

## Two kinds of vowel epenthesis in Alguerese Catalan

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- (1) • *Case study:* Epenthesis in Alguerese (the Catalan variety spoken in Alghero, Sardinia).  
 • *Topic:* [a] epenthesis at word level vs. [i] epenthesis between words.  
 • *Challenge to:* In epenthesis, except for assimilatory environments, the same default vowel is always inserted independently of the phonological context (cf. Uffmann 2002).  
 • *Goals:* To determine the prosodic conditions that justify vowel insertion and to show that the selection of one or the other vowel is not arbitrary.

### I. DATA<sup>1</sup>

- (2) a. Stressed position: [i, u, e, o, ε, ə, a]  
 b. Unstressed position: **Alguerese: [i, u, a]**; Central: [i, u, ə]; Western: [i, u, e, o, a]

(3) *Epenthesis:*

		Alguerese (A)	Central (C)	Western (W)
Lexical level	a. within morph	—	—	—
	b. initial position	a	ə	a
	c. final position	a	ə	e
	d. between morphs	a	ə	e
Postlexical level	e. between words	i	—	—

- (4) a. *espina* /spína/: [aspína] (A,W) [əspína] (C) ‘spine’  
 b. *sofre* /sófr/: [sófra] (A) [sófrə] (C) [sófr̩] (W) ‘sulfur’  
*ventre* /véntɾ/: [véntɾa] (A) [béntɾə] (C) [véntɾ̩] (W) ‘belly’  
 c. *ventres* /véntɾ+s/: [véntɾas] (A) [béntɾəs] (C) [véntɾ̩s] (W) ‘bellies’  
*coinxeré* /kunɛʃ+ré/: [kunaʃaré] (A) [kunaʃəré] (C) [konejʃeré] (W) ‘I will know’  
 d. *és tot pastura* /tót##pastúra/: [ès tot i pastúra] (A) ‘all is pasture’ (cf. *tot* [tót])  
*cent voltes* /sént##vóltas/: [sènt i vóltas] (A) ‘a hundred times’ (cf. *cent* [sént])  
*porc món!* /pòlk##món/: [pòlk i món] (A) ‘dirty world!’ (cf. *porc* [pòlk])

- (5) a. Clitics /CV(C)/ = within words (i.e. no epenthesis but simplification; other special phenomena):  
*renta-te* /rénta#ta/: [réntata] ‘wash yourself!’  
*rentant-te* /rentánt#ta/: [rantánta] ‘washing yourself’  
 b. Compounds = between words (i.e. i-epenthesis), except for some lexicalized words:  
*cent-seixanta* /sént##ʃiʃánta/: [sènt i ʃiʃánta] ‘160’  
*cap de mort* /káb##de#mórt/: [kàp i ðe mólt] ‘skull’ (also: [kà ðe mólt])  
*camp sant* /kámp#sánt/: [kantsánt] ‘cemetery’ (cf. Loporcaro 1997)

<sup>1</sup> The Alguerese data are mainly from Loporcaro (1997) and the *Corpus Oral Dialectal* of the Universitat de Barcelona. Other sources used are Recasens (1991) and Bosch (2002). Throughout the handout, epenthetic V are underlined for clarity.

(6) Codas in Alguerese (C = Consonant; G = Glide; N = Nasal):

	C	CC	CCC
FINAL	√	√ including 1sgPrInd (ansófr ‘I sulfate’)	Only √ exceptionally 1sgPrInd (kómpr ‘I buy’)
	Only * palatals $\eta, \lambda$ <i>Repair</i> : centralization (béł/béłá ‘nice.masc/fem’)	If * <i>Repair</i> : a. simplif. ln>l ( <i>carn</i> [kál] ‘meat’) b. <b>epenthesis</b> (sófra)	* <i>Repair</i> : a. simplif.>CC (sénts) b. <b>epenthesis</b> (véntra)
INTERNAL	√	Only √ G+N/s diwɲ kózas ‘they say things’, majstrál ‘NW wind’	* <i>Repair</i> : <b>epenthesis</b> (kòmpr i mólt ‘I buy a lot’)
	*Palatal C ( <i>peix bo</i> [z.b]) * f, Stop, Affricate <i>Repair</i> : <b>epenthesis</b> (tòt i pastúra)	* <i>Repair</i> : <b>epenthesis</b> (ansófr i mólt, sènt i vóltas)	

## II. PROSODIC CONDITIONS FOR EPENTHESIS

### II.1. Motivation for epenthesis

(7) Lexical epenthesis (contra Loporcaro 1997; pro other literature on Catalan):

- Initial position: Minimal Redundancy (vs. Lexicon Optimization). Ex. [aspína].
- Final position: Minimal Redundancy (vs. Lexicon Optimization). Ex. [sófra].

