Romance Languages and Linguistic Theory 2003

EDITED BY

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INTRODUCTION

The annual *Going Romance* conference is an international initiative of the Dutch university community involved in research on Romance languages. In the last two decades of its existence, it has developed into the major European discussion forum for theoretically relevant research on Romance languages where current ideas about language in general and about Romance languages in particular are tested. Starting with the thirteenth conference held in 1999, the proceedings volumes, entitled *Romance Languages and Linguistic Theory*, contain the selected papers of the conferences which are organized and held at various universities of the country.

This is the fifth volume, containing a selection of papers that have been presented at the seventeenth *Going Romance* conference, which was held at the Radboud University Nijmegen from 20-22 November 2003. Younger than its American sibling, the annual *Linguistic Symposium on Romance Languages*, the *Going Romance* conference is highly comparable to it, except that in previous issues *Going Romance* balanced more and more to syntax and less and less to phonology. In accordance with our wish to make phonology a more important part of Going Romance XVII, the three day program included a workshop on "Diachronic Phonology" and proudly listed Morris Halle as a key-note speaker.

The present volume reflects the restored balance and contains a broad range of articles dealing not only with syntax and phonology, but also with morphology, semantics and acquisition of the Romance languages.

We would like to thank everyone who contributed to the success of the 17th edition of Going Romance. We would like to thank the Rector of the Radboud University, Cees Blom, for his kind acceptance to deliver the opening address. We take great pleasure in singling out Maja Ciumak and Agnieszka Gasior, who helped us with all kind of organizational matters and to whom we express our great gratitude. Finally, we would like to thank Monique Burggraaf for last-minute help in preparing the indexes.

Besides one of the editors, the organization committee consisted of Reineke Bok-Bennema (Groningen), Frank Drijkoningen (Utrecht), Aafke Hulk (Amsterdam), Brigitte Kampers-Mahne (Groningen), Johan Rooryck (Leiden) and Henriëtte de Swart (Utrecht).

The editors would like to express their warmhearted thanks to the following individuals who have helped establishing the program by evaluating the more than 70 received abstracts and/or by reviewing and selecting the papers in this volume:

Nijmegen, October 2005

Twan Geerts
Ivo van Ginneken
Haike Jacobs

CONTENTS

AN INTEGRATED APPROACH TO VARIATION IN OT
EVIDENCE FROM BRAZILIAN PORTUGUESE AND PICARD

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1.   *Introduction*

     This paper proposes an integrated approach for the analysis of "variation" in Optimality Theory in its broadest sense: it accounts for variation that occurs within a single prosodic domain (1a) as well as the type of variation that operates across domains (1b). While the former is variable and triggered by linguistic and extralinguistic factors (and is thus the subject of sociolinguistic investigation), the latter is invariable and strictly determined by prosodic domains. This is illustrated in (1), where A and B designate prosodic domains, and *x* and *y* indicate the output forms of an input segment /x/ that exhibits alternations:

(1)   Two types of "variation":

       a. Domain-specific variation: b. Across-domain variation:
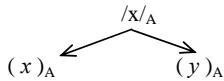
$$/x/_A$$

$$(x)_A \qquad (y)_A$$

$$/x/_A \qquad /x/_B$$

$$(x)_A \qquad (y)_B$$

     For the analysis of these two types of "variation", I adopt the framework of Optimality Theory (OT) (Prince & Smolensky 1993). One of the advantages of this framework is that it allows us to account for domain-driven and sociolinguistic variation within a language by means of a single grammar. In the context of domain-sensitive phenomena (1b), this can be accomplished by the decomposition of constraints into their domain-specific counterparts, each of which may be ranked independently within a single grammar to yield the alternations observed across domains. Based on this line of research and influenced by insights from Prosodic Phonology (Selkirk 1972, 1997, and Nespor & Vogel 1986), I propose an approach to the decomposition of constraints in which only prosodic domains may serve for constraint specification. I argue that this is advantageous because it constrains the grammar by imposing limitations on the types of domains that may be subject to decomposition, and captures Prosodic Phonology's view that the interface between phonology and morphosyntax must be indirect, that is, mediated by domains from the prosodic hierarchy. In the

context of variation triggered by linguistic and extralinguistic factors, I argue that variable patterns are best analyzed as the result of crucial nonranking of constraints (Reynolds 1994, Anttila 1997). A positive consequence of this approach is that it is able to incorporate variation and its frequency effects directly into the grammar (i.e. competence), via constraint ranking.

I will utilize the abovementioned integrated approach for the analysis of two variable phenomena that reflect the two types of variation illustrated in (1): r-deletion in Brazilian Portuguese, and Across-Word Regressive Assimilation (AWRA) in Picard, a Gallo-Romance dialect spoken in northern France. I will argue that the variable results observed in these two phenomena result from a single language-specific constraint ranking, composed of domain-specific and crucially unranked constraints.

This paper is organized in the following way: in section 2, I introduce the domain-specific constraint approach and the concept of crucial nonranking of constraints in the context of variable r-deletion in Brazilian Portuguese. In section 3, I utilize the same tools developed in the previous section to analyze the variable patterns of Across-Word Regressive Assimilation in Picard. Finally, in section 4, I present my concluding remarks.

2.   *r-deletion in Brazilian Portuguese – An OT Account*

In the northern variety of Brazilian Portuguese (BP) spoken in the city of Belém, r-deletion applies variably at the right edge of the Prosodic Word (PWd), regardless of whether the following phonological environment is a consonant (2a), a vowel (2b), or a pause (2c). Observe that the alternations in (2) illustrate a type of variation that resembles that illustrated in (1a) above (*type 1* variation henceforth). Cardoso (1999) argues that these variable results are triggered primarily by level of formality: the more informal the environment in which oral interaction takes place, the more likely it is for r-deletion to occur (see statistical results in Figure 1; data from Cardoso 1999).

(2)   *Variable* word-final r-deletion in BP (type 1 variation; see (1a))
        a. (falar)$_{PWd}$ (bem)$_{PWd}$ →   [fala_ bem]   [falar bem]   "to speak well"
        b. (beber)$_{PWd}$ (agwa)$_{PWd}$ →   [bebe_ agwa]   [beber agwa]   "to drink water"
        c. (amor)$_{PWd}$ →   [amo_]   [amor]   "love"
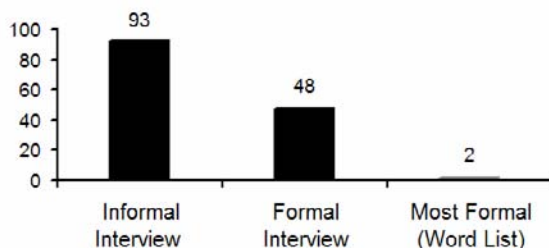
Figure 1: Level of Formality & r-deletion (%)

The variability of the phenomenon, however, is exclusive to the right edge of a Prosodic Word, as was shown in (2). In (3), observe that r-deletion is blocked in configurations in which the target /r/ is outside of the domain limit just specified for the phenomenon. In these cases, /r/ is either internal to a Prosodic Word (3a), or it occurs at the right edge of a constituent that does not constitute a PWd in BP (3b). Observe that the alternations in (3), contrasting with those shown in (2), illustrate a type of *domain-driven* variation that resembles that illustrated in (1b) above (*type 2* variation henceforth).

(3)   Inapplicability of r-deletion in BP (type 2 variation; see (1b))

    a. PWd-internally

(karta)$_{PWd}$	→	[ka**r**ta]	*[ka_ta]	"letter"
(perdi)$_{PWd}$	→	[pe**r**di]	*[pe_di]	"lost-1prs.sg."

    b. When /r/ is not PWd-final

(por)$_σ$ (ali)$_{PWd}$	→	[po**r** ali]	*[po_ ali]	"around there"
(por)$_σ$ (diɲejro)$_{PWd}$	→	[po**r** diɲejro]	*[po_ diɲejro]	"for money"

Since its establishment in the early 1990s, Optimality Theory (Prince & Smolensky 1993) has received considerable interest as a framework for investigating domain-sensitive phenomena such as the one described above. While some traditional approaches have been adapted and converted into OT (e.g. Lexical Optimality Theory; e.g. Kiparsky 1999, 2000), others have attempted to adhere to the non-derivational orientation of the framework by introducing new ways of analyzing domain-related phenomena. In OT, there are at least three possibilities to analyze these phenomena: (a) one in which domain-driven alternations are captured by a type of alignment of prosodic and/or morphosyntactic categories (i.e. different domains equal different edge alignments; e.g. McCarthy & Prince's 1993 Generalized Alignment); (b) one in which different domains are assigned different rankings and consequently distinct grammars (i.e. different domains equal different rankings; e.g. Kiparsky's 1999, 2000 Lexical Optimality Theory, and Itô & Mester 1995's Cophonologies); and (c) one in which domain-sensitive phenomena are captured by a single constraint ranking (i.e. one grammar), composed of domain-specific constraints (i.e. different domains equal one ranking; e.g. Buckley 1995, Pater 1996). In the context of variable and domain-sensitive r-deletion in BP and Across-Word Regressive Assimilation in Picard, I will argue in favor of the latter approach.

To illustrate how the domain-specific constraint approach mentioned in (c) works, let us now return to the data on r-deletion in Brazilian Portuguese, which variably applies PWd-finally and is inapplicable in other domains. If we simply assume that the phenomenon is triggered by the high ranking of NoCoda, an incorrect form without the word-internal coda is selected (i.e. candidate (5c)). In

(5), ☠ indicates an output that was wrongly selected while ⊗ illustrates a correct BP form that was incorrectly discarded.

(4)   Relevant OT constraints
       NoCoda: Syllables do not have codas (Prince & Smolensky 1993)
       MAX-IO: Every element of the input has a correspondent in the output (i.e. No deletion) (McCarthy & Prince 1995)

(5)   r-deletion in BP (preliminary)

	/dorm-ir/	NoCoda	MAX-IO
⊗	a. dor.mir	*!*	
⊗	b. dor.mi_	*!	*
☠	c. do_.mi_		**

        To capture the fact that certain constraints have an effect in some domains but not in others, general constraints such as NoCoda should be decomposed into their domain-specific counterparts, each of which may be ranked independently within a single grammar to yield the alternations observed across domains. However, before we proceed with the decomposition of NoCoda for the analysis of r-deletion in BP, we still need to address the question of what may constitute the domains into which constraints can be decomposed. In the OT literature, at least two types of domain-specific constraints have been proposed: (1) constraints that refer directly to morphosyntactic constituents (MS-based constraints; e.g. MAX-IO$_{Root}$); and (2) constraints that refer to morphosyntactic constituents indirectly, via the prosodic hierarchy illustrated in (6) (PP-based constraints; e.g. MAX-IO$_{PWd}$).

(6)   The Prosodic Hierarchy (e.g. Nespor & Vogel 1986)

                      Phonological Phrase(PPh)
                                |
                      Prosodic Word (PWd)
                                |
                           Foot (Ft)
                                |
                         Syllable (σ)
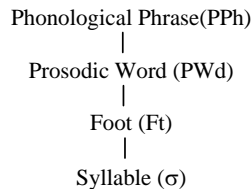
        I adopt a PP-based approach to the decomposition of constraints for the following reasons: first and foremost, it captures one of the fundamentals of Prosodic Phonology, namely that the morphology and syntax cannot adequately provide domains for phonological processes (see Nespor & Vogel 1986). As a result, the interaction of phonology with the other components of the grammar must be mediated by prosodic domains. Second, since prosodic constituents are essential to capture other phonological behavior (e.g. Selkirk 1972, 1997, Nespor & Vogel 1986), the adoption of a single framework for specifying domains harmonizes and constrains the grammar by restricting the possibilities of domain-

specific constraints to those that refer exclusively to domains established by Prosodic Phonology, i.e. to the constituents of the prosodic hierarchy in (6). Finally, this approach captures the surface orientation of OT by not allowing intermediate steps to intervene between inputs and outputs, and thus presupposes a single grammar (or ranking) to account for phonological alternations across domains.

From a PP-based perspective to domain specification, the relevant constraint for r-deletion (i.e. NoCoda) should be decomposed into prosodically determined domain-specific constraints: NoCoda$_{PWd}$, NoCoda$_{PPh}$, etc. These domain specifications (and most importantly NoCoda$_{PWd}$), however, are insufficient for a precise delimitation of the scope of r-deletion: if the NoCoda constraint simply refers to the Prosodic Word (i.e. NoCoda$_{PWd}$), without any specification of the precise context within the PWd in which the constraint is relevant (i.e. at the right edge), it incorrectly implies that NoCoda$_{PWd}$ operates within the entire Prosodic Word. This yields results that do not correspond to the BP data: i.e. r-deletion across the board (e.g. (dormir)$_{PWd}$ → *[do_.mi_]).

Because NoCoda has a stronger effect at the right edge of the Prosodic Word (where r-deletion takes place), the constraint needs to be further decomposed into one of the three types of processes that Prosodic Phonology recognizes (Nespor & Vogel 1986): domain span (e.g. NoCoda$_{PWd}$), domain juncture (e.g. NoCoda$_{PWd\_PWd}$) and domain limit processes (e.g. NoCoda$_{PWd\text{-}Final}$).[1] The latter describes the locus of r-deletion and, accordingly, the appropriate NoCoda constraint should also indicate precisely where in the PWd the constraint is operative – at the right limit of the domain PWd: NoCoda$_{PWd\text{-}Final}$ (see (7)). For expository convenience, I will only indicate the distinction between the general constraints (e.g. NoCoda) and their domain-specific counterparts (e.g. NoCoda$_{PPh}$, NoCoda$_{PWd\text{-}Final}$, etc.) when they become relevant to the analysis. In addition, constraints that lack a domain specification will not be labeled for a domain. It should be understood, however, that they operate throughout the entire Phonological Utterance (U), as if they were specified for the domain span U (i.e. NoCoda$_{U}$).

(7)   The decomposition of NoCoda into PP-based constraints

NoCoda$_{PWd\text{-}Final}$ Syllables do not have codas at the right limit of PWd
NoCoda   Syllables do not have codas (e.g. in U)

---

[1] That a constraint should specify exactly where within a prosodic domain it is operative is not an original claim. In OT, several authors have adopted different markedness and faithfulness versions of domain-sensitive constraints; for example (from McCarthy 2002): σ/*Voice (no syllable-final voiced obstruents), DEP$_{Init\text{-}\sigma}$ (no epenthesis in syllable-initial position). See also Beckman (1997) for a larger selection of examples.

The tableau in (8) illustrates how PP-based domain-specific constraints interact with other constraints within a single grammar to yield the correct outputs in the relevant domains: r-deletion in PWd-final position (e.g. in polymorphemic (8a-c) and monomorphemic words (8d-e)), and its inapplicability in other domains (e.g. internal to the Prosodic Word (8c) and in other domains (8f-g)). What remains to be accounted for is the variability of r-deletion at the right edge of a Prosodic Word. As indicated previously, the most faithful candidates (8a) and (8d) are also observed in BP. The issue of variation in OT will be addressed below.

(8)   Tableau for r-deletion in BP (preliminary)

	/dorm-ir/	NoCoda$_{PWd-Final}$	MAX-IO	NoCoda$_U$	
☹	a. (dor.mir)$_{PWd}$	*!		**	
☞	b. (dor.mi_)$_{PWd}$		*	*	PWd-final
	c. (do_.mi_)$_{PWd}$		**!		
	/amor/				
☹	d. (amor)$_{PWd}$	*!		*	
☞	e. (amo_)$_{PWd}$		*		
	/por diɲejro/				Other domains
☞	f. (por)$_σ$ (diɲejro)$_{PWd}$			*	
	g. (po_)$_σ$ (diɲejro)$_{PWd}$		*!		

In Optimality Theory, there have been at least two proposals for the analysis of type 1 variation: (1) one that advocates a stricter view of constraint domination (i.e. a view in which constraints are crucially ranked) and variation is seen as a result of competing grammars (or distinct constraint rankings; e.g. Kiparsky 1993); and (2) one that explains variation via crucial nonranking of constraints. In an effort to account for variation by assuming the existence of a single grammar, Reynolds (1994) and Anttila (1997) pursued an idea hinted at by Prince & Smolensky (1993) about the possibility of crucial nonranking of constraints. Within this approach, distinct outputs can be predicted from the number of rankings allowed by sets of unranked constraints.

To illustrate the second approach in the context of r-deletion in BP, consider the results shown for Formal Interview in Figure 1 (i.e. the likelihood of r-deletion to occur in this style is 48%). These results can be account for by the ranking illustrated in Table 1, which is composed of sets of constraints that are crucially unranked; i.e. {NoCoda$_{PWd-Final}$} and {MAX-IO >> NoCoda}. This single hierarchy yields two rankings, one of which selects r-deletion as the optimal form at the right edge of the Prosodic Word and r-preservation elsewhere (a), while the other selects r-preservation (b).

Constraint Ranking: { {NoCoda$_{PWd\text{-}Final}$} MAX-IO >> NoCoda }			
Corresponding Tableaux: 2	**OUTPUT SELECTION**		
	r-deletion **PWd-Final**	**r-preservation** **PWd-Final**	**Elsewhere**
a. MAX-IO >> NoCoda dominated: NoCoda$_{PWd\text{-}Final}$ >> MAX-IO >> NoCoda	✓		✓
b. NoCoda$_{PWd\text{-}Final}$ dominated: MAX-IO >> NoCoda **>>** NoCoda$_{PWd\text{-}Final}$		✓	✓

Table 1: *Final variable ranking for r-deletion in BP (Formal Grammar)*

Following Anttila's (1997) variant probabilistic prediction in (9), the variable ranking of {NoCoda$_{PWd\text{-}Final}$} and {MAX-IO >> NoCoda} results in a pattern in which two outputs are possible, and the probability of each output to occur can be predicted by (9). For example, in the Formal style, forms with r-deletion will win in exactly one tableau (n=1), and two is the total number of tableaux (t=2) allowed by the ranking established for this style. $n/t = 1/2 = 0.5$ or 50%. Each candidate's probability of occurrence is thus 0.5 and each variant is likely to occur 50% of the time in the same grammar.

(9)   Variant probabilistic prediction (Anttila 1997):

    (a) A candidate is predicted by the grammar iff it wins in some tableaux.

    (b) If a candidate wins in n tableaux and t is the total number of tableaux, then the candidate's probability of occurrence is n/t.

The application of Anttila's variant probability prediction (n/t) in (9) yields probabilistic results that tightly match the ones illustrated in Figure 1. Observe in Table 2 that under each variant, the left column indicates the predicted probability of each variant's occurrence, calculated by n/t, and the parenthesized numbers illustrate the number of rankings (or tableaux) for each ranking in which that candidate is the winner. The values in the right column, on the other hand, indicate the actual probability observed for each variant.

Formality Level	Total # of tableaux	r-deletion		r-preservation	
		Predicted by n/t	Observed	Predicted by n/t	Observed
Formal Grammar	2	50 (1)	48	50 (1)	52

Table 2: *Predicted & observed % of variant occurrence: Formal Grammar*

I illustrate in (10) the corresponding rankings and tableaux for each variant selected by the final hierarchy established for Brazilian Portuguese. Note that this hierarchy accounts for the two types of variation that characterize r-deletion in BP: sociolinguistic (type 1) and domain-driven (type 2).

(10)   Output: r-deletion PWd-finally & r-preservation elsewhere

/dorm-ir/	NoCoda$_{PWd-Final}$	MAX-IO	NoCoda	
a. (dor.mir)$_{PWd}$	*!		**	PWd-
☞ b. (dor.mi_)$_{PWd}$		*	*	final
c. (do_.mi_)$_{PWd}$		**!		
/por diɲejro/				
☞ d. (por)$_σ$ (diɲejro)$_{PWd}$			*	Other domains
e. (po_)$_σ$ (diɲejro)$_{PWd}$		*!		

(11)   Output: r-preservation PWd-finally & elsewhere

/dorm-ir/	MAX-IO	NoCoda	NoCoda$_{PWd-Final}$	
☞ a. (dor.mir)$_{PWd}$		**	*	PWd-
b. (dor.mi_)$_{PWd}$	*!	*		final
c. (do_.mi_)$_{PWd}$	*!*			
/por diɲejro/				
☞ d. (por)$_σ$ (diɲejro)$_{PWd}$		*		Other domains
e. (po_)$_σ$ (diɲejro)$_{PWd}$	*!			

To summarize, I illustrate in (12) the three grammars responsible for the phenomenon of r-deletion across three levels of formality in Brazilian Portuguese: variable r-deletion PWd-finally in the formal style (12a), (near) categorical r-deletion PWd-finally in the informal style (12b), and (near) categorical r-preservation in the most formal stylistic level (12c). Note that I adopt three distinct grammars to account for variation determined by level of formality. Along the lines of Selkirk (1972), van Oostendorp (1997), and Boersma (2001), I assume that each style constitutes a discrete grammar between which BP speakers code-switch according to the context of the discourse.

(12)   r-deletion and level of formality – Summary of rankings
            a. Formal Grammar: { {NoCoda$_{PWd-Final}$} MAX-IO >> NoCoda }
            b. Informal Grammar: NoCoda$_{PWd-Final}$ >> MAX-IO >> NoCoda
            c. Most Formal Grammar: MAX-IO >> NoCoda >> NoCoda$_{PWd-Final}$

In the following section, I will show how the tools introduced and utilized in this section can be applied in the analysis of another variable phenomenon: Across-Word Regressive Assimilation in Picard.

3.   *Across-Word Regressive Assimilation in Picard – An OT Account*

Across-Word Regressive Assimilation (AWRA) is a domain-sensitive phonological process that operates exclusively at the domain juncture of an /l/-final syllable and the following consonant-initial Prosodic Word, within the Phonological Phrase domain: ((ʃol)$_σ$)-$_ϕ$-(kurɛ)$_{PWd}$)$_{PPh}$. For ease of exposition, I will refer to this domain as ɸ-juncture (data from Cardoso 2001, 2003).

In this prosodic domain, three distinct variable patterns can be observed: (a) faithfulness of input /l/ (/l/-preservation); (b) Across-Word Regressive Assimilation (AWRA); and (c) /l/-deletion. Observe that AWRA (which I will use as a cover term for both the phenomenon and one of its variants) clearly reflects the type 1 of sociolinguistic variation illustrated in (1a):

(13)   Variants of AWRA (*Type 1* variation; see (1a))
        (ʃol-ϕ-kurɛ)ₚₚₕ   →   a. [ʃo**l k**urɛ]   b. [ʃo**k k**urɛ]   c. [ʃo_ kurɛ]
                                    "the/this pork pâté"
        (dol-ϕ-tart)ₚₚₕ   →   a. [do**l t**art]   b. [do**t t**art]   c. [do_ tart]
                                    "some pie"

I will now show that AWRA is also characterized by domain-driven variation, since, as implied above, its application is sensitive to the prosodic domains in which the morphosyntactic constituents involved prosodize. Observe in (14) that AWRA does not apply in prosodic contexts distinct from the ones illustrated in (13). /l/-faithfulness (or inapplicability of AWRA) is the result when the relevant sequence of consonants occurs in monomorphemic words (i.e. within the PWd; (14a)), in compounding (14b) (i.e. within recursive PWds) and in other prosodic configurations (e.g. at the juncture of two Intonational Phrases (I); (14c)).

(14)   Inapplicability of AWRA (Type 2 variation; see (1b))
        a. (kalfa)ₚWd   → [ka**lf**a]   *[kaffa]   *[ka_fa]
           "caulker"
        b. ((bryl)ₚWd (dʒœl)ₚWd)ₚWd   → [bry**ld**ʒœl]   *[brydʒdʒœl]
           "pipe w/ short tube"
        c. (sjel)I (pur)I   → [sje**l p**ur]   *[sjep pur]   *[sje_pur]
           "sky, for"

As was the case with r-deletion in Brazilian Portuguese, it is clear that a hierarchy composed of general (i.e. non domain-specific) constraints will not be able to account for domain-driven and sociolinguistic variation in AWRA. For instance, consider the following set of relevant constraints:

(15)   Standard (i.e. not domain-specific) OT constraints

Linearity	S_1 reflects the precedence structure of S_2, and vice versa (McCarthy & Prince 1995)
NoCoda-Rt[2]	A Coda cannot license a Root node (cf. Prince & Smolensky 1993)
MAX-IO	Every element of the input has a correspondent in the output (No deletion) (McCarthy & Prince 1995)

If one assumes a ranking in which NoCoda-Rt and Max-IO are ranked higher than Linearity (e.g. NoCoda-Rt, Max-IO >> Linearity), one would expect AWRA to apply incorrectly across the board and, consequently, the phenomenon would not display variation at the domain juncture ɸ (cf. (13)). This problem can be solved by the adoption of an approach that promotes the decomposition of constraints into their domain-specific counterparts, as introduced in section 2. The domain-specific versions of the relevant constraint NoCoda-Rt are: (a) NoCoda-Rt$_\phi$: a Coda cannot license a Root node at the juncture ɸ; and (b) NoCoda-Rt: a Coda cannot license a Root node (e.g. in U).

While the hierarchy proposed in (16) adequately accounts for the domain-driven idiosyncrasies of AWRA as shown by the correct selection of candidates (16c) and (16d) as optimal forms, it fails to account for the variable aspect of the phenomenon. As illustrated in (13), the incorrectly discarded candidates (16a) and (16b) are also possible forms in Picard.

(16)   AWRA across different domains

	/ʃol kurɛ/	NoCoda-Rt$_\phi$	MAX-IO	Linearity	NoCoda-Rt	
☹	(a) ʃol.kurɛ	*!			*	Juncture
☹	(b) ʃo.kurɛ		*!			ɸ
☞	(c) ʃok.kurɛ			*		
	/kalfa/					
☞	(d) kal.fa				*	Other
	(e) ka.fa		*!			domains
	(f) kaf.fa			*!		

Cardoso (2003) demonstrates that the most statistically significant factor in determining the variable patterns observed in AWRA is the *geographic location* of the speakers. According to this factor, two distinct patterns can easily be

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[2] As originally proposed by Prince & Smolensky (1993) (i.e. Syllables do not Codas), the general version of NoCoda is inadequate to account for the range of behavior that coda consonants display cross-linguistically (in OT, see McCarthy & Prince 1993, Kawasaki 1998, among others). Observe that NoCoda-Rt is formulated in terms of licensing; consequently, a syllable final consonant can only surface without incurring a violation of this constraint if all of its features are linked to and therefore licensed by a following onset. See Cardoso (2003) for a comprehensive discussion of NoCoda-Rt.

delineated: while the AWRA variant is more likely to appear with the two other variants being equally distributed (and equally disfavored) in Nibas, /l/-preservation, AWRA and /l/-deletion are all equally expected to occur in the villages of Feuquières, Fressenneville, Bienfay and Bouillancourt ("Other").
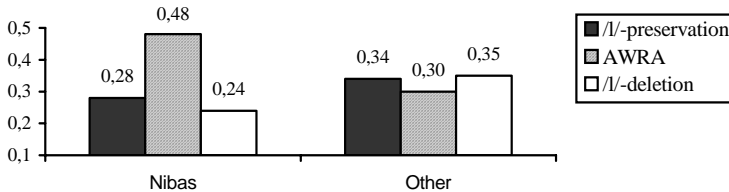
Figure 2: *AWRA and Geographic Location*

To account for the disparity of results observed involving the factor *geographic location*, I propose the two distinct variable grammars in (17), composed of domain-specific constraints (where semi-colons and curly brackets indicate sets of unranked constraints): (1) one grammar for the village of Nibas, in which the nonranking of two sets of constraints yields 4 tableaux; and (2) one for Other, in which the nonranking of three constraints yields 6 tableaux. As has been proposed for the analysis of distinct dialectal varieties (e.g. Selkirk 1997, Boersma 2001), I assume that these two sets of villages define separate dialects, which are formally represented by two grammars or constraint rankings. The application of Anttila's variant probability prediction in (9) yields the results illustrated in Table 3, which tightly match the ones illustrated in Figure 2.

(17)   Geographic location and AWRA
   a. Nibas Grammar:
   { { MAX-IO; NoCoda-Rt$_\phi$ } Linearity } >> NoCoda-Rt
   b. Other Grammar:
   { MAX-IO; NoCoda-Rt$_\phi$; Linearity } >> NoCoda-Rt

Geographic Location	Total # of tableaux	/l/-preservation		AWRA		/l/-deletion	
		Pred.	Obs.	Pred.	Obs.	Pred.	Obs.
Nibas	4	.25 (1)	.28	.50 (2)	.48	.25 (1)	.24
Other	6	.33 (2)	.34	.33 (2)	.30	.33 (2)	.35

Table 3: *Predicted & observed probability of variant occurrence by geographic location*

For illustrative purposes, I show in Table 4 how the ranking responsible for the results in Nibas determines the selection of each of the three variants involved in the AWRA phenomenon, and thus predicts the probability of each variant to occur:

Constraint Set: { { MAX-IO; NoCoda-Rt$_\phi$ } Linearity } >> NoCoda-Rt			
Corresponding Tableaux: 6	**OUTPUT SELECTION**		
	/l/-preservation	**AWRA**	**/l/-deletion**
a. NoCoda-Rt$_\phi$ dominated:			
Linearity >> MAX-IO >> NoCoda-Rt$_\phi$	✓		
b. Linearity dominated:			
MAX-IO >> NoCoda-Rt$_\phi$ >> Linearity		✓	
NoCoda-Rt$_\phi$ >> MAX-IO >> Linearity		✓	
c. MAX-IO dominated:			
Linearity >> NoCoda-Rt$_\phi$ >> MAX-IO			✓

Table 4: *Variable output selection for Other*

In sum, the domain-specific versions of NoCoda-Rt together with the crucial nonranking of the relevant sets of constraints were able to account for both the sociolinguistic and domain-driven variable patterns that characterize the AWRA phenomenon in Picard, by means of a single grammar.

4.   *Conclusions*

In this paper, I have provided an analysis for the variable phenomena of r-deletion in Brazilian Portuguese and Across-Word Regressive Assimilation Picard, within an integrated approach that is able to account for domain-driven and sociolinguistic variation in OT via a single constraint ranking or grammar.

For the analysis of domain-sensitive phenomena, I have elaborated and utilized a version of the domain-specific constraint approach that is based on insights from Prosodic Phonology (e.g. Selkirk 1972, Nespor & Vogel 1986), Buckley (1995) and Pater (1996). In comparison with approaches that require a multi-level relation between input and output (e.g. Lexical Optimality Theory; e.g. Kiparsky 2000), this approach is preferable because it is able to account for domain-driven phonological phenomena such as those encountered in r-deletion in BP and AWRA in Picard by means of a single constraint ranking, composed of independently ranked domain-specific constraints.

For the investigation of the variable aspect of r-deletion and AWRA, I have adopted the proposal of Reynolds (1994) and Anttila (1997) that variation can be satisfactorily accounted for in the OT framework, via crucial nonranking of constraints. One of the advantages of this approach is that it not only allows for variation to be directly encoded in the grammar, but it also incorporates into the same grammar a mechanism that captures the quantitative aspect of variable phenomena: the crucial nonranking of constraints. The claim that the probability of each variant's occurrence may be encoded in (and therefore predicted by) the grammar yields important consequences for the study of variation and linguistic theory in general, because it constitutes an attempt to narrow down the distinction between what is traditionally labeled as competence versus performance.

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ON *FACTS* IN THE SYNTAX AND SEMANTICS OF ITALIAN[*]

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1.   *Introduction*

This contribution is about processes of anaphora resolution that do not concern standard entities of the domain of discourse underlying natural language such as objects and kinds but slightly more exotic or non-standard entities such as events and *facts*. Reference to facts has brought about alive and still largely unsettled discussions in the modern philosophy of language (for a recent survey, see especially Neale 2001). However, although the enrichment of natural language ontology with facts has been already contemplated in philosophical research, with interesting consequences within formal semantics and discourse theory (see especially Asher 2000 and the references cited therein), I believe that the extraordinary relevance of facts for both *syntax* and *semantics* has still to be fully appreciated.

The main task of this contribution is to show what can be independently achieved in syntax and semantics as a consequence of the recognition that the ontology of natural language is populated by *facts*.

In syntax, the main consequence is a principled derivation of important data concerning fact-resuming pronominal anaphora (mainly focusing on previously disregarded properties of null pronominal subjects).

In semantics, the main consequence concerns the asymmetry between the Tarskian definition of the truth-predicate as ranging over *sentences* and a distinct interpretation of the truth-predicate as ranging over *facts*. This distinction has some important philosophical implications, crucially including the possibility of deriving the Tarskian *disquotational* predicate from its *factive* counterpart.

This paper is divided into four sections. The second section introduces the data on anaphora that seem to motivate an ontological distinction between events and facts within linguistic semantics. The third section is devoted to the semantic

consequences of the proposed ontological distinction (whereby a crucial comparison is made between a factive and a disquotational truth-predicate in natural language). In this section, I contend that the core usage of the truth-predicate is the factive usage. The fourth section is devoted to the syntactic consequences of this distinction, by discussing a full array of data on fact-resumption through pronominal anaphora. In this section, new interesting data are presented concerning the anaphoric behavior of null pronominal subjects.

2.   *Events, propositions and facts*

At first sight, there are several empirical reasons to distinguish *that*-clauses from simple clauses. Abstracting away from the obvious fact that *that*-clauses are the typical realization of embedded sentences, let us concentrate on some striking distributional differences. *That*-clauses are required as an answer to questions over thoughts, beliefs and propositional attitudes quite generally (I exemplify on Italian):

(1)   a.   *Che cosa pensi?*
                 what do you think
         b.   *Che i fatti non sono proposizioni*
                 that the facts are not propositions
         c.   *?I fatti non sono proposizioni*
                 the facts are not propositions

Conversely, simple sentences are the natural option when one inquires about the course of events in the world:

(2)   a.   *Che cosa è successo?*
                 what happened
         b.   *Giovanni ha risolto il problema*
                 Giovanni solved the problem
         c.   *?Che Giovanni ha risolto il problema*[1]
                 that Giovanni solved the problem

Vendler (1967) observed that the most verblike of English gerund phrases (the so-called ACC-*ing* gerunds) pattern exactly as *that*-clauses in being awkward or infelicitous when combined with predicates involving some form of spatio-temporal location (see also Asher 2000). *That*-clauses and verblike gerund phrases constitute what Vendler calls *imperfect* nominals, contrasting with event nominals and POSS-ing nominalizations (the so-called *perfect* nominals). The flavor of the Vendlerian contrast can be appreciated in (3):

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[1] The core contrast is the difference in the acceptability of simple independent clauses exemplified by (1c) vs. (2b). The relative acceptability of (2c) can be explained by the presence of a structural analysis in which (2c) is an elliptical structure whereby the *that*-clause is selected by a phonologically null predicate corresponding to the verb present in the question (*happen*).

(3)   a.   *Mary hitting Fred occurred at noon (took place in the park, was bloody, made him angry, is an event)

        b.   *That Mary hit Fred occurred at noon (took place in the park, was bloody, made him angry, is an event)

        c.   Mary's hitting of Fred occurred at noon (took place in the park, was bloody, made him angry, is an event)

Since imperfect nominals may successfully combine with predicates of the same *syntactic* category as those in (3), as is shown by (4) below, it is likely that the contrast in (3) be due to semantic mismatch between subject and predicate: the type of objects referred to by imperfect nominals cannot be in the extension of what is denoted by the VP in (3a-b):

(4)   That Mary hit Fred *bothered Alfred*

One way to make sense of this paradigm is to propose that *that*-clauses refer to *non-eventive* entities. In other words, the observation that *that*-clauses cannot be in the extension of predicates of spatio-temporal location suggests that what is referred to by *that*-clauses is somehow of *non-eventive* nature.

Let us simply assume the (somewhat standard) view that events are dynamic entities endowed with spatio-temporal boundaries, real objects in the world involved in relations of mechanical causation within the ontology presupposed by the grammar of natural language. When we utter (5), for instance, we are really committed to the view that what is referred to by the event-nominal "explosion" mechanically caused the destruction of the surrounding buildings:

(5)   *Ieri è scoppiata una bomba. L'esplosione ha completamente distrutto gli edifici circostanti*
        yesterday a bomb exploded. The explosion completely destroyed the surrounding buildings

It can be shown that the anaphoric system of natural language is sensitive to exactly this kind of ontological properties: let us notice, for instance, that the dynamic event to which reference is made in the first sentence in (6) cannot be naturally resumed by means of the anaphoric epithet "la cosa" (the thing) in Italian:

(6)   *Ieri è scoppiata una bomba. #La cosa ha completamente distrutto gli edifici circostanti*
        yesterday a bomb exploded. *The thing* completely destroyed the surrounding buildings

Suppose that "la cosa" cannot be used, in Italian, to refer to the kind of dynamic entities that we have identified as *events*. In fact, it suffices to combine "la cosa" with a verb of less evident mechanical causation to get a substantial improvement of the anaphoric dependency in (6). This is shown in (7):

(7)   *Ieri è scoppiata una bomba. La cosa ha destato un'ondata di profonda commozione nel Paese*
        yesterday a bomb exploded. *The thing* raised a wave of deep emotion in the country

Let us try to make sense of the contrast between (6) and (7). Adopting the standard view in event semantics, we propose that the first sentence in (6)-(7) is associated with a logical form involving an event variable *e* such that *Explosion(e)*. The dynamic nature of this entity consists in being endowed with spatio-temporal boundaries and in being involved in activities of *mechanical* causation. When we combine "la cosa" with the predicate "destroy" in the second sentence of (6), there is little doubt that it is exactly this newly introduced dynamic entity that we are trying to resume: the destruction of a building can only be the product of some concrete spatio-temporal cause. Hence, awkwardness is arguably the consequence of the fact that the anaphoric potential of "la cosa" (the objects it is allowed to resume) does not extend to *events*. Now, let us consider (7). The predicate in the second sentence does not necessarily express mechanical causation: people did not get moved and upset within the spatio-temporal boundaries of the explosion. The point is in effect that people may become angry and upset as a result of their thinking about the fact that the explosion has taken place in a recent or even remote past. The fact that "la cosa" can be used felicitously in (7) undoubtedly favors the conclusion that whatever kind of *non-eventive* entity is involved in the sort of non-mechanical or psychological causation characterizing the second sentence in (7), it is this non-eventive entity that is felicitously resumed by the anaphoric epithet "la cosa".

The sensitivity of the anaphoric system of Italian to the proposed ontological divide is confirmed by other less exotic facts concerning the behavior of pronominal clitics. As is well-known, pronominal clitics may give rise to sentence pronominalization in Italian and more generally in Romance, as shown in (8)[2]:

(8)   *Ho visto che Pavarotti ha cantato in Arena, non lo avevo previsto*
        I saw that Pavarotti sang in the Arena, I had not foreseen it

"Lo" can resume both the whole sentence (what I had not foreseen is that I would see Pavarotti sing) or the embedded sentence (what I had not foreseen is that Pavarotti would sing) in (8), even though the second reading is clearly preferred on rather obvious pragmatic grounds. This situation radically changes if the sentential complement of the perception verb in (8) is turned into a *naked* infinitival, giving rise to (9):

(9)   *Ho visto Pavarotti cantare in Arena. Non lo avevo previsto*
        I saw Pavarotti sing in the Arena. I had not foreseen it

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[2] See Moro (2000b) for a possible reduction of predicate pronominalization to sentence pronominalization.

Here, the natural reading has "lo" resuming the whole sentence (I had not foreseen that I would see Pavarotti sing), whereas the reading in which "lo" resumes the embedded infinitival sentence (what I had not foreseen is that Pavarotti would sing) is hardly accessible, despite its being at least as natural as the first on pragmatic grounds. This paradigm is easily explained if we adopt the hypothesis that naked infinitivals are event-referring constituents (cf. Higginbotham 1983). Again, events are not a natural target for (pronominal) anaphora: this corroborates the insight that pronominal clitics may be sentence-resuming only to the extent in which sentences introduce non-eventive constituents. In other words, the embedded clause can be pronominalized in (8) because *that*-clauses denote *non-eventive* entities (in full accordance with the observations made above), and it cannot be successfully pronominalized in (9) because naked infinitivals denote *eventive* entities of some sort.

This hypothesis is corroborated by the analysis of the contexts where the pronominal clitic is selected by a perception verb in the second sentence: in this way, we easily ensure that the selected entity be an event. A case in point is given in (10a), where "lo" cannot be anaphorically dependent on the naked infinitival (*I have heard Callas sing, but I have not seen Callas sing). This strongly confirms the opacity of event-like entities to anaphoric resumption by anaphoric clitics:

(10)   a.   *Ho sentito la Callas cantare, ma non l'ho visto
              I heard Callas sing, but I did not see it

When the perception verb "sentire" (*hear*) selects a *that*-clause, it semantically selects a proposition: the only interpretation of (10b) is that I heard some report that Callas sang, not that I heard her sing. Conversely, the only interpretation of (10c) is that I heard Callas sing, not that I heard some report that she sang.

(10)   b.   Ho sentito che la Callas ha cantato in Arena. Anche tu l'hai sentito?
              I heard that Callas sang in the Arena. Did you hear it as well?
        c.   Ho sentito la Callas cantare in Arena. *L'hai sentito anche tu?
              I heard Callas sing in the Arena. Did you hear it as well?

If the hypothesis that pronominal clitics can resume propositions/facts but cannot resume events is correct, we clearly predict that the anaphoric dependency introduced by the clitic in the second sentence of (10b) (where the resumed entity is a *proposition*) be fully legitimate, while it should be ruled out in the second sentence of (10c) (where the resumed entity is an *event*). This prediction is fully borne out. In particular, the second sentence in (10c) cannot express the pragmatically natural reading "did you hear Callas sing?".

Let us try to evaluate which kind of conclusions are warranted by the observations made above. We noticed that both simple clauses and *that*-clauses – contrary to some *prima facie* evidence - introduce non-eventive discourse entities that can constitute the target of pronominal anaphora. It seems thus appropriate to turn now to some more explicit hypotheses concerning the nature and properties of these non-eventive entities.

It is a commonplace in formal semantics that *that*-clauses, being typically selected by verbs and predicates of propositional attitude, denote propositions, i.e. functions from possible worlds to truth-values. However, *that*-clauses do not behave homogeneously w.r.t. a number of semantic diagnostics, such as the substitution of expressions denoting the same entity. An interesting difference emerges for instance between the complements of factive nouns and the complements of nouns expressing propositional attitudes. Semanticists working on propositional attitudes would suppose that (11a) is false, whereas (11b) clearly strikes speakers as a true statement (Asher 2000: 128):

(11)   a.   The belief that Cicero was the most highly regarded philosopher of his time is
                identical to the belief that Tully was the most highly regarded philosopher of his
                time
         b.   The fact that Cicero was the most highly regarded philosopher of his time is
                identical to the fact that Tully was the most highly regarded philosopher of his
                time

On the grounds of these and other observations, Asher (1993, 2000) proposed that the complement of factive verbs like *show* and *indicate* refers to a different kind of objects than the complement of propositional verbs like *think* and *believe*. Suppose these entities are *facts*. This hypothesis is directly confirmed by the contrast in (12):

(12)   a.   *That Mary hit John is an event
         b.   That Mary hit John is a fact

Notice that in this case, the ontology presupposed by the lexicon of a natural language seems to match the ontology presupposed by the grammatical system underlying the very same language: *fact-referring that*-clauses may be in the extension of the nominal predicate *fact*, but not in the extension of the nominal predicate *event*[3].

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[3] Whether this is always the case is a question that should be addressed by empirical inquiry: generally speaking, language constitutes an interplay of essentially different cognitive modules, possibly based on *distinct* ontological presuppositions. This considerably complicates the assumption, common to one of the main traditions in the philosophy of language, that *simple* inspection of the ontology presupposed by natural language can provide a decisive contribution towards the solution of classical philosophical issues.

Putting aside these considerations, let us go back to the presence of *facts* in the domain of discourse. According to the proposed analysis, what is resumed by the anaphoric link involving "la cosa" in (7) and the pronominal clitic in (8) is the *facts* introduced into the domain of discourse by the simple sentence "yesterday a bomb exploded" and by the *that*-clause "that Pavorotti sang", respectively. By hypothesis, *facts* are the *non-eventive* entities that we were looking for in order to account for the opacity of events to (pronominal) anaphora.

At this point, the obvious question concerns the relationship existing among *events*, *propositions* and *facts*. Intuitively, facts are more objectual than propositions and less objectual than events. Clearly, one needs also capture the insight that what made people upset is something about the constitution of the *real* world. In other words, we need some way to conceive of *facts* as objects in the world. In the next section I will further investigate the nature of facts in linguistics semantics, by elucidating the relation existing between the notion of fact and the notion of truth.

3. *Facts and truth*

3.1 *Some preliminary observations on the factive truth-predicate*
There is a long-standing debate in the philosophy of language concerning the extension of the truth-predicate in natural language. Which kind of objects are actually said to be true? Are they the sentences we utter (Tarski 1983), what is expressed by these sentences (i.e. propositions, thoughts, etc.) or what we refer to when we make an assertion (Strawson 1949)?

On the other hand, as emphasized in Neale (2001), facts are philosophically disputed entities that seem to lack uncontroversial identification criteria. They have been indifferently considered as truth-makers, as causal relata, as true propositions, as objectual constituents, as necessary existents, as entities crucially endowed with spatio-temporal location or as completely deprived of one or other form of location, as exclusively atomic in nature or as conjunctive, negative and general in nature.

It is my contention here that a linguistic analysis of the properties of reference to facts in natural language can act as sieve with respect to the tenability of the various conceptions of facts that have been proposed in the philosophical literature. For instance, since the predicate "_ is true" correctly applies to fact-referring constituents in natural language, it makes no sense to regard facts as truth-makers: a fact may also be false, possible, unlikely, and so on (this negative conclusion extends thus as well to the notion of fact as *true proposition* or as *necessary existent*).[4] On similar empirical grounds, conceiving of facts in terms of

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[4] In what follows, I will contend that what makes a sentence true is the *existence* of the fact it denotes. Asserting the existence of a fact is different from simply denoting a fact (or stating that a fact [A] *corresponds* to a sentence A). It is thus not facts that are truth-makers, but the (possibly

causal relata deserves some qualifications, since fact-referring expressions are hardly compatible with predicates of physical/mechanical causation, witness the contrast between (6) and (7) above. Nor are fact-referring expressions compatible with predicates expressing spatio-temporal location, as shown in (3a) and (3b) above, which means that location is orthogonal to the metaphysical constitution of facts that is warranted by the semantics of natural language. On the other hand, the anaphoric properties of fact-reference in natural language clearly argue - I think - in favor of a view of facts as discourse entities of some sort, as well as in favor of the view that facts may be negative, conjunctive or even general (even though I will not explicitly argue for this conclusion here).

Given these preliminary logico-metaphysical assumptions concerning facts, we can profitably inquire into the syntax and semantics of the factive truth predicate. It is my contention here that it is this inquiry into the factive truth-predicate that enables us to cast a new light on the properties of the Tarskian, so-called "disquotational" use of the truth-predicate in natural language (typically illustrated by Tarski's T-convention). More particularly, I will argue here that the disquotational usage of "_ is true" is somehow derivative of the factive use of "_ is true".

Let us start with some appreciation of Tarski's *disquotational* account of the truth-predicate. Following Quine (1992), "the truth-predicate is said to disquote a sentence S if the form

_____is true if and only if_____

comes out true when S is named in the first blank and written in the second" (Quine 1992: 83).

What Tarski made clear is that such a truth-predicate must be *incompletely* disquotational: for instance it cannot disquote the sentences that contain it, on pain of inconsistency. According to Quine, it should be fully appreciated that the

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second-level) property of existence when it applies to them (cf. also fn. 6 and the related discussion in the main text). This distinction yields some non-trivial consequences for non-atomic sentences, about which there is much confusion in the literature. For instance, I take it as fundamentally mistaken to state that a disjunctive sentence A∨B denotes the fact [A] in a model where fact [A] exists and fact [B] does not exist (say, a model where A is true and B is false). In my view, what we should say is that the sentence A∨B denotes the fact [A∨B] in every model. The disjunctive sentence is made true by the disjunctive fact only if the latter exists. For every model, we say that the disjunctive fact [A∨B] exists only if one of these three conditions holds: [A] exists, [B] exists or [A∧B] exists. It is worth emphasizing that, under the view that I will argue for, facts are not objects *in the world*, as most commonly assumed. They are abstract objects involving logical as well as non-logical relations among individuals, times and locations. In a sense, they mediate between the logical forms of language and the actually existing objects (or *facts* in the common linguistic usage). It is in this sense that I crucially propose that facts are *not* truth-makers: it is not these abstract objects that make a sentence true, but what happens in the world (or in our model) whenever these objects are said to exist.

source of the semantic paradoxes based on an inconsistent use of the truth predicate is a language containing, besides the notations of elementary logic, "the innocent notations for quoting and appending" (*ibidem*).[5]

However, a fact that has previously gone largely unnoticed is that quotation devices do not come for free in natural languages. This fact is exemplified in (13):

(13)   *#Bruto ha pugnalato Cesare è vero se e solo se Bruto ha pugnalato Cesare*
         Brutus stabbed Caesar is true if and only if Brutus stabbed Caesar

This is not really striking, after all: the clause filling the first blank of the T-sentence in (13) (i.e. *Bruto ha pugnalato Cesare*) is not a name for itself, that is, it does not refer to itself; rather, as we will see below, it expresses the existence of an event having occurred in the world, introducing a fact into the domain of discourse. This clause refers thus to a fact, not to a sentence. As a consequence, utterances of sentences like (13) will not do as an instantiation of the canonical scheme required by the T-convention (whereby the first blank must be filled by a name for S). What we need is rather something along the lines of the *appositive* structure in (14):

(14)   *L'enunciato Bruto ha pugnalato Cesare è vero se e solo se Bruto ha pugnalato Cesare*
         the sentence Brutus stabbed Caesar is true if and only if Brutus stabbed Caesar

Given these observations, the fact that (15a) is grammatical and (15b) ungrammatical in Italian/English is exactly what we purported to explain above:

(15)   a.   *L'enunciato Bruto ha pugnalato Cesare è vero*
               the sentence Brutus stabbed Caesar is true
        b.   **Bruto ha pugnalato Cesare è vero*
               Brutus stabbed Caesar is true

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[5] Quine proposes a logically purified version of the Paradox of the Liar ("I am lying", "This sentence is false") and of the looser version represented by the Paradox of Epimenides the Cretan, who said that all Cretans were liars. Quine's version of the Paradox, instantiating his view that nothing more is needed than "the innocent notations for quoting and appending", reported in (i), constitutes a sort of natural language equivalent of Gödel's celebrated autoreferential formula that says of itself that it is false or not provable (Piergiorgio Odifreddi, p.c.). In fact, (i) is interpreted as saying that (i) itself is false (Quine 1992: 82-83).

    (i)   "yields a falsehood when appended to its own quotation" yields a falsehood when appended to its own quotation

I believe that Quine's point is moot. The parallel with Gödel does not go through, for the simple reason that the predicate "yields a falsehood" (equivalent to "is false") applies in (i) to a VP instead of a sentence. In fact, I will argue farther in the text that there are solid reasons to question even the traditional Tarskian usage according to which utterances where "_ is true" directly applies to sentences are well-formed. No doubt thus that Quine's (i) does not qualify as a well-formed instance of a paradoxical sentence.

However, what *is* striking is the perfect acceptability of (16) alongside (15a):

(16)   *Che Bruto ha/abbia pugnalato Cesare è vero*
         that Brutus has/has-SUBJ stabbed Caesar is true

    The well-formedness of (16) ceases to be surprising only under the hypothesis that the referential properties of the nominal "the fact that…" are exactly the same as the referential properties of the *that*-clause in (16): both the complex nominal and the *that*-clause refer to facts.

    This suggests that the truth-predicate is essentially *ambiguous* in Italian/English. Besides a Tarskian use (according to which the truth-predicate has *sentences* in its extension), one finds a "factive" use, according to which the truth-predicate has *facts* in its extension. The obvious question to be raised concerns the semantics of these two uses of "_ is true" and its relevance for a general theory of truth for natural language.

    As for the Tarskian disquotational truth-predicate, it is questionable whether there is any generality involved: Tarski's account "explicates truth by providing a method of specifying for particular sentences of the language the circumstances in which they are to be called true: truth is the property which belongs to "The cat is on the mat" iff the cat is on the mat, to "Snow is white" iff snow is white, and so on" (Walker 1997: 328). Things might be more straightforward with the factive truth-predicate: informally, to say that the fact F denoted by the *that-clause* in (16) is true means that this fact *obtains* in the real world *w*. Such an interpretation is confirmed by the full acceptability, alongside (16), of sentences such as (17):

(17)   *Che Bruto abbia pugnalato Cesare è possibile*
         that Brutus has-Subj stabbed Caesar is possible

    It follows from an obvious extension of the account just proposed for (16) that the logical paraphrase of (17) is something along the lines of "there is at least a possible state of affairs *w'* in which the fact referred to by the *that*-clause in (17) *obtains*". On intuitive grounds, this sort of analysis can be easily extended to sort-like predicates like "impossible", "necessary", "odd", etc.

