

Constraining the scope of metaphony in southeastern peninsular Spanish

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Based on previous work with

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New data provided by

Antonio López Montabes (& friends)

(Granada speaker)

Background

- The process of ‘vowel harmony’ in the dialects of southeastern peninsular Spanish has been studied for many years, either descriptively, theoretically or typologically.
- A final vowel which is open/lax due to the aspiration or complete loss of a word-final -s causes a stressed vowel to open as well (*classical metaphony*), which may affect high vowels, and posttonic and pretonic vowels (including clitics).

nene-s	[nénɛ] (cf. nene [néne] ‘boy’)	‘boys’
trébol-es	[tréβolɛ], [tréβɔɛ]	‘clovers’
come-mos	[komémɔ], [kɔmémɔ]	‘we eat’
tesis	[tési], [tésɪ]	‘thesis’
cómico-s	[kómikɔ], [kómikɔ], [kómɪkɔ]	‘comic.PL’
recóge=lo-s	[rekóhelɔ], [rekóhelɔ], [rekóhelɔ]	‘pick them’

TO BE AWARE OF:

- Other local assimilations within the word are triggered by separate constraints (regressive); quite general:

esper^e [e̞p^hé̞re] ‘wait’ árbol [árβo̞^(l)] ‘tree’
conteste [konté̞^he] ‘answer’ correcto [koré̞^{tto}] ‘correct’

- Other ‘harmonic’ assimilations between proclitics are triggered by separate constraints (bidirectional); data from Granada:

→ nos=lo=coge [no̞llokóhe] ~ [no̞llo̞kóhe] ‘s/he takes it from us’
← te=los=coge [telok^hóhe] ~ [te̞l^ook^hóhe] ‘s/he takes them from you’

- Both are subject to separate pressures that do not apply at metaphony -> **Against vowel harmony as a unique process across the full word.**



Metaphony in Eastern Andalusian provinces of Almería, Granada, Córdoba and Jaén, and the neighboring Murcian region

Interest of the data (1)

1. The final trigger is an open vowel, which emerges due to the aspiration or complete loss of a word-final consonant, typically -s.
 - Do we depart from a 5-vowel system (Spanish: /a e i o u/)?
 - Is the triggering feature derived (local assimilation, as an effect of MaxF, cue preservation) or is it morphologized (floating featural-morpheme)?
 - Which is the triggering feature ([-ATR], [-tense], [-peripheral], [+constricted])?

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 - Which is the triggering feature ([-ATR], [-tense], [-peripheral], [+constricted])?

(See details in work by, e.g., Henriksen, Herrero de Haro, Jiménez & Lloret)

Interest of the data (2)

2. This now-final open vowel gives rise to several metaphonic patterns. **In common: the preceding stressed vowel obligatorily opens (*classical metaphony*)**, with limitations affecting high vowels in some dialects.

- Transparency/Opacity of high vowels
- Domains (posttonic and pretonic vowels, clitics)
- Gapping (non-locality)
- Optionality (variability in the Granada dialect)

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- Gapping (non-locality)
- Optionality (variability in the Granada dialect)

(See details in work by, e.g., Walker, Jiménez & Lloret, Kaplan)

Interest of the data (& 3)

3. Some patterns are **phonologically conditioned**

Others are **morphologically conditioned as well** (when the trigger is part of a limited set of inflectional suffixes):

- **Phonology-Morphology interactions**

(See details in work by, e.g., Soriano 2012, Jiménez & Lloret 2020)

Main goal of the talk

- **Clitic domain**, especially combinations of two clitics and proclitics in general
- **Why is it relevant?**
 - Asymmetries between proclitics and enclitics
 - Constraints that limit metaphony
 - Directionality
 - Gapping
 - Perceptual approaches vs. Articulatory approaches
- **Data from Granada**

Outline of the talk

- 1. General picture of the metaphonic patterns**
- 2. Overview of recent analyses under the Licensing view**
- 3. The challenge of new data: enclitics and proclitics in Granada**
- 4. Additional factors and remaining issues**
- 5. Conclusion**

1 General picture of the metaphonic patterns

Sum up of the patterns (Jiménez & Lloret 2020)

	Murcian	Granada			Jaén
		Maximal pattern	Medium pattern	Minimal pattern	
Domain	whole word	whole word	not pretonic	only stressed	whole word
Vowels affected	never high V & blockers of Metaphony	high V open due to word-final -s loss/aspiration; but never undergo opening by Metaphony, though they are transparent for Metaphony			all vowels
Conditionings on the -C that opens the preceding V	non-nasal -C	only -/s/ & -/h/			only -/s/ & -/r/ ⊆ specific morphemes
	Phonologically-conditioned Metaphony				Morphologically-conditioned Metaphony

