

Segment–zero alternations in Galician definite article allomorphy

Floating consonants at the left-edge of morphemes

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Abstract: Galician presents an intriguing case of opaque phonologically-conditioned definite article allomorphy (PCA). Though Galician features in the general literature on PCA (Nevins 2011), there is a surprising lack of synchronic theoretical discussion of this specific pattern. The data appears to require allomorph selection arranged in a system of Priority (Mascaró 2005; Bonet et al. 2003; 2007). The pattern involves opaque segment ‘deletion’ and resyllabification, where segment deletion counterbleeds allomorph insertion along with morphologically-specific segmental changes. A Strict CV representational reanalysis is proposed in which there is no true allomorphy (no selection between competing underlying morphemes). All the forms are generated from a single underlying form, thereby undercutting PRIORITY.

Keywords: allomorphy; opacity; floating segments; empty nuclei; Strict CV

1. Introduction

Galician is part of the Galician-Portuguese branch of Western Ibero-Romance. Its definite article comes in three different forms depending on its phonological context. Unlike Italian definite article ‘allomorphy’ (Larsen 1998; Faust et al. 2018), the defining context for the allomorph selection in Galician occurs to the left of the article, not the right.

- (1) Galician article allomorphy (Álvarez Blanco & Xove 2002; Dubert García 2014)

	First form	Second form	Third form
(F)eminine	a	la	na
(F.Pl)ural	as	las	nas
(M)asculine	o	lo	no
(M.Pl)ural	os	los	nos

2. The phonology of the pattern

Although the allomorphy is phonologically conditioned, the pattern is thoroughly non-optimising. First, as we see in (2a), the pattern creates cross-morphemic V.V sequences, which are strongly dispreferred cross-linguistically. Second, the V-initial variant is selected in absolute-initial position (2b), another reversal of cross-linguistic preferences. Third, though CC sequences are more marked than CV sequences, the consonant-initial allomorph is selected only after the consonant-final stems (ending in /r, s, ŋ/) (2c).

- (2) Contexts for Galician allomorphy (Álvarez Blanco 1983; Dubert García 2001; Kikuchi 2006; Dubert García 2014)
- a. After vowel-final stems
 - i. vexo [os] primos ‘see the cousins’
see.1SG the cousins
 - ii. para [o] campo ‘for the field’
for the field
 - iii. chegou [o] momento ‘the moment has come’
take.3PS the moment
 - b. Absolute initial position
 - i. a nena ‘the girl’
 - ii. os falantes ‘the speakers’
 - c. After consonant initial stems
 - i. [por] [po-lo-mar] ‘for the sea’
 - ii. [todas] [toda-las-muñeres] ‘all the women’
 - iii. [beŋ] [be-nas-muñeres] ‘they see the women’

As we see in (2c), the nasal variant of the allomorph is selected after stems ending in /ŋ/. In Galician, all word-final nasals become /ŋ/.¹ If a stem-final /ŋ/ precedes the definite article, the allomorph takes a consonant-initial form and the /ŋ+l/ sequence surfaces as [n] (2c-iii).

Interestingly, though consonant-final words predict the second and third-allomorphs, the final consonants also delete (2c). This produces a synchronically active case of ‘counterbled’ allomorph insertion: UR: /por+__+mar/ → Allomorph insertion: por-lo-mar → C-deletion: polo-mar → Output: [polomar] ‘for the sea’. In an affront to modularity,

¹ This statement is effectively generalizable to the ‘coda’ position, although it has exceptions derived from (a) nasal-place assimilation and (b) a syntactically conditioned contrast (Dubert García 2014).

these segmental changes do not occur within morphemes: [buɾla] ‘mockery’, [meɾlu] ‘blackbird’, [penla] ‘handle’, [kanle] ‘canal’, [esluir] ‘dilute’, [leʝislaðoɾ] ‘legislator’.

3. Previous accounts

Dubert-García (2014) offers a diachronic explanation leading to the modern set of allomorphs, however, he does not propose to give a generative (non-lexicalist) synchronic account of the alternations such as would be accessible to a child learner, for instance.

