

Maximal Prominence in Positional Licensing*

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1 Introduction

- Languages often restrict some element to a prominent position.
- 2 kinds of processes:
 1. Preservation: a contrast is maintained in a prominent position but neutralized elsewhere.
 - E.g. vowel reduction
 2. Overwrite: features that originate in outside a prominent position move/spread to that position.
 - E.g. metaphony
- Barnes (2006), Walker (2011): the positions that behave as prominent in overwrite are a subset of those that behave as prominent in preservation.
- My argument: This asymmetry comes from a difference between constraint families that account for prominence-based patterns, Positional Faithfulness (PF) and Positional Markedness (PM).
- PF (for preservation) can target any prominent position.
- PM (for preservation or overwrite) can target only the most prominent positions.

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2 Preservation

2.1 Primary Stress

- English: stressed syllables resist vowel reduction.

2.2 Initial Syllables

- Tamil: short *e*, *o* appear only in initial syllables (Beckman 1999, Christdas 1988):

(1)	teru	‘street’
	*ture	
	perɜ	‘room’
	*pare	
	kosu	‘mosquito’
	*kuso	
	pori	‘fry’
	*piro	

- Classical Mongolian (Walker 2001), roundness is permitted on non-initial non-high vowels just when all preceding vowels are also round (**CaCo*, **CeCo*):

(2)	nøkør	‘friend’
	ølø	‘gray’
	moŋyol	‘Mongol’
	qomoyol	‘horse dung’
	møren	‘river’
	kømøske	‘eyebrow(s)’
	bøgere	‘kidney’
	qola	‘far, distant’
	olan	‘many’
	nomoyodqa	‘to tame’

- The rounding contrast is preserved in initial syllables and permitted elsewhere only via harmony with the initial syllable.
- Becker et al. (2011, 2012) provide experimental evidence for initial-syllable privilege.

2.3 Root/Stem

- Xhosa: clicks appear only in roots: *úku-^hóla* ‘to pick up’; **ú|u-^hóla* (Beckman 1999)
- Cuzco Quechua: glottalization and aspiration appear only in roots (Parker & Weber 1996).
- Arabic: pharyngeals are restricted to roots (McCarthy & Prince 1995).
- German: only *s*, *t*, *n*, *r*, *ə* in suffixes (Bach 1968).

2.4 Final Syllables

- Evidence for prominence (Barnes 2006, Walker 2011): final syllables are lengthened, preserved in children’s truncations, and recalled more often in tip-of-the-tongue states than medial material.
- English: final unstressed syllables don’t reduce the same extent that medial syllables do (Chomsky & Halle 1968, Hammond 1997).
- Hausa: the full range short vowels appears only in final syllables (Schuh & Yalwa 1999).

- (3) a. *Short medial /e, o/ are neutralized*
zɔ̀:bè: ‘ring’ zɔ̀bba: ‘rings’
rɛ̀:fè: ‘branch’ rɛ̀ssa: ‘branches’
- b. *Short final /e, o/ are not neutralized*
tà:rɛ ‘together’
g^wo:rò ‘kola nut’

2.5 Secondary Stress

- English again: secondary stress resists vowel reduction.
- Guaraní: nasal harmony domains are delimited by primary and secondary stress (Beckman 1999, Gregores & Suárez 1967, Rivas 1975):

- (4) a. *Regressive harmony is blocked by a stressed oral V:*
/re+xó+ta+ramò/ → rexó^ˈtãrãmò^ˈ ‘if you go’
- b. *Prenasalized stops initiate harmony:*
/a+ÿe+reⁿdú/ → ãñẽrẽⁿdú ‘I hear myself’
- c. *Harmony blocked by secondary stress:*
^mbaʔè^mbiasí ‘sadness’

2.6 Unstressed Syllables in Certain Positions

- Sometimes certain unstressed syllables undergo greater reduction than others (Crosswhite 2001).
 - Italian dialects: all post-tonic vowels reduce to ə; pretonically, a does not reduce.
 - Contemporary Standard Russian: /o/ reduces to a immediately preceding stress; elsewhere, both /o/ and /a/ reduce to ə.

2.7 Summary

- Six positions participate in preservation: primary stress, initial syllables, roots/stems, final syllables, secondary stress, certain unstressed syllables.