    Conversely, all these predicates fail to establish a relation between language and world in all contexts that involve a Tarskian use of the truth-predicate, as shown in (18):

(18)   *L'enunciato Bruto ha pugnalato Cesare è possibile/necessario/strano/verosimile*
         the sentence Brutus stabbed Caesar is possible/necessary/odd/plausible

    We are led to the conclusion that while the factive truth-predicate (let us call it T_F) patterns together with other predicates intuitively belonging to the same semantic category (*possible*, *necessary*, *likely*, *odd*, etc.), the Tarskian truth-

predicate (let us call it T$_T$) is actually quite remote from them. This is confirmed by the inspection of (19a) vs. (19b): all sentences in (19a) are about *real facts* in the world (for instance, what is *admissible* is the *fact* that the President insulted a MP).

(19)   a.   *Che il Presidente ha/abbia insultato un deputato è vero/possibile/ammissibile*
              that the President has/has-SUBJ insulted a MP is true/possible/admissible

On the contrary, the use of the Tarskian truth-predicate induces a bipartition in (19b): only the sentence involving the predicate "true" is about a real fact in the world (for instance, what is *admissible* is the *grammar* (!) of the sentence "the President insulted a MP").

(19)   b.   *L'enunciato il Presidente ha insultato un deputato è vero/possibile/ammissibile*
              the sentence the President has insulted a MP is true/possible/admissible

The conclusion is that the symmetry between "_ is true" and the other predicates akin to it (in the sense that they are all about establishing the existence of facts in certain suitably defined classes of situations) is completely broken whenever the truth-predicate is used disquotationally. "Disquotation" is admitted only for "_ is true", that is, only "_ is true" warrants semantic ascent, ascribing a property to sentences *that depends* on some property of state of affairs external to language.

This situation is clearly in need of some explanation. Is the special status of the disquotational variant of "_ is true" simply to be regarded as an accident in the lexicon of English/Italian (and, arguably, of all other natural languages as well)? I think the question admits a quite principled answer: the special status of the disquotational truth-predicate depends on the formally definable semantic relationship that exists between the disquotational and the factive variant of the truth-predicate. Once the constraints imposed by this relation are clearly established, the peculiar properties of the disquotational predicate (among which the *asymmetry* with "modal" predicates) naturally follow.

3.2   *Deriving the disquotational usage*

After these general remarks, let me now face the more formal task of deriving the disquotational use of the truth-predicate from its more primitive factive use. Let us take a sentence ϕ of a natural language L. In general, ϕ will have either the logical form (i) $\exists e\ P(X_1,\ldots, X_n, e)$ (for episodic sentences) or the logical form (ii) $[\lambda x\ (\ldots P(x)\ldots)]$ (a), "a" a logical constant (for generic sentences). Informally, episodic sentences express a certain relationship among objects and events, whilst generic sentences involve the ascription of a certain property to an object (even complex properties involving quantifiers over events, that can be present in the nuclear scope of the λ-operator; see Delfitto 2002). I want to propose that ϕ, when asserted, introduces a fact $\bullet\phi\bullet$ into the domain of discourse

(an episodic fact when ϕ expresses a relation between objects and events, a general fact when ϕ expresses the ascription of a property to an object). More precisely, we may adopt a DRT-style of analysis, and propose that the assertion of ϕ will introduce a discourse referent x plus the DRS-condition capturing the information that this discourse referent represents the fact indicated by ϕ: something of the sort •ϕ•(x). By default existential quantification of the discourse referent x at the discourse-level, we get the logical form $\exists x \ (x = •ϕ•)$ as the semantic content of the assertion of ϕ.

Now, the important observation to be made is that for any asserted ϕ in L there will be an expression in L of the form *"That-ϕ is true"* such that this expression is logically equivalent to the assertion of ϕ. This is so because *that*-clauses are fact-referring expressions (more exactly, names for facts) and the factive predicate "_ is true" roughly means "_ obtains in the real world w". Notice that under this approach we have names for facts that do not exist (in the sense that the extension of the *that*-clause in the real world w is not in w's domain), exactly as we have names for nonexistent objects (in the sense that the extension of object-referring terms at w is not in w's domain).[6] Notice also - even more interestingly - that under this approach existence is both a quantifier (a second-level property of L) and a property in L, exactly the situation we find in modal free logic (cf. fn. 6). This is made clear by the observation that the proposed logical equivalence (given in (20)) is formally expressed by the logical form in (20'):

(20)   That-ϕ is true ↔ ϕ

(20') $T \ (•ϕ•) \ ↔ \ \exists x \ (x = •ϕ•)$

The only difference between the left and the right side of (20') is that when the predicate T is used instead of default existential quantification over factive discourse referents, the fact referred to by the *that*-clause is somehow presupposed, i.e. it must have already been introduced into the domain of discourse, to the effect that the focused part of the relevant utterance (i.e. the new information) consists in the assertion relative to the existence of such a fact (i.e.

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[6] I adhere here to a position (formally implemented by free logic) according to which names need not refer to an object in the domain of quantification. Technically, a Q-model for quantified modal logic will be a quintuple <W, R, D, Q, a>, whereby W is a set of possible worlds, R is a binary relation of accessibility defined on W, D is a non-empty set of possible objects, Q is the domain of quantification (either D or the objects that exist in a given world) and *a* the assignment function that interprets constants, variables and predicates in the domain. When the quantifier rules adhere to free logic, the language contains a primitive predicate E (exist), with $a(E) = Q$ (cf. for instance Garson (1984)). For a philosophical defence of a Meinongean, anti-Russellian and anti-Quinean position concerning nonexistent objects, cf. among others. Parsons (1980). For an inspiring discussion of the position of free logic in the debate concerning nonexistent objects and extensionally empty predicates (in the context of a detailed comparison between the position held by classical logic and the position held by modern standard first-order logic), see Mignucci (2004).

the predicate T is the "narrow" focus). As already proposed by Austin (1962) and Strawson (1949), the reason for preferring the "redundant" use of T in the left side of (20') will have simply to do with the discourse condition that the fact in question is *familiar* in the relevant context (as when, for instance, the existence of the relevant fact has been denied by a previous speaker).

Suppose now that the disquotational usage of the truth-predicate is tantamount to saying that the sentence φ of L being disquoted is logically equivalent to a (suitably defined) sentence ψ of L containing one occurrence of T (where T is T_F). Informally, we predicate "_ is true" of a sentence φ iff φ is logically equivalent to a sentence ψ of the form *that-φ* whereby T is predicated of the fact corresponding to φ. This is to say that we can assert (21a) as a consequence of the logical equivalence in (21b): *semantic ascent* is possible in virtue of the intermediate role played by the factive truth-predicate through the logical equivalence in (21b):

(21) a.   The sentence "φ" is T_T
      b.   That-φ is T_F ↔ φ

Asserting the truth of a sentence φ is based thus on the equivalence of φ with a distinct suitably defined sentence (i.e. a sentence of the form *that-φ is true*) containing some instance of the more basic truth-predicate T_F. *In other words, the use of T_T is based on a well-defined semantic property of φ: its logical equivalence with a sentence of L of the form "that-φ is true".* The semantic ascent imputed to T_T is gradual: there is no direct ascent from linguistic expressions (sentences) to the external world as a collection of facts, there is rather ascent from sentences to logical properties of sentences. It is this more modest ascent that ensures the link to T_F (as a predicate of existence having facts in its extension) and, through T_F and only through T_F, to a world of facts.

Now, if (21a) is admissible in L because of the validity in L of the logical equivalence established in (21b), it follows that (22) will not be admissible in L as a sentence involving semantic ascent, that is, as a sentence where the modal predicate *P(ossible)* holds of a linguistic expression φ iff *P(ossible)* holds of the fact corresponding to φ (for instance, "the sentence 'snow is white' is possible" iff the fact that snow is white is possible). The reason is that the schema in (22') is not a generally valid logical equivalence in L:

(22)   The sentence "φ" is P(ossible)

(22')   That-φ is P(ossible) ↔ φ

The counterpart of (22) that involves "_ is true" is valid in virtue of the logical equivalence in (20'): the validity of this equivalence depends in turn on the semantics of T_F as a first-level predicate of existence (having facts in its

extension). These conditions do not hold for (22'). An effective way of elucidating this consists in pursuing the already suggested parallelism with free logic: whereas T_F is essentially equivalent to a first-level predicate of existence (the predicate E in free logic) and thus truth-conditionally equivalent to existential quantification over facts (*Ea* can be easily shown to be equivalent to $\exists x x = a$ in free logic), the predicate *P(ossible)*, when applied to a fact-referring *that*-clause, roughly states that the extension of that *that*-clause is at some w' accessible to the real world w. As a consequence, *P(ossible)*, when applied to facts, cannot be considered as logically equivalent to existential quantification over facts, to the effect that the equivalence in (22') is not valid in natural language. In my view, this is the essential reason why disquotation fails in (22) and, more generally, with predicates potentially akin to the truth-predicate: the disquotational interpretation constitutes an additional lexical meaning of the truth-predicate warranted by the validity of the logical equivalence in (20). It cannot be extended to other predicates because this equivalence does not hold for other predicates.

4.   *Facts and pronominal anaphora*

My point of departure is the contrast between (6) and (7) (repeated here for the reader's convenience) discussed in section 2 above:

(6)   *Ieri è scoppiata una bomba. #La cosa ha completamente distrutto gli edifici circostanti*
        yesterday a bomb exploded. *The thing* completely destroyed the surrounding buildings

(7)   *Ieri è scoppiata una bomba. La cosa ha destato un'ondata di profonda commozione nel Paese*
        yesterday a bomb exploded. *The thing* raised a wave of deep emotion in the country

The source of the contrast was identified in the fact that the subject of the second sentence is arguably event-referring in (6) and fact-referring in (7), due to the semantic properties of the verbal predicate with which it combines. Since the anaphoric expression "la cosa" can resume only facts, the degraded status of the anaphoric link in (6) directly follows.

Let us now investigate the behavior of pronominal anaphora in examples similar to (6) and (7). The first relevant observation is that in *pro-drop* languages such as Italian, a null subject is unable to resume both the event in (6) and the fact in (7):

(23)   *Ieri è scoppiata una bomba. Ha completamente distrutto gli edifici circostanti*
        yesterday a bomb exploded. Completely destroyed the surrounding buildings
        (*the event corresponding to the explosion)

(24)   *Ieri è scoppiata una bomba. Ha destato una profonda ondata di commozione nel Paese*
        yesterday a bomb exploded. Raised a wave of deep emotion in the country
        (*the fact that the bomb exploded)

As far as events are concerned, the behavior of null pronominal subjects, shown in (23), exactly parallels the behavior of the lexical epithet "la cosa", shown in (6), and the behavior of object clitics, which cannot easily resume event-referring naked infinitivals, as shown by (9), repeated below for the reader's convenience:

(9)   *Ieri ho visto Pavarotti cantare. Non lo avevo previsto*
        yesterday I saw Pavarotti sing. I had not foreseen *it*
        (??I had not foreseen that Pavarotti would sing)

These data strongly suggest that events are not readily accessible for nominal anaphoric expressions such as the anaphoric epithet "la cosa", pronominal clitics and null pronominal subjects. This is in effect a plausible hypothesis, since we have argued in the course of the previous section that not only *that*-clauses but also – and more crucially - simple sentences introduce facts and not events into the domain of discourse. In other words, fact-resumption is the default equivalent of sentence pronominalization.

However, the empirical pattern of fact-resuming anaphora gives rise to some non-trivial issues. In particular, the behavior of null pronominal subjects, exemplified in (24), clearly contrasts with the behavior of "la cosa" (as is shown in (7) above) and with the behavior of object clitics resuming fact-referring *that*-clauses (shown in (8), repeated below):

(8)   *Ho visto che Pavarotti ha cantato, non lo avevo previsto*
        I saw that Pavarotti sang, I had not foreseen it
        (I had not foreseen that Pavarotti would sing)

The behavior of the null subject in (24) is confirmed by the analysis of the contexts where null pronouns are intended to be anaphoric to state-related facts. A case in point is given in (25):

(25)   *Il ministro è stupido/corrotto. Ha causato al Paese danni ingenti*
        the minister is stupid/corrupt. Caused great damage to the country
        (*the fact that he is stupid/corrupt)

It is impossible to interpret the null pronoun as referring to the state-related fact that the minister is stupid/corrupt. Analogously, it is impossible to interpret the null pronoun as referring to the event in (26a) or to the event-related fact in (26b):

(26)   a.   *Il ministro si è dimesso. *Ha avuto luogo ieri davanti alle telecamere*
                the minister resigned. Took place in front of the TV cameras
                (the event corresponding to the minister's resignation)
        b.   *Il ministro si è dimesso. *Ha danneggiato il paese*
                the minister resigned. Damaged the country
                (the fact that the minister resigned)

Given the data shown above, the question to be raised concerns the reason why null pronominals are unable to resume facts, while being perfectly able to establish anaphoric links with other object-level entitities such as individuals and kinds, as is shown in (27):

(27)   a.   *Il ministro si è dimesso. Ha parlato a lungo davanti alle telecamere*
              the minister resigned. Talked for a long time in front of the TV cameras (object-resuming)
        b.   *I cani sono molto diffusi. Sono il migliore amico dell'uomo*
              Dogs are very widespread. Are the best friend of the man (kind-resuming)

Since both anaphoric epithets such as "la cosa" and phonetically realized object clitics are perfectly able to resume facts, the further question is what accounts for the difference in anaphoric properties between null pronominals on one side and object clitics / anaphoric epithets on the other side.

A natural hypothesis is that standard conditions on feature-agreement proper to anaphora require that fact-resuming pronominals be endowed with the same set of features owned by the expressions that introduce these facts into the domain of discourse. More concretely, the reason why the anaphoric link to a fact in (25) and (26b) fails to be felicitously established is formally parallel to the reason why the anaphoric link between the null pronominal in the second sentence and the subject-NP in the first sentence fails in (28) (i.e. formal feature mismatch):

(28)   *Il ministro si è dimesso. (pro) Hanno parlato a lungo davanti alle telecamere*
        the minister resigned. Have-3pl talked for a long time in front of the TV cameras

In order to refer back to the DP "the minister", the empty subject pronominal in the second sentence of (28) needs be endowed with the same grammatical features as its antecedent (third person, singular, etc.). Since empty pronominals are lexically underspecified for these features, what we need is a computational device introducing the required feature specification. In the case of (28), this device is feature-sharing under *spec-head* agreement: if the verb-related AGR-head is provided with the required features, *pro* will be endowed with the correct feature-specification under *spec-head* agreement with the AGR-head, to the effect that the anaphoric link under discussion can be correctly established (cf. (27a)).

Analogously, I propose that fact-referring pronouns must be endowed with a formal F-feature in order for them to be able to refer back to the facts introduced by simple sentences and *that*-clauses into the domain of discourse.

This makes two strong predictions:

        (i)   there should be lexical pronominals selectively referring to facts
                (due to their specific feature-endowment);

(ii)   phonetically empty pronominals can refer to facts depending on the syntactic relations in which they are involved within the formal configurations that contain them.

Prediction (ii) is motivated in turn by the following reasonable hypotheses:
(a)   empty pronominals are lexically underspecified for F;
(b)   empty pronominals can be licensed as +F computationally, by exploiting a relation of Feature-marking under sisterhood with some fact-selecting predicate.

In what follows, I intend to show that both predictions (i) and (ii) are fulfilled.

Let us start with (i). It takes a moment's reflection to see that the lexicon of natural languages contains designated anaphoric expressions selectively referring to facts. In Italian, for instance, we have (besides the anaphoric epithet "la cosa" discussed above), the demonstrative pronouns "questo" e "ciò". They can be felicitously used instead of the subject null pronoun in (23)-(24) in order to resume a fact:

(29)   *Ieri è scoppiata una bomba. Questo/ciò ha causato nel Paese una enorme ondata di commozione*
yesterday a bomb exploded. This/that caused an enormous wave of emotion in the country

The result is not equally felicitous when the *denotatum* is an event:

(30)   *Ieri è scoppiata una bomba. ??Questo/??Ciò ha completamente distrutto gli edifici circostanti*
yesterday a bomb exploded. This/that completely destroyed the surrounding buildings

This observation clearly holds not only for event-related facts but also for state-related facts. In (31), for instance, we may easily refer to *the fact that the minister is stupid/corrupt* by using either *questo* or *ciò* (remember that fact-resumption is impossible if we use a null pronominal, as shown by (25) above):

(31)   *Il ministro è stupido/corrotto. Questo/ciò ha causato danni ingenti al Paese*
the minister is stupid/corrupt. This/that caused great damage to the country

The null hypothesis is that both *questo* and *ciò* can be generated, in the lexicon of Italian, as endowed with the formal interpretable feature +F. It should be noticed that these pronouns do not exhibit any demonstrative/deictic force when they are used, as in (29) and (31), as referring to facts. We might thus speculate that +F is generated in alternative to the formal feature responsible for the demonstrative/deictic interpretation of the pronoun (in other words, +F is homophonous to the deictic feature). Anyway, I propose that it is the presence of +F in its feature endowment that allows *questo*/*ciò* to be fact-referring.

Conversely, it is the absence of this feature that prevents *null* pronominals from being fact-referring in contexts like (25). We conclude that prediction (i) is borne out.

Let us now examine prediction (ii): there should be structural environments in which null pronominals get enriched with a +F feature in the course of the syntactic derivation. In these contexts, null pronominals should be able to resume facts that have previously been introduced into the discourse domain. In this respect, consider the contrast below between (32) and (33):

(32)   a.   *E' scoppiata una bomba. * (pro) Mi ha riempito di sgomento (il fatto che sia esplosa la bomba)*
              a bomb exploded. (it) frightened me (the fact that the bomb exploded)
        b.   *E' scoppiata una bomba. * (pro) Ha provocato enorme emozione (il fatto che sia esplosa la bomba)*
              a bomb exploded. (it) caused great emotion (the fact that the bomb exploded)

(33)   a.   *E' scoppiata una bomba. (pro) E' ormai noto a tutti (il fatto che è esplosa la bomba)*
              a bomb exploded. (it) is already known to everybody (the fact that the bomb exploded)
        b.   *E' scoppiata una bomba. (pro) E' doloroso ma vero (il fatto che è esplosa la bomba)*
              a bomb exploded. (it) is painful but true (the fact that the bomb exploded)
        c.   *E' scoppiata una bomba. (pro) E' un fatto*
              a bomb exploded. (it) is a fact

Syntactically, there is a clear difference between pronominal resumption in (32) and pronominal resumption in (33). In (32), *pro* is realized in the canonical spec-of-VP position proper to external arguments: in the course of the derivation, it never finds itself in a sisterhood relation with the selecting verbal predicate. In (33), *pro* represents the subject of the small clause including an adjectival (33a-b) or a nominal (33c) predicate: in the course of the derivation, it finds thus itself in a sisterhood relation with a fact-selecting predicate (*to be well-known*, *to be painful/true*, *to be a fact*). I propose that subject *pro* gets computationally endowed with the required F-feature in the small-clause configuration proper to (33), before moving higher up for syntactic reasons[7]. This provides a principled explanation for its fact-resuming properties: in the syntactic configurations underlying (33), null pronominals are simply the covert equivalent of the fact-referring pronominals *questo* and *ciò*. In (33c), for instance, *pro* is merged as a sister of the predicate "fact" (*fact*, N, +F___). Again, we simply propose that it is the selection properties of the predicate *fact* that induce the specification of the lexically underspecified *pro* as +F. The same holds for the instances of *pro* that count as subject of small clauses with adjectival predicates in (33a-b). The

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[7] See Moro (1997) for a detailed theoretical analysis of copular constructions.

contrast between (32) and (33) provides thus a strong confirmation to the hypothesis that the kind of feature-agreement relevant for anaphoric relations has not only a lexical but also a syntactic dimension, and that the latter crucially involves selection under sisterhood (i.e. *Merge* in minimalist terms). In this respect, it is worth emphasizing that the predicate with which the null subject combines is *fact-selecting* both in (32) and in (33), as confirmed by the observation that replacement of the null subject with the fact-referring pronominals *questo* and *ciò* is fully acceptable both in (32) and in (33). In other words, lexical-semantic considerations do not suffice to derive the data: what matters is the *structural* constraint (i.e. *feature-assignment under sisterhood/Merge*).

The relevant evidence extends beyond small-clause configurations. Consider in fact the contrast between (34) and (35):

(34)   *L'uomo è autodistruttivo. *Dimostra che l'intelligenza umana ha aspetti negativi (il fatto che l'uomo sia autodistruttivo)*
        the human being is self-desctructive. (it) proves that human intelligence has negative aspects (the fact that the human being is self-destructive)

(35)   *L'uomo è autodistruttivo. E' stato abbondantemente dimostrato dalla storia umana (il fatto che l'uomo sia autodistruttivo)*
        the human being is self-destructive. (it) has been widely proved by human history (the fact that the human being is self-destructive)

Dimostrare is arguably a fact-selecting predicate, (*dimostrare*, V, __C: [F]). Fact-resuming anaphora is ruled out in (34) by the absence of the required sisterhood relation between subject *pro* and the relevant fact-selecting predicate (*dimostra*): *pro* acquires the required F-specification neither lexically nor computationally. Conversely, *pro* is merged as a sister of the passive predicate in (35), being successively raised from the object to the subject position, according to the standard movement analysis of copular passives. It is the F-specification acquired under sisterhood that arguably enables *pro* to behave as a fact-resuming pronominal.

So far, I have shown that Feature-specification under sisterhood plays a central role in copular and passive structures, where null pronominals easily license fact- and proposition-referring anaphora, contrary to what happens in the syntactic configurations where the null pronominal cannot enter a sisterhood relation with the selecting predicate. At this point, an obvious question to be raised concerns the behaviour of null pronominals within unaccusative structures.[8] Two cases in point are given in (36) (*sembrare* and *happen* responds positively to the canonical tests for unaccusativity):

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[8] For the relevance of these issues of fact-reference for the properties of different classes of psych-predicates (cf. especially Pesetsky 1995 and Delfitto 2004).

(36)   a.   *Si è dimesso il presidente. (pro) E' successo (t) ieri alle cinque*
            the president resigned. (it) happened yesterday at five o'clock
       b.   *Il presidente ha commesso un grave errore. (pro) Sembra (t) anche a me*
            the president made a serious mistake. (it) seems to me, too

Since *pro* is merged in the object position of these unaccusative structures, the prediction is that it be endowed, under sisterhood, with the required interpretable feature, enabling it to act as a fact-resuming (or perhaps as an event-resuming) pronominal. The perfect status of fact-resuming anaphora in the second sentence of both (36a) and (36b) shows that the prediction is borne out.

        I would like to close this section with the discussion of a minimal pair that is, in this respect, quite revealing. Despite their similar meaning, the predicates "to take place" and "to happen" differ in their syntactic properties, since the latter, but not the former, responds positively, in Italian, to the tests for unaccusativity. The prediction is that, *ceteris paribus*, fact-resuming anaphora be licensed in the unaccusative configuration (where the relevant null pronominal finds itself in a sisterhood relation with the licensing predicate) and blocked in the semantically strictly equivalent non-unaccusative structure. The minimal pair in (37) shows that this prediction is fully borne out:

(37)   a.   *Si è dimesso il presidente. (pro) E' successo (t) ieri alle cinque*
            the president has resigned. (it) happened yesterday at five o'clock
       b.   *Si è dimesso il presidente. * (pro) Ha avuto luogo ieri alle cinque*
            the president has resigned. (it) took place yesterday at five o'clock

        As we should expect, the difference is completely obliterated if we replace *pro* with a fact-referring *lexical* pronominal:

(38)   a.   *Si è dimesso il presidente. Ciò è successo (t) ieri alle cinque*
            the president has resigned. That happened yesterday at five o'clock
       b.   *Si è dimesso il presidente. Ciò ha avuto luogo ieri alle cinque*
            the president has resigned. That took place yesterday at five o'clock

        Let me summarize. In this last section, I purported to show that the centrality of fact-reference within the language design is confirmed by the anaphoric properties of null subject pronominals. Reference to facts manifests itself in grammar through the system of formal interpretable features that feeds the syntactic computation and contributes to the inner constitution of individual lexical items belonging to different grammatical categories (both nouns and verbs) and, crucially, through the interaction of these interpretable features with the specific modalities of the syntactic computation. The centrality of the computational operation *Merge* for the structural nature of a wide range of interpretive effects involving fact-reference has clearly emerged from the discussion above, somehow extending previous insights of minimalist syntax concerning the link between derivation and interpretation (cf. especially Zwart

2002). In this way, the relevance of syntax and of syntactic considerations for the issue of reference in natural language (first explicitly argued for, to the best of my knowledge, in Longobardi 1994) receives a non-trivial confirmation by the present inquiry into the intricacies of fact-reference.

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ON THE STATUS OF *STEMS* IN MORPHOLOGICAL THEORY[*]

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1.   *Introduction*

To a first approximation, languages show two different types of morphological alternation, with "alternation" construed in a broad sense. One type is concatenative, involving what looks like the affixation of one piece to another; e.g. *kick/kick-ed*. Another type of alternation involves morpho-phonological alternations of the type seen in *sing/sang*. One of the primary tasks of morphological theory is to provide an analysis of such alternations, and to situate them with respect to other parts of the grammar, especially syntax and phonology. Here we examine alternations that have been used in arguments that grammar must contain the "stem" as a privileged object. We argue that that the move to stems is both unmotivated and problematic, points that we illustrate in a number of case studies, including a discussion of the verbal morphology of Classical Latin.

The theory of Distributed Morphology (Halle & Marantz 1993, Harley & Noyer 1999, Embick & Halle (forthcoming)) advances a piece-based view of word formation, in which the syntax/morphology interface is as transparent as possible. Distributed Morphology posits that there are two types of primitive elements in the grammar that serve as the terminals of the syntactic derivation, and, accordingly, as the primitives of word formation. These two types of terminals correspond to the standard distinction between *functional* and *lexical* categories (for more details on the view adopted here see Embick & Halle (forthcoming)):

(1)   a.   **Abstract Morphemes:** These are composed exclusively of non-phonetic features, such as [past] or [pl], or features that make up the determiner node D of the English definite article *the*.

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b.   **Roots:** These make up the open-class vocabulary. They include items such as √CAT, √OX, or √SIT, which are sequences of complexes of phonetic features, along with abstract indices (to distinguish homophones) and other diacritics (e.g. class features).

Distributed Morphology conceives of the architecture of the grammar as sketched in (2), in which *morphology* refers to a sequence of operations that apply during the PF derivation, operations that apply to the output of the syntactic derivation. This theory is in its essence a syntactic theory of morphology, where the basic building blocks of both syntax and morphology are the primitives in (1). There is no *Lexicon* distinct from the syntax where word formation takes place; rather, the default case is one in which morphological structure simply is syntactic structure.[1]

(2)   The Grammar

(Syntactic Derivation)

Morphology

PF   LF
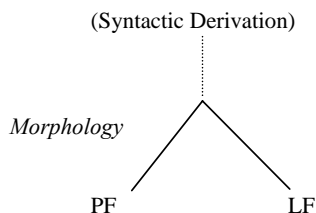
The derivation of all forms takes place in accordance with the architecture in (2). Roots and abstract morphemes are combined into larger syntactic objects, which are moved when necessary (Merge, Move). In the simplest case, PF rules linearize the hierarchical structure generated by the syntax, and add phonological material to the abstract morphemes in a process called *Vocabulary Insertion*. During Vocabulary Insertion, individual *Vocabulary Items*—rules that pair a phonological *exponent* with a morphosyntactic context—are consulted, and the most specific rule that can apply to an abstract morpheme applies. Abstract morphemes are thus said to be *spelled out* during Vocabulary Insertion.[2] To take a specific example of Vocabulary Insertion, the Vocabulary Item inserting the phonological form of the English regular past tense is as follows:

(3)   T[past] ↔ -d

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[1] For explicit discussion of the non-Lexicalist aspect of this theory, see Marantz (1997) and Embick & Halle (forthcoming).

[2] In special cases, PF rules manipulate the syntactic structure in sharply constrained ways. Crucially, these processes are triggered by language-specific well-formedness conditions, & do not constitute a generative system. Rather, the only generative system in the grammar is the syntax.

The effect of this rule is to add the exponent /d/ to a T(ense) node containing the feature [past]. Some Vocabulary Items make reference to items in the environment in the head being spelled out in this way. So, for instance, the exponents –*t* and –*Ø* also appear in the English past tense; the Vocabulary Items that insert these exponents make reference to specific lists of verbs, as illustrated in (4):

(4)   T[past] ↔ -t/{LEAVE, BEND, BUY…}   +_____   (List 1)
        [past] ↔-Ø/{HIT, SING, SIT…}   +_____   (List 2)

These rules, which are more specific than the rule in (3), apply whenever a Root from List1 or List2 is in the same complex head as T[past]. Since in Vocabulary Insertion a more specific rule takes precedence over a rule that is less specific, the rules in (4) apply before (3), which has no contextual condition on its application and therefore functions as default for T[past].

Vocabulary Items like those in (3) and (4) are rules that apply to abstract morphemes and supply phonetic features to them. The abstract morphemes are terminals nodes that appear in syntactic structures. In the case of the English past tense, the standard analysis is that the syntax generates a structure in which the verb (*v*-Root complex) is separate from Tense (i.e. there is no "verb raising" to Tense in English). At PF, a *Lowering* operation combines Tense and *v*-Root into a single complex head (for a discussion of this operation see Embick & Noyer 2001):
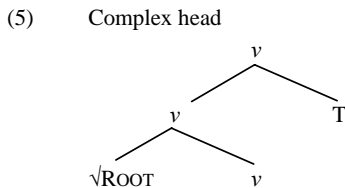
(5)   Complex head

The Lowering process that derives the complex head in (5) applies prior to Vocabulary Insertion. When Vocabulary Insertion applies at T, all of the information that is required for the spell-out of this abstract morpheme is localized in (5).

A common occurrence in morphology is *syncretism*, a situation where several abstract morphemes have the same phonetic exponent. A typical example IS the Person/Number prefixes for subject & object in the Athabascan language Hupa (Golla 1970):

(6)   Hupa Subject/Object Markers

	Subject	**Object**
1SG	W-	Wɨ-
2SG	n-	nɨ-
1PL	dɨ-	noh-
2PL	oh-	noh -

As shown in (6) in Hupa there are distinct exponents for 1PL & 2PL Subject, but only a single exponent for 1PL & 2PL Object.

An important reason for the separation of morphology from syntax & semantics in Distributed Morphology (& realizational theories of morphology in general) is that this provides a means for capturing syncretisms in a systematic fashion. In particular, it is assumed that in the syntax of Hupa these prefixes are supplied with their entire complement of grammatical features as illustrated in (7) (in addition to 1, 2 & PL, we assume features for SUBJ & OBJ):

(7)   a.   1, +PL, SUBJ
        b.   2, +PL, SUBJ
        c.   1, +PL, OBJ
        d.   2, +PL, OBJ
                etc.

As noted above, these four morphologically distinct forms correspond to only three phonetically distinct strings. We account for this fact by positing the three Vocabulary Items in (8).

(8)   a.   1, +PL, SUBJ   ↔   dɨ
        b.   2, +PL, SUBJ   ↔   oh
        c.   +PL, OBJ   ↔   noh

While in (8a,b) all three features on the left of the Vocabulary Item match features in the morpheme into which they are inserted, this is not the case for Vocabulary Item (8c): the exponent *noh-* is inserted into the morphemes (7c,d) even though the Vocabulary Item (8c) matches only two of the three features specified in (7c,d), & it is this fact that gives rise to the syncretism of these two morphemes. The converse, however, does not hold; an exponent is not inserted into a morpheme in cases where the Vocabulary Item includes features that are absent in the morpheme. We express these facts formally by positing that Vocabulary Insertion is subject to the Subset Principle (9) (Halle 1997):

(9)   The phonological exponent of a Vocabulary Item is inserted into a morpheme
        of the terminal string if the item matches all or only a subset of the
        grammatical features specified in the terminal morpheme. Insertion does not
        take place if the Vocabulary Item contains features not present in the
        morpheme. Where several Vocabulary Items meet the conditions for

insertion, the item matching the greatest number of features in the terminal morpheme must apply.

It is by virtue of the Subset Principle (9) that (8c) is inserted into both (7c) & (7d). The fact that 1PL OBJ & 2PL OBJ are non-distinct is systematic on this account, with the syncretism being captured via the single underspecified Vocabulary Item (8c).

We note that Vocabulary Insertion only applies to abstract morphemes; Roots are not subject to insertion. A consequence of this view is that it is not possible for Roots to show *suppletion*. Contextual allomorphy of abstract heads of the type found with the *-ed, -t,-Ø* realizations of T[past] in English is, effectively, suppletion: the same abstract morpheme is expressed by phonologically unrelated exponents. The formal means by which these patterns are stated is Vocabulary Insertion. Since Roots are not subject to insertion in the first place, they cannot supplete. We assume that apparent cases of Root suppletion involve members of the functional vocabulary (e.g. *go*/*went*, is a light-verb; see Marantz (1995) & Embick & Halle (forthcoming) for discussion), although other treatments are possible as well.

The rules in (3-4) specify how the abstract morpheme T[past] is instantiated phonologically in structures like (5) in English. However, these rules specify only a subpart of the morphological alternations seen in the English past tense. In addition to the Vocabulary Items required for T[past], the English past tense requires a number of further rules that alter the phonology of the Root, as in the case of the past tense form *sang-Ø*. Such rules are called *Readjustment Rules*. Readjustment Rules are phonological rules that effect changes in a given morphosyntactic context & that typically include lists of Roots that undergo or trigger these changes. In the case of *sang-Ø*, the rule in question is one that makes reference to the morphosyntactic feature [past] & the Root list X:

(10)   /I/ → /æ/ /X____Y [past],
            X= √SING, √RING, √SINK, √BEGIN, √SIT, …

Readjustment Rules like (10) do not block Vocabulary Insertion rules (or vice versa) in the way that the insertion of e.g. *–t* at T[past] blocks the insertion of *–ed*. This fact is clear from the existence of such "doubly-marked" forms as *tol-d* or *froz-en*; in cases of this type, Vocabulary Insertion inserts overt exponents into abstract morphemes, while Readjustment Rules apply as well to alter the phonology of the Root.[3] Of course, in some forms there is no Readjustment, e.g. *beat/beat-en* etc..

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[3] In the English cases in question it is the phonology of the Root (& not the form of the exponent inserted by Vocabulary Insertion) that is affected by the Readjustment Rule. In principle, nothing prevents such rules from applying to exponents.

A further point is that Readjustment Rules like (10) may be limited in scope, in some cases only applying to a h&ful of listed Roots. However, the very nature of the readjustments is such that no generalizations are lost in this treatment. It is simply a fact that certain morphemes undergo phonological changes in certain environments, & all approaches must list which forms are subject to these rules in particular environments, & state what the rules are. Our treatment, which relies on Roots with underlying phonological forms & the operation of Readjustment Rules, treats these patterns in a way that allows for strong syntax/morphology connections to be maintained. That is, stem changing is analyzed in a way that accounts for the facts, & that does the least damage to the general claim that sound/meaning correspondences should be predictable in derivationally related forms. The same cannot be said of treatments that appeal to the storage of stems to account for such patterns, a point we revisit in §3.[4]

Readjustment Rules are phonological rules; their distinguishing property is that they are conditioned by both morphosyntactic & Root-specific information. For instance, the rule that changes the nucleus of *sing* to /æ/ makes reference both to the presence of the feature [past] & to the identity of the Root (e.g. √SING & not √HIT; also *bit/bit*, *sit/sat*, & so on). In this way, Readjustment Rules differ from other rules of the phonology that require no reference to morphosyntactic environments, & are not accompanied by lists of Roots that undergo or trigger the rules. For example, the rule of regressive devoicing that applies in past tense forms when the exponent *-t* appears— e.g. *leave/lef-t*, or *lose/los-t*— is a "normal" phonological rule, & not a Readjustment Rule.

Like Vocabulary Items, Readjustment Rules are underspecified with respect to the syntactico-semantic environment in which they apply. It appears to be the case that they are even broader in their distribution; Readjustment Rules are unlike Vocabulary Items in that they allow heterogeneous sets of environments to condition their application.[5] One clear example of this type of underspecification is found in the phenomenon of *Umlaut* in German (see e.g. Wiese 1996). The Umlaut process, which is represented orthographically in the familiar way, relates the following pairs of vowels:

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[4] The fact that irregular forms behave differently from regular forms for the purposes of some psycho- & neurolinguistic tests is sometimes taken to indicate that irregular forms must be stored as a whole, an interpretation which our approach rejects; see Embick & Marantz (2005) for some comments.

[5] This observation follows in some ways proposals made by Lieber (1980); see below.

(11)   Umlaut

Vowels		**Examples**
/uː/	/yː/	Huhn, Hühn-er
/ʊ/	/ʏ/	dumm, dümm-lich
/oː/	/øː/	hoch, höch-st
/ɔ/	/œ/	Holz, hölz-ern
/aː/	/ɛː/	Europa, europä-isch
/a/	/ɛ/	St&, ständ-ig
/aʊ/	/ɔʏ/	sauf, Säuf-er

As discussed by Wiese (1996), the process of umlaut is a fronting process, with some additional complications that we disregard here.

We take it that Umlauting is accomplished via a Readjustment Rule. The important point for our purposes concerns the environments in which this Readjustment Rule is triggered. The rule makes reference both to morphosyntactic features & to the identity of particular Roots. Moreover, the morphosyntactic environments in which Umlaut applies are not a natural class; rather, they must be listed (see Wurzel 1970). A subset of these environments is given in (12):

(12)   Umlaut: Morphosyntactic Environments (Not Exhaustive)

    a.   Verb forms: fahr-en "drive" Inf, fähr-t 3s Pres.
    b.   Noun Plurals: Huhn "hen", Hühn-er "hens"
    c.   Diminutives: Vater "father""; Väter-chen "father-DIM"
    d.   Adjective Formation: Europa "Europe", europä-isch "European"
    e.   Comparatives: lang "long", läng-er "longer"

In addition, it is also the case that a Root that undergoes Umlaut in one of these environments may or may not be subject to this process in another environment. This fact must evidently be listed; some examples are given in (13) (cf. Wiese (1996:188)):

(13)   back(-en), Bäck-er; fahr(-en), Fahr-er; fahr-en, fähr-t
        Maus, Mäus-e, maus-en; Luft, lüft-en

These examples show that while √FAHR undergoes Umlaut in the verbal environment, this rule does not apply in the agentive nominalization for that particular Root, although it does for other Roots like √BACK; the situation is similar for √MAUS.

In terms of the process responsible for this type of readjustment, the grammar contains a single phonological rule:[6]

(14)   **Umlaut Rule:** V → [-back]

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[6] Something in addition must be said about a/ä.

The important fact about this rule is that in addition to the phonological conditions on its application, it requires reference both to a host of morphosyntactic environments, & & a list of the particular Roots subject to the rule in each environment.

As is clear from the discussion above, a Readjustment Rule like Umlaut may be triggered in a number of distinct syntactico-semantic environments, while at the same time being a single rule of the grammar. In this way Readjustment Rules can potentially show distributions that are much broader than those found with exponents inserted by Vocabulary Insertion. This difference between Readjustment & Vocabulary Insertion parallels proposals made by Lieber (1980:311sqq). In the context of an architecture that differs significantly from that assumed here, Lieber argues for the conclusion that Readjustments like Umlaut (for her, "string dependent" rules) differ fundamentally from "lexical" morphological processes, i.e. those involving discrete pieces. As Lieber notes, the relevant distinctions are difficult to make in "pieceless" theories of morphology, a point to which we return below.

In the discussion above, we have made reference to (i) the underlying forms of Roots; (ii) the Vocabulary Items, rules that add phonological material to abstract morphemes; & (iii) the Readjustment Rules, morphosyntactically conditioned phonological rules. Both types of rules in (ii) & (iii) may be underspecified with respect to the syntactico-semantic context in which they apply. Beyond this, there are no *stems* listed as phonological instantiations of a Root.[7] Rather, any particular phonological form of a Root, such as *broke* for √BREAK, exists only as the output of a derivation of the type above; forms like *broke* do not appear on any list. Roots appear in syntactic structures with abstract morphemes. The latter receive phonological form through the process of Vocabulary Insertion, in which (potentially underspecified) Vocabulary Items pair phonological exponents with conditions on insertion. Readjustment Rules apply in specific contexts to alter phonological forms in a way that is distinct from Vocabulary Insertion. Such rules are specified in the grammar to apply only in certain environments; apparently these environments may be simply listed. These mechanisms constitute a departure from the ideal type of syntax/morphology interaction, by introducing a distinction between morphophonology & syntax/semantics. Accepting this type of distinction amounts to accepting a version of the *Separation Hypothesis* (cf. Beard 1995). While our approach acknowledges the need for Separation, it seeks to constrain syntax/morphology mismatches to the fullest possible extent.

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[7] As discussed below, the absence of stems is one of the essential features that distinguishes our approach from others.

2.   *The Verbal Inflection of Latin*

In traditional accounts of Latin grammar (of the kind commonly presented in introductory classes of Latin) students are required to memorize the so-called principal parts of each verb illustrated in (15).[8]

(15)		**"Present"**	**"Perfect"**	**"Supine"**	**Trans.**
	a.	laud-ā-mus	laud-ā-v-i-mus	laud-ā-t-um	"praise"
	b.	scrīb-i-mus	scrīp-s-i-mus	scrīp-t-um	"write"
	c.	tang-i-mus	tetig-i-mus	tāc-t-um	"touch"
	d.	ag-i-mus	ēg-i-mus	āc-t-um	"act"
	e.	fer-i-mus	tul-i-mus	lā-t-um	"bear"

It is obvious that the forms (15e) differ fundamentally from those in (15a-d), in that in (15e) the portions of the word to the left of the first hyphen in the three principal parts are phonetically unrelated. There is no set of phonological rules that can plausibly relate the stems in (15e) to one another. By contrast, the stems in (15a-d) are readily related by phonological rules.

In traditional grammars this fact is noted only terminologically, i.e., by referring to verbs of the type (15e) as *suppletive.* It has been observed that suppletive verbs (as well as adjectives & nouns) constitute but a vanishingly small portion of the total vocabulary of the language, & that semantically these verbs express very elementary notions. Suppletive verbs in the languages of the world have meanings such as "be", "go", "bear", etc., but not "grind", "withst&", "animadvert". We take it that these cases involve light-verbs, i.e. members of the functional vocabulary. Like other abstract morphemes, these morphemes obtain their phonetic features by Vocabulary Insertion. In particular, for (15e) there are three distinct Vocabulary Items, each of which applies in a different morphological environment: *tul-* in finite forms of the perfect; *lā-* in (certain) participial forms, & *fer-* elsewhere.

The majority of Latin verb forms have the structure shown in (16) where the Root is followed by a theme vowel (at least in the present tenses). We take it that theme vowels are exponents inserted into Theme positions, henceforth TH, & that the TH positions are added to the syntactic structure at PF in particular structural configurations. The addition of TH nodes is in accordance with well-formedness requirements of Latin.

TH nodes are *dissociated* nodes that are not present in the syntactic part of the derivation (see Embick 1997 for discussion of nodes of this type). Rather, they are added to *v* (& other functional heads) at PF (for related proposals concerning

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[8] Traditionally students are taught to commit to memory the first person singular forms of the present & perfect. We have replaced these here with the first person plural forms, because this allow us to side-step a number of phonological issues (e.g., vowel deletion) that have no bearing on the matters under discussion here.

themes, see Oltra 1999 & Arregi 1999). For example, in an Imperfect like *laud-ā-bā-mus* "we were praising", the Root combines with the syntactic heads *v* & T[Past] via head-movement to form a complex head (16a). At PF, a TH node is added to *v*:[9]

(16)   a.   Syntactic Structure: [[Root *v*] T[past]]
       b.   Morphological Structure: [[Root [v TH]] [T[past]**]]]**

    Membership in one of the conjugation classes is an arbitrary property of the Roots that appear in the Latin verbal system. The simplest implementation of this fact involves specifying each Root for a diacritic feature that encodes membership in a specific class:

(17)   √AUD[IV]

    The TH node acquires the Conjugation Class feature of the Root via a Concord process (18a); the TH node is subsequently spelled out with one of the theme vowels by the Vocabulary Items in (18b): [10]

(18)   a.   TH → TH[X]/√ROOT[X]___

       b.   TH[I]   ↔   -ā-
               TH[II]   ↔   -ē-
               TH[III]   ↔   -i-
               TH[III(i)]   ↔   -i-
               TH[IV]   ↔   -ī-

    We take it that the small number of "athematic" verbs like *esse* possess a diacritic that triggers deletion of the TH node (see below).
    The Latin Perfect tenses are of particular interest here because they exhibit more allomorphy than the non-Perfect tenses. Moreover, the theme vowel found in the non-Perfect tenses does not always appear in the Perfect tense. We assume that that Perfect forms have the syntactic structure (19), where the head Asp[perf] is the locus of the aspectual semantics of the perfect "tenses":

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[9] The *-ā-* component following the Tense exponent *-b-* in Imperfects like *laudābāmus* is also a theme, so that the full morphological structure for this example is:
(i)   Morphological Structure: [[[Root [v TH]] [T[past] TH]]
See also Oltra (1999) & Arregi (1999) for this type of approach; similar proposals appear in Aronoff (1994) as well as Williams (1981).
[10] We use the label III(i) to refer to verbs like *capiō* which are treated in traditional accounts as being somewhere in between Conjugations III & IV. For the treatment of the theme in Conjugation III as *-i-* see Embick & Halle (forthcoming).

(19)

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                              T
                           ╱     ╲
                         T          Agr
                      ╱     ╲
                   Asp        T
                ╱     ╲        ╲
              v          Asp[perf]
           ╱     ╲
      √ROOT        v
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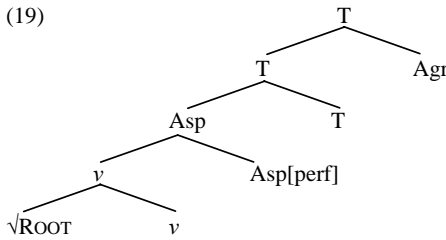
With respect to form, the most regular is the behavior of verbs of Conjugation I & IV, which typically show the theme vowel ($\bar{a}/\bar{\imath}$ respectively) & a -*v*- exponent of Asp[perfect] (cf. (20a)). But even these conjugations include a number of exceptional cases. As illustrated in (20b,c), there are verbs of Conjugation I & IV that have no theme in the Perfect (we follow the traditional practice of representing the Root-attached -*v*- exponent of Asp[perf] as -*u*- orthographically):

(20)

		Present	**Perfect**	**Trans.**
a.		laud-ā-mus	laud-ā-v-i-mus	"praise"
		aud-ī-mus	aud-ī-v-i-mus	"hear"
b.		crep-ā-mus	crep-u-i-mus	"rattle"
		cub-ā-mus	cub-u-i-mus	"lie"
		sec-ā-mus	sec-u-i-mus	"cut"
c.		aper-ī-mus	aper-u-i-mus	"open"
		oper-ī-mus	oper-u-i-mus	"cover"
		sal-ī-mus	sal-u-i-mus	"leap"

The Perfect exponent in all these forms is *v* (followed by *i*), & as shown in (20a) the Perfect exponent commonly appears directly after the Theme following the verb Root. By contrast in the Perfect forms in (20b,c) the Theme is absent & the suffix -*v*- appears directly after the verb Root. We shall account for the Perfect forms in (20b,c) by positing an Impoverishment rule which deletes the TH position on the head *v* with these verbs in the Perfect:[11]

(21)   TH → Ø/LIST *v* Asp[perf]

            LIST =   {√CREP, √CUB, √SEC,...}

The effect of this rule is to make these verbs athematic in the Perfect; they have no TH position.

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[11] It would also be possible to hold that the TH position simply is not assigned under the relevant conditions.

The verbs without a TH position in the Perfect are unusual in Conjugations I & IV, but they are the st&ard case in Conjugations II & III (as well as for III(i) verbs like *capiō*). In fact, in Conjugation II except for the six listed in (22a), where the /ē/ Theme appears in the Perfect, none of the other verbs has a theme vowel in the Perfect as illustrated in (22b-e).

(22)   Perfect forms: Conjugation II
        a.   dē-l-ē-v-i-mus   "destroy"
              ol-ē-v-i-mus   "grow"
              fl-ē-v-i-mus   "weep"
              pl-ē-v-i-mus   "fill"
              n-ē-v-imus   "spin"
              vi-ē-v-i-mus   "plait"
        b.   mon-u-i-mus   "remind"
              sorb-u-i-mus   "suck up"
        c.   aug-s-i-mus   "grow" (trans)
              fulg-s-i-mus   "glow"
        d.   prand-i-mus   "breakfast"
              strīd-i-mus   "screech"
        e.   to-tond-i-mus   "shear" (pres. tond-ē-mus)
              mo-mord-i-mus   "bite" (pres. mord-ē-mus)

Regarding the forms in (22a), it has been argued that these Roots share a common property— they would all fail to be minimally CV without the -ē-. For this reason, it has been argued that these verbs are not exceptions to the pattern according to which Conjugation II verbs are athematic in the Perfect; rather, the -ē- is part of the phonology of the Root, not a theme vowel (cf. Ernout 1952/1989:143sqq; also Aronoff 1994:48). Thus it can be concluded that Conjugation II verbs are always athematic in the Perfect. Similarly, the -*i*- & -*i*-theme vowels of Conjugations III & III(i) are never found in Perfect forms; these conjugations can be treated as uniformly athematic as well. This requires a simple extension of the LIST in the rule in (21) above:

(23)   TH → Ø/LIST *v* Asp[perf]

                LIST =   {[II],[III],[III(i)], √CREP, √CUB, √SEC,...}

The environment for this rule is a list that includes both individual Roots & diacritic conjugation features. This is necessary since the conjugations II, III, & III(i) do not form a natural class in terms of e.g. the phonology of their theme vowel; listing is the only option.

The examples (22b-e) illustrate not only the absence of Theme vowel /ē/ in the Perfect tense, but also the fact that not all Conjugation II verbs form the

Perfect with the suffix -*v*-. In fact, this is true only of the verbs in (22a,b). The verbs in (22c) form the Perfect with the suffix -*s*-, whereas those in (22d,e) take the suffix -Ø. Each of these Asp[perf] exponents is followed by the vowel -*i*-, which we take to be the realization of a TH position attached to Asp[perf]. A complete account of the Latin conjugation must, of course, deal properly with all five types of Perfect forms illustrated in (22). (See Embick & Halle (forthcoming)).

The Perfect exponents are dependents of the ASP head, &, as we have just seen, it has the exponents -*v*-, -*s*-, & -Ø-. Moreover, (i) all three exponents of the Perfect are followed by the suffix -*i*-, (ii) the exponent -*v*- appears in the overwhelming majority of verbs, & (iii) in certain cases the phonology of the Root undergoes changes of various kinds. We discuss each of these three facts in turn.

As noted above, in Latin verb forms, Themes are inserted not only after Roots (i.e. after *v*); but also after Tense nodes & after the Asp[perf] node. The Perfect theme is -*i*- i.e., identical with that of Conjugation III Roots. The three exponents of the Perfect have now the shapes shown in (24), which brings together these observations:

(24)   Asp[perf] ↔   -s- in env. List1 _ T
                                List 1 = {√AUG, √FULG, √DĪC, √SCRĪB ... }

                                -Ø- in env. List2_T
                                List2 ={√PR&, √STRĪD, √TOND, √MORD, ...}

                                -v- elsewhere

Of the three Perfect exponents, -*v*- is by far the most common, & it also occurs in both thematic & athematic perfects. We therefore assume that it is the elsewhere case, whereas each of the other two exponents appears after its own list of Roots.

In (22e) the forms of the Roots in the Perfect differ from those of the Present (and other non-Perfect tenses). We propose to account for these differences by means of Readjustment rules, which apply to listed items in the Perfect; in this particular case, the Readjustment rule effects reduplication. The Readjustment rules here function exactly like those responsible for English Root ablaut as in *sing/sang-Ø*, *buy/bough-t*, and *tell/tol-d*. (For details of Root ablaut in English, see Halle & Mohanan 1985, and in Latin, Embick & Halle (forthcoming)).[12]

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[12] In (24) and other cases, we have simply listed the Roots referred to by Vocabulary Items, or Readjustment Rules. It should be noted that there might very well be internal structure to such lists, structure that is relevant for learnability or acquisition (e.g. "neighborhood effects"; see Albright & Hayes (2002) and Yang (2002) for perspectives on this question). Our point is that this structure is irrelevant to the working of the grammar per se; see Embick & Marantz (2005) for some comments.

3.   *Stems*

The Distributed Morphology approach sketched above makes a fundamental distinction between abstract morphemes, which, as noted, lack phonetic exponents, and Roots (concrete morphemes), which have an underlying phonological form. The distinction between abstract morphemes and Roots is further marked by the important fact that the phonetic exponents of morphemes may be subject to phonological Readjustment Rules. These rules have the limited expressive power of phonological rules. (They differ from the rules of the phonology in being ordered in a block separate from the latter.) Readjustment Rules can therefore not be employed to relate phonetic exponents of radically different shapes. The only way of dealing with suppletive morphemes is by Vocabulary Insertion (recall our discussion of contextual allomorphy above).