Kikuchi (2006) (henceforth K) does propose a synchronic account in the framework of OT, however, the account is complicated and only accounts for part of the allomorphy (K openly says that their analysis mispredicts the third-form allomorphs and leaves this to later work). K’s account has three properties that I deliberately avoid in my analysis: (a) modularity violation, the phonology has access to morpho-syntactic features, (b) a crucial syntax-to-prosody mapping, and (c) PRIORITY. I will discuss only this last mechanism for reasons of space.

PRIORITY (Mascaró 2005; Bonet et al. 2007) is a type of precedence that exists between URs. Two or more allomorphs can be a (partially) ordered set: {A > B} with A’s insertion taking priority over B. Then in the constraint ranking, PRIORITY (defined in (3)) enforces faithfulness to this lexical ordering. For Galician, K proposes to establish the lexical priority shown in (4).

(3) PRIORITY (Bonet et al. 2007)

Respect lexical priority of allomorphs (e.g. {A > B})

(4) DEF.MASC.SG. {o > lo} DEF.MASC.PL. {os > los}
 DEF.FEM.SG. {a > la} DEF.FEM.PL. {as > las}

K’s analysis relies on the broader concept of allomorph **competition** and **selection** rather than attempting to derive the forms from a single underlying form, which is the direction that a number of analyses are moving in recently.² PRIORITY may or may not be ‘right’, however, all other things being equal, a simpler analysis should always be preferred over a complex one. I would argue that a phonological account that derives the allomorphy

² For analyses replacing selection with derivation see Barillot et al. (2017); Faust et al. (2018).

from a single underlying form is more perspicacious, especially where the allomorph shapes are so similar to each other. Moreover, my account does not violate modularity given that all of the forms are generated by the phonological component (Barillot et al. 2017; Faust et al. 2018). My proposed analysis has the added advantage of being morphologically unified and compatible with a Distributed Morphology-style vocabulary insertion of exponents (Halle & Marantz 1993).

4. The Strict CV account

4.1. Strict CV, the framework, the possibilities

Strict CV (Lowenstamm 1996; Scheer 2004) is an offshoot of Government Phonology (Kaye et al. 1990). Like its predecessor, it is an autosegmental theory of phonology. Strict CV proposes that representations are chiefly made up of two layers. The first is a skeletal tier, universally composed of strictly alternating C and V slots, the second is a melodic tier that contains the features: the Elements of Element Theory (Harris & Lindsey 1995; Backley 2011).

In principle, these two layers are independent of each other. Therefore, exponents can come in any of the shapes in (5); defined by the presence of a phonological object in either layer and whether these objects are related to each other via an association line.

(5) Shapes of exponents (Bendjaballah & Haiden 2008; Faust et al. 2018)

a. Fixed	b. Floating	c. Empty	d. Unfixed
C V		C V	C V
α β	α		α β

In Strict CV, vocabulary items (the exponents of morphemes) contain any combination of the structures shown in (5). When melody is linked by an association line to the CV skeleton, it is said to be **fixed**. Whereas an exponent could contain only a feature/segment, in this case it is referred to as **floating**. Exponents could also be composed of entirely empty skeletal structure (cf. the affixal moras of D'Alessandro & van Oostendorp 2015; Zimmermann 2017).³ Finally, there is the possibility of leaving the two

³ There are many recent cross-framework analyses using empty structure/floating segments: Zimmermann (2017); Newell (under review); Kiparsky (to appear); and papers within: Newell & Ulfsbjorninn (to appear).

layers unconnected by association lines, this is referred to as **unfixed** (cf. Pagliano 2003).

Strict CV uses representations with a proliferation of empty positions. In this framework, empty positions can receive a phonetic interpretation ('epenthesis'). However, under certain universal and parametrized conditions empty positions are silenced (= marked as not receiving any phonetic interpretation).

