

Prominence Conflicts in Bolognese

Aaron Kaplan

University of Utah
a.kaplan@utah.edu

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*'Metaphony': Theoretical, Descriptive and Typological Issues
Phonetics and Phonology in Europe*

Prominence in Phonology

- Many phonological phenomena revolve around prominence:
 - Positional Licensing (Ito 1988, Lombardi 1994, Walker 2005, 2011, Zoll 1998): weak elements must appear in prominent positions.
 - Positional Augmentation (Smith 2005): weak elements are excluded from prominent positions.
 - Positional Faithfulness (Beckman 1999): material in prominent positions resist neutralization.
- Sometimes these are in conflict with each other.
- Metaphony in Bolognese exhibits interactions among all three of these phenomena, and that interaction reveals properties of each of them.

Prominence in Phonology

- Positional Augmentation, but not Positional Faithfulness, must distinguish long and short vowels.
- A positive version of Positional Licensing more transparently reflects restrictions on Bolognese's metaphony and permits a simpler analysis.

This work stems from collaboration with Edward Rubin. All data comes from his fieldwork, Canepari & Vitali (1995), and Saunders (1984).

Vowel inventory

Short vowels

- Underlyingly eight short vowels: /i, e, æ, a, ʌ, ɔ, o, u/
- The three-way contrast in low vowels may be historical; for modern speakers, they probably all merge to something like [a], though [æ] survives before [ŋ].
- But the distinction is retained in metaphony (when stressed) and when reduced (when unstressed):

(1)

Singular	Plural	Gloss	Unstressed	Gloss
/pad ¹ raŋ/	pad ¹ roŋ	‘boss(es)’	padru ¹ naθ	‘bad boss’
/dæŋt/	dɛŋt	‘tooth’/‘teeth’	diŋ ¹ ten	‘little tooth’
/lu ¹ kat/	lu ¹ ket	‘lock(s)’	luk ⁰ ten	‘little lock’

- Here, transcriptions distinguish low vowels that are front under metaphony [æ] from those that are back under metaphony [a], following Saunders (1984).

Vowel inventory

Short vowels

- Mid lax vowels:
 - [æ] may be closer to [ɛ]; I retain [æ] for consistency with Saunders (1984).
 - Canepari & Vitali (1995): [ɔ] emerged in the 1800s and appears only word-finally. No examples from nouns are provided.
- Therefore, no evidence for [ɔ] in metaphony. [æ]/[ɛ] affects the starting point for metaphony, but doesn't change the major generalizations.

Vowel inventory

Long vowels & Diphthongs

- Seven long vowels: /i:, e:, ε:, a:, ɔ:, o:, u:/
- Two diphthongs (which behave like long vowels): /æj, aw/
- Length is contrastive:

(2)	Long	Gloss	Short	Gloss
	me:l	'honey'	mel	'thousand'
	sɑ:k	'bag'	sak	'dry.MS'
	so:	'his/her/their'	so	'up, above'

Vowel inventory

A positional restriction

- Bolognese generally prohibits short high stressed vowels (Canepari & Vitali 1995).
- Such vowels appear only in Italian borrowings and as the output of a process that shortens word-final long vowels.
- This is a “Worst of the Worst” effect (Padgett 2002, Smolensky 2006) and Positional Augmentation.

Vowel inventory

A positional restriction

- (3) * $[\text{PEAK}/\text{HIGH}\check{V}]/\acute{\sigma}$: assign one violation mark for each short high vowel in a stressed syllable.
- Cf. Smith's (2005) * $[\text{PEAK}/\text{HIGHV}]/\acute{\sigma}$, which penalizes all high stressed vowels.

Vowel inventory

A positional restriction

(4) a.

/ ¹ num/	*[PEAK/HIGH ^ˇ]/ ^ó	FAITH
a. ¹ num	*!	
☞ b. ¹ nom		*

b.

/ ¹ lu:g/	*[PEAK/HIGH ^ˇ]/ ^ó	FAITH
☞ a. ¹ lu:g		
b. ¹ lo:g		*!