Examples of the patterns

EXAMPLE	Murcia	Granada (Maximal)	Granada (Medium)	Granada (Minimum)	Jaén
nene-s	[néne]	[néne]	[néne]	[néne]	[néne]
trébol-es	[tréβole]	[tréβole]	[tréβole]	[tréβole]	[tréβole]
come-mos	[kómémɔ]	[kómémɔ]	[komémɔ]	[komémɔ]	[kómémɔ]
tesis	[tési]	[tésɪ]	[tésɪ]	[tésɪ]	[tési]
cómico-s	[kómikɔ]	[kómikɔ]	[kómikɔ]	[kómikɔ]	[kómikɔ]
recóge=lo-s	[rekóhelo]	[rekóhelo]	[rekóhelo]	[rekóhelo]	[rekóhelo]

- Green:** full harmony (only coincidence in all dialects if ó)
- Blue:** only specific morphemes trigger the spreading
- Pink:** high vowels unaffected and stop the spreading
- Yellow:** high vowels unaffected, but do not stop the spreading
- Grey:** pretonic and posttonic unaffected
- Orange:** pretonic unaffected, posttonic affected

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nene-s	[néne]	[néne]	[néne]	[néne]	[néne]
trébol-es	[tréβole]	[tréβole]	[tréβole]	[tréβole]	[tréβole]
come-mos	[kómémɔ]	[kómémɔ]	[komémɔ]	[komémɔ]	[kómémɔ]
tesis	[tési]	[tésɪ]	[tésɪ]	[tésɪ]	[tési]
cómico-s	[kómikɔ]	[kómikɔ]	[kómikɔ]	[kómikɔ]	[kómikɔ]
recóge=lo-s	[rekóhelɔ]	[rekóhelɔ]	[rekóhelɔ]	[rekóhelɔ]	[rekóhelɔ]



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2 Overview of recent analyses under the Licensing view

Walker (2011) (Granada)



Classical OT with Positional Licensing (Lic), with Minimal Lic (ó) and Maximal Lic ($\forall V$) (adapted from Walker 2011):

1. Minimal Lic (ó): Lic(-ATR,ó) >> Ident(-ATR) >> *DuplicateF, MaxLic
2. Maximal Lic ($\forall V$): Lic(-ATR,ó), MaxLic >> *DuplicateF, Ident(-ATR)

'cloves' Minimal	trébóles /é o E/	Lic(-ATR,ó)	Id(ATR)	*Dupl	MaxLic
a.	é o E	*!			**
b. 	É o E		*	*	*
c.	É O E		**!		
Maximal	/é o E/	Lic(-ATR,ó)	MaxLic	*Dupl	Id(ATR)
a.	é o E	*!	**		
b.	É o E		*!	*	*
c. 	É O E				**

'trombones' Minimal	trombones /o ó E/	Lic(-ATR,ó)	Id(ATR)	*Dupl	MaxLic
a.	o ó E	*!			**
b.	 o Ó E		*		*
	O Ó E		**!		
Maximal	/o ó E/	Lic(-ATR,ó)	MaxLic	*Dupl	Id(ATR)
a.	o ó E	*!	**		
b.	o Ó E		*!		*
c.	 O Ó E				**

Some problems arise; e.g., inclusive relationship in Maximal pattern (if pretonic affected, posttonic obligatorily affected too)

'forks' Maximal	tenedores /e e ó E/	Lic(-ATR,ó)	MaxLic	*Dupl	Id(ATR)
a.	e e ó E	*!	***		
b.	e e Ó E		**!		*
c.	e E Ó E		*!		**
d. 	E E Ó E				***
'gather them' Maximal	recóge=los /e ó e O/	Lic(-ATR,ó)	MaxLic	*Dupl	Id(ATR)
a.	e ó e O	*!	***		
b.	e Ó e O		**!	*	*
c.	E Ó e O		*!	*	**
d. Medium	e Ó E O		*!		**
e. 	E Ó E O				***

Jiménez & Lloret (2020) (Granada, Murcia, Jaén)

GRANADA:

Classic OT with Positional Licensing by prosodic domain (to capture the inclusive relationship):

1. Minimal pattern:

$\text{Lic}(-\text{ATR}, \acute{o}) \gg \text{Id}(\text{ATR}) \gg * \text{Dupl}, \text{Lic}(-\text{ATR}, \text{Ft}), \text{Lic}(-\text{ATR}, \forall \text{V})$

2. Medium pattern:

$\text{Lic}(-\text{ATR}, \acute{o}), \text{Lic}(-\text{ATR}, \text{Ft}) \gg * \text{Dupl}, \text{Id}(\text{ATR}) \gg \text{Lic}(-\text{ATR}, \forall \text{V})$

3. Maximal pattern:

$\text{Lic}(-\text{ATR}, \acute{o}), \text{Lic}(-\text{ATR}, \text{Ft}), \text{Lic}(-\text{ATR}, \forall \text{V}) \gg * \text{Dupl}, \text{Id}(\text{ATR})$

Kaplan (2018, 2021a, b) (Granada)