(6) Silencing of empty positions

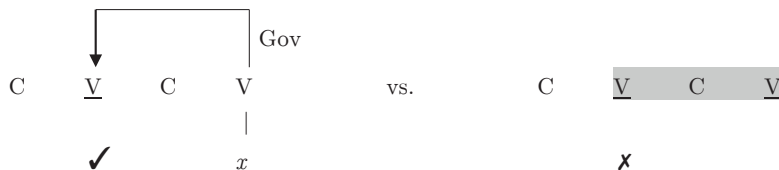
a. Domain-Final Parameter (DFP) (based on Kaye 1990)

Domain-final empty V slots are silenced (receive no phonetic interpretation)

C	V	C	<u>V</u>
<i>x</i>	<i>y</i>	<i>z</i>	

b. Gov(ernment)

An empty V-slot can be silenced **iff** it is followed by a V-slot that is **not** itself silenced.

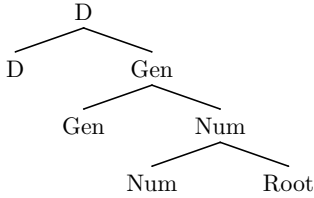


Although the full cross-linguistic variation on the linking of floating segments remains unknown, two things are already quite clear: (a) floating segments happily link to empty positions and (b) floating melody does **not** link to silenced positions (Faust et al. 2018).

4.2. The shape of Galician articles

The Galician allomorphs for the articles can all be derived from a single underlying form. This produces a morphologically unified analysis, where the morpho-syntactic features of definiteness, gender and number are all uniformly exponed as shown in (7).

(7) Galician DP structure and exponents



a. D(eterminer)

[+definite] ⇔ ⟨l⟩⁴

[-definite] ⇔ un

b. Gen(der)

[+fem] ⇔ a

[-fem] ⇔ o

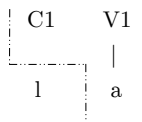
c. Num(ber)

[+plural] ⇔ s

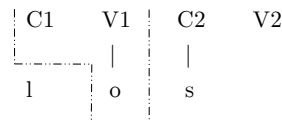
[-plural] ⇔ ∅

The underlying ⟨l⟩ of the definite is analysed as a floating segment with no skeletal structure of its own. I propose that when the Determiner Phrases' (DP) D, Gen and Num features are exponded and linearised, the floating segment of [+definite] sits beneath Gen's CV exponent (CV1 in (10a–b)). The CV of the Num is shown as CV2.

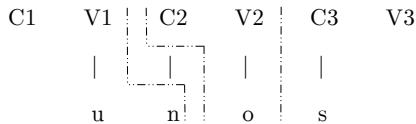
(8) The shape of Galician determiners as they enter phonological derivation

a. Feminine singular definite⁵

b. Masculine plural definite



cf. c. Masculine plural indefinite



⁴ The angle brackets here indicate that the exponent for the [+definite] feature is a floating segment.

⁵ The lines show morpheme affiliation for reader convenience (how the pieces came together) but the lines have no status in the representation. Colour would have been visually clearer.

4.3. How the shape of exponents causes alternations

In this analysis, it is the floating nature of the definiteness exponent ⟨l⟩ that causes segment–zero alternations. As the forms in (8a–b) show, the local empty position for the floating ⟨l⟩ is the C just above it (C1). Given that the floating ⟨l⟩ is poised at the left-edge of its morpheme, the variable in the phonological environment that conditions its linking to C1 is also on the left.

As is shown in the derivation in (9), when the UR of the definite article is preceded by a vowel-final word, the Gov of V1 is directed toward its own C position (C1) (cf. Scheer & Ziková 2010). In this context, C1 is a silenced position, therefore unavailable for linking. This leaves the floating ⟨l⟩ of the determiner with no **suitable** empty C position, consequently ⟨l⟩ is stray erased ('deleted').