A significant difference between Distributed Morphology and other approaches is the answer that the respective theories offer to the question as to whether a particular morpheme such as Past Tense or Plural, that has to be recognized as a head in the syntax, can be expressed phonologically by nothing more than a phonetic modification of the Root to which it attaches in the syntax. An affirmative answer runs into immediate difficulties with forms such *tol-d* and *sol-d,* on the one hand, where the Past tense suffix /d/ is accompanied by Root alternations, and, on the other hand, by Past forms such *put* or *hit,* where the Past tense is signaled by neither Root alternation, nor by the presence of a distinct suffix. This point is especially relevant in view of Anderson's (1992) "amorphous" approach, in which no distinction is made between affixation and readjustment; rather, all morphological alternations are the result of rules that rewrite the phonology of the stem.

A further important difference between Distributed Morphology and other approaches concerns *stems*, which have no place in Distributed Morphology. Theories that posit multiple stems for a single underlying item (typically referred to as the *lexeme* in such approaches) are faced with the questions of how a set of such stems is represented, and how a particular stem is selected in a particular context.[13]   Recognizing this issue, Anderson (1992) attempts to answer these questions with reference to the notion of *lexical stem set*:[14]

> A lexical stem set S is a group of phonologically distinct stems {S1, S2, …}
> with the same syntactic requirements and semantic interpretation, each
> associated with its own (partial) set of morphosyntactic properties.
> (1992:133)

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[13] There are also further questions for such approaches, such as the question of whether or not a particular stem is derived from an underlying form, or from another stem. These questions need not concern us here, although they are touched on to some extent in our discussion of the Latin "third stem" below.

[14] Anderson's approach to stems is also discussed in Halle & Marantz (1993) and Embick & Halle (forthcoming).

Thus with SING, for example, the lexeme contains a stem set that lists particular phonological stems, along with the contexts in which they appear:

(25)   Stems of SING

sing   +V
sang   +V +Past
sung   +V +Participle

Anderson's treatment of stem-changing in these terms leads to problems with blocking effects in his amorphous theory, a point which has been detailed elsewhere (Halle & Marantz 1993, Embick & Halle forthcoming). We wish to emphasize here that nothing about the representation in (25) ensures that there should be any phonological similarity between the different stems of √SING. As far as (25) is concerned, the relationship between *sing* and *sang* is equivalent to that between e.g. *go* and *went*. Storing stems in this fashion thus amounts to generalizing the phenomena of suppletion, in such a way that stem-changing with phonologically-related forms is non-distinct from outright suppletion of the *go/went* type. Suppletion is very rare in natural language, and constitutes a sort of "worst case scenario"—a maximally opaque phonological relationship between two syntactico-semantic objects that are taken to have a common derivational source. As such, it is clearly undesirable to generalize suppletion to cover all morphological alternations that involve some change in the phonology of a Root.

For these reasons, it is important that sharp distinctions be made between non-suppletive morphological relationships and cases of suppletion. In an approach with stem-storage, this is not possible without explicit stipulation; in principle, any phonological forms could be linked in a representation like (25). This point can be made with respect to other approaches endorsing "stems" as well. The idea that the relationship between different stems of the same lexeme can be essentially arbitrary is asserted quite clearly in Zwicky's (1990) conception of the stem:

> …several stems might be available for particular lexemes… . …how are the different stems related to one another phonologically? Apparently, in just the same ways that an input stem can be related to its output form—in every way from suppletion, at one extreme, to complete predictability by rule, at the other. (1990:225)

Our objection is not that apparent instances of suppletion should simply be ignored. Rather, the point is that the theory must sharply distinguish between the extremes of predictability and suppletion if it is to be explanatory in any meaningful sense. Introducing stems into the theory makes this distinction impossible to draw, or requires a host of additional stipulations. An approach that generalizes suppletion makes the weakest possible predictions concerning sound/meaning relationships: it makes no predictions.

Theories with stem storage are subject to this argument in one form or another. It might always be possible to stipulate conditions that have the desired effect. But given the additional complexities caused by such stipulations, what must really be asked is if there is any reason to store stems in the first place. Given the severe problems confronting treatments with stem storage, and general concerns of theoretical parsimony, it is clear that morphological theory should not admit the "stem" into its inventory of basic objects.

4.   *Stems in Latin?*

Aronoff's (1994) discussion of Latin verbs is in part an attempt to argue that morphology must contain "stems" as a special sort of object. According to this view, the grammar must contain more than Roots and their underlying forms, along with rules that operate on such forms. Rather, the grammar must also make reference to and in some cases list "stems". The view of the stem advanced by Aronoff is that it is a particular form that a Root (in Aronoff's terminology, a *lexeme*) takes:

> A stem, in my use of this term, is a sound form. In particular, it is the phonological domain of a realization rule: that sound form to which a given affix is attached or upon which a given nonaffixal realization rule operates. …however…we cannot simply equate the two notions "stem" and "sound form of a lexeme". …a lexeme may have more than one stem, not all of them necessarily listed. (1994:39)

Aronoff's discussion is centered on identifying stems of this type— phonological forms that have a broad syntactico-semantic distribution. To the extent that Aronoff's arguments point to the conclusion that phonological forms are underspecified with respect to the syntactico-semantic environments in which they appear, we are in full agreement. The additional point— that these patterns require the introduction of stems as objects in the theory of morphology— is, however, not correct. The mechanisms we have motivated already, Vocabulary Insertion and Readjustment Rules, are capable of stating the relevant generalizations in a way that does not interfere with the general idea that sound/meaning connections are systematic. The further move that introduces stems is problematic, and ultimately unnecessary.

4.1   *The Perfect*

Recall from our discussion of the Perfect above that verbs of Conjugations II and III show -*ē*-/-*i*- themes in the present tenses, but these theme vowels do not surface in the Perfect tenses at all. The fact that the thematic vowels -*ē*- and -*i*- do not surface in any Perfect forms, in conjunction with the fact that the Perfect shows a great deal of allomorphy, leads some researchers to the conclusion that

the Perfect involves stored stems.[15] Aronoff, for instance, concludes from patterns like those discussed above that it is individual stems that belong to conjugation classes, not Roots (for him, *lexemes*):

> A less subtle type of evidence for the direct relation between conjugation or theme vowel and stems, rather than lexemes, lies in the fact that there are many verbs whose individual stems "belong to different conjugations". These are almost all verbs of the first or fourth conjugation that lack theme vowels in the perfect or third stem....In these cases, it is simply impossible to say that a lexeme belongs to a conjugation or selects a theme vowel. Rather, we must say that an individual *stem* of a lexeme belongs to a particular conjugation.... This only reinforces my earlier remark that theme vowels are associated directly with stems of lexemes rather than with entire lexemes. (1994:49)

Such cases constitute an apparent "change of conjugation" because in Aronoff's terms, the categories "Conjugation I" and "Conjugation IV" clearly exist in the Perfect— that is, there are numerous verbs that show -$\bar{a}$- and -$\bar{\imath}$- theme vowels in the Perfect. This is unlike Conjugation II, because there are no verbs that have an -$\bar{e}$- Theme in the Perfect. On these points, Aronoff's position reflects in part the traditional view that the division of the Latin verbal system into conjugation classes is really only justified in the present system (cf. Sommer 1914:487). Concerning the details of the Perfect, Aronoff argues that the appearance of -$\bar{a}$- and -$\bar{\imath}$- theme vowels for verbs that are conjugations I and IV in the present system is derivative:

> ...the theme vowel occurs basically in the present stem for all Latin verbs...it occurs in other stems only when they are built on the present stems.(1994:52)

In terms of what this means for the representation of Conjugation Class information, the idea is that the theme vowel, or Conjugation Class feature, is not a property of a Root. Rather, it is a property of a stem of a Root. In some cases, the form of a stem is predictable by rule. For instance, the default for forming the Perfect Stem of a verb in Conjugations I or IV, and for the system in general, is to derive this stem from the Present stem. In other cases, i.e. in those cases in which

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[15] It has also led to the conclusion that the Perfect is outside the system of conjugation classes in Latin, a conclusion that is unwarranted. Justifying his decision to examine only the non-perfect tenses of Latin verbs, Carstairs-McCarthy (1994:752) makes an assertion of this type:

> As has often been pointed out, these conjugations really apply only to the imperfective forms of Latin verbs, because perfective forms make use of perfective "stems" formed in various ways which do not correlate closely with the imperfective forms.(1994: 752)

This type of comment recapitulates the observation that there is more allomorphy in the Perfect than there is in the non-perfect tenses.

the Perfect Stem does not show the theme vowel of the Present stem, the stem
must be listed. This is illustrated for the verb *crepāre* in (26); recall that while
this verb appears with the *-ā-* theme in the present system, its Perfect is athematic
crep-u-i-mus, not *crep-ā-v-i-mus:

(26)   Root √CREP

    a.   Present Stem: crepā
    b.   Perfect Stem: crepu

  Note that in this type of case, Aronoff is driven to the position that the
sound form found in the Perfect— for him, *crepu*— must be listed in the lexicon
as a stem of the lexeme √CREP. Aronoff takes care in his discussion of stems to
argue against the idea proposed in Lieber (1980) that all stems of a lexeme must
be listed.[16] Thus for verbs that are "regular within their conjugation", there is no
need for stem storage of the Perfect stem, since it is derived from the Present
Stem. But for Aronoff this is not the case with verbs like *crepāre*; the stem *crepu*
must be stored as an (unanalyzed) whole.

  This is clearly a stem-storage solution, the problems with which were
discussed in section 3 above. The analysis in (26) does not distinguish the
behavior of *crepāre* from the behavior of truly suppletive verbs, and this is
undesirable with √CREP and other Roots of this type. While some information
must be listed concerning such Roots— namely, the fact that they are athematic in
the perfect— this is very different from saying that *crepu* is a suppletive stem
form.

  A further problem with the treatment in (26) is that it allows for any
unrestricted "conjugation changing" behavior. With stem storage, and the idea
that the theme vowel is a property of the stem, any possible combination of
conjugation changes can be represented; for instance, analogous to (26), one could
have a lexeme that has a stem of Conjugation IV in the Imperfect tenses, but a
stem of Conjugation I in the Perfect:

(27)   Hypothetical Lexeme
    a.   Present Stem: STEMē
    b.   Perfect Stem: STEMāv
    c.   Third Stem: STEMit

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[16] In particular: Contrary to what Lieber claims, the majority of verb stems are regular and hence
most likely are nonlexical (in the idiosyncratic sense of the term). Being listed is therefore not a
necessary criterion for being a stem. ... I conclude that a given lexeme may have more than one
stem and that these stems are not necessarily arbitrary and hence listed in the permanent lexicon
(though they may be). (Aronoff 1994:44)

As long as stem storage is an option, and as long as thematic vowels are properties of stems, any combination of different theme vowels throughout the tense system is possible. In other words, the representation allows for any possible "feature changing" behavior among the different conjugations; this is clearly a weak position given the facts of Latin. Our approach, in which Roots are specified for Conjugation Class features that determine Vocabulary Insertion at TH nodes, is not subject to this objection. In the default case, a Root will show a uniform conjugational/thematic behavior across tenses.[17]

4.2   *"Past"/"Passive" and "Future Active" Participles*

Aronoff's principal argument for stems is derived from what Matthews (1972) and Aronoff call *priscianic* or *parasitic* formations. These are cases in which some derived form is apparently derived not from the underlying form of the Root, but instead from a form with a different distribution. The example of this that Matthews and Aronoff focus on is in the formation of the so-called *Future Active* participle in Latin. This participle has an interpretation that is roughly futurate, i.e. "about to": *laudāre* "praise", Fut. Act. *laudātūrus* "about to praise". In terms of its form, the Future Active participle looks like the result of simply adding *–ūr-* to the so-called "Passive Participle" (what Aronoff calls the "third stem"):[18]

(28)

	Infinitive	**Pass.Part.**	**Fut. Active**	**Trans.**
	laudāre	laudātus	laudātūrus	"praise"
	monēre	monitus	monitūrus	"warn"
	premere	pressus	pressūrus	"press"
	iubere	iussus	iussūrus	"order"

While the "Passive Participle" is typically past and passive,[19] the Future Active participle shares neither of these properties. For Matthews and Aronoff, such a case constitutes a clear instance of the separation of sound form from syntax/semantics. In particular, Aronoff's argument is that both the Future Active and Passive participles must be derived from a sound form—in this case the "Third Stem"—that exists independently of any particular syntactico-semantic context.

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[17] Something further must be said about a handful of "special" cases like *pet-i-mus /pet-ī-vi-mus*, where an *-i-* theme in the present system is paired with an *-ī-* theme in the perfect tenses. These are the only instances of "conjugation changing" verbs in the language. See Embick & Halle (forthcoming) for a proposal.

[18] There are some exceptions to this general pattern, such as *secō* "cut", with Past *sectus* and Future Active *secātūrus*.

[19] The form appears in active syntax with deponent verbs; see Embick (2000) for discussion. In addition, there are some complications to the aspectual interpretation of this form, many of which are documented in Brugmann (1895).

Within the context of our assumptions, there is no need to assume that the Future Active participle is derived from the "Past Passive" participle in any sense, whether syntactico-semantic or morphophonological. In this way, we are in agreement with Aronoff. This point is especially obvious when we take into consideration the rest of the grammar, and the role that morphosyntactic derivations play in the construction of phonological forms. Syntactico-semantically, there is a clear sense in which one object can be said to be "derived from" another: if structure S contains structure S' as a subcomponent—i.e. is built additively on S'—then S is derived from S'. In the present case, while there might be some parts in common to the two types of participle— i.e. common syntactic structure in the form of v and Asp(ect) syntactic heads— there is no obvious syntactic sense in which one must be directly derived from the other simply because of the similarity in form (although it would be desirable for the connection in form to be as syntactico-semantically motivated as possible).

The criteria for one form being derived from the other are, of course, purely phonological. But phonological criteria may not always be very informative. One property that Aronoff's approach shares with Distributed Morphology is the idea that phonological forms may be underspecified with respect to the syntactico-semantic contexts in which they appear. Consider the relationships between the English forms in (29), recalling the discussion of §2 above:

(29)   break, broke, broken
         drive, drove, driven
         take, took, taken

It happens to be a fact about English that the same Readjustment Rule applies to √BREAK in both the Past Tense and the Participle forms, since each of these forms shows the same vowel. This is not the case for √DRIVE and √TAKE. But this is no way implies that the participle *broken* is derived from the Past form (or vice versa) in the case of √BREAK, but not in the case of the other Roots. The syntactic structures are what they are, and Vocabulary Insertion and Readjustment Rules apply to the different Roots and contexts in a distinct way. Taken together, these two types of rules generate the correct forms; as far as the grammar is concerned, there is nothing further to be said about relationships between the stem forms found in the Past and Participle environments.

Returning to the "Past Passive" and "Future Active" participles, the strongest hypothesis is that the apparent "priscianic" formation is a result of the two participles having some common syntactico-semantic properties, however abstract this common structure may be. This is the strongest hypothesis because it grounds the similarities in the forms of the two participles in the syntactico-semantic structure. In particular, this would be an analysis in which the participles contain similar heads/features, with the underspecification of Vocabulary Items and Readjustment Rules accounting for the similarities in form.

An analysis of Latin participles in terms of the underspecification of piece-based Vocabulary Items is sketched in Embick (2000). This analysis treats the Past Passive and Future Active participles as forms involving both verbalizing structure (*v*) and Asp(ectual) structure; this is shown in (30-31):

(30)   Past Passive

```
                      ASP
                     /    \
                    v      ASP
                  /   \     -t-/-s-
              √ROOT    v
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(31)   Future Active

