' (JD; 2023-04-13)

Verb Phrase (VP): maximal VP parsed to ϕP

- Subject not parsed into the ϕP – cannot condition lenition

a. **(**gà꞉**)**$_{\phi P}$ **(p**ɛ́tɛ́sè **)**$_{\phi P}$
gà꞉ [ó̩–**p**ɛ́tɛ́–sè]$_{vP}$
1s.nPST 3s–see–IPFV
‘I see him’ (JD; 2023-04-27)

b. **(**gè**)**$_{\phi P}$ **(**é **v**ɛ̀tɛ̀nè **)**$_{\phi P}$
gè [é **p**ɛ́tɛ̀–nè]$_{vP}$
1s 2s see–PFV
‘I see you’ (JD; 2023-04-13)

Prediction #1

- Expect a strong noun to blocks lenition within the VP.
- And it does!

			O	V
c.	**(**gè	lɛ̀**)**	**((**gízí **)**$_{\phi P}$	**(p**ɛ̀tɛ̀sè**)**$_{\phi P}$ **)**$_{\phi P}$
	gè	lɛ̀	[gízí	**p**ɛ̀tɛ̀–sè]$_{vP}$
	1s	NEG	hill	see–IPFV
	‘I don’t see a mountain’			(JD; 2023-04-13)

Prediction #2

- An XP with more than two words should be parsed as a single)ϕP.
- True in NPs with with two adjectives. (Unknown for VPs.)

	N	A	A			
gà:	**((**pɛ́lɛ́	zàɣà	**w**ólé:	**)**$_{\phi P}$	**(**tà:	vɛ̀tɛ̀sè **)** **)**$_{\phi P}$
gà:	[[pɛ́lɛ́	zàɣà	**k**óló]$_{nP}$=í		tà:	vɛ̀tɛ̀–sè]$_{vP}$
1s.nPST	house	dirty	small=DET		DEM?	see–IPFV

‘I see a small dirty house’ (JD; 2023-04-27)

Summary

- Consonant lenition in Loma controlled by
  - prosodic structure ← this talk
    - Maximal XPs are parsed to a phonological phrase
    - Explains phonological conditioning
    - Strong consonants occur at the left edge, but otherwise lenite
  - lexical class ← previous research
    - Strong lexical class cannot be phrased with a following word
    - Grammar causes the next item to be parsed to the left edge of a phonological phrase
    - Therefore: lenition won't occur

Discussion

Typology of non-phonological features

Question: which non-phonological constraints are visible to phonology?

- information structure
  (e.g., Kratzer & Selkirk 2020 on English; Yip 2023 on Cantonese/Mandarin)
- lexical accent (presence/absence)
  (e.g., Hualde et al. 1994; Elordieta & Selkirk 2018 on Lekeitio Basque)
- category (lexical/functional)
  (e.g., Lee & Selkirk 2022 on Xitsonga; Elfner 2015 on Conamara Irish)

Expected under models that translate syntactic structure into prosodic structure
(e.g., MSO-PI-PO model in Lee & Selkirk 2023; prosodic Dep/Max model in Itô & Mester 2019)

Loma's place in the typology

- information structure
  (e.g., Kratzer & Selkirk 2020 on English; Yip 2023 on Cantonese/Mandarin)
- lexical accent (presence/absence)
  (e.g., Hualde et al. 1994; Elordieta & Selkirk 2018 on Lekeitio Basque)
- category (lexical/functional)
  (e.g., Lee & Selkirk 2022 on Xitsonga; Elfner 2015 on Conamara Irish)

- **abstract inflectional class (Loma; this talk)**
  - "strong" class required to fall at the left edge of a ϕP
  - forces the following morpheme into a separate ϕP, causing mismatches

Questions for the future…

- What's in a label?
  - "Strong" lexical items = ϕ, CG, ω?
  - How would we know? (possibly ω based on vowel harmony?)

- Are there mismatches due to phonology? (some, maybe?)

- Is this mapping algorithm from maximal NP/VP → ϕ ad hoc?
  - Similar to MatchPhrase, under many definitions (Selkirk 2011, Elfner 2015…)
  - Is the internal structure of the NP and VP similar across these langs?
  - (In particular the high-merged # and PL in the DP.)

Ámàmà! Thank you all!

- Isaiah Suchman, Jem Burch, Edwin Ko, Yale Field Methods 2023/2024

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