(9) Definite article after a vowel-final exponent

a. URs /para ⟨l⟩o kampo/ 'for the field (M.SG)'

C	V	C	V	C	V	C	V	C	V	C	V
p	a	r	a	l	o	k	a	m		p	o

b. [paraokámpo] 'for the field' (stray erased segments are shown in grey highlight)

C	V	C	V	<u>C</u>	V	C	V	C	<u>V</u>	C	V
p	a	r	a	l	o	k	a	m	p	o	

↓ Gov
↓ Gov

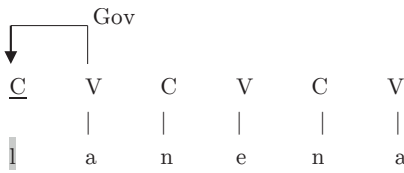
In absolute DP-initial position, the situation is similar to the post-vocalic one. This is because the definite article is the highest element in the DP. Correspondingly, the UR of the definite article will be the first exponent in the phonological string of a DP.

(10) Definite article in absolute-initial position

a. URs /⟨l⟩a + nena/ 'the girl (F.SG)'

C	V	C	V	C	V
l	a	n	e	n	a

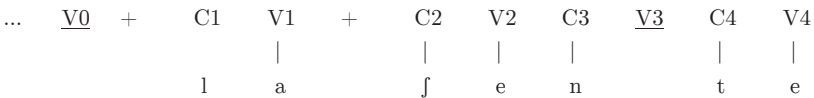
b. [anena] ‘the girl’



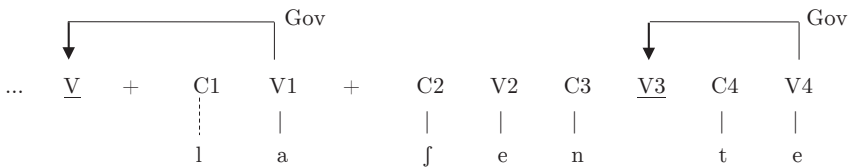
In Strict CV, consonant-final forms end in empty V-slots. In isolation, this V is silenced by DFP. However, when this empty V-slot (V0 in (11)) precedes the definite article, V0 absorbs Gov (since it is not final, it is not silenced by the DFP). Therefore, in this context (shown in (11b)), C1 is not a Governed position and we (correctly) expect ⟨l⟩ to link to C1.

(11) Definite article after C-final stem (partial structure)

a. UR /vir + la + fente/ ‘see the people’



b. [vilafente] ‘see the people’



We now move to the opaque stem-final consonant deletion and the nasalisation of the definite article as these are not purely explained by the floating nature of the ⟨l⟩.

As already shown in section 2, the segmental changes that the allomorphs undergo are not regular phonological processes of Galician; they do not occur within morphemes: [por] ‘for’ vs. [po-lo-mar] ‘for the sea’, [bɛŋ] ‘they see’ vs. [be-nas-muʎeres] ‘they see the women’ (cf. [merlu] ‘black-bird’, [esluir] ‘dilute’, [canle] ‘canal’). In fact, it is not even the case that these clusters are excluded across morpheme boundaries: [bisitar-me] ‘visit me’, [faθerβos-mal] ‘make you bad’. Therefore, it is important to the description of the phenomenon that the stem-final consonants only seem to actively compete for the position of a floating consonant to their right. In fact, in the dialect of Santiago de Compostela it is permitted to delete either of the competing Cs: *todos dias* ‘all the days’ (cf. Standard Galician with its opaque stem-final deletion), or: *todos os dias* (deleting the ⟨l⟩ of

the determiner. What is not attested in Santiago de Compostela is maintaining both the stem-final consonant and the ⟨l⟩ of the definite article: **todos los dias*.

I take this to mean that there is a morpheme-structure constraint whereby consonant-final stems actually end in floating consonants. Consequently, all Galician stems are analysed as underlyingly ending in a fixed vowel or a final floating CV.