Metaphony in Bolognese

Data

- Plural is marked on some nouns (Saunders's Class III, which consists of a subset of masculine nouns) by stressed-vowel raising.
- Long vowels and diphthongs become high:

(5)	Singular	Plural	Gloss
	¹ mæjz	¹ mi:z	'month(s)'
	¹ pæjl	¹ pi:l	'hair(s)'
	¹ pɛ:θ	¹ pi:θ	'piece(s)'
	¹ spɛ:tʃ	¹ spi:tʃ	'mirror(s)'
	sku'dɔ:θ	sku'du:θ	'crock(s)'
	aw ¹ tawr	aw ¹ tu:r	'author(s)'
	¹ awlum	¹ u:lum	'elm tree(s)'
	bis ¹ ko:t	bis ¹ ku:t	'biscuit(s)'
	¹ o:rgen	¹ u:rgen	'organ(s)'

Metaphony in Bolognese

Data

- Short vowels become mid and tense:

(6)	Singular	Plural	Gloss
	'mæ̃s	'mēs	'messenger(s)'
	dja'læt	dja'lēt	'dialect(s)'
	'bræt	'brēt	'child's cap(s)'
	'stam̃g	'stom̃g	'stomach(s)'
	'p̃aŋt	'p̃oŋt	'bridge(s)'
	bi'z̃aŋ	bi'z̃oŋ	'need(s)'

Metaphony in Bolognese

Quantity is important

- Crosslinguistically, different vowel qualities can have different results (Calabrese 2011).
 - /e, o/ → [i, u]
 - /ɛ, ɔ/ → [e, o]

- But in Bolognese, different *quantities* have different results.
 - /æj, aw/ → [i:, u:]
 - /æ, a/ → [e, o]

Metaphony in Bolognese

Quantity is important

- No short mid stressed vowels in Saunders's Class III.
 - Words like [ˈnom] 'name' are identical in singular and plural, and thus ambiguous between Saunders's Class I, which has no overt plural marking, and Class III, where metaphony would have no effect: /o/ → [o].

Metaphony in Bolognese

Quantity is important

- Two anomalous items in Class III: ['pæ] 'foot,' ['ba] 'ox'
 - Both have plurals with *long high* vowels: ['pi:], ['bu:]
 - Saunders's tentative suggestion: the singulars undergo word-final monophthongization.

Metaphony in Bolognese

Some curiosities

- In all examples for /ɛ:, ɔ:/ → [i:, u:], the following consonant is a coronal obstruent:

(7)

Singular	Plural	Gloss
'pɛ:ts	'pi:ts	'piece(s)'
'spɛ:ts	'spi:ts	'mirror(s)'
'mɛ:ð	'mi:ð	'middle'/'means'
sku'dɔ:θ	sku'du:θ	'crook(s)'

- We know of no examples of metaphony with /a:, ɔ/.
- Some possibilities:
 - Accidental gaps
 - Metaphony is sensitive to the relevant properties.
 - These properties help determine which class a word belongs to.

Metaphony in Bolognese

Analysis of long vowels

- The Class III plural morpheme is [+ high, -low, +ATR] (to be fully justified later).
 - This is the feature class [HEIGHT] (Walker 2011, Odden 1991).
- Metaphony is driven by (8) (Walker (2011) uses constraints much like this one).

(8) LICENSE([HEIGHT]_{plural}, \acute{o}): [HEIGHT] features associated with the plural morpheme must appear in the stressed syllable.

Metaphony in Bolognese

Analysis of long vowels

(9)

/aw ^l tawr, PL/	LICENSE ([HT] _{pl} , $\acute{\sigma}$)	RM(PL)	IDENT(HEIGHT)
a. aw ^l tawr		*!***	
☞ b. aw ^l tu:r			***
c. aw ^l to:r		*!	**
d. u: ^l tawr	*!***		***

(10)

/'pɛ:ts, PL/	LICENSE ([HT] _{pl} , $\acute{\sigma}$)	RM(PL)	IDENT(HEIGHT)
a. 'pɛ:ts		*!*	
☞ b. 'pi:ts			**

- PL = [+high, -low, +ATR]
- RM(PL): REALIZEMORPHEME (Kurisu 2001) for the plural morpheme. One violation for each deleted feature.

Metaphony in Bolognese

Analysis of short vowels

(11)

/dja'læt, PL/	LICENSE ([HT] _{pl} , ó)	*[PK/HiṼ]/ó	DEP-μ	RM(PL)	IDENT(HT)
a. dja'læt				**!*	
b. dja'let				*	**
c. dja'lit		*!			***
d. dja'li:t			*!		***
e. dji'let	*!				*****

- The winner eradicates [+high] to resolve conflict between *[PEAK/HIGHṼ]/ó and LICENSE.
- Candidate (e): plural's [-low, +ATR] appear on the stressed vowel, [+high] appears on pretonic vowel to satisfy *[PEAK/HIGHṼ]/ó and RM(PL).

