Plural Isogloss and Linguistic Change: a Comparative Study of Romance Nouns

Nicola Lampitelli
Université Paris Diderot - Paris 7 & Université d'Orléans
nicolalampitelli@gmail.com

1. Introduction

Romance nouns display a well-known case of isogloss with respect to the expression of plural. There are two groups of languages: those that pluralize by adding the suffix -s, and those that pluralize by changing the quality of the final vowel of the noun. Table 1 below illustrates such an isogloss providing examples from Portuguese, Spanish, French, Italian and Romanian.

(1) Romance noun plural isogloss

Portuguese	Spanish	French	Italian	Romanian	
[loβᵘʃ]	[loβos]	/løz/, [lø][1]	[lupi]	[lupʲ]	'wolves'

Literature in historical linguistics (cf. among others Tagliavini 1972: 131-139) has depicted this situation by distinguishing a Western Romania (including Pt, Es, Fr, etc) from an Eastern Romania (including It, Ro, etc).[2]

In this paper, I propose an explanation to the morphological isogloss. More precisely, I argue that this cross-linguistic diversity within Romance depends on morpho-phonological parameters on the structure of the noun. These parameters consist of language-particular restrictions on the form of (nominal) roots and on the exponents of gender and number. Moreover, I propose a formalization of the linguistic change. For the sake of clarity, I repeat the three main goals of this paper below:

(2) Goals of the paper
a. Propose an explanation of the morphological isogloss.
b. Show how parameters on the structure of the noun account for cross-linguistic diversity.
c. Formalize the linguistic change.

The analyses presented in this paper are consistent with a syntactic approach to word-formation, such as Distributed Morphology (Embick 2010, Halle & Marantz

[1] French [lø], spelled *leu*, is used only in the following idiom: *à la queue leu-leu* 'one-by-one line'. Modern French borrowed the form [lu], spelled *loup*, from Occitan. The phonemic transcription /løz/ is necessary to show the plural morpheme /z/. This surfaces only in the well-known context of *liaison* (Encrevé 1988, Dell 1973). I return to French plural in section 3.2.1.

[2] For the sake of clarity, Italian peninsula is cut into two parts: Northern Italy belongs to Western Romania, whereas Southern Italy to Eastern Romania. The line of the isogloss goes from Massa to Senigallia. Modern Italian results from vulgar Tuscan, thus belonging to Eastern Romania.

1993, Marantz 1995, 1997). In this theory, words are built in the Syntax and each terminal node corresponds to a morpheme. Morphemes are feature-matrices devoid of phonological content. The phonological exponents of each morpheme are inserted through an operation called *spell-out*. In addition, I assume the general framework of Government Phonology (Kaye, Lowenstamm & Vergnaud 1985, 1990), and the more specific CV option (Lowenstamm 1996, Scheer 2004). Following Bendjaballah & Haiden (2008), I consider that each exponent surfaces according to one of the following phonological types:

(3) a. Segmental b. Skeletal c. Segmental and skeletal d. Silence

In the first case, the exponent consists only of a sequence of (auto)segments. In an autosegmental framework, a segment is audible only if it is associated to a skeletal tier. Thus, exponents of type (3a) are not audible unless they find C and/or V positions. Conversely, type (3b) consists of a CV unit, and no segments. This is an exclusively skeletal type. Type (3c) is complex, i.e. a fully audible sequence of segments. Finally, (3d) consists of a null exponent, i.e. a phonological zero.

The paper is organized in the following manner. In section 2, I present the historical explanation to the isogloss and my own hypothesis on the origin of the vocalic plural. Italian is used as a case study. Section 3 shows the parametric choices made by each individual language with respect to the internal organization of the noun structure. I present first Latin nouns, then three case studies: French, Spanish and Italian nouns. Each language exemplifies a particular situation of the evolution from Latin nouns. In section 4, I illustrate my proposal on the linguistic change. More precisely, I show that the linguistic change must be viewed as the loss of underlying phonological and/or morpho-syntactic items. This hypothesis produces an important discussion, which is introduced therein. Finally, section 5 concludes.

2 The isogloss

This section is divided in two parts. The first part presents the traditional hypothesis about the origin of the isogloss; the second part illustrates my own proposal, based on a particular phonetic evolution of the Acc marker -s.

2.1 The historical explanation of the isogloss

The situation shown in (1) originates, diachronically, from the Latin declensional system. It is traditionally accepted that Romance nouns derive from Latin Acc as far as singular is concerned (cf. Meyer-Lübke 1890-1902), as shown in the table below:[3]

[3] Latin nouns are spelled in small caps; vocalic length is marked by a dash on the vowel.

(4) Singular nouns in Latin and Romance

Latin	Portuguese	Spanish	French	Italian	Romanian
Nom PONS	*	*	*	*	*
Acc PONTEM	[põnt^{ə}]	[pwente]	[põ]	[ponte]	[pod]

The pattern shown in (4) accounts for the overwhelming majority of singular nouns in Romance.

In contrast, plural cannot be explained on the simple basis of the comparison with the Acc. In fact, as already mentioned, plural displays an interesting isogloss, which has been described in the following manner:

(5) Romance plural isogloss
a. Western Romance (Pt, Es, Fr, etc) pluralizes using -s;
b. Eastern Romance (It, Ro, etc) pluralizes using -i.

This situation is illustrated in the table below:

(6) Plural nouns in Latin and Romance

Latin	Portuguese	Spanish	French[4]	Italian	Romanian
Nom LUPĪ	*	*		[lupi]	[lup^{i}]
Acc LUPŌS	[loβ^{u}ʃ]	[loβos]	/løz/	*	*

The data above suggest that Portuguese, Spanish and French plurals are the continuations of the Acc form LUPŌS, whereas Italian and Romanian plurals originated from the Nom LUPĪ.

The explanation depicted in (6) is based on a phonological observation: Western Romance conserved final -s, whereas Eastern Romance disallowed this consonant from final positions.[5] This hypothesis, called the morphological hypothesis (Maiden 1996), is based mainly on the consideration that, in Italian, the phonological evolution would have blurred the distinction between the singular and the plural. This fact is schematized below:

---

[4] Modern French has developed through various and well documented stages of Ancient and Middle French. In these stages of the language, two distinct syntactic cases existed: subject case (SC) and oblique case (*cas régime*, RC). Singular was characterized by the presence of -s at SC and a zero marker at RC, whereas plural displayed the reverse situation:

(i)	Singular	Plural	
SC	*murs*	*mur*	'wall(s)'
RC	*mur*	*murs*	'wall(s)'

This situation makes the analysis slightly more complicated with respect to the origin of Modern French plural marker /z/. The general trend, which I assume here, is that Modern French /z/ is the direct continuation of Latin Acc -s (cf. La Chaussée 1989, Picoche 1979 and Zink 1986).

[5] Recall that, in French, plural /z/ surfaces only followed by a vowel, i.e. in the already mentioned context of *liaison*. This consonant has been elided during the XII century.

(7) Proto-Romance from Italian area

	Lost of -m	Lost of length	Lost of -s	Low. of -u	It. forms
Singular					
Nom LUPUS			*lupu	*lupo	lupo
Acc LUPUM	*lupu			*lupo	lupo
Plural					
Nom LUPĪ		*lupi			lupi
Acc LUPŌS		*lupos	*lupo	*lupo	lupo

Once Acc -m had been lost and length neutralized, final -s was dropped. At this stage of the phonological evolution, Proto-Romance variety from the Italian area could not make the distinction between Nom and Acc in the singular, as both forms were presumably *lupu. At the same time, plural displayed two distinct forms: *lupi in Nom, and *lupo in Acc. Later, the lowering of (short) -u caused the neutralization between the singular and the Acc plural, all forms being hence *lupo. Rohlfs (1969), among others, claims that this situation represents the crucial argument in favor of the hypothesis that Italian plural -i originated from Latin Nom from declension 2.

The historical explanation of the isogloss depicted so far does not seem consistent because it claims that Italian nouns result from two distinct syntactic cases depending on their number. Is it possible that the Italian plural has been formed on the Nom, whereas the corresponding nouns in Portuguese, Spanish and French continued the Acc forms?

In the next subsection, I argue against this point of view, claiming that Italian nouns represent the continuation of Latin Acc both in the singular and in the plural.

2.2 Vocalic plurals derive from Latin Acc

In this subsection, I explore the hypothesis according to which Italian nouns derive, diachronically, from Latin Acc, both in the singular and in the plural. Recall that Italian belongs to the Eastern Romania group. This group is characterized by the presence of a vocalic plural. Following an idea originally found in Reichenkron (1939), I propose that the Romance vocalic plural derives from the Latin Acc marker -s, through a phonetic evolution that transformed /s/ into /i/.

The comparison between the Latin plurals from declensions 1, 2 and 3 on one side and the corresponding plurals of Italian on the other, illustrates the starting point of the analysis.

(8) Latin and Italian plurals

	Case	Declension 1		Declension 2		Declension 3	
Gender		mas	fem	mas	fem	mas	fem
La	Nom	POETAE	ROSAE	LUPĪ	FAGĪ	DUCĒS	PACĒS
La	Acc	POETĀS	ROSĀS	LUPŌS	FAGŌS	DUCĒS	PACĒS
It	---	*poeti* ‘poets’	*rose* ‘roses’	*lupi* ‘wolves’	*faggi* (M) ‘beeches’	*duci* ‘leaders’	*paci* ‘peaces’

Italian generalized the use of -i, except than in fem nouns from declension 1. Thus, -i is not specified for gender. Rather, it expresses only the plural (Author 2010, 2011, Passino 2009). This is exactly the same situation that holds in Latin: Acc -s marker is used to express the plural, disregarding the gender. More precisely, Latin -s is a port-manteau morpheme expressing both Acc and plural.[6]

I make the hypothesis that, first, -s lost its specification of syntactic case. As a consequence, it became a simple plural marker. Then, a phonetic change occurred and transformed the alveolar fricative into a palatal high vowel (cf. Reichenkron 1939, Straka 1979), as shown below:

(9) s ⟶ ʃ ⟶ j ⟶ i

The phonetic change depicted in (9) is responsible for the creation of plural maker -i in Italian.

This idea, first proposed by Reichenkron (1939), has been supported by Äbischer (1960), Maiden (1996) and D'hulst (2006). The latter work, in particular, proposes that "the articulator feature of final [s] tends to survive" (D'hulst, 2006: 1327) and spreads to the preceding vowel. This vowel can be either -o- (cf. LUPŌS) or -a- (ROSĀS). In other words, D'hulst's analysis claims that the plural marker -i is the result of the spreading of the feature [coronal] to either [o] or [a]. No distinction is made between the marker of number and the marker of gender, as they are both expressed by one vowel: [i] is masculine and plural, whereas [e] is feminine and plural.