Positive Positional Licensing in Harmonic Grammar (HG), serial HG in 2018, 2021a; (parallel) Noisy HG in 2021b:

- **Positive Positional Licensing (PL)**: “Assign +1 for each [-ATR] that coincides with the \acute{o} and +1 for each additional syllable that this [-ATR] appears in.” (Kaplan 2021b: 708)
- ***[-ATR]** instead of Ident(ATR).
- **CrispEdge(-ATR, \acute{o} ,Left)**: “The stressed syllable’s [-ATR] cannot extend beyond the left edge of that syllable.” (It assigns 1 violation for each pretonic [-ATR] vowel.) (Kaplan 2018b)



Improvements (in addition to the account of variability with NHG):

1. With **PL**, not need to have different Licensing constraints conditioned by domain or Minimal/Maximal spans.
2. With **PL**, not need to resort to *DuplicateF (or similar constraints).
3. ***[-ATR]** instead of Ident(ATR), since [-ATR] vowels are not input vowels, but are always derived from -s (through Max(-ATR)).
4. **CrispEdge** captures directionality and domain effects (as advanced in Walker 2011).

Core weighting requirements (Kaplan 2021b: 714)

1. **Minimal pattern:** $2w_{Lic} > w^*[-ATR] > w_{Lic}$
2. **Medium pattern:** $w^*[-ATR] + w_{CrispEdge} > w_{Lic} > w^*[-ATR]$
3. **Maximal pattern:** $w_{Lic} > w^*[-ATR] + w_{CrispEdge}$

➤ MINIMAL pattern (ó only): PL(-ATR) (2), *[-ATR] (3)



'forks'	tenedores /e e ó E/	PL(-ATR) 2	*[-ATR] 3	H	
a.	e e ó E		-1	-3	-3
b.	 e e Ó E	+2	-2	-2	+4-6
c.	e E Ó E	+3	-3	-3	+6-9
d.	E E Ó E	+4	-4	-4	+8-12
'gather them'	recóge=los /e ó e O/				
a.	e ó e O		-1	-3	-3
b.	 e Ó e O	+2	-2	-2	+4-6
c.	e Ó E O	+3	-3	-3	+6-9
d.	E Ó E O	+4	-4	-4	+8-12

(Constraints in green favor spreading; in red, disfavor spreading)

➤ **MEDIUM pattern (posttonic affected, pretonic unaffected):**

$w^*[-ATR] + wCrispEdge > wLic > w^*[-ATR]$ (not illustrated in Kaplan)

➤ **MAXIMAL pattern (all σ): PL(-ATR) (5), *[-ATR] (2)**

'forks'	tenedores /e e ó E/	PL(-ATR) 5	*[-ATR] 2	H	
a.	e e ó E		-1	-5	-5
b.	e e Ó E	+2	-2	+6	+10-4
c.	e E Ó E	+3	-3	+9	+15-6
d.	 E E Ó E	+4	-4	+12	+20-8
'gather them'	recóge=los /e ó e O/				
a.	e ó e O		-1	-5	-5
b.	e Ó e O	+2	-2	+6	+10-4
c.	e Ó E O	+3	-3	+9	+15-6
d.	 E Ó E O	+4	-4	+12	+20-8

3 The challenge of new data: enclitics and proclitics in Granada

Up to now

- **Examples limited to 1 or 2 enclitics, with -s at the end, as in:**

recóge=los [rekóhelɔ] (Min), [rekóhɛlɔ] (Med), [rɛkóhɛlɔ] (Max)
'gather them'

cóme=te=los [kómetelɔ] (Min), [kómɛtɛlɔ] (Med, Max)
'eat them (for you)'

(Jiménez & Lloret 2009, 2020, also analyzed in Kaplan 2018, 2021a,b)

- **Few examples with proclitics:** In the literature, 'they may also be affected by metaphony', as in:

me=lo=dices [mɛlɔdíθɛ] 'you tell it to me' (Lipski 2020: 459)

The challenge

➤ **To further explore the behavior of clitics**

(remember asymmetries in Servigliano; e.g., Mascaró 2011, Walker 2011)