Metaphony in Bolognese

Back to long vowels

- Augmentation does not interfere with long vowels:

(12)

/aw'tawr, PL/	LICENSE ([HT] _{pl} , ó)	*[PK/HiṼ]/ó	DEP-μ	RM(PL)	IDENT(HT)
a. aw'tawr				*! **	
☞ b. aw'tu:r					***
c. aw'to:r				*!	**
d. u:'tawr	*! **				***

Positional Licensing & Positional Augmentation

- Positional Licensing: to compensate for their weakness, high vowels must appear in a prominent position, the stressed syllable.
- Positional Augmentation: to enhance the contrast between stressed and unstressed syllables, the weakest vowels (short high vowels) are excluded from stressed syllables.

Positional Licensing & Positional Augmentation

Positional Augmentation wins out

Informally, augmentation prevents full satisfaction of licensing. Formally, RM(PL) is violated to satisfy both LICENSE([HEIGHT]_{plural}, \acute{o}) and *[PEAK/HIGH \check{V}]/ \acute{o} .

(13)

/dja'læt, PL/	LICENSE ([HT] _{pl} , \acute{o})	*[PK/HI \check{V}]/ \acute{o}	DEP- μ	RM(PL)	IDENT(HT)
a. dja'læt				**!*	
b. dja'let				*	**
c. dja'lit		*!			***
d. dja'li:t			*!		***
e. dji'let	*!				*****

- This analysis has consequences for Positional Licensing, Positional Augmentation, and Positional Faithfulness.

Implications for Positional Constraints

Positional Augmentation & Positional Faithfulness

- Like Bolognese, Zabiče Slovene allows long high stressed vowels, but not short high stressed vowels (Crosswhite 2001, Smith 2005).
- Smith's account:
 - *[PEAK/HIGHV]/ \acute{o} penalizes all high stressed vowels.
 - Long vowels are protected by a Positional Faithfulness constraint.

Implications for Positional Constraints

Positional Augmentation & Positional Faithfulness

- No data for Zabiče Slovene available; hypothetical examples:

(14) a.

/ˈtuk/	IDENT(HI)-V:	*[PK/HIV]/ \acute{o}	DEP- μ	IDENT(high)
a. ˈtuk		*!		
☞ b. ˈtok				*
c. ˈtu:k			*!	

b.

/ˈtu:k/	IDENT(HI)-V:	*[PK/HIV]/ \acute{o}	DEP- μ	IDENT(high)
☞ a. ˈtu:k		*		
b. ˈto:k	*!			*

- Bolognese shows that this cannot be the correct way to distinguish long and short vowels.

Implications for Positional Constraints

Positional Augmentation & Positional Faithfulness

- Metaphony creates new long high vowels that violate both $*[PEAK/HIGHV]/\acute{o}$ and positional faithfulness:

(15)

/aw'tawr, PL/	IDENT(HI)-V:	LICENSE ([HT] _{pl} , \acute{o})	*[PK/HIV]/ \acute{o}	DEP- μ	RM(PL)	IDENT(HT)
a. aw'tawr					*! **	
(15) b. aw'tu:r	*!		*!			***
^{◌̄} c. aw'to:r					*	**
d. u'tawr		*! **				***

- Metaphony is now blocked from creating any high vowel.

Implications for Positional Constraints

Positional Augmentation & Positional Faithfulness

- The augmentation constraint must distinguish short and long vowels:

(16)

a.

/tuk/	*[PK/HiV̌]/ó	DEP- μ	IDENT(high)
a. tuk	*!		
☞ b. tok			*
c. tu:k		*!	

b.

/tu:k/	*[PK/HiV̌]/ó	DEP- μ	IDENT(high)
☞ a. tu:k			
b. to:k			*!

Implications for Positional Constraints

Positional Augmentation & Positional Faithfulness

- Alternative: local conjunction (e.g. Smolensky 1993) of two simpler augmentation constraints:

(17) a.

/ ^h tuk/	*[PK/HIV]/ó&*[PK/ǂ]/ó	DEP-μ	ID(hi)	*[PK/HIV]/ó	*[PK/ǂ]/ó
a. ^h tuk	*!			*	*
☞ b. ^h tok			*		*
c. ^h tu:k		*!		*	

b.

/ ^h tu:k/	*[PK/HIV]/ó&*[PK/ǂ]/ó	DEP-μ	ID(hi)	*[PK/HIV]/ó	*[PK/ǂ]/ó
☞ a. ^h tu:k				*	
b. ^h to:k			*!		