Conversely, I propose to consider that -i is an independent marker, expressing only plural. This way, gender is expressed by the etymologic vowel, i.e. -o- marks masculine in LUPŌS and -a- marks feminine in ROSĀS. This analysis allows us to account for both Latin and Italian nouns, as it will be clear later in subsections 3.1 and 3.2.3, dedicated respectively to Latin and Italian noun structures.

Before turning to the structure of a noun in Romance, I provide two arguments in favor of the phonetic path shown in (9). The first one is a phonetic one, whereas the second is a syntactic one.

The phonetic argument comes from two phenomena that can be observed in Italian. The first case concerns a few monosyllabic words such as POS(T) 'after, later', NŌS 'we', VŌS 'you (pl)'. The final -s has been replaced by -i as Italian examples illustrate: *poi*, *noi*, *voi*. The second case involves the verbal system. The second person of the singular is -i. Crucially, Latin displays -s in that position. For instance, Latin AMĀS 'you love' corresponds to Italian *ami*. This situation holds for the all conjugations of Italian.[7]

[6] We will see that, in some cases, gender is expressed by the theme vowel, cf. section 3.

[7] Other cases of -s replaced by -i exist in Romance. Rohlfs (1977) cites a well-known phenomenon of Gascon (a dialect of Occitan) where -s in coda-position became -i, as in ÁSINUM ⟶ *asinu* ⟶ *asnu* ⟶ *aine*. 'donkey'. Also, consider Chilean Spanish, where *(tu) vas* 'you go' becomes *(tu) vaj*.

As for the syntactic argument, consider the following Latin sentence (Väänänen 1934):

(10) FILIOS ET NEPOTES MEMORIA PATRI POSUERUNT
sons and nephews to-the-memory of-the-father built
'The sons and the nephews built [this] in memoriam of their father'

In (10) above, FILIOS is clearly a Nom. However, its form has the shape of an Acc from declension 2. The Nom bearing an Acc profile has been used quite often since the second century and a large documentation has been conserved (Väänänen 1934). The use of the Acc instead of a Nom is an argument in favor of the hypothesis according to which LUPŌS is the base of the Italian plural.

In the next section, I explore the structures of Latin nouns. Then, I show the structure of nouns in Spanish, French and Italian.

3. The parameters of the evolution from Latin

The goal of this section is to illustrate that a few parametric choices on the forms of the exponents trigger the cross-linguistic variation that we observe in Romance. The first part of the section is dedicated to the exploration of the underlying structure of nouns in Latin. In the second part, three case studies will be analyzed: French, Spanish and Italian. Finally, it is shown that these three Romance languages differ each other with respect to the form of the spell-out of gender, number and theme vowel.

3.1 Latin nouns

In Latin, nouns are organized in declensions, e.g. five distinct inflectional paradigms. Each noun consists of a root followed by a theme vowel (henceforth Th) and a number-case (henceforth num and K, respectively) ending, as shown below:

(11) Root + Th + num/K

Each declension is characterized by a particular Th, so that declension 1 selects for -*a*-, declension 2 selects for -*o*-, etc.. (Meiser 1998). Both diachronic and synchronic phonological processes render surface forms opaque with respect to the sequence in (11). For instance, declension 2 pl. Nom, LUPĪ does not display the expected Th -o-.[8]

In addition to this fact, declensions 1 and 2 display a certain degree of predictability as far as gender is considered. Hence, a noun in declension 1 is

[8] Note that Archaic Latin pl Nom of decl. 2 was -oi, cf. Gordon (1975) and Meiser (1998).

generally feminine, whereas those appearing in declension 2 are masculine. Declension 3, however, does not allow for gender recognition.[9]

The table below illustrates the complete paradigms of declensions 1 and 2, as well as three sub-paradigms of the singular of declension 3.[10]

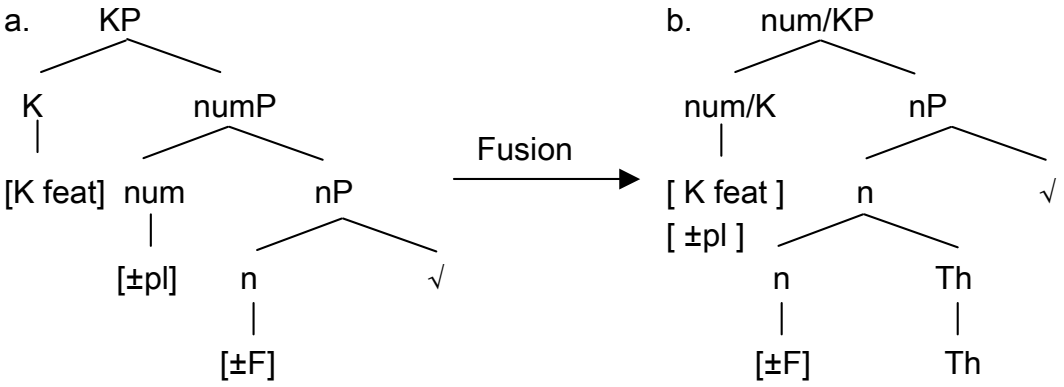
(12)	Declension 1		Declension 2			Declension 3		
#	sg.	pl.	sg.	pl.	sg.	sg.	sg.	sg.
gender	F	F	M	M	Neu	F	M	Neu
gloss	'rose'	'roses'	'wolf'	'wolves'	'egg'	'peace'	'leader'	'body'
Nom	ROSA	ROSAE	LUPUS	LUPĪ	OVUM	PAX	DUX	HONOR
Gen	ROSAE	ROSĀRUM	LUPĪ	LUPŌRUM	OVĪ	PACIS	DUCIS	HONORIS
Dat	ROSA	ROSĪS	LUPŌ	LUPĪS	OVŌ	PACĪ	DUCĪ	HONORĪ
Acc	ROSAM	ROSĀS	LUPUM	LUPŌS	OVUM	PACEM	DUCEM	HONOR
Voc	ROSA	ROSAE	LUPE	LUPĪ	OVUM	PAX	DUX	HONOR
Abl	ROSĀ	ROSĪS	LUPŌ	LUPĪS	OVŌ	PACE	DUCE	HONORI

Latin data say three things. First, num and K endings are realized by a single suffix; for example -rum indicates both plural *and* Gen (declensions 1 and 2). Second, the portmanteau morpheme num-K is generally identical across declensions. For instance, the Acc is marked by -m in the sg. and by -s in the pl (to the exception of Neu from declension 3[11]). In other words, sg *and* Acc is spelled out as -m, whereas pl *and* Acc is spelled out as -s. Third, the num-K suffix is preceded by the theme vowel corresponding to the declension. In a few cases, however, the theme vowel is deleted, as in declension 2 pl. Nom LUPĪ 'wolves'.[12] These problems aside, the data in (12) confirm the underlying sequence in proposed in (11).

Following previous work in DM (Embick and Halle 2005, Halle and Vaux 1998) I propose that Latin noun structures consist of a root merging to an nP. This projection is then merged to num(ber)P and in turn to KP. In addition, I propose that the underlying structure shown in (4a) undergoes Fusion (Calabrese 1998). Fusion is a particular theoretical mechanism that operates on terminal syntactic nodes (Noyer 1992). More precisely, Fusion makes the nodes KP and numP unify under a unique label, num/KP, as shown in (13b):[13]

[9] I am not concerned with declensions 4 and 5, as they are not crucial for the purpose of this paper.
[10] By hypothesis, the structure proposed for declensions 1, 2 and 3 underlies the entire paradigm of Latin nouns.
[11] Neu is characterized by the identity of its direct cases, i.e. Nom, Acc and Voc. This is the reason why it escapes the generalization that the same Acc suffixes apply to all declensions.
[12] Halle and Vaux (1998) explicitly mention "deletion rules" to account for the deletion of the theme vowel.
[13] Cf. Calabrese (1998) for technical details on how Fusion applies to Latin structures.

(13) Latin noun structures



In addition to Fusion, the structure in (4b) displays an adjunct to *n*: *Th*.[14] This is a specific requirement of the language, e.g. a lexical property. Each node introduces the features of a particular morpho-syntactic property: *Th* hosts the them vowel, *n* hosts gender, *num* hosts number and, finally, *K* hosts the feature matrix corresponding to the syntactic cases.

As mentioned in the introduciton, the realizational process applying to each terminal node is called spell-out. This consists of the insertion of phonological material into the structure.[15] Each phonological item is referred to as a Vocabulary Item (VI). A VI pairs a phonological object to its context of insertion. As far as Latin nouns are considered, the complete list of the VI's involves a quite large number of items. I propose to focus only on the Acc as it is the crucial case for our discussion. In order to account for the Acc, we need the following VI's (cf. Halle and Vaux 1998 for a complete list):

(14) VI's for Latin Acc nouns

m	zero
a. CV ⇔ [Acc, -pl]	e. CV ⇔ decl. 3
s	u
b. CV ⇔ [Acc, +pl]	f. CV ⇔ decl. 4
a	e
c. CV ⇔ decl. 1	g. CV ⇔ decl. 5

[14] Embick & Noyer (2007:305-310) propose an adjoined *Th* to *v* and *n* in order to account for theme vowel in both Latin verbs and nouns (called "Ornamental Morphology"): in their account, too, *n* is empty. In addition, Oltra-Massuet (2000) proposes an adjoined *Th*, to all major categories in Catalan verbs.

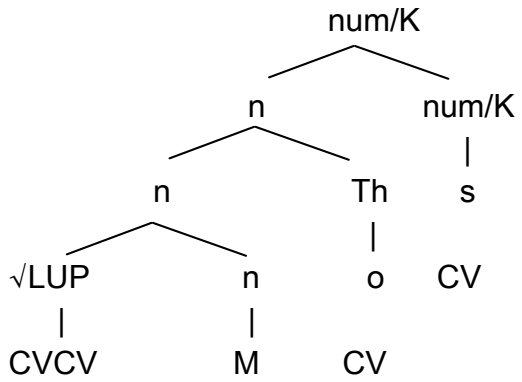
[15] A syntactic approach to word-formation is generally realizational, cf. Di Sciullo and Williams (1987) for a non-realizational syntactic approach to word-formation. On the other hand, theories claiming for an independent morphological module can postulate a realizational process, e.g. through the application of rules of referral (cf. Paradigm Function Morphology, Stump 1993, 2001). This discussion, however, is tangential to the purposes of this paper.

o
|
d. CV ⇔ decl. 2

VI's (14a) and (14b) constitute the exponents of the Acc sg. and the Acc pl., respectively. VI's (14c) to (14g) represent the exponents of the theme vowel of each declension. The VI's shown in (14) all consist of a complex spell-out, e.g. a spell-out including both segmental and skeletal material, cf. the representation (3c). In other words, each VI above is a fully pronounceable phonological item. This is the case for the root, too. In fact, the shape of the root is lexical, e.g. the length of the template depends on the number of segments the root is made of.