```
                          Mod
                        /     \
                     ASP       Mod
                    /   \       -ūr-
                   v     ASP
                 /   \    -t-/-s-
             √ROOT    v
```
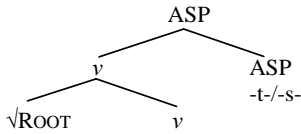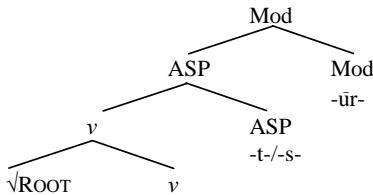
The basis for this analysis is that while there are differences with respect to voice and mood, each of these structures involves the creation of a participle from a verbalized object (Root and *v*). Thus there is an ASP head present in each, and the default realization of the ASP head is *-t-/-s-*. In the Future Active participle, which has additional modal (future) properties, there is an additional head Mod (for Modal), which is realized as *-ūr-*; syntactico-semantically this head is the locus for the modal/futurate interpretation of this participle.[20]

Moving beyond the participles to other derivations that show the "Third Stem", the type of analysis sketched above can be extended quite naturally. For instance, different types of nominalizations show the exponents *-t-/-s-*:

(32)   Nominalizations
    a.   *Agentive Nominalizations:*
              amāmus   "love"   amā-t-or   "lover"
              canimus   "sing"   can-t-or   "singer"
    b.   *Other Nominalizations:*
              cogitāre   "think"   cogitā-t-io   "thought"
              dēpellimus   "defend"   dēpul-s-io   "defense"

_____

[20] The word-final desinences *-us* are the realization of an AGR node, which we have not included in these structures.

In all of these cases, the *-t-/-s-* exponents appear when additional material — Aspectual or perhaps verbal (i.e. *v*-like) — appears in the structure (cf. the discussion of nominalizations in Marantz 1997, Alexiadou 2001, and related work). While this covers a wide range of semantic features, the pattern can be accounted for directly if the Vocabulary Items that insert *-t-/-s-* are highly underspecified with respect to the contexts in which they apply.

An additional factor is that there are Readjustment Rules that alter the phonology of the stem in the contexts associated with the "Third Stem" (e.g. *ag-i-mus, āc-t-um* and other readjustments). One alternative would be to treat these effects along the lines of German Umlaut— that is, by enumerating the environments in which these Readjustment Rules apply:

(33)   "Third Stem" Readjustments apply in environments $X_1...X_n$

There is, however, an apparent problem with this solution. This rule lists exactly the environments $X_1...X_n$ in which the exponents *-t-/-s-* are inserted, a kind of "elsewhere" environment where more Vocabulary Items for Asp do not apply. The fact that the contexts for (33) are identical with the contexts in which *-t-/-s-* are inserted are identical is an accident.

This problem is avoided if the phonological effects of stem readjustment are analyzed as resulting from Readjustment Rules triggered by the exponents *-t-/-s-* themselves, rather than by abstract feature content:[21]

(34)   Readjustment Rules are triggered by the ASP exponents *-t-/-s-*

Because the rules that insert *-t-/-s-* are highly underspecified, and because the Readjustment Rules are linked to the presence of these exponents, in the default case the Readjustments will accompany the presence of *-t-/-s-*. Moreover, the Readjustment Rules will have the same wide distribution as the exponents that trigger them. The effects of the "Third Stem" can thus be stated directly with Vocabulary Insertion and Readjustment Rules.[22]

4.3   Stems and "Morphology by Itself"

The questions raised by the "Third Stem" effect have a very particular status in the context of our theory of syntax/morphology interactions. However, at the level of detail that Aronoff argues it is impossible to conclude anything other than that the "third stem" has a relatively broad distribution. The reason for this comes ultimately from the fact that Aronoff's project is sui generis—"morphology

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[21] This assumes that these exponents are uniquely indexed; that is, they are distinct from e.g. the *-t-* of 3S Agr and the *-s-* of 2S Agr respectively.

[22] Some questions remain concerning the formation of some verbal derivatives like *ag-i-t-ō* (cp. *āc-t-us*, where the Readjustment is not found. It is unclear how systematic formations of the latter type are. We leave this matter for further research.

by itself". In the case at hand, the problem is that the exact mechanics of how stems relate to syntactic contexts is not specified by Aronoff (unlike Anderson (1992), who makes the proposal criticized above). This is important, since the stems clearly must relate to syntactico-semantic features in some fashion. In any case, Aronoff derives three primary conclusions:

> ...these stems, whether or not they are listed in the permanent lexicon, have three important properties. First, they are not meaningful. Second, the abstract elements present stem, perfect stem, and third stem enjoy a special status in Latin grammar as independent parts of the morphological system of the language. Realization rules of the language operate on these abstract elements, and not on specific forms, when selecting forms on which to operate. Finally, they are functions whose output may vary considerably according to the verb to which they apply.(1994:58)

While these observations might in some cases be in agreement with positions we have taken, there remain innumerable questions of representation and derivation. It is difficult to see how these questions could be answered, because Aronoff's approach isolates morphophonology from other components of the grammar. Absent a theory of morphosyntax, and in particular absent an explicit theory of how phonological forms relate to the environments in which they appear, little can be concluded from Aronoff's observations, beyond the fact that these are problems for lexicalist approaches to grammar in which syntax-semantics must be deterministically projected from phonological forms. In a sense Aronoff's arguments constitute the statement of a problem to be solved, and not a concrete proposal.

There is in addition a related problem concerning how to determine what counts as a "stem". Aronoff tries to define this notion in terms of the removal of affixes: "I will adopt the traditional definition of stem as the part of complete word form that remains when an affix is removed" (1994:31). On what basis is the distinction between being part of the stem and being an affix determined? The dividing line between what has to be part of a "stem" and what has to be added by realization rules is apparently arbitrary. Given the fact that the imperfect tense has a syntax involving a node like T[past], and given that the Latin imperfect invariably shows *-bā-* (e.g. *laud-ā-bā-mus* "we were praising"), why treat the object containing *-bā-* as a stem? The general conclusion is that treating form as completely divorced from structure is in principle unsystematic, a conclusion which is stated in (35):

(35)   In a non-piece-based view of morphology, distinctions between stem alternants and by-products of morphophonological rules (i.e. word-formation rules) is <u>arbitrary</u>.

The reason for this is that the notion of "stem" is defined as a sound form, i.e. in the absence of any notion of piece-based internal structure. Since there is no

principled structural basis on which some subpart of a phonological string could be treated as a "stem", anything could be a stem, reducing the notion to an ad hoc device subject to no principled constraints.

To summarize, notwithstanding the theoretical interest of the facts considered by Aronoff, there is no reason to augment our inventory of morphological objects by reifying the "stem". The cases studied above raise a number of analytical issues centering on the relationship between piece-based affixation and Readjustment Rules, and the question of how morphophonological forms are underspecified with respect to the context in which they appear. But these questions can only be addressed concretely in the context of a theory that provides explicit connections between syntax/semantics and morphological form, something which Aronoff's approach fails to do.

5.   *Conclusions and Further Directions*

There is no need for the "stem" in morphological theory. In the context of the analysis that we have sketched above, some further questions remain about the relationship between Vocabulary Insertion and Readjustment Rules, since both of these rule types are required in the grammar. Given that word formation is grounded in syntactic structure, a guiding hypothesis concerning these two rule types is that the default assumption should be that morphological alternations involve pieces:

(36)   **Piece Assumption:** All other things being equal, a piece-based analysis is
            preferred to a Readjustment Rule analysis when the morpho-syntactic
            decomposition justifies a piece-based treatment.

Exactly what is contained in the "all other things being equal" clause is a matter of great interest. There are a number of different factors that could be implicated in the analysis of a particular alternation as being piece-based as opposed to being the result of a Readjustment Rule.[23] Questions of this type are, to a large extent, open. The fact that they can be posed meaningfully derives from the fact that there is a sharply defined theoretical framework which makes it possible to discuss the grey areas between piece-based and non-piece based morphological alternations. In alternative approaches to morphology, questions about sound/meaning connections are either not articulated in detail (e.g. Aronoff 1994), so that it is difficult to situate any particular morphological analysis with respect to other parts of the grammar (as discussed above). Or, sound/meaning

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[23] A case of interest is the formation of verbs in -en. Consider: *wide*, *width*, *widen*; *long*, *length*, *lengthen*; *high*, *height*, *heighten*. The fact that the "deadjectival" verb is formed with the phonological form associated with the nominalization has potential implications for the analysis of nominalizations in –*th*. In particular, if *length* is treated as the output of a Readjustment Rule in *length-en*, then this same analysis should apply to the nominal *length*, which would be *length-Ø*. Similar considerations might extend to *growth*, etc..

connections at the word level are treated as essentially arbitrary, so that there is no morphological "theory" per se, surely the most pessimistic option (this seems to be the case with Stump 2001). Questions of this type are of great interest; but they can be appreciated only in a framework that analyzes word formation along with syntax and other parts of the grammar, in the way that we have done here.

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ITALIAN [VN] COMPOUND NOUNS
A CASE FOR A SYNTACTIC APPROACH TO WORD FORMATION

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1.   *Introduction*

In this paper, I argue that Italian VN compound noun formation is a post-lexical process that takes place in the syntax. Cross-linguistically, the proposal that VN compounds are syntactic constructs is not a new one (see, for instance, Di Sciullo & Williams (1986:80-82), Varela (1987), Lieber (1992), Kayne (1994), Roeper (1999) and Bok-Bennema & Kampers-Mahne (2001), among others). All the above authors agree that V and N are syntactic constituents and that N is the internal argument of the predicate V. In addition, Kayne (1994), Roeper (1999) and Bok-Bennema & Kampers-Mahne (2001) propose that VN compound noun derivation involves Movement.

Taking into consideration the insights of these previous works, I propose a novel syntactic derivation for VN compound nouns. More precisely, using Cinque's (1999) CP-IP representation, I argue that morphological, syntactic and semantic properties of VN compound nouns indicate that compound derivation takes place in the IP structure of the grammar. The core idea is that VN compound nouns start the derivation as "larsonian" VPs, and, at a specific point in the VP derivation, the merger of a *Null Nominal Head* [henceforth NØ] assigns a nominal reading to the initial VP. As the selector, NØ becomes the head of the [XP [VP [V [NP]]]] structure blocking any further derivation of XP including the derivation of all the elements that XP might contain.

The theoretical framework of my analysis follows Chomsky (1995, 1998) and the recent minimalist works on word formation in the syntax (Josefsson 1997, Marantz 1997, Kihm 2001, Julien 2000, Alexiadou 2001, among others). Accordingly, I consider Merge and Move the basic operations involved in compound formation. In addition, following Kayne's (1994) and Roeper's (1999) analyses of VN compound nouns, I take Move to be overt and leftward. Lastly, in the spirit of Kayne (1994, 2000, 2001, 2002, 2003), and Koopman and Szabolcsi (2000), I assume that in VN compound formation movement is preferably of the phrasal type.

2.   *Theoretical Premises for a Syntactic Analysis*

The theoretical premises for a syntactic analysis of VN compound nouns are built on the assumption that V and N are syntactic constituents rather than simple lexical heads. I argue that, as constituents, they can be modified and undergo deletion and that they are prosodically independent phonological words.

The possibility of modifying N through adjective and/or apposition insertion is evidence of the constituent-like nature of N. As the examples in (1) indicate, the internal N of independent compounds such as "porta-sapone" (soap dish) and "copri-impianto" (stereo cover) can be pre-nominally and/or post-nominally modified.

(1)   a.   *il porta-[sapone liquido]*
               the container-soap liquid
               "the liquid soap container"
        b.   *il copri-[mini-impianto hi-fi]*   (Ricca, in press:7.ft13)
               the cover mini-stereo hi-fi
               "he mini hi-fi stereo cover"

The examples in (1) suggest that the complement of V may be a complex NP. The complexity of the NP is shown in the following example, where the N of the compound "copri-borsa" (bag cover) can be modified by a PP.

(2)   *un copri-[borsa dell'   acqua calda]*   (Ricca, in press:7.ft13)
               a cover-bag   of   water   hot
               "a hot water bag cover"

With regards to the predicate, the possibility of deleting V in coordinate constructions reveals the syntactic nature of V as the examples in (3) show.[1]

(3)   a.   *colleziono [porta-sigari e sigarette] in argento*
               I collect   hold-cigars and cigarettes in silver
               "I collect silver cigar- and cigarette cases"
        b.   *e' un cofanetto, credo [portafili e spilli]*   (Ricca, in press)
               it is a case, I believe hold-threads and pins
               "it is a case, I believe a thread and pin case"

Prosodically, the syntactic nature of VN compound nouns predicts that V and N are two separate phonological words, each of which bears a primary stress. This explains, for instance, why the deletion of V has no effect on the prosodic structure of the remaining part of the compound. In addition, if the preceding prediction is correct, one can further predict the presence of across-word boundary phonological phenomena. As will be demonstrated below, both predictions are borne out.

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[1] Similar constituency tests are used in Bisetto and Scalise's (1999) syntactic analysis of compound-like phrases such as "la produzione scarpe" (shoe production).

With regards to the first prediction, in Italian, VN compound nouns have two primary stresses, though the stress on N is perceived as more prominent than the stress on V. However, as argued by Nespor (1992:174), the stress of the first member of the compound is not a secondary stress but a primary one. In compounds such as "pórtaocchiáli" (eyeglass case), for instance, the first member of the compound must bear a primary stress because in Italian, the distribution of the mid-open vowels [o] and [e] is limited to syllables that bear primary stress only. Secondly, according to Nespor (1992:174) the first member of the compound undergoes vowel lengthening, e.g., "cólapásta" > c[ó:]lapásta (colander), and in Italian long vowels belong only to open syllables that bear primary stress. In Nespor's words, the fact that the first member of the compound has a long vowel indicates that this vowel is in a syllable bearing primary stress.

With regards to the second prediction, there exist VN compound nouns that show the effects of the phono-syntactic reinforcement phenomenon of "raddoppiamento sintattico" (henceforth RS). RS is an across-word boundary phenomenon occurring between word 1 and word 2 that consists of the gemination of the initial consonant of word 2, when word 1 ends in a stressed vowel, as illustrated in the following example.

(4)   *Luca ha trè [g:]atti e trè [t:]artarughe* (<gatti, tartarughe)
        Luca has three cats and three turtles.   (Nespor 1992:96)

Consonantal germination takes place in VN compounds as well. As given in (5), the monosyllabic and stressed form of the verb "fa" (to do) triggers gemination of the initial consonant of the following word as indicated in the doubling of [n] and [t].

(5)   a.   *il fannulla*
                the doer nothing
                "the person who does nothing"
        b.   *il fattutto*
                the doer all
                "the person who does all"

Because RS is an across-word phenomenon and not a word internal one, its occurrence between compound elements is here interpreted as evidence for its constituent-like nature.

Finally, morpho-syntactically, as suggested by Zuffi (1981:37), the presence of a plural marker on the object of the compound indicates that these compound types cannot be pure lexical formations. As widely assumed, number is an inflectional feature and inflectional morphology is added to nominal stems in the syntax (Ritter 1991, among others). This leads to the implication that somehow compound formation is a process that cannot take place exclusively in the Lexicon.

From the above data and observations I derive the empirical premises for a syntactic account for VN compound nouns.

2.1   *Nominal Compound Types in Italian and the [NØ] Hypothesis*

Italian productive compound nouns are of two types: (a) compounds without an overt nominal head as in (6a-b); and (b) compounds with an overt left nominal head as in (6c-d-e).

(6)   a.   *[V-N]: accendi-sigari*
                 light cigars
                 "cigar lighter"
       b.   *[P-N]: sottoscala*
                 under stair
                 "cupboard under the stairs"
       c.   *[N-N]: carro attrezzi*
                 truck tools
                 "tow truck"
       d.   *[N-N]: calza maglia*
                 stock mesh
                 "knitted stockings"
       e.   *[N-A]: ufficio pubblico*
                 office public
                 "state bureau"

Scalise (1992:378) observes that compound nouns with an overt left nominal head are the most productive type in Italian. Given the fact that VN compound nouns are extremely productive (Ricca, in press), I assume that they are also characterized by a left nominal head. More precisely, I argue in favor of the presence of a leftward null nominal head, NØ, acting as head of the structure in compound type (a), i.e., [NØ [XP accendi sigari]].

The presence of a NØ as head of the compound is necessary to justify the gender of VN compound nouns. In Italian the majority of compound type (a) is masculine[2] as indicated by the masculine gender agreement feature on D in (7).

(7)   *il [porta spilli]*
       the (m.sg.) [hold pins-(m.pl)] (m.sg)
       "pin cushion"

I associate masculine gender with the presence of a NØ head. The internal noun of the compound does not trigger masculine agreement on D, given that its gender-number features mismatch with the features of D. In addition, D alone cannot function as nominalizer. In Italian, the presence of D is contingent on the presence of an overt or covert NP as the ungrammaticality of (8) suggests.

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[2] Feminine exceptions such as "la lavapanni" can be assumed to derive their gender by truncation from an initial structure of the type : "la [macchina] lavapanni" (the washing machine).

(8)   *_il é andato_
        *the is gone

Before proceeding further with the analysis, it is important to point out that the hypothesis that the head of VN compounds is null was first assumed by Rohrer (1977) for French and then taken over by Lieber (1992) for French[3]. However, Rohrer's null head and the NØ of Italian compound nouns differ morphologically, semantically and syntactically. According to Lieber (1992:67), in fact, Rohrer's null head is a derivational zero-affix whose presence is justified in French by the lack of a "productive overt instrumental affix". This implies that Rohrer's null head is semantically motivated and its presence is related to the derivation of VN compound nouns. By contrast, the presence of NØ in Italian does not compensate for the lack of a particular agentive/instrumental morpheme, given the existence of the very productive deverbal agentive/instrumental affix "tore". It follows that (i) morphologically, NØ is not necessarily affixal, (ii) NØ's semantic nature is not necessarily instrumental/agentive and (iii) syntactically, NØ's existence is not necessarily solely justified by VN compound formation. As we will see in the next section, NØ functions as the nominal head not only for compound formation, but also for other non-nominal parts of speech. I consider, in fact, NØ to be a nominalizer, i.e., a semantic neutral null nominal head whose merger with certain specific XPs yields a nominal formation.

2.2   _How NØ Enters into the Structure_

I consider the merge of NØ with XP a type of nominalization process that is available in the grammar to enable non-nominal lexical items and phrases to function as nouns in a string. Some examples of NØ derived nominals are given in (9).

(9)   a.   VN compound: _il tagliacarte_ (the papercutter)
        b.   Infinitive: _il mangiare_ (the eating)
        c.   Adverbs: _il perchè_, (the why), il domani (tomorrow)
        d.   Phrases: _é [un andare e venire continuo di gente]_
                is a going and coming constant of people
                there is a constant going and coming of people
        e.   Numerals: _il quattro_ (the number four)
        f.   Adjectives: _il bello_ (that which is beautiful)

All the NØ-derived nominals in (9) are masculine. I attribute such a gender feature to the presence NØ as the head of all nominalized parts of speech. I posit that all non-nominal parts of speech exemplified in (9) acquire a nominal reading post lexically via NØ Merge. Post-lexical merger of NØ is justified by the observation that nominalization of syntactic structures such as VPs in (9a),

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[3] Varela (1990) also assumes the presence of a null head underlying Spanish VN compound formations.

infinitives in (9b) and phrases in (9e) cannot be a lexical process. With the exceptions of idioms and few lexicalized forms, syntactic structure such as VP and infinitives are derived in the syntax. Secondly, assuming that in the Lexicon, lexical stems are marked with only one categorial feature, nominalizations of non-nominal stems, e.g., adverbs, adjectives and numerals must occur post-lexically to avoid the presence in the Lexicon of stems marked with two or more categorial features.

The post-lexical merger of NØ implies that the merger with XP occurs at a specific point in the derivation of XP. Where exactly NØ merges and with what kind of XP it merges, however, is subject to constraints. In particular, in the case when the XP contains a VP, as with VN compound nouns, the merger of NØ with XP is somehow constrained by the type of VP. For instance, a NØ cannot merge with a verbal stem marked for tense or for mood as shown in (10). But a NØ can merge with infinitives, present participles and some types of past participles as given in (11).

(10) a. *il mangia*   "3rd sg, present" (the eats)
     b. *il mangiava*   "3rd sg. imperfect" (the ate)
     c. *il mangi (tu)*   "2nd sg. imperative" (the eat you!)
     d. *il mangiando*   "gerund" (the eating)

(11) a. *il mangiare*   "infinitive" (the eating)
     b. *il dovuto*   "past participle" (what is due)
     c. *lo studente*   "present participle" (the student)

Assuming Cinque's (1999) CP-IP syntactic representation, the data in (10) and (11) show that NØ cannot be merged with TenseP or with any other projection above TP, i.e., MoodP[4]. The presence of a non-finite form such as the gerund in (10d) is justified by Kayne's (2000:304) observation that gerunds somehow pair with finite verbs and therefore must be located above TP. On the other hand, infinitives and present and past participles are all generated below Tense under specific AspectPs and therefore they all allow for a NØ merger. In the specific case of VN compound nouns, in the next session, I argue that NØ merges with Cinque's (1999:99) Generic Aspect Projection (henceforth GAP) as represented in (12). GA heads are what Dahl (1985:95) defines as Habitual Generic Aspect morphemes.

(12) XP >…Aspect frequentative (I) > (intentionally) mood volitional > (quickly) aspect celerative (I) > (already) **T-anterior** >(no longer) aspect terminative >(still) aspect continuative > (always) aspect perfect(?) >(just) aspect retrospective > (soon) aspect proximative > (briefly) aspect durative > **merger of NØ with aspect generic** > (almost) aspect prospective > (completely) aspect (sg) completive > (tutto) aspect (pl) completive

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[4] See also Alexiadou's (2001:59) analysis of process and result nominal formations in Greek and other languages for other evidence suggesting the incompatibility between Tense and other types of nominalizations.

> (well) Voice P > (fast/early) aspect celerative (II) > (again) aspect repetitive (II) >
(often) Aspect frequentative (II) > …VP (Cinque 1999:106)

3. *The Analysis of VN Compounds*

In Italian, VN compound nouns are formed from the verbal bases of the
three verbal conjugations, i.e., the 1st conjugation [-are], as in *tagliare* "to cut",
the 2nd conjugation [-ere], as in *accendere* "to light", and the 3rd conjugation [-ire],
as in *aprire* "to open" as given in (13).

(13) a. *tagli-**a**-carte*
          cut-**a**-papers
          "paper cutter"
      b. *accend-**i**-sigari*
          light-**i**-cigars
          "cigar lighter"
      c. *apr-**i**-scatole*
          open-**i**-cans
          "can opener"

Fundamental to the present analysis is the morphological nature of the end
vocalic segment [a-i-i] highlighted in (13). Many hypotheses have been proposed
regarding that nature of [a-i-i]. (I) According to Scalise (1992) and Vogel (1993),
Vogel & Napoli (1995) and Scalise & Guevara (2004), the end vocalic segment
are thematic vowels, i.e., "semantically empty conjugation markers" appearing in
certain parts of the paradigm (Savoia 1997:75). It follows that the V of
compounds is a verbal theme, i.e., lexical V + thematic vowel. (II) According to
Tollemache (1945) and Dardano (1978), V+[a-i-i] in the compound corresponds
to a 3rd.sg present indicative. (III) Finally, according to Rohlfs (1969), Prati (1931)
and Thornton (1988) the verbal element of the compound is a 2nd,sg imperative.

In this section, I argue instead for a fourth and novel hypothesis that [a-i-i]
are generic aspect (GA) morphemes. For the sake of the analysis in the table (1), I
outline the relevant morphology for the four proposals relative to the nature of the
end vocalic segments on V.

Infinitive	GA	TV	2nd.sg.Imp	3rd.sg Pres
comprare	compr-a	compr-a	compr-a	compr-a
vend-ere	vend-i	vend-e	vend-i	vend-e
servire	serv-i	serv-i	serv-i	serv-e

Table 1

With regards to my proposal, more specifically, I assume that [a-i-i] are
generic aspect morphemes that are merged into an initial VP of the "larsonian"
type, e.g., OV. Because of the inflectional nature of aspectual morphology, once
merged, GA triggers verbal movement yielding the final VO order found in
compounds. Once the verb has moved to GAP, the merger of a NØ with GAP
concludes the derivation yielding a nominal reading of the initial VP. In other

words, what has been termed a compound noun is in reality a nominalization of an initial VP structure. The proposed derivation is represented in (14).

(14) a.   Merger of GA with VP: [GAP [GA–a [VP [XP scarpe]
                                          [VP [V port-]]]]]
      b.   Move VP to spec of GAP: [GAP [VP port-]i [GA-a][VP [XP
                                          scarpe][ti]]]
      c.   Merger of NØ: [NP [NØ [GAP [VP port-]i[GA
                                          a][VP [XP scarpe][ti]]]]]

The hypothesis that [a-i-i] are general aspect morphemes is semantically, syntactically and morphologically justified. As I will show in (3.1), (3.2) and (3.3) below, besides enabling a straightforward syntactic derivation, the GA hypothesis provides a better explanation for (i) the semantics of compounds and (ii) for semantic-syntactic bare conditions of the internal object of the compound. In addition, it accounts morph-syntactically for the presence of a NØ in the VN structure thereby solving once for all the unexplained exo-centricity of these forms.

3.1   *Semantics*

From Prati's (1931) and Tollemache's (1945) observations that in VN compounds the verb has an habitual and not an episodic reading and that VN compounds indicate an action habitually performed, I derive my assumption on the presence of a generic aspectual feature on V that selects for a generic NP. Because of their many similarities with sentences marked by the presence of a habitual generic aspect, semantically, VN compounds can be considered types of generic expressions whose VP marked by GA selects for a generic object.

According to Dahl (1985:95-97), habitual generic aspect is used in generic sentences to describe "the typical or characteristic properties of a kind." Similarly, in Cinque (1999:99), "a GA sentence seems to refer to some inherent characteristic (of an Object) that may not yet have had realization". The generic nature of VN compound nouns can be revealed by applying Carlson et al.'s (1995:7) genericity tests. The paraphrases of a VN compound noun into generic expressions with the construction "is used to" or with the adverb "usually", in fact, show that VN compounds can be interpreted as the description of the typical properties of a kind (X) as exemplified in (15).

(15)   a.   *Apriscatole* ("can opener")
       b.   X *e' solito aprire scatole*
            X usually opens cans
       c.   X *si usa per aprire scatole*
            X is used to open cans

Additionally, as Carlson & Pelletier (1995:7) suggest, English agentive nouns such "pipe smoker" have a generic meaning. These nouns describe an agent

who performs a habitual action and, usually, if they are used as predicates in a sentence, the sentence acquires a generic meaning. Interestingly, many VN Italian compound nouns correspond to English agentive nouns sharing with them the same semantics, e.g., *lavapiatti*. (dishwasher), *portalettere*, (mail carrier).

Moreover, verbs in generic aspects can select for generic noun phrases, i.e., an NP that quantifies "over possible objects rather than over actual ones" (Dahl 1975:108). Similarly, objects of VN compounds are to be interpreted as possible ones, not as actual ones. In *apribottiglia* (bottle-opener)*,* for instance, the action of V refers to a possible bottle not necessarily a specific actual bottle.

Finally, according to Chierchia (1996), in Italian bare nouns can be generic NPs, but for Longobardi (2001:353), bare nouns are generic objects only when the predicate selecting them has a habitual and not episodic reading. For Longobardi, bare nouns can only be "object denoting generics" that are "bound by unselective generic operators". The habitual aspect feature is one of the operators providing the characterizing environment necessary for the licensing of bare nouns. If Longobardi's hypothesis is correct, the presence of [a-i-i] as an expression of habitual aspect becomes fundamental for the licensing of bare generic objects inside Italian compound nouns.

3.2   *Syntax*

It is also possible to account syntactically for the bare noun object condition in compounds. According to the recent work of Kayne (2003b:6) on Sportiche (2002)'s determiner proposal, D enters the derivation merged externally to VP and subsequent to the merger of NumberP. NP and D are configurationally contiguous because NP sits on the spec of NumP as represented in (16), where it is shown that D does not directly select for NP.

(16)   [D the [NUMP [NPi house] [Num-s… [VP [ti]]]]]

For Kayne (2003b:6), the prohibition of D from appearing in compounding is due to the fact that compounds "cut off" somewhere between VP and the point at which D is merged as the following examples suggests.

(17)   a.   John loves Brooklyn/the Bronx (Kayne, 2003b:6)
        b.   John is a well-known Brooklyn lover/ *the Bronx lover

I assume that in Italian, GAP is the compound's "cut off point". Once GA is merged, the VP can be nominalized by the merger of NØ, which, in turns, freezes the derivations of VP and its internal object. As a result, the internal object of the VP cannot be preceded by D. Morphologically Kayne's suggestion of a possible cut-off point in the CP for compound formation is justified by the particular nature of GA. In the next session, I will argue that the presence of GA in the structure is necessary to guarantee the syntactic merger of NØ into the structure, i.e., it guarantees the nominalization of VP.

3.3   *Morphology*

In Dahl (1985), there are only few languages that are overtly marked for GA. Nevertheless it has been noted that GA morphology has a strong derivational nature, besides being an inflectional feature of verbs. According to Bergstand (1994:329-330), in fact, in Aleut, a language of the Eskimo-Aleut family, generic aspect morphology appears in the general, i.e., a finite form of the verb that is tenseless and moodless. Bergstand claims that "being a zero tense, and a zero mood, the general may also be nominal depending on the syntactic construction". Similarly, it is possible to assume that, in Italian, the presence of GA morphology indicates a zero tense and zero mood verbal form, whose derivation depends on the syntactic environment. A verb marked by GA can acquire a nominal reading if merged with a nominal element, i.e., a NØ and a derivational morpheme, or it can have a verbal reading if merged with other inflectional verbal features. These two derivational outcomes for the GA form of the verb are attested to in Italian by the following facts.

Firstly, as noted by Zuffi (1981:31) and by Bisetto (1997:509-510), VN compounds and agentive/instrumental derived nouns with the suffixes "tore" (m) and "trice" (f), share identical verbal bases with end vocalic segments [a-i-i] as in (18).

(18)   a.   *Il compra-tore*   (the buy-er)
        b.   *Il bevi-tore*   (the drink-er)
        c.   *Il servi-tore*   (the serv-ant)

Such an identity indicates that GA verbal stems take part in derivational noun formation processes confirming their derivational nature. In other words, a GA stem can yield a de-verbal noun if found in the presence of derivational nominal morphology. Similarly, as seen above, it can yield a compound noun if merged with NØ.

Secondly, and most interestingly, the hypothesis that GA is the expression of a zero tense/zero mood verbal form explains its formal similarities with the 2nd person imperative, which, according to Zanuttini (1997:114), are "bare verbal forms with zero tense and mood". This suggests that a verb in a GA form can acquire a verbal reading, for instance, an imperative one, if it is in a verbal environment, i.e., if the GA form can be embedded under a null imperative mood head (Kayne, PC). The imperative force is structurally determined by the position the bare verbal form will occupy in the CP. In the absence of NØ, the GA stem can be merged into a syntactic environment that allows for a verbal derivation of GA.

Finally, the merger of NØ with GAP explains the morphological differences when juxtaposed with the 3rd,sg present indicative forms [a-e-e]. It is possible to assume that the generic aspect markers [a-i-i] are not spelled out when

the verb moves to the higher IP field above TP; contrary to indicative forms whose tense and agreement features compel the verb to move above GA.[5]

Summing up, the hypothesis of GA morphology accounts for several factors characterizing the semantics, the syntax and the morphology of compounds and it makes the post-lexical derivation of compounds straightforward. In addition, it explains the formal similarities with the imperative form of the verb and the formal difference with the indicative present. Most importantly, it resolves the puzzling hypothesis of the existence of headless compound nouns. In the following section, I briefly argue against the tenability of the previous hypotheses regarding the nature of [a-i-i].

4. *Previous Analyses on the End Vocalic Segments [a-i-i]*

As stated above, there are three main hypotheses related to the nature of the end vocalic segment of V in VN compound nouns. The first and most current hypothesis regards the association of [a-i-i] with thematic vowels. The hypothesis that [a-i-i] are thematic vowels is motivated by the assumption that the verb forming the compound is not marked by any tense-aspect-mood feature. According to Scalise (1992:192) and Vogel & Napoli (1995:368), in fact, there is no semantic motivation to assume some kind of temporal or modal values expressed by the verbal forms of these compounds. The lexical nature of VN compounds excludes any possible syntactic derivation for these compounds and therefore, the impossibility of any inflectional marking on the verbal base. From this derives the plausibility to prefer an inflectional neutral form of the verb as the base for lexical formation. Inflectional neutrality is met by verbal stems, i.e., root + thematic vowel, given the empty nature of TV.

However, two arguments can be raised against the TV solution all of which show that verbal stems are not sufficient bases for VN compound formation. The first argument comes from the analysis of compound nouns formed with de-adjectival or de-nominal verbs such as *pulire* (to clean). The pulire-type of verbs is characterized by the presence of an inchoative morpheme *[-sc-]* in certain parts of the paradigm. As noticed for the present tense by Schwarz (1999), contrary to regular verbs such as *aprire* (to open), the presence of the morpheme [-sc-] preserves the TV from the fusion with the agreement markers of 1[st], 2[nd] and 3[rd] person, as indicated in (19).

(19) a.   Infinitive   3[rd.sg] present   Morphological Analysis
            pul-i-re   *pul-i-sce*   V-Stem+TV+sc+e
      b.   *apr-i-re*   *apr-e*   V-Stem+e

Looking at VN compound formation with *pulire*-type of verbs, the obligatory presence of the [-sc-] morpheme suggests that the verbal theme alone is an insufficient base for compounding. Compound nouns with *pulire*-type of verbs

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[5] Thanks to one of the anonymous reviewers for suggesting this solution.

preserve their TV as illustrated in (20). In addition, the absence of the affix [-sc-] from the verbal base gives rise to an ill-formed compound as in (21). This suggests that root+TV is an insufficient base for VN compounds.

(20)   a.   *il pulisci tutto*
                the clean all
                "the all (surface) cleaner"
        b.   *il pulisciscarpe*
                the clean shoes
                "the shoe polisher"

(21)   a.   **il pulitutto*[6]
        b.   **il puliscarpe*

    The obligatory presence of the affix [-sc-] in (21) shows that the verbal base for compounding is something more than a simple verbal stem. From the above, I deduce that [a-i-i] on V cannot be simple TVs.

    In addition, formally, TVs [a-e-i] do not fully match with the [a-i-i] vocalic elements found in compounds. Scalise (1992), among others, assumes the presence of a vowel raising rule in the grammar with [e] raising to [i] that applies to verbs of the 2nd conjugation when found contiguous to a second morpheme, i.e., the N in the case of VN compounds. Bissetto (1997:510) argues against Scalise's proposal pointing out that the vowel raising rule is an ad hoc type of solution that does not find any other application in Italian. Additionally, the presence of [V-V] compound nouns such as *"saliscendi"* (latch) puts into question the validity of the Scalise's rule. In *"saliscendi",* the vocalic element of the second V component undergoes vowel raising despite the absence of any contiguous morpheme. From the above arguments, I exclude the possibility in VN compound nouns that the end vocalic segments on V are thematic vowels.[7]

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[6] "spartiacque" or "spartineve" are not counterexamples to the statements about the pulire-type of verbs. Like many of the Italian verbs derived from the Latin verb "parteo" (to divide), they can have two lexical forms, e.g., comparto /compartisco and sparto/spartisco. In addition, Thornton (PC) suggests that in Italian there exists the form "il puliorecchie" (earcleaner). In the Zingarelli (2001), this compound is given as "il pulisciorecchie" and no instance of "puliorecchie" is found on the Italian language corpus Banca dati dell'Italiano parlato. (http://languageserver.uni-graz.at/badip/badip/24_genSearch.php)

[7] Although TVs are not found on the V of compound nouns, in Italian, TVs are independently needed, for instance, for infinitive formation. It, therefore, begs the question of where TVs are added to a verbal stem and how one excludes their use inside VN compound nouns. Since Belletti (1990:70-72), it is assumed that the derivation of Italian infinitives takes place in the syntax and it involves movement of the verbal root from VP to a higher projection in the IP that Belletti identifies with AGRP. Though Belletti is correct in assuming that infinitive derivation takes place outside the VP, the following observations show that verbal root moves to AspectP rather than to AGRP. Firstly, as seen in (10), (11) and (12) nominalization of infinitives occurs below TP, which implies that infinitive formation takes necessarily place below AGRP given that AGRP occupies an higher position in the IP than TP. In addition, If one looks at the semantics of nominalized infinitives, according to Gaeta's (2002:121) analysis of Italian and Bartsch's (1986:17-8) analysis

4.1   *Arguments Against the Imperative Solution*

The formal identity between imperative forms of a verb and verbal bases for compounding leads Prati (1931), Rohlfs (1966) and Thornton (1988) to assume that the verbal stem in compounds corresponds to an imperative form of the verb. Their arguments are based mostly on diachronic data and on the hypothesis that, in Italian, the form of the imperative corresponds to the actual verbal theme (Thoronton 1988). According to Scalise (1992), Vogel (1993), Vogel & Napoli (1995) and Bisetto (1997), however, semantically, the presence of an imperative form in a compound seems unjustifiable. As Vogel & Napoli point out (1995:369), compound nouns such as "grattacielo" (skyscraper) do not entail an imperative reading of the type "scrape the sky!" In addition, I argue that the following two facts exclude an imperative reading of V.

Firstly, in Italian, objects of imperative verbs cannot be bare nouns, as indicated in the contrast between the examples in (22) and in (23); whereas in VN compounds objects can only be bare nouns, as indicated in the contrast between (24a) and (24b).

(22)   a.   *Apri le bottiglie!*
               "open the bottles!"
         b.   *passami del pane!*
               "give me some bread!"

(23)   a.   **Apri bottiglie!*
               *open bottles
         b.   **Passami pane!*
               *give me bread!

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of German and Dutch, nominalized infinitives refer to temporally unbound situations representing a process/event without focusing on its completion. As Gaeta (2002:122) explains, nominalized infinitives are compatible with predicates and temporal expressions that do not focus on the final completion of the action, but they are incompatible with predicate or temporal expression indicating the completion of the action/event as shown in the following Gaeta's examples:

     i.   il gocciolare del lavandino dura gia da due ore
        the dripping of the sink has been going on for the past two hours
     ii.   *l'insegnare il latino e' stato completato
        the teaching of Latin has been completed

Syntactically, looking at the long array of AspPs in Cinque's IP-CP representation, it is interesting to note that the semantic values associated with nominalized infinitives possibly correspond to the semantic values of Aspect ContinuativeP, which is located above GAP but below TP. This Aspectual feature, in fact, indicates an action that extends its course over a period of time. Given the fact that among the non-finite verbal forms only nominalized infinitives show TVs, it is plausible to conclude that TVs are spelled-out in Aspect ContinuativeP. This explains why thematic vowels are not found in VN compound nouns. V+GA and V+TV are morphologically different, and such difference is semantically and syntactically motivated.

(24)   a.   *l'apriscatole*
                "the can opener"
        b.   **l'apri le scatole*
                the open the cans

If the verbal base of the compound were really an imperative form, it would be impossible to account for the obligatory bare object condition in compounding.

Secondly, although a marginal case, the existence of the compound form *il fannulla* "the nothing doer" shows that the imperative hypothesis is not feasible. The verb "fa", in fact, cannot be an imperative, because, in Italian, a negative imperative followed by *nulla* is realized through a verb in the infinitive form preceded by the negation "non" as in (25). In addition, the nominalization of (25a), although, is possible, as represented in (26), yields a form that has lost its imperative force.

(25)   a.   *non fare nulla*
                do not do anything
        b.   **non fa nulla / *fa nulla.*

(26)   *il non fare nulla*
                to do nothing

As seen in (10c), positive imperative forms of a verb cannot be merged with a NØ and as seen in (28), the merger of NØ with a negative form of the imperative yields a non-imperative form. The contrast between (10c) and (26) shows that neither positive nor negative imperatives can be bases of VN compounds because, as stated above, syntactic imperatives occupy the Mood Speech Act Projection (Cinque 1999:55), a projection sitting above TP, i.e., outside the range of possible loci for NØ to be merged.

4.2   *Arguments Against the Present Tense Hypothesis*
In Italian, the present tense hypothesis is asserted in Tollemache (1945) and Dardano (1978). Compound formation is achieved through a transformation that reduces a relative clause to a noun, e.g., from *"X che porta la bandiera"* (X that carries the flag) to *"il portabandiera"* (ensign). More precisely, this hypothesis is based on the assumption that VN compounds are derived from phrases with a covert external head, e.g., a generic noun such as a person, a thing and an object. Such external head acts as the 3[rd] person singular subject of the compound and triggers present tense agreement on the verb. Although such hypothesis has the benefit of being able to predict the correct VN order of constituents in compound, three main arguments run against its validity.

Firstly, as in the case of TV, present tense morphology does not formally match with the vocalic ending of compounds (see table 1). This implies the necessity of ad hoc phonological rules for verbs of the 2[nd] and 3[rd] conjugation.

Secondly, according to Cinque (1999:88), the present tense corresponds to the default value of the T(Past). It follows that the present tense feature is encoded in TP. As shown in (10a/10b) above, the merge of NØ with TP is impossible. And finally, cross-linguistically, it is interesting to note that in the Sardinian variety spoken in Cagliari, VN compound nouns are identical to the Italian ones as given in (27).

(27) *porta-mantellu* (Artizzu 1996)
      hang coat
      "the coat hanger"

However, in this variety of Sardinian, 3^{rd} sg. person indicative present tense is marked by a 3^{rd} person morpheme [-t], e.g., *porta-t* (he carries). But, the person morpheme [-t] is not found in VN compound nouns. From here I derive that present tense verbal bases do not take part in compound formation.[8]

To conclude, from the above discussion it is clear that the previous hypotheses relative to the nature of [a-i-i] are morphologically inadequate, consequently, weakening the plausibility of the three compound analyses subsuming the three morphological hypotheses. As a matter of fact, none of the previous analyses is able to capture as a whole the semantic, syntactic and morphological interrelations among compound components. For these reasons, I consider the GA hypothesis superior as it is able to account for several previously unexplained factors characterizing VN formation.

5.   *Conclusion*

In this paper, I argue that VN compound noun formation is a post-lexical process taking place in the syntax. More precisely, I demonstrate that a VN compound noun starts the derivation as a "larsonian" VP and subsequently acquires a nominal interpretation by the merger of a null nominal head. I argue that the merger of the null nominal head is justified by the presence of a generic aspect morpheme on V. I then show how the presence of this aspectual morpheme is fundamental to a syntactic analysis of VN compound nouns because it enables one to understand semantic, syntactic and morphological aspects of the compound and its internal constituents. Finally, my analysis provides a plausible solution to the exocentric nature of VN compounds. The particular derivational and inflectional nature of generic aspect morphemes justifies the merge of the null nominal head and consequently allows for an endocentric reading of what has been interpreted previously as headless.

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[8] As one of the anonymous reviewers suggests English VN compounds, e.g., "scarecrow" and "killjoy" can be considered another argument against the 3^{sg} present indicative hypothesis. The verb in the compound lacks $3^{rd\ sg}$ present tense morphology.

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THE DEVELOPMENT OF LIQUIDS
FROM LATIN TO CAMPIDANIAN SARDINIAN
THE ROLE OF CONTRAST AND STRUCTURAL SIMILARITY[*]

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1. *Introduction*

This paper focuses on the distribution of liquids in Campidanian Sardinian (Southern Sardinian, Romance) consonantal clusters. It first investigates the general process of neutralization of Latin L and R to the Sardinian rhotic within clusters. Subsequently, the perspective shifts to the synchronic sound system of Campidanian Sardinian, where the rhotic is systematically banned from the coda position within syllables. As we shall see, this ban is repaired in several ways, including total assimilation with the following onset consonant and metathesis.

In this paper, I specifically aim to answer the following questions: (i) Why are Latin L and R neutralized to Sardinian /R/ within consonant clusters?[1] (ii) Why does the Campidanian phonological system ban /R/ from the coda position? (iii) How are the different repair strategies phonologically determined?

The historical part of the paper first illustrates the development of the obstruent-liquid clusters from Latin to Campidanian (section 2). It then exploits the phonological assumption that contrast in sound inventories can be organized in different ways in different languages by proposing that Latin L and R neutralize to /R/ in Sardinian within clusters because the latter, despite appearances, is a one-segment-only liquid subsystem (section 3). This hypothesis relies on phonological patterns of intervocalic /L/ and /R/. Phonologically, Sardinian /L/ patterns with obstruents, whereas /R/ patterns with sonorants, and thus /R/ is the only liquid among Sardinian sonorants. The possibility for /L/ to show non-sonorant

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[1] In this paper I adopt the following graphic conventions: Latin words and sounds are given in small capitals, and Campidanian phonemes in capital letters between slashes. In the reconstructed forms for Campidanian listed in (2), (4) and (5), the capital letters convention is maintained but the slashes are omitted.

behaviour stems from the way in which the Sardinian inventory encodes the contrast between sonorants and obstruents.

The synchronic investigation in section 4 addresses questions (ii) and (iii). It defines the constraints on coda segments in Campidanian and argues for the role of structural similarity in computing repair strategies. Final remarks conclude the paper.

2. *Latin liquids in Campidanian clusters*

One of the main features of the development from Latin to Campidanian is the neutralization of Latin L and R in morpheme-internal consonant clusters (Wagner 1941, Tagliavini 1956, Virdis 1978, Bolognesi 1998 among others). Within clusters, Latin L and R neutralized to the Campidanian rhotic /R/; Latin L did not reduce to Campidanian /R/ in other contexts (see 3.1.1 and 3.1.2 for details and data).

As the following data show, the neutralization takes place both in tautosyllabic (1) and heterosyllabic (2) consonant sequences (Virdis, 1978:58, 69). In particular, (1a) provides examples of consonant-L clusters, and (1b) instances of consonant-R clusters. Latin etyma throughout the paper are from Wagner (1941, and 1960-1964) and/or Virdis (1978).

(1)		*Latin*	*Campidanian*	*gloss*
	a.[2]	PLUS	ˈprus	"more"
		CLAVIS	ˈkrai	"key"
		FLOS, -ORE	ˈfrɔri	"flower"
		FLAMMA	ˈframːa	"flame"
	b.	CRAS	ˈkrazi	"tomorrow"
		PRIMUS	ˈprimu	"first"
		FRATER	ˈfraði	"brother"
		TRAHERE	ˈtrairi	"to pull"[3]

The reconstructed forms, listed in the second column (*Campidanian) in (2), are based on the historical survey by Wagner (1941), according to which the ban on coda /R/ is a later development of the Campidanian system (1941:175, 235).[4]

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[2] The Latin obstruent-liquid clusters inventory shows the systematic gap of TL and DL. Latin also systematically avoids DR sequences (*DR > TR), except in borrowings (e.g. from Greek) (Vennemann 1988:19, among others).

[3] There is a homophonous verb, derived from Spanish *traer*, meaning "to bring".

[4] The development of Latin L to Campidanian /R/ in codas is attested in the more conservative varieties spoken in central and northern Sardinian (e.g. Nuorese sɔrtu < SOLTU "lazy", Wagner 1941:177).

(2)		Latin	*Campidanian	Campidanian	gloss
	a.	PALMA	*paRma	ˈpramːa	"palm"
		DULCIS	*duRtʃe	ˈdrutːʃi	"sweet"
		CALCINA	*kaRtʃina	kraˈtːʃina	"lime"
		PALPARE	*paRpare	praˈpːai	"to touch"
		CALCANEUM	*kaRkaneum	kraˈkːandʒu	"heel bone"
	b.	PORCUS		ˈprokːu	"pig, pork"
		TURMA		ˈtrumːa	"herd (horses)"
		DORMIRE		ˈdromːi	"to sleep"
		CURVARE		kruˈβai	"to bent"
		FORMICA		froˈmːiɣa	"ant"
		VERVEX, -ECIS		breˈβɛi	"sheep"
		*TORC(U)LARE		trɔˈɣai	"to spin (a thread)"

The following data are complementary to the ones in (1). They show that even when the obstruent-liquid cluster was not originally at the left edge of the morpheme, it moves there, independently from stress (compare (3a) and (3b))[5]:

(3)		Latin	Campidanian	gloss
	a.	TEMPLA	ˈtrɛmpa	"cheek"
		PIGER, PIGRU	ˈpri(ɣ)u	"lazy"
	b.	FEBRUARIU	friˈaʒu	"February"

As shown by the following cases, neutralization of R and L to the rhotic is systematic: it also involves tautosyllabic obstruent-L clusters derived through syncope of unstressed vowels. Campidanian obstruent-/R/ clusters then shift to the leftmost edge of the morpheme, as already seen in (3).

(4)	Latin	*Campidanian	Campidanian	gloss
	COP(U)LA	*kopRa	ˈkroβa	"pair, couple"
	MAC(U)LA	*makRa	ˈmraɣa	"stain"
	PEDUC(U)LU(M)	*pedukRu	priˈoɣu	"lice"

Often, these derived clusters are further reduced to [ɣ] after the loss of /R/ (Wagner 1941:164):

(5)	Latin	*Campidanian	Campidanian	gloss
	OCUL(U)M	*okRu	ˈoɣu	"eye"
	FENUC(U)LUM	*fenukRu	feˈnuɣu	"fennel"

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[5] The preference for the left edge has been noted and discussed in Bolognesi (1998). An in-depth analysis of all metathesis patterns is beyond the scope of the present work, which concentrates on the distribution of liquids in Campidanian clusters and on the historical development of this sonorant sub-system.

The neutralization of Latin L and R to /R/ within Campidanian clusters has been illustrated through some of the most relevant examples reported in the literature about Sardinian. Section 3 is concerned with the question of why this happened. The hypothesis I argue for is primarily based on phonological evidence, and considers the patterning of Campidanian /L/ and /R/ in intervocalic position, both morpheme- and phrase-internally.

3.   *Sardinian: a one-liquid system*

In this section, I provide phonological arguments for referring to the Sardinian inventory as having a single liquid, namely the rhotic, within its sonorant subset.

The phonological assumption on which my hypothesis lies is that, while the principle of contrastiveness organizing phonemic inventories is universal, the outputs of contrastive organization (i.e., phonemic inventories) are language specific (see Dresher, Piggott & Rice 1994, and Dresher 2002, for instance).[6] In such a framework, phonological patterns are the keys to the phonemic inventories.

In the case of Sardinian, /L/ does not behave phonologically as the other sonorants, and as such it does not belong to the sonorant subset of the inventory (the evidence provided in 3.1 is drawn from Campidanian). Evidence for Latin L and R forming together a subclass of sonorants can be drawn from L…R dissimilation patterns (see Kenstowicz 1994:35, for instance).

(6)   a.   *Latin*   b.   *Sardinian*

                              | [sonorant] | [sonorant]
        … | L   R   N   …   /L/ | /R/   /N/

While the feature specification for sonorants takes scope over L R and N in Latin, it takes scope only over /R/ and /N/ in Sardinian (the inventories in (6) are simplified for illustrative purposes; thus, for instance, glides are not included in the sonorant sub-set). The Sardinian picture looks particularly interesting because in this inventory the feature specification for voiced obstruents and sonorants in this inventory appears to be the same, that is, Sonorant Voicing (Piggott 1992, Rice 1992, 1993, and Avery 1996; henceforth SV). As discussed in Rice and Avery, inventories exploiting SV for voicing show a three-way distinction on the obstruent-sonorant continuum—i.e., obstruents (no SV) vs. "sonorant obstruents" (SV) vs. sonorants (SV + dependent thereof)—rather than a two-way contrast of the type obstruents vs. sonorants. In 3.2.1, I discuss the relevance of the contrast configuration attained by SV in the development of Sardinian.

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[6] A feature specification can take scope over different elements of the inventory in different languages, and the sequencing through which the feature specifications implement contrast in the system can also vary language-specifically.

How does the analysis of Sardinian /L/ not being a sonorant explain the neutralization of Latin L and R to Sardinian /R/ within clusters? In Sardinian, consonant clusters consist of an obstruent and a sonorant, in either order, not of two obstruents, /S/ excluded. If Sardinian /L/ is not a sonorant, its exclusion from clusters, and its neutralization to /R/, can be understood: it neutralizes to the only sonorant liquid within the inventory, that is /R/.

I am aware of two scholars who have made the claim that /L/ is an obstruent in Sardinian, namely Politzer (1954) and Contini (1987). Both of them argue that /L/ shifted to the obstruent set under the pressure of either strengthening processes (Contini) or analogy (Politzer).

According to Contini (1987), the geminate lateral shifts to the obstruent class due to a general strengthening process affecting the articulation of consonants in Sardinian. However, the existence of a "general" strengthening in Sardinian is disputable.[7] Politzer (1954) offers an alternative analysis based on analogy. He recalls that in some Romance languages (including Sardinian) the Latin voicing contrast was lost intervocalically through the approximantization of both voiced and voiceless obstruents. The approximant outputs (Latin singletons) were then contrasted to phonetically long obstruents (Latin geminates and clusters). In those languages, Latin -LL- develops as a retroflex geminate stop, [ɖː]. According to Politzer this happens in order for the pair [l]-[ɖː] to match the singleton approximant-geminate obstruent pairs in the system.

Politzer's analysis leaves a question unanswered, namely, why the analogical pressure for an approximant-geminate contrast affects /L/ but not other sonorants, especially, for my purposes here, /R/. Studies on syllable well-formedness and phonotactics (e.g., Selkirk 1982, Vennemann 1988, van der Torre 2003) conclude that between the liquids /l/ and /r/ the former is less sonorant than the latter. This generalization appears to be respected by the differential patterning of /L/ and /R/ in the development of Sardinian.

For the purpose of this paper, I assume this generalization about the sonority asymmetry between /l/ and /r/ to be explanatorily adequate.[8]

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[7] Across word boundaries, the consonantal fortition is due to *raddoppiamento*. It affects all segments in the central varieties, but only voiceless obstruents and sonorants in the southern varieties (with the voiced obstruent showing a typical lenition output in the same context!). Word-internally, postvocalic approximantization is systematic, while hardening (e.g., devoicing, gemination) is not recorded (see Frigeni 2003 for details).

[8] Interpreting Politzer's analysis from a pure phonological perspective does not make much sense, as I demonstrate below. I think he refers to a phonetic, rather than phonemic, contrast. Let us first adopt the phonological perspective. In Latin, the contrast in terms of length was active throughout the phonemic inventory. Latin L thus participates in the length contrast. In the Romance languages discussed in Politzer (Sardinian, Sicilian and Southern Italian varieties), the loss of the voicing contrast among obstruents redefines the scope of the length distinction among obstruents. Sonorants do not constitute a domain for such a restructuring. Sardinian /L/ still participates in the length contrast, as Latin L did. Why should Sardinian /L/ then shift to the obstruent set in order to respect the restructured length contrast, as Politzer (1954:327) seems to argue, if read in pure

3.1   *Phonological patterns*

Before discussing the phonological patterns of /L/ and /R/, it is worth explaining the transcription system I adopt from now on. I use the way of transcribing intervocalic consonants proposed by Virdis (1978) and illustrated in (7a), as it captures the fact that in Campidanian length is phonologically non-distinctive among obstruents (even if voiceless obstruents are phonetically long) while it is distinctive among sonorants. Both transcription systems, however, record the loss of voicing contrast among intervocalic obstruent singletons. That is, both Latin P and B are equal to [β] in Campidanian.

(7)   a. Virdis (1978):

Latin	C (singleton)	CC (geminate or cluster)
Camp. obs., e.g. P, B	β	p
Camp. son., e.g. N	n	nn

   b. e.g., Bolognesi (1998), Molinu (1998), Ladd & Scobbie (2003):

Latin	C (singleton)	CC (geminate or cluster)
Camp. obs., e.g. P, B	β	pp
Camp. son., e.g. N	n	nn

3.1.1   */L/ in intervocalic position* The tables in (8) illustrate the developmental patterns of Latin L and R to Campidanian, in morpheme-internal intervocalic position (Virdis 1978:55-60, Wagner 1941:120-131).

(8)   a. /L/

Latin	*Campidanian*
VLV	VβV~VwV~VʁV
VLLV	VɖV

   b. /R/

Latin	*Campidanian*
VRV	VrV
VRRV	VrrV

---

phonological terms? If we consider his perspective in terms of phonetic contrast, though, it is possible to make more sense of his analysis. He assumes that the relevant contrast is between a single approximant and a double stop. His question then is: why does the pair [l]~[ll] need to change in order to match the single approximant-double stop pattern, but not [r]~[rr] and [n]~[nn]? His answer is articulated as follows: he states that /r/ and /n/ show some phonetic characteristics of stops, and thus they already match the pattern and do not undergo any change. /l/, on the other hand, he proposes, can match the pattern only by becoming a stop. I think, however, that this hypothesis is problematic even on the phonetic level. In fact, while /r/ matches the single approximant-double stop schema with the pair [R] /r/-[r] /rr/, is /n/, by any chance, phonetically more an approximant or more an obstruent depending on its length? I believe that the right analysis (still to be found) is phonological, and that the relevant questions are: (i) did the shift within obstruents, from Latin to Sardinian and the other southern Italian varieties, occur from a voicing contrast to a contrast expressed in terms of length? (ii) If not, what happened in the obstruent subsystem after the loss of the voicing contrast? This is, however, beyond the scope of this paper.

While the length contrast is maintained for /R/ (8b), this is lost for /L/ (8a). In particular, intervocalic single /L/ is phonetically reduced to a wide range of different segments (see (13)). The variation depends upon geographical and social factors. Geminate /L/ is realized as a retroflex stop, [ɖ].

Let us now compare the outputs of /L/ and /R/ given in (8), with the ones of a prototypical obstruent (in this case /P/) and of a prototypical sonorant (in this case /N/) respectively.

(9)

Latin	Campidanian
VLV	VβV~VwV~VʁV
VPV	VβV
VLLV	VɖV
VPPV	VpV

(10)

Latin	Campidanian
VRV	VrV
VNV	VnV
VRRV	VrrV
VNNV	VnnV