Implications for Positional Constraints

Positional Augmentation & Positional Faithfulness

- And for Bolognese:

(18) a.

/dja'læt, PL/	*[PK/HiV]/ó& *[PK/ǂ]/ó	LICENSE ([HT] _{pl} , ó)	DEP-μ	RM(PL)	*[PK/HiV]/ó	*[PK/ǂ]/ó
a. dja'læt				**!*		*
☞ b. dja'let				*		*
c. dja'lit	*!				*	*
d. dja'li:t			*!		*	
e. dji'let		*!				*

b.

/aw'tawr, PL/	*[PK/HiV]/ó& *[PK/ǂ]/ó	LICENSE ([HT] _{pl} , ó)	DEP-μ	RM(PL)	*[PK/HiV]/ó	*[PK/ǂ]/ó
a. aw'tawr				*!***		
☞ b. aw'tu:r					*	
c. aw'to:r				*!		
d. u:'tawr		*!***				

Implications for Positional Constraints

Positional Augmentation & Positional Faithfulness

- Either way, Positional Augmentation constraints must be sensitive to vowel length.
- This refines the typology of Positional Augmentation constraints.
 - Smith's account of Zabiče Slovene actively avoids $*[PK/HI\check{V}]/\acute{o}$.
 - Smith argues for $HEAVY\sigma/\acute{o}$, requiring heavy stressed syllables; $*[PEAK/\check{V}]/\acute{o}$ is a more specific cousin of this constraint.

Implications for Positional Constraints

Positional Augmentation & Positional Faithfulness

- Should Positional Faithfulness constraints for long vowels be admitted (e.g. IDENT(HIGH)-V:)? Length isn't positional in the usual sense.

Implications for Positional Constraints

Positional Licensing

- A conceivable (but wrong) alternative: the plural morpheme is just [+high].
- Changes to [low] and [ATR] entailed by /æj, aw/ → [i:, u:] are enforced by other means:
 - The incompatibility of [+high, +low]
 - *[+high, -ATR] (Archangeli & Pulleyblank 1994)

(19)

/aw'tawr, [+hi]/	*[+high, -ATR]	LICENSE ([+hi] _{pl} , ó)	RM(PL)	IDENT(HT)
a. aw'tawr			*!	
☞ b. aw'tu:r				***
c. aw'to:r			*!	**
d. aw'tu:r	*!			***

Implications for Positional Constraints

Positional Licensing

- But this does not motivate raising to mid:

(20)

/dja'læt, [+hi]/	LICENSE ([+hi] _{pl} , ó)	*[PK/HIŤ]/ó	DEP-μ	RM(PL)	IDENT(HT)
• a. dja'læt				*	
(☞) b. dja'let				*	*!*
c. dja'lit		*!			***
d. dja'lit			*!		***
e. dji'let	*!				*****

- Raising to mid incurs gratuitous faithfulness violations.

Implications for Positional Constraints

Positional Licensing

- [-low, +ATR] must be part of the plural morpheme, and Positional Licensing must hold for all three features.
- This conclusion aligns with Walker's (2011) analysis of metaphony in Lena, where /a/ → [e]. Walker's licensing constraint also refers to [HEIGHT].

Alternative: Positive Positional Licensing

- Positive Positional Licensing has benefits in Harmonic Grammar (Kaplan 2018).
- For Bolognese, positivity permits a simpler analysis that more transparently reflects the competition between Positional Licensing and Positional Augmentation.

(21) +LICENSE([HEIGHT]_{plural}, \acute{o}): assign +1 for each [HEIGHT] feature associated with the plural morpheme that appears in the stressed syllable.

Alternative: Positive Positional Licensing

(22)

/dja'læt, PL/	+ LICENSE ([HT] _{pl} , \acute{o}) 2	*[PK/HI \check{V}]/ \acute{o} 7	DEP- μ 7	IDENT(HT) 1	H
a. dja'læt					0
☞ b. dja'let	2			-2	2
c. dja'lit	3	-1		-3	-4
d. dja'li:t	3		-1	-3	-4
e. dji'let	2			-5	-1

- Obeying *[PEAK/HIGH \check{V}]/ \acute{o} means sacrificing a reward from LICENSE.
- RM(PL) is unnecessary: deleting the plural [HEIGHT] features means a smaller reward from LICENSE.