3 Overwrite

3.1 Primary Stress

- Central Veneto metaphony: post-tonic [+high] spreads to stressed syllable (e.g. Walker 2011):

(5)	kal-sé-to	‘sock (MASC. SG.)’	kal-sí-ti	‘sock (MASC. PL.)’
	kant-é-se	‘sing (1PL.)’	kant-í-si-mo	‘sing (1PL. IMPF. SUBJ.)’
	móv-o	‘move (1SG.)’	múv-i	‘move (2 SG.)’
	kantór	‘choir singer (MASC. SG.)’	kantúr-i	‘choir singer (MASC. PL.)’

3.2 Initial Syllables

- Esimbi: non-high height features migrate to the initial syllable (e.g. Hyman 1988):

(6)	<i>Infinitive</i>		<i>Sg. class 9</i>	
	u-ri	‘eat’	ì-bì	‘goat’
	u-bini	‘dance’	ì-dzìmi	‘back’
	u-suhuru	‘crouch’	ì-sù	‘fish’
	u-mu	‘drink’	ì-sùmu	‘thorn’
	o-si	‘laugh’	è-gbì	‘bushfowl’
	o-kibi	‘pour’	è-kìbì	‘antelope’
	o-tu	‘insult’	è-sù	‘hoe’
	o-zumu	‘dry up’	è-nùnù	‘bird’
	o-mu	‘go up’	è-bì	‘canerat’
	o-dzi	‘steal’	è-kpìsì	‘rock’
	o-tini	‘refuse’	è-nyìmi	‘animal’
	o-nimìni	‘think’	è-yìsì	‘hole’
	ɔ-rini	‘be poor’	è-zù	‘snake’
	ɔ-njihiri	‘chew’	è-fumù	‘hippo’
	ó-mu	‘sit’	è-tlì	‘place’
	ɔ-zumulu	‘wither’	è-kìrì	‘headpad’
	ɔ-bì	‘come’		
	ɔ-simbiri	‘scatter’		

3.3 Root/Stem

- Lango: [+ATR] spreads from suffixes to roots (Kaplan 2008, Noonan 1992, Woock & Noonan 1979):

(7)	bòŋɔ́	‘dress’	bòŋɔ́-ní	‘your (sg) dress’
	còŋɔ́	‘beer’	còŋɔ́-ní	‘your (sg) beer’
	àmúk	‘shoe’	àmúk-kí	‘your (sg) shoe’
	àtɪ̃n	‘child’	àtɪ̃n-nî	‘your (sg) child’

3.4 Other Prominent Positions only do Preservation

- No systems where an element moves/spreads to the final syllable, secondary stress, or (prominent kinds of) unstressed syllables specifically.

3.5 Summary

- A variety of positions shows evidence of prominence and participates in preservation systems.
- Only a subset of these participate in overwrite:

(8)

	Preservation	Overwrite
Primary stress	✓	✓
Initial syllable	✓	✓
Root/Stem	✓	✓
Final syllable	✓	
Secondary stress	✓	
Certain unstressed syllables	✓	

4 Prominence Hierarchies

- Why do we find this distribution?
- Each of these preservation-only positions is less prominent than some other relevant position.
 - Final syllables < initial syllables: prominence in final syllables is offset by weakness (decreased amplitude, devoicing, glottalization; Barnes 2006).
 - Secondary stress < primary stress (by definition?)
 - Unstressed syllables < (primary) stress
- We can encode these relationships in prominence hierarchies (Prince & Smolensky 1993/2004):
 - (9)
 - a. **Metrical Prominence:** Primary Stress > Secondary Stress > Unstressed Syllables
 - b. **Sequential Prominence:** Initial Syllable > Final Syllable > Medial Syllable
 - c. **Morphological Prominence:** Root/Stem > Affixes
 - (10) Generalization: The positions that participate in overwrite are highest in the prominence scales.
- Language-particular modifications might be necessary. E.g. different languages exhibit different relationships among unstressed syllables.
 - This is unlikely to affect the generalization in (10).

5 Positional Markedness vs. Positional Faithfulness

- PM and PF account for prominence-based phenomena.
 - PM bans features from non-prominent positions.
 - PF preserves features in prominent positions.
- Both PM and PF appear to be necessary.
 - Only PM can produce overwrite (Zoll 1998).
 - While PM motivates feature-sharing between prominent and non-prominent positions, it often falls to PF to determine which position assimilates to the other (Walker 2011).
- Since only PM produces overwrite, the asymmetry is explained if PM may target only the maximally prominent positions in (9).

5.1 Maximal Prominence in Positional Markedness

- Walker’s (2011) Generalized Licensing:

(11) *Generalized Prominence-based Licensing constraint schema:*

LICENSE(λ, π)

$\lambda / \neg \text{LICENSE}(\lambda, \pi) \equiv_{def}$

Let any occurrence of λ , a given type of constituent, in a chain $C_j(\lambda)$ be λ_j and p be an occurrence of π , a given type of prominent position.