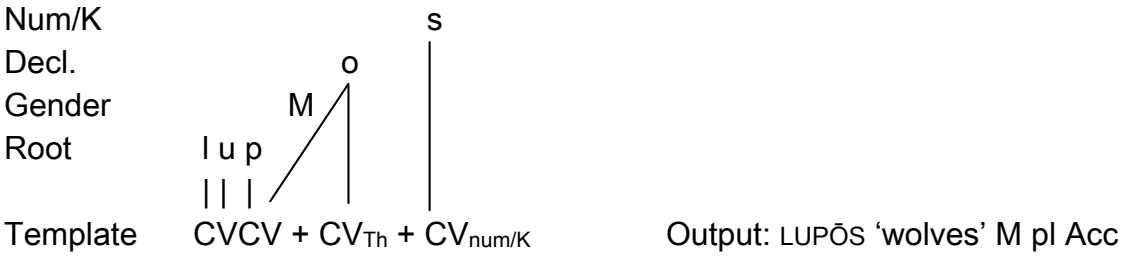
The way spell-out occurs is subject to an intense debate, but is beyond the scope of this paper (Author 2011, Bendjaballah and Haiden 2008, Borer 2005, Caha 2010, Embick 2010, Embick and Marantz 2008, Faust 2011, Lowenstamm 2008, 2010, 2012, Piggott and Newell 2006, Scheer 2011, 2012). In the present discussion, I consider that spell-out provides each terminal node in the structure (13b) with phonological material. In addition, a complex-head is created, e.g. a head not dominated by another head projection (Embick 2010:37-38). Below, I show the complex head of LUPŌS 'wolves' M pl Acc:

(15) Latin complex head: LUPŌS 'wolves'



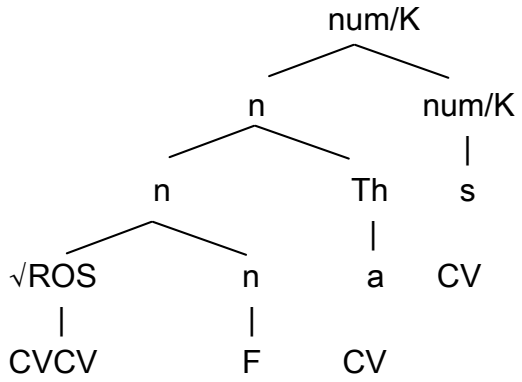
In order to create the well-formed surface noun, the phonological material has to be linearized. The linearization of LUPŌS is shown below:

(16) The linearization of LUPŌS 'wolves'



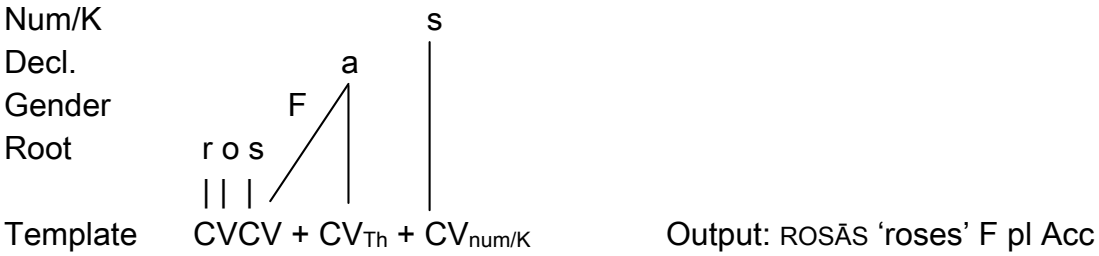
In a similar way, the representation of ROSĀS ‘roses’ F pl Acc consists of the complex head below:

(17) Latin complex head: ROSĀS ‘roses’



The linearization of this noun is shown in what follows:

(18) The linearization of ROSĀS ‘roses’



By hypothesis, the structures shown for LUPŌS ‘wolves’ M pl Acc and ROSĀS ‘roses’ F pl Acc account for the whole system. According to DM, specific readjustment rules may apply post-syntactically.

To summarize this subsection, Latin nouns are formed by the combination of three distinct functional nodes (*n*, *num* and *K*). Two of these nodes undergo Fusion, and become a unique terminal *num/K*; an adjunct *Th* is created later in the derivation. The spell-out procedure provides the terminals with the phonological material, which is then combined into surface forms throughout a linearization process.

The next subsection explores the nouns of Romance, and highlights the formal changes undergone in the evolution of Romance from Latin.

3.2. Romance nouns

Romance nouns differ from Latin ones with respect to the following features: (i) the absence of overt case morphology (except Romanian, which is not treated here), (ii) the emergence of particular phonological restrictions. In this subsection, I illustrate how these two types of changes occurred to French, Spanish and Italian nouns. More precisely, I attempt to formalize the properties of both types of changes.

3.2.1 French

One of the main features of French nouns is the opaqueness of the morphological decomposition with respect to the form of the inflectional exponents. In other words, French nouns don't seem to suit the decomposition into discrete objects, e.g. gender and/or number markers.

Modern French results from the evolution of well attested stages of what have been traditionally referred to as Ancient French (IX to XIV centuries) and Middle French (XIV to XVII centuries), respectively. As already mentioned (cf. section 2.1, fn 4), Ancient French used to have two syntactic cases: a subject case (SC) and an oblique case (*cas régime*, RC). The distinction between these two cases has been lost in Middle French. Modern French nouns represent the evolution of RC nominal forms.

On the other hand, since Ancient French, the Romance variety known as *langue d'oïl* has been targeted by a strong phenomenon of phonetic erosion. As a consequence, a generalized loss of post-tonic consonants as well as the neutralization of unstressed vowels occurred. This process can be observed in the examples below:

(19) Phonetic evolution in French (cf. Zink 1986: 217)[16]

a.	Latin	ÁSĬNU(M) 'donkey'
	III	ásenu
	IV	áznu
	V	ázno
	VII	áznə
	XI	ãːnə
	XV	ãːnœ
	XVI	ɑːnœ
	XVII	ˈɑːn

b.	Latin	KAMPÁNĬA(M) 'countryside'[17]
	I	kampánja
	II	kampájɲja
	V	ʧampájɲja
	VII	ʧampáɲə
	XI	ʧãmpãɲə
	XIII	ʃãmpãɲə
	XV	ʃãmpãɲœ
	XVII	ʃãˈpaɲ

The phonetic erosion is even more surprising if we compare French ['ɑːn] and [ʃãˈpaɲ] to the Italian equivalents *asino* ['asino] 'donkey' and *campagna* [kamˈpaːɲa] 'countryside'.

The Modern French lexicon shows the effects of this phonetic erosion, as can be seen in the following examples. It includes nouns ending either in a consonant or in a vowel:

[16] Roman digits indicate the century in which the phonological change occurred.

[17] Modern French [ʃãˈpaɲ] denotes the Region *Champagne* as well as the famous *Champagne* wine. The equivalent of 'countryside' is [k]*ampagne*, a borrowing from the Picard variety (cf. TLFi).

(20) French nouns

Number	sg.	pl.	sg.	pl.	sg.	pl.	sg.	pl.
Gender	F	F	M	M	F	F	M	M
V#	[ʁu] ‘wheel’	[ʁu]	[lu] ‘wolf’	[lu]	[ami] ‘(she) friend’	[ami]	[ami] ‘(he) friend’	[ami]
C#	[pil] ‘battery’	[pil]	[fil] ‘wire’	[fil]	[fak] ‘university’	[fak]	[pik] ‘peak’	[pik]

The isolated forms of the nouns in the table (20) do not distinguish the singular from the plural. [18] As already mentioned, the plural morpheme /z/ surfaces only in the *liaison* context, as can be seen below (cf. Dell 1973, Sauzet 2004):

(21) *Liaison* contexts

a. *un enfant*
a kid
‘a kid’

b. *des petit*[z] *enfants*
Det little kids
‘(some) little kids’

c. [lami] *italien*
Det.friend Italian
‘the Italian friend’

d. [lez.amiz.it]*aliens*
Det.friends.Italian
‘the Italian friends’

In addition, gender is only very partially predictable. For instance, a noun ending in a vowel can be either M or F, or both, as shown in the table (20). I submit that M gender has no exponent, e.g. a phonological zero. On the other side, F gender is marked by /ə/, as proposed by Dell (1973).[19]

---

[18] There are some exceptions to this general pattern: nouns such as *cheval* ‘horse’ have a distinct form for plural [ʃ(ə)vo] *chevaux* ‘horses’, cf. Lowenstamm (2012).

[19] Lowenstamm (2008) proposes that F gender in French is marked by /a/. This hypothesis does not contradict my proposal, precisely because /ə/ derives historically from unstressed /a/. Thus, one could argue that /ə/ and /a/ are two allomorphs of the morpheme of the F gender.
On the other hand, Lowenstamm (2012:392ff) distinguishes the notion of “gender profile” from that of “gender agreement”. According to the author, the former is the morphological shape a noun, whereas the latter is the syntactic gender triggered by agreement with the DP. In this account, nouns having floating consonant have overt masculine morphology, whereas the appearance of these segments on the surface entails feminine morphology:

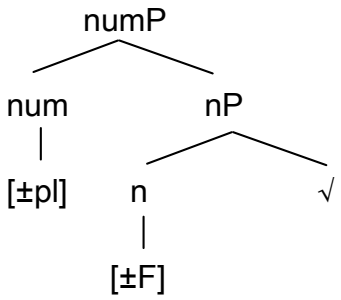
(i) /bʁas/ [bʁa] ‘arm’ M
b ʁ a s
| | |
CVCV

(ii) /bʁas/+F [bʁas] ‘breaststroke’
b ʁ a s
| | | |
CVCV + CV_F

In Lowenstamm’s (2012) analysis, F gender is expressed by an extra CV unit. Whether it is CV or /ə/ (as in the body of the paper) has no bearing on the present argument.