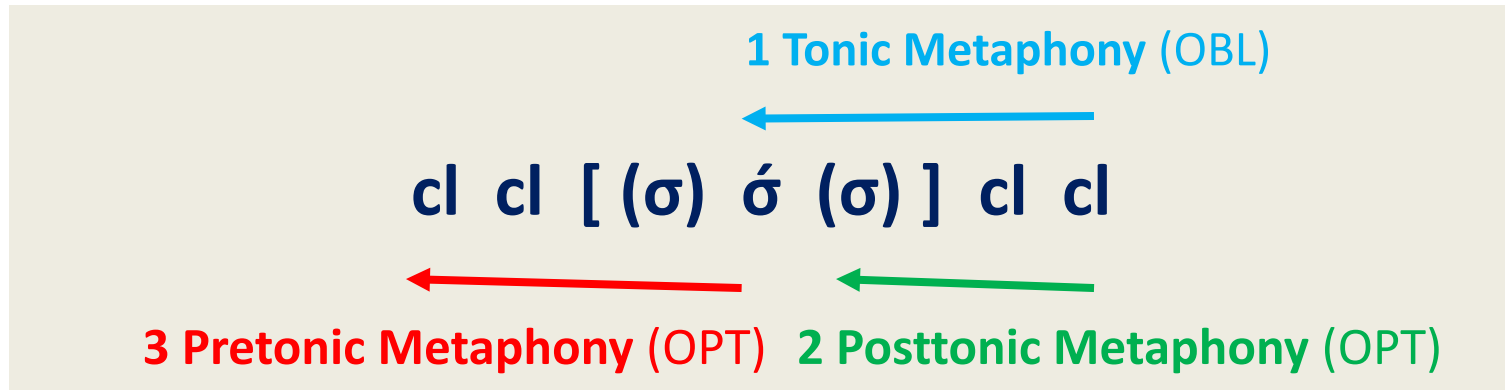
in order to check the suitability of previous analyses.

For the purpose of today's study, we are going to concentrate on:

1. the **Minimal pattern** (no spreading to the left of the \acute{o}), where some **cases of maximal spreading are detected**, and
2. the **Maximal pattern** (spreading to posttonic and pretonic), where **further variability is found in proclitics** (tied candidates),

following the basics of Kaplan (2021b)'s analysis.

3.1 General picture



TO KEEP IN MIND:

- Impossible to have enclitics and proclitics at the same time.
- Pronominal clitics: me, te, se, lo, la, le; **nos, os, los, las, les.**
- **Max(-ATR)** is responsible for the opening of the preceding vowel of **words** and **clitics** ending in **-s**.
- Hence, **clitics ending in -s host [-ATR] on the preceding vowel independently of metaphony.**

3.2 Enclitics: generalizations (1)

1. Tonic Metaphony is only triggered by a **word/clitic-final -s**:

cóme=lo [kómelo] ‘eat it’

cóme=los [kómelo] (Min pattern) ‘eat them’

[kómɛlo] (Max pattern)

3.2 Enclitics: generalizations (2)

2. Final enclitics not ended in -s are not affected by metaphony:

cóme=nos=lo [kómɛnollo] (Max), *[kómɛnollɔ] (Max) ‘eat it for us’

It does not seem related to secondary stress or Ident(ATR)-FinalVowel:

pón=nos=lo ‘put it for us’ or comámos=lo ‘let’s eat it’
same results than cóme=nos=lo

comámos=te=lo [komámot^helo] (Min), [kɔmámot^helo] (Max)

‘let’s eat it for you’ *[komámot^hɛlo] (Min), *[kɔmámot^hɛlo] (Max)

➤ **Directionality:** **Positive Licensing(-ATR, Left)**

(Cf. “Precedence-sensitive Maximal Licensing” in Walker 2011: 271)

3.2 Enclitics: generalizations (3)

3. Discontinuous [ATR] intra-unstressed vowels (extra-weak syllables) are banned, even in the Minimal pattern (the same in proclitics, as we will see later):

cóme=te=los [kómetelɔ] (Min) 'eat them (for you)'

cóme=nos=lo *[kómenɔllo] > [kómenɔllo] (Min) 'eat it for us'

cóme=nos=los *[kómenɔlɔ] > [kómenɔlɔ] (Min) 'eat them for us'

It cannot be an effect of *DuplicateF:

violated in [kómetelɔ] as well as in *[kómenɔllo] and *[kómenɔlɔ]

- Articulatory (gestural uniformity):

***Discontinuous Intra-unstressed**

3.2 Enclitics: generalizations (& 4)

4. As for metaphony, **enclitics behave like the Morphological Word (MWd)** (as in Servigliano):

[[Verb]_{MWd} cl (cl)]_{MWd}

(For our purposes, this is sufficient, though it is not exactly the same domain because word stress is not computed on enclitics.)

Interim summary

➤ **Domain of Metaphony: Morphological Word**

➤ **Enclitics = MWd:**

[[Verb] cl (cl)]_{MWd}

➤ **Minimal pattern (only \acute{o}):**

PL(-ATR,Left) (2.5), *[-ATR] (3), *DiscIntr (3)

➤ **Maximal pattern (all σ):**

PL(-ATR,Left) (5), *[-ATR] (2), *DiscIntr (3)



- For enclitics, it will be sufficient to maintain Kaplan's weights of PL and *[-ATR], but we change the **weight of PL** to **2.5** (instead of 2) in the Minimal pattern to account for proclitics later.