Then assign a violation to each λ_j if the following holds

$\exists \lambda_j [P(\lambda_j)] \wedge \forall \lambda_j [\neg \text{Coincide}(\lambda_j, p)]$

- Boxed text: what does it mean to be prominent?
- Certain things contribute to prominence: duration, amplitude, psycholinguistic importance
- Positions possess these to varying degrees—what counts as sufficiently prominent?
- For PM, an adequate licenser is maximal on some prominence hierarchy.

(12) *Formalization of maximal:*

- a. Let H be a prominence hierarchy with the members $p_1, p_2 \dots p_n$. Then $\text{Max}(H) = p_i$ such that $\neg \exists p_j (p_j > p_i)$.
- b. Let $\Pi = \{p : \exists H [\text{Max}(H) = p]\}$
- c. Let π be a variable over elements of Π .

- Revision to (11): π is defined as maximally prominent by (12), so we remove the boxed text:

(13) *Generalized Prominence-based Licensing constraint schema* (revised):

LICENSE(λ, π)

$\lambda / \neg \text{LICENSE}(\lambda, \pi) \equiv_{def}$

Let any occurrence of λ , a given type of constituent, in a chain $C_j(\lambda)$ be λ_j and p be an occurrence of π .

Then assign a violation to each λ_j if the following holds

$\exists \lambda_j [P(\lambda_j)] \wedge \forall \lambda_j [\neg \text{Coincide}(\lambda_j, p)]$

- We can construct licensing constraints only for primary stress, initial syllables, and roots/stems.
- Since PM is the source of overwrite, overwrite systems on non-maximally prominent positions are impossible.

5.2 Prominence Hierarchies in Positional Faithfulness

- What about the preservation systems involving non-maximally prominent positions?
- Can't come from PM, so they must be PF—how far down in a hierarchy can PF reach?
 - Obviously not to the bottom: PF constraints for the least prominent positions would undermine the goals of PF (Beckman 1999; see also Gouskova (2003)).
 - Beyond this it's not clear. Maybe all but the least prominent positions?
- Formalism for PF IDENT from Beckman (1999):

(14) IDENT $Position(F)$

Let β be an output segment in a privileged position P and α the input correspondent of β . If β is $[\gamma F]$, then α must be $[\gamma F]$.

- The revision:

(15) *Non-Minimally Prominent Positions:*

a. Let H be a prominence hierarchy with the members $p_1, p_2 \dots p_n$, and Ω be the set of non-minimally prominent positions. Then $p_i \in \Omega$ iff $\exists H$ such that $\exists p_j (p_i > p_j)$.

b. Let ω be a variable over elements of Ω .

(16) IDENT $Position(F)$

Let β be an output segment in ω and α the input correspondent of β . If β is $[\gamma F]$, then α must be $[\gamma F]$.

5.3 Summary

- Only maximally prominent positions participate in overwrite. This is explained by PM’s inability to designate anything else a licenser.
- PF can access all non-minimally prominent positions. This is why those positions are licensers in preservation systems.

6 Potential Counterexample: Tone

- Contour tones are often restricted to final syllables; often this involves creation of new contours in that position—i.e. overwrite (Clark 1983, Zhang 2001).
- If PM can’t target final syllables, how do we explain this?
- Clark (1983), Hock (1999), Zhang (2001): contour tones need long hosts, and final syllables are long. Final syllables are actually poor hosts from the point of view of prominence, and tones are attracted to their greater duration despite this.
- Whatever motivates attraction of contours to final syllables is something other than prominence-based PM.
- Further evidence: the range of phenomena contours tones participate in smaller than the range displayed by vowel features. E.g., no languages where:
 - a contour on a non-final syllable triggers the appearance of one on the final syllable (cf. Central Veneto)
 - a contour on the final syllable licenses contours in other positions (cf. Classical Mongolian)

7 Conclusion

- Overwrite targets a subset of the prominent positions that participate in preservation.
- This results from an asymmetry in the formalizations of PM and PF: only the latter may target non-maximally prominent positions.
- This proposal has several desirable consequences:
 - It explains the preservation/overwrite asymmetry.
 - It helps distinguish PF and PM, whose effects overlap: overwrite must be PM; preservation in non-maximally prominent positions must be PF; only preservation in maximally prominent positions remains ambiguous.
 - It answers “what’s sufficiently prominent?” for PF and PM.

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