Catalan nativization patterns in the light of Weighted Scalar Constraints

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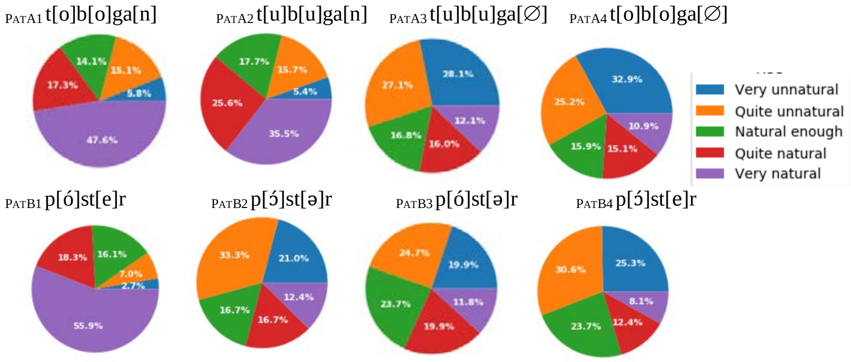
1. Introduction. 1.1. Word-final posttonic *-n* deletion (ND) and vowel reduction (VR) are general processes in the native lexicon of Catalan (*pla* [pláns] 'flat PL.' ~ [plá∅] 'flat SG.' ~ [plənifiká] 'to plan'; [bósə] 'bag' ~ [busέtə] 'bag DIM.'; Mascaró 1976). These two processes, though, tend to underapply in loanwords (*diva*[n], *eur*[o]) (Cabré 2002). Interestingly enough, loans susceptible to undergo both processes show a consistent behavior across young speakers in which underapplication of both processes is the most common solution ($_{\text{PATA1}}$: t[o]b[o]ga[n]), followed by just underapplication of ND ($_{\text{PATA2}}$: t[u]b[u]ga[n]), followed by far by application of both processes ($_{\text{PATA3}}$: t[u]b[u]ga[∅]), and in which underapplication of VR and application of ND ($_{\text{PATA4}}$: t[o]b[o]ga[∅]) is unattested. **1.2.** In Catalan, there is a notable tendency to prefer [–ATR] mid vowels in stressed position ([έ], [ɔ́]), over the [+ATR] counterparts ([é], [ó]), which is manifested through a wider distribution of the former across the Catalan lexicon (Mascaró 2002) and in loanword adaptation (Mascaró 2002): l[ɔ́]ft, gil[έ]tte. This tendency, which we interpret as a sonority-driven vowel laxing (VL) process of an underlying /e/ or /o/, also interacts with VR in loanwords. In these cases, the most common solution among young speakers is underapplication of both processes ($_{\text{PATB1}}$: [é]ur[o], p[ó]st[e]r) (see Bonet & Lloret & Mascaró 2006 and Cabré 2009 for an alternative interpretation of this pattern based on vowel harmony), followed by far by the application of both processes ($_{\text{PATB2}}$: [έ]ur[u], p[ɔ́]st[ə]r); on the contrary, mixt patterns with underapplication of VL and application of VR ($_{\text{PATB3}}$: [é]ur[u], p[ó]st[ə]r) or with application of VL and underapplication of VR ($_{\text{PATB4}}$: [έ]ur[o], p[ɔ́]st[e]r) are generally avoided, although they can be found sporadically in some specific words. **2. Goals.** The purpose of this talk is to present the results of two surveys supporting quantitatively these patterns and to attempt a formalization of them under the *Weighted Scalar Constraints* version of Harmonic Grammar, following the recent proposals by Hsu & Jesney (2017a, b) (see also Smith 2018 for work on loanword nativizations). **3. Experimental survey.** A picture-naming production task containing 16 loans with the relevant structures in § 1.1 (t**o**b**o**ga**n**, s**e**da**n**, c**a**ima**n**, etc.) and 6 loans with the relevant structures in § 1.2 (p**ò**st**e**r, **e**ur**o**s, etc.) has been conducted on 31 Barcelona Catalan speakers aged 18-23 during the period 2017-2018. The same 31 speakers have been asked to answer a judgment test inquiring the naturality of the four possible patterns (presented in an audio file via a Google form available on Internet) of the same 16 + 6 loans (22 x 4 patterns = 88 items), which had to be valued in a Likert scale of 1-5 (very unnatural, quite unnatural, natural enough, quite natural, very natural). Both tests where fulfilled with loans with just one of the relevant structures (*i.e.