(8) Trigger of lexical epenthesis: SONORITYSEQUENCING (including OCP).

Ex.: [aspína] ‘spine’, [sófra] ‘sulfur’, [véntras] ‘bellies’

*But*: In Alguerese (and Balearic) SONORITYSEQUENCING can be violated due to an Optimal Paradigm effect (McCarthy 2005) to homogenize the output form of the stems (*jo ensofr* [ansófr] ‘I sulfate’ vs. *sofre* [sófra] ‘sulfur’; cf. Lloret 2004).

Optimal Paradigm effects further explains maintenance of certain final consonants that are otherwise deleted. E.g., *n* final word deletion: *man* ‘I order’ vs. *mà* ‘hand’ (cf. *mans* ‘hands’); *entén* ‘s/he understands’ (in all Catalan dialects).

- For our purposes, *Basic ranking*: SONSEQ >> MAX >> DEP >> \*CODA

(9)	/sént/ ‘100’	SONSEQ	MAX	DEP	*CODA	/vént/ ‘belly’	SONSEQ	MAX	DEP
☞ a. sént					*	a. vént	*!		
b. sén.ta				*!	*	☞ b. vén.tra			*
c. sén			*!		*	c. vént		*!	

(10) Postlexical epenthesis:

- To avoid internal complex codas, except G+N/s codas:

[sènt i vóltas] ‘a hundred times’, [pòlk i món] ‘dirty world!’

[kawz bé] ‘you make a good impression’ (cf. [majstrál] ‘NW wind’)

[diwɲ kózas] ‘they say things’, [fè wm prajé] ‘to make a pleasure’

b. To avoid f, Stops, and Affricates as internal single codas:

[vìf i bé]	‘I live well’	(cf. /vív/: [víf])	vs. <i>és pastura</i> [s.p]
[ès tot i pastúra]	‘all is pasture’	(cf. /tót/: [tót])	vs. <i>vol pastura</i> [l.p]
[tòts i taním]	‘all us have’	(cf. /tót+s/: [tots])	
[dàzítʃ i féu]	‘bad desire’	(cf. /dazídʒ/: [dazítʃ])	

(11) Trigger of postlexical epenthesis: Perceptual salience of certain consonants depending on the environment. Some factors affecting consonant perceptibility (Padgett 1995; Steriade 1999, 2001; Côté 2000, among others):

- Class of consonants: stops > strident fricatives > nasals ... (Côté 2000)
- $\_Son > \_# > \_$  (Padgett 1995)
- $C > CC > CCC$

In line with the complexity ranking for final demisyllables proposed by Clements (1990), based on the Dispersion Principle (though obstruents grouped together in Clements’ account):

- 2-member final demisyll.: VG (Complexity 1) > VL (2) > VN (3) > VO (4)
- 3-member final demisyll.: VGL (1) > VLN, VGN (2) > VGO, VNO (3) > VLO (4)

(12) In our case:

- V = Vowel; G = glide; L = liquid; N = Nasal; S= Sibilant fricative; O = f, Stop, Affricate
- Sonority scale*: Vowel > Glide > Liquid > Nasal > Sibilant fricative > f, Stop, Affricate
- Sonority Gradient* (SonGrad), or requirements of sonority distance between adjacent segments within a syllable, related to perceptibility (cf. Steriade 1997, 2001) and production difficulty. Alguerese SONORITY GRADIENCE in CC codas:  $C_i + C_j \geq 2$  ( $C_i = Son$ ).

Decreasing perceptibility in codas  $\longrightarrow$

	C	CC			
FINAL	√ VG káw				
	√ VL bəl	* VGL SonGrad			
	√ VN fəm	√ VGN díwn	* VLN SonGrad <sup>a</sup>		
	√ VS és	√ VGS réjs	* VLS SonGrad <sup>b</sup>	* VNS SonGrad <sup>c</sup>	
	√ VO tót	√ VGO kàjk	√ VLO pòlk	√ VNO sènt	√ VSO víst
INTERNAL	√ VG kaw bé				
	√ VL bèl prajé	* VGL SonGrad			
	√ VN fəm prajé	√ VGN fè wm prajé	* VLN SonGrad		
	√ VS es tót	√ VGS kawz bé	* VLS SonGrad	* VNS SonGrad	
	* VO tòt i prajé	* VGO kàjk i també	* VLO pòlk i món	* VNO sènt i vóltas	* VSO víst i tót

<sup>a</sup> rC > IC and -ln > -l: *carn* [kál] ‘meat’ vs. *carnassa* [kal.ná.sa] ‘bad meat’.