(12) UR of stems in Galician

a. UR of /pəlβo/ ‘octopus’ and /torðo/ ‘thrush’⁶

C	V	C	V	C	V
p	ɔ	l		β	o
t	o	r		ð	o

b. UR of /todos/ ‘all’ and /mar/ ‘sea’

C	V	C	V	C	V
t	o	ð	o	s	
		m	a	r	

Because the floating melody is rightmost in stems, its presence is subject to the phonological environment to its right. In (13) beneath, CV2 is an underlyingly empty CV, therefore it will receive Gov from the V3 of CV3 (13b). It seems that in Galician, it is sufficient for this final CV to receive Gov in order for the whole final CV to be silenced.⁷

Silencing the full empty CV with a single application of Gov does have a precedent (Lowenstamm 1999). There are also hints in the GP literature that sometimes an empty C needs its own source of Gov: *[lθe]ro *le+hero* ‘the hero’ and *[dθ]hors *dehors* ‘outside’ (Charette 2003), though sometimes it does not: *[lθa]mi *le+ami* ‘the friend’. In Standard GP, this difference was referred to as ‘pointed’ vs. ‘pointless’ onsets (cf. Charette 1991), with the pointed onsets requiring their own independent source of Gov. An empty C only parametrically seems to need an independent source of Gov. Galician seems to allow ungoverned empty onsets, so perhaps its empty CV’s Cs are ‘pointless’ (or some equivalent) and Gov’ing their V is sufficient for them also to be Gov’d.

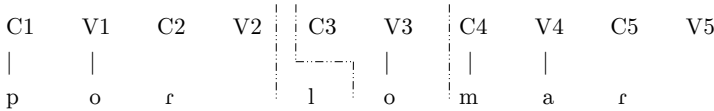
⁶ Here and elsewhere in the paper, I show the voiced fricatives in the underlying forms, although they may be surface allophones. This is a matter of analysis and I do not pronounce on it here.

⁷ Unlike Gov (as we might expect) the DFP does not ‘license’ the whole final CV site.

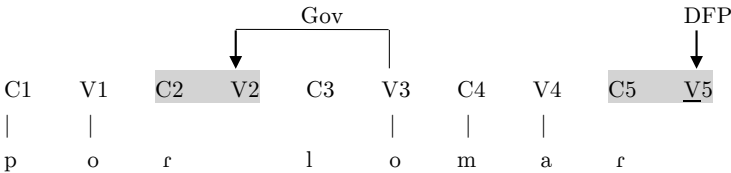
As shown in (13c), given that the whole empty CV is silenced, the floating ⟨r⟩ cannot link to CV2. Since CV2 absorbs Gov, C3 is not a silenced position (13c). Therefore, the floating ⟨l⟩ is permitted to dock to C3. I further hypothesise that the floating ⟨r⟩ **also** links to C3. This is satisfyingly non-teleological because each floating C links to the closest suitable empty position (without any knowledge of the other, and without any arbitrary sequential order of association).⁸

(13) Definite article after C-final stem

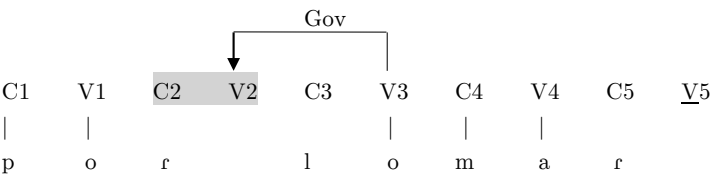
a. UR /por + lo + mar/ ‘by the sea’ (morpheme affiliation shown)



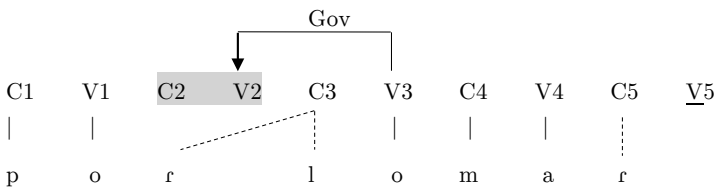
b. Phonological computation



c. Floating melody cannot link to C2 but it can link to C3



d. [polomar] ‘by the sea’



This analysis naturally embodies the observation that stem-final consonants and the ⟨l⟩ of the definite article vie for the same position in the

⁸ Though this results in them linking to the same position, which will require fusion by coalescence (4.4).

skeletal structure. The fusion of $/r+l/$ results in the surface opaque outcome [l], giving the impression of ‘no change’ and the false impression of deletion. The next section will explain the mechanism of coalescence and derive the ‘morpheme-specific’ (actually floating-specific) segmental changes and the third-form allomorphs.