* diva**n**, màst**e**r, etc.) and with a 50% of distractors, and were presented in a randomized way. The results of the production test can be seen in (1), and the results of the judgment test, in (2). About these results, which generally fit the gradations exposed in §1, we should comment the following: *a*) Mixt patterns $_{\text{B3}}$ and $_{\text{B4}}$ received a high score for the neutral category "natural enough" (23,7% in both cases), which reveals the hesitation of speakers in front of this type of realizations. *b*) We attribute the low scores for $_{\text{PATA3}}$ (t[u]b[u]ga[∅]) and $_{\text{PATB2}}$ ([έ]ur[u]), both in the production and in the judgment tests, to the age of the inquired speakers. c) Note, finally, that no significant differences were detected in $_{\text{PATTERNSA}}$ with respect to the quality of the unstressed vowels (*i.e.* low /a/ vs. mid /e/, /o/). **4. Analysis with Weighted Scalar Constraints.** For the cases in § 1.1, we assume a triple lexical strata for Catalan (3): *a*) the core one (for those speakers with application of VR and ND) (3*i*), *b*) the intermediate one (for those speakers with just application of VR) (3*ii*), and *c*) the peripheral one (for those speakers with underapplication of both VR and ND) (3*iii*). The two M constraints involved are *e,o$_{\sigma\text{UNSTR}}$ and *n]$_{\text{WD}}$, which receive respectively a stable weight of 5.5 and 2.5 across all 3 possible strata. Following the proposal by Hsu & Jesney (2017a), we assume that F constraints can be scaled as follows: "Given a basic constraint weight *w*, and a scaling factor *s* corresponding to distance from the core, for any input that is not realized faithfully in the output, assign a weighted violation score of *w* x *s*" (p. 255). As illustrated, this ensures that the F weight values increase from the core stratum (in which *s* = 1: (3*i*)), towards the intermediate stratum (which starts with *s* = 1.8: (3*ii*)), until reaching the peripheral stratum (which starts with *s* = 2.8 and which covers the largest interval: (3*iii*) and (5a); F values acquire, thus, a higher relevance the closer to the peripheral strata. Given the constraint weights, no scaling factor can yield the impossible nativization $_{\text{PATA4}}$*t[o]b[o]ga[∅] (see the strata cross overpoints in (5)). For the cases in § 1.2, we assume also a triple lexical strata (4): *a*) the core one (for speakers with application of VR and VL) (4*i*); an intermediate one (for speakers with application of VR but underapplication of VL) (4*ii*), and *c*) the peripheral one (for speakers with underapplication of both VR and VL) (4*iii*). The two M constraints involved are $*e,o_{\sigma\text{UNSTR}}$ and $*e,o_{\sigma\text{STR}}$, which receive both a stable weight of 5.5 across all possible strata. In this case, the transition scaling factors from one strata to the other are 1, 2.3 and 2.8. No scaling factor can yield the nativization $_{\text{PATB4}}$ p[ɔ́]st[e]r and a very small scaling factor interval for the intermediate stratum ($_{\text{PATB3}}$ p[ó]st[ə]r) is predicted. In this talk we are going to discuss the advantages of this modelization with respect to a classic OT approach with a stratified grammar (Itô & Mester 1995, 1999).