<sup>b</sup> SonGrad maximized via affrication: LS (SonGrad2) > LO (SonGrad3), [lts]: *persona* ‘person’, *car+s* ‘expensive (pl.)’, *bell+s* ‘nice (pl.)’, *animal+s* ‘animals’.

<sup>c</sup> NS > NO via affrication, [nts]: *man+s* ‘hands’, *any+s* ‘years’, *funció* ‘function’.

- (13) • **\*WEAKCUES**: Portmanteau constraint to cover the poor acoustic cues of the codas shaded in (12).  
 • *Ranking*: **\*WEAKCUES**, SONSEQ >> MAX >> DEP >> **\*CODA**

(14)

/tót/ ‘all (sg.), any’	*WEAKCUES	SONSEQ	MAX	DEP	*CODA
☞ a. tót					*
b. tó			*!		
c. tó.ta				*!	

(15)

/tót+s/ ‘all (pl.)’	*WEAKCUES	SONSEQ	MAX	DEP	*CODA
☞ a. tóts					*
b. tós			*!		*
c. tó.tas				*!	*

(16)

/tót táp/ ‘any cork’	*WEAKCUES	SONSEQ	MAX	DEP	*CODA
a. tot.táp	*!				**
b. to.táp			*!		*
☞ c. tò.ti.táp				*	*

- (17) *tot sentit* [tòt ì santít], \*[tò.tsantít] ‘any sense’ = *poc liquid* [g.l], \*[kl], \*[gl] ‘few liquid’  
*pot rumpir* [d.r], \*[tr], \*[dr] ‘s/he can break’  
 as an effect of **ALIGN-LEFT (PrW, σ)**, which is only violated to avoid onsetless syllables:
- ONSET >> AL-L (cf. Jiménez 1999, Bonet&Lloret 2005): *tot animal* [tò.ta.ni.mál] ‘any animal’

- (18) • **Ranking: AGREE-PLACE, \*WEAKCUES, SONSEQ >> MAX >> DEP >> \*CODA**

(19)

/táp+s/ ‘corks’	AGREE-PL	*WEAKCUES	SONSEQ	MAX	DEP	*CODA
a. táps	*!		*			*
☞ b. táts						*
c. tás				*!		*
d. tá.pas					*!	*

(20)

/tót prát/ ‘any dish’	AGREE-PL	*WEAKCUES	SONSEQ	MAX	DEP	*CODA
a. tot.prát	*!	*				**
b. top.prát		*!				**
c. to.prát				*!		*
☞ d. tò.ti.prát					*	*

- (21) • **Ranking: MAX-MANNER, AGREE-PLACE, \*WEAKCUES, SONSEQ >> MAX >> DEP >> \*CODA**

(22)

/tót nás/ ‘any nose’	MAX-MAN	AGREE-PL	*WEAKCUES	SONSEQ	MAX	DEP	*CODA
a. tod.nás			*!				**
b. ton.nás	*!						**
c. to.nás	*!				*		*
☞ d. tò.ti.nás						*	*

(23)	/vól negár/ 's/he wants to deny'	MAX-MAN	AGREE-PL	*WEAKCUES	SONSEQ	MAX	DEP	*CODA
	☞ a. vòl.na.gá							*
	b. vòn.na.gá	*!						*
	c. vò.na.gá	*!				*		
	d. vò.l̩.na.gá						*!	

## II.2. Site of epenthesis:

(24) Lexical level:

- a. Initial/final position: CONTIGUITY responsible for edge-epenthesis and for non-epenthesis within a morph ([aspína], \*[sapína] 'spine'; [véntra], \*[véntar] 'belly').
  - I-CONTIGUITY: No skipping; it bans morpheme internal epenthesis. (Cf. McCarthy&Prince 1995)
- b. Between morphs: Epenthesis occurs as a last resort strategy ([véntras] 'bellies') (cf. Jiménez 1999, Bonet&Lloret 2002, 2005; see Bonet&Lloret 2002 for OCP cases).
- c. • *Ranking*: CONT, MAX-MAN, AGREE-PL, \*WEAKCUES, SONSEQ >> MAX >> DEP >> \*CODA

(25)	/véntɾ/ 'belly'	CONT	MAX-MAN	*WEAKCUES	SONSEQ	MAX	DEP	*CODA
	a. véntɾ			*!	*			*
	b. vént		*!			*		*
	☞ c. vén.tra						*	*
	d. vén.tar	*!					*	**

(26) Postlexical level: In principle, the same ranking, but see (29)-(30).