- **Remember** that now **directionality: PL(-ATR,Left) (PL-L in the tableaux).**

3.2 Enclitics: analysis

MINIMAL pattern (only ó): PL(-ATR,Left) (2.5), *[-ATR] (3), *DiscIntr (3)

(Underlined [-ATR] vowels are not multiply associated by metaphony: no reward for PL)



	tréboles /e ó E/	PL-L 2.5	*[-ATR] 3	*Disc 3	H	
a.	e ó <u>E</u>		-1		-3	-3
b. 	É o E	+2	-2		-1	+5-6
c.	É O E	+3	-3		-1.5	+7.5-9
	cóme=los /ó e O/					
a.	ó e <u>O</u>		-1		-3	-3
b. 	Ó e O	+2	-2		-1	+5-6
c.	Ó E O	+3	-3		-3	+7.5-9



	cóme=te=los /ó e e O/	PL-L 2.5	*[-ATR] 3	*Disc 3	H	
a.	ó e e <u>O</u>		-1		-3	-3
b. 	Ó e e O	+2	-2		-1	+5-6
c.	Ó e <u>E</u> O	+3	-3	-1	-4.5	+7.5-9-3
d.	Ó <u>E</u> E O	+4	-4		-2	+10-12
	cóme=nos=lo /ó e O o/					
a.	ó e <u>O</u> o		-1	-1	-6	-3-3
b.	Ó e O o	+2	-2	-1	-4	+5-6-3!
c. 	Ó <u>E</u> O o	+3	-3		-1.5	+7.5-9
d.	Ó <u>E</u> O O	+3	-4		-4.5	+7.5-12

3.2 Enclitics: analysis

MAXIMAL pattern (all σ): **PL(-ATR,Left) (5)**, ***[-ATR] (2)**, ***DiscIntr (3)**

(Underlined [-ATR] vowels are not multiply associated by metaphony: no reward for PL)

	tréboles /e ó E/	PL-L 5	*[-ATR] 2	*Disc 3	H	
a.	e ó <u>E</u>		-1		-2	-2
b.	É o E	+2	-2		+6	+10-4
c. 	É O E	+3	-3		+9	+15-6
	cóme=los /ó e O/					
a.	ó e <u>O</u>		-1		-2	-2
b.	Ó e O	+2	-2		+6	+10-4
c. 	Ó E O	+3	-3		+9	+15-6

	cóme=te=los /ó e e O/	PL-L 5	*[-ATR] 2	*Disc 3	H	
a.	ó e e <u>O</u>		-1		-2	-2
b.	Ó e e O	+2	-2		+6	+10-4
c.	Ó e <u>E</u> O	+3	-3	-1	+6	+15-6-3
d. 	Ó <u>E</u> E O	+4	-4		+12	+20-8
	cóme=nos=lo /ó e O o/					
a.	ó e <u>O</u> o		-1	-1	-5	-2-3
b.	Ó e <u>O</u> o	+2	-2	-1	+3	+10-4-3
c. 	Ó <u>E</u> O o	+3	-3		+9	+15-6
d.	Ó <u>E</u> O O	+3	-4		+7	+15-8

3.3 Proclitics: generalizations (1)

1. If the verb does not end in -s, no opening ever in the stressed syllable of the verb (directionality: **PL(-ATR,Left)**):

los=cóme [lɔk^hóme], *[lɔk^hóme], *[lɔk^hóme] 's/he eats them'

3.3 Proclitics: generalizations (2)

2. In the Maximal pattern, the proclitic next to the verb may or may not be affected by metaphony (interaction of the MWd with the proclitics, different from Servigliano):

lo=comemos **s** [lokomémɔ] (Min) ‘we eat it’

[loɔmémɔ] ~ [lɔɔmémɔ] (Max)

➤ **Different prosodic domain:**

proclitics = PWd (vs. enclitics = MWd):

$PW_d [(cl) cl_{MW_d} [Verb]]$

3.3 Proclitics: generalizations (3)

3. Metaphony cannot skip pretonic (CrispEdge constraints):

lo=comemos [lɔkɔmémɔ], *[lɔkɔmémɔ] (Max) ‘we eat them’

In the Maximal pattern, proclitics can be affected 1 by 1 (hence, different from pretonic vowels); but no skipping:

te=lo=comes [telɔkómɛ], [tɛlɔkómɛ], *[tɛlokómɛ] (Max)
‘you eat it (for you)’

CrispEdge constraints can capture part of these effects:

➤ **CrispEdge(-ATR, ó, Left)**

to penalize pretonic spreading

CrispEdge(-ATR, MWd, Left)

to penalize proclitic spreading

(counting σ’s 1 by 1, as in Kaplan’s work)

3.3 Proclitics: generalizations (4)

4. Additional need to impose adjacency by σ in proclisis:

Provisionally, ***DuplicateF** (or similar: O-Cont, *Gap, *Skip)