(1) Production test

	% of answers		% of answers
a. $_{\text{PATA1}}$ t[o]b[o]ga[n]	65,2%	a. $_{\text{PATB1}}$ p[ó]st[e]r	98,9%
b. $_{\text{PATA2}}$ t[u]b[u]ga[n]	25%	b. $_{\text{PATB2}}$ p[ɔ́]st[ə]r	1,1%
c. $_{\text{PATA3}}$ t[u]b[u]ga[∅]	9,8%	c. $_{\text{PATB3}}$ p[ó]st[ə]r	0%
d. $_{\text{PATA4}}$ t[o]b[o]ga[∅]	0%	d. $_{\text{PATB4}}$ p[ɔ́]st[e]r	0%

(2) Judgment test



(3) HG with scalar constraints (PatternsA)

i. /tobogan/	$*e,o_{\sigma\text{UNSTR}}$ w = 5.5	$*n]_{\text{Wd}}$ w = 2.5	Ident-V_{UNSTR} w = 2	Max-IO w = 1.5	H	*Scaling factor for F*	*Strata*
a. [toβoɣán]	–1	–1			–8	1	*Core stratum*
b. [tuβuɣán]		–1	–1		–4.5		
☞c. [tuβuɣá∅]			–1	–1	–3.5		
d. [toβoɣá∅]	–1			–1	–7		
ii. /tobogan/	$*e,o_{\sigma\text{UNSTR}}$ w = 5.5	$*n]_{\text{Wd}}$ w = 2.5	Ident-V_{UNSTR} w = 2	Max-IO w = 1.5	H	*Scaling factor for F*	
a. [toβoɣán]	–1	–1			–8	1.8	*Intermediate stratum*
☞ b. [tuβuɣán]		–1	–1		–6.1		
c. [tuβuɣá∅]			–1	–1	–6.3		
d. [toβoɣá∅]	–1			–1	–8.2		
iii. /tobogan/	$*e,o_{\sigma\text{UNSTR}}$ w = 5.5	$*n]_{\text{Wd}}$ w = 2.5	Ident-V_{UNSTR} w = 2	Max-IO w = 1.5	H	*Scaling factor for F*	
☞ a. [toβoɣán]	–1	–1			–8	2.8	*Peripheral stratum*
b. [tuβuɣán]		–1	–1		–8.1		
c. [tuβuɣá∅]			–1	–1	–9.8		
d. [toβoɣá∅]	–1		–1		–11.1		

(4) HG with scalar constraints (Patterns B)

i. /poster/	$*e,o_{\sigma\text{UNSTR}}$ w = 5.5	$*e,o_{\sigma\text{STR}}$ w = 5.5	IDENT-V_{STR} w = 2.5	IDENT-V_{UNSTR} w = 2	H	*Scaling factor for F*	*Strata*
a. [póster]	–1	–1			–11	1	*Core stratum*
☞ b. [pɔ́stər]			–1	–1	–4.5		
c. [póstər]		–1		–1	–7.5		
d. [pɔ́ster]	–1		–1		–8		
ii. /poster/	$*e,o_{\sigma\text{UNSTR}}$ w = 5.5	$*e,o_{\sigma\text{STR}}$ w = 5.5	IDENT-V_{STR} w = 2.5	IDENT-V_{UNSTR} w = 2		*Scaling factor for F*	
a. [póster]	–1	–1			–11	2.3	*Intermediate stratum*
b. [pɔ́stər]			–1	–1	–10.35		
☞ c. [póstər]		–1		–1	–10.1		
d. [pɔ́ster]	–1		–1		–11.25		
iii. /poster/	$*e,o_{\sigma\text{UNSTR}}$ w = 5.5	$*e,o_{\sigma\text{STR}}$ w = 5.5	IDENT-V_{STR} w = 4	IDENT-V_{UNSTR} w = 2	H	*Scaling factor for F*	
☞ a. [póster]	–1	–1			–11	2.8	*Peripheral stratum*
b. [pɔ́stər]			–1	–1	–12.6		
c. [póstər]		–1		–1	–11.1		
d. [pɔ́ster]	–1		–1		–12.5		

(5) Strata cross overpoints