As shown in (9), /L/ behaves as the obstruent /P/: contrastive length is lost, and singletons are phonetically reduced. /R/, on the other hand, patterns with the sonorant /N/ in all respects, as given in (10). The relevant data are provided in (11) and (12).

(11) a. MALE   'ma [β ~ w ~ ʁ] i   "badness/badly"
          VOLEBAT   (b)o' [β ~ w ~ 'ʁ] ia   "he wanted"
          SOL, SOLE   'sɔ [β ~ w ~ ʁ] i   "sun"
          MALEHABITUS   mo' [β ~ w ~ ʁ] aðiu   "sick"

      b. VILLA   'biɖa   "town, village"
          NULLA   'nuɖa   "nothing"
          CABALLU   ku'aɖu   "horse"
          ECCU ILLUM   'kuɖu   "this (close to the addressee)"

(12) a. CARUS   'karu   "dear"
          ARENA   a'rɛna   "sand"
          FLOS, FLORE   'frori   "flower"
          *PARIC(U)LA   'pa'riɣa   "pair, couple"

      b. CARRUM   'karru   "wagon"
          TERRA   'tɛrra   "earth, soil"
          MARRA   'marra   "mattock"

The different phonetic realizations of Latin intervocalic single L characterize different dialects spoken in Southern Sardinia. While in (8a), (9) and (11a) I gave only the more widespread outputs, a complete list follows in (13) (Virdis 1978:55-60, Wagner 1941:120-131). Geographical coordinates in (13) are relative to the southern part of the island.

(13) a. [β/w]   in most of the central and western area;
      b. [ʁ]   in the eastern area, and south-western area
                       (Sulcis) (unstressed intervocalic L drops in these varieties);
      c. [ʔ]   in a small eastern area on the coast (Sarrabus),
                       and in some villages in the eastern area;
      d. [gʷ]   in Gesturi (a village in the north);
      e. [L]   low/popular variety spoken in Cagliari (the
                       capital), almost lost now

3.1.2 */L/ in other contexts* In utterance-initial position, Latin word-initial L and R
are maintained as such in Campidanian. Initial /R/ systematically requires a
prothetic vowel, as shown in (14b).

(14) a. *Latin*   *Campidanian*   *gloss*
          LONGUS   ˈloŋgu   "long"
          LUCERE   luˈʒiri   "to shine"

      b. *Latin*   *Campidanian*   *gloss*
          ROSA   arˈrɔza   "rose"
          RUBEUS   arˈruβju   "red"

However, within a phrase, in post-lexical intervocalic position, word-
initial /L/ manifests the same surface variants as word-internally (Virdis 1978:58),
that is, [β w ʁ ʔ L gʷ] (see (13)).

Note that the [β w ʁ ʔ L gʷ] realization of word-initial /L/, when post-
vocalic within a phrase, is almost lost nowadays, under the strong influence of
Standard Italian, and Tuscan dialects, where word-initial /L/ is maintained also in
these contexts as [l]. In Campidanian, word-initial /L/ is realized as a long
retroflex lateral approximant [ɭː] (Virdis 1978:65, 66; Contini 1987). For instance:

(15) [sa ɭːuʒi] is nowadays more common than [sa ʁuʒi] "the light"

Moreover, [β w ʁ ʔ L gʷ] now alternate with a [ɭː] even in intervocalic
morpheme-internal position, as shown in (16) (Virdis 1978:57; this is however not
reported by Wagner 1941).

(16) ˈsɔβi ~ ˈsɔɭːi   "sun"
      ˈtɛʁa ~ ˈtɛɭːa   "fabric"

It is interesting to notice that when the lateral is reintroduced in
intervocalic context, it is produced as long. This might lead one to think that the
lateral has been reintroduced in the sonorant system via Standard Italian and
Tuscan. However, there is no contrast between singleton [l] and geminate [ɭː] in
the system, as one would expect from a true sonorant (recall the oppositions

[r]~[rr] and [n]~[nn], in the table in (10)). I thus argue that [ɭ] is, together with [β w ʁ ʔ ʟ gʷ], an allophone of singleton /L/, i.e. a singleton obstruent.[9]

3.2   /L/ in the obstruent subset

If the Campidanian /L/ is to be considered an element of the obstruent sub-inventory, on which dimension is the contrast among the elements of this sub-system implemented? For instance, if /L/ is differentiated from the other obstruents in terms of place features, how can we explain the variety of places of articulation that are found among its allophones?

(17)   bilabial   labiovelar   retroflex   velar   uvular glottal
        [β]   [w],[gʷ]   [ɭ]   [ʟ]   [ʁ]   [ʔ]

The variation along the dimension of place of articulation indicates that contrast is not likely to have been implemented on this dimension. On which phonological dimension, then, could the following elements, [β w ʁ ʔ gʷ ʟ ɭ] for /L/ and [d] for /LL/, be grouped together?

In order to answer this question, it may be relevant to consider the discussion around the phonetic and phonological nature of retroflex segments. Lahiri & Reetz (2003) suggest that the feature [retroflex] belongs to the dimension of tongue height, rather than place. They provide both acoustic and phonological arguments for their hypothesis.

Acoustically, as reported by Bhat (1974:237), "retroflexion cannot be identified or correlated with retraction," that is, an operation on the dimension of place.

As for phonological arguments, Lahiri & Reetz (2003) refer to Panini's *ruki* rule (Sanskrit). Briefly, a retroflex allophone of /s/ always surfaces in the context of the segments [r, u, k, i] (thereafter the name of the rule). As Lahiri & Reetz point out, a feature along the front/back dimension cannot group these segments, whereas [high] seems a good candidate Interestingly, along the same lines, Celata (2003) reports that Romance retroflection processes are not limited to back vowel contexts.

However, the hypothesis about the relevance of tongue height for the definition of obstruent /L/ in Campidanian needs to be verified. This paper just suggests a new perspective for the analysis of this problem.

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[9] There are also other historical sources for the current Campidanian [ɭ]. These sources are: (i) Latin -LJ- and -LEV- (e.g, FILIA > ˈfiɭa "daughter"; ALLIU > ˈaɭu "garlic"); (ii) Catalan -ll- [ʎ] (<Lat.-LJ-) (cullera [kuʎɛra] > kuˈɭɛra "spoon"; agulla [aguʎa] > aˈkuɭa "needle"); and (iii) Spanish -ll- [ʎ] (<Lat. -LJ-): billa [biʎa] > ˈbiɭa "ball to play pool". In these cases the adjacency to the approximant [j] (sonorant) might have prevented the Campidanian stop /L/ from undergoing the same intervocalic processes as singleton /L/ and geminate /LL/ (that is, [β, w, ʔ, ʁ, ʟ, gʷ] and [d] respectively).

3.2.1   *Contrastive configuration: the role of S(onorant) V(oicing)*

What does the obstruent sub-system look like in Sardinian? Which kind of obstruent is Campidanian /L/?

In previous work (Frigeni 2003), I claim that the voicing specification in the Sardinian system is expressed in terms of SV. Sonorants and voiced obstruents, in fact, pattern as a class within this system; for instance, they both trigger voicing assimilation. Both voiced obstruents and sonorants are thus specified by the SV node. In this perspective, Sardinian /L/ is a "sonorant obstruent".[10]

As anticipated in section 3, the contrastive configuration attained by the SV specification (as in (18)) implies that sonorants and obstruents form a class, whereas they do not in a system where the voice contrast among obstruents is realized through the specification of laryngeal features (as in (19)).[11]

(18)   *obstruents*   *"sonorant obstruents"*   *sonorants*

    /P/ /T/ /K/   /B/ /D/ /G/   /L/ /R/ /N/

                                                                             SV+[dependent]

                                                     SV

(19)   *obstruents*   *sonorants*

    /P/   /T/   /K/   /B/   /D/   /G/

                                                           SV

The SV configuration in (18) predicts that it is enough to delink a feature dependent under the SV node in order for a sonorant to become an obstruent; moreover, it also predicts that the obstruent output is voiced. These predictions are matched by /L/.

3.3   *Summary*

In the first part of this paper the phonological status of the Campidanian phoneme /L/ has been discussed. The morpheme- and phrase-internal intervocalic patterns of Campidanian /L/, when compared to those of obstruents and sonorants, show that /L/ needs to be classified as an obstruent rather than a sonorant. The structure of the Campidanian phonemic inventory, thus, may explain why /L/ neutralizes to /R/–that is, the only lateral sonorant in Campidanian–within consonant clusters, given the ban on obstruent-obstruent clusters in the language.

Section 3.2 has posed the question of how to fit /L/ within the obstruent sub-inventory. Since inventories are interpreted as instantiations of contrastive

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[10] Voiced obstruents in SV-systems are labeled "sonorant obstruents" (Piggott 1992, Rice 1992, 1993).

[11] SV-systems and laryngeal-systems are systematically compared in Avery 1996.

hierarchies (see Dresher 2002), the question reduces to which phonological dimension is responsible for /L/ contrasting with the other obstruents in the system. I argued that place of articulation is not a suitable candidate, and I suggested the option of the tongue height dimension. In 3.2.1, the relevance of SV for the Sardinian patterns has been briefly outlined.

4.   *Coda /R/ in Campidanian*

In the next sections the analysis is strictly synchronic. The data show the intolerance of Campidanian phonology for /R/ in coda position. The conditions on coda segments in Campidanian are very strict and the banned sequence /R.C/ is systematically repaired, either through assimilation or metathesis. I argue that the different repair strategies are determined by the degree of structural similarity between /R/ in coda position and the following onset. This model thus refers to the Coda Licensing principle (Kaye 1990:331), which states that "Post-nuclear rhymal positions must be licensed by a following onset." While the Coda Condition, first proposed by Steriade (1982) and elaborated by Itô (1986), requires licensing through the following consonant only for coda obstruents ("An obstruent can be syllabified as a coda only if it is segmentally linked to the following consonant"), Kaye extends it to all segments in coda position. The proposed model is essentially phonological, as similarity is not intended in physical terms (acoustic or perceptual), but rather in structural, representational terms.

4.1   *Data*

Within a disharmonic heterosyllabic sequence, where a coronal /R/ is followed by a non-coronal segment, the ban on /R/ in coda position is repaired through metathesis, with /R/ moving to the onset within the same syllable rather than to the following heterosyllabic onset.

(20)		*Latin*	**Campidanian*	*Campidanian*	*gloss*
	a.	CULPA	*kuRpa	ˈkrupːa	"guilt"
		PALMA	*paRma	ˈpramːa	"palm"
		DULCIS	*duRtʃe	ˈdruʈʂi	"sweet"
		CALCINA	*kaRtʃina	kraˈtʃina	"lime"
	b.	PORCUS		ˈprokːu	"pig", pork"
		CORPUS		ˈkropːu	"body"
		SERVIRE		ˈsreβi	"to serve"
		VERVEX, ECIS		brɛˈβɛi	"sheep"

It is worth noticing that while the voicing contrast between /P/ and /B/ is neutralized intervocalically (both segments reduce to [β]), the voicing contrast appears to be phonologically relevant when considering the obstruent onset once adjacent to /R/.

For vowel-initial morphemes, nothing happens, e.g., ARCUM > ˈarku (Virdis 1978:60, among others), as metathesis is possible only if a word-initial onset consonant is present. However, when items of this type are preceded by the definite determiner su/sa "the.M/F.SG" or by a demonstrative, /R/ moves onto the leftmost onset within the phrase (for instance, Bolognesi 1998:55), as shown in (19):

(21)   /su ˈarku/   >   [ˈsrakːu]   "the bow"
        /su ˈorku/   >   [ˈsrokːu]   "the ogre"
        /kusta ɛrba/   >   [kuˈstrɛβa]   "this grass"
        /kusːa ardʒa/   >   [kuˈraʒa]   "that tarantula"

From a survey of possible consonant-/R/ complex onsets, /LR/, /NR/, /JR/, /WR/ are not possible; /SR/, and /MR/, on the other hand, are attested.

Within a harmonic coronal sequence, where coda /R/ is followed by a coronal voiceless obstruent, the repair strategy is assimilation instead.

(22)   *Latin*   *Campidanian*   *Campidanian*   *gloss*
        ALTUS   aRtu[12]   ˈatːu   "tall"
        AUSCULTARE   askuRtai[13]   askuˈtːai   "to hear"
        MORTUUS   ˈmotːu   "dead.M.SG"
        FORTIS   ˈfɔtːi   "strong.M.SG"
        CERTARE   tʃeˈtːai   "to argue"
        MARTIUS   ˈmratːʃu   "March"

When /R/ is followed by a voiced coronal, then a second type of metathesis takes place:[14]

(23)   *Latin*   *Campidanian*   *gloss*
        SURDUS   ˈsuðru   "deaf"
        CARDU(U)S   ˈkaðru   "thistle"

4.2   *Coda requirements*

Why does the Campidanian phonological system ban the sonorant /R/ from the coda position?

In Frigeni (2003), I argue that voicing specification in Campidanian is banned from codas unless structure (*in primis* Place) is shared with the following onset. In this section I argue that the condition on coda /R/, a sonorant, follows from this general constraint on voicing specification in coda position.

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[12] This form, with L > /R/ in coda, is reported by Wagner (1960-64:76) together with the one showing assimilation to [t]. In my fieldwork, I recorded only the assimilated form.
[13] See Wagner 1960-64:134.
[14] Notice moreover that the resolution of Latin RD clusters is subject to a certain degree of variability (see, for instance, Wagner 1947:176 and Bolognesi 1998:54). In this paper, I am referring to the varieties of Southern Sardinian spoken in Villasor, Sanluri, Serrenti, Samassi.

Possible codas in Campidanian are given in (24):

(24)   a.   homorganic nasals
       b.   /S/ (in voiceless SC clusters only)
       c.   the first half of geminates
                (always voiceless in the case of obstruents)

From the coda phonotactics, it appears that the segments in a coda must be structurally licensed by the following onset, by sharing place (24a), voicing (24b) or the complete set of features (24c).

In particular, the SV specification of nasals is tolerated in coda because the place specification is totally shared with the following onset. For the other two possible coda segments (/S/ and the first half of a voiceless geminate), SV specification is excluded, unless, as in the case of sonorant geminates, the complete set of features is shared across the syllable boundary.

4.3   *Segment representations*

In this section, I present the underlying feature structure for the relevant segments. I assume a simplified version of the feature geometry discussed in Rice (1992). The phonemic representations, upon which the degree of structural similarity is calculated, rely on principles of underspecification and minimality as postulated by Avery & Rice (1989) and further elaborated by Dresher, Piggott & Rice (1994) and Dresher (1998a,b and 2002).

Specifications for place of articulation are represented as features (namely, [cor(onal)], [lab(ial)], and [vel(ar)]) underneath the Place node.

A second organizing node is SV (voicing dimension). The SV node groups together sonorants and voiced obstruents (as seen in 3.2.1). Voiced obstruents present a bare SV node, while sonorants are further specified by dependents of SV, such as the feature [nasal] for /N/ and the feature [approximant] for /R/. /S/ is a coronal obstruent (no SV node, only Place node) specified for continuancy ([cont(inuant)] directly attached to the Root node).

A sample of the segmental representations is displayed in (25).

(25)   a. voicless obstr.   b. sonorant obstr.   c. sonorants
       T   S   D   R   N
       Root   Root   Root   Root   Root
       | /\   /\   /\   /\
       Pl   Pl [cont]   Pl   SV   PL   SV   Pl   SV
       | | | | | |
       [cor]   [cor]   [cor]   [cor] [apx]   [nas]
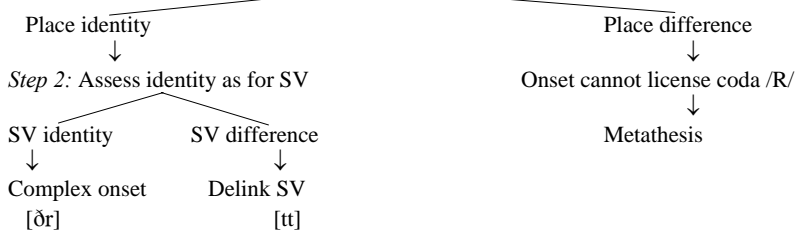
/P/ and /K/ differ from /T/ with respect to the feature under the Place node. The same relationship holds between /B/ and /G/ *versus* /D/. /P, T, K/ and /B, D, G/ are distinguished by the presence of the SV in the latter but not in the former.

Notice furthermore that /N/ does not bear specification as for place of articulation (evidence for this is drawn from homorganic nasals in coda position).

4.4   *Computing repair strategies*

How are the different repair strategies phonologically determined? In this section I put forward the idea that the repair strategies to satisfy the ban on voicing (SV) specification in coda position (which affects /R/ in this position) are computed according to the structural similarity between the coda and the following onset. The similarity in terms of place and SV specification between coda /R/ and the following onset appears to determine the repair strategies according the algorithm in (26). The algorithm estimates the likelihood of licensing /R/ (i.e., its voicing specification) through the following heterosyllabic onset. Place identity has more weight than SV identity: SV identity is meaningful only if place identity holds. The higher the similarity, the higher the chance for the onset to license the preceding coda /R/.

(26)   *Step 1:* Given R.C, assess identity between R and C as for place

Place identity	Place difference
↓	↓
Step 2: Assess identity as for SV	Onset cannot license coda /R/
	↓
SV identity SV difference	Metathesis
↓ ↓	
Complex onset Delink SV	
[ðr] [tt]	

Let us first consider the case of another segment violating the ban on voicing specification in coda position, that is the case of the sonorant nasal /N/ (please refer to the diagrams in (25) in order to visualize the processes). The presence of voicing structure SV in the coda is tolerated only if place structure can be shared completely, by spreading the feature under the Place node from onset to coda. This operation is possible precisely if the target (the coda) is not specified for place of articulation, as in the case of /N/. Place thus appears to be crucial in the resolution of the coda voicing constraint in Campidanian.

Now consider the different cases of /R/ in coda position in the light of structural similarity (algorithm in (26)). In the case of the place- and SV-harmonic sequence /R.D/, /R/ is licensed by /D/ in its same syllabic position, with no structure changing process (e.g., spreading, delinking) taking place. The output [ðr] can be considered a complex onset. Comparing /R.D/ with /N.C/ clusters, /R/ and /D/ each have their own [cor(onal)] dependent. Thus, place structure, while identical, is not shared and /R/ cannot remain in the coda the way /N/ does. In the case of Place-harmonic sequences–i.e., coronal-harmonic sequences, such as /R.T/ and /R.S/—the voicing specification in coda position is eliminated by delinking the SV node. This operation respects the principle of structure preservation, as

delinking SV creates a segment (T) already present in the underlying inventory. In the coronal-harmonic sequence /R.S/ (/T.S/ after delinking of SV), the feature [continuant] is further shared. In the case of place-disharmonic sequences–e.g., /R.P/, /R.B/ and /R.M/—the onset cannot share its place structure with the preceding coda, as /R/ is specified as [coronal] (in contrast with coda /N/), and thus the voicing specification on coda position cannot be tolerated. Metathesis of /R/ onto the tautosyllabic onset thus takes place.

The following synopsis collects all the cases discussed in this section. *SV]$_\sigma$ symbolizes the ban on voicing specification in codas; SV]$_\sigma$, on the other hand, represents the presence of voicing specification in coda position. *Placeless C stands for the impossibility of a placeless segment that appears to drive repairs in case of clusters containing /N/. The symbol ≠ means "different".

(27)

Case	Structural configuration	Effect on *SV]$_\sigma$
NC > [mp]	*Placeless C → Place node spreading	SV]$_\sigma$ tolerated
RD > [ðr]	= Place, SV	Complex onset
RT/S > [tt/ss]	= Place	SV]$_\sigma$ delinked
RP/RB/RM	≠ Place	metathesis

5.   *Conclusions*

In this paper I addressed three questions about the phonological system of Sardinian in general and Campidanian Sardinian in particular. As far as the historical question is concerned ("Why are Latin L and R neutralized to Sardinian /R/ within consonant clusters?"), I showed that Sardinian has only one liquid sonorant segment, /R/. As /L/ phonologically patterns with the obstruents in this system and obstruent-obstruent clusters are impossible, /L/ never appears in clusters. The point theoretically significant in this first part of the paper is the relevance of SV specification in determining the nature of obstruent /L/.

In the second half of the paper, I claimed that /R/ is not a possible coda in Campidanian because voicing specification is not tolerated in this position in this grammar. The only voiced segment allowed in coda is /N/, because /N/ inherits the place specification from the following onset. The model for computing the different repair strategies for coda /R/ in the system relies in fact on the assumption of the Coda Licensing principle, that is: a coda must be licensed by the following onset. Whether the Coda Licensing principle can be fulfilled and how it is fulfilled depend upon the structural similarity between coda and onset.

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CLITIC PLACEMENT AND THE POSITION OF SUBJECTS IN THE HISTORY OF EUROPEAN PORTUGUESE

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1. *Introduction*

The complex pattern of clitic-placement in Modern European Portuguese (henceforth EP) tensed sentences has long been noticed and discussed in the framework of Generative Grammar. Leaving some marginal cases of variation aside, the distribution of proclisis and enclisis can be summarized in the following way. Proclisis is obligatory in subordinate clauses, as well as in root clauses when the verb is preceded by a negative, interrogative, quantified or focalized phrase, or certain aspectual or focalizing adverbs, as exemplified below in (1) to (7):

Negative clauses:

(1) a. *O Paulo <u>não</u> **me** fala*
   b. **O Paulo <u>não</u> fala-**me***
    "Paulo does <u>not</u> speak *to me*"

Subordinate clauses:

(2) a. *Todo mundo sabe <u>que</u> **a** viste*
   b. **Todo mundo sabe <u>que</u> viste-**a***
    "Everybody knows <u>that</u> (you) saw *her*"

(3) a. *<u>Se</u> tu **me** tivesses dito...*
   b. **<u>Se</u> tu tivesses-**me** dito*
    "<u>If</u> you had said *to me*."

Clauses in which the preverbal phrase is a quantifier (4), a WH operator (5), a focalized phrase (6), or an aspectual adverb (7):

(4) a. *<u>Alguém</u> **me** chamou*
   b. **<u>Alguém</u> chamou-**me***
    "<u>Somebody</u> called *me*"

(5)   a.   *Quem* **me** *chamou?*
        b.   **Quem chamou-**me**?*
               "<u>Who</u> called *me*"

(6)   a.   *Só ele* **a** *entende.*
        b.   **Só ele entende-**a***
               "<u>Only he</u> understands *her*"

(7)   a.   *Eu <u>sempre</u>/<u>ainda</u>/<u>já</u>* **a** *encontrei no mercado*
        b.   **Eu <u>sempre</u>/<u>ainda</u>/<u>já</u> encontrei-**a** no mercado*
               "I <u>always</u>/<u>still</u>/<u>already</u> met *her* at the market"

Enclisis is categorical in all the other contexts, namely when the verb is in absolute first position, and when a referential phrase precedes it, as in the example below:

(8)   **Deu-me** *um livro* /**me deu um livro*
               He gave me a book

(9)   *O João* **deu-me** *um livro* /**O João **me deu** um livro*
               John gave me a book

(10)   *Ontem* **escrevi-lhe** *uma carta*/ **Ontem **lhe escrevi** uma carta*
               Yesterday (I) wrote him a letter

Barbosa (1996, 2000) argues that all enclitic constructions are V1 constructions in EP. According to her, enclisis derives from the application of the Tobler Mussafia Law, which bans unstressed words at the absolute beginning of sentences (cf. also Salvi 1990, and Benincà 1995). This is straightforward for (8), but (9) needs an auxiliary hypothesis in order to be derivable from this analysis. If (9) is a case of the application of the Tobler-Mussafia law, this means that pre-verbal subjects in EP do not occupy a position internal to the clause, but are dislocated, like topics. Barbosa argues at length in favor of this hypothesis, in the general framework of the discussion of the position of subjects in null subject languages (NSLs), in the line of Vallduvi (1990) and others. According to this line of argumentation, the A-position for subjects in NSLs is the post-verbal position and pre-verbal subjects occupy a A' -position. As for pre-verbal referential subjects in EP, Barbosa (2000) argues that this position is of adjunction to IP.

Costa (1998, 1999) and Costa and Duarte (2002) argue against this analysis by showing on the basis of syntactic and discursive evidence that subjects and topics display a different behavior in EP, which is unexpected if subjects occupy the same position as left-dislocated topics[1]. In this paper, we bring another

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[1] See for instance, the following contrast in (i)-(iv), from Costa (1998). These sentences show that a dislocated Prepositional Phrase plus a subject can precede the verb; but if two PPs are dislocated

kind of evidence against the analysis of enclisis in sentences like (9) above as derived from the Tobler Mussafia law in EP. We contrast this language with its ancestor, Classical Portuguese (henceforth ClP), represented by texts written by Portuguese authors born between the 16th and the 18th century. Based on a large annotated Corpus from this period[2], we show that clitic placement interacts with subject position in ClP in a way which nicely fits within Barbosa's account: the enclitic placement corresponds to structures in which the pre-verbal phrase, be it subject or any other XP, is outside the boundaries of the clause. We then show that the change from ClP to EP involves not only a quantitative change in the rate of enclisis but also a qualitative change affecting the position of subjects with enclisis. We conclude that although pre-verbal subjects with enclisis used to be external to the clause in ClP, this is no more true for EP.

The organization of this chapter is as follows. In Section 1, we present the pattern of clitic-placement in Classical Portuguese, and we argue that enclisis shows up when the verb is structurally in the absolute first position in the clause. Section 2 is devoted to a quantitative analysis of clitic-placement in V3 sentences in ClP and in the change from ClP to EP. In this section we show that the pattern XSVcl which was extremely rare in the Classical Period becomes much more frequent from the beginning of the 18[th] century on, evidencing a change in the syntax of subjects. Finally, in Section 3, we bring additional evidence of this change, drawn from Paixão de Sousa (2004).

2.   *The variation between enclisis and proclisis in Classical Portuguese*

It is important to emphasize that ClP displays the same behavior as EP as far as the obligatory proclitic contexts are concerned;   the sentences below exemplify the pattern found in the contexts defined in (1) to (7):

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in preverbal position, the sentence is bad. This contrast is unexpected under the hypothesis that subjects are dislocated:

(i)   Com o Pedro, o Paulo falou sobre o big bang
         "with Pedro Paulo talked about the big bang"
(ii)   Sobre o big bang, o Paulo falou com o Pedro
         "about the big bang Paulo talked with Pedro"
(iii)   *Sobre o big bang, com o Pedro, o Paulo falou
         "about the big bang with Pedro Paulo talked"
(iv)   *Com o Pedro, sobre o big bang, o Paulo falou
         "with Pedro about the big bang Paulo talked"

[2] The Tycho Brahe Annotated Corpus of Historical Portuguese:
         http://www.ime.usp.br/~tycho/corpus

(11)   a.   _Bem_ **me** **importava** _entender ao certo o que se passa ..._ (Melo, 1608)
              Well to-me- mattered to understand rightly what goes on...

        b.   _Muito_ **me sofreu**   _Nosso Senhor._   (Chagas, 1631)
              Much me-suffered   Our Lord:...

        c.   _Todos_ **me tratam** _como_   _a desfavorecido_   (Melo, 1608)
              All   me-treat   as   an disadvantaged one

Also when the verb is in absolute first position, enclisis invariably appears:

(12)   **_Julga-vos_** _as obras,_ **_julga-vos_** _as palavras_   (Vieira, 1608;
              Judges-you the works, judges-you the words, ...   Sermons)

However, when the verb is _not_ in first position, and it is not preceded by the kind of phrase that obligatorily triggers proclisis, there is variation between proclisis and enclisis, and the former is highly dominant. This variation shows up not only with pre-verbal subjects (examples 13), but also with pre-verbal adverbs[3] (examples 14) and dislocated phrases (examples 15).

(13)   a.   _Eu_ **corro-me**   _de dizer o que padeço._   (Melo, 1608)
              I   **run-myself** from saying what I suffer

        b.   _Os cortesãos_ **chamam-lhe** _replexão por haver comido muito…_(Brochado, 1651)
              The courtesans **all-i**   plentiness for having eaten too much ...

        c.   _Taquete_ **nos diz**   _que João Delgado Figueira vai a Roma..._ (Vieira, 1608)
              Taquete **to-us-tells** that João Delgado   goes to Roma

        d.   _Quem lhe der auxílio_ **lhe dará** _também as armas para a vitória._(Chagas, 1631)
              He who gives you help **to-you-will-give** also the weapons for victory

(14)   a.   _Agora_ **quero-lhe**   _dizer algumas cousas_   (A. Costa, 1714)
              Now (I) **want-to-you** to say some things

        b.   _Depois_ **sucedeo-lhe** _o_   _Mirão, seu sobrinho, ..._   (Couto, 1542)
              Afterwards **succeeded-to-him** Mirão, his nephew, ...

        c.   _Ontem_ **me escreveu**   _Jerónimo Nunes_   (Vieira, 1608,
              Yesterday **to-me- wrote** Jerónimo Nunes   Letters)

        d.   _Claramente_ **o disse** _São Paulo:_   (Bernardes, 1641)
              Clearly   it-said   St Paul: ...

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[3] There is also variation with dependent pre-verbal clauses and in V1 coordinated clauses, but with a different rate cf. Galves, Britto and Paixão de Sousa (2003) and Paixão de Sousa (2004) (the examples below are from Vieira's Sermons)

(i)   E porque não teve boa informação de seus procedimentos , **o chamou** á sua presença
       "And because (he) did not have a good information of his proceedings, him-called to his presence"

(ii)   e se sois e fostes sempre bom, **julgam-vos** mal…
       "and if (you) are and were always good, (they) judge-you badly"

(iii) e **lhe pediu** conta …
       "and to-him asked account"

(iv)   Deus julga os pensamentos , mas **conhece-os**
       "God judges the thoughts, but (he) know-them"

(15)   a.   *Por isso* **mande-me**   *Vossa Reverência boas novas disto ...* (Sousa, 1572)
             For that **send-to-me**   Your Reverence   good news of that
       b.   *À fidalguia* **chamam-lhe** *qualidade, e chamam-lhe sangue.* (Vieira, 1608)
             To nobility (they) **call-it** quality, and   call-it   blood
       c.   *Com isto o despedio*   *o Governador com muitas honras,* (Couto, 1542)
             With that **him-dismissed** the Governor with many honors...
       c.   *Para os críticos* **me deu** *Nosso Senhor excelente coração, ...* (Melo, 1608)
             For the critics   **to-me-gave** Our Lord excellent heart

       Figure 1 shows the evolution of the frequency of enclisis in these contexts
in authors born from 1541 to 1835[4] as described in Galves, Britto & Paixão de
Sousa (2003).

Galves, Britto & Paixão de Sousa 2003
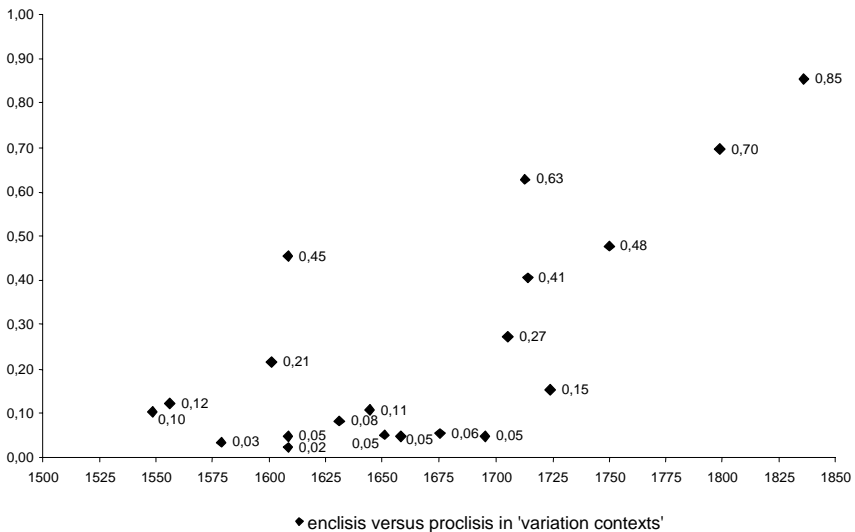
Figure 1: *Enclisis versus proclisis in "variation contexts" – 16th to 19th centuries*

       We can observe that, from the beginning of the 18th century on, there is a
sharp increase of the rate of enclisis, which gets close to the modern pattern in
the letters written by Ramalho Ortigão, born in 1836[5].

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[4] List of the authors included in this study: Diogo do Couto (b. 1542); Luis de Sousa (b. 1556); F.
Rodrigues Lobo (b. 1579); Manuel da Costa (b. 1601); Antonio Vieira (b. 1608) – Letters and
Sermons; F. Manuel de Melo (b. 1608); Antonio das Chagas (b. 1631); Manuel Bernardes (b.
1644); J Cunha Brochado (b. 1651); Maria do Ceu (b. 1658); Andre de Barros (b. 1675); Matias
Aires (b. 1705); Luis Antonio Verney (b. 1713); Antonio da Costa (b. 1714); Correia Garção (b.
1724); Marquesa de Alorna (b. 1750); Almeida Garrett (b. 1799); Ramalho Ortigao (b. 1836).

On the basis of the same data, but focusing now on the classical period, Figure 2 concentrates on the authors born between 1541 and 1695.
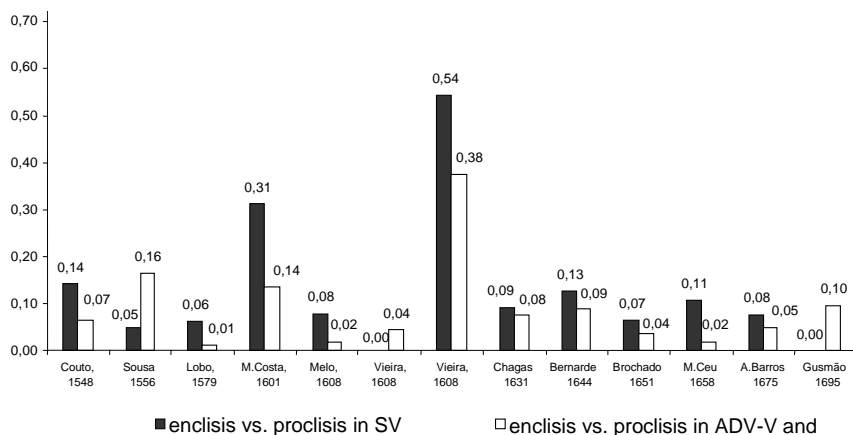
Figure 2: *enclisis in SV and XV matrix clauses - 16ᵗʰ and 17ᵗʰ centuries*

Figure 2 shows that in the texts considered, enclisis ranges from 0 to 16%, with two exceptions to which we come back below. Additionally, we see that, although there is variation between the authors considered, the   alternance between enclisis and proclisis affects subjects and non subjects in a comparable way.

As for the more enclitic texts, from authors respectively born in 1601 and 1608, it is worth noting that they constitute two different cases. In the former – Manuel da Costa – the higher rate of enclisis concerns only subjects. This can be explained by the high use of the reflexive/passivizing clitic SE, which was shown by Galves, Britto and Paixão de Sousa (2003) to highly favor enclisis at this period[6]. Indeed, if we do not compute the occurrences of SE in Costa, enclisis drops to 0%. As for the second text, Vieira´s Sermons[7], two observations are at stake. First, it is more enclitic than the others both with subjects and with non-subjects. Second, although we can observe the effect of SE on the rate of enclisis, it is not as strong as in Costa, particularly for subjects, for which we still find 38% of enclisis if we leave SE aside. Moreover, the comparison between Vieira's

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Sermons and his other text included in the Corpus (his letters) shows that enclisis is not a property of his writing in general, but of his writing in the Sermons.

Galves (2001) examined   Vieira´s Sermons available in the Tycho Brahe Corpus[8] and found that in the *totality* of the cases of enclitic sentences with pre-verbal subjects, the subject is contrasted with another term, as exemplified in (16)-(21).

(16)   *Não diz o Apostolo, que passa o mundo, senão as figuras; porque <u>as figuras</u> **vão-se**, e o theatro fica. [p. 74]*
The Apostle does not say that passes the world but the figures; because <u>the characters</u> **go-SE**, and <u>the theater</u> remains

(17)   *Comparada, porém, qualquer revelação não canonica, com as boas obras, eu antes quizera a certeza das obras, que a da revelação; porque <u>a revelação</u> não me póde salvar sem boas obras; e <u>as boas obras</u> **pódem-me** salvar sem revelação. [p. 97]*
Compared, though, any revelation not canonical, with the good deeds, I rather would want the certainty of the deeds than the certainty of the revelation because the revelation cannot save me without good deeds; and <u>the good deeds</u> **can-me** save without revelation.

(18)   *<u>Nós</u> deixamos as pégadas de traz das costas, e <u>Deus</u> **tem-n'as** sempre diante dos olhos [p. 121]*
<u>We</u> leave the footprints behind our back, and <u>God</u> **has-them** always in front of his eyes,..

(19)   *<u>As pégadas</u> estão manifestas e **vêem-se**; <u>as raizes</u> estão escondidas, e não se vêem [p. 121]*
<u>The footprints</u> are obvious and **see-SE** ("can be seen"); <u>the roots</u> are hidden and cannot be seen:...

(20)   *<u>Elles</u> **conheciam-se**, como homens, <u>Christo</u> **conhecia-os**, como Deus. [p. 125]*
<u>They</u> **knew-themselves**, as men, <u>Christ</u> **knew-them**, as God.

(21)   *<u>Deus</u> **julga-nos** a nós por nós; <u>os homens</u> **julgam-nos** a nós por si. [p. 170]*
<u>God</u> **judges-us** by ourselves; <u>Men</u> **judge-us** by themselves

The same pattern can be observed with non subjects:

(22)   *Muitas vezes a bons princípios seguem-se bons fins, como em Christo, e <u>a máus principios</u> **seguem-se** bons fins, como no bom ladrão, e <u>a bons princípios</u> **seguem-se** máus fins, como em Judas. [p. 163]*
Many times to good principles follow good aims as in Christ and <u>to bad principles</u> **follow-SE** good aims, as in the good thieve, and <u>to good principles</u> **follow-SE** bad aims, as in Judas.

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[8] These sermons totalize 53.855 words, with a total of 160 sentences with clitics in variation contexts, 74 of them enclitic, and 86 proclitic.

(23) *Eis aqui porque David queria que o julgasse Deus, e não os homens:* <u>*no Juiso de Deus*</u>
      perdoam-se *os peccados como fraquezas***:** <u>*no juiso dos homens*</u> ***castigam-se*** *as valentias*
      como peccados. [p. 156]
      This is why David wanted that God judged him, and not the men**:** <u>in the judgement of</u>
      <u>God</u> **forgive-SE** ("are forgiven") the sins as weaknesses**:** <u>in the judgement of men</u>
      punish-SE (is punished) bravery as sins.

Note that in all the cases listed above, the opposition between the pre-
verbal phrase and another phrase is explicitly given either in the immediately
preceding sentence, where the same terms are explicitly contrasted by terms like
senão, "but" (ex. 16), or *antes* "rather" (ex. 17), or in the same sentence by means
of lexical oppositions, or negation. The productivity of these constructions in the
Sermons is deeply linked to the baroque style, whose composition is based on
oppositions (cf. Saraiva and Lopes 1996 for a description of this property in
Vieira´s style).

The choice of enclisis is therefore governed by stylistic considerations in
Vieira's sermons.   Non-contrastive pre-verbal phrases, be they subjects or not,
invariably show up with proclisis. This is illustrated in (24), where   "estes
tesouros" (*those treasures*), is a continuative topic introduced in the preceding
sentence.

(24) *porque ainda que a vida e os dias em que peccamos passam, os peccados que n'elles*
      commettemos, não passam, mas ficam depositados <u>*nos thesouros*</u> *da ira divina ...* <u>*Estes*</u>
      <u>*thesouros, pois, que agora estão cerrados,*</u> ***se abrirão*** *a seu tempo, e se descobrirão para*
      a conta no dia do Juiso, que isso quer dizer, in die iræ, et revelationis justi judicii Dei. [p.
      122]
      because although the life and the days in which (we) sin pass, the sins that we commit do
      not pass but remain deposited **in the treasures** of the divine anger. ....<u>These treasures,</u>
      <u>therefore, that now are closed</u>**, SE-will-open** ("will be opened") in its time**,** and **SE-will-**
      discover ("will be discovered") for the counting in the day of the Judgement..

The stylistic use of enclisis in Vieira's sermons supports the analysis first
proposed in the literature by Salvi (1990)[9] that the alternation in clitic-placement
in ClP derives from the availability of two topic positions in this language. One is
external to the clause, and the other one is internal, qualifying as an internal topic
position, like in V2 languages. Both are available both for subjects and non
subjects, as represented below.

       i) [Subject/XP]   # [V-cl]
       ii)   # [Subject/XP   cl-V]

From this point of view,   i) is a sub-case of V1, and enclisis derives from
the application of the Tobler-Mussafia Law.   Vieira´s oratory use of enclitic
sentences to mark contrast in his sermons gives support to the claim that pre-

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[9] See also Benincà (1995).

verbal material in this configuration has an intonational contour of its own that gives it discursive saliency.

In the next section, we shall see how constructions in which not only one but two phrases precede the verb can be taken as an additional evidence for this analysis.

3. *The evolution of clitic placement in V3 constructions from Classical to Modern European Portuguese*

The V3 sentences attested in the Corpus can be sub-divided in XXV, SXV, and XSV; examples of each type, with enclisis and proclisis, are given below:

(25)   XXV
    a. *As minhas cartas, quando Vossa Mercê lhe achar alguma cousa, que sem nojo possa aproveitar a alguém, **mostre-as**, se quiser*   (Chagas, 1631)
My letters, when Your Mercy finds in them something that someone could profit for, **show-them**, if you want
    b. *Se eu a governara, neste lugar **a havia de meter** algum tempo.* (Chagas, 1631)
If I governed it, in this place **it-had to put** some time

(26)   SXV
    a. *Nós, pelo contrário, **pegamo-nos**.*   (Vieira, 1608,
We, on the contrary**, take-ourselves**   Letters)
    b. *ela com o ruido **os chama**, com suas doces águas **os deleita**, ...* (Chagas, 1631)
she with the noise **them-calls**, with its sweet waters **them-delights**

(27)   XSV
    a. *Vendo tão rara e verdadeira amizade, el-rei Dionísio o mais velho **disse-lhes***: (Bernardes, 1644)
Seeing such a rare and true friendship, the king Dionísio the older **said-to-them**
    b. *Se êste negócio é de Deus, êle **o há** de conservar*   (Chagas, 1631)
If this deal is of God, he **it-has** to conserve

3.1 *Enclisis and Proclisis in V3: 16th and 17th centuries*

According to the analysis of enclisis as derived from the Tobler-Mussafia law, in V3 enclitic sentences *the two pre-verbal phrases are outside the boundaries of the clause*, while in V3 proclitic constructions *the second phrase is necessarily internal* (or proclisis would not surface), as represented below:

i)   [X] [X] # [V-cl]   →   XXVcl
ii)   [X] # [X   cl-V]   →   XXclV

a. [As minhas cartas,]   [quando Vossa Mercê lhe achar...,]   # [_____ **mostre-as**]
b.   [Se eu a governara,]   # [neste lugar **a havia**]

Additionally, we must consider that "*X*" can be of two types: argumental XPs, and adjunct XPs (such as prepositional phrases, sentential adverbs,

dependent clauses). Argumental XPs in external position correspond to a topicalization construction. In the case of nominal complements, this will surface as a CLLD construction– as in example 25 (a) (in which the clitic ***as*** is co-referential with the dislocated topic <u>*As minhas cartas*</u>).

        Subjects can also be involved in topicalization constructions – but they need not be doubled by a resumptive pronominal, or any lexical category, since Classical Portuguese is a null subject language. Therefore, the four logical possibilities for V3 sequences involving subjects are:

i)	[subject]	[XP]	#	[	V-cl]	→ SXVcl
ii)		[subject]#		[XP	cl-V]	→ SXclV
iii)	[XP]	[subject]#		[	V-cl]	→ XSVcl
iv)		[XP]	#	[subject cl-V]		→ XSclV

a.   [<u>Nós</u>,] [<u>pelo contrário</u>,] # [**pegamo-nos**]
b.   [<u>ela</u>] # [<u>com o ruído</u> **os chama**]
c.   [<u>Vendo tão rara e verdadeira amizade</u>,][<u>el-rei Dionísio o mais velho</u>] # [**disse-lhes**...]
d.   [<u>Se êste negócio é de Deus</u>] # [<u>êle</u> **o há** de ...]

        The data shows, as expected, that the enclitic V3 constructions (the (a) cases in 25 to 27 above) are in general much less frequent than the proclitic V3 constructions in this period (as we shall see in detail below). But we observe that one of them is particularly rare. It is the one with a subject immediately preceding the verb: XSV-cl. The example 25 (a) above is in fact the only occurrence found in 16[th]-17[th] c. texts.

        Figure 3 presents the proportion of each of the attested V2 and V3 patterns in relation to the sum of all V1, V2 and V3 sequences, grouped in 50-year periods[10].

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[10] The results in this section are drawn from Paixão de Sousa (2004) and differ in two aspects from the data considered so far. First, the sentences with clitic SE are not taken into consideration, for the reason mentioned in footnote 6. Second, the total <u>universe</u> is not the set of occurrences of proclisis and enclisis in the contexts of variation defined above, but the whole set of matrix affirmative sentences with clitics, divided in V1, V2 and V3 sentences. The total universe of data surveyed for the whole timespan (16[th] to 19[th] centuries) amounts to 2.305 matrix affirmative sentences. Of these, 501 are V1 sentences; 1.451 are V2 sentences; and 353 are V3 sentences. For the 16[th] and 17[th] century, of the total of 1.397 matrix affirmative clauses, 283 are V1 sentences (0,20), 915 are V2 sentences (0,65), and 99 are V3 sentences (0,14). A thorough account of methodological issues, as well as the listing of the complete set of occurrences attested, is available in Paixão de Sousa (2004).
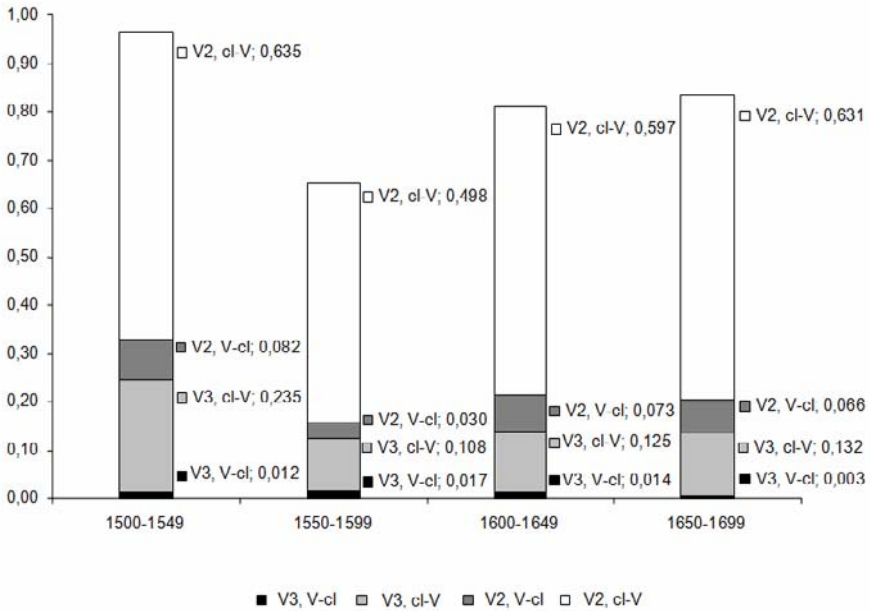
Figure 3: *V2 and V3 orders: proclisis and enclisis, 16th and 17th centuries*

We observe that V3 sequences in general range from 0,13 to 0,25 of the total data in each 50 year period. But <u>enclitic</u> V3 sentences are marginal: on the whole, V3 with enclisis in the two centuries amounts to 17 cases in a universe of 1.397 clauses, rendering a proportion of 0,01. In each 50 year period, the proportion is respectively 1/85, 4/231, 11/794 and 1/287 of total data.

Let's have a closer look now at the different types of V3 order. Figures 4 and 5 respectively shows proclitic and enclitic V3 sentences.
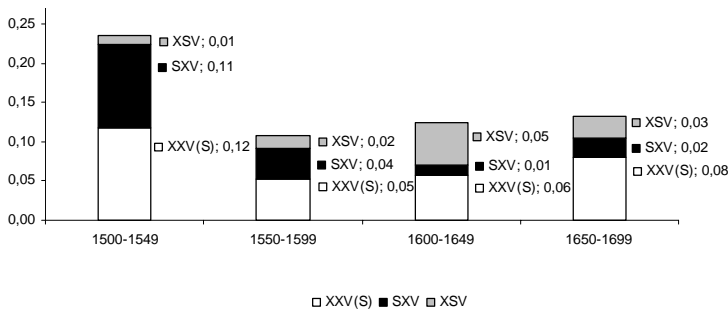
Figure 4: *V3 orders with proclisis (proportions in relation to total data in main clauses), 16th and 17th centuries*
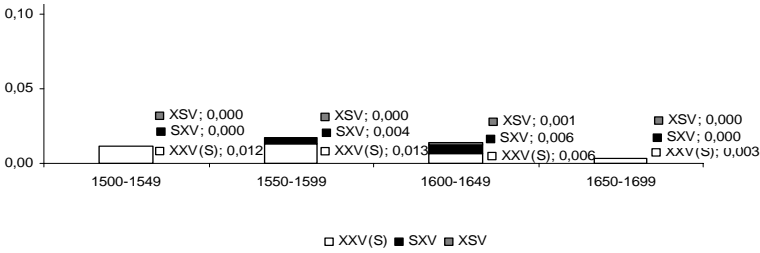
Figure 5: *V3 orders with enclisis (proportions in relation to total data in main clauses), 16ᵗʰ and 17ᵗʰ centuries*

As far as proclitic sentences are concerned (figure 4), we see that in all the periods, at least half of the occurrences are XXV, while SXV and XSV vary from period to period.

If we now look at enclitic V3 sentences (Figure 5), we see that the pattern which is more consistently represented over periods is again XXV. SXV does not appear in all the periods, and when it appears, it is less frequent than XXV. The more important fact for our analysis is that XSV occurs only once (see   25 a. above), in all the period considered.   Comparing proclitic and enclitic V3 sentences by type, we therefore find:

XXV: 100 cases/10 with enclisis = 10%
SXV: 42 cases/6 with enclisis= 14%
XSV: 57 cases/1 with enclisis= 1,7%
Total: 199/17 = 8,5%

Contrasting this result with the pattern of clitic-placement in V2 (cf. Figures 1,2 and 3), we see that we find a comparable proportion of enclisis in V3 order, except for the order XSVcl, which is almost absent of the corpus. Crucially, this order will appear after 1700, as we shall show now.

3.2   *Enclisis and Proclisis in V3 after 1700*
     As shown by Figure 1 above, from the beginning of the 18ᵗʰ century on, enclisis ceases to be a marginal pattern in Portuguese texts; a gradual increase in its frequency, in relation to proclisis, will end up in the well-known pattern of Modern European Portuguese, where enclisis is categorical with referential pre-verbal phrases, including subjects (as shown in the introduction, cf. example 9).
     Under the hypothesis that pre-verbal subjects in EP are not left-dislocated phrases, as argued by Costa (1998) and Costa and Duarte (2002), an important consequence is that in the new grammar, enclitic V3 constructions with a subject immediately preceding the verb would consist, structurally, of one topicalized constituent only, as represented below.

i) ClP:	[XP] [XP]	# [	V-cl]
	[XP] [Subject]	# [	V-cl]
ii) EP:	[XP] [XP]	# [	V-cl]
	[XP]	# [Subject	V-cl]

Following the same line of reasoning that was pursued before, V3 constructions with enclisis – and more specifically, XSV sequences – should become more frequent in the change from ClP to EP. This is exactly what the data shows, as we will see now.

If we take up the contrast between V2 and V3 proclitic and enclitic sequences in the modern texts, some very interesting differences arise in comparison to what was shown in section 1 for classical texts. Figures 6 and 7 below show what happens in V3 constructions after 1700.

Figure 6 shows the decrease of proclisis which is typical of this period, and which affects all types of V3 orders. In contrast, the evolution of enclitic V3, as shown by Figure 7, does not affect the different types of V3 sentences homogeneously. Crucially for our purposes, the order XSV, which was extremely rare in the preceding centuries, is now present in all the sub-periods observed, increasing from 0,006 of the total data in the first one to 0,012 in the second one (although globally the enclitic V3 constructions are less represented in this period) and reaching 0,027 in the last one.

We therefore see that not only the proportion of V-cl increases in V3 constructions from the beginning of the 18[th] century on, consistently with what happens in V2 structures, but also a new pattern emerges. This new pattern is XSV. Differently from SXV and XXV which were already attested, and are only affected by the increase of enclisis, enclitic XSV evidences that this increase is accompanied by a change in the position of the subject. This change can also be detected by comparing the behavior of V2 sentences using the methodology proposed by Paixão de Sousa (2004) as will be shown in the next section.
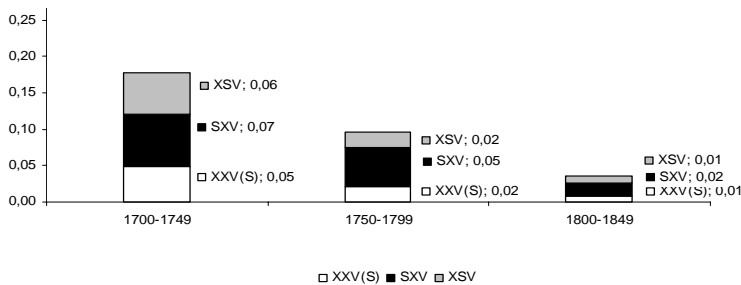
Figure 6: *V3 orders with proclisis - 18th and 19th centuries*
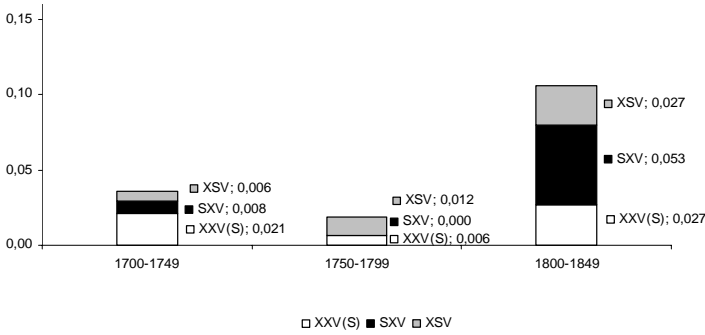
Figure 7: *V3 orders with enclisis - 18th and 19th centuries*

4.   *The dissociation of SVcl and XVcl and the loss of VS*

The hypothesis that pre-verbal subjects and non subjects cease to occupy the same position at this time is supported by the fact that the proportion of enclitic subjects with respect to the total data ceases to be equal to the proportion of enclisis with other pre-verbal phrases.

This asymmetry between the tendency of SVcl and XVcl in proportion to total data represents a further argument in favor of the interpretation that in the new grammar, subjects cease to behave like left-dislocated elements (while other XPs, naturally, do not). The difference in the evolution of enclisis regarding SV and other XV is shown for the whole period here considered (16[th] to 19[th] century) in Figure 8:
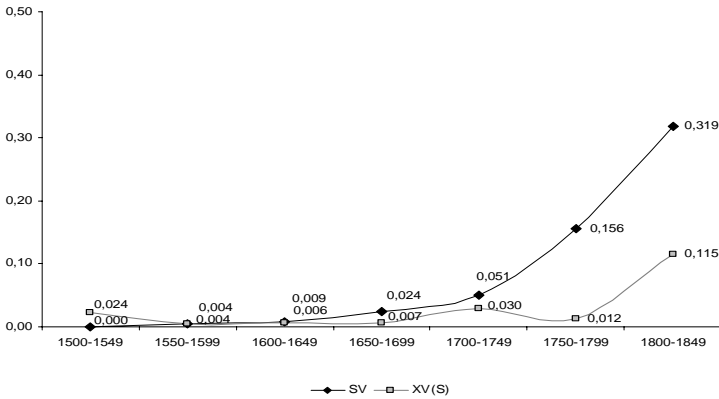
Figure 8: *Evolution of SVcl and XVcl (in relation to total data in main clauses),
16th to 19th centuries*

While it is true that all V2 and V3 constructions with enclisis become more frequent in texts post-18th century, it is important to notice that this elevation in frequency affects subjects in a singular way, as opposed to the constructions PP-Vcl and ADV-Vcl (XV in the figure).

Figure 8 shows that the proportion of PP-V and ADV-V constructions with enclisis in main clauses raises at a rate of 0,02-0,00-0,01-0,01-0,03-0,01-0,12 (as expected, enclisis becoming more frequent after the 18th century). On the other hand, the proportion of SV with enclisis in main clauses raises at 0,00-0,00-0,01-0,05-0,16-0,32. That is, there is a neat elevation in the frequency of pre-verbal subjects with enclisis between the first and the second half of the 18th century (from 0,05 to 0,16) which is not accompanied by the other environments (which pass from 0,03 to 0,01 at the same period) ; and although the increasing of enclisis is finally observed with non-subjects in the most recent text, the proportion of enclisis with SV remains twenty points higher than enclisis with XV (0,32 to 0,12).

Notice, crucially, that the two constructions had an identical proportion in texts up to the second half of the 17th century (0,02-0,00-0,01-0,02 for XV, and 0,00-0,00-0,01-0,02 for SV).

We interpret the contrast between the behavior of SV enclitics and XV enclitics as an indication that pre-verbal S and X ceased to occupy the same position in the new grammar.

This conclusion is supported by another fact evidenced by Paixão de Sousa (2004): at the same time enclisis ceases to be a marginal pattern, the XVS order, typical of V2 systems, shows a decline in frequency. In matrix affirmative clauses, the frequency of VS orders in general decreases between the last half of the 17[th] and the first half of the 18[th] centuries. However, VS with enclisis (which is typically #VS, *ie*., V1) is reasonably stable, while XVS with proclisis presents a marked decrease after the 17[th] century. Furthermore, within XVS orders, the subgroup that shows the more drastic reduction in frequency are the sentences with the pattern XVSX (that is: *Germanic* inversions); contrastively, the VS orders in texts after the 1700s are, mostly, #VXS (that is: *Romance* inversions) [11].

5.   *Concluding Remarks*

In this paper, we have brought evidence that in Classical Portuguese enclitic placement is a property of V1 sentences. When the verb is not initial, proclisis is by large the preferred pattern. The occurrence of enclisis in V2 sentences can be shown to correspond to a structure in which the pre-verbal

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[11] The progressions in 50 year periods are as follows (the texts surveyed are the same presented in this study). For VS in general: 0,18-0,18-0,21-0,22-0,09-0,09-0,08. For VS with enclisis (typically, #V): 0,05-0,07-0,05-0,04-0,03-0,02. For XVS with proclisis: 0,13-0,13-0,13-0,17-0,05-0,06-0,06. For XVSX, from 0,07 of total data in matrix clauses in the second half of the 17[th] century, to 0,01 in the first half of the 18[th] *cf*. Paixão de Sousa, 2004.

phrase is external to the boundaries of the clause.   This is true for subjects as well as for other pre-verbal phrases.

V3 sentences played an important role in our discussion since they evidence that the increase of enclisis we observe in authors born from the beginning of the 18[th] century on is accompanied by a change in the position of subjects. The comparison of the frequencies of the order XSV-cl before and after 1700 suggests that enclitic subjects cease to be external in the emerging grammar.

At the same time, we also observe that the evolution of enclisis ceases to be parallel for subjects and other phrases. This indicates that pre-verbal subjects and dislocated phrases cease to be treated in the same way by the new grammar.

This is exactly what we predict if pre-verbal subjects in EP, contrary to the pre-verbal subjects in enclitic constructions in ClP, occupies a specified position inside the boundaries of the clause[12]. We therefore reach, on diachronic grounds, the same conclusion attained by Costa (1999, 2000), and Costa and Duarte (2002) on synchronic grounds.

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[12] The exact position of the subject as well as the complex issue of deriving enclisis in EP without appealing to the Tobler Mussafia law is beyond the limits of this text. We refer the interested reader to Duarte and Matos (1995), and Galves and Sândalo (2004).

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SUBJECT INVERSION IN SPANISH RELATIVE CLAUSES
A CASE OF PROSODY-INDUCED WORD ORDER VARIATION
WITHOUT NARROW FOCUS[*]

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1.   *Introduction*

This paper analyses a number of word order alternations observed in relative clauses in Spanish and concludes that they are the result of intonational considerations. However, it is shown that the relevant intonational factors are not the same as those related to focalization (which is well-known to induce word order alternations in Spanish), but rather they relate to the relative prosodic weight of constituents in the intonational structure of these clauses.

Spanish relative clauses typically (but not necessarily) show transitive subjects in a post-verbal position, as in (1).

(1)   a.   *El libro* [*que escribió   la maestra*].
                the book   that wrote   the teacher
                "The book that the teacher wrote"
         b.   *El alumno* [*al   que   reprobó   la maestra*].
                the student ACC-the whom   failed   the teacher
                "The student that the teacher failed."

Given that Spanish is an SVO language, the post-verbal position of the transitive subjects in (1) is in need of an explanation. As a first step in explaining the word order alternation in (1), it is useful to compare these data with other cases where Spanish transitive subjects appear in a post-verbal position, such as *wh*-interrogatives (Torrego 1984, Contreras 1989) and clauses where the subject is the narrow focus of the clause (Contreras 1976, Zubizarreta 1998, Büring & Gutiérrez-Bravo 2001, Gutiérrez-Bravo 2002). Such a comparison indicates that

the inversion facts in (1) are unlike those of these better-known cases of subject inversion.

1.1   *Wh-interrogatives*

Subject inversion is observed in Spanish *wh*-interrogatives like (2), as is well known. Many different analyses have been developed to account for this pattern, but recently Zubizarreta (1998) and Gutiérrez-Bravo (2002) have proposed that inversion in interrogatives results from the fact that *wh*-phrases in Spanish have Spec-TP as their final landing site. When Spec-TP is occupied by a *wh*-operator, as in (3b), the subject remains in its VP-internal position. Movement of the verb from V-to-T thus derives the *Wh*-V-S order.

(2)   *Qué escribió   la maestra?*
                what wrote   the teacher
                "What did the teacher write?"

(3)   a.   [$_{TP}$ *la   maestra$_i$ escribió$_k$* [$_{VP}$ t_i t_k *el   libro*]]
                the teacher wrote   the book
         b.   [$_{TP}$ *qué$_i$ escribió$_k$* [$_{VP}$ *la   maestra* t_k t_i]]?
                what   wrote   the   teacher

However, there are two reasons why this analysis cannot be extended to inversion in relative clauses. First, relative clauses admit preverbal subjects, but *wh*-interrogatives do not (presumably because Spec-TP is indeed available in (4), but not in (3)). See Torrego (1984) and Contreras (1989).

(4)   a.   *El libro* [*que la maestra   escribió*].
                the book   that the teacher   wrote
                "The book that the teacher wrote."
         b.   *El alumno* [*al   que la maestra   reprobó*].
                the student   ACC-the whom the teacher   failed
                "The student that the teacher failed."

(5)   a.   * *Qué   la maestra   escribió?*
                  what   the teacher   wrote
         b.   * *A   quién la maestra reprobó?*
                  ACC   who   the teacher failed

Secondly, the standard assumption is that relative clauses are CPs, not TPs. This is particularly evident in relatives with an overt C^0 *que* "that", and a null relative operator, such as (6b).[1] Since the landing site of the relative operators is Spec-CP, in these cases Spec-TP is an available position for the subject to move into, and so the optionality of inversion is unsurprising.

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[1] See Zagona (2002) for evidence that *que* is a complementizer and not a relative pronoun when it appears by itself in relative clauses in Spanish.

(6) a. *El alumno* [CP *al   que*i Ø [TP __*reprobó* [VP *la   maestra t*i]]].
          the student ACC-the whom   failed   the teacher
     b. *El libro* [CP Opi *que* [TP __   *compró* [VP *la   maestra t*i]]].
          the book   that   bought   the teacher

Inversion in relatives is thus not the same phenomenon as inversion in *wh*-interrogatives in Spanish. This is the same conclusion that is arrived at about inversion in French in Kampers-Manhe *et al.* (2004), although for reasons different from those presented here for Spanish

1.2   *Focalization*

As shown in (7), subjects in focus in Spanish typically occupy a post-verbal position. The explanation for inversion in these cases is that foci must be signaled with the nuclear accent of the clause, which is invariably clause-final in Spanish (Contreras 1976, Zubizarreta 1998, Büring & Gutiérrez-Bravo 2001). In order to meet this condition when the subject is in focus, the subject remains in its VP-internal position, while other constituents move to the left. This results in a subject-final construction like (7b), where the subject ends up in the position where it can receive the nuclear accent.

(7) a. Q: *Quién escribió el   libro?*
              who   wrote   the book
     b. A: *El libro lo   escribió* [LA MAESTRA]Focus .
              the book ACC-CL wrote   the teacher
              "The TEACHER wrote the book."

However, there is evidence that the post-verbal position of subjects in relatives is in fact their unmarked position, and not a marked option resulting from focalization. This is observed with the diagnostic that constituents emerge in their unmarked word order when the whole sentence is in focus (i.e. sentence focus contexts). In these cases, the transitive subjects of relatives still emerge in a post-verbal position, as shown in (8). In contrast, the relative with a preverbal subject is infelicitous in this context, which is consistent with the general perception (see especially Contreras 1989) that the SV order is a marked option for these relatives.[2] Observe that the exact opposite situation is observed in matrix clauses

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[2] A reviewer asks if there are cases of inversion in Spanish where the subject is part of a larger focus that includes the predicate. Such cases do exist (Zubizarreta 1998, Gutiérrez-Bravo 2002) but there are two reasons to think that inversion in (8) is unrelated to them. First, inversion with subject and predicate focus with transitive verbs in matrix clauses is not felicitous in a sentence focus context, as shown in (9c). Secondly, while a predicate+subject focus analysis may in principle be compatible with the inversion facts in (8b), by itself it would fail to explain the absence of inversion in ditransitive relatives, a fact discussed in section 4 of this paper. In any case, my claim is not that inverted subjects can't ever be part of a larger focus, but rather that this is not attested in matrix transitive clauses in a sentence focus context (i.e. 9c), in contrast with what is observed in relative clauses.

like (9). In this case the subject-initial order is clearly preferred, and the subject inversion order is infelicitous.

(8)   a.   *Qué pasó?*
                what happened?
        b.   *Pedro   no leyó   el   libro* [*que escribió la   maestra*]. [(O)**VS**]
                Pedro   not read   the book that wrote   the teacher
                "Pedro did not read the book that the teacher wrote."
        c.   #*Pedro   no leyó   el   libro* [*que la   maestra escribió*]. [(O)**SV**]
                Pedro   not read   the book that the teacher wrote

(9)   a.   *Qué pasó?*
                what happened?
        b.   *La maestra escribió un   libro.*   **SVO**
                the teacher wrote   a   book
                "The teacher wrote a book."
        c.   #*Escribió la   maestra   un   libro.*   **VSO**[3]
                wrote   the teacher   a   book

        The observation that the post-verbal position is the unmarked position of transitive subjects in the examples above is supported by evidence that preverbal subjects in (5) and (8c) above are sentence topics (in contrast with preverbal subjects in matrix clauses: see also Contreras 1989). For one thing, non-subject XPs functioning as topics have the same distribution, namely, they appear between the complementizer *que* and the verb in T, as shown in (10).

(10)   a.   *El   apoyo   masivo y superior* [*al   que   **originalmente***
                the   support   massive and superior   to-the which   originally
                tuvieron   nuestros   alcaldes].[4]
                had   our   mayors
                "The massive support superior to that which our mayors originally had."
        b.   *El respaldo* [*que **en su partido** disfrutaba Aznar*]   *fue abrumador*.[5]
                the support   that in his party   enjoyed   Aznar   was overwhelming
                "The support that Aznar enjoyed in his party was overwhelming."

        More importantly, when the subject of the relative has an instantiation in the previous discourse, it must occupy the preverbal (and not the unmarked post-verbal) position, a typical property of sentence topics in Spanish.

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[3] A reviewer asks whether VOS is a felicitous order in Spanish in this sentence focus context. It is in fact not, but it can be discarded on independent grounds because Spanish VOS necessarily has a reading where the subject is a narrow focus (Zubizarreta 1998). Hence the correct comparison must be between the SVO and VSO orders in (9).
[4] *Corpus del Español*, Illinois State University/Brigham Young University.
[5] Note from The Associated Press, Madrid.

(11)   *Sé   que **la maestra**   ha   editado   muchos libros, pero*
                  I-know that **the teacher** has   edited   many books but
                  yo   estoy   buscando...
                  I   am   looking-for

        a.   *#el libro que escribió la maestra.*   [(O)**VS**]
             the book that   wrote   the teacher
        b.   *el   libro   que la   maestra escribió.*   [(O) **SV**]
             the book   that the teacher wrote

Lastly, at least some speakers reject relatives with preverbal subjects when the subject is indefinite and non-specific, as shown in (12).

(12)   a.   *Podemos presentar una   carta* [*que redacte una estudiante*].
             we-can   present   a   letter that can-write a   student
             "We can present a letter that a student can write."
    b.   ??*Podemos presentar una   carta* [*que   una estudiante redacte*].
             we-can   present a   letter that   a student can- write

The evidence thus indicates that the unmarked subject position in the relatives under consideration is the post-verbal position, which rules out an analysis where this position results from narrow focalization of the subject.

2.   *Prominence, prosodic weight and word order*

2.1   *Prosodic structure*

The proposal I develop to account for these word order facts is that the VS order of relatives results from intonational considerations, although not those that are relevant for focus. The assumptions that I adopt about prosodic structure and its relation to syntactic structure are the following. I assume that, intonationally, clauses correspond to Intonational Phrases (iPs), which are composed in turn of Phonological Phrases (PhonPs), as in Nespor & Vogel (1986) and Selkirk (1984). This is schematized in (13).

(13)   (iP   )
                 (Phon-P)(Phon-P)(Phon-P)
                 [Clause   ].

I also assume the analysis in Nespor & Vogel (1986) where it is observed that relative clauses in Spanish form their own intonational phrases. This is schematized in (14), from Nespor & Vogel (1986: 213).

(14)   (iP   )   (iP   )
            Ése es el escorpión   que espantó al tucán
            that is the scorpion   that scared the toucan