4.4. The third-form (nasal) allomorph

I assume that fusion/coalescence is the process by which the features of two (floating) segments are joined with each other under a single C. I assume that the outcome of coalescence between a segment (set of elements) and its featural subset will result in ‘no change’.

(14) **If** $|X,Y| \Leftrightarrow [\alpha]$ **then** $|X+X,Y| = |X,X,Y| = |X,Y| \Leftrightarrow [\alpha]$

For Galician, the only possible CC coalescence is: $/r,s,\eta+l/$. In Element Theory, $/r/$ is often taken to be a featurally proper subset of $/l/$. Therefore, coalescence between $/r+l/$ would operate accordingly: $/r+l/ = |R+R,?| = |R,R,?| = |R,?| \Leftrightarrow [l]$, because $|R,?| \Leftrightarrow [l]$, effectively producing a ‘no change’ outcome.

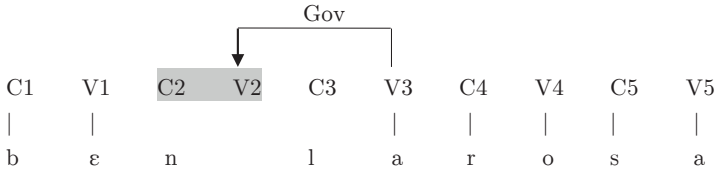
Said that, the proposed coalescence between $/s+l/$ also just yields [l]. However, $/l/ |R,?|$ is not a featural subset of $/s/ |R,H|$. In fact, we could have expected $/s+l/ |R,H+R,?|$ to fuse into $|R,H,?|$, which (at least superficially) looks like a representation of [t]. However, if coalescence is the right analysis, its product must exclude [H]. One proposal for excluding this element uses licensing constraints (Charette & Göksel 1998). I assume that stops contain headed $[?]$, but even ‘hard’ sonorants (like nasals) only contain the unheaded version of the element: $[?]$ (Ulfsbjorninn & Lahrouchi 2016). If we assume that the headedness of one element does not switch merely for the teleological preservation of another element, then we can propose that in Galician (and in most languages) [H] cannot coexist with $[?]$ (only with $[?]$). If [H] is deleted, coalescence yields the correct ‘no-change’ output: $|R,H+R,?| = *|R,H,R,?| \rightarrow |R,R,?| = |R,?| \Leftrightarrow [l]$.

Admittedly, the fact that $/s+l/$ does not fuse into [t] might suggest that the coalescence analysis is inferior to one which simply stray erases one of the offending segments: $/\langle s \rangle + \langle l \rangle / \rightarrow \langle s \rangle \langle l \rangle \rightarrow [l]$. This is, of course, still a possibility and it would also achieve my main aim of deriving all the forms of the definite article from a single UR. However, I will continue to present the coalescence analysis because of the third-form allomorphs:

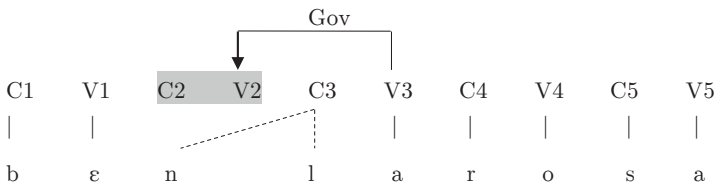
[bɛ-na-rosa] ‘they see the rose’. The coalescence analysis correctly predicts that ⟨n⟩ and ⟨l⟩ ought to fuse (crucially) in C3 (shown in (15) below).

(15) Definite article after C-final stem (full structure)

- a. UR /bɛ⟨n⟩ + ⟨l⟩a + rosa/ ‘they see the rose’; ⟨n⟩ cannot link to C2 (Gov) but it can link to C3



- b. [benarosa] ‘they see the rose’



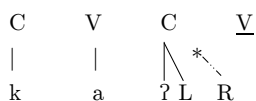
My theory of coalescence then correctly predicts that the outcome of ⟨n+l⟩ should be [n]. In keeping with standard ET assumptions, /l/ |R,ʔ| is a proper subset of /n/ |R,ʔ,L|. Therefore, we expect: /n+l/ = |R,ʔ,L+R,ʔ| = |R,R,ʔ,ʔ,L| = |R,ʔ,L| ⇔ [n], because |R,ʔ,L| ⇔ [n].