- **CrispEdge(-ATR,PWd,Left)**, with recursive adjunction of proclitics, cannot do the job of ***DuplicateF**: In the Maximal pattern (with tied candidates since proclitics affected 1 by 1), there are cases like, e.g.:
 - te=lo=comes [telokóme] ~ [telɔkóme] (CE-PWd \checkmark) ‘you eat it (for you)’
*[tɛlokóme] (CE-PWd *)
 - but:** [tɛɔkóme] (CE-PWd *) will lose w.r.t. [telokóme] ~ [telɔkóme]
 - nos=lo=comes [nɔllɔkóme] (CE-PWd *) ‘you eat it for us’
not differentiated from: *[nɔllɔkóme] (CE-PWd *)

Summary

➤ **Domain of Metaphony: Prosodic Word**

➤ **Asymmetry between enclitics and proclitics:**

[[Verb] cl (cl)]_{MWd} vs. _{PWd}[(cl) cl]_{MWd}[Verb]

➤ **Minimal pattern (only \acute{o}):**

PL(-ATR,Left) (2.5), *DuplicateF (1), *[-ATR] (3), CrispEdge(-ATR, \acute{o} ,Left) (1), CrispEdge(-ATR,MWd,Left) (2), *DiscIntr (3)

➤ **Maximal pattern (all σ , with tied candidates):**




PL(-ATR,Left) (5), *DuplicateF (1), *[-ATR] (2), CrispEdge(-ATR, \acute{o} ,Left) (1), CrispEdge(-ATR,MWd,Left) (2), *DiscIntr (3)




- The addition of the new constraints (i.e., CrispEdge(Left) and *DuplicateF) does not change the results for enclitics with the proposed weights.



MINIMAL pattern (only ó):



PL(-ATR,Left) (2.5), *Dupl (1), *[-ATR] (3), CrispEdge(-ATR,ó,Left) (1), CrispEdge(-ATR, MWd, Left) (2), *DiscIntr (3)

(Underlined [-ATR] vowels are not multiply associated by metaphony: no reward for PL)

	lo=comes /o ó E/	PL-L 2.5	*Dupl 1	*[-ATR] 3	CE-ó,L 1	CE-MWd,L 2	*Disc 3	H	
a.	o ó <u>E</u>			-1				-3	-3
b. 	o <u>Ó</u> E	+2		-2				-1	+5-6
c.	O <u>Ó</u> E	+3		-3	-1	-1		-4.5	+7.5-9-1-2
	los=comes /O ó E/								
a.	<u>O</u> ó <u>E</u>			-2				-6	-6
b. 	<u>O</u> <u>Ó</u> E	+2		-3				-4	+5-9
c.	O <u>Ó</u> E	+3		-3	-1	-1		-4.5	+7.5-9-1-2
	los=come								
a. 	<u>O</u> ó e			-1				-3	-3
b.	O <u>Ó</u> e			-2				-6	-6
c.	O <u>Ó</u> E			-3				-9	-9

	te=lo=comes /o ó E/	PL-L 2.5	*Dupl 1	*[-ATR] 3	CE-ó,L 1	CE-MWd,L 2	*Disc 3	H	
a.	e o ó <u>E</u>			-1				-3	-3
b. 	e o Ó E	+2		-2				-1	+5-6
c.	e O Ó E	+3		-3	-1	-1		-4.5	+7.5-9-1-2
d.	E o Ó E	+3	-1	-3	-1	-1		-5.5	+7.5-1-9-1-2
e.	E O Ó E	+4		-4	-2	-2		-8	+10-12-2-4
lo=comemos									
/o o é O/									
a.	o o é <u>O</u>			-1				-3	-3
b. 	o o É O	+2		-2				-1	+5-6
c.	o O É O	+3		-3	-1			-2.5	+7.5-9-1
d.	O o É O	+3	-1	-3	-1	-1		-5.5	+7.5-1-9-1-2
e.	O O É O	+4		-4	-2	-1		-6	+10-12-2-2
tenedores									
/e ó E/									
a.	e e ó <u>E</u>			-1				-3	-3
b. 	e e Ó E	+2		-2				-1	+5-6
c.	e E Ó E	+3		-3	-1			-2.5	+7.5-9-1
d.	E E Ó E	+4		-4	-2			-4	+10-12-2

	te=los=comes /e O ó E/	PL-L 2.5	*Dupl 1	*[-ATR] 3	CE-ó,L 1	CE-MWd,L 2	*Disc 3	H	
a.	e <u>O</u> ó E			-2				-6	-6
b. 	e <u>O</u> Ó E	+2		-3				-1	+5-6
c.	e O Ó E	+3		-3	-1	-1		-4.5	+7.5-9-1-2
d.	E <u>O</u> Ó E	+3	-1	-4	-1	-1		-8.5	+7.5-1-12-1-2
e.	E O O E	+4		-4	-2	-2		-8	+10-12-2-4
	nos=lo=comes /O o ó E/								
a.	<u>O</u> o ó E			-2				-6	-6
b. 	<u>O</u> o Ó E	+2		-3				-4	+5-9
c.	O o Ó E	+3	-1	-3	-1	-1		-5.5	+7.5-1-9-1-2
d.	<u>O</u> O Ó E	+3		-4	-1	-1		-7.5	+7.5-12-1-2
e.	O O Ó E	+4		-4	-2	-2		-8	+10-12-2-4