            (iP   )   (iP   )
            que espantó al faisán que se paseaba   en el jardín.
            that scared the pheasant that was taking a walk in the garden

I further assume that PhonPs are typically aligned with some syntactic constituent (Truckenbrodt 1999). Following Büring & Gutiérrez-Bravo (2001), I assume that in Spanish, the constituents that PhonPs align themselves with are stressed lexical heads (plus any unstressed elements, typically clitics, that precede or follow the lexical head). This is schematized in (15).

(15)   (iP   )
            (Phon-P)(Phon-P) (Phon-P   )
            Ése   es   el escorpión
            that   is   the scorpion

I also assume that each prosodic category has a head (see Truckenbrodt 1999). Specifically, the head of the iP is the PhonP that is intonationally the most prominent (i.e. the PhonP that bears the nuclear accent, represented as **X** in what follows):

(16)   (iP   **X**)
            (x)(x   ) (**X**)
            Ése   es   el escorpión

Finally, I also adopt the standard assumption that the nuclear accent in Spanish is always clause-final (Contreras 1976, Zubizarreta 1998). In other words, in Spanish the schema in (16), where the head of the iP is the rightmost PhonP of the iP, is the only possible representation.

2.2   *Prosodic weight and intonational prominence*

The intonational analysis I propose stems form the well-known fact that at the word level, heavy syllables attract lexical stress, as expressed by the Weight-to-Stress Principle of Prince (1990). This principle establishes a relation between the size/weight of a category and its prosodic prominence. The weight-prominence correlation is most dramatically observed in languages with unbounded stress systems. In these languages, stress falls on a heavy syllable (as long as there is one) independently of the position of this syllable in the word (see Prince 1990, Hayes 1995, *inter alia*).

(17)   Weight-to-Stress Principle (WSP)
            If heavy, then stressed.

My proposal is that a similar principle operates at the level of sentence prosody, and that not all phonological phrases are equal. Just like there are light and heavy syllables, I propose that there are heavy and light phonological phrases. As in the lexical level, the unmarked prosodic representations are those where the head of the iP is a heavy PhonP. The WSP can be extended to the prosodic levels beyond the word level by the constraint in (18):

(18)   WEIGHT-TO-PROMINENCE (W-TO-P)
            The head of a prosodic category α
            is a heavy prosodic category β.

Following the well-known observation that prosodic constituents aligned with lexical XPs tend to attract stress, I propose that heavy PhonPs (henceforth in double boldface brackets) are those whose edges are aligned with the edges of a lexical XP (cf. Truckenbrodt 1999), whereas light PhonPs are PhonPs that do not meet this condition. Observe how this relates to the Spanish facts previously discussed. Since in Spanish the nuclear accent must fall on the rightmost PhonP of the iP, when the PhonPs under consideration correspond to the subject (a heavy PhonP) and the verb in T (a light PhonP), the only way to satisfy W-TO-P is to resort to the non-canonical word order VS, as in (19b), where the subject remains in its VP-internal position and the PhonP aligned with it becomes the head of the iP.[6]

(19)   a. $(_{iP}$ **X**)
              $((_{PhonP}$ X $))(_{PhonP}$ **X**)
              $[_{TP}[_{NP}$ S   ]   V $[_{VP}$ t t]
        b. $(_{iP}$ **X**)
              $(_{PhonP}$ X   ) $((_{PhonP}$ **X**))
              $[_{TP}$ V $[_{VP}[_{NP}$ S] t]]

Spanish can thus be characterized as a language that prioritizes intonational considerations over canonical subject position. This is not surprising, since it is well-known that a similar state of affairs is observed in cases of narrow focus on the subject like (7b) (see Büring & Gutiérrez-Bravo 2001).

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[6] In all cases considered here, the relative clauses are sentence-final. This means that the iP that corresponds to these relative clauses is the last iP of the larger prosodic unit that corresponds to the whole sentence in each example (the Phonological Utterance; see Nespor & Vogel 1986). Accordingly, the rightmost accent of the relative clauses is also the nuclear accent of the sentence, and henceforth I refer to it as such. Observe, however, that the analysis is not dependent on relative clauses being sentence-final (my own intuitions are that the word order facts are the same when relative clauses are not sentence-final). The constraint in (18) does not make reference to the nuclear accent of the sentence: rather, it simply requires that the head of every iP be a heavy prosodic category, irrespective of the position of iP in a larger prosodic/syntactic structure. When the relative clause is not sentence-final, the rightmost accent of the iP that corresponds to it is not the nuclear accent of the sentence, but (18) still requires that this accent fall on a heavy phonological phrase.

3.　*An OT analysis*

Optimality Theory (Prince & Smolensky 2004) is an ideal framework for the analysis of conflicts between different grammatical requirements, and so the conflict described above between syntactic and intonational requirements receives a straightforward account in this theory. In OT, the requirement that the subject occupy [Spec, T] can be expressed by a violable EPP constraint.

(20)　　　　　　　EPP (Grimshaw 1997, Gutiérrez-Bravo 2002)
　　　　　　　　　The specifier of the highest I-related head must be filled.

In an OT analysis, the fact that Spanish prioritizes prosodic weight requirements over syntactic requirements follows from the ranking W-TO-P » EPP. As shown in Tableau 1, the SV candidate (a) satisfies the EPP constraint, since the subject occupies [Spec, T]. However, by doing so it incurs in a fatal violation of W-TO-P, because the light PhonP that corresponds to the verb in T^0 (cf. 19) is clause-final and hence it becomes the head of the iP. The winning candidate is instead the inversion candidate (b), which violates EPP but satisfies W-TO-P by virtue of its VS order: the heavy PhonP aligned with the subject is clause-final and so the head of the iP is a heavy prosodic category.[7]

	W-TO-P	EPP
a.　(iP　　　　　　　　　　**x**　) 　　(x)　((　x))(　**x**　) El libro [que [TP la maestra　escribió]].　**SV**	*!	
☞ b.　(iP　　　　　　　　**x**　) 　　(x)　　　(x)　((　**x**　)) El libro [que [TP __ escribió la maestra]].　**VS**		*

Tableau 1: *Unmarked word order of relative clauses*[8]

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[7] A reviewer asks if it would be possible to extend this analysis to cases of inversion in Spanish that have previously been analyzed as resulting from focussing, thus analyzing them without making reference to focus (as in Marandin 2001). It seems to me that such an extension of my analysis would be undesirable given the evidence that inversion is indeed linked to focus in a number of cases in Spanish. The clearest cases are VOS clauses like (i), which are well-known to be compatible only with a narrow-focus reading of the subject, and inverted subjects with a preverbal focus operator like (ii). Contrary to what might be expected from the scope of the focus operator, these cases again can only have a reading where the subject is a narrow focus, and a predicate+subject focus reading is not available (see Samek-Lodovici 1996).

(i)　*Ayer　　compró　el periódico　Pedro*.
　　yesterday bought　the newspaper　Pedro
　　"Yesterday, PEDRO bought the newspaper."
(ii)　*Sólo lo compró　Pedro*.
　　only it bought　Pedro
　　"Only PEDRO bought it."

[8] For simplicity, in the analysis I only consider relatives introduced by the complementizer *que*, since Garro & Parker (1983) observe that the intonational pattern of relative clauses introduced by *que* and those introduced by a relative operator like *al que* "whom" is the same.

Observe that the SVO order of matrix transitive clauses follows from this analysis. As shown in (21), the nuclear accent falls on the heavy PhonP that corresponds to the direct object. W-TO-P is thus independently satisfied and the canonical order of the subject need not be affected. The SVO order satisfies both EPP and W-TO-P, hence it is optimal with respect to these two constraints when compared with any alternative order, as I leave it for the reader to verify.

(21)   (iP   **X**)
              ((x)) (x)((**X**   ))
              [TP *la maestra   escribió* [NP *el libro*]].   **SVO**
                    the teacher   wrote   the book

Recall now that subjects in relative clauses can occupy the preverbal position when the subject of the relative is a sentence topic, as in (11b). In these cases the syntactically optimal structure is attested. My suggestion is that this results not from the requirements of EPP, but rather from the requirement that sentence topics occupy a clause-initial position, a requirement formulated in the TOPICFIRST constraint (see Gutiérrez-Bravo 2002 for a formalization).

(22)   TOPICFIRST (Costa 2001)
              Topics are sentence-initial.

Following Zubizarreta (1998) and Gutiérrez-Bravo (2002), where evidence is presented that topics (whether subjects or otherwise) in Spanish matrix clauses have [Spec, T] as their landing site, I assume that preverbal subject topics in relatives also move into this position to satisfy TOPICFIRST.[9] Since this results in the SV order ruled out in Tableau 1, this indicates that the requirement that topics occupy a clause-initial position in turn overrides the prosodic requirement that the head of an iP must be a heavy PhonP. The desired result is obtained with a ranking where TOPICFIRST dominates W-TO-P, as in Tableau 2 below, which equally accounts for example (4b).

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[9] Topics in relative clauses arguably do not occupy the absolute clause-initial position, as can be seen most clearly in examples (4b), (10a) and (10b), where a relative operator occupies the clause-initial [Spec, C] position. My interpretation of this fact is that it is due to the nature of relative clauses as islands for extraction. TOPICFIRST requires topics to be clause-initial, but movement of the topic beyond the relative operator would result in a violation of the relative island constraint. Accordingly, [Spec, T] is the leftmost position that a topic can occupy without violating this island constraint.

		TOPICFIRST	W-TO-P	EPP
☞ a. (iP **x**) (x)((x)) (**x**) El libro [que [la maestra]$_{TOP}$ escribió]. **SV**			*	
b. (iP **x**) (x)(x) ((**x**)) El libro [que escribió [la maestra]$_{TOP}$]. **VS**		*!		*

Tableau 2: *Topicalized subjects in relative clauses*

4.   *Extensions of the Analysis*

In this final section I consider a number of extensions and predictions that result from the analysis developed so far. First, consider the unmarked position of the subject in relative clauses with two complements, where the direct object is again relativized. An important property of these relative clauses that is not addressed in previous literature is that for these relatives speakers have clear intuitions that the unmarked position of the subject is not the post-verbal position, but rather the canonical preverbal position. This is shown by the felicity contrast between (23a) and (23b) in a sentence focus context. In this respect, relatives with two complements are no different from matrix transitive clauses like those in (9).

(23)   *Qué pasó?*
            what happened?
      a.   *#Estoy   leyendo la carta* [*que le   mandó la maestra a Pedro*]
             I-am   reading the letter that DAT-CL sent   the teacher to Pedro
      b.   *Estoy leyendo la carta* [*que la maestra le   mandó a Pedro*]
            I-am reading the letter that the teacher DAT-CL sent   to Pedro
            "I'm reading the letter that the teacher sent to Pedro."

The OT analysis developed here correctly predicts that this should be so: just as in the case of matrix transitive clauses (21), in relative clauses with two complements there is no conflict between W-TO-P and EPP. The analysis of (23) is presented in Tableau 3.

		W-TO-P	EPP
☞ a. (iP **x**) (x) ((x)) (x)((**x**)) La carta [que [$_{TP}$ la maestra le-mandó a Pedro]]. **S-V-IO**			
b. (iP **x**) (x) (x) ((x)) ((**x**)) El libro [que [$_{TP}$ __ le-mandó la maestra a Pedro]]. **V-S-IO**			*!

Tableau 3: *Relative clauses with two complements*

As can be seen in this tableau, candidate (a), which corresponds to (23b), satisfies both EPP and W-TO-P, because the subject occupies the Spec-TP position and the nuclear accent falls on the heavy PhonP that corresponds to the indirect object: with respect to the two constraints under consideration, it is optimal both syntactically and intonationally. In contrast, candidate (b) gratuitously violates

EPP. It leaves [Spec, T] empty and this does not improve the intonational structure of the relative clause in any respect, since the head of the iP is already the heavy PhonP aligned with the indirect object. Consequently, candidate (b)'s violation of EPP proves fatal and the S-V-IO candidate (a) emerges as the winner.

Another prediction made by this analysis is that, all else being equal, verb-final constructions in Spanish should be marked when compared with constructions where a full XP is clause final. Clearly enough, intransitive verbs, both in matrix and subordinate clauses, constitute an obvious testing ground for this prediction. A number of independent factors make this prediction difficult to test, but to the extent that these factors can be neutralized or isolated, the data from intransitive verbs does provide further support for the analysis developed here.

Consider unaccusative verbs first. It is widely acknowledged that the unmarked word order of clauses with unaccusative verbs in Spanish is VS and not SV (Contreras 1976, Gutiérrez-Bravo 2002, *inter alia*). This is shown in (24), where it can be seen that the SV order is infelicitous in a sentence-focus context.

(24)   *Qué pasó?*
           what happened?
    a.   *Llegó   tu   hermano.*   **VS**
           arrived   your   brother
           "Your brother arrived."
    b.   #*Tu   hermano   llegó.*   **SV**
           your   brother   arrived

On a first approximation, it would seem that this data corroborates the prediction made by my analysis. Unfortunately, both Contreras (1976) and Gutiérrez-Bravo (2002) provide evidence that constituents in Spanish with thematic roles that are low in the Thematic Hierarchy (such as *themes* or *patients*) occupy a post-verbal position in the unmarked case irrespective of their grammatical relation. Hence, these works show that unaccusative subjects in Spanish independently occupy the post-verbal position in the unmarked case because of their thematic role.

Consider now unergative verbs in matrix clauses. There is no agreement in the literature about the unmarked word order of these clauses in Spanish, and it is often noted that speakers have no clear intuitions about them. For instance, Zubizarreta (1998) reports, for speakers of Peninsular and Rioplatense Spanish, that both SV and VS orders are accepted as unmarked. The same results were observed with speakers of Mexican Spanish, as shown in (26). Consequently, these data do not allow us to test the prediction under consideration either.

(25)   a.   *Qué pasó?*
              what happened?
        b.   *Juan* (se)   rió /   (Se)   rió   Juan.
              Juan   CL   *laughed* CL   *laughed   Juan*   (Zubizarreta 1998)

(26)   *Qué pasó?*
            what happened?
     a.   *Bailaron   los estudiantes.*   **VS**
            danced   the students
     b.   *Los estudiantes bailaron.*   **SV**
            the students   danced

      However, it is possible that the SV order in (25) and (26) results from the subject being interpreted as a sentence topic, since the subjects in both cases are highly individuated nominal expressions (proper names and definite NPs, respectively). Observe that when the subject is indefinite, some speakers show a slight preference for the VS order.

(27)   *Qué pasó?*
            what happened?
     a.   *Bailaron   unos estudiantes.*   **VS**
            danced   some students
     b.   (#) *Unos   estudiantes bailaron.*   **SV**
                 some   students   danced

      Although in matrix clauses this preference is very slight indeed, a clearer picture emerges in subordinate clauses with unergative verbs. In CP complements with unergative verbs there is a slight preference for the VS order when the subject is definite and a clear preference for this order when the subject is indefinite.[10]

(28)   *Qué pasó?*
            what happened?
     a.   *Quiero* [*que naden los niños*].   **VS**
            I-want   that swim the children
            "I'd like that the children swim."
     b.   (#)*Quiero* [*que los   niños   naden*]. **SV**
               I-want   that the   children swim

---

[10] In example (29) the verb of the complement CP is in the subjunctive. This is important to achieve these results, since this contrast does not hold in complement clauses in indicative mood. The elicitation was set up in this way to prevent the indefinite subjects from being interpreted as [+specific], given the well-known observation that subjunctive contexts tend to block the [+specific] interpretation of indefinites (observe that this is not an absolute restriction: indefinites in both complement and relative clauses in the subjunctive can be interpreted as [+specific] under the right discourse conditions). This variable was controlled for under the assumption that the [+specific] feature would be enough for an NP to qualify as a topic in Spanish, even when indefinite. Observe that if this interpretation of the role of specificity is correct, it provides a potential explanation for the SV/VS alternation in (27), where a subjunctive verb is not possible. The SV order would correspond to a [+specific] indefinite subject that qualifies as a topic, whereas the VS order would correspond to a [-specific] subject that does not. The absence of the SV/VS alternation in (28) and (30) would in turn follow from the observation that the discourse factors motivating topicalization are weak in certain kinds of subordinate clauses (see Belletti & Rizzi 1988), even if the relevant NPs are definite. Developing this solution in detail, however, must be left for future research.

(29)   *Qué pasó?*
              what happened?
      a.   *Quiero* [*que   bailen   unos   estudiantes*].   **VS**
              I-want   that   dance   some   students
              "I'd like that some students dance."
      b.   #*Quiero* [*que unos   estudiantes   bailen*].   **SV**
                 I-want that some   students   dance

        Finally, relative clauses with unergative verbs behave fully as predicted by my analysis. In this case, there is a clear preference for the VS order even when the subject is definite, as shown in (30).

(30)   *Qué pasó?*
              what happened?
      a.   *Estoy   buscando   la sala [en la   que   cantan   los estudiantes].*
              I-am   looking-for the room in the which sing   the   students
              "I'm looking for the room where the students sing."
      b.   #*Estoy   buscando   la sala [en la   que   los estudiantes cantan].*
              I-am   looking-for the room in the which the students   sing

        Summing up these results, although the word order facts of unaccusative clauses and of unergative matrix clauses are such that they cannot be used to test the analysis developed in this paper, the word order of complement and relative clauses with unergative verbs is mostly consistent with the predictions made by the analysis. Clearly, there appears to be some other factor at play in matrix clauses that results in both the VS and the SV order being accepted as unmarked when the verb is unergative. Alternatively, it may ultimately be that inversion (or its absence) in matrix unergative clauses is a phenomenon unrelated to the one addressed in this paper. Given the large number of different kinds of subject inversion attested in French (Kampers-Manhe *et al.* 2004) and given the sensitivity of these different kinds of inversion to matrix vs. subordinate contexts, this would hardly be a surprising result. Settling this issue, though, goes beyond the scope of this paper and so I leave this question open for future research.

5.   *Conclusions*
        In this paper I have proposed an analysis where the VS order of relative clauses in Spanish is the result of intonational considerations related to the relative prosodic weight of different intonational constituents. Specifically, I proposed that just as there exists a distinction between heavy and light syllables, at the level of sentence prosody there exists a distinction between heavy and light Phonological Phrases. I then proposed that the prominence-prosodic weight correlation at the level of sentence prosody is regulated by the WEIGHT-TO-PROMINENCE constraint, an extension of the Weight-to-Stress Principle of Prince (1990). From this I concluded that the VS inversion order results from the requirement that the head of the Intonational Phrase be a heavy Phonological Phrase. An OT analysis was developed that explains why this prosodic requirement has priority over the

syntactic requirement that the subject occupy its canonical position. The analysis also explains why the unmarked word order of relative clauses is subject-initial in relative clauses with two complements. In these cases there is another heavy Phonological Phrase, the one that corresponds to the indirect object of the verb, that occupies the clause final position and so W-TO-P is independently satisfied. Lastly, it was argued that this prosodic requirement can in turn be overridden by the requirement that topics occupy a clause-initial position, which derives the SV order that is observed when the subject of the relative clause is a sentence topic.

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ATTRITION AND INTERPRETABLE FEATURES[*]

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1.   *Introduction*

This experimental study investigates attrition in native Catalan influenced by near-native English. Attrition is the non-pathological loss of structural aspects of a first language under the influence of a second language. Therefore, attrition constitutes a context of languages in contact which may have the specific effect of leading to individual language loss. The status of near-native English is measured by means of the criteria established in White & Genesee (1996).

The theoretical issue addressed is the relationship between attrition and interpretable features (Chomsky 1995). According to Tsimpli et al (2003), attrition affects the grammatical options provided by different parametric settings between languages rather than the parameters themselves. The hypothesis underlying the claim is that syntactic attrition may affect interpretable features at the syntax – discourse interface, which would entail more ambiguity in interpretation since conflicting options for the native and near-native language would be available at the interface. In contrast, uninterpretable features are inaccessible and thus attrition will not affect the structural aspects that they regulate. The purpose of this article is to establish whether interpretable features as a class are subject to the effects of attrition or if, rather, a more fine-grained approach is necessary to determine which specific interpretable features are subject to attrition effects and under which conditions. Toward this purpose, two categories of interpretable features are studied: those related to the null subject parameter, following Tsimpli et al's (2003) methodology, and the feature of number.

For interpretable features related to the null subject parameter the relevant data are as follows. In languages such as Catalan, a positive setting for the null subject parameter provides the possibility of null or overt subjects and preverbal or post-VP subjects. In English null and post-VP subjects are ungrammatical (Rizzi 1982, 1986). The examples in (1) and (2) show these contrasts:

(1)   a.   *Ha marxat.*
                Has gone
                "He/she left"
        b.   **(He/she) left.*

(2)   a.   *Ha marxat el Joan.*
                Has-gone the John
                "John left."
        b.   *Left John.

The fact that a given language allows both null and overt subjects and preverbal and post-VP subjects is a result of a positive setting of the null subject parameter in which uninterpretable features play a role. Whether or not in a specific context a specific syntactic subject is phonetically realized or not or appears preverbally or post-VP is in large part determined by pragmatic factors and thus a result of interpretable features.

Given that number also constitutes an interpretable feature, a second context in which attrition effects may be found is that of the plural feature. A contrast occurs with respect to the context and lexical categories which require the feature in the native and near-native languages. In the near-native language the interpretable feature is restricted to appearing on nouns, whereas in the native language the feature is crucial to the derivation of other nominally related structures. Determiner-noun-adjective agreement configurations constitute such a context:

(3)   a.   *Les gates negres estan a la cuina.*
                The-*fem-pl* cats-*fem-pl* black-*fem-pl* are in the kitchen.
        b.   *Els gats atigrats estan dormint.*
                The-*mas-pl* cats-*mas-pl* tiger-stripe-*mas-pl* are sleeping.

Furthermore, different classes of Catalan pronouns and passive participles also require the plural feature. Thus, under the influence of the reduced plural paradigms in the near-native language, attrition effects related to the interpretable feature of plural may appear.

The paper is organized as follows. In section 2 the relationship between interpretable features and syntactic attrition is outlined. In section 3 syntactic subjects are treated and in section 4 the interpretable feature of number is examined. Section 5 contains results and discussion.

2.   *Interpretability of features and syntactic attrition*

The Minimalist Program holds that the language faculty consists of two components: the cognitive system, composed of a computational system and a lexicon, and the performance system (Chomsky 1995). The cognitive system stores information to be made available for interpretation to the articulatory-perceptual and conceptual-intentional external interfaces of the performance

systems. The cognitive and performance systems are able to interact by means of two levels of linguistic representation, the level of Phonological Form at the articulatory-perceptual interface and the level of Logical Form at the conceptual-intentional interface. The cognitive system is thus a mechanism that generates derivations constructed according to universal principles and local conditions on economy which at the two interface levels provide specific instructions for the conceptual-intentional and articulatory-perceptual systems, respectively.

The two components of the cognitive system are the computational system and the lexicon. The computational system selects lexical items from the lexicon and generates structures. The principles of Universal Grammar and language specific principles of phonology and morphology are excluded from the lexicon and thus the lexicon is the component of the grammar in which parametric options reside. Items stored in the lexicon are conceived of as consisting of collections of phonological, semantic and formal, or grammatical, features. Within the category of formal features the class distinction of features as interpretable or uninterpretable is an important one. Underlying the distinction is the concept that there are certain formal features which are semantically interpretable, that is, interpretable features, and others, uninterpretable features, which are not semantically interpretable. Interpretable features need to be recognizable for the operations which interpret derivations at the Logical Form interface. Examples of some interpretable features are categorical features, such as [N] for noun, and nominal φ-features. The operations which interpret derivations at the Logical Form interface are able to read such features. In contrast, these operations cannot read uninterpretable features. Some examples of uninterpretable features are abstract φ-features of verbs or formal features of nouns, such as case.

The consequences of the interpretable – uninterpretable opposition are as follows. Interpretable formal features are legitimate objects at the Logical Form interface, but uninterpretable features are not and therefore must be eliminated before that level of representation. A derivation converges at Logical Form, that is, it has the status of grammatical when these conditions are met. Derivations must also satisfy the principle of Full Interpretation. The principle of Full Interpretation is satisfied if at the Logical Form representation only interpretable features remain. A derivation is said to crash, that is, have the status of ungrammatical, if it contains any uninterpretable features at the level of Logical Form. Checking is the mechanism by which uninterpretable features are eliminated, thereby, by which the principle of Full Interpretation is satisfied. For example, the case features of the lexical category verb and the functional category tense are uninterpretable and must be checked. If not, the resulting derivation will be uninterpretable and the principle of Full Interpretation will be violated.

Checking operations eliminate uninterpretable features but in principle do not affect the presence of interpretable features. Checking theory places an unchecked feature in a checking relation with a matching feature. Checking configurations are established whenever an unchecked feature enters into a Spec-

head or Head-head relation, that is, a checking domain, with a corresponding matching feature. Such relations are established by means of the operations Merge or Move, structure building operations which respectively build up lexical and functional categories in binary forms and target a merged category to make it available to the functional structure by raising it within the checking domain of a given functional category, by substitution or by adjunction. Checked uninterpretable features are eliminated by this operation but checked interpretable features are not because they must remain so that the derivation can be interpreted.

In the case of syntactic subjects in languages set positively for the null subject parameter, the positive value of the parameter provides the syntactic possibilities of null and post-VP subjects. In contrast, the distribution and interpretation of null or overt and preverbal or post-VP subjects are largely determined by the interpretable features assigned to the syntactic options already available. Thus, cross-linguistic syntactic variation is a consequence of the parameter setting, but the interpretable features topic, focus and definiteness mediate the distribution and interpretation of these grammatical options. Based on these facts, Sorace (2000) proposes that syntactic attrition should affect interpretable morpho-syntactic features at the Logical Form interface but not uninterpretable features. In other words, syntactic attrition should occur in the domain of interpretable features causing these features to become unspecified and thus originating optionality.

If it is true that interpretable features pattern as a class, then it may also be true that all interpretable features may undergo attrition effects because they will be unspecified and thus lead to optionality. For example, the feature [± plural] is an optional interpretable feature of nouns and therefore need not be eliminated at Logical Form. Such features therefore remain visible at Logical Form even after they are checked. The properties of visibility at Logical Form and accessibility to the computational system have a specific relation. The relation is that features visible at Logical Form are accessible to the computation throughout, whether checked or not, whereas features invisible at Logical Form are inaccessible to the computational system once checked. Thus, the only kind of feature possibly subject to attrition must be an interpretable one, such as [± plural].

2.1   *Subjects*

Two groups of subjects participated in this study: one experimental group of Catalan near-native speakers of English (n=10), of which four were male and six were female of ages ranging from thirty-four to fifty-two years old, and one group of Catalan controls (n=10), of which five were male and five were female of ages ranging from forty-three to fifty-six years old. Both groups are residents in Catalonia. The control subjects have minimum or no knowledge of English. In this context it should be noted that in Catalonia and Spain exposure to English in terms of media such as television is perhaps more limited than in some other

European countries. Television programs or movies are not usually projected in English and on the occasions that they are the choice of original language is individual and subtitles are not provided. The experimental subjects use both the L1 and L2 in daily contexts and their level of English L2 is near-native according to White & Genesee's (1996) criteria.

2.2 *White & Genesee's Criteria*

In White & Genesee (1996) criteria were developed to establish whether a speaker has achieved native-like proficiency in L2 English. The theoretical objective of the authors' approach is to test the critical period hypothesis for language acquisition which is thought to limit the ultimate level of competence attainable by older L2 learners. The version of the hypothesis that is tested is the debate on whether adult learners can achieve native-like competence on properties of grammar that are assumed to stem from principles of Universal Grammar. The specific hypothesis formulated is that adult L2 learners can achieve native-like linguistic competence. The areas of knowledge investigated in L2 adult learners of English are Subjacency and the ECP.

In this study a version of White & Genesee's (1996) grammaticality judgment task was administered. Subjects were asked to judge English sentences as grammatical or ungrammatical as quickly as possible. The task included a total of 40 sentences relevant to Subjacency, half grammatical and half ungrammatical.[1] Just as in the original test, the purpose of the grammatical sentences was to establish whether subjects were able to detect grammaticality and whether they knew that wh-movement is permissible out of embedded clauses and noun phrases in English. The purpose of the ungrammatical sentences was to test for knowledge of restrictions on wh-movement in English. The examples in (4) show respectively a grammatical example from the test used and an ungrammatical example:

(4)   a.   *What does Mary believe that John stole*?
       b.   **What does Mary believe the claim that John stole*?

The purpose of the present study was to investigate whether or not the native-like competence in English of the experimental group affected the use of the native language, Catalan. It was therefore important to establish the native-like competence in English of the experimental subjects. In contrast, the control subjects had little or no knowledge of English. Therefore, it was not necessary for them to take this test. The experimental subjects scored between 38 and 40 out of 40 on the grammaticality judgment test, thereby establishing their near-native knowledge of English as very proficient L2 users of the language.

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[1] White & Genesee (1996) investigate sentences relevant to Subjacency and the ECP and find that the results on that-trace effects lack the degree of consistency of Subjacency effects. Therefore, in this study only Subjacency effects were considered.

3.   *Syntactic subjects*

Following Tsimpli et al's (2003) methodological design, the interpretable – uninterpretable feature distinction characteristic of syntactic subjects in data from the experimental group and the control group is examined. The positive setting of the null subject parameter in Catalan allows null and post-VP subjects in finite clauses, whereas English, set negatively for the parameter, does not (Rizzi 1982, 1986). The predictions for these data are as follows. First, there should be no attrition effects on the options of null or overt and preverbal or post-VP subjects in native Catalan. Second, attrition effects are expected in the distribution and interpretation of overt Catalan subjects due to their regulation by the interpretable features topic – shift and focus, the explanation being that the interpretable features on overt pronominal subjects should become unspecified so that syntactic subjects will then not necessarily be interpreted as shifted topics or foci. Finally, there should be a higher occurrence of preverbal subjects in the Catalan of the experimental group due to the influence of the negative setting of the null subject parameter in English, which entails preverbal subjects.

As mentioned above, the syntactic options provided by a positive setting for the null subject parameter are null and post-VP subjects, both ungrammatical in English given its negative setting for the parameter:

(5)   a.   *Ha marxat*.
                Has-3s gone
                "He/she left"
        b.   *(He/she) left.

(6)   a.   *Ha marxat el Joan.*
                Has-gone the John
                "John left."
        b.   *Left John.

The pragmatic options follow from the syntactic options. First, the null option is the default (unmarked) option and an overt pronoun is the marked option (Montalbetti 1984), facts which bring about two specific effects. The first effect is that an overt subject pronoun is used for topicalization or focusing of the subject. The examples in (7) illustrate these possibilities:

(7)   a.   Context: Both John and Mary have bought this new book.
                (Ell) l'hi va recomanar.
                He it-to her PAST recommend
                "He recommended it to her." (*He* is the contrastive topic.)
        b.   Context: I don't know if John and Mary will come to the party.
                (Ella) vindrà.
                She come-fut-3sg
                "She will come." (*She* is focused.)

The second effect is to create a shift of topic in the unmarked choice of the antecedent for the subject pronoun:

(8)   a.   *El Jaume va insultar el Pere quan el va trobar.*
                 The Jaume PAST insult the Pere when *pro* him PAST meet.
                 "Jaume insulted Pere when he met him."
         b.   *El Jaume va saludar el Pere quan ELL el va trobar.*
                 The Jaume PAST greet the Pere when HE him PAST meet.
                 "Jaume saw Pere when HE approached him."

In (8a) there is a non-shifted topic interpretation for the null embedded subject, whereas in (8b) there is a shifted topic interpretation.[2]

There are three specific pragmatic effects of post-VP non-right dislocated subjects in Catalan (Bonet 1990). First, post-VP subjects appear after all the subcategorized complements. Second, the subject necessarily receives contrastive focus. Third, post-VP subjects appear only with stage-level predicates[3] (Diesing 1990). These three effects are exemplified in (9):

(9)   *Ha ficat les sabates a l'armari l'Oriol.*
                 Has put the shoes in the closet the Oriol
                 "Oriol has put the shoes in the closet."

Furthermore, a post-VP subject may also receive the interpretation of new topic because in answer to the question in (10) everything except the subject is presupposed:

(10)   *Qui ha ficat les sabates a l'armari?*
                 Who has put the shoes in the closet
                 "Who put the shoes in the closet?"

In unaccusative structures the implications are similar. A definite or indefinite post-VP subject is interpreted as new information. The contrastive focus reading, however, does not hold without a special intonation pattern, in contrast to those of post-VP subjects of transitive and unergative structures, which allow the contrastive focus reading without requiring a special intonation pattern. The post-VP noun phrases in (11a) and (11b) are interpreted as new information, whereas the preverbal nouns phrases in (12a) and (12b) are ambiguous between old and new information:

(11)   a.   *Ha vingut un amic meu.*
                 Has come a friend mine
                 "A friend of mine has come."

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[2] Not all speakers seem to consider these pragmatic effects to be absolute.
[3] Following Diesing (1991) a stage-level predicate is one which involves an event or a spatio-temporal location lacked by individual level predicates.

b.   *Ha arribat la Maria.*
        Has arrived the Maria
        "Maria arrived."

(12)   a.   *Un amic meu va arribar de Vilafranca.*
                a friend mine Past-3rd p sing arrive from Vilafranca
                "A friend of mine arrived from Vilafranca."
        b.   *La Maria ha arribat a temps.*
                the Maria has arrived on time
                "Maria arrived on time."

One-place predicates such as work (*treballar*) include an additional locative argument which must be overt in Catalan, although the locative argument may occupy the preverbal position.[4] The subject NP, *el Joan*, thus appears in post-VP position as in (13a) and the example shows that the locative form is an argument and thus fulfills the requirement of an EPP feature (Chomsky 1995). In (13a) *el Joan* constitutes new information and can also receive contrastive focus and the interpretation is stage-level. In contrast, in (13b) *el Joan* may constitute old or new information:

(13)   a.   *Aquí treballa el Joan.*
                Here works the Joan-nom
                "Joan is working here."
        b.   *El Joan treballa aquí.*
                the Joan works here
                "Joan works here."

In contrast, verbs such as *riure* (laugh) are one place predicates and therefore the NP subject argument appears in post-VP position as in (14a), with the interpretation as new information or contrastive focus. The preverbal subject is again ambiguous between old and new information.[5]

(14)   a.   *Al final de la pel·lícula va riure el Joan.*
                PAST-3s laugh the Joan
                "Joan laughed."
        b.   *El Joan va riure al final de la pel·lícula.*
                the Joan PAST-3s laugh
                "Joan laughed."

The difference between *laugh* and *work* type predicates, that is, whether or not a locative argument is required, is not language specific, and therefore should also appear in English. The difference is that the possibility of a post-VP subject is mediated by the setting of the null subject parameter. The result is that if both

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[4] The locative argument can occupy the subject position and thus satisfy the requirement for a subject in the preverbal position (Chomsky 1995).
[5] If an optional adverbial is added, it seems to require right dislocation and thus a pause is required if it appears clause finally.

preverbal and post-VP subjects are possible due to a positive setting of the null subject parameter, then definiteness distinctions can impose interpretative differences on preverbal and post-VP subjects.

Post-VP indefinite (and definite) subjects are interpreted as new information or with contrastive focus, as in example (15a). In contrast, preverbal indefinite (and definite) subjects are interpreted as ambiguous, as either old or new information, as illustrated in the example in (15b). A final interpretative distinction ensues from the interpretation of topics. Preverbal indefinite (or definite) subjects are interpreted as topic, that is, old information:

(15)   Context :*La veïna de la tercera planta va tenir bessons*.
             "The neighbor on the third floor had twins."
    a.   *Ahir nit plorava un bebè*.
             Last night was crying one baby (= *one of the twins*)
    b.   *Un bebè plorava ahir nit*.
             "A baby was crying last night." (= *one of the twins* or *some other baby*)

The null subject parameter provides this interpretative distinction by making the post-VP position a grammatical option for the subject.
Two tasks, a production task and an interpretation task, both reproduced based on the design in Tsimpli et al (2003), were carried out with Catalan subjects. The production task required the subjects to order the constituents of a sentence consisting of a verb, a noun phrase and an adverbial expression presented in scattered phrases and including a picture depicting the story meant to be described by the phrases. The cue was *Did you hear that …* (*Has sentit que …*). The grammatical subject alternated between definite and indefinite. The task's purpose was to test the use of preverbal and post-VP subjects in a focus context. Before proceeding with the task, each subject was shown a sample item and asked to carry out the instructions of determining the order of constituents to ensure comprehension of the instructions. On this task, the experimental group was predicted to use the post-VP option less than the control group given the prediction that attrition would cause an increased frequency of the preverbal option in their production data because of the influence of near-native English.

In the second task, an interpretation task, the subjects were provided a context with two sentences. The first sentence provided a possible set of referents and an event, and the second sentence included a singular indefinite subject in either preverbal or post-VP position. The purpose of the task was to identify a preference for the "old" or "new" referent interpretation or a lack of preference, for which preference of the latter would suggest ambiguity. Prior to carrying out the task, each subject was guided through a sample to ensure comprehension of the instructions.

4. *The interpretable feature of number*

   The feature plural is an interpretable feature which has an effect on the semantic interpretation of derivations as well as on the morphology of words. Furthermore, the feature has an effect on syntax in that if it appears on a subject noun, for example, it ensures that an agreement relation will hold between the subject and the inflected verb. The phenomenon holds in both the native and near-native language. The feature thus interacts with interface rules. The morphological interface rule relates the syntactic specification of plural to the form of stem with the plural affix, thus a morphological rule, and also to a semantic rule which allows the plural noun to be interpreted as such.

In both the native and near-native language, the form used to mark the feature of number is –s, so formal confusion between the two languages is ruled out. A contrast occurs, however, with respect to the context and lexical categories which require the feature in English and Catalan. In English, the interpretable feature is restricted to appearing on nouns, whereas the interpretable feature of number is crucial to the derivation of a number of other nominally related structures in Catalan. One example is constituted by determiner-noun-adjective agreement configurations:

(16)   a.   *Els gats negres estan a la cuina.*
             "The-masc-pl cats-mas-pl black-mas-pl are in the kitchen."
        b.   *Les gates atigrades estan dormint.*
             "The-fem-pl cats-fem-pl black-fem-pl are sleeping."

   Different classes of Catalan pronouns, such as clitics, also require overt marking:

(17)   a.   *Has vist els teus amics?*
             "Have seen (you) the your friends?"
        b.   *Sí, els he vist.*
             "Yes, they (I) have seen."

   As do adjectives or adjectival passive participles:

(18)   a.   *Els vestits per l'obra de teatre són grocs.*
             "The dresses for the play are yellow."
        b.   *La Guardia Urbana ens ha dit que aquests objectes van ser trobats al carrer.*
             "The city police us has told that those objects were found in the street."

   In other words, the contexts in which the plural feature is required are much more numerous and complex in the native than in the near-native language. The hypothesis then is that under the influence of the reduced plural paradigms in the near-native language, the interpretable feature of plural may be affected in the native language interpretation and production.

4.1   *Number*

Two tasks were used to elicit data on the plural feature, an interpretation task and a production task. The interpretation task was based on a set of pictures and the subjects were required to select the form which best suited the corresponding picture. The focus here was on plural forms which vary in the two languages:

(19)   a.   *un pijama*
                "pajamas"
        b.   *cérvols*
                "deer"

Before carrying out the task each subject was asked to complete a sample question under observation to ensure comprehension of the instructions. The subjects were asked to select the noun phrase which best depicted what they viewed in the corresponding picture. The purpose of this task was to determine whether or not the usage of the plural feature might be affected by a different usage in the near-native language. In the production task the subjects were required to supply (or not) a form in the various types of structures in which the plural feature is obligatory in Catalan but not in English.

The example in (20) contains a predicative adjective, *suficient*, which requires plural agreement with the noun *gots*, although there is a syntactic separation between the two elements:

(20)   *Pregunta-li si els gots que tenim seran suficient__ .*
                "Ask him if the glasses that we have will be enough."

In (21) there is likewise a syntactic separation between the elements that agree in terms of the plural feature:

(21)   *Els estrangers corren el perill de ser robat__.*
                "Foreigners run the risk of being robbed there."

The example in (22) requires plural agreement between an adjective and a noun:

(22)   *Aquest treball és la continuació del nostre primer comentari de*
                la Llei catalana 19/2002, de drets real__ de garantia.
                "This paper is the continuation of our first comment on the Catalan law of 19/2002, on real property rights."

The example in (23) requires plural agreement on the clitic *els*, anaphoric with the noun phrase *els seus quaderns*:

(23)   *Obria els seus quaderns i el__ contemplava llargament amb uns ulls grossos I foscos.*
        "(He) used to open his notebooks and contemplate them for long periods of time with big,
        dark eyes."

The objective of this task was to determine whether or not the plural system of the
near-native language affected the interpretable feature of the native language in a
variety of contexts.

5.   *Results and discussion*

Table 1 contains the descriptive statistics and the variables evaluated. The
first variable that appears is indicated as ± definite. The variable represents the
interpretation of definite and indefinite post-VP subjects and their interpretation
by the two groups of subjects as old or new information. The second variable,
post-VP, represents the tendency towards the choice of post-VP subject position.
Finally, the variable plural represents the comparative notion of interpretation and
production of this feature by both groups of the study.

Variable	Exper-cont	N	Mean	Std. Deviation
± definite	1.00	10	9.6000	1.34990
	2.00	10	11.5000	1.90029
Post-VP	1.00	10	2.5000	2.27303
	2.00	10	3.0000	2.00000
Plural	1.00	10	8.8000	.78881
	2.00	10	9.3000	.67495

Table 1: *Descriptive Statistics*

Table 2 contains the test statistics with respect to these variables.

	± definite	Post-VP	Plural
Mann-Whitney U	21.000	45 .500	32.000
Wilcoxon W	76.000	100.500	87.000
Z	-2.220	-.351	-1.460
Asymp. Sig. (2-tailed)	.026	.726	.144
Exact Sig. [2*(1-tailed Sig.)]	.029(a)	.739(a)	.190(a)

a Not corrected for ties.b Grouping Variable: EXPCONTR

Table 2: *Test Statistics*

Preliminary assumptions testing was conducted to check for normality
(Levene Test) with no serious violations noted, but since the number of subjects
was relatively reduced, non-parametric tests were chosen. For each of the
variables a Mann-Whitney test was performed to determine whether or not there
were any statistical differences between the control and experimental groups on
these variables.

A non-parametric Mann-Whitney was conducted to compare the results for the control group and the experimental group on the variable ± definite,. There was a significant difference in scores for control group (M= 9.60, SD=1.35), and experimental group [M=11.50, SD=1.90;, p=.026]. The purpose of the test was to determine whether or not the results of the experimental subjects showed evidence of unspecified features related to the interpretation of post-VP syntactic subjects in a context where the expected interpretation of a post-VP subject is as new information. The statistical significance of these results indicates that the control group, as expected, interprets post-VP indefinite subjects as new information. In contrast, the results of the experimental group show optionality with respect to this pragmatic choice.

A non-parametric Mann-Whitney test was conducted to compare the post-VP variable for the control group and the experimental group. There was no significant difference in scores for the control group (M= 2.50, SD=2.27) and the experimental group. [M=3.00, SD=2.00;, p=.726]. The results thus contrast with those expected. The experimental subjects were predicted to use the post-VP option less than the control group due to the fact that attrition should cause an increased frequency of the preverbal option in their production data influenced by near-native English. The explanation for lack of statistical significance may lie in the fact that there is a high variance among the subjects with respect to this variable. In general, the subjects have shown consistent behavior for all of the tests. According to the results of the Levene test there was a normal distribution which is also confirmed by examining the histograms. In contrast, however, it is worth noting that the SD of the post-VP variable (SD = 2.10) indicates the relatively high degree of variance among the subjects for this variable, taking into account that the mean score is of 2.75. Before concluding that the results do not support the original hypothesis that the experimental group would prefer preverbal subjects to post-VP subjects and corroborate those reported in Tsimpli et al (2003), it would be useful to examine the hypothesis with a wider sample of subjects. It can therefore not be concluded that the post-VP option is less preferable for the experimental subjects or the reverse for the control subjects.

Likewise, a non-parametric Mann-Whitney was conducted to compare the plural variable for the control group and the experimental group. There was no significant difference in scores for the control group (M= 8.80, SD=.79), and the experimental group [M=9.30, SD=.67; p=.144].   Thus, with respect to this variable the results are conclusive and it could be stated that the interpretable feature of plural appears not to be vulnerable to attrition effects at the interface.

In this study, the hypothesis, that not all interpretable features are subject to the effects of attrition at the interface, is confirmed in a general sense. The details of the results, however, require a more precise explanation. With respect to

the interpretable features related to the null subject parameter, the results are mixed. According to the patterns of statistics found, the features related to interpretation of post-VP subjects as new information clearly appear to be affected by attrition. In contrast, the patterns of statistics found do not fully support the conclusion that optionality in interpretable features leads to a tendency towards more preverbal subjects in the data of the experimental group. Thus, the interpretable features mediating the interpretation of preverbal and post-VP subjects do seem to give rise to optionality, whereas those mediating the distribution of preverbal – post-VP options seem not to. Finally, attrition effects regarding the plural feature have not been found. Future research may be in the form of a similar study with a greater number of subjects in order to clarify the statistical results reported here.

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ACCELERATION IN BILINGUAL FIRST LANGUAGE ACQUISITION

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1. *Language influence and language separation in bilingual acquisition*

During the past three decades, research on bilingual first language acquisition has been determined by two opposing views. According to the so-called *fusion* or *single system hypothesis*, bilingual children start out with one undifferentiated system of both languages. The most influential work representing this view was Volterra & Taeschner's (1978) three stage model. Accordingly, bilingual children initially have a shared syntax and a mixed lexicon containing words from both languages and lacking translation equivalents. In the subsequent stage, this system is extended to a language-differentiated lexicon, while the syntax is still rudimentary and the same for both languages. It is only in the third stage that children also have separate syntactic systems. The assumption of a single system has been very influential during the late 1970ies and during the 1980ies, though not all advocators have hypothesized the three stage model. Later, accruing evidence suggested that the single system hypothesis cannot be maintained. The three stage model has been criticized on methodological and theoretical grounds. At the same time, a large number of studies involving many different grammatical phenomena as well as language combinations have shown that bilingual children are capable of separating their two language systems in terms of both grammar and the lexicon (e.g. Genesee 1989, Genesee, Nicoladis & Paradis 1995, De Houwer 1990, Meisel 1986, 1989, Müller 1993, Quay 1995).

More recently, a third view on bilingual first language acquisition has been promulgated. Accordingly, language influence and language separation are not mutually exclusive but can be observed in one bilingual individual during the same developmental stage (e.g. Gawlitzek-Maiwaldt & Tracy 1996, Hulk 1997, Hulk & Müller 2000, Müller, Hulk & Jakubowicz 1999, Müller & Hulk 2001, Müller, Cantone, Kupisch & Schmitz 2002). This view presupposes a definition of

language influence with respect to the grammatical phenomenon to be acquired, rather than the language as a whole. For example, Müller et al. (2002) have shown that the German-Italian bilingual Carlotta separated her two languages with respect to gender marking on determiners. At the same time, she dropped objects to an amount typical of monolingual German children in her Italian, which is suggestive of language influence. Data from the same bilingual child indicated furthermore that influence may take different directions during the same developmental period: for phenomenon X, language A influences language B, while for phenomenon Y, language B has an impact on language A. As mentioned before, Carlotta's use of objects in Italian was influenced by her German, but with respect to verb-placement in main clauses her Italian affected her German.

Researchers have proposed that language influence is related to a temporary or long-term imbalance in language proficiency in the two languages of a bilingual child. Hulk & Müller (2000) explicitly argued against this view. The case of Carlotta provides two counterarguments. First, the child was fairly balanced, but nonetheless she showed influence. Second, influence operated in both directions. The authors define two predictions for what they call "cross-linguistic influence". It is supposed to occur

- at the interface between two modules of grammar, and more particularly at the interface between pragmatics and syntax in the so-called C-domain
- if language A has a syntactic construction which may seem to allow more than one syntactic analysis and, at the same time, language B contains evidence for one of these possible analyses (Hulk & Müller 2000:228,229)

Provided language influence occurs, it may appear in three different forms, which Paradis & Genesee (1996) describe as:

(i)   transfer: the incorporation of a grammatical property into one language from the other
(ii)   acceleration: a property emerges early in bilinguals as compared to monolinguals
(iii)   delay: a property emerges late in bilinguals as compared to monolinguals.

The present treatment will show language influence in the acquisition of determiners in the German of bilingual children whose second (first) language is either French or Italian. It will be argued that the simultaneous acquisition of the Romance language accelerates the acquisition process in German. The grammatical domain and the language combination meet the preconditions for language influence introduced above (see section 2.1.).

2.   *Nominal arguments and the NP/ DP distinction*

Today, most generative works on the noun phrase[1] presuppose that determiners are not hosted in the specifier of NP, as in (1), but head their own projections, as in (2). The idea that they represent DPs originates in the works of Szabolsci (1983) and Abney (1987) and is by now widely accepted.

(1)   [$_{NP}$ the [$_N$ cat]

(2)   [$_{DP}$ [$_D$ the [$_{NP}$ [$_N$ cat]]]]

The question of the internal structure of noun phrases is far from being settled though. A number of projections were proposed to intervene between NP and DP, e.g. number and gender (Valois 1991, Ritter 1992, Picallo 1991, Bernstein 1993). Moreover, it was argued that the left periphery of the DP, on a par with the clausal left periphery, should contain a topic and a focus projection (e.g. Ihsane & Puskás 2001, Aboh 2004). I will not be concerned with the internal structure of nominals here, but what I am saying is consistent with the existence of projections between NP and DP and beyond DP.

Another issue currently debated concerns the question of whether noun phrases constitute DPs uniformly. Traditionally, the NP/ DP contrast has been linked to the predicate/ argument distinction (e.g. Stowell 1989, Longobardi 1994). In a more recent work by Chomsky (2000), the NP/DP distinction has been explicitly related to the specific/ non-specific distinction (see also De Villiers & Roeper 1995, Pérez-Leroux & Roeper 1999, Schafer & De Villiers 2000, Roeper (to appear), for proposals along these lines).

> In MP it is speculated that categories lacking interpretable features should be disallowed […]. The argument carries over to other cases, among them semantically null determiners D_{null}. If true D relates to referentiality/specificity in some sense, then an indefinite nonspecific nominal phrase (*a lot of people, someone* that enters into scopal interactions, etc.) must be a pure NP, not DP with a D_{null} […]. (Chomsky 2000:13)

The idea that the DP-level is associated with token-reference (i.e. reference to particular instances) and the N-layer with type-reference (i.e. reference to kinds in terms of Carlson 1977) is widely accepted, as the following quote from Longobardi (1994:649) shows.

> We can affirm that the N-position is interpreted as referring to universal concepts, that is, to *kinds*; the D position, instead, determines the *particular designation of the whole DP*, either directly, by being assigned reference to a

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[1] The term noun phrase is used here in a theoretically neutral sense to refer to what has been traditionally labelled "NP" and which is called "DP within much of the contemporary generative literature.

single individual object, or indirectly, by hosting the operator of a denotational (operator-variable) structure.

But not all scholars who consider the type/ token distinction to be important share the view that it should result in different syntactic structures, and that NP is a possible projection in UG (cf. e.g. Vergnaud & Zubizaretta 1992, Longobardi 1994). However, the possibility of having noun phrases that represent NPs would be in line with one of the main goals in Minimalism, which is to keep derivations as minimal as possible. According to Chomsky (1995:151), "just as there can be no superfluous steps in derivation, so there can be no superfluous symbols in representation".

There are several arguments in favour of the view that DP only projects when noun phrases have a specific reading. First, in cases of non-specific reference the DP-layer is redundant because NP is sufficient to establish type-reference. At first sight, a problem seems to arise in languages that require articles with generic noun phrases, as e.g. Italian.

(3)   *I gatti* sono animali intelligenti.
         "Cats are intelligent animals."

The hypothesis that noun phrases are uniformly DPs would imply that Italian articles in cases like (3) are expletives lacking semantic content. For example, Longobardi (1994) proposes that generic nouns involve a chain between D and N, but that only N is interpreted. The question arises, however, why there should be a D, if it is not interpreted anyway? An alternative possibility would be that the DP-layer is absent because a type is denoted and NP is sufficient to denote types. The article in (3) may merely spell out phi-features and it could be hosted in an intermediate position between NP and DP rather than in D (a position associated with specific reference). Such an account gains further plausibility under the assumptions that the structures of clauses and noun-phrases are similar.

The latter point brings me to the second argument against a uniform structure for noun phrases. The DP-hypothesis has largely been developed in drawing parallels between nominal structure and clause structure (e.g. Szabolcsi 1983, Valois 1991, Bernstein 1991). Rizzi (1997) argues that the left periphery of the clause is very complex, containing e.g. FinP and ForceP. But not all of this structure is canonically projected. Small clauses may have a reduced structure, as shown by (4).

(4)   I consider [ₛ𝒸 him intelligent].

Given the parallel configuration of clauses and DPs and provided that the former do not always project all of the structure, why should nominals do so (especially in cases where this is morphologically and semantically unmotivated)? The only reason to insist on this claim is the attractiveness of maintaining uniform