I propose to consider that French lost the projection KP, as well as the adjunct *Th* and all the CV units associated with the VI's (cf. the list in 14 above). The root is the only item that conserves its template. This situation gives rise to the following structure:

(22) French noun structure



Following the procedure proposed for Latin, spell-out occurs once the structure above has been created. The VI's for French nouns are the following:

(23) VI's for French nouns

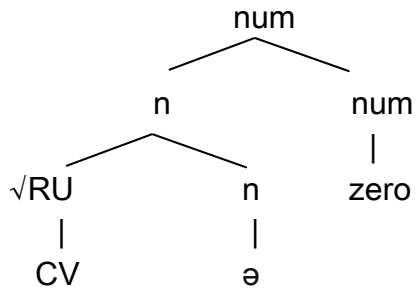
a. zero ⇔ [-pl]
b. /z/ ⇔ [+pl]
c. zero ⇔ [-F]
d. /ə/ ⇔ [+F]

Singular is marked by zero, whereas plural is expressed by the consonant /z/. As for gender, M is zero, whereas the F exponent is the vowel /ə/.

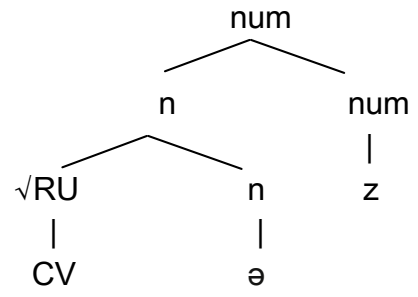
Now, consider the noun [ʁu] 'wheel'. Its singular has the underlying form /ʁu/, whereas its plural has /ʁuz/. The complex heads of both forms are shown below:

(24) Complex heads of /ʁu/ F sg and /ʁuz/ F pl:

a. /ʁu/ F sg 'wheel'



b. /ʁuz/ F pl 'wheels'



Finally, the linearization proceeds without any problems:

(25) Linearization of /ʁu/ F sg and /ʁuz/ F pl:

a. /ʁu/ F sg ‘wheel’		b. /ʁuz/ F pl ‘wheels’	
Num		Num	z
Gender	ə	Gender	ə
Root	ʁ u	Root	ʁ u
	| |		| |
Template	CV	Template	CV
Output	[ʁu] ‘wheel’ F sg.	Output	[ʁu] ‘wheels’ F pl.

Spell-out in French adopts three different types of exponents. Roots are both segmental and skeletal, as they are fully well formed and pronounceable phonological items. M and sg. are null objects, e.g. silence-type spell-outs. Finally, F and pl. display an exponent of the segmental type. The internal organization of the noun in French is responsible for the fact that neither the F exponent /ə/ nor the pl. exponent /z/, surface.

The next subsection explores the structures of Spanish nouns.

3.2.2 Spanish

As Spanish belongs to the Western branch of Romance, it inherited the pl. Acc -s from Latin. Indeed, Spanish nouns are characterized by the extensive use of the morpheme -s in the plural. This applies to all nouns, regardless of their gender or their phonological shape.

On the other hand, gender is not easily identifiable on the simple basis of the phonological shape of a noun. As a general trend, M nouns end in -o (*lobo* ‘wolf’, whereas F nouns end in -a (*rueda* ‘wheel’). However, exceptions such as *mano* ‘hand’ F or *problema* ‘problem’ M are quite frequent. In addition, if a noun ends in -e or in a consonant, gender is not predictable at all. This situation has been described and analyzed by Harris (1992), who proposed to consider that Spanish nouns are formed by a root followed by what he called ‘word class marker’. Crucially, this object does not correspond to gender.

A representative list of Spanish nouns is illustrated below:

(26) Spanish nouns

Gender	F		M		F		M	
Num	sg.	pl.	sg.	pl.	sg.	pl.	sg.	pl.
V#	[rweða] ‘wheel’	[rweðas]	[loβo] ‘wolf’	[loβos]	[fwente] ‘source’	[fwentes]	[pwente] ‘bridge’	[pwentes]
C#	[mar] ‘sea’	[mares]	[pan] ‘bread’	[panes]	[θjuðað] ‘city’	[θjuðaðes]	[mal] ‘pain, disease’	[males]

The line labeled V# contains the nouns ending in a vowel in the sg. These represent the majority of the nouns in the language. Moreover, the line labeled C# displays those nouns whose sg. ends in a consonant. Note that a noun can end in a single consonant only if the latter is one of the following non-plosive coronals: [r], [l], [n], [s], [θ], [ð]. This fact has a historical reason, i.e. the deletion of unstressed -e in a final position: CIVITĀTE(M) ⟶ *kivitàte ⟶ *tʃiuitàt ⟶ *tʃiutàt ⟶ θjuðàð. Interestingly, this fact occurred only to nouns belonging to declension 3. In fact, Acc from this declension is generally marked by *-em*, as in CIVITĀTE(M) above.[20] Note that a root ending in a C[+coronal,-plosive] can selects for either a final -a or a final -o. On the other side, such roots can never select a final -e. In other words, nouns ending in C[+coronal,-plosive]+[e]# do not exist in Spanish.

(27) Roots ending in C[+coronal,-plosive]

Gender	M		F		M		M	
Number	sg.	pl.	sg.	pl.	sg.	pl.	sg.	pl.
[+cor., -plos.]#	[faro]	[faros]	[rana]	[ranas]	[laðo]	[laðos]	[palo]	[palos]
	‘lighthouse’		‘frog’		‘side’		‘stick’	

The data in (26) and (27) point to the existence of two distinct groups of nouns. In one, we have those nouns that end either in -o (M gender) or in -a (F gender). These nouns distinguish a specific ending for each gender. In the other, we have those nouns that do not allow for gender recognition. Depending on the quality of the last consonant of the root, the latter group of nouns can be further divided into two subgroups. If the root ends in a C[+coronal,-plosive], then the noun has no additional ending. In all the other cases, the noun ends in -e. The insertion of -e depends only on a phonological constraint, e.g. the ungrammaticality of *C[+plosive]#.

Let me turn to the plural. The nouns in (26) pluralize by suffixating the morpheme -s to the sg. form, with no exception. In addition, nouns belonging to the group C# insert the vowel -e- between the stem and the pl. morpheme. Spanish disallows two obstruents from final positions, e.g. **mars* ‘seas’. Thus, in order to avoid such a situation, the strategy adopted by the language is the epenthesis of the vowel [e].[21]

Nouns belonging to the group C# display an epenthetic [e] in the pl. I claim that this fact is related to the presence of the same vowel in the final position of nouns behaving like [fwente] and [pwente]. Crucially, nouns ending in -e and those ending in a consonant correspond to the nouns that do not allow for gender recognition. In other words, they behave in the same manner with respect to the ‘word class marker’ (Harris 1992). Thus, final -e is an epenthetic vowel, exactly like the -e- inserted in the plural.

[20] Nouns such TURRIS ‘tower’ displayed an Acc sg. ending in *-im*: TURRIM. In addition, Neu nouns such as CORPUS ‘body’, MARE ‘sea’, etc displayed an Acc sg. identical to the Nom.

[21] [e] is the epenthetic vowel in Spanish: *estado* ‘state’, *estructura* ‘structure’, *España* ‘Spain’, *estándar* ‘standard’ (initial #sC clusters are not tolerated in Spanish).

If this hypothesis is correct, then Spanish nouns are organized in the following manner:

(28) Spanish nouns

	group 1: o/a		group 2: no vowel, epenthesis	
	sg	pl	sg	pl
M	[loβo]	[loβos]	[pwente]	[pwentes]
F	[rweða]	[rweðas]	[θjuðað]	[θjuðaðes]

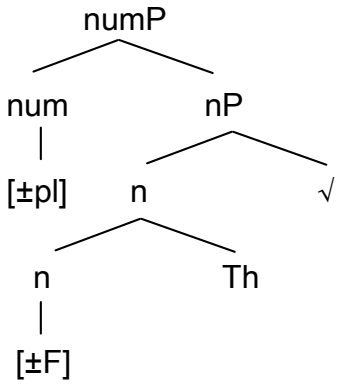
Nouns in the group 1 are characterized by the presence of a final vowel depending on the gender, i.e. M=o, F=a. On the other hand, nouns in the group 2 do not make the distinction between the genders. An epenthetic [e] is inserted in order to prevent a impossible consonant cluster (such as CC#, or C[+plosive]#) from surfacing.

I make the hypothesis that Spanish lost KP and maintained *Th* as an adjunct. The loss of KP is justified by the general loss of case in Romance. On the other side, *Th* introduces the theme vowel, as in Latin. Contrarily to Latin, however, Spanish nouns belonging to the group 2 above lack the expression of the theme vowel. I submit that the formal difference between the group 1 and the group 2 is the presence or the absence of the adjunct Th.

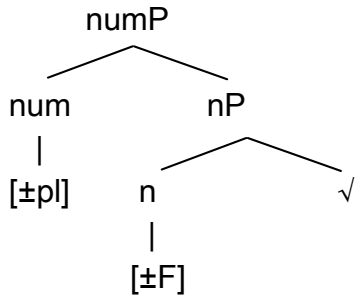
The structure of a noun belonging to the group 1 and that of a noun belonging to the group 2 are shown below.

(29) Spanish nouns

a. Nouns with *Th*, i.e. group 1



b. Nouns without *Th*, i.e. group 2



The structure (29b) is identical to the one proposed for French (cf. 22 above). As for the spell-out, I propose the following list of VI's:

(30) VI's for Spanish nouns

a. zero ⇔ [-pl]
   s
   |
b. CV ⇔ [+pl]

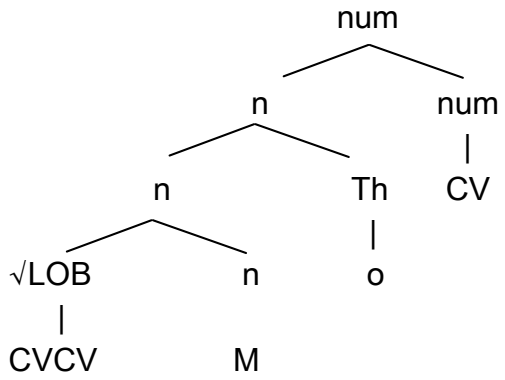
c. /o/ ⇔ [-F] / Th
d. /a/ ⇔ [+F] / Th
e. zero ⇔ [±F]

VI's (30a) and (30b) represent the exponents of sg and pl, respectively. Note that pl. has its own CV. This reflects the fact that the whole nouns are marked by -s when plural.[22] The situation is more complicated as far as gender is involved. If the noun has a lexical *Th* (i.e. an idiosyncratic property of the root), then gender is spelled out as either /o/ (M, 30c) or /a/ (F, 30d). If the root selects for no *Th*, then the gender is not overtly marked on the noun.