	te=lo=comemos /e o o é O/	PL-L 2.5	*Dupl 1	*[-ATR] 3	CE-ó,L 1	CE-MWd,L 2	*Disc 3	H	
a.	e o o é <u>O</u>			-1				-3	-3
b. 	e o o <u>É</u> O	+2		-2				-1	+5-6
c.	e <u>o</u> O <u>É</u> O	+3		-3	-1		-1	-5.5	+7.5-9-1-3
d.	e <u>O</u> o <u>É</u> O	+3	-1	-3	-1	-1	-1	-8.5	+7.5-1-9-1-2-3
e.	e O O <u>É</u> O	+4		-4	-2	-1		-6	+10-12-2-2
f.	E <u>o</u> O <u>É</u> O	+4	-1	-4	-2	-1	-1	-10	+10-1-12-2-2-3
g.	E O O <u>É</u> O	+5		-5	-3	-2		-9.5	+12.5-15-3-4
te=los=comemos /e O o é O/									
a.	e <u>O</u> o é <u>O</u>			-2			-1	-9	-6-3!
b.	e <u>O</u> o <u>É</u> O	+2		-3			-1	-7	+5-9-3!
c.	e <u>O</u> o <u>É</u> O	+3	-1	-3	-1	-1	-1	-8.5	+7.5-1-9-1-2-3!
d. 	e <u>O</u> O <u>É</u> O	+3		-4	-1			-5.5	+7.5-12-1
e.	e O O <u>É</u> O	+4		-4	-2	-1		-6	+10-12-2-2
f.	E <u>O</u> O <u>É</u> O	+4	-1	-5	-2	-1		-10	+10-1-15-2-2
g.	E O O <u>É</u> O	+5		-5	-3	-2		-9.5	+12.5-15-3-4

MAXIMAL pattern (all σ , tied candidates):

PL(-ATR,Left) (5), *Dupl (1), *[-ATR] (2), CrispEdge(-ATR, \acute{o} ,Left) (1), CrispEdge(-ATR, MWd, Left) (2), *DiscIntr (3)

REMEMBER: In Maximal pattern, proclitics may or may not assimilate (tied violations)

(Underlined [-ATR] vowels are not multiply associated by metaphony: no reward for PL)

	lo=comes /o ó E/	PL-L 5	*Dupl 1	*[-ATR] 2	CE- \acute{o} ,L 1	CE-MWd,L 2	*Disc 3	H	
a.	o ó <u>E</u>			-1				-2	-2
b.	 o Ó E	+2		-2				+6	+10-4
c.	 O Ó E	+3		-3	-1	-1		+6	+15-6-1-2
lo s =comes /O ó E/									
a.	<u>O</u> ó <u>E</u>			-2				-4	-4
b.	<u>O</u> Ó E	+2		-3				+4	+10-6
c.	 O Ó E	+3		-3	-1	-1		+6	+15-6-1-2
lo s =come									
a.	 <u>O</u> ó e			-1					-2
b.	O Ó e			-2					-4
c.	O Ó E			-3					-6

te=lo=comes /o ó E/		PL-L 5	*Dupl 1	*[-ATR] 2	CE-ó,L 1	CE-MWd,L 2	*Disc 3	H	
a.	e o ó <u>E</u>			-1				-2	-2
b.☞	e o Ó E	+2		-2				+6	+10-4
c.☞	e O Ó E	+3		-3	-1	-1		+6	+15-6-1-2
d.	E o Ó E	+3	-1	-3	-1	-1		+5	+15-1!-6-1-2
e.☞	E O Ó E	+4		-4	-2	-2		+6	+20-8-2-4
lo=comemos /o o é O/									
a.	o o é <u>O</u>			-1					-2
b.	o o É O	+2		-2				+6	+10-4
c.☞	o O É O	+3		-3	-1			+8	+15-6-1
d.	O o É O	+3	-1	-3	-1	-1		-5	+15-1-6-1-2
e.☞	O O É O	+4		-4	-2	-1		+8	+20-8-2-2
tenedores /e ó E/									
a.	e e ó <u>E</u>			-1				-2	-2
b.	e e Ó E	+2		-2				+6	+10-4
c.	e E Ó E	+3		-3	-1			+8	+15-6-1
d.☞	E E Ó E	+4		-4	-2			+10	+20-8-2