Remaining Issues

Metaphony + deletion

- When words ending in [é:l] or [ó:l] undergo metaphony, [l] deletes, too:

(23)	Singular	Plural	Gloss
	fra'dɛ:l	fra'di:	'brother(s)'
	ka'pɛ:l	ka'pi:	'hair(s)'
	kur'tɛ:l	kur'ti:	'knife'/'knives'
	fa'zɔ:l	fa'zu:	'bean(s)'
	pi'ro:l	pi'ru:	'stairway(s)'
	luz'ɲɔ:l	luz'ɲu:	'nightingale(s)'

Remaining Issues

Other vowel raising

- Some feminine adjectives show vowel raising (also certain verb roots, not shown here):

(24) a. al 'dæŋ:t 'sɑŋŋ
the.MS tooth healthy.MS
'the healthy tooth'

b. i 'dɛŋ:t 'sɑŋŋ
the.MP teeth healthy.MP
'the healthy teeth'

(25) a. la 'gɑŋ:ba 'sɛ:na
the.FS leg healthy.FS
'the healthy leg'

b. i 'æ:l 'gɑŋ:b 'sɛ:ni
the.FS leg healthy.FP
'the healthy legs'

- Not the same as metaphony:
 - Occurs in feminine adjectives, not masculine nouns.
 - Marks feminine, not plural.
 - [ɛ:] is not an output of metaphony.

- Metaphony in Bolognese is conditioned by quantity.
- Metaphony conflicts with Positional Augmentation.
- Augmentation wins; an account of this requires a Positional Augmentation constraint that refers to short vowels specifically.
- Positive Positional Licensing simplifies the analysis and illustrates the conflict more clearly.
- Markedness is not one-dimensional.
 - Metaphony compensates for the markedness of high vowels by placing them in a prominent position.
 - It also increases the markedness of the stressed syllable.

Archangeli, Diana & Douglas Pulleyblank (1994) *Grounded Phonology*. Cambridge, MA: MIT Press.

Beckman, Jill N. (1999) *Positional Faithfulness*. New York: Garland.

Calabrese, Andrea (2011) Metaphony in Romance. In *The Blackwell Companion to Phonology*, Marc van Oostendorp, ed., vol. V, 2631–2661, Malden, MA: Wiley-Blackwell.

Canepari, Luciano & Daniele Vitali (1995) Pronuncia e Grafia del Bolognese. *Rivista Italiana di Dialettologia* **19**: 119–164.

Crosswhite, Katherine (2001) *Vowel Reduction in Optimality Theory*. New York: Routledge.

Ito, Junko (1988) *Syllable Theory in Prosodic Phonology*. New York: Garland Publishing.

Kaplan, Aaron (2018) Positional Licensing, Asymmetric Trade-Offs, and Gradient Constraints in Harmonic Grammar. *Phonology* **35**: 247–286.

Kurisu, Kazutaka (2001) *The Phonology of Morpheme Realization*. Ph.D. thesis, University of California, Santa Cruz.

- Lombardi, Linda (1994) *Laryngeal Features and Laryngeal Neutralization*. New York: Garland.
- Odden, David (1991) Vowel Geometry. *Phonology* 8(2): 261–289.
- Padgett, Jaye (2002) Constraint Conjunction versus Grounded Constraint Subhierarchies in Optimality Theory, ms., University of California, Santa Cruz.
- Saunders, Gladys E. (1984) The Expression of Number in Bolognese Nouns and Adjectives. In *Romanitas: Studies in Romance Linguistics*, Pulgram Ernst, ed., 213–242, Ann Arbor, MI: Michigan Romance studies.
- Smith, Jennifer L. (2005) *Phonological Augmentation in Prominent Positions*. New York: Routledge.
- Smolensky, Paul (1993) Harmony, Markedness, and Phonological Activity, handout of talk presented at Rutgers Optimality Workshop I, New Brunswick, NJ. ROA-87, Rutgers Optimality Archive, <http://roa.rutgers.edu>.

Smolensky, Paul (2006) Optimality in Phonology II: Harmonic Completeness, Local Constraint Conjunction, and Feature Domain Markedness. In *The Harmonic Mind: From Neural Computation to Optimality-Theoretic Grammar*, Paul Smolensky & Géraldine Legendre, eds., vol. 2, chap. 14, 27–160, Cambridge, MA: The MIT Press.

Walker, Rachel (2005) Weak Triggers in Vowel Harmony. *NLLT* 23: 917–989.

Walker, Rachel (2011) *Vowel Patterns in Language*. New York: Cambridge University Press.

Zoll, Cheryl (1998) Positional Asymmetries and Licensing, ms., MIT ROA-282, Rutgers Optimality Archive, <http://roa.rutgers.edu>.