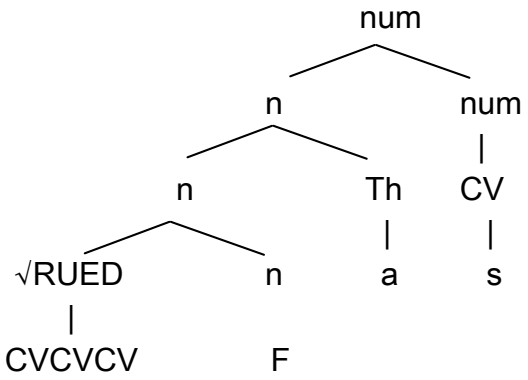
Let me begin with the complex head and the linearization of *lobo* M sg 'wolf' and *ruedas* F pl. 'wheels', two nouns belonging to the group 1. Their complex heads are represented in what follows:

(31) Complex heads of *lobo* M sg 'wolf' and *ruedas* F pl 'wheels':

a. *lobo* M sg 'wolf'



b. *ruedas* F pl 'wheels'



The linearization of both forms proceeds as follows:

(32) Linearization of *lobo* M sg 'wolf' and *ruedas* F pl 'wheels':

a. *lobo* M sg 'wolf'

Num	
Th	o
Gender	M
Root	l o β
Template	CVCV+CV
Output	[loβo] M sg. 'wolf'

b. *ruedas* F pl 'wheels'

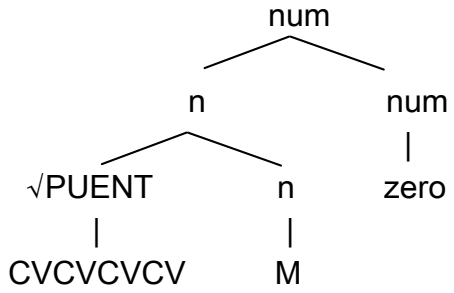
Num	s
Th	a
Gender	F
Root	ɤ w e ð
Template	CVCVCV+CV
Output	[rweðas] F pl. 'wheels'

[22] I return to this fact later, in section 4.2.1

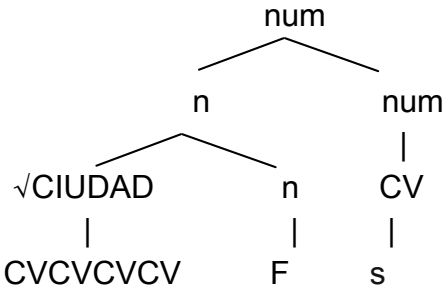
Nouns belonging to the group 2 are characterized by the lack of the adjunct *Th*. Thus, the VI /o/ ⇔ [-F] / Th (cf. 30c) and /a/ ⇔ [+F] / Th (cf. 30d) cannot be inserted. Thus, the VI (30e) is chosen. The phonology does the rest: the noun can either end in a consonant, or in the vowel -e.

(33) Complex heads of *puente* M sg 'bridge' and *ciudades* F pl 'cities'

a. *puente* M sg 'bridge'



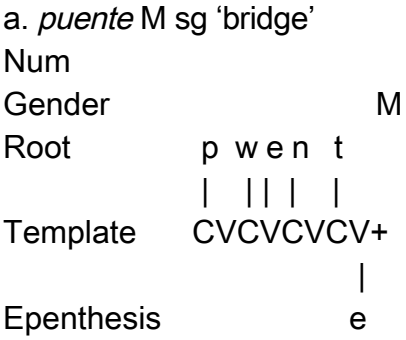
b. *ciudades* F pl 'cities'



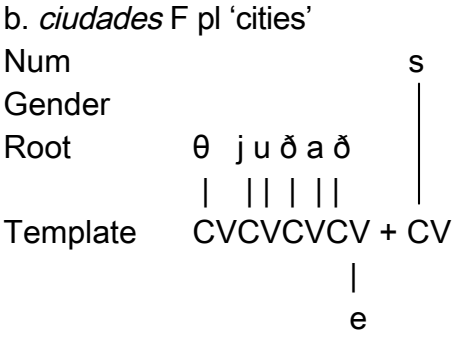
The nouns shown above are linearized as follows:

(34) Linearizations of *puente* M sg 'bridge' and *ciudades* F pl 'cities'

a. *puente* M sg 'bridge'



b. *ciudades* F pl 'cities'



The representations above illustrate the epenthesis of [e] in two different morphological contexts: (34a) is a M sg noun, whereas (34b) is a F pl nouns.

Before turning to Italian, let me briefly conclude the discussion on Spanish. Two observations are important. First, a specific parameter on the structure of the nouns accounts for the differences between Spanish and Latin on one side (e.g. the optional status of Th vs. the obligatory status of Th), and between Spanish and French on the other (e.g. the optional status of Th vs. the lack of Th). In addition to this parameter, the form of the phonological exponents plays a crucial role in a specific feature of Spanish morphology, e.g. the generalized presence of the plural morpheme -s. Spanish plural is overtly marked on nouns precisely because its spell-out includes a CV unit. Recall that French plural does not bear a CV, i.e. it is silent unless it finds a free C position elsewhere.

In the next subsection, I illustrate the case of Italian, where the presence of *Th* is shown to be fundamental for the inflection to be overtly marked on nouns.

3.2.3 Italian

Italian nouns differ from French and Spanish nouns with respect to the two following features: (i) they must end in a vowel, and (ii) they pluralize by turning the last vowel into either -i or -e. In this section, I illustrate how the analysis proposed so far accounts for the Italian situation.

It is well known that Italian native lexicon consists of nouns ending in a vowel. This pattern is consistent and the exceptions are limited to prepositions, the definite M article and loans.[23] Plural is formed by changing the quality of the final vowel. Interestingly, only nouns ending in a vowel in the singular can pluralize. Thus, each noun belongs to an inflectional class, consisting of pair of final vowels. I call "vocalic pattern" (henceforth VPn) each pair of final vowels.

The table below illustrates the possible VPn's in the lexicon of Italian:

(35) Italian nouns

Num	sg.	pl.	sg.	pl.	sg.	pl.	sg.	pl.	sg.	pl.
Gen	F	F	M	M	M	M	F	F	M	M
V#	[rwota] 'wheel'	[rwote]	[poeta] 'poet'	[poeti]	[lupo] 'wolf'	[lupi]	[fonte] 'source'	[fonti]	[ponte] 'bridge'	[ponti]
VPn	a	e	a	i	o	i	e	i	e	i

The data above show the existence of four distinct VPn's. These are listed in (36):[24]

(36) VPn's in Italian nouns
- a. a - e gender: F
- b. a - i gender: M
- c. o - i gender: M
- d. e - i gender: F and M

---

[23] The prepositions ending in a consonant are: *per* [per] 'for', *in* [in] 'in' and *con* [kon] 'with'. The definite M article is *il* [il] 'the-M.sg'. As for the loans, here are a few examples: *film* [film] 'movie', *bar* [bar], *jeans* [ʤins], *software* [softwer] 'software', *sport* [sport] 'sport', *email* [imejl] 'e-mail', etc. Loans are all invariable with respect to number, e.g. they do not change their shape between the sg. and the pl. In this paper, I will be only marginally concerned with these nouns, cf. the representations (46) and, for further details, Author (2011:135-145).

[24] An additional VPn exists in the language. It consists of o - a (cf. *uovo* 'egg-M.sg' vs. *uova* 'egg-F.pl). This pattern characterizes a small number of nouns that change the gender in the plural. Cf. Acquaviva (2007) on this topic.
Also, the VPn (36b) a - i contains two F nouns: *ala* 'wing' and *arma* 'weapon'. Both nouns have a high register plural ending in -e: *ale* and *arme* (cf. TLIO). Finally, the VPn (36c) o - i contains one F noun: *mano* sg. vs. *mani* pl. 'hand(s)'. I will not be concerned with any of these exceptions.

Gender is predictable if a noun belongs to VPn (36a), (36b) or (36c). Conversely, the VPn (36d) corresponds to both M and F nouns. That said, it is possible to predict the shape of the plural from the shape of the singular combined to the gender.

Let me focus on the shape of the plural, first. Plural nouns end either in -i or in -e. In the former case, they can be either M or F, whereas in the latter, they can be only F. Crucially, plurals in -e belong to the VPn (36a) that is the only VPn containing exclusively F nouns. Historically, these nouns belong to the declension 1 (cf. table 12, section 3.1).

By the hypothesis formulated in above in section 2.2, Italian plurals derive from Latin Acc. More precisely, the Acc marker -s underwent a phonetic evolution so that it has been transformed into -i, through the path shown in (9) and repeated below:

(37) s ⟶ ʃ ⟶ j ⟶ i (identical to 9)

According to this path, plurals such as *ruote* F ‘wheels’ and *lupi* M ‘wolves’ have been derived in the following manner:

(38) Historical derivation of Italian plurals:
a. ROTĀS ⟶ *rotaʃ ⟶ *rotaj ⟶ *rwotai ⟶ rwote
b. LUPŌS ⟶ *lupoʃ ⟶ *lupoj ⟶ *lupoi ⟶ lupi

The scheme in (38a) has been proposed by Maiden (1996), Reichenkron (1939) and Väänänen (1934), whereas (38b) has never been explored in these terms. The representation (38) offers the possibility to posit a unique plural for both M and F gender. In other words, both M and F nouns pluralize using the morpheme -i, which is the evolution of the Latin plural Acc marker -s (cf. D’hulst 2006). If the plural marker is -i for both genders, then, synchronically, F plural ending -e is made of two distinct exponents: one corresponding to the plural, the other corresponding to the F gender. This means that the vowel [e] has an internal structure.

Couched within the framework of Government Phonology, the Theory of Elements (Kaye, Lowenstamm and Vergnaud 1985) is a theory of segmental representations. More precisely, it proposes the existence of three basic matrices, corresponding to the Elements A, I and U. The combination of two or more Elements entails the formation of all other vowels. This operation is called “fusion”.[25] For instance, the fusion of A and U (U being the head of the operation) gives rise to the vowel [o], and the fusion of A and I (I being the head) gives rise to the vowel [e].[26]

The application of the Theory of Elements to the vowels appearing in the VPn’s shown in (36) is straightforward:

[25] This “fusion” has nothing to do with Fusion, a syntactic operation proposed by DM and discussed above, cf. section 3.1.
[26] For additional details, cf. Kaye, Lowenstamm and Vergnaud (1985).