	te=los=comes /e O ó E/	PL-L 5	*Dupl 1	*[-ATR] 2	CE-ó,L 1	CE-MWd,L 2	*Disc 3	H	
a.	e <u>O</u> ó <u>E</u>			-2				-4	-4
b.	e <u>O</u> Ó E	+2		-3				+4	+10-6
c. ☞	e O Ó E	+3		-3	-1	-1		+6	+15-6-1-2
d.	E <u>O</u> Ó E	+3	-1	-4	-1	-1		+3	+15-1-8-1-2
e. ☞	E O O E	+4		-4	-2	-2		+6	+20-8-2-4
nos=lo=comes /O o ó E/									
a.	<u>O</u> o ó <u>E</u>			-2				-4	-4
b.	<u>O</u> o Ó E	+2		-3				+4	+10-6
c.	O o Ó E	+3	-1	-3	-1	-1		+5	+15-1!-6-1-2
d.	<u>O</u> O Ó E	+3		-4	-1	-1		+4	+15-8-1-2
e. ☞	O O Ó E	+4		-4	-2	-2		+6	+20-8-2-4

	te=lo=comemos /e o o é O/	PL-L 5	*Dupl 1	*[-ATR] 2	CE-ó,L 1	CE-MWd,L 2	*Disc 3	H	
a.	e o o é <u>O</u>			-1				-2	-2
b.	e o o <u>É</u> O	+2		-2				+6	+10-4
c.	e o <u>O</u> <u>É</u> O	+3		-3	-1		-1	+5	+15-6-1-3
d.	e <u>O</u> o <u>É</u> O	+3	-1	-3	-1	-1	-1	+3	+15-1-6-1-2-3
e.☞	e <u>O</u> <u>O</u> <u>É</u> O	+4		-4	-2	-1		+8	+20-8-2-2
f.	E o <u>O</u> <u>É</u> O	+4	-1	-4	-2	-1	-1	+4	+20-1-8-2-2-3!
g.☞	E <u>O</u> <u>O</u> <u>É</u> O	+5		-5	-3	-2		+8	+25-10-3-4
	te=los=comemos /e O o é O/								
a.	e <u>O</u> o é <u>O</u>			-2			-1	-7	-4-3
b.	e <u>O</u> o <u>É</u> O	+2		-3			-1	+1	+10-6-3
c.	e <u>O</u> o <u>É</u> O	+3	-1	-3	-1	-1	-1	+2	+15-1-6-1-2-3
d.	e <u>O</u> <u>O</u> <u>É</u> O	+3		-4	-1			+6	+15-8-1
e.☞	e <u>O</u> <u>O</u> <u>É</u> O	+4		-4	-2	-1		+8	+20-8-2-2
f.	E <u>O</u> <u>O</u> <u>É</u> O	+4	-1	-5	-2	-1		+5	+20-1-10-2-2
g.☞	E <u>O</u> <u>O</u> <u>É</u> O	+5		-5	-3	-2		+8	+25-10-3-4

4 Additional factors and remaining issues

Additional factors to investigate (1)

1. NOS LO(S) sequences:

- When s-l assimilates to [ll] (where MaxF of -s is already satisfied through the assimilation), the opening of the preceding vowel is **optional**. If the vowel does not open, metaphony (left) does not occur:

cóme=nos=lo [kómɛnɔllo] ~ [kómenollo] ‘eat it for us’

cóme=nos=los [kómɛnɔlɔ] ‘eat them for us’

- But not the same effect with aspiration in voiceless stops: opening always (whether some aspiration or not):

nos=los=comemos [nɔllɔkʰɔmémɔ] ~ [nollɔkʰɔmémɔ]

‘we eat them’ *[nɔllɔkʰomémɔ], *[nollɔkʰomémɔ]

Additional factors to investigate (& 2)

2. Gestural effects in sequences of proclitics (bidirectional):

$\overrightarrow{\text{nos}}=\text{lo}=\text{coge}$ [nɔllokóhe] ~ [nɔllɔkóhe] ‘s/he takes it from us’

$\overleftarrow{\text{te}}=\text{los}=\text{coge}$ [telɔk^hóhe] ~ [tɛlɔk^hóhe] ‘s/he takes them from you’

How does this phenomenon interact with Proclitic Metaphony (and especially w.r.t. *DuplicateF)?

3. Weight values for the Medium pattern, which behaves as the Maximal pattern for enclitics but as the Minimal pattern for proclitics.

4 Conclusions

Conclusions (for the time being)

1. Metaphony vs. Vowel Harmony

2. Directionality: **Left**

3. Asymmetries between enclitics and proclitics:

[[Verb] cl (cl)]_{MWd} vs. _{PWd}[(cl) cl _{MWd}[Verb]]

3. **CrispEdge constraints limit licensing**, as for **domain** (ó, MWd) and **directionality** (Left): **CrispEdge(-ATR,ó,Left)** and **CrispEdge(-ATR,MWd,Left)**

4. **But *DuplicityF** (or similar constraint) also seems necessary to impose **adjacency** (needed in combinations of proclitics only)

5. ***Discontinuous Intra-unstressed** imposes **gestural uniformity** (in enclitics and proclitics)

Thank you for your attention

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