structures. However, if Economy of Representation is given precedence over Uniformity, then the hypothesis of universal DPs should be reconsidered.

In this study, I will presuppose that the DP-level is only projected with reference to specific entities, i.e. with *token*-reference, while nouns denoting types do not project to be DPs. Accordingly, the object nouns in (5a-b) differ from the one in (5c) in involving less structure. *Cats* in (5a) and *a cat* in (5b) do not refer to specific entities, while *a cat* in (5b) does.

(5)   a.   I love [$_{NP}$ cats].
        b.   I don't have [$_{NP}$ a cat].
        c.   I have [$_{DP}$ a cat].

The simplified structure for noun phrases is illustrated in (6). The intermediate agreement-layer, possibly consisting of NumP and GenP, is simplified as a Φ-projection. The account implies that some noun phrases merely constitute ΦPs or even only NPs. Such noun phrases are argumental but not referential because referentiality requires the presence of the DP-layer.

(6)   DP
       / \
    Spec   D'
          / \
        D°   ΦP
             / \
          Spec   Φ'
                / \
              Φ°   NP
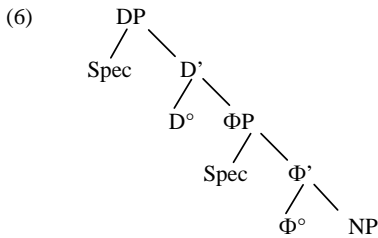
In the languages treated in this article, bare nouns cannot be DPs because they never refer to specific entities[2]. The syntactic DP-projection is assumed to grammaticalize the notion of specificity.

The assumptions made here have a direct bearing on the production of noun phrases in child language. Obviously, children do not speak like adults for an extended period after their birth. One characteristic feature of their speech is the omission of determiners. The Minimalist Program (Chomsky 1995) suggests that there should be economy principles that work against the projection of redundant structure. Roeper (1999:171) has proposed that in the language of children these principles are valued more highly than e.g. principles of explicitness. Under the assumption that noun phrases can be either DPs or NPs, the continuity assumption on language acquisition, according to which child language is UG-conform, can be maintained.[3]

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[2] Among the Romance languages Brazilian Portuguese constitutes an exception to this. Here, specifically referring noun phrases can be bare.
[3] It is possible though to maintain the continuity hypothesis even under the assumption that DP is uniformly and universally projected. Theoretically, the BNs that children produce may constitute

2.1.   *Why language influence in the nominal domain is expected*

As mentioned above, Hulk & Müller (2000) predict that cross-linguistic influence should occur (i) if the domain involves the interface between syntax and pragmatics and (ii) if there is syntactic overlap. It is easy to show that this applies to determiner use in German as compared to the two Romance languages. The examples in (7) and (8) illustrate an overlap at the level of syntax.

(7)   a.   *Anne mange   une/la pomme.*
       b.   *Anna mangia   una/la mela.*
       c.   *Anna isst   einen/den Apfel.*
             "Anne eats an/the apple."

(8)   a.   *Anne a   peur.*
       b.   *Anna ha   paura.*
       c.   *Anna hat   Angst.*
             "Anne is afraid."

The overlap is only partial though. An asymmetry arises in the area of non-specific entities. These tend to be denoted by bare nouns in German but by determined nouns in the Romance languages, as illustrated for existential and generic constructions in (9) and (10) respectively.

(9)   a.   Je voudrais   *du pain et des tulipes.*
       b.   Vorrei   *(del) pane   e (dei) tulipani.*
       c.   Ich möchte   *Brot   und Tulpen.*
             "I'd like (some) bread and (some) tulips."

(10)   a.   *L'huile d'olive*   est bonne pour la santé.
       b.   *L'olio di oliva*   fa bene alla salute.
       c.   *Olivenöl*   ist gesund.
             "Olive oil is healthy."

According to the theory outlined here, the noun phrases in (9) and (10) should be represented as NPs (if they lack an article) or ΦPs (if they occur with an article) rather than DPs. We are unaware of what a child knows about the structural representation of noun phrases at the initial state. If the child starts out with abstract structural knowledge, s/he should realize that NP/DP-distinction reflects the same semantic differences across the languages. If the child is only aware of surface sequences or phonological patterns, similarities and differences should be perceived. Under a purely quantitative perspective, the languages deviate with regard to the amount of contexts in which bare nouns (BNs) may occur. This is illustrated in Figure 1.

DPs with a phonetically empty D and a specificity feature that accounts for referentiality. Alternatively, they may be DPs, in which the noun has raised from N to D. Given the systematic lack of determiners in the early stages I consider both possibilities to be implausible. The issue has, however, no direct bearing on the findings presented here.
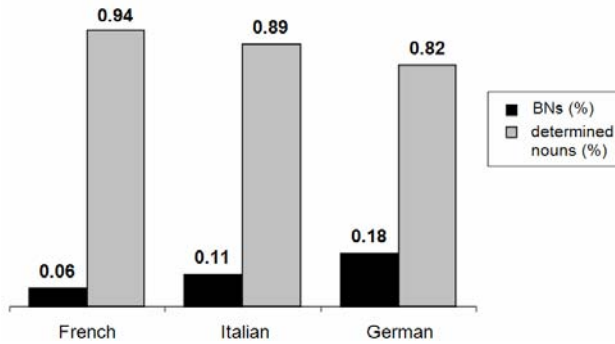
Figure 1: *Distribution of bare and determined nouns (from Kupisch 2004a)*

Figure 1 shows the relative number of BNs as compared to determined nouns in child-directed adult speech. The percentages are based on a minimum of 2500 noun phrases in each language.

We can conclude that there is an overlap from which the child may infer that the rules for determiner use in Germanic and Romance are similar.

Let us turn to the second precondition for language influence. There is no doubt that determiner use is dependent on discourse properties. Just as a tense feature on a verb situates a process with respect to the time of the speech event, a determiner gives some indication about whether and how the designated "thing" is related to the discourse. A speaker may use an indefinite determiner to signal to the listener(s) that the indicated entity is unknown and that he is not supposed to know it, as in (11a). By contrast, the definite article presupposes that the referent is familiar to the listener, like in (11b). A bare noun indicates that no specific entity at all is referred to, as in (11c).

(11)   a.   Yesterday I found *a cat* in my garden.
        b.   *The cat* had a long grey tail.
        c.   *Cats* like to roam around in my garden.

That is, determiner use can only be fully described when taking into account pragmatic and semantic aspects. In this respect, Hulk & Müller's second condition on the occurrence of cross-linguistic influence is also met.

3.   *The acquisition of determiners*

This section deals with the acquisition of determiners in bilingual children acquiring German simultaneously with French or Italian. A comparison with a monolingual German child will show that the acquisition process proceeds comparatively fast in the bilingual children.

3.1   *The "Romance"- "Germanic" asymmetry in acquisition*

Determiner acquisition has been studied in monolingual children for many different languages. The development is typically characterized by three stages which Chierchia et al. (1999) have named: *BN-stage*, *free variation stage* and *target stage*. In the bare-noun stage, nouns occur exclusively bare. Some children may already have passed this stage when they are recorded for the first time. The second stage is characterized by inconsistent determiner use. In one and the same recording and with identical constructions, a determiner may be used or omitted. In the third stage, determiners are provided whenever required by the target-language.

Some cross-linguistic studies on determiner omission have focussed on the Romance-Germanic contrast (Chierchia et al. 1999; Guasti & Gavarró 2003, Lleó & Demuth 1999). Findings converge on the point that the Romance languages facilitate the acquisition process, so that children exposed to a Romance language such as French, Italian, or Spanish go through the above stages at earlier ages and/or faster. There are noticeable differences both regarding the moment when children start to use determiners and the moment when they cease to omit them. Various explanations have been given to account for these differences. Chierchia et al's solution relates to the syntax/ semantics mapping, while for Lleó and Demuth (1999) the prosodic properties of the target-languages are crucial. The present treatment is not meant to explain the Romance-Germanic asymmetry. Rather, taking the asymmetry for granted, the study investigates whether it is mirrored in the development of bilingual children acquiring one language of each type. In case of language differentiation, this would be expected.

A number of recent longitudinal studies looked at the appearance of determiners in bilingual children acquiring a Romance-Germanic language combination (e.g. Paradis & Genesee 1997, Serratrice 2000, Bernardini 2001, Granfeldt 2003, Hulk 2004). Most of these studies confirm that determiners are acquired earlier in the Romance language, which, at first sight, speaks in favour of language separation. At the same time, however, such findings do not exclude the possibility that the bilinguals are comparatively slow in their Romance language (retardation), and/or comparatively fast in their Germanic language (acceleration). For these reasons, it is desirable to make comparisons with other bilingual and monolingual data.

3.2   *The data*

The data were collected in a research project on early bilingualism under the direction of Natascha Müller. The project is part of the *Collaborative Research Centre on Multilingualism*, which is associated with the University of Hamburg, Germany. The data were transcribed and double-checked by native speakers of the respective languages. The children were recorded bimonthly for approximately 30 minutes in each language. For the present treatment of determiners, the investigation period covers the age before 3 years, but the

corpora differ with respect to the children's age at the first recording session. All children grew up in binational families, in which the parents followed the *one person - one language strategy* (an exception is Marta, whose parents addressed her exclusively in Italian to support the non-environment language). In spite of similar backgrounds, the children differ in terms of language balance.[4] An overview of the corpora is provided in Table 1.

Corpus	Language(s)	age range	no. of files included	language balance
Chantal	German	1;10 – 3;0	29	-
Carlotta	German-Italian	1;8 – 3;0	21	balanced
Marta	German-Italian	1;6 – 3;0	27	slight imbalance, Italian stronger
Alexander	German-French	2;2 – 3;0	16	slight imbalance, French stronger
Amélie	German-French	1;6 – 3;0	29	slight imbalance, French stronger
Céline	German-French	2;0 – 3;0	21	strong imbalance, Ger. stronger

Table 1: *Corpora*

3.3 *Acceleration in the acquisition of determiners in the German of the bilingual children*

This section summarizes the results of the empirical study on determiner omissions, in which the bilingual children have been compared to the monolingual German child Chantal. The rate of omission was established on the basis of determiner realizations as compared to illicit determiner omissions, as e.g. *fuss da* "foot there" or *is kleine baby* "is small baby". Target-conform omissions, as in (12), imitations, and mixed DPs (where mixing occurred between D and N) have not been counted. Placeholders (see Bottari et al. (1993/94) for a definition) were counted if they had been clearly identified as articles; e.g. *d* or *de* instead of a definite article.[5]

(12)	a.	*kindern* da drin	(Amélie 2;2,15)
		lit.: "children there in"	
	b.	die spielt *ball*	(Amélie 2;3,5)
		"she plays *ball*"	
	c.	*zucker / teller* / so / alles fertig	(Amélie 2;4,16)
		"sugar / plates / so / all finished"	

Since the investigation aimed at finding out when determiners ceased to be omitted, no attention was paid to the morphological adequacy of the determiner.

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[4] The children's languages were compared with respect to five criteria: word-based MLU (mean length of utterances), upper bound (longest utterance per recording in words), increase of verb-lexicon, increase of noun-lexicon, absolute number of utterances in 30 minutes recording) (see Kupisch 2004b for details).

[5] I relied on the transcriptions. Note, however, that no phonetic transcription was available because the data were mainly intended for research on syntactic development.

The omission rates have been calculated on a monthly basis. Percentages based on less than 5 nouns per month have been excluded. Figure 2 shows the result of an age-based comparison.
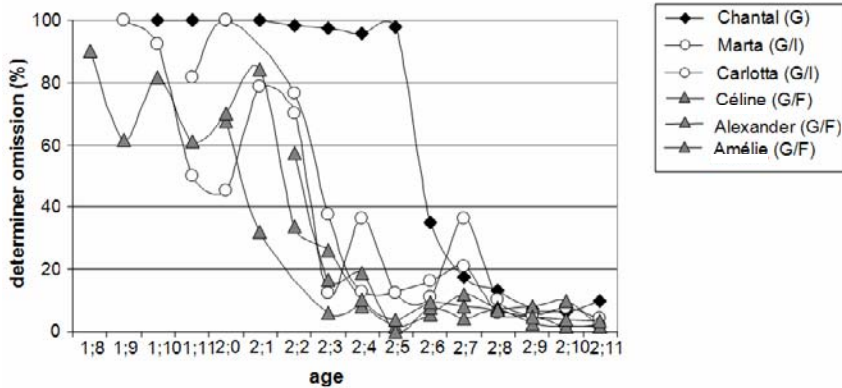
Figure 2: *Determiner omission in monolingual and bilingual German (age-based comparison)*

In the bilingual children, there was a sharp drop of omissions below the 50%-level between the ages of 2;1 and 2;3. During the same period, the monolingual child's omissions were still close to 100%. Only at age 2;6, they decreased below 50%. After the age of 2;4, the rate of omission of the bilingual children tended to remain below 20%, while Chantal reached a comparable stage at the age of 2;7. That is, the bilingual children's development appears to be accelerated. A χ^2-test has been performed on the contrasts between the bilingual children and Chantal for individual stages (age 1;8-1;11, age 2;0-2;3, and age 2;4-2;6). All contrasts are highly significant ($p<0.001$).

It is debatable whether age is a suitable means to compare across children because there may be inter-individual variation within a language with respect to the onset of language development. For this reason, determiner omission was also compared in terms of the children's word based mean length of utterance (MLU) (see Figure 3). The MLU-based acquisition stages were defined as follows. The recordings were included in stage I, as long as the MLU remained below 1.49; the first recording with an MLU exceeding an average of 1.5 words per recording marks the beginning of stage II, even if the MLU subsequently decreased again; the first recording with an MLU of more than 2 words on the average marks the beginning of stage III etc. The investigation reveals the same overall-picture: the bilingual children ceased to omit determiners at earlier MLU-points compared to the monolingual child. The contrasts between the bilingual children and Chantal are very significant ($p<0.01$) in each individual MLU class below MLU 3 (exceptions are Alexander in MLU class 2.0-2.49 and Carlotta in MLU class 2.5-2.99).
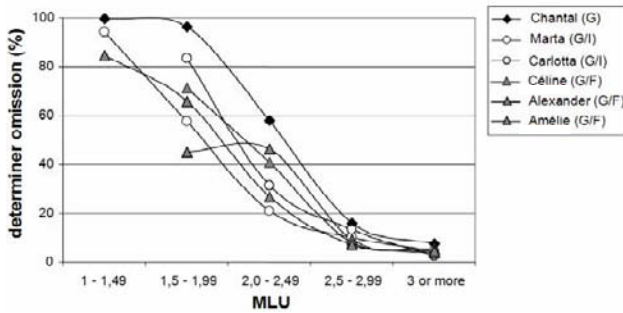
Figure 3: *Determiner omission in monolingual and bilingual German*
(MLU-based comparison)

To conclude this section, the empirical data have shown that the acquisition process in bilingual children acquiring German simultaneously with a Romance language proceeds fast compared to a monolingual German child. The phenomenon matches Paradis & Genesee's (1996) definition of language influence in the form of acceleration.

4.   *Article functions in the early grammar of a bilingual German-French child*

The question should be posed whether the influence observed here causes problems in the domain of non-specific entities, where Romance and Germanic are asymmetric. In the following, I will argue based on the German-French corpus Amélie that transfer of grammatical knowledge is only plausible for the contexts in which the languages overlap, but not for those where they differ.

Figure 4 compares the decrease of determiner omission in Amélie's German and French to that in the German of the monolingual child Chantal. The graphs show a noticeably similar development in Amélie's two languages, which is in sharp contrast that of Chantal. At the same time, the Romance-Germanic asymmetry is in principle maintained.
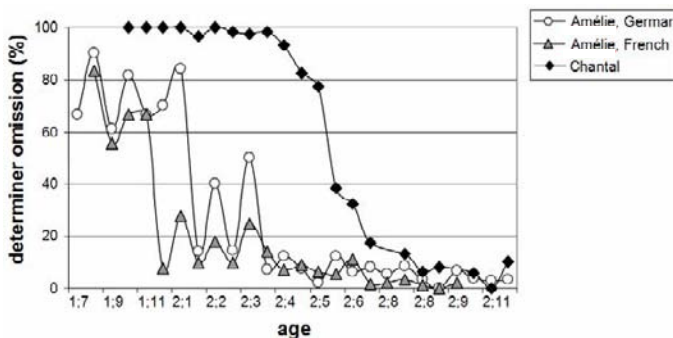
Figure 4: *D-omission in Amélie (biling.) compared to Chantal (monoling.)*

Article functions that are encoded by the same construction types in German and French emerge roughly at the same time in both languages. In case of a difference, French is the language in which they appear earlier. I will illustrate this for the functions of the indefinite article.

For a few noun phrases occurring before age 2 it is impossible to precisely determine the functions because the context gives no clue to them. However, the majority clearly functions to name objects, as do most of the articles after age 2. Namings and presentational constructions are extremely frequent in both languages. Of all indefinite noun phrases between 2;0 and 3;0 they constitute 69% in French and 74% in German.

(13)   a.   ça c'est *un dro* [=oiseau]
              "that that's a bird"   (Amélie 1;9,27)
       b.   là c'est *un bébé*
              "there that's a baby"   (Amélie 1;10,18)
       c.   da *eine kuh*
              "there a cow"   (Amélie 1;9,27)

At a later age, indefinite articles are used to denote non-specific entities. The first instances occur a little later in German than in French. By then, variation between definite and indefinite articles signals the contrast between specific and non-specific reference.

(14)   a.   j'ai pas un - *un* [=de] *siege*
              "I don't have a baby chair"   (Amélie 2;1,7)
       b.   t'as *un mouchoir*?
              "do you have a tissue?"   (Amélie 2;2,15)
       c.   wo's *eine stuhl*?
              "where's a chair?"   (Amélie 2;4,2)
       d.   *n kaffee* habn
              "a coffee have.INF"   (Amélie 2;4,16)

Finally, the indefinite article is also used in the identifying function, i.e. to indicate to the hearer that s/he is not presupposed to be familiar with the designated entity. Again, the first instances are found in French, but they occur shortly after that in German as well.

(15)   a.   moi aussi j'ai *un sucette*
              "me too I have a dummy"   (Amélie 2;3,19)
       b.   dans un zoo [...] j'ai vu eh *un walroß* et *un phoque* tout gros
              "in a zoo I saw a walrus and a really big seal"
                                                     (Amélie 2;8,15)
       c.   ich hab gekauft *ein taschentuch* für mich
              "I bought a tissue for me"   (Amélie 2;6,25)
       d.   *eine maus* zieht seine strümpfe an [describing picture]
              "a mouse puts on its socks"   (Amélie 2;9,26)

This may be taken to mean that the child applies her knowledge from one language to the other in contexts where the syntax of German and French overlaps. Now what happens in contexts where this is not the case? There are a few target-deviant cases in both languages but they are by far outnumbered by cases in which the child correctly omits the article in German and uses it in French, as illustrated by (16)-(17).

(16)   a.   und da is *schnee*
            "and there is snow"   (Amélie 2;5,28)
       b.   ich will *kaffee* trinken
            "I want to drink coffee"   (Amélie 2;6,11)
       c.   das sind *große löffel*
            "that are big spoons"   (Amélie 2;6,11)

(17)   a.   j'en a pas, *des petit sous*
            "I don't have small pennies"   (Amélie 2;2,0)
       b.   toi aussi tu as *des chaussettes*?
            "you too, you have shoes?"   (Amélie 2;6,11)
       c.   toi aussi tu veux *de l'eau?*
            "you too, you want water?"   (Amélie 2;5,28)

That is, although the children seem to transfer their grammatical knowledge from one language to the other in cases of syntactic overlap, they are aware of the contexts in which the languages are different.

5.   *Conclusion and discussion*

The investigation presented here has shown that the acquisition of German determiners in bilingual German-French and German-Italian children is accelerated. It has been argued that this is due to the presence of the Romance language which is acquired simultaneously. Apparently, bilingual children may apply their linguistic knowledge from language to the other in structures where the languages overlap, which holds true for the great majority of contexts that necessitate determiner use in French, Italian and German. Here, this had the effect that the bilinguals used determiners earlier than monolingual German children normally do. At the same time, the asymmetry arising in the domain of non-specific reference did not seem to pose particular problems. That is, there was no negative transfer, at least not in the case study of Amélie exemplified here.

The findings confirm Hulk & Müller's (2000) proposal that language influence should occur (i) at the interface between syntax and pragmatics, and (ii) if the two languages show an overlap at the level of syntax. Now, the question must be posed why and in what way these criteria constitute the preconditions for cross-linguistic influence.

The idea that phenomena at the interface between syntax and pragmatics are particularly "vulnerable" in acquisition, and susceptible to cross-linguistic influence in bilingual acquisition, is plausible under the assumption that children

are endowed with an innate universal grammar that develops autonomously, i.e. independent of other cognitive domains. Supposedly, whenever this grammar has to interact with other cognitive domains, this may create particular difficulties to a child during the process of acquisition. A problem with the interface-criterion as a precondition for cross-linguistic influence is, however, that there seem to be only few grammatical areas in which syntax and pragmatics do not interact.

This makes the second criterion, i.e. that of overlapping syntactic systems, appear more prominent, or even crucial to cross-linguistic influence. For example, if we imagine a bilingual child who is exposed to an article-language like Italian and to a non-article language like Chinese simultaneously, we would not expect him/her to produce Chinese articles. But if syntactic overlap is crucial, one must address the question of what the mechanism are that drive the influence. The role of syntax in the human language faculty, and especially in the bilingual language faculty should be examined more closely. Mac Swan (2000) proposed a model of the bilingual language faculty, couched in terms of the Minimalist Program, according to which two components of the language faculty are doubled: the lexicon and phonological form (PF). He assumes that what is usually referred to as narrow syntax (i.e. the operations Select, Merge, and Move) is shared by both languages. With respect to bilinguals acquiring German in combination with a Romance language this means that determiners enter their computational system more often compared to children acquiring only German. This may explain the acceleration effect provided we admit that frequency plays a role in acquisition, which is not traditionally the case in generative grammar.

Recently, Yang (2002) has proposed a grammar competition model of language acquisition, which crucially relies on frequency. The model presupposes that children are equipped with multiple grammars for particular grammatical domains from the outset of the acquisition process. These grammars try to parse incoming sentences, and get punished when they fail, or rewarded when they succeed. The child is passive in this process. The acquisition task is fulfilled by the system itself and consists of the increase or decrease in prominence of each grammar. The acquisition task is completed when the grammars have stabilized their weights, i.e. when they have gained the measure of prominence that they have in the target-languages. Yang's model of grammar competition was shown to make the correct predictions for determiner acquisition across languages (Kupisch 2004a). That is, the weight of the competing grammars in the target-languages corresponded with the rate of learning. If narrow syntax is a mechanical system that operates blindly on lexical items and the features encoded thereon, we could assume that the DP-option is strengthened earlier in the Romance-Germanic bilingual than in the monolingual German child, because the Romance language provides the child with more evidence for the DP-option.

The solution sketched above raises new questions though, which should be resumed in future research. First, it implies retardation in the Romance language because the computational system of a child who is bilingual with French/ Italian

and German has less exposure to determiners than a monolingual child acquiring only French or Italian. In this study, the acquisition of determiners in Romance has not been examined in enough detail to verify whether this is the case. Second, if narrow syntax is shared by both language systems, it is not clear how the children can end up with two different target-weights for each language. Last, this model may imply that there is no language separation in the domain of syntax because all variation is lexically encoded.

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"FOCUS VS"
A SPECIAL TYPE OF FRENCH NP SUBJECT INVERSION

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1.   *Introduction*

In the literature, three types of "NP subject inversion" (henceforth: "VS") have been distinguished in French[1]. According to Marandin (2001), "unaccusative VS", which typically involves an intransitive verb, occurs in temporal subordinates, in main clauses after a temporal adverbial and in subjunctive clauses (cf. also Kampers-Manhe 1998, 1999):

(1)   **Unaccusative VS**
    Le silence se fit.   Alors sont entrés deux hommes.
    the silence was made then have entered two   men
    "Silence fell. Then, two men entered."

                                   (Marandin 2001:195)

"Stylistic VS" (Kayne 1972, Kayne & Pollock 1978, 2001) or "extraction-triggered VS" (Bonami, Godard & Marandin 1999), is the type of VS that appears in wh-contexts, as in (2)[2].

(2)   **Stylistic VS = extraction-triggered VS**
    L'homme avec lequel est sortie Marie s'appelle Jacques.
    the man with whom has left   Mary is named Jacques
    "The man who Marie has left with is named Jacques."

                         (Kayne & Pollock 1978:595-598)

Kayne & Pollock (2001:143) argue that the *ne...que* "only" VS case in (3), which they call "strong focalization stylistic VS" is a sub-case of stylistic VS.

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[1] NP subject inversion is different from "complex inversion" (*Jean est-il arrivé?*) and "pronominal inversion" (*Est-il arrivé?*), where the postverbal position is occupied by a subject clitic.
[2] Cf. Lahousse (in press), where I argue that unaccusative VS and stylistic VS cannot be distinguished from a syntactic point of view, and constitute one VS-configuration, "genuine VS".

(3)   **Strong focalization VS**
       N'a   téléphoné que ton   ami.
       Neg has telephoned only your friend
       "Only your friend telephoned."

(Kayne & Pollock 2001:108)

The third type of VS is "heavy subject NP VS" (Bonami, Godard & Marandin 1999:21) or "elaborative inversion" (Kampers-Manhe et al. in press:75). In this type of VS, the postverbal subject position hosts a long or heavy NP, as in (4).

(4)   **Heavy subject NP VS = elaborative VS**
       Ont accepté notre proposition les députés de la majorité ainsi que les non-inscrits.
       have accepted our   proposal   the MPs   of the majority
       as well as the non-registered ones
       "The MPs of the majority as well as the non-registered ones accepted our proposal."

(Bonami, Godard & Marandin 1999:21)

Whereas the syntactic and semantic properties of unaccusative VS and stylistic VS have been studied in detail, strong focalization VS (3) and elaborative VS (4) have not yet received a detailed analysis.

In this article, I argue that strong focalization VS and elaborative VS constitute one type of VS, "focus VS", which has a particular syntactic analysis, and where the postverbal subject has an identificational focus reading.

The structure of the paper is as follows. In section 2, I present some examples of focus VS (section 2.1), and I argue that postverbal subjects in this type of VS have an identificational focus reading (section 2.2). Then, I show that instances of focus VS also share a certain number of syntactic properties concerning the position of the postverbal subject with respect to complements and adjuncts, as well as the distribution of floating quantifiers and lexical objects in focus VS (section 2.3). In section 3, I give a brief survey of the two analyses for VS that have been proposed in the literature. In section 4, I argue in favor of one specific analysis for focus VS, and I show that it accounts for the interpretation of both the subject and the verb phrase, as well as for the distribution of floating quantifiers, complements and adjuncts.

2.   *Focus VS in French*

2.1   *Examples*

Elaborative VS and strong focalization VS are both sub-cases of one type of VS in French, which I call focus VS[3]. In this type of VS, the subject is often a

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[3] Both Pollock (1985:322fn16) and Kayne & Pollock (2001:158fn83) suggest that the *ne...que* case of stylistic VS has something in common with "list" constructions like (i):
(i)   *Sont entrés   Pierre, Paul et Marie.*
       have entered Peter, Paul and Mary

definition (5a), an enumeration (5b), or an NP modified by an exclusive focus particle, whether it is *ne…que*, as in (5c), or *seul* (5d)[4].

(5)   **Focus VS**

      a.   **The postverbal subject is a definition**

               Rendront   un devoir   les élèves qui ont raté l'examen de chimie.
               will hand in an assignment the pupils who have failed the exam of chemistry
               "The pupils who failed the chemistry exam will hand in an assignment."

                                                    (Marandin in press:8)

      b.   **The postverbal subject is an enumeration**

               Se   sont qualifiés pour les demi-finales des   championnats
               Refl   are   qualified for   the semi-finals in the championship
               de France amateurs samedi soir   à Dijon: mouche, Rabak Khalouf;
               of France amateur Saturday evening in Dijon: flyweight, Rabak Khalouf,
               coq,   A. Consentino, Acquaviva; plume,   Lasala; Lainé.
               bantamweight,   A. Consentino, Acquaviva, featherweight, Lasala; Lainé
               "Qualifying for the semi-finals in the amateur championship of France Saturday evening in Dijon were: Rabak Khalouf, flyweight; A. Consentino, Acquaviva, bantamweight; Lasala, featherweight; Lainé."

                                      (*L'Aurore*, cited by Jonare 1976:40)

      c.   **Focus particle *ne ... que***

               <u>*Ne*</u> *donneront de l'argent à ceux qui en ont besoin* <u>*que*</u> *les pauvres.*
               Neg will give money   to those who it have need   only the poor
               "Only the poor will give money to those in need."

                                           (Gross 1975:93ft)

      "Peter, Paul and Mary entered."
      (Pollock, 1985:322)

According to Pollock (1985:302), the preverbal subject position in (i) is occupied by *pro*, the null expletive counterpart of impersonal *il*, and the author further argues that "In French only those subject empty categories which are co-indexed with a *que NP* can be identified as pro". One of the arguments in favour of this hypothesis is that the postverbal subject in instances of VS with *ne…que* (ii), just as the postverbal NP in impersonal constructions (iii), cannot control PRO:

(ii) * *Ne trônaient que deux bibelots de prix sur cette bibliothèque avant de tomber par terre.*
     Neg queened only two precious curious on that bookshelf before falling on the ground.
     "Only two precious curious queened on that book-shelf before falling to the ground."

(iii) * *Il ne trônait que quelques bijoux de prix sur cette bibliothèque*
     there Neg queened only some precious curious on that bookshelf
     avant de tomber par terre.
     before falling on the ground
     (Pollock 1985:301-302)

However, the ungrammaticality of (ii) does not necessarily have to be accounted for in the same way as the ungrammaticality of (iii): the postverbal subject in (ii) is not in sentence-final position, whereas this is required in focus VS (cf. section 2.3).

[4] I do not consider VS cases with the adverb *seulement* "only", although they seem to have the same properties as examples of VS with *ne ... que* and *seul* (cf. Lahousse 2003, chapter 3).

    d.   **Focus particle *seul***
Peu lui importait ce nouveau roi David à propos duquel on entendait les pires choses (...).
"This new king, David, about whom the worst things were being said, didn't bother him much."
<u>*Seules*</u> *comptaient la force qu'il   représentait*
only   counted   the power that he represented
et les armées qu'il   commandait.
and the armies   that he commanded
"The only thing that counted was the power he represented and the armies he commanded."

(Fr, Lanzmann)[5]

In the following sections, I will first show that the interpretation of the subject is the same in all these sub-cases of focus VS (section 2.2). Then, I will present a certain number of syntactic properties which are typical of all instances of focus VS (section 2.3)[6].

2.2   *The interpretation of the postverbal subject*

All the focus VS examples in (5) have in common that the subject exhaustively identifies the referents that satisfy the predicate. In (5c) and (5d), the exhaustive interpretation of the subject is an effect of the presence of the exclusive focus particle *ne ... que* and *seul* "only". Thus, the clause in (5c) indicates that the poor give money to those in need, and that nobody else gives money to those in need. Similarly, (5d) means that nothing besides the power and the armies counted. In addition, although the examples (5a) and (5b) do not contain an exclusive focus particle, their interpretation is exactly the same: in these examples, the referents the predicate applies to are defined or enumerated, and, at the same time, it is understood that no other referent satisfies the predicate. Hence, in (5b), the persons who qualify for the semi-finals are enumerated, but, in addition, it is understood that nobody else has been selected. In (5a), the persons that will have to hand in an assignment are described, and, at the same time, the clause implies that these are the only persons who will hand in an assignment.

The same exhaustive interpretation also arises in the focus VS example (6), which does not contain an exclusive focus particle, and where the subject is not an enumeration or a definition.

(6)   *A   gagné 1000F Haie Bernard.*
has won   1000F Haie Bernard
"The person who won 1000F is Haie Bernard."
(*L'Aurore*, cited by Jonare 1976:40)

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[5] Several of my examples are (simplifications of) attested examples. Literary examples from *Frantext* are marked with *Fr* (followed by the name of the author), journalistic examples from *Le Monde 1998* with *LM*. I am grateful to the Institute for Modern Languages (ILT) in Leuven (Belgium) for allowing me to use their *Le Monde 1998* corpus.
[6] In Lahousse (in press), I show that other types of VS in French do not have these properties.

This example is only acceptable in a context where several persons have participated in, say, a game where 1000 francs can be won, and the sentence is uttered to identify the unique participant who won the prize. In other words, a particular winner is identified, and it is implied that no one else won the prize.

In sum, all these instances of focus VS are characterized by the exhaustive reading of the postverbal subject. This is also confirmed by the fact that focus VS examples cannot be followed by clauses where a referent is added to the postverbal subject[7]. For instance, the clauses in (5a), (5b) and (5c) cannot be followed by (7a), (7b) and (7c) respectively.

(7)   a.   *En outre, les élèves qui ont raté l'examen de littérature rendront aussi un devoir.*
             "The pupils who have failed the literature exam will also hand in an assignment."
    b.   *En outre, Lauro Visconti s'est aussi qualifié.*
             "Furthermore, Lauro Visconti has qualified."
    c.   *En outre, la classe moyenne donnera aussi de l'argent à ceux qui en ont besoin.*
             "Furthermore, the middle class will also give money to those in need."

The interpretation of the postverbal subjects in (5) and (6) corresponds exactly to Kiss' (1998:245) definition of *identificational focus*: "[an identificational focus] represents a subset of the set of contextually or situationally given elements for which the predicate phrase can potentially hold; it is identified as the *exhaustive subset* of this set for which the predicate phrase actually holds" (underlining is mine). Hence, the postverbal subjects in examples (5) and (6) are identificational foci, i.e. they have an identificational focus reading, and this is why I call this type of VS "focus VS".

In the following section, I will show that, beside the exhaustive reading of the postverbal subject, instances of focus VS also share some very specific syntactic properties.

2.3   *Syntactic properties*
The examples in (8), (9) and (10) illustrate that postverbal subjects in focus VS must necessarily be the last element of the clause:

(8)   a.   *Ne   sont nés   en 1976 que Jean, Pierre et Michel.*
             Neg were born in 1976 only John, Peter and Michael
    b.   * *Ne   sont nés   que Jean, Pierre et Michel   en 1976.*
             Neg   were born only John, Peter and Michael in 1976
             "Only John, Peter and Michael were born in 1976."

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[7] In Lahousse (2003, chapter 5) and Lahousse (in press), I show that Szabolcsi's (1981) "entailment test" and Kiss' (1998) "lie test", when applied to focus VS, give the same result.

(9)   a.   *Seule restait <u>sur le sol</u>   une plaque noire et grise.*
                only stayed on the ground a plate   black and grey
                (Fr, Tchao Pantin)
        b.   ** Seule   restait   une plaque noire et grise   <u>sur le sol</u>*
                 only   stayed   a plate black and grey   on the ground
                "Only a black and grey plate stayed on the ground."

(10)   a.   *Passera   <u>devant le conseil de discipline</u>   tout élève*
                will appear   before the disciplinary committee   every pupil
                de l'établissement au comportement incivil.
                of the school   with behaviour inappropriate
                                                                    (Marandin in press: 8)
        b.   ** Passera   tout élève de l'établissement au comportement*
                will appear   every pupil of the school   with behaviour
                incivil   <u>devant le conseil de discipline</u>.
                inappropriate   before the disciplinary committee
                "Every pupil of the school with inappropriate behaviour will go before the
                disciplinary committee."

This is not the case for other types of VS in French:

(11)   a.   *Il était dans cette région quand éclata   <u>en 1848</u> la révolution.*
                he was in that region when broke out in 1848 the revolution
        b.   *Il était dans cette région quand éclata   la révolution <u>en 1848</u>.*
                he was in   that region when broke out the revolution in 1848
                "He was in that region when the revolution broke out in 1848." (LM)

        Moreover, Lahousse (2003) and Lahousse (in press) observe that the
quantifier *tous* "all" can occur between the auxiliary and the postverbal subject in
focus VS[8]:

(12)   a.   *Ont   <u>tous</u>   réussi ceux   qui   ont   assez   travaillé.*
                have all succeeded   those   who   have enough   worked
                "Those who worked enough have all succeeded."
        b.   *Ont   <u>tous</u>   rendu un   devoir   les élèves   qui…*
                have   all   handed-in an   assignment the pupils   who
                "The pupils who… all handed in an assignment."

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[8] Note that the quantifier *tous* "all" is incompatible with the focus particles *ne…que* and *seul* "only", independently of NP subject inversion:
(i)   ** Je n'ai mangé   que toutes les pommes.*
        I Neg have eaten but all   the apples
(ii)   ** Seules toutes les femmes sont venues.*
        only   all   the women have come
Moreover, some native speakers might find examples such as (12) and (13) a bit awkward. This is due (Danièle Vandevelde, p.c.) to the redundancy that arises because of the co-presence of the universal quantifier *tous* and the exhaustive interpretation of the focus VS structure itself (cf. section 2.1).

(13)   *Sont <u>toutes</u> nationalisées dans les conditions fixées par les articles 7 à 10*
            are   all   nationalized in the conditions   set   by the articles 7 through 10
            les banques suivantes: le Crédit Lyonnais, la Société Générale, ...
            the banks following: the Crédit Lyonnais, the Société Générale, …
            "Pursuant to conditions stated in articles 7 through 10, the following banks have
            all been nationalized: Crédit Lyonnais, the Société Générale, … ."
                                    (modification of an example cited in Le Bidois 1952:26)

In contrast, it is well known that floating quantifiers such as *tous* "all" may not appear between the auxiliary and the postverbal subject in other types of VS in French (cf. also Déprez 1990:56, Hulk & Pollock 2001:8, Lahousse 2003:382-383):

(14)   a.   * *Quand sont   <u>tous</u> arrivés   les enfants ?*
                when have   all   arrived   the children
                "When did the children all arrive?"
       b.   * *… au   moment où   sont <u>tous</u> arrivés   les   enfants.*
                  at the   moment where   have all   arrived   the children
                "… at the moment when the children did all arrive."

Moreover, whereas lexical objects may not appear between the verb and the subject in regular instances of VS, as the examples in (15) show, such objects do appear between the verb and the subject when the subject has an exhaustive interpretation, as in the focus VS examples (4), (5a), (5c) and (6).

(15)   a.   * *au   moment où   rendront   <u>un devoir</u>   ces élèves…*
                at-the   moment when will-hand-in an assignment those pupils
                "at the moment when those pupils will hand in an assignment"
       b.   * *Alors a   signé   <u>ce texte</u> le   Syndicat national de radio.*
                then   has   signed   this text the   Union   National of Radio
                 "Then, the National Radio Union signed this text."

In what follows, I will first briefly present the two ways in which VS has been derived in the literature (section 3), and I will then propose an analysis for focus VS (section 4), which accounts for the properties of focus VS presented in the sections 2.2 and 2.3.

3.   *Two analyses for VS in the literature*

As Longobardi (2000) points out, under current restrictive theories of phrase structure (cf. Kayne 1994) VS constructions can be analyzed in two ways.

In the first analysis (cf. Déprez 1990, de Wind 1995 for stylistic VS in French; Suñer 1994, Zubizarreta 1998 and Ordóñez 2000 for VSO in Spanish; Costa 2002 for VOS in Portuguese), the subject stays in its base-generated

position in VP[9], and the verb moves (across the subject) to its normal position in T°, as in (16).

(16)   a.   [$_{VP}$ **subject** [$_{V°}$ **verb**] [$_{YP}$]] = base-generated positions
              → movement of the verb from V° to T°
      b.   [$_{TP}$ [$_{T°}$ **verb**] [$_{VP}$ **subject** [$_{V°}$ t$_{verb}$] [$_{YP}$]]] = VS

Under such an analysis, complements and adjuncts that appear between the verb and the postverbal subject must have undergone scrambling to that position.

In the second derivation (cf. Kayne & Pollock 2001 for stylistic VS in French, Longobardi 2000 for VS in Italian, and Ordóñez 2000 for VOS in Spanish), the subject and the verb first move to the positions they occupy in the SV word order (SpecTP and T° respectively) (17a). Then, the subject moves out of SpecTP to the specifier of a functional projection XP in the left periphery (17b). This step in the derivation is followed by the phrasal "remnant" movement of TP, including the subject trace[10], leftward past the subject to the specifier position of another functional projection ZP (17c).

(17)   a.   [$_{TP}$ **subject** [$_{T°}$ **verb**]]
              → movement of the subject to SpecXP
      b.   [$_{XP}$ **subject** [$_{X°}$] [$_{TP}$ t$_{subject}$ [$_{T°}$ **verb**]]]
              → movement of the whole TP to SpecZP
      c.   [$_{ZP}$ *[$_{TP}$ t$_{subject}$ [$_{T°}$ **verb**]]*] [$_{Z°}$] [$_{FP}$ **subject** [$_{F°}$] t$_{TP}$]]

In this derivation, there are two possibilities to account for the position of complements and adjuncts between the verb and the postverbal subject: either they are moved with the remnant TP (cf. Kayne & Pollock 2001), or they undergo scrambling before the movement of the TP (cf. Ordóñez 2000).

Note that, if one argues in favour of the derivation in (17) to account for a particular type of VS, the movement of both the subject and TP to the left periphery should be motivated in one way or another, presumably on the basis of the discourse status of these elements (cf. Rizzi 1997).

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[9] I make abstraction of the fact that postverbal subjects of ergative verbs are merged in complement position.

[10] The fact that, to derive the VS word order, the TP (instead of T') moves, and that the subject must move out of TP to derive the VS word order, is due to theory-internal reasons: if the subject stayed in SpecTP, then the VS word order would be obtained by the movement of T', a non-maximal projection. However, movement of non-maximal projections is generally not allowed (cf. Kayne & Pollock 2001).

4.   *The analysis of focus VS*

4.1   *Introduction*

In this section, I will first determine the type of verb movement that is involved in the derivation of focus VS (section 4.2). I will allege several arguments in favour of a derivation that explains the verb – complements / adjuncts – subject word order in focus VS by the movement of the whole verb phrase (i.e. the verb with the complements and the adjuncts) to the left of the subject, rather than by the scrambling of the complements and the adjuncts. Then, I will show that the postverbal subject in focus VS is not right-dislocated and also does not occupy the base-generated position (SpecVP), nor the preverbal subject position (SpecTP) (section 4.3). On the contrary, I will argue that the postverbal subject is in a Focus-position in the left periphery. In the last part of this section (section 4.3), I will argue that the whole verb phrase is in a Topic-position to the left of the subject. The overall conclusion of this part will be that focus VS is derived as in (17).

4.2   *The type of verb movement involved in the derivation of focus VS*

It has often been argued that the verb – object – subject (henceforth: VOS) word order in Spanish and Portuguese, which shares some characteristics with the focus VS cases in French, is derived by the leftward scrambling of complements and adjuncts across the subject (cf. Costa 2002 for Portuguese, Jiménez 1997 and Ordóñez 2000 for Spanish). This analysis, however, cannot be applied to focus VS in French.

First of all, in Spanish and Portuguese, besides the VOS word order, the VSO word order is also possible. Hence, in these languages, VOS could possibly be derived from VSO by the scrambling of the complement to the left. In French, however, although the VOS word order is instantiated (in focus VS cases), the VSO word order is never grammatical:

(18) a.   * *Ne   donneront   que   les   pauvres   de   l'argent.*
              Neg   will give   only   the   poor   Art   money
              "Only the poor will give money."
      b.   * *Rendront   les élèves   qui…   un devoir.*
              will hand in   the pupils   who…   an assignment
              "The pupils who… will hand in an assignment."

In a scrambling analysis, it is indeed not clear why complements and adjuncts must obligatorily scramble to the left of the postverbal subject in French focus VS (cf. section 2.3), whereas scrambling of complements is optional in Germanic languages, Spanish and Portuguese[11].

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[11] Note that, although the scrambling of the complements in these languages is optional, both options (with and without scrambling) are correlated with different (pragmatic) felicity contexts,

Secondly, it has been shown for Germanic languages that only definite or specific indefinite complements scramble to a position outside VP (cf. Diesing 1992 and de Hoop 1991). Also, Costa (2002) and Ordóñez (2000) argue that the VOS word order in Portuguese and Spanish is sensitive to the properties of the scrambled object. In French focus VS, however, this is not the case; focus VS is acceptable when the object is a definite, as in (19), but also when it is a non-specific indefinite, as in the examples (5a) (*un devoir* "an assignment") and (5c) (*de l'argent* "money") above.

(19)   *Seul   a   pu   écrire   <u>ces mots</u>   un   homme qui,* …
              only   has   can   write   these words   a   man   who…
              "Only a man who… can have written these words."
              (Kundera, cited in Hobaek Haff 2000:28)

The fact that focus VS in French is not sensitive to the semantic features of the complements between the verb and the postverbal subject is an argument against a scrambling analysis for the focus VS cases in French.

Thirdly, data concerning quantifier scope constitute an empirical argument against a scrambling analysis for focus VS. If focus VS is derived by remnant movement of the verb phrase, then the object (which is part of the moved verb phrase, and which necessarily precedes the postverbal subject, cf. supra) does not c-command the subject, since elements which are part of a larger constituent are not able to c-command outside this constituent. This prediction is borne out. Indeed, the focus VS example in (20) only has an interpretation in which each person mentioned has read two non-specific texts; this clause does not mean that there exist two specific texts for which it holds that Jean, Marie and Paul read them[12].

(20)   *Ont   lu   deux textes   Jean, Marie et Paul.*
              have   read   two   texts   Jean, Marie and Paul
              "John, Mary and Paul read two texts."

In other words, in focus VS examples such as (20), the postverbal subject cannot be in the scope of the object. Given that, according to Reinhart (1983), scope-effects reduce from c-command, it can be concluded that the object does not c-command the subject in focus VS. This cannot be explained in an analysis in which the complements and adjuncts scramble to the left of the subject, but it is exactly what is predicted under a remnant movement analysis, where complements and adjuncts move with the verb to the left of the subject.

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cf. Zubizarreta (1998) on Spanish, Costa (2000) on Portuguese, as well as Diesing (1992) and de Hoop (1991) on Germanic languages.

[12] On the basis of similar arguments, Ordóñez (2000) and Costa (2002) argue, for the VOS word order in Spanish and Portuguese, that the object does c-command the postverbal subject, and, hence, that this word order should not be derived by remnant movement.

In conclusion, in focus VS, the verb moves together with the complements and adjuncts.

4.3   *The position of the subject in focus VS*

In this section, I will demonstrate that the postverbal subject in focus VS is not in a right-dislocated position, nor in the base-generated position (SpecVP), nor in the canonical preverbal subject position (SpecTP). Instead, I will argue that it is in a Focus-position in the left periphery.

In the representation in (21), the subject leaves its base-generated position (to the SpecTP position) and is then right-dislocated in the sentence-final position, following the verb and all its complements and adjuncts:

(21) $[_{TP}$ t''$_{subject}$ $[_{T°}$ verb $[_{VP}$ t'$_{subject}$ $[_{V°}$ t$_{verb}$ [complements and adjuncts]]]]] [subject]

There are several empirical arguments against this type of analysis for focus VS, although it does account for the distribution of complements, adjuncts and floating quantifiers in focus VS.

First of all, postverbal subjects in French focus VS are not co-referential with a pronoun in the same clause, cf. the examples in (5) and (6), whereas right-dislocated arguments in French must necessarily be anticipated by a co-referential pronoun in the main clause:

(22)   a.   *(Il)   a   lu   ce   livre, Jean.
                 he   has   read   this   book John
        b.   Jean *(l')a   lu,   ce   livre.
                 John it-has   read   this   book

Secondly, postverbal subjects in focus VS can be quantified (23), whereas, according to Cardinaletti (1998), right-dislocated subjects cannot:

(23)   Rendront   un devoir   tous les élèves   qui ont raté   l'examen.
        will hand in   an assignment all the pupils   who have failed the exam
        "All the pupils who failed the exam will hand in an assignment."

Third, although right-dislocated constituents in French are normally interpreted as defocalized or topicalized constituents (Barnes 1985, Ashby 1988, Lambrecht 1981), it has been shown above that the subject in focus VS is a focus, and more specifically an "identificational focus".

These three arguments all indicate that the postverbal subject in French focus VS is not right-dislocated. Moreover, it can also be shown that the subject in focus VS does not stay in its base-generated position (SpecVP), and, hence, that the analysis (16) does not apply to focus VS. Indeed, as we have seen above (cf. examples (12) and (13)), the quantifier *tous* "all" can "float", i.e. appear between the auxiliary and the past participle in focus VS. This is an argument in favour of

the hypothesis that the subject leaves its base-generated position, since floating quantifiers are assumed to be either "stranded" in a position the NP they modify moves through (cf. Sportiche 1988) or situated in an adverbial position where they bind the trace of the NP they are associated with (cf. Doetjes 1992).

The distribution of focus VS itself confirms that the postverbal subject in focus VS leaves its base-generated position and either surfaces in SpecTP or moves through this position in the course of the derivation. In contrast with other instances of VS in French, focus VS most often occurs without a sentence-initial element which precedes the verb, as in the examples (4), (5a), (5b), (6), (10a), (12), (13), (20), (23). This suggests that the postverbal subject either occupies SpecTP or has moved through this position: in this way, the subject is able to check EPP (or the strong D-feature of T, cf. Chomsky 1995), and no other element has to be inserted to do so.

Furthermore, there is theoretical and empirical evidence that the subject in focus VS cannot occupy the canonical SpecTP position. Let's first consider a theory-internal argument. Under the assumption that inflected verbs in French always move to T° (cf. Pollock 1989), it is expected that the subject moves out of SpecTP before the remnant movement of the verb phrase (i.e. TP). Indeed, if the subject stayed in SpecTP, this would entail the movement of T', a non-maximal projection, which is generally not allowed (cf. Kayne & Pollock 2001). It must thus be TP, but not T', that moves to derive focus VS. This immediately entails that the subject must have left TP before the movement of TP, since otherwise the word order VS could not be obtained.

An empirical argument in favor of the movement of the subject out of SpecTP comes from the fact that preverbal subjects and postverbal subjects in focus VS do not have the same properties, which is expected if they occupy the same position. Indeed, whereas postverbal subjects in focus VS are interpreted as identificational foci (cf. section 2.2), preverbal subjects are not. Thus, whereas clauses with focus VS cannot be followed by a clause adding a referent to the postverbal subject (cf. (7a), (7b) and (7c) above), the clause (24a), with a preverbal subject, can be followed by the clause in (24b), which adds a referent to the preverbal subject:

(24)   a.   *Les élèves qui ont raté l'examen de chimie rendront un devoir.*
                "The pupils who have failed the chemistry exam will hand in an assignment."
                                                                    (Marandin, in press: 8)
         b.   *... en outre, les élèves qui ont raté l'examen de littérature rendront aussi un devoir.*
                "As well, the pupils who failed the literature exam will also hand in an assignment."

Hence, the postverbal subject in focus VS is not in a right-dislocated position, nor in the base-generated position SpecVP, nor in the canonical

preverbal subject position SpecTP. By consequence, the subject in focus VS must be in some position in the left periphery. Which position could this be?

There is cross-linguistic evidence in favour of the claim that postverbal subjects in focus VS leave SpecTP and move to a left-peripheral position. Kiss (1998) shows that, in a wide array of languages including Arab, English, Catalan and Hungarian, identificational foci move to a left-peripheral focus position. Now, given that, as I argued before, postverbal subjects in focus VS, but not preverbal subjects in the SV word order, are identificational foci, I conclude that the former, but not the latter, are in a left-peripheral focus position.

4.4   *The position of the verb phrase (TP) in focus VS*

In section 4.2, I have shown that focus VS is derived by the leftward movement of the whole verb phrase, i.e. the verb with the complements and the adjuncts, and, in section 4.3, I have shown that the subject is in a left-peripheral focus-projection. By consequence, the verb phrase must also be in a left-peripheral position, but it remains to be established which position this is. In other words, it needs to be determined how (i.e. on the basis of which discourse-semantic property) the movement of the whole verb phrase to the left periphery is motivated.

I argue that the verb phrase in focus VS occupies a Topic-position to the left of the Focus-projection the subject ends up[13]. The whole clause preceding the subject in focus VS is indeed interpreted as "what the sentence is about", i.e. as the "sentence topic" or the "aboutness-topic" (cf. Kuno 1972, Dik 1989, Reinhart 1981, Lambrecht 1994, Vallduví 1992, Erteschik-Shir 1997, 1999, van Kuppevelt 1995).

A typical test to determine whether an entity can count as such a topic, is to embed the sentence in a so-called "*about* sentence" of the form "I say about x that y" (cf. Reinhart 1981:64). The element of the original clause which occupies the position x is then the sentence topic. Let us apply this test to, for instance, example (6), repeated here as (25). Although there are theoretically two possible outcomes, (26a) and (26b), only (26b) is a suitable paraphrases for (25).

(25)   *A   gagné 1000F Haie Bernard.*
             has won   1000F Haie Bernard
             "The person who won 1000F is Haie Bernard."
             (*L'Aurore*, cited by Jonare 1976:40)

(26)   a.   # *Je dis à propos de Bernard Haie qu'il a gagné 1000 francs.*
             "I say about Bernard Haie that he has won 1000 francs."
        b.   *Je dis à propos de celui qui a gagné 1000 francs que c'est Bernard Haie.*
             "I say about the one who has won 1000 francs that it is Bernard Haie."

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[13] Rizzi (1997) argues that the single Foc projection in the left periphery may be surrounded by one or more Top projections.

This shows that, in the focus VS examples, the sentence topic is the whole clause preceding the subject, i.e. the verb, together with its complements and adjuncts. On the basis of this, I conclude that the preposed TP in focus VS is in a left-peripheral topic projection[14].

5.   *Conclusion*

In this article, I have argued that "strong focalization VS" (Kayne and Pollock 2001) and instances of "heavy subject NP inversion" (Bonami, Godard & Marandin 1999:21), also called "elaborative inversion" are sub-cases of one type of inversion, "focus inversion". This type of inversion has the following properties: (i) the postverbal subject has an identificational focus reading, (ii) the whole verb phrase, i.e. the verb with the complements and the adjuncts, is interpreted as a sentence topic or an aboutness-topic, (iii) floating quantifiers can appear between the auxiliary and the past participle, (iv) complements and adjuncts must necessarily precede the postverbal subject, i.e. the postverbal subject must be the last element of the clause, (v) no element has to precede the verb for focus VS to be grammatical, (vi) focus VS is not sensitive to the semantic features of the complement between the verb and the postverbal subject, and (vii) the subject is never in the scope of a complement which precedes it. These arguments lead to the conclusion that focus VS has the following analysis: [$_{TopP}$ verb + complements + adjuncts] [$_{FocP}$ subject].

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[14] Rizzi (1997) defines the notional content of topics in the following way: "as for X (which is already present in the discourse context), I'm telling you that Y".

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ASPECTUAL QUANTIZATION AND [±] ACCUSATIVE CASE CHECKING IN ROMANCE[*]

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1.   *Introduction*

The case pattern of direct objects in Romance languages alternates between two different systems. The first makes use of accusative and partitive case, and French and Italian exemplify this pattern in (1).

(1)   Pattern 1 (French/Italian: partitive/accusative)
    a. *Il   a   mangé   de   la tarte/   Il   a   mangé   une tarte*.
        he has eaten PART ART   pie   he has eaten   a   pie
        "He ate some pie/He ate a pie"
    b. *Ha   mangiato   della   torta/   Ha   mangiato   una torta.*
        He-has eaten   PART ART pie   he-has   eaten   a   pie
        "He ate some pie/He ate a pie"

The second case pattern makes use of accusative plus a prepositional case, and Romanian and Spanish illustrate this pattern in (2).

(2)   Pattern 2 (Spanish/Romanian: accusative/prepositional case)
    a. *Pedro trajo   unos   estudiantes./ Pedro   trajo   a   Ana.*
        Pedro brought   some   students   Pedro brought   to   Ana
        "Pedro brought some students/ Pedro brought Ana"
    b. *Petru   a   adus   nişte studenţi./   P.   a   adus-o   pe Ana.*
        Petru   has brought   some students/   P   has brought on Ana
        "Pedro brought some students/ Pedro brought Ana"

It has been suggested that this parameter is at the base of a typological split within the Romance family (Posner 1996 and references therein). At first sight partitive and prepositional case marking seem to be two sides of the same coin, the former marking NPs with weak interpretation, and the latter marking strong referential NPs. Hence there is the possibility of defining this syntactic difference as a morphological microparameter.

This paper studies the nature of that morphological difference, and proposes that it should be traced to the morphological features of accusative case, (which is basically a predicate that maps arguments into aspectual structure). The distinction is whether the argument should check [+/- quantized] accusative features. In other words, this microparameter is the Romance solution to legibility conditions on the mapping of arguments to events. Two functional categories regulate the aspectual structure. The higher one checks elements with [+D] features and is related to Nominative case checking. If aspectual structure is semantically saturated, this functional category bears [+ quantized] features. The lower one checks elements with a [+ N] feature and is related to accusative case checking. The verb moves to the lower Asp, attracted by a [- interpretable] aspectual feature, that is checked by a [± quantized] lexical feature borne by the verb. This operation triggers case conflation, that is only one case, nominative or accusative, is activated, since the upper AspP binds the lower one. Languages with pattern 1 have [+ quantized] mapping eventive features, which activate nominative case checking. Accusative case is assigned by default. In order for the object to check its case features, its features should be [+ quantized]. If not, partitive case is assigned, where the partitive structure allows the NP to check [+ quantized] features, through the abstract incorporation of the external argument of the partitive function to the aspectual head. Languages with pattern 2 have [- quantized] mapping eventive features. As a result, only [- quantized] objects can check accusative case. The remaining elements, subjects and [+ quantized] objects, receive default nominative case. [+ quantized] objects that bear similar features to the subject, and are potential checkers of some of the subject grammatical functions should bear differential lexical case marking, that is oblique case.

In this paper I first introduce some questions concerning the theory of case presented in Chomsky (1995), taking into account previous research that has studied displacement and case theory. I then present the framework used in my analysis based on the interface between aspectual structure and case theory. Next, in the fourth section I present my analysis. Finally, in the fifth section I offer some conclusions.

2.   *Displacement and case checking*

2.1   *The Minimalist Program*

The theoretical framework employed in this paper is partially based on the feature-checking theory of case defended by the Minimalist Program of Linguistic Theory (Chomsky 1995), with the caveat that Move is not a necessary operation to check case features (de Hoop 1996, Chomsky 2000, López 2001). Additionally, I incorporate other more specific proposals offered by studies of accusative case and aspectual structure.

Minimalist theory of case is based on the assumption of the VP-Internal Subject Hypothesis. Because of theta theoretic considerations, the Internal VP-Hypothesis claims that both the internal and the external arguments are base generated under VP, where they receive their theta-role. This projection has been split into two different layers by Chomsky (1995). The internal argument is base-generated in the complement position of VP, while the external argument is base-generated in the Specifier position of vP.