(39) VPn's as they result from the application of the Theory of Elements

	sg. Elem.	surface	gender	sg. Elem.	surface		
a.	A	[a]	F	A.I	[e]	*ruota*	*ruote*
b.	A	[a]	M	I	[i]	*poeta*	*poeti*
c.	A.U	[o]	M	I	[i]	*lupo*	*lupi*
d.	A.I	[e]	M / F	I	[i]	*ponte, fonte*	*ponti, fonti*

From the observation of the data in (39), it follows that the Element I marks the plural. On the other hand, the plural [e] is made of the Elements I and A. As a consequence, the Element A is the exponent corresponding to the F gender.[27] F plural ending -e results from the fusion of F gender A and plural I.

As for the singular, the Element A appears in all the VPn's. Consider that, as already mentioned (cf. section 2.1 and table 7), Latin (final) short -u and -i lowered to -o and -e, respectively:

(40) Lowering of Latin (final) short -u and -i:
a. LUPU(M) ⟶ *lupo* (VPn o - i, M gender)
b. TURRI(M) ⟶ *torre* (VPn e - i, F gender)

I propose that the lowering phenomenon shown above consists of the appearance of the Element A in the representation of the singular. More precisely, the Element A is the exponent of the singular in Italian. As a consequence, feminine must have two A's.

Following the same lines of reasoning, I propose that the Element U is the exponent of the M gender. This hypothesis is consistent with the historical origin of the nouns ending in -o. In fact, declension 2 nouns, such as LUPU(M) are M and contain the vowel -u. Thus, final [o] in M sg nouns results from the combination of the exponent of the M gender, U, and the exponent of the singular, A. On the other hand, plural should be /U.I/, i.e. /M + plural/. The fusion between U and I gives rise to a front rounded vowel, such as [y], [œ] or [ø].[28] None of these vowels belong to the Italian phonological inventory. According to the Theory of Elements, however, in a language such as Italian the Elements U and I are linked to the same line of representation. As a consequence, they cannot undergo fusion. The vowels [y], [œ] and [ø] are thus prevented from surfacing. Italian plural can surface as either [i] or [u], but not as the combination of both Elements. I claim that, in Italian, the surfacing vowel is [i].[29]

Finally, let me focus on the Element I in (39d). It combines with A and gives rise to [e], nouns in this group being M (*ponte* 'bridge') as well as F (*fonte* 'source). In other words, this Element is responsible for the neutralization of the gender. As a

[27] The idea that the Elements can be interpreted as morphemes must be ascribed to Ségéral (1995).
[28] The exact nature of the resulting vowel depends on the presence of the cold vowel, phonetically [ɨ], and on the head of the operation. Cf. KLV (1985) for additional details on this point.
[29] Cf. Author (2011) and Passino (2009) for the same analysis and a few cross-linguistic examples.

consequence, the Element I is the exponent of a lexical property of nouns, which I call "Theme Element" (henceforth TE). Each TE can surface as A (giving rise to F nouns), U (giving rise to M nouns) and I (giving rise to both M and F nouns). In addition, a TE can also surface as zero. This is the case of *poeta* M sg. 'poet'.

The table below shows the internal composition of the final vowels in Italian:

(41) The internal composition of the final vowels

	sg.	TE		gender	pl.	TE		examples	
a.	A	A	[a]	F	I	A	[e]	*ruota*	*ruote*
b.	A	zero	[a]	M	I	zero	[i]	*poeta*	*poeti*
c.	A	U	[o]	M	I	U	[i]	*lupo*	*lupi*
d.	A	I	[e]	M / F	I	I	[i]	*ponte, fonte*	*ponti, fonti*

Each final vowel results from two distinct exponents. One is the exponent of the gender, A for the sg. and I for the pl., whereas the other is the exponent of what I called TE, e.g. a lexical property of the root. I claim that each root selects for a particular TE. In two cases (41a and 41c), the TE corresponds to the gender.[30]

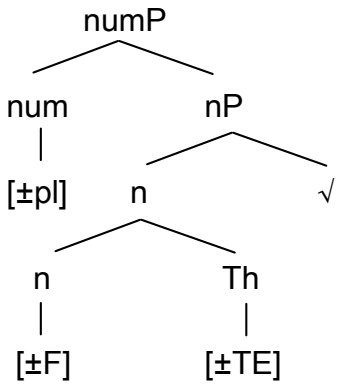
Now, consider that Italian has a group of loans that do not display overt inflectional morphology, such as *film* M sg./pl. 'movie(s)'. The behavioral difference between nouns that display overt morphology and those that don't can be captured only by arguing that the inflectional vowel results from the existence of a lexical property. I submit that such a lexical property corresponds to the appearance of the TE. In turn, I argue that the presence of the TE is related to the spell-out of the feature [+TE]. The exponent of [+TE] is a CV unit, e.g. the site where the inflection is realized. In contrast, loans select for the opposite feature, e.g. [-TE]. Its spell out corresponds to a null exponent.[31]

In order to account for such a dichotomy, I propose that Italian lost KP and maintained *Th* as an adjunct to *n*. In addition, the CV units associated to *num* and *Th* have been lost. In other words, Italian structures are identical to those underlining Spanish nouns ending in -o and -a (cf. 29a above), to the exception of *num*:

[30] A caveat is in order here. Spanish final -o, -a and maybe -e could have been analyzed in the same manner as Italian final vowels, i.e. within the Theory of Elements. This would have yielded to the same results in terms of the internal phonological organization of these vowels. However, Spanish differs on an important point: the plural morpheme is consonantal and its exponent does not change the quality of the vowel. In other words, the Element I in Spanish does not relate to plural. In addition, one could argue that, in Spanish, M is marked by the combination of two Elements, U and A, whereas F is marked by the Element A alone. For this reason, decomposing the Spanish vocalic inventory into basic Elements is not straightforward with respect to the understanding of the internal organization of nouns. In other words, the Theory of Elements is a theory of the phonological representations of the segments: it does not predict whether an Element plays a morphological role or not.

[31] The overall situation is slightly more complicated than it appears from the data presented in this paper, but its explanation leads away from the topic of this paper. Cf. Author (2011:67-158) for an extensive analysis of Italian nouns.

(42) Italian nouns



As for the spell-out, I propose the following list of VI's:

(43) VI's for Italian nouns

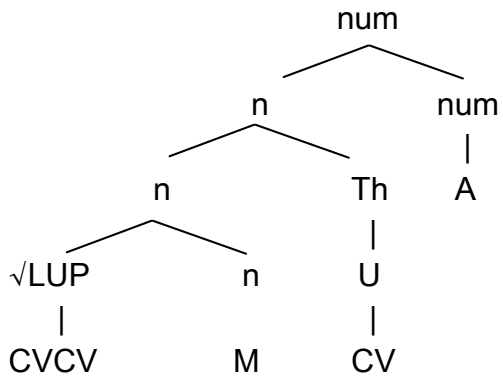
a. A ⇔ [-pl]
b. I ⇔ [+pl]
c. U ⇔ [-F] / list of roots (*lupo*, etc)
d. A ⇔ [+F] / list of roots (*ruota*, etc)
e. I ⇔ [±F] / list of roots (*ponte*, *fonte*, etc)
f. zero ⇔ [-F] / list of roots (*poeta*, etc)
g. CV ⇔ [+TE]
h. zero ⇔ [-TE]

(43a) and (43b) are the exponents of number. The selection of the exponent corresponding to the TE is more complex. VI's (43c) and (43d) represent the exponents corresponding to M [o] and F [a], respectively. The exponent in (43e) marks those nouns that do not distinguish the M form from the F form. VI (43f) corresponds to the situation where TE=zero (cf. *poeta*). Finally, (43g) and (43h) are the exponents of the property TE.

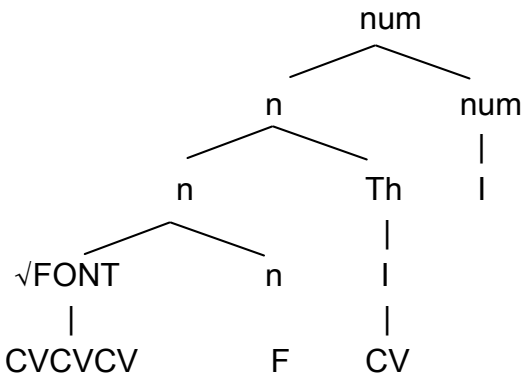
The complex heads of *lupo* M sg 'wolf' and *fonti* F pl 'sources' are shown below:

(44) Complex heads of *lupo* M sg 'wolf' and *fonti* F pl 'sources':

a. *lupo* M sg 'wolf'



b. *fonti* F pl 'sources'



The linearization of each form proceeds as follows:

(45) Linearization of *lupo* M sg 'wolf' and *fonti* F pl 'sources':

a. *lupo* M sg ‘wolf’

Num	A
Th	U
Gender	M
Root	l u p
Template	CVCV+CV

Output [lupo] M sg. ‘wolf’

b. *fonti* F pl ‘sources’

Num	I
Th	I
Gender	F
Root	f o n t
Template	CVCVCV+CV

Output [fonti] F pl. ‘sources’

Italian nouns are formed in a way similar to that of Spanish nouns displaying the adjunct *Th* (cf. 31, section 3.2.2 above). The crucial difference between the two languages lies in the presence of a CV unit in the representation of the plural in Spanish, whereas *Th* introduces this CV unit in Italian. In addition, Italian plural is simply segmental, i.e. it needs a free skeletal position in order to surface. Note that Italian could not have maintained Latin Acc -s: the C position on the external CV is not accessible as plural has to be linearized at the right side with respect to the TE. This is the general pattern in Romance.

Also, note that the underlined V position in (45a) and (45b) is not accessible to inflection. This becomes clear when we compare the linearizations in (45) to those of the two following nouns: *marea* ‘tide’ and *film* ‘movie’. The former selects for the feature [+TE], whereas the latter selects for the feature [-TE], which corresponds to the absence of the extra CV:

(46) Linearization of *marea* F sg ‘tide’ and *film* M sg ‘movie’:

a. *marea* F sg ‘tide’

Num	A
Th	A
Gender	F
Root	m a r e
Template	CVCV+CV

Output [marea] F sg. ‘tide’

b. *film* M sg/pl ‘movie(s)’

Num	A/I
Th	none
Gender	M
Root	f i l m
Template	CVCVCV

Output [film] M sg/pl. ‘film(s)’

In (46a), the underlined V position is occupied by a radical vowel. Thus, this site is not available for inflection. An external CV is necessary: it is provided by the spell-out of the property [+TE]. In contrast, in (46b) the underlined V position could in principle be the realizational site of overt inflection. Indeed, *film* is invariable with respect to number and ends in a consonant, e.g. an aberrant coda. However, **filmi* is absolutely ungrammatical. I conclude that that position is not available. Again, an external CV would be the only possibility: *film* selects for [-TE], which corresponds to a null exponent.