The competing deletion-analysis would probably expect the nasal to remain under C2. Satisfyingly, there is Galician-specific evidence that the [n] that emerges from underlying ⟨n+l⟩ moves from its original location beneath C2 into C3. In Galician the velar nasal is an allophone of /n/. Morpheme-internally and word-finally, a nasal is always velarized in ‘closed syllables’ (Lipski 1975). This is defined in Strict CV as: before an empty V.⁹ This is transparently analysed as a case where the coronal nasal needs to have its place feature (|R|) licensed by a filled V position, lest it become placeless ([ŋ]): |R| of |R,ʔ,L| must be Licensed (Lic).¹⁰ This condition means that the coronal feature of the nasal **cannot** be found in a singleton C position **unless** that C comes before a filled V position that can Lic it.

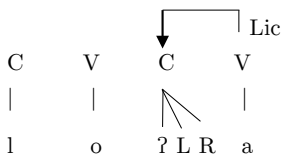
⁹ Or via spreading from a licensed C: [kampo] ‘field’, [kanta] ‘he/she sings’.

¹⁰ This is an instance of a **Melody-to-Structure Licensing Constraint** (Ulfsgjorninn & Lahrouchi 2016).

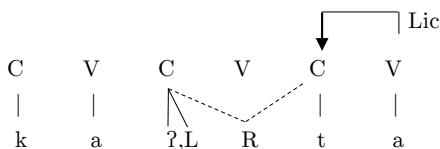
(16) a. [kan] ‘dog’



b. [lona] ‘canvas’

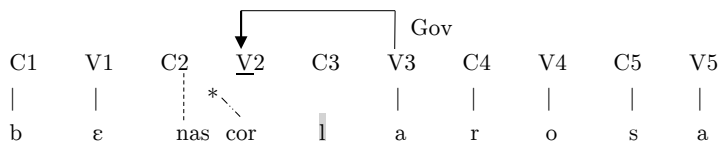


c. [kanta] ‘he/she sings’



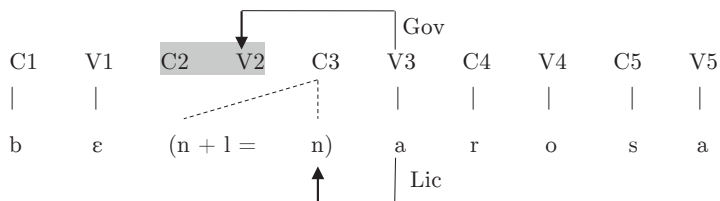
Given these conditions, if the third-form allomorph was generated by the deletion of the article’s ⟨l⟩, the nasal should link to C2 and surface as velar contrary to the facts.

(17) *[benarosa] ‘they see the rose’



Instead, the coalescence analysis fuses ⟨n+l⟩ in C3 (17). Being in C3, the fused ‘n’ is the onset of a vowel-initial syllable, allowing its place feature to be licensed (18).

(18) [benarosa] ‘they see the rose’



5. Conclusion

I proposed a representational solution to Galician definite article allomorphy. My proposal uses only general phonological factors in combination with specific underlying lexical shapes of URs to generate all the surface alternants. Because a single underlying form is derived into the nine surface variants, there is no need for the lexical ordering of an analysis like PRIORITY. The idiosyncratic difference between fixed and alternating segments is encoded in the lexical shape of the underlying forms (cf. the Borer-conjecture (Borer 1984; Chomsky 1995)). The initial /l/ of the determiner floats and is stray erased in post-vocalic and utterance-initial positions in accordance to Strict CV principles (and by virtue of it being highest phonological object in the string exposing the DP). In consonant-final contexts the two consonants fuse as the onset of the determiner's vowel.

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