Case is conceptualized as a formal feature that needs to be properly licensed. Case features are universally [- interpretable], and they should therefore be checked and erased before going into Interpretation at the Conceptual-intentional system. Hence, both arguments have to find a head with a similar feature with which they can be checked, and have their feature erased. In the case of the internal argument this head is v. Hence, under a theory that allows for multiple specifiers, the internal argument should move to the checking domain of v. Under that configuration both heads check their features. Meanwhile, the external argument moves to IP to check its nominative feature. Leaving aside the technicalities of the operation Move, the representation of such a derivation is shown as in (3):

(3)
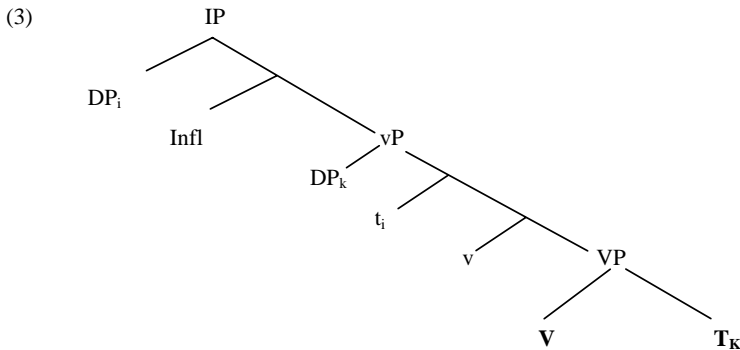
However, there are two issues that should be taken into account with this analysis. First, there is not always movement out of a shell where the object and the subject are base-generated (de Hoop 1996, Chomsky 2000, López 2001). Second, the objective case is related to the aspectual structure of the predicate. Semantic investigation has pointed out the relevance of the internal argument to compute the aspectual properties of a predicate (Verkuyl 1972). The aspectual structure of a predicate has been expressed syntactically by the existence of one or more aspectual functional categories, and accusative case checking has been related to these functional categories (Ramchand 1997, Kiparsky 1998, Borer 1998, Ritter & Rosen 2000). In this sense, although case checking is purely a formal mechanism, it can activate certain semantic structures.

2.2   *"Weak" and "strong" case*

De Hoop (1996) has pointed out that not every nominal expression seems to undergo displacement to check case. Some NPs seem to behave as predicates and receive "weak" case. Weak case is a structural default case licensed at D-structure in a certain configuration. Objects that bear weak case are treated as predicate modifiers (type <<e,t><e,t>>). Strong case is licensed at S-structure. It is a type-shifter on all arguments, lifting the type to a generalized quantifier.

Dutch, for example, shows these kind of effects with an object moved over the adverb *altijd* "always", as illustrated in (4):

(4)   a.   *dat hij altijd   enkele   artikelen   met   die   mensen las*
             that he always some   articles   with   those   people read
             "that he always reads some articles with those people"
       b.   *dat hij enkele   artikelen   altijd   met   die   mensen las*
             that he some   articles   always with   those   people read
             "that he always reads some (of those) articles with those people"

                                                                    (de Hoop 1996:84)

According to de Hoop, when the object is scrambled over the adverb, the object has a strong interpretation, either referential or partitive, in contrast with the unscrambled position where it has a weak interpretation.

If this is true, why should an NP with weak case remain in the D-structure position? A possible answer is the difference that de Hoop makes between weak and strong assignees, stated in (5).

(5)   An object is interpreted as a generalized quantifier if and only if it bears
              strong case. An object that bears weak case is interpreted as part of the
              predicate. (de Hoop 1996:102)

In accordance with (5), objects with strong case are syntactically and semantically real arguments, whereas objects with weak case are part of the predicate. De Hoop notes that although strong NPs can remain in their D-Structure, weak NPs cannot move to an external A-position.

However, this type of analysis is not entirely suited to Spanish in contrast with languages with Pattern 1. (6) shows that a weak NP can remerge at a higher position still under neutral intonation, something that is not allowed, for example, in French, as illustrated in (7):

(6)   a.   *Pedro   bebe   siempre cerveza.*
       b.   *Pedro   bebe   cerveza siempre.*
             Pedro   drinks   beer   always
             "Pedro always drinks beer"

(7)   a.   *Pierre   buvait   toujours de la bière.*
       b.   **Pierre buvait   de   la   bière   toujours.*
             Pierre   drinks   PART ART   beer   always

The minimal conclusion that we can extract from the Dutch and Spanish data is that displacement is not a pre-requisite for case operations, at least in the case of NPs that function as predicates. However, in some languages, such as Spanish, displacement of this type of NP is not precluded. The minimal assumption would be that weak NPs in Spanish do not move because of case reasons, but possibly for scope reasons. The question is why these "scope-movements" are disallowed in Dutch.

2.3   *Absolute small clauses (ASCs)*

However, as López (2001) has shown, the situation is even more complex, and affects NPs that cannot be considered predicates. Belletti (1990) has observed that a pronominal object in absolute small classes in Italian receives accusative case, as illustrated in (8). Under Chomsky's model, this would be difficult to account for since arguably ASCs lack vP, as illustrated in (9).

(8)   *Conosciuta   me,   hai   cominciato   ad   apprezzare   il   mare.*
       known   me-ACC   you.have   begun   to   like   the   sea
       "After you met me, you began to like the sea." (Belletti 1990:103)

(9)

Absolute Small Clause
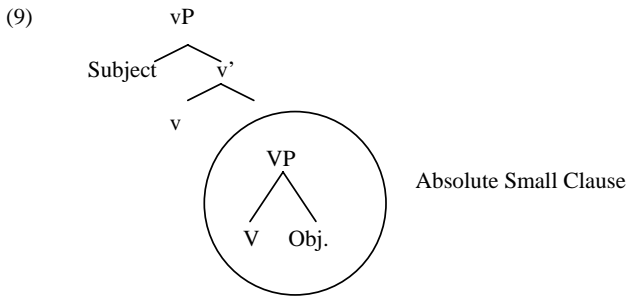
As López observes, this clearly shows that vP cannot be assigning accusative case here. López concludes that the object checks accusative case in its base-generated position. However, data from Spanish and other languages introduce further complications. In Spanish for example, the object receives nominative case in these constructions, as illustrated in (10):

(10)   *Una vez   liberado   yo,   continuaron   su   ataque.*
        once   released   I-NOM   they-continued   their   attack
        "Once I was released, they continued their attack"

López suggests that ASCs have a case strategy connected with an aspectual head that activates when the verb heading the construction does not bear a case feature. In Spanish the case assigned would be nominative. However, one question remains. Why do Spanish and Italian differ in such a way?

2.4   *Subject in-situ Generalization (Alexiadou & Anagnostopoulou 2001:216)*

Finally, to complete the picture, Alexiadou & Anagnostopoulou's (2001:216) generalization in (11a), that also holds for languages that check the EPP by a different mechanism than overt movement, such as an expletive, should be considered.

(11)   Subject in-situ Generalization
        a.   By Spell-Out VP can contain no more than one argument with   an unchecked Case feature.
        b.   Interpreted as: v and T cannot both have active Case features when they form a complex head.

The generalization in (11a) is derived from the configuration created by V-to-T raising in (12) where neither head can c-command outside the complex head, given the definition of c-command (Chomsky 2000:116) in (13).

(12)

$$
\begin{array}{c}
T \\
\diagup\diagdown \\
Vb \quad\quad T\langle Case\rangle \\
\diagup\diagdown \\
V \quad\quad v\langle case\rangle
\end{array}
$$
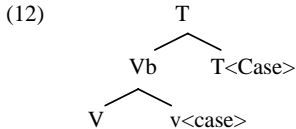
(13)   α c-commands β if α is the sister of K that contains β

However, languages with case conflation show that T can check one case, hence Alexiadou & Anagnostopoulou assume that case features of one of the heads adjoined in T percolate to the maximal projection. Since only one of them does percolate, given the version of the Case Frame Preservation Principle in (14), a stipulation such as (15) becomes necessary:

(14)   A complex X in a given language can have at most the maximal Case-checking features permitted to a simple X in that language. (Alexiadou & Anagnostopoulou 2001:217)

(15)   T⟨case⟩ or v⟨case⟩ must be eliminated before the complex head is formed.

As acknowledged by Alexiadou & Anagnostopoulou, (15) becomes a problem for a derivational model with strict cyclicity, since it triggers look ahead/back operations. Under this kind of model, the only alternative is to lexically specify the active case. So the question becomes, how do languages specify active cases?

Whatever solves this issue for a strong derivational model, should also be able to account for the exception found in Romanian and Spanish for the subject in-situ Generalization, noted by Alexiadou & Anagnostopoulou. Romanian and Spanish allow the subject and the object to remain within the VP by Spell-out, as illustrated in (16) with Spanish:

(16)   *¿Cuándo hace   bien   Juan   este trabajo?*
         when   he-does well   Juan   this work
        "When does Juan do this work well?"

The availability of this structure is linked to clitic doubling by Alexiadou & Anagnostopoulou. Languages that permit clitic doubling of objects seem to permit this type of structure. Alexiadou & Anagnostopoulou argue that this is because Agreement behaves as a clitic in those languages. Hence, under a feature movement analysis, NPs doubled by agreement do not need to be pied-piped, remaining in VP internal position. Nominal features have raised to Tense and its case has been checked before Spell-Out. If this is the case, then Romanian and Spanish are no longer counter-examples. However, in order to accept this explanation, we need to understand in a more precise way the differences between the Italian and Spanish agreement systems. Although there are some differences between the clitic systems, it is more difficult to see how this extends to the Subject Agreement mechanisms of both languages.

There are therefore four main conclusions that we can extract from the previous discussion:

(17)   1.   Accusative case is not necessarily related to vP, at least in some languages.
        2.   "Weak nouns" tend to remain in their VP-shells, but this is not a universal.
        3.   Case does not always involve displacement[1] (cf. Chomsky 2000) in languages with verb movement, although one of the arguments with direct case (nominative/ accusative) must be moved out of the VP-shell. (This however might not be universal.) The generalization that we can draw is that there is only one direct case active by Spell-out in these languages.
        4.   Within a strong derivational model, the only possibility is to lexically specify the active case, leaving the other inactive, and assigned by default.

There are also three questions triggered by the data in Spanish and Romanian:

(18)   1.   Why can weak "accusative" NPs be displaced out of their shell in Spanish and Romanian?
        2.   Why can Italian, but not Spanish and Romanian assign accusative case in ASCs?
        3.   Why can two strong NPs remain in their VP-shells in Spanish and Romanian but not in Italian?

Before trying to answer these questions and analyze these facts, I present what would be the structure of the lower clause once we incorporate the aspectual theory of case into the lower structure of the clause.

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[1] The "agree" mechanism can explain the behavior of one of the arguments, but not the other. "Agree" is a long-distance operation through which features are matched. It doesn't involve either overt or covert movement. If this type of analysis is pursued, then an explanation of why it applies to one argument, but not the other is necessary. I attempt to do this in this paper.

3.   *The conflation of sentential and lexical aspect and the theory of case*

Previous studies have proposed, on the one hand, that sentential aspect effects can be derived by the interaction of two functional categories, Tense and Aspect (Delfitto & Bertinetto 2000), that act as dyadic predicates taking time-denoting phrases as arguments. On the other hand, in most studies of the last decade it has been argued that lexical aspect is syntactically determined (Borer 1998, Ritter & Rosen 2000). Borer (1998) has argued that there are two syntactic projections related to the points of "origination" and "termination" or "delimitation" in the eventive structure. Those two syntactic positions are relevant to case checking. Although there is evidence from languages that show an interaction between sentential and lexical aspects for claiming that sentential and lexical aspect is interrelated, the two structures have been kept independent, and their connection is not well defined in current theory. In this paper I argue in favor of the conflation of both types of aspects.

My proposal is that the two functional categories related to the lexical aspectual structure are also the two functional categories that saturate, or not, an event predicate. Hence, in the same way that NPs related to a predicate can act as arguments or as predicates of the verb, there is an event argument that might not be lexically saturated in all languages. This is just the case in Romance, for example.

The syntactic implementation of this conflation is based on the split of Delfitto & Bertinetto's AspP into two functional categories. In Romance the verb raises to the lower AspP to check its quantificational features (cf. Delfitto & Bertinetto 2000). The lower AspP is the landing site for non referential elements, elements that are not selected by a DP. These elements check their [+N] feature at the Spec-of-AspP[+N]. Spec-of-AspP[+N] is the site where wh-phrases without restriction, negative phrases, and certain adverbs land.

The upper AspP is where referential elements, that is, elements selected by a DP, check their [+D] feature. As a result they bind the existential variable of the event. The elements that land in its specifier may be, among others, D-linked wh-phrases. In this way we can explain the differing word orders of D-linked and non D-linked phrases (Martín 2003). Both referential and non referential elements value the quantificational features of AspP, but they use different AspPs. The reason for this distribution is simple; elements that are not dominated by a determiner have a cumulative structure, while elements dominated by a determiner have a quantized structure. According to Krifka (1989), the quantificational internal structure of nouns and events, can be defined in terms of quantization. Depending on the quantificational operations that take place at both AspPs, an event would be "cumulative" or "quantized" in accordance with the definitions in (19):

(19)   a.   A predicate P is cumulative iff ∀ x,y[[P(x) ∧ P(y) → P(x⊕y)] ∧
              card(P)≥2] [whenever P applies to x and y, it also applies to the sum of x and y,
              provided that it applies to at least two distinct entities]
        b.   A predicate P is quantized iff ∀ x,y[P(x) ∧ P(y) → ¬y<x]
              [whenever P applies to x and y, y cannot be a proper part of x]

The upper AspP is related to the originator end of the event, and the lower AspP to the termination point through the case system. Both AspPs can bind the event variable. In Romance if the event is delimited at AspP[+N], then the event variable may be activated in the upper AspP[+D] (cf. Ritter & Rosen 2000). For example *Peter painted the house* is a quantized and delimited event. AspP[+N] is quantized and delimited and that activates the event variable in the upper AspP, the originator end of the event. On the other hand, if AspP[+N] has a cumulative structure and the event is not delimited, then the subject of the upper AspP[+D] can bind the predicate as a property. This is a fact similar to what happens in a noneventive interpretation of a sentence such as *Peter paints houses*. Hence, the relationship between the two AspPs should be considered somehow parallel to that of a determiner and a noun, in the sense that the upper projection binds the lower projection, and the lower projection activates some of the features in the upper projection.

Unaccusative verbs may activate a causative event role in the upper AspP. Unergative intransitive verbs may not do this although they may bind an event variable, for example, by means of the perfective morphology of the preterit. If this happens, the event has an inchoative interpretation, since "termination" has not been activated in the lower AspP. States behave in a similar way.[2] Unergative intransitive verbs denoting activities may be delimited through modification (Ritter & Rosen 1998).

It is important to make a distinction between quantization (and mapping to events) and telicity (Ritter & Rosen 1998, Rothstein 2004, Kratzer 2004). Telicity has a compositional nature, and the (a)telic nature of the event can be coerced by partitive and delimitative operations. The difference in quantization is the domain of verb/adjective differences (Rothstein 2004), while delimitedness of quantized events belongs to the domain of telicity. Achievements and accomplishments are inherent events, and have an eventive interpretation as long as their eventive structure is quantized. States and activities need their structure to be saturated by external means such as modifiers or perfective morphology.

Independently the verb may bear features used to map objects to events if AspP has an active [- interpretable] feature to be checked by the verb.[3] This feature can be set up as [± quantized], as happens in Romance. A priori, this is quite stipulative, as pointed out by one of the anonymous reviewers. In this paper the arguments for such a stipulation are the issues that it can solve. However, I

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[2] I owe this observation to Paula Kempchinsky.
[3] English verbs, on the other hand, seem not to have this formal specification, the mapping of objects to events being straightforward through accusative case.

would like to present a conceptual aspect of this proposal, and two possible empirical arguments.

The conceptual reasoning is that V-movement is triggered by the necessity of making arguments visible for case marking and of integrating arguments into aspectual structure. The proposed feature [± quantized] borne by AspP is a relational feature, and although it has a lexical nature, it is not based on the lexical properties of the verbs that bear them. However, in order to be active it has to be set up to [± quantized]. The way that it is set up is probably contingent on other morphological properties of the language, yet to be defined.

A piece of evidence that seems to support an analysis along these lines is the fact that Italian allows bare plural nouns in the object position especially with elements that coerce the predicate into a [- quantized] interpretation such as negative and interrogative sentences, as illustrated in (20):

(20)   a.   *Non voglio fiori.*
                 "I don't want any flowers"
        b.   *Vuole fiori?*
                 "Do you want flowers"

If AspP is bearing [- quantized] because of the quantificational features of negation or interrogation, then Pattern II of checking case (accusative case for [- quantized] objects) may emerge.

A second, perhaps more speculative, piece of evidence is the contrast between Italian and Spanish with respect to sentence (8). The Spanish version of (8) is ungrammatical:

(21)   *Conocida   yo,   has   comenzado   a   apreciar el mar.*
        known   I-NOM   you.have   begun   to   like   the sea
        "After you met me, you began to like the sea."

The only possible interpretation of the past participle in (21) is an adjectival interpretation that the context does not allow to be felicitous. According to Ritter & Rosen (1998) achievements and accomplishments are inherent events, so eventive structure within ASCs headed by these types of verbs is saturated. On the other hand, states and activities need external saturation. My argument is that in Italian such saturation takes place through the [+ quantized] features of AspP, while in Spanish the ASC in (21) cannot have an eventive interpretation because AspP does not bear [+ quantized] features, and the atomicity of the event cannot be defined.

This formal mechanism of mapping objects to events must be kept independent from partitive and delimitative operations, as mentioned above. The partitive operation returns an atelic event, as (22) illustrates:

(22)   a.   *Il a   mangé de la   tarte   en une heure.
             he has eaten   PART ART pie   in an hour
       b.   Il   a   mangé de la   tarte   pendant une heure.
             he has eaten   PART ART pie   during   an hour
             "He has eaten pie for one hour"

The question is whether partitive objects actually match [+ quantized] features. My answer is yes, but the whole partitive construction does not do the checking. Partitive constructions are two-place predicates. Only one of the arguments actually checks [+ quantized] features. This is what can be called the external argument of the partitive construction, which in (22) has been incorporated into the verb. This argument denotes the part of the pie that has been eaten. That part cannot have proper parts that are the part of the pie eaten. In order to determine if the predicate *Il a mangé de la tarte* is telic or atelic the whole predicate is computed, including the whole partitive construction. Therefore, telicity has a compositional nature. Note that in (22b) temporal modification returns a telic event (Rothstein 2004).

In conclusion, the presence of both aspectual projections is independent from the actionality of the verb. The actionality of the verb may or may not be defined by the binding of an <e> variable by these functional projections, and by the features that are activated.[4] These functional projections are directly connected with the case checking mechanisms. What I propose is that these two AspPs create "case fields", one marked as [+D] and the other as [+N]. The two AspPs mark the limits of two case fields. In addition, these AspPs are not linked to specific cases, as proposed by Borer (1998). In this way we can explain the ergative pattern of languages.

Based on the interaction between sentential and lexical aspect,[5] I propose that the clause structure in Romance is as in (23).

According to Delfitto & Bertinetto, Tense selects for its complement the Event Time argument, which can be defined as AspP. Romance verbs, endowed with a quantificational lexical feature, raise to AspP. The nature of that quantificational feature is the factor that defines the parameter between Romance languages.

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[4] On the difference between D-events and the eventive argument see Ritter & Rosen (1998).

[5] There is also some empirical motivation given by question formation involving wh-phrases with and without restriction, and some extraction facts (Martín 2003) that I cannot cover here.

(23)

ForceP
    (TopP)
      IntP
por qué   (TopP)
        TP
          (TopP)
            AspP[+D]

DPs & wh-phrases with restriction   (TopP)
(D-linked wh-phrases, etc.)

                AspP [+N]

N-words, NPs, wh-phrases without restriction
(non D-linked wh-phrases, etc.)
              V   … t$_V$ …
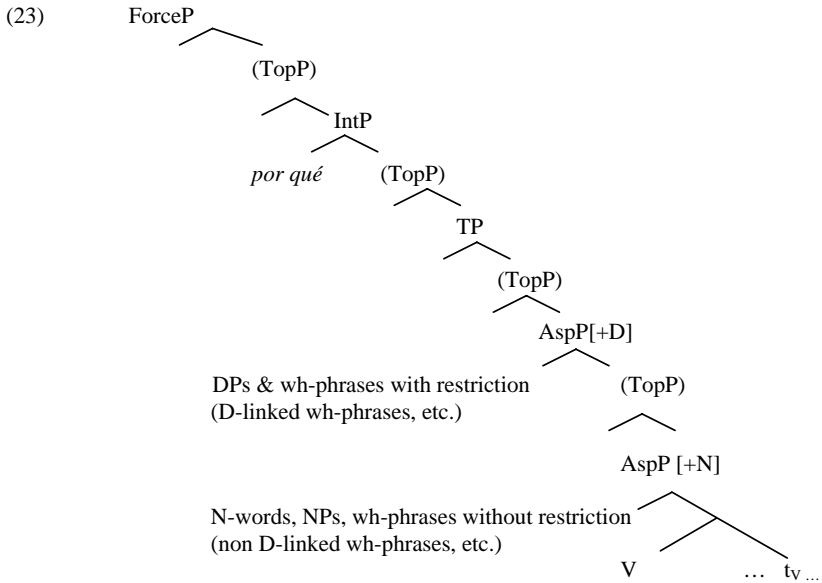
4. *The analysis*

4.1 *The trigger for V-movement and case activation*

Pollock (1989) argues that Inflection attracts the verb only when it has morphological features strong enough to assign thematic roles. Under a structure where Inflection is split into TenseP and two AspPs, case would be the actual factor and not thematic roles. We have argued also that the AspP bears quantificational features, and these features may be [+/- quantized]. My claim is that verbs may or may not be lexically specified with those features. If they are, the Verb moves to AspP. If they are not, the verb remains in a lower position, as is the case in English. The specification might have a positive or a negative value for quantization. Italian and especially French make wide use of the partitive structure as a means for objective case checking. On the other hand, that structure is quite limited in Spanish and Romanian. These languages allow singular bare countable nouns as objects, something that Italian and French do not allow, as illustrated in (24):

(24)   a.   *Pedro   compró (un) coche./ Petru   şi-a luat   (o) maşină*
               Pedro   bought (a) car.   Petru   has bought (a) car.
      b.   *P   a acheté *(une) voiture./ Ha   comprato *(una)   macchina.*
               P   bought   (a) car.   Has bought   (a)   car.
               "P. bought a car"

If partitive structure is taken as a predicate that maps cumulative structure into quantized structure, and the lack of formal quantization is considered in

(24a), one must conclude that Italian/French and Spanish/Romanian seem to be two sides of the same coin with respect to objective case checking. French and Italian objects are required to check [+ quantized] features, while Spanish and Romanian are not. Why is this? In section 3 it was claimed that the verb in Romance raises to AspP because it bears quantificational features, and that only one case was active in Romance, this having to be determined through lexical specification within a strong derivational model. It was also argued that the AspPs bear [+/-quantized] features as functional binders of the eventive predicate. Now, if lexical features of Romance verbs are specified as [+/- quantized], then there is a solution for the puzzle. Italian/French languages have their verbs specified as [+ quantized], i.e. they check features with [+ quantized] arguments. On the other hand Spanish and Romanian verbs are [- quantized]. As a result of this specification verbs are raised to AspP in Romance. Italian and French activate nominative case, which is related in Romance to the upper AspP as a result of the [+ quantized] specification of the verb. On the other hand, Romanian and Spanish activate accusative case, which is related to the lower AspP, as a result of the [- quantized] specification. In French and Italian the subject should check Nominative case with a head that bears a [+ D]/[+ quantized] feature, and that means the higher AspP, or even higher, as the examples from Cinque (1999:110-111) in (25) illustrate.

(25)   *Maria   mica   prende   il   treno. /   *Mica Maria prende il treno.*
            Maria   not   takes   the train
            "Maria does not take the train"

(26)   a. *Rapidamente   Gianni alzò   di nuovo   il   brazo.*
            quickly   Gianni raised again   his arm
            "Gianni raised his arm again quickly"
        b. *Gianni rapidamente alzò di nuovo il brazo.*

        (25) shows that the subject in Italian has to occupy a higher position than *mica* "not", which is arguably in the lower AspP. (26) shows that the subject may or may not precede adverbs higher than *mica*.[6]
        On the other hand, Spanish and Romanian accusative checks case with a head that bears [+ N]/[- quantized] features, as (27) shows.

(27)   a. *Pedro   compra   siempre coche.*
            Pedro   buys   always car
            "Pedro always buys a car."
        b. *Pedro compra coche siempre.*
        c. *Pedro coche compra siempre.*
        d. **Coche Pedro compra siempre.* (with neutral intonation)

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[6] For further data see Cinque (1999:110-111)

In (27) with neutral intonation the bare singular countable noun can occupy any position up to Spec-of-lower AspP. Then the position to which the verb raises in Romance seems to split the syntactic tree between [+ D] or [+ quantized] heads and [+N] or [- quantized] heads, as illustrated in (28).

(28)
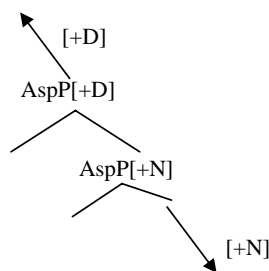
(28) looks similar to a tree splitting algorithm, with the incorporation of Delfitto & Bertinetto's idea that AspP is the key element in structuring the restrictive, and the nuclear scope clauses. The fact that the lower AspP is the dominating projection of the syntactic [-quantized] projections is probably the reason that many elements that are [- quantized], such as non D-linked wh-phrases, negative words and lower adverbials, are attracted to this position (in order to be semantically associated with focus).

The question that remains unanswered with respect to subjects is what happens when the Italian subject is left in the sentence final position, as in (29):

(29)   *Prende* il treno MARIA.

According to Cinque (1999:111), an expletive in Spec-head relationship with the verb licenses a contrastive subject in the sentence final position. This final position can be derived from the fact that the subject acts as an informational predicate, following de Hoop's analysis of nominal expressions that do not leave the VP-shell. In this way there is no need to stipulate that the expletive is generated in the lowest Functional Category and then moved to the subject position.

If the lexical features of the verb activate just one of the case features that the verb complex bears as a result of movement, this answers Alexiadou & Anagnostopoulou's challenge to a one-cycle model of grammar, but obviously also poses new questions. The main question is how objects check case in Italian and French, and how [+ quantized] objects and subjects do it in Spanish and Romanian.

4.2   *AGREE as a default case*
Based on the case of pronominal forms within ASCs, I would like to propose that at Merge every argument should bear case features to be checked in

the syntax. If an argument does not bear checking features, it should receive a default case. This default case would be the non activated case. In Italian (and French), the default case is accusative, as shown in (8). This default case should bear the features that the predicate bears, that is in Italian and French [+ quantized]. Default cases are subject to a matching condition instead of a checking condition. Since in the case of French and Italian, the verb has not activated objective case, objective case is obtained through the "agree" mechanism, where the argument matches the features of the predicate. If the argument is not quantized, it should undergo lexical quantization through the partitive function.

On the other hand, Romanian and Spanish have as a default case nominative, as shown in (10) for Spanish, and in (30) for Romanian:

(30)   *Odată   pus eu   în libertate,   am plecat (cu toţii)*
         once   put I-NOM   in freedom,   we-left   (all)
         "Once I was released, we left"

A fair question is whether these structures are in fact comparable. My answer is that they are, once that the different types of ASCs are defined. Belletti (1990:104-105) shows that the structure with accusative in Italian is not a case of a (reduced) passive. It is therefore necessary to apply similar tests to Spanish and Romanian to show that Spanish and Italian structures are different from reduced passives. Belletti's arguments are that in Italian ASCs partitive and accusative direct objects cliticize onto the past participle, that *by*-phrases cannot appear within ASCs, and that idioms involving objects may appear within ASCs. Only the last two tests are applicable to Spanish and Romanian. The *by*-phrase test seems to indicate at first sight that the Spanish construction is passive, since it is available, as (31) illustrates:

(31)   *Liberado   yo   por   la   patrulla, ...*
         released   I   by   the   patrol
         "When I was released by the patrol,…"

However, the distribution of the *por*-phrase is constrained by informational factors. As pointed out by an anonymous reviewer, *por*-phrases in Spanish ASCs must be focused and the nominative argument should bear topic-like properties. Hence the ASCs in (32a) are ungrammatical because *por Cervantes* is not focused, and *la paz* cannot be a topic. Note that once we create a context where there can be more than one author, the clause is fine, as in (32b). In the same way, if there is a specific peace that the clause is predicated of, the clause becomes fine.

(32)   a.   *Una vez (fue)   { escrito el   Quijote (*por   Cervantes)/*
                once   was   written the Quixote   byCervantes/
                firmada la   paz (*por   los embajadores)}...
                signed   the peace by   the ambassadors
        b.   *Una vez (fue)   {escrita la   segunda   parte   del   Quijote por*
                once   was   written the second   part   of-the   Quixote by
                Avellaneda/ firmada la   paz   de Westfalia   por los embajadores}...
                Avellaneda/ signed   the peace   of Westphalia   by the ambassadors

Note that in (32) the same judgments hold if the verb *ser* is present. The optional presence of *ser* shows that these may be cases of reduced periphrastic passives. Assuming that this is the case, and leaving the study of the informational constraints for future research, the question becomes whether reduced periphrastic passives and the adjectival passive, which I leave aside in this study, are the only types of ASCs in Spanish. The third of Belleti's tests show that there is actually a third type in Spanish. It is the one that matches the Italian case that is relevant here.

This difference between periphrastic passives and Italian ASCs is the distribution of idioms involving a verb and an object (Belletti 1990:105). While idioms involving a verb and its object cannot passivize, they can form ASCs in Italian (Belletti 1990:105). The same state of affairs exists in Spanish as illustrated in (33):

(33)   *Una vez (*fue)   metida   la   pata   (*por Juan), me fui*
        once   was   put-inside   the leg   (by Juan)   I left
        "Once that I put my foot in it, I left"

This test clearly shows that ASCs are not reduced passives in Spanish. Note that idioms and *por*-phrases are not compatible within ASCs, showing that (32b) and (33) are two different types of ASCs in Spanish. Also the presence of the auxiliary results in a literal reading of the idiom.

An additional test that can be applied is whether an agent can be bound from outside the small clause. Agents of periphrastic passives cannot be bound from outside as (34) shows:

(34)   *Pedro dijo   que   la   carta fue   destruida.*
        Pedro   said   that   the letter was   destroyed
        "Pedro said that the letter was destroyed"

In (34) the subject of the main clause cannot bind the agent of the embedded clause. On the other hand, this is possible with non periphrastic ASCs, as in (33). In fact, the agent has to be bound in (33), something that also happens in Italian ASCs that have an accusative argument, as pointed out by Mario Saltarelli (p.c.).

Finally, I would like to mention that many speakers of Italian seem to accept reduced periphrastic passives, as the sentences in (35) illustrate:[7/8]

(35) a. *Liberato   io/me,   la pattuglia   mi ricondusse   al   campo.*
          released   I/me,   the patrol   me took   to-the camp
          "Once I was released, the patrol took me to the camp"

     b. *Liberato   (io/*me)(dalla   pattuglia), il nemico bombardò   il   fronte.*
          released   I/me   by-the   patrol   the enemy bombed   the front
          "Once I was released (by the patrol), the enemy bombed the front"

Then these speakers would have the three Spanish types: the adjectival passive that I have not studied in this paper, the ASC with an implicit bound agent, and the reduced periphrastic passive.

Since Italian and Spanish ASCs with implicit bound agents are comparable in the sense that they are the same type of structures, and the case assigned is different between both languages, then our system should account for this asymmetry. In the case of Italian the argument cannot bear nominative case features because that case has not been activated in the upper AspP. Hence it has to receive default accusative case. In the case of Spanish, accusative case is not available because it checks only [- quantized] features, so then it has to receive default nominative case as a last resort. Since there is no competing nominative case, pronouns do not have to take semantic oblique case.

In conclusion, the Spanish verb bears [- quantized] features. Hence, Spanish and Romanian [-quantized] objects check features in the lower field. Subjects and [+ quantized] objects are assigned case in any position through AGREE. This explains why in Spanish and Romanian the two direct arguments can remain in the VP-shell by Spell-out. Thus I am arguing that in Spanish and Romanian there may be two arguments with the same case, which is acceptable unless the object has the same semantic features and quantificational properties as the subject.[9] In the latter case lexical differential object marking takes place in the form of prepositional case marking. When the subject is not present in terms of the case algorithm, objects that prototypically are introduced with a preposition in other contexts appear with default nominative case, such as in Absolute Small Clauses.

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[7] I owe these examples to Mario Saltarelli.

[8] According to Belletti (1990:117-118) the accusative appears also with adjectives. The extension of these facts seems to be constrained to Toscana (Saltarelli, p.c.). It seems that there has been an over-extension of the use of the default accusative case to other contexts. According to my informants this is not the only context where there has been an over-extension of the use of accusative case. It happens also in regular clauses.

[9] As pointed out by an anonymous reviewer, this might be an undesirable consequence of my analysis. Nominative case is just a default case. There is nothing in the computational system that blocks double assignment of a semantic default case, except for Bare Output Conditions. If the double case assignment does not interfere with Interpretation then it may be a possibility.

4.3   *Differential object marking*

The object in Spanish and Romanian is case marked with a preposition when the semantic features of the object are similar to those of the subject, as (2) and (36) illustrate. This usually translates into prepositional objects that are animate and definite, and therefore are also called "personal accusatives", but, as we know, there are multiple exceptions to this, as (36) illustrates.

(36)   *El   adjetivo   modifica   al   sustantivo.*
        the adjective   modifies   to-the   noun
        "The adjective modifies the noun"

The explanation by which "differential case marking" is triggered by the similarities between subjects and objects has been dismissed, because historically prepositional objects appeared with pronouns first, and pronouns still show morphological case in Romance. However, as I discussed earlier, the default case for [+ quantized] objects is nominative, and accusative case is not available for this type of object in some Romance languages, such as Romanian and Spanish. Hence, prepositional case might have appeared to make a distinction between subject and object, given the set up of the syntactic system of Romanian and Spanish. In other words, under this analysis the fact that pronouns have morphological case is actually the trigger for prepositional marking.

Another counter-argument to an analysis where "differential case marking" is triggered by the similarities between subjects and objects is that it is not always the case that prepositional case-marking takes place when the subject and object bear the same semantic features. If we look at (37), both arguments can satisfy the semantic selection for being subjects of the verb *causar*:

(37)   La   guerra causó (*a)   la   pobreza.
        the   war   caused to   the   poverty
        "The war caused the poverty"

However, there is an important difference between the sentences in (2), (36), and (37). In (2) and (36), but not in (37), the object can quantify the event. In other words, if there is a plural object in (37), there cannot be multiple causations. In other words, "causation" is a property and not an event. It can only be quantified by the subject. On the other hand, in (2) if there is a plural object, there might be multiple events of inviting. Hence, case is relevant for quantificational operations.

The interesting issue in (2) and (36) is that only those objects that bear the same semantic features as the subject may quantify an event. In *vimos los libros* "we saw the books" there is only one event of seeing but in *vimos a los enfermos* "we saw the ill people", there may be more than one event of seeing. Hence the preposition is a lexical mechanism to make an object visible for quantificational

structure, and seems to be independent from thematic features and any interpretative condition at the interface.

5.   *Conclusion*

The theory of case employed in this study treats case as a function that makes a DP visible in quantificational terms for the aspectual structure of the event denoted by the verb. [+ quantized] features in AspP trigger nominative checking and accusative/partitive matching (Italian/French). Languages with [- quantized] AspP can check only accusative case of [- quantized] objects. These languages (Spanish, Romanian) use other strategies for subjects and [+ quantized] objects, such as default nominative and lexical prepositional case. This explains why a subject and an object can be left in the VP-shell in Romanian and Spanish, but not in Italian and French. In Spanish and Romanian the subject and the object receive default nominative case through the "agree" mechanism. It also explains why pronouns bear nominative case in ASCs in Spanish and Romanian. Finally, the fact that weak objects can escape their shell in Spanish and Romanian up to the Spec of the lower AspP is because they match the [-quantized] feature of these projections. From a historical point of view the loss of morphological case and general impoverishment of morphological case mechanisms in Romance languages result in a case conflation system that results from V movement to AspP, triggered by the attraction of a [- interpretable] feature. This feature has to be checked by lexical specifications concerning quantization in verbs. An analysis along these lines has important ramifications for syntactic phenomena that have previously been unexplained, such as the behavior of lower adverbs in Romance and the semantic, syntactic, and morphological properties of the different pronominal systems in Spanish. I hope to study these ramifications and predictions in future research.

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STRATA, YES; STRUCTURE PRESERVATION, NO.
EVIDENCE FROM SPANISH[*]

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1.   *Two issues in phonological theory*

1.1   *Stratification*

The insight embodied in Lexical Phonology [LP] that phonological rules apply in sequential strata, in tandem with grammatical operations, is incompatible with wholly parallel candidate evaluation, a linchpin in current mainstream Optimality Theory [OT]. The architecture of the two models can be schematized as follows:

(1)   LP (adapted from Roca 1994:251):

MORPHOLOGY   SYNTAX
input → Stratum 1 → Stratum 2 → … → Stratum n → postlexical stratum → *output*

rule 1 > rule 2 > rule 3 > … > rule m
PHONOLOGY

(2)   OT (McCarthy 2002:138, (68)):

input → GEN → *candidates* → EVAL → *output*
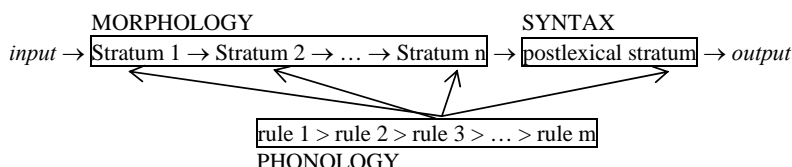
The diagram in (1) represents mid-1980s LP. Rules are assigned a single ordering throughout the language's whole phonology,[1] their application or not in

the different strata being regulated by certain universal principles, of which the Structure Preservation Condition discussed in section 1.2 below is one.

In the OT of diagram (2), underlying representations ("input") are fed through the generator ("GEN"), to yield an infinite number of mappings ("candidates") competing in an evaluation procedure (EVAL). EVAL checks compliance with a set of regulatory statements or "constraints", ranked according to their relative strength so as to achieve resolution of conflicts: the candidate that best complies with the higher ranked constraints wins the evaluation and outputs the system ("output").

As reflected in (2), current mainstream OT does not countenance stratal divisions (cf. e.g. Kager 1999, McCarthy 2002, 2003). In the words of McCarthy (2002:163),

> […] Globality and parallelism follow from the simplest model, the basic OT architecture in (68) [= (2) above, IMR]. The architecture is global because a single grammar – that is, a single ranking of the constraints in CON – is in force throughout the derivation. It is parallel because the derivation is flat, mapping input directly to output without further applications of the grammar.

A number of authors sympathetic to OT, indeed operating from within it, have, however, pointed out the continuing need for stratal divisions on empirical grounds.[2] Such evidence notwithstanding, steadfast defense of a strictly parallel OT persists in some quarters, and the issue thus remains open. In this paper, we will see that the Spanish processes of coda *r* strengthening, coda *s* aspiration and onset high vowel consonantalization bolster the case for a stratal OT, that is, for parallel evaluation to be stratum-bounded, not global.

1.2   *Structure Preservation*

Also in the context of LP, the SPC was proposed in the 1980s,[3] as part of the drive to dispense with stipulative stratum allocation of rules, substituting it with universal principles regulating rule activation. In particular,

> Lexical rules may not mark features which are non-distinctive, nor create structures which do not conform to the basic prosodic templates of the language (i.e. syllable and foot templates). (Borowsky 1986:29)

The effect of the SPC can be illustrated with English foot-internal flapping (Borowsky 1986:35-37). Thus, for instance, *atom* surfaces as *a*[ɾ]*om*, while *atomic* keeps the underlying strong *t*. This divergent behavior follows from the

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[1] In original LP modelling, rule ordering could vary stipulatively from stratum to stratum.

[2] Cf. Booij (1997), Rubach (1997, 2000), Itô & Mester (2003), and Kiparsky (2003), among others.

[3] See, for instance, Kiparsky (1982, 1984, 1985), Mohanan (1986).

exclusively postlexical application of flapping, predicted by the SPC, since [ɾ] is not distinctive in English – it is not in the English underlying segment inventory:

(3)   [ætɒm]   [[ætɒm] ɪk]

    Lexical Stratum

                                                                      1st cycle

    stress   ˈæ   ˈæ
    flapping   blocked by SPC   blocked by SPC
                                  _____
                                                                    2nd cycle

    stress   ˈɒ
    flapping   NA (else blocked by SPC)
    _____

    Postlexical Stratum

    stress[4]   vacuous?   vacuous?
    flapping   ɾ   NA (NB t not foot-internal)
    (V-reduction   ə   ə   )

                ˈæɾəm   ətˈɒmɪk
                                      NB *əɾˈɒmɪk

In the first lexical cycle, *atom*, *t* flapping is blocked by the SPC, on account of the fact that the flap [ɾ] is not in the English underlying inventory. As a consequence, the *t* in the *atom* of *atomic* does not become [ɾ] at this stage, crucially so, since, if it did, it would persist through to the end of the derivation, illegitimately giving *[əɾˈɒmɪk]. Postlexical application of flapping, consistent with the SPC, is only operative in *atom*, since in *atomic* the *t* is foot-initial, *a(ˈtomic)*, not foot-internal as required.

The OT equivalent of the SPC is an undominated ranking of the constraints that regulate the language's underlying segment inventory. Such ranking, however, is not universal, in contradiction of the SPC, as McCarthy (2002:74-75) articulates:

> In OT, whether a markedness constraint has a triggering effect […], or a blocking effect […], is a matter of interaction. […] Both types of interaction are well attested, and no criteria have been discovered that can consistently predict whether a given inventory restriction will apply in triggering or blocking mode. From the OT perspective this is precisely as expected: blocking versus triggering is a matter of constraint ranking, and constraint ranking differs across languages.

---

[4] Borowsky (1986) does not discuss the role of stress in the postlexical stratum.

The Spanish facts we present in this paper back up McCarthy's misgivings over the SPC.[5] These same data, however, support stratal divisions. Our conclusion will thus be that, while rule/constraint stratification is a reality of natural language phonology, the generalization encapsulated in the SPC is not.

2.   *Basic Spanish syllabification*
In this section we examine the rankings of the constraints responsible for Spanish core syllabification, to prepare the ground for the assessment of the role of stratal divisions and the SPC in Spanish phonology. In particular, the following three relevant properties will be noticed in Spanish syllables:

- Minimal onset satisfaction
- Onset maximization
- Cyclicity associated with certain prefixes

2.1   *Minimal onset*
The fully representative syllabifications in (4) demonstrate that the universal preference for ONSET fulfillment extends to Spanish:

(4)   *mi.ra*, *mi.na*, *mi.sa*, *mi.ma* "he looks, mine, mass, he spoils"

Evidence for these parsings comes, subjectively, from native intuitions (reflected in the standard orthographic conventions for line breaking), and, objectively, from the failure of the relevant consonants to undergo certain coda processes characterizing at least some accents:

- coda rhotic strengthening: ✓[r.], *[ɾ.] (*ma[r.]* "sea", **ma[ɾ.]*)
- coda /n/ velarization: ✓[ŋ.], *[n.] (*da[ŋ.]* "they give", **da[n.]*)
- coda /s/ aspiration: ✓[h.], *[s.] (*má[h.]* "more", **má[s.]*)
- coda nasal PoA neutralization (*Beckha[n.]*, **Beckha[m.]*)[6]

Formally, onset preference translates as a high ranking of ONSET. In Spanish, however, ONSET cannot be satisfied at the expense of MAX and DEP, as illustrated in (5) (<…> = orthographic; C = epenthetic consonant):

(5)   *<h>ilo*   "thread"   *lo   *Cilo
        li.o   "trouble"   *li/o   *li.Co

---

[5] Problems with the SPC had been noticed before: cf. Calabrese (1988, 1995) and Borowsky (1993), among others.

[6] *Beckham* has become a common enough utterance in Spain following Real Madrid's signing of the player, and is typically (and characteristically) delivered with a final [n] ([ŋ] in n velarizing accents).

The ranking of the three relevant constraints is, therefore, MAX, DEP >> ONSET. The evaluations in (6) illustrate:

(6)   a.   *<h>ilo* "thread"

ilo	MAX	DEP	ONSET
☞ ilo			*
lo	*!		
Cilo		*!	

b.   *lío* "trouble"

lío	MAX	DEP	ONSET
☞ lí.o			*
li	*!		
lo	*!		
li.Co		*!	

MAX and DEP also outrank NOCODA (V = epenthetic vowel):

(7)   *lindo* "pretty"

lindo	MAX	DEP	NOCODA
☞ lin.do			*
li.do	*!		
li.nV.do		*!	

MAX and DEP need to be dominated, since Spanish syllable structure requires compliance with certain strictures, for convenience encapsulated here in a shorthand cover constraint OK-SYLL, of necessity undominated. In addition, DEP needs to outrank MAX, to favor deletion over epenthesis in syllable-motivated repair.[7] For instance, one of the strictures included under OK-SYLL prohibits C+Stop clusters, both in the coda and in the onset. The direction of repair is illustrated in tableaux (8) and (9) (NB for economy, only relevant material will be provided in tableaux, in conventional spelling with additional phonetic help where necessary):

(8)   *escultura* "sculpture" (cf. *esculpir* "to sculpt")   c = [k]

culptu	OK-SYLL	DEP	MAX
☞ cul.tu			*
culp.tu	*!		
cul.ptu	*!		
cul.pV.tu		*!	

---

[7] The exception of *s* (e.g. English *slogan* > Spanish [e]*slogan*, not **logan*) can be accounted for with a specific constraint MAX-s outranking DEP. We sidestep this matter, as it does not interact with the data we will be concerned with.

(9)   *Racing* "Racing (club)" (cf. *racin.[g]ista* "Racing supporter") c = [θ] or [s][8]

cing	OK-SYLL	DEP	MAX
☞ cin			*
cing	*!		
cin.gV		*!	

2.2 *Onset maximization*

Spanish favors maximization of onsets, within the bounds of OK-SYLL, as illustrated in (10). Evidence for the parse comes from the usual sources.

(10)   *ca.bra*, *a.bra.zo*, *so.bra.do*, *su.bli.me*   "goat, hug, sufficient, sublime"

On the other hand, syllabifications like **ca.rbón* or **ru.mba* fall foul of SON-SEQ,[9] subsumed under our OK-SYLL, and consequently they are disallowed: cf. correct *car.bón* "coal", *rum.ba* "rumba", etc.

The dispreference for codas just sampled in (10) is accounted for with the ranking NOCODA >> NOCOMPLEXonset:

(11)   *sobrado* "sufficient"

sobra	DEP	MAX	NOCODA	NOCOMPons
☞ so.bra				*
sob.ra			*!	
so.ra		*!		
so.bV.ra	*!			

2.3 *Cyclic effects*

We will now show that the behavior of *r* reveals some cyclic syllabification effects, in traditional generative modeling.

The Spanish segment inventory includes two contrasting rhotics, [r] and [ɾ]:[10]

(12)   [r]   ca**rr**o, pe**rr**o, mi**rr**a, mo**rr**o, …   "cart, dog, myrrh, muzzle"
        [ɾ]   ca**r**o, pe**r**o, mi**r**a, mo**r**o, …   "dear, but, look!, Moor"

The two rhotics are in complementary distribution in all contexts but intervocalically, with only [r] allowed word-initially, and only [ɾ] in a complex onset:

---

[8] Most accents have [s] for Castillian [θ].

[9] As is well known, SON[ORITY]-SEQ[ENCE] demands a mountain-like sonority profile in the syllable.

[10] Both [r] and [ɾ] are phonetically simple segments, a trill and a tap, respectively: the reader must not be misled by the orthographic convention of spelling [r] as *rr* in some contexts.

(13) [r]   **r**ey, **r**aya, **r**iña[11]   "king, line, quarrel"
      [ɾ]   b**r**azo, a.b**r**azo, so.b**r**ado   "arm, hug, sufficient"

This phonotactics is accounted for with the constraints *{ɾ and *.Cr ranked above IDENT, as we demonstrate in (14). Note that we adopt "{" to indicate the word left boundary; also "?" to signal potential faithfulness violations, contingent on choice of underlying representation, irrelevant here (see Harris 2002 and Mascaró 2003 for mutually opposing views, the latter on the footsteps of Bonet & Mascaró 1997):

(14) a.   *rey* "king"   y = [i]

	*{ɾ	*.Cr	IDENT
ɾei	*!		?
☞ rei			?

      b.   *brazo* "arm"

	*{ɾ	*.Cr	IDENT
☞ bɾa			?
bra		*!	?

Consider now the words in (15), existing or nonce:

(15) sub[r]ayado, sub[r]egión, sub[r]egimiento, sub[r]atón, …
      "underlined, sub-region, sub-regiment, sub-mouse"

The paradox these forms give rise to can be broken down thus:

1) on onset maximization (= NOCODA >> NOCOMPONSET) we expect *su.bra.yado*
2) if so, *r* should manifest as [ɾ], by *.Cr >> IDENT
3) however, it manifests as [r]
4) therefore, the syllabification needs to be *sub.rayado*, in contradiction of onset maximization

Besides *r* strengthening, forms in the shape of *subrayado* exhibit *b* weakening effects, deletion included:

(16) *subrayado*, *sublíder*, *submarino*, *subdirector*, etc. [suβ] / [suΦ] / [su∅]
      "underlined, deputy leader, submarine, deputy director"

Some such weakening effects (e.g. deletion) necessarily correlate with a coda parse: they are absent from *ca.bra*, *su.blime*, etc., with onset *b*. Accordingly,

---

[11] Notice that [r] is spelled *r* here. The spelling conventions are irrelevant to our task, and we will ignore them henceforth.

we shall attribute coda weakening to the action of a Spanish-specific version of CODA-CONDITION[12], which for economy we assume is included in our OK-SYLL.

The syllabification *sub.rayado* implies that *rayado* "scored" persists as a word in its own right after embedding in the derivative:[13] such an analysis automatically accounts for the absence of [ɾ] in that position, given *{ɾ. The structure we assume involves prefix adjunction, as follows:

(17)   Wd
                    |
                    Wd   Wd
         ╱╲   ╱╲   ╱╲
       sub rayado   cf.   sobrado
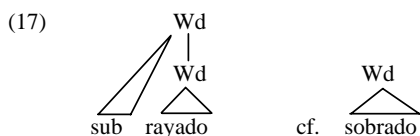
In rule-and-derivation, a rule strengthening *r* Wd-initially applies cyclically on this structure.[14] The OT equivalent has two parts. First, a constraint ALIGN(Wd, σ)-LEFT crucially ranked above NOCODA, as in (18) (R = rhotic archiphoneme, sufficient at this point):

---

[12] The constraint CODA-CONDITION incorporates language-specific segmental conditions on coda parsing: it would ban [h] from the English coda, for instance, and so on.

[13] Deciding whether such a word is morphological or phonological is not straightforward. Harris (2002:85) argues for the **morphological** word, "not the phonological word, which includes clitics" and thus incorrectly prevents the computation of *r* as word-initial in, e.g. *la͡ ropa* "the clothing" (cf. *la *[ɾ]opa*). However, this inference is not inevitable: it is eschewed if the clitic group is countenanced (Nespor & Vogel 1986, Hayes 1989), or, without the clitic group, if the proclitic *la* **adjoins** to the base word *ropa*, in a manner similar to the productive prefix *sub-* in (17) below, rather than incorporating into it, as is assumed in Harris's statement. Indeed, the adjunction analysis is adopted for Portuguese in Vigário (1999), and Peperkamp (1997) specifically proposes the **phonological word** as the domain of Spanish word-initial *r* strengthening. For reasons of space, we cannot probe this issue here, and will resort instead to the deliberately ambiguous label "Wd", sufficient to obtain the results we seek. A problem for either interpretation (morphological word or phonological word) is posed by forms like *sub.[r]epticio* "surreptitious" or *sub.liminal* "subliminal", ostensibly thus syllabified, despite the fact that there are no independent words *[r]epticio* or *liminal*, an instantiation of the classical *cranberry* problem. We suggest that the required word status of these stems in the derivatives, but obviously not in isolation, may be due to the (phonological, semantic, etc.) transparency of the productive prefix *sub-* inducing a Wd construal of its contextual stem, otherwise **morphologically bound**. The situation is somewhat reminiscent of adverbializing -*mente* "-ly", which exhibits full word behavior except in requiring attachment to a full adjective: cf. e.g. *sola-mente* "solely". We revisit the issue in fn 26 below, in connection with the consonantalization of /i/ under similar circumstances. For fruitful recent discussion of the phonological word, see Peperkamp (1997), the papers in Hall & Kleinhenz (1999), and Vigário (2001), among others.

[14] Note that underspecification enables circumvention of the Strict Cycle Condition where necessary. It also obviates the need to duplicate rules and morpheme structure conditions, the so-called Duplication Problem (see Clayton 1976, Kenstowicz and Kisserberth 1977).

(18)   *subrayado* "underlined"

	ALIGN(Wd, σ)-L	NOCODA
su.b{Ra	*!	
☞ sub.{Ra		*

Second, on this syllabification, the ranking *{ɾ >> IDENT does the rest:

(19)   *subrayado* "underlined"

	ALIGN(Wd, σ)-L	*{ɾ	NOCODA	IDENT
su.b{ɾa	*!	*		?
su.b{ra	*!			?
sub.{ɾa		*!	*	?
☞ sub.{ra			*	?

2.4   *Cancellation of cyclic effects*

The words in (20a), fully representative, are complex in the same way as *subrayar*, as displayed in (20b):

(20)   a.   *subestimar*, *suboficial*, *subacuático*, *suburbano*, …
"to underestimate, non-commissioned officer, underwater, suburban"

b.
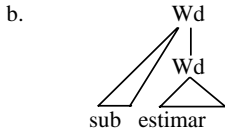
However, in these forms the *b* of *sub* exhibits no coda weakening, a new paradox. Its resolution involves domination of ALIGN(Wd, σ)-L by ONSET:

(21)   *subestimar* "to underestimate"

sub{es	ONSET	ALIGN(Wd, σ)-L
sub.{es	*!	
☞ su.b{es		*

ONSET now obviously also outranks NOCODA, by transitivity via ALIGN(Wd, σ)-L (NB violations irrelevant to the point discussed are bracketed):

(22)

a.   *subestimar* "to underestimate"

sub{es	ONSET	ALIGN(Wd, σ)-L	NOCODA
sub.{es	*!		(*)*
☞ su.b{es		*	(*)

b.   *subrayar* "to underline"

sub{ɾa	ONSET	ALIGN(Wd, σ)-L	NOCODA
☞ sub.{ɾa			*
su.b{ɾa		*!	

3.   *Evidence compatible with a single evaluation*

So far, all the evaluations have been word-based. In this section we examine a further case that requires phrase-level evaluation.

The case in question (already referred to in parsing on p. 202) involves coda rhotic strengthening to [r] in a number of accents:

(23)   *amo[ɾ], a[ɾ]te, mi[ɾ]to, su[ɾ]co, me[ɾ]ma, …
          ✓amo[r], a[r]te, mi[r]to, su[r]co, me[r]ma, …
          "love, art, myrtle, furrow, decrease"

We account for this fact by means of a constraint *ɾ. ranked above IDENT, in fact level with *{ɾ, *.Cr, for the familiar reasons:

(24)   *amor* "love"

moɾ	*ɾ.	IDENT
moɾ	*!	
☞ mor		*

Unexpectedly, word-final coda *r* systematically turns up as [ɾ] (not as [r]) when the next word in the phrase is vowel-initial:[15]

(25)   "love is wonderful"   "wonderful loves"
          el amo.[ɾ] es maravilloso   ≡ amo.[ɾ]es maravillosos
          *el amo[r]. es maravilloso   vs. amo[r]. "love"

Such an effective annulment of *ɾ. by ONSET across words shows that *ɾ. does not come into effect before the phrase level. The relevant evaluations are as follows:

---

[15] These facts support Harris's (1983) analysis of *r* as underlying /ɾ/, not /r/ (cf. (26) below). In particular, given /r/, its realization as [ɾ] in *amores* "loves", *amor es* "love is", etc. would be unaccountable for, the legitimacy of intervocalic [r] in (all accents of) Spanish (cf. (12) above) ruling out a constraint *VrV. By contrast, the ban on coda [ɾ] in the relevant accents is readily expressed through *ɾ. outranking IDENT. Notice, moreover, that a putative *VrV would not obviate *ɾ., with the concomitant duplication.

(26)

a. *amor* "love"

moɾ	*ɾ.	Onset	Al(Wd, σ)-L	Ident
moɾ	*!			
☞ mor				*

b. *amor es* "love is"

moɾ {es	*ɾ.	Onset	Al(Wd, σ)-L	Ident
☞ mo.ɾ {es			*	
mo.r {es			*	*!
mor. {es		*!		*
moɾ. {es	*!	*		

c. *amores* "loves"

moɾes	*ɾ.	Onset	Al(Wd, σ)-L	Ident
☞ mo.ɾes				
moɾ.es	*!	*		
mo.res				*!
mor.es		*!		*

Now, crucially, if *ɾ. were active pre-phrasally, *amor* would carry [r] prior to phrasal concatenation, and **amo[r] es* would emerge (NB we use ☹ to signal the defeated true candidate in tableaux):

(27) *amor es* "love is"

moɾ {es	*ɾ.	Onset	Al(Wd, σ)-L	Ident
☹ mo.ɾ{es			*	*!
☞ *mo.r{es			*	
mor. {es		*!		
moɾ. {es	*!	*		*

This false outcome demonstrates that the scope of *ɾ. is strictly phrasal. The remainder of the data examined so far are compatible with a postlexical, thus single, evaluation, and hence global parallelism can be maintained, provided of course that morphological structure (in particular, information concerning the prefixal nature of *sub* in *subrayar*, etc.) still be available postlexically.[16]

The present data are also consistent with the SPC, in effect rendered vacuous by the absence of a lexical level. In the next two sections, however, we examine two other processes that impose separation of lexical and postlexical

---

[16] Postlexical accessibility of morphological structure in the absence of a lexical EVAL would seem compatible with the Bracket Erasure Convention of classical Lexical Phonology. In particular, the BEC would only come into effect, if at all, after a fully postlexical EVAL has done its job.

evaluations, in contradiction of global parallelism. The SPC will be seen also to be challenged by such data.

4.   */s/ aspiration evidence for multiple evaluation*

Evidence against both the absolute parallelism espoused by mainstream OT and the SPC of mainstream Lexical Phonology comes from the aspiration of coda /s/ to [h] in Río Negro, Southern Argentina, as described in Harris & Kaisse (1999) [H&K99] (the facts of Río Negro are replicated in many other Spanish accents throughout the world):[17]

(28)   Realizations of *s* in Río Negro Spanish:

	pre-V	**elsewhere**
Word-internally:		
morpheme-internally	ca.**s**a	ca[**h**].pa
	"house"	"dandruff"
morpheme-finally	de.**s**{atar	de[**h**].{cargar
	"to untie"	"to unload"
	me.**s**es	me[**h**]
	"months"	"month"
Across words:	ve[**h**] uno	ve[**h**] cuatro
	"thou seest one"	"thou seest four"

We shall encode the illegitimacy of coda [s] in a constraint *s. , paralleling *ɾ. in its effects and ranking: in particular, the new constraint needs to outrank IDENT.[18] The tableaux in (29) demonstrate the effects of this ranking in various phonological and morphological contexts:

(29)

a.   *casa* "house"   c = [k]

casa	*s.	ONSET	ALIGN (Wd, σ)-L	NOCODA	IDENT
cas.a	*!	*		*	
cah.a		*!		*	*
☞ ca.sa					
ca.ha					*!

---

[17] A different distribution of [h] in a handful of *s*-aspirating accents is irrelevant to our present task, and we will ignore it.

[18] *s., *ɾ., etc. may seem construable as individual instantiations of CODACONDITION. However, we will see below that their respective rankings cannot be unified, and therefore the constraints need to be kept separate.

b.   *desatar* "to untie"

des{a	*s.	ONSET	ALIGN (Wd, σ)-L	NOCODA	IDENT
☞ de.s{a			*		
de.h{a			*		*!
des.{a	*!	*		*	
deh.{a		*!		*	*

c.   *ves* "thou seest"   *v* = [b]

ves	*s.	ONSET	ALIGN (Wd, σ)-L	NOCODA	IDENT
ves.	*!			*	
☞ veh.				*	*

d.   *caspa* "dandruff"   *c* = [k]

caspa	*s.	ONSET	ALIGN (Wd, σ)-L	NOCODA	IDENT
cas.pa	*!			*	
☞ cah.pa				*	*

e.   *destapar* "to take off the lid"

des{ta	*s.	ONSET	ALIGN (Wd, σ)-L	NOCODA	IDENT
des.{ta	*!			*	
☞ deh.{ta				*	*

Now, crucially, a single phrase-level evaluation produces an incorrect result across words:

(30)

ves {u	*s.	ONSET	ALIGN (Wd, σ)-L	NOCODA	IDENT
☞ *ve.s{u			*		
☹ ve.h{u			*		*!
ves.{u	*!	*		*	
veh.{u		*!		*	*

ves uno "thou seest one"   *v* = [b]

The true form *ve[h] uno* is being disfavored for its illegitimate alternative *ve[s] uno*. A two-stage evaluation is, therefore, unavoidable. First, a word-bounded, lexical level, evaluation:

(31)

a.   *ves* "thou seest"   *v* = [b]

ves	*s.	ONSET	ALIGN (Wd, σ)-L	NOCODA	IDENT
ves.	*!			*	
☞ veh.				*	*

b.   *desatar* "to untie"

des{a	*s.	ONSET	ALIGN (Wd, σ)-L	NOCODA	IDENT
☞ de.s{a			*		
de.h{a			*		*!
des.{a	*!	*		*	
deh.{a		*!		*	*

Second, a phrase-bounded evaluation with the word-bounded output as input:

(32)   *ves uno* "thou seest one"   *v* = [b]

ve[h] {u	*s.	ONSET	ALIGN (Wd, σ)-L	NOCODA	IDENT
ve.s{u			*		*!
☞ ve.h{u			*		
ves.{u	*!	*		*	*
veh.{u		*!		*	

This evaluation, crucially with [h] in the input, yields as the winner the true form *ve[h] uno*, irrespective of the onset parse of [h].[19]

Note, importantly, that resort to output-output faithfulness as an alternative is not viable. An obvious constraint to call on would be BASE-IDENTITY[h] (cf. Kenstowicz 1995), to force *ve[h] otro* on the strength of *ve[h]*, irrespective of the onset parse of [h] phrasally (*ve.[h]o.tro*). The problem is that B-I[h] is inoperative word-internally, in alternants that involve the plural (*me[h]* "month" ~ *me[s]es* "months", *compá[h]* "compass" ~ *compa[s]es* "compasses", and so on), the diminutive (*to[h]* "cough" ~ *to[s]ecita* "little cough", *compa[s]