To summarize this section, I showed that Italian behaves similarly to those Spanish nouns that have the adjunct Th. Further, I showed that Italian differs from Spanish (and French) with respect to the exponence of the plural and the presence of a CV unit low in the structure, e.g. below nP.

The next section is dedicated to the theoretical issues inspired by the analyses proposed so far.

4. Theoretical issues

This section is organized in two parts. In the first one, I present the formalization of the morphological change as it results from the analyses presented in the preceding section. In the second part, I propose the typology of pluralization in Romance that emerges from the comparison between the structures of French, Spanish and Italian.

4.1 The formalization of the morphological change

The analysis proposed for Latin on one side and for three Romance varieties on the other suggests a typology of the morphological change. The goal of this subsection is to formalize such a typology.

First, we noticed that the major difference between Latin and Romance consists of the loss of overt case morphology (with the exception of Romanian). In the structures proposed above, this loss has been represented as the lack of the projection KP in Romance. In addition to KP, French and partially Spanish lost an additional syntactic head, i.e. the adjunct *Th*.

Secondly, each Romance language displays a particular organization of the inflectional material. More precisely, we noticed that French, Spanish and Italian nouns are organized in slightly different manners with respect to the exponent of gender and number. The architecture of the skeletal positions is the principle reason for the behavior of each language. In other words, the distribution CV units and the syntactic architecture make each language different from the other.

Thus, I propose that the morphological change that occurred from Latin to Romance is the combination of the following two scenarios:

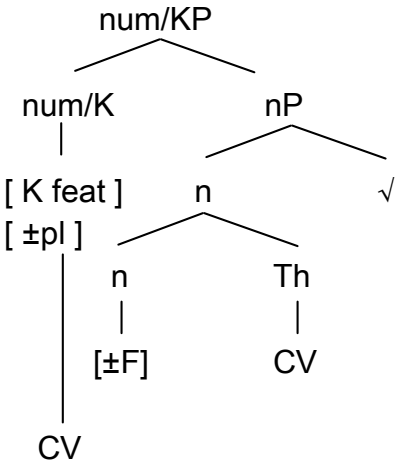
(47) Hypothesis on the morphological change
- a. Phrase or head loss (morphosyntactic change).
- b. CV unit loss (morphophonological change).

The scenario (47a) points to the loss of one or more syntactic components, e.g. an entire phrase or a head. This is morphosyntactic change. The scenario (47b), on the other hand, concerns the organization the phonological material with respect to the morphological categories. Both choices depend on language-particular parameters.

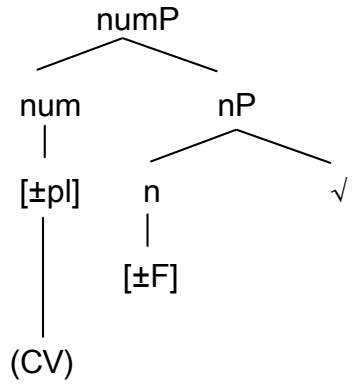
The reaction each Romance language has with respect to both (47a) and (47b) entails the following typology (the parentheses point to the parametric status of the CV):

(48) A typology of morphological change

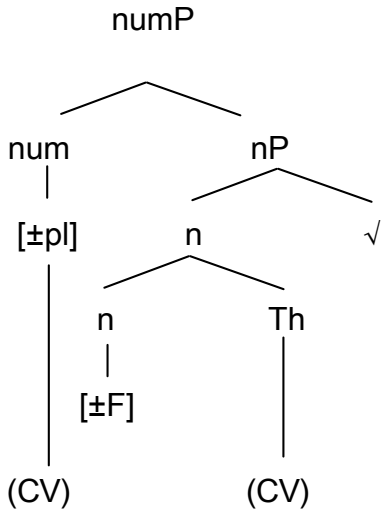
a. Basic type: Latin



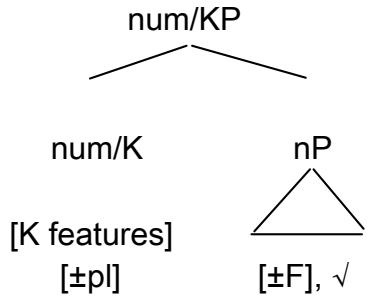
b. Derived type 1: French, Spanish (no Th)



c. Derived type 2: Italian, Spanish (with Th)



d. Derived type 3



The structure underlying Latin nouns (48a) turns into one of the other structures represented above. French exemplifies the most drastic changes (cf. 48b). As we saw, French lost KP, *Th* and all the CV units associated to the functional categories. In a similar way, Spanish nouns belonging to group 2 (*puente*, *ciudad*, *mar*, *pan*, cf. 28 above) have the same structure as French, but they maintained the CV introduced by *num*. This makes for the difference between Spanish and French plurals ([s] opposed to silent /z/). The derived type 2 consists of the absence of KP and the maintenance of *Th*. Within this type, Italian lacks the CV introduced by num. Spanish nouns such as *rueda* 'wheel' and *lobo* 'wolf' (cf. group 1 above in 28) do have it. Again, the parametric choice on the status of this CV accounts for the difference between Spanish and Italian plurals. Finally, a third type is possible, namely a type still containing KP (with either *Th* or not). This may correspond to Romanian as illustrated in (48d). This type will not be further analyzed: it is only shown here for the sake of clarity.

In addition to the internal organization of each structural type, examples in (48) illustrate that the cross-linguistic difference within the Romance varieties stems from the parametric interpretation of the spell-out of each terminal node.

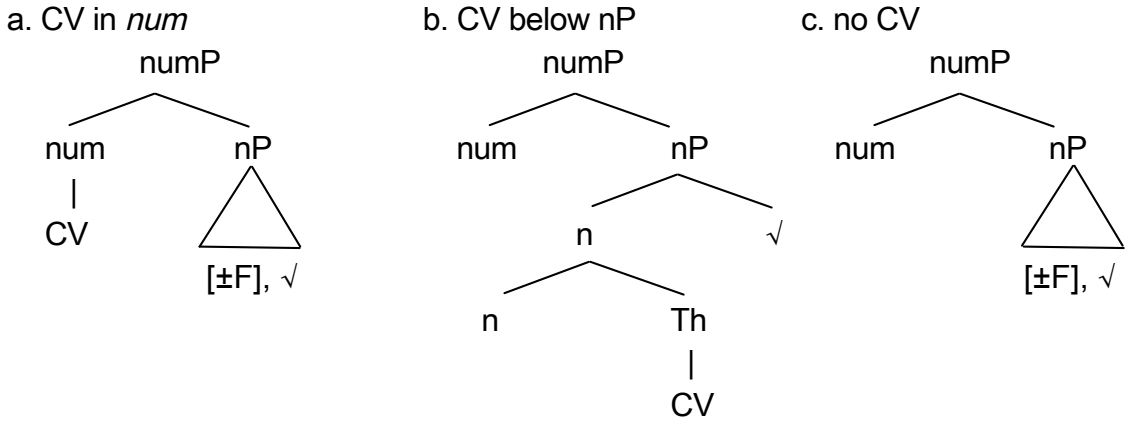
In the next subsection, I turn to a typology of pluralization in Romance.

4.2 A typology of pluralization

This subsection illustrates how the presence of a CV unit under *num* entails the lack of restrictions to the plural marking.

Spanish displays a CV associated to *num*. Its presence entails that the plural morpheme -s can be associated to any structure having the projection numP, i.e. any count noun (cf. Borer 2005). In contrast, if *num* lacks such a CV unit, plural is either silent (as in French) or vocalic (as in Italian). Hence, I argue for the existence of the following typology:

(49) A typology of the structure of the plural



Type (49a) corresponds to the situation we find in Spanish. Type (49b) illustrates the case of Italian, e.g. plural is associated to a CV which depends on a lexical property of the root. Finally, type (49c) represents the case of French, a language that lacks any CV external to the root able to host the exponent of number.

In what follows, I focus first on the comparison between Spanish and Italian plurals. Then, in section 4.2.2, French is compared to Italian.

4.2.1 Spanish vs. Italian

In Spanish, a noun always takes -s in the plural. This occurs in native lexicon as well as in loans and truncated nouns such as *moto*(*cicleta*)*s* 'motor(cycle)s'. By contrast, the Italian plural applies to a restricted set of nouns, e.g. those belonging to one of the four VPn's shown in (35). In other words, in Italian, a noun can pluralize only if its root selects for a TE (cf. table 41 in section 3.2.3 above).

I submit that this difference is accounted for by the fact that, in Spanish, the feature [+pl] spells out as segmental-and-skeletal exponent, whereas in Italian the same feature spells out simply as a segmental exponent:

(50) Plural exponents in Spanish and Italian

a. Spanish	b. Italian
s | CV ⇔ [+pl]	I ⇔ [+pl]

VI (50a) provides a skeletal position to the segment associated to plurality. Hence, whenever *num* contains the feature [+pl], plural is overtly marked. On the other side, the Element I is spelled out devoid of any skeletal position, thus it needs to find one in order to surface. As we saw, in Italian such a position is provided by the property "theme vowel", e.g. the feature [+TE].

The table below compares a few examples of Spanish and Italian:

(51) Plurals in Spanish and Italian

	Spanish a CV in *num*			Italian **no** CV in *num*	
	sg.	pl.		sg.	pl.
a. Native lexicon	[rosa] 'rose'	[rosas]	a. Native N.	[roza] 'rose'	[roze]
b. Loans	[liðer] 'leader'	[liðeres]	b. Loans	[lider] 'leader'	[lider] [*lideri]
c. Stress-final nouns	[pje] 'foot'	[pjes]	c. Oxyton N.	[re] 'king'	[re] [*ri], [*rei]
d. Truncated nouns	[moto] 'moto'	[motos]	d. Trunc. N.	[moto] 'moto'	[moto] [*moti]

In conclusion, the data in (51) are explained on the basis of the typological aspect of the spell-out of the feature [+pl] introduced by num. In Spanish, the overtly marked plural depends on the CV. This is why it has no restrictions. On the other hand, in Italian, the appearance of the plural morpheme is a lexical property of the root. This explains why the final -o in [moto] does not change into -i in the plural: it does not depend on *Th*.

4.2.2 French vs. Italian

Both French and Italian lack the CV in *num*. In other words, there is no available skeletal position for the plural exponent to surface. The French plural exponent is consonantal: no free C slot is available in the structure. Italian is expected to behave in the same manner. However, as its plural exponent is vocalic, it finds its place on a CV spelled out under the adjunct *Th*.

The comparison between these pluralization strategies is shown below:

(52) The comparison between French and Italian plurals

a. French: /luz/ M pl 'wolves'		b. Italian: *lupi* M pl 'wolves'	
Num	z	Num	I
Gender		Gender	U
Root	l u	Root	l u p
	| |		| | |
Template	CV	Template	CVCV+CV_{Th}
Output	[lu] 'wolves' M sg.	Output	[lupi] 'wolves' F pl.

As we saw, French lost both the CV in *num* and the adjunct *Th* (cf. 48b). Thus, there is no available C slot for the plural exponent. It remains silent. In contrast, Italian plural is realized in the CV spelled out as the exponent of [+TH]. Note that there is no space for a consonantal plural -s. In fact, if the plural were -s then we would need an external CV as in Spanish. The situation depicted in (52b) forces the language to find an exponent of plural which is not consonantal. In other words, I claim that Italian followed the only possible strategy, e.g. changing Acc pl -s into -i.[32]

5. Conclusions

In this paper, I showed that the Romance noun structures share a unique set of functional categories, e.g. *num*, *n*, and *Th*. Language-particular parameters on the realization of these categories account for the diversity between Romance varieties.

The first part of the paper proposed an explanation of the plural isogloss. Arguing that Italian plural -i derives from Latin Acc pl -s permitted us to unify the analysis of the nouns in Romance. In the second part, I focused on the parameters of the evolution. More precisely, I showed that French, Spanish and Italian can be accounted for on the basis of a structure proposed for Latin. Finally, in the third part, I proposed to formalize the linguistic change as a phrase or head loss combined to the reorganization of the CV units.

As a conclusion, I showed that the internal organization of the nouns in Romance depends on the type of spell-out presented in (3) and on the syntactic architecture.

References

Äbischer, P. 1960. "La finale -e du féminin pluriel italien". *Studi Linguistici Italiani* 1, pp. 5-48.

Acquaviva, P. 2007. *Lexical Plurals*. Oxford: Oxford University Press.

[32] The same thing didn't happen in French as it lacks both the CV in num and the CV in *Th*. In fact, even if -s had been changed into -i, it couldn't have surfaced because of the lack of available skeletal positions.

Author, A. 2010. “Nounness, gender, class and syntactic structures in Italian nouns”. *Romance Languages and Linguistic Theory 2008. Selected papers from ‘Going Romance Groningen 2008’*. R. Bok-Bennema, B. Kampers-Manhe and B. Hollebrandse (eds.). Amsterdam: John Benjamins, pp. 195-214.

Author, A. 2011. *Forme phonologique, exposants morphologiques et structures nominales: études comparée de l’italien, du bosnien et du somali*. PhD Thesis, Université Paris Diderot-Paris 7.

Bendjaballah, S. and M. Haiden. 2008. A typology of Emptiness in Templates. Hartmann J., V. Hegedus & H. van Riemsdjik (eds.), *The Sounds of Silence: Empty Elements in Syntax and Phonology*. Elsevier, Amsterdam, pp. 21-57.

Borer, H. 2005. *In the Name only. Structuring Sense*. Oxford: Oxford University Press.

Calabrese, A. 1998. “Some remarks on the Latin case system and its development in Romance”. *Theoretical Analysis of the Romance Languages*. Treviño, E. & J. Lema eds. 71-126. Amsterdam: Benjamins.

Caha, P. 2010. *The nanosyntax of case*. PhD Thesis, Universitetet i Tromsø.

Dell, F. 1973. *Les règles et les sons*. Paris: Hermann.

D’hulst, Y. 2006. “Romance plurals”. *Lingua* 116, pp. 1303-1329.

Di Sciullo, A. M. and E. Williams. 1981. *On the definition of word*. Cambridge, Mass.: MIT Press.

Embick, D. 2010. *Localism versus Globalism in Morphology and Phonology*. Cambridge, Mass.: MIT Press.

Embick, D. and M. Halle 2005. “On the status of *stems* in Morphological Theory”. *Proceedings of Going Romance 2003*. Geerts T. & H. Jacobs eds. Amsterdam: John Benjamins, pp. 37-72.

Embick, D. and A. Marantz. 2008. “Architecture and Blocking”. *Linguistic Inquiry*, 39, 1, pp. 1-53.

Embick, D. and R. Noyer. 2007. “Distributed Morphology and the Syntax/Morphology Interface”. *Oxford Handbook of Linguistic Interfaces*, ed. Ramchand, G. & C. Reiss. Oxford University Press, pp. 289-324.

Encrevé, P. 1988. *La Liaison avec et sans enchaînement*. Paris: Editions du Seuil.

Faust, N. 2011. *Forme et fonction dans la morphologie nominale de l’hébreu moderne: études en morphosyntaxe.* PhD Thesis, Université Paris Diderot-Paris 7.

Gordon, A. E. 1975. “Notes on the Duenos-vase inscription in Berlin”, *California Studies in Classical Antiquity* 8, pp. 153-72.

Kaye, J., Lowenstamm, J. and J.-R. Vergnaud. 1985. “The internal structure of phonological elements: a theory of charm and government”. *Phonology Yearbook* 2.305-328.

Kaye, J., Lowenstamm, J. and J.-R. Vergnaud. 1990. “Constituent structure and government in phonology”. *Phonology Yearbook* 7.193-231.

Halle, M. and A. Marantz. 1993. “Distributed Morphology and the Pieces of Inflection”. *The View from Building 20*. K. Hale and S. J. Keyser (eds.), Cambridge, Mass.: MIT Press.

Halle, M. and B. Vaux. 1998. “Theoretical aspects of Indo-European nominal morphology: The nominal declensions of Latin and Armenian”. Mir Curad: Studies

in Honor of Clavert Watkins. J. Jasanoff, H. C. Melchert and L. Oliver (eds.). Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck, pp. 223-240.
Harris, J. 1991. “The exponence of gender in Spanish”. *Linguistic Inquiry* 22:27-62.
La Chaussée, F. de 1989. Initiation à la morphologie historique de l’ancien français. Paris: Klincksieck.
Lowenstamm, J. 1996. “CV as the only syllable type”. Current trends in Phonology. J. Durand and B. Laks (eds.) Manchester: Salford, pp. 419-441.
Lowenstamm, J. 2008. “On *n*, nP and √”. *The Sounds of Silence: Empty Elements in Syntax and Phonology*. Hartmann J., V. Hegedus & H. van Riemsdjik (eds.) Amsterdam: Elsevier.
Lowenstamm, J. 2012. “Feminine and Gender, or Why the Feminine Profile of French Nouns has Nothing to Do with Gender”. *Linguistic Inspirations. Edmund Gussmann in memoriam*, Eugeniusz Cyran, Henryk Kardela, and Bogdan Szymanek (eds.), Wydawnictwo Katolicki Uniwersytet Lubelski, Lublin, pp. 371-406.
Maiden, M. 1996. “On the Romance Inflectional Endings -i and -e”. *Romance Philology* 2, pp. 147-182.
Marantz, A. 1995. “Cat as a phrasal idiom”. Ms. MIT.
Marantz, A. 1997. “No Escape from Syntax: Don’t Try Morphological Analysis in the Privacy of our Lexicon”. *University of Pennsylvania Working Papers in Linguistics*, 4 2, pp. 201-225.
Meiser, G. 1998. *Historische Laut- und Formenlehre der lateinische Sprache*. Darmstadt: Wissenschaftlichte Buchgesellschaft.
Meyer-Lübke, W. 1890-1902. *Grammatik der romanischen Sprachen*. Leipzig: Reisland.
Noyer, R. 1992. *Features, positions and affixes in autonomous morphological structure*. PhD Thesis, MIT.
Oltra-Massuet, I. 2000. “On the Constituent Structure of Catalan Verbs”. *MIT Working Papers on Linguistics* 33, pp. 279-322.
Passino, D. 2009. “An Element-based Analysis of Italian Inflection”. *Selected Proceedings of Décembrettes 6, Morphology in Bordeaux*. F. Montermini, G. Boyé and J. Tseng (eds.). Somerville, Mass.: Cascadilla Press, pp. 63-75.
Picoche, J. 1979. *Précis de morphologie historique du français*. Paris: Nathan.
Piggott, G. and H. Newell. 2006. Syllabification, stress and derivation by phase in Ojibwa. *McGill Working Papers in Linguistics*. 20:1.
Reichenkron, G. 1939. *Beiträge zur romanischen Lautlehre*. Jena-Leipzig: Gronau.
Rohlfs, G. 1969. *Grammatica storica della lingua italiana e dei suoi dialetti*. Torino: Einaudi.
Rohlfs, G. 1977. *Le Gascon*. Tübingen: Niemeyer.
Sauzet, Patrick. 2004. “La singularité phonologique du français”. *Langue française*, 141:14-35.
Scheer, T. 2004. *A Lateral Theory of Phonology: What is CVCV, and why it should be?* Berlin: Mouton.

Scheer, T. 2011. *A Guide to Morphosyntax-Phonology Interface Theories. How Extra-Phonological Information is Treated in Phonology since Trubetzkoy's Grenzsignale*. Berlin: Mouton.
Scheer, T. 2012. *Direct Interface and One-Channel Translation. Vol.2 of A Lateral Theory of phonology*. Berlin: Mouton.
Ségéral, Ph. 1995. *Une théorie généralisée de l'apophonie*. PhD Thesis, Université Paris 7.
Straka, G. 1979. "Remarques sur la désarticulation et l'amüissement de l'*s* implosive". *Les sons et les mots. Choix d'études de phonétique et de linguistique*. Paris: Klincksieck.
Stump, G. 1993. "On Rules of Referral" *Language* 69, 3: 449-479.
Stump, G. 2001. *Inflectional morphology: A theory of paradigm structure*. Cambridge: Cambridge University Press
Tagliavini, C. 1972. *Le origini delle lingue neolatine*. Bologna: Patrón.
[TLFi] *Le Trésor de la Langue Française informatisé*. http://atilf.atilf.fr/.
[TLIO] *Tesoro della Lingua Italiana delle Origini*. Pietro Beltrami (ed.) http://tlio.ovi.cnr.it/TLIO/.
Väänänen, V. 1934. "Le nominatif pluriel en -as dans le latin vulgaire". *Neuphilologische Mitteilungen XXXV* 4, pp. 81-95.
Zink, G. 1986. *Phonétique historique du français*. Paris: PUF.