(27)	/sént táps/ '100 corks'	CONT	MAX-MAN	*WEAKCUES	SONSEQ	MAX	DEP	*CODA
	a. sent.táts			*!				**
	b. sen.táts					*!		**
	☞ c. sèn.t̩.táts						*	**

(28)	/tót+s tením/ 'all us have'	CONT	MAX-MAN	*WEAKCUES	SONSEQ	MAX	DEP	*CODA
	a. tòts.ta.ním			*!				**
	b. tòs.ta.ním		*!			*		**
	c. tò.tas.ta.ním						*	**!
	☞ d. tò.t̩s̩.ta.ním						*	*

It could also be an effect of ALIGN-MM >> ALIGN-WW, or due to an OUTPUTOUTPUT-CONTIGUITY effect (cf. CONT-BASE/RED in McCarthy&Prince 1995).

(29) It is in fact one of those effects: /vól+s fér/: [vòl.t̩s̩.fé] 'you want to do'

- OO-CONT preferable because the agrammatical candidate \*[vò.l̩.as.fé] violates AL-MM due to the inserted vowel, but also the grammatical candidate [vòl.t̩s̩.fé] violates AL-MM due to affrication (the closure/stop component of the affricate misaligns [vòl] and [s]).

- (30) • **Ranking:** OO-CONT, CONT, MAX-MAN, AGREE-PL, \*WEAKCUES, SONSEQ >> MAX >> DEP >> \*CODA

/vól+s féɾ/ Base: [vólts]	OO-CONT	MAX-MAN	AGREE-PL	*WEAKCUES	MAX	DEP	*CODA
a. vólts.fé			*!	*			*
b. vól.fé		*!			*		*
c. vò.las.fé	*!					*	*
d. vòl.tsi.fé						*	*

### III. VOWEL SELECTION

#### III.1. The nature of the inserted vowel

- (31) Perceptual approach (based on phonetic grounds): Epenthetic vowels are conditioned by the perceptual component of the grammar.
- Most sonorous vowels are the best nuclei (cf. Prince&Smolensky 1993):
    - Nuc/a > Nuc/ε,ɔ > Nuc/e,o > Nuc/i,u > Nuc/ə
  - Positional-perceptual basis (cf. Kenstowicz 1996, de Lacy 2002, Gouskova 2003):
 

Nucleus sonority scale in strong branches of feet:

    - FootHead (Peak) scale: Peak<sub>Ft</sub>/a > Peak<sub>Ft</sub>/e,o > Peak<sub>Ft</sub>/i,u > Peak<sub>Ft</sub>/ə

Nucleus sonority scale in weak branches of feet (the previous scale is reversed):

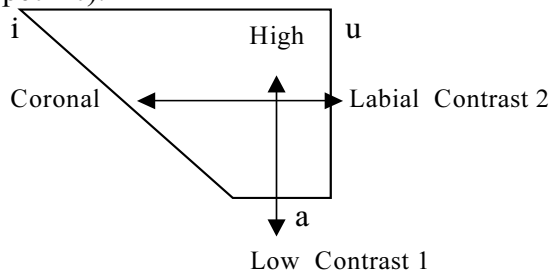
    - FootNonHead (Margin) scale: Mar<sub>Ft</sub>/ə > Mar<sub>Ft</sub>/i,u > Mar<sub>Ft</sub>/e,o > Mar<sub>Ft</sub>/a

Along the same lines, Steriade (2001): Epenthetic segments are always perceptually minimal, i.e. closest to zero: ə > i > ... > a.

- (32) According to (31a), [a] selection in Alguerese OK.  
According to (31b), [i] selection in Alguerese OK (because prohibition on [ə]).

*Question:* How to account for the selection of one or the other vowel?

- (33) Phonological approach: Epenthetic vowels are the unmarked vowels of the system (language specific).



- (34) a. [i], [u] are [High] and have Place features (Coronal/Labial) to contrast among them.  
b. [a] is [Low] and does not have any specification for Place because it does not contrast with any other [Low] vowel: [a] is the least marked vowel and thus selected as epenthetic.

*Problem:* How to account for the selection of [i]?

- (35) Mixed approach: Both the perceptual and the phonological components of the grammar intervene in the selection of the inserted vowel (cf. Rose&Demuth, forthcoming).

*Question:* How to account for the selection of one or the other vowel?

### III.2. Levels and vowel selection

- (36) Analysis I: Lexical epenthesis does not exist: these vowels are in the Input (cf. Loporcaro 1997).
- [i] chosen on phonetics grounds only (closest to zero, less sonorous vowel).
- Problem:* In loan adaptation, [a] is inserted ([a]Snoopy, [a]spaguets), and not [i] as predicted by this approach. (It further limits Freedom of Analysis.)
- (37) Analysis II: Serial approach:
- [a] at the lexical level, chosen on phonological basis.
  - [i] at the postlexical level, chosen on phonetic grounds.
- (38) *Problems for analyses I and II:* In Alguerese, there is postlexical sibilant voicing before vowels, but there is no voicing between stop/affricate and epenthetic [i]:
- desig amistós* [da.zì.ð̃ʒa.mis.tós] ‘friendly desire’ ≠ *desig feo* [da.zì.t̃ʃi.fé.u] ‘bad desire’
- Cf. other lexical phenomena are maintained, e.g. obstruent word-final devoicing: well explained in serialism through levels, but also in parallelism through OO constraints:
- arrib aviat* [a.rì.pa.vi.át] ‘I arrive soon’ = *arrib tard* [a.rì.p̥i.tált] ‘I arrive late’
- (39) *Solution:* Epenthetic [i] has no features at all, and thus cannot trigger voicing.
- Problems:*
- Arbitrariness of underspecification?
  - In Alguerese, [i]-epenthesis and lexical [i] are reported as being alike nowadays as far as their phonetic characteristics are concerned (cf. Loporcaro 1997).
- (40) Analysis III: Parallel approach:
- Nucleus sonority scale on positional-perceptual basis (= (31b)):
    - *FootHead (Peak) scale:* Peak<sub>Ft</sub>/a > Peak<sub>Ft</sub>/e,o > Peak<sub>Ft</sub>/i,u > Peak<sub>Ft</sub>/ə
    - *FootNonHead (Margin) scale:* Mar<sub>Ft</sub>/ə > Mar<sub>Ft</sub>/i,u > Mar<sub>Ft</sub>/e,o > Mar<sub>Ft</sub>/a
  - Our proposal: The offside position of a PrWord also is a weak position with respect to the PrWord itself:
    - *PrWordIn (Peak) scale:* Peak<sub>PrW</sub>/a > Peak<sub>PrW</sub>/e,o > Peak<sub>PrW</sub>/i,u > Peak<sub>PrW</sub>/ə
    - *PrWordOff (Margin) scale:* Mar<sub>PrW</sub>/ə > Mar<sub>PrW</sub>/i,u > Mar<sub>PrW</sub>/e,o > Mar<sub>PrW</sub>/a
- (41) + Prominent – Prominent

PrWord In		PrWord Off
Foot Head	Foot NonHead	
	Word-Initially	Word-Finally

Hence, within the PrWord the vowel selected is the best one from the perceptual point of view (i.e. [a]), while off the PrWord the least sonorous (closest to zero) vowel can be selected (i.e. [i]) on positional-weakness perceptual basis.

- (42) *Advantages:*
- Parallelism can be maintained.
  - The selection of the two vowels is inferred from a unique ranking of constraints: No need of underspecification.

- c. It is predicted that if there is a difference between lexical and postlexical vowels, the least prominent will always be the postlexical one. Along the same lines, if the difference occurs within the PrWord, it is predicted that the most prominent vowel will be that occurring in initial position (cf. the facts of Western Catalan: [aspína] vs. [véntre]).
- d. Assimilations also occur from prominent positions to weak positions (e.g. from onset to coda). Hence, no sibilant-voicing between words if the following V is the PrWdOff [i]-epenthesis is predicted too (cf. [da.zi.ḏ̪a.mis.tós] ‘friendly desire’ vs. [da.zi.t̪i.fé.u] ‘bad desire’). It is also predicted voicing if the following V is [a]-epenthesis ([da.zi.ḏ̪as.pe.sjál] ‘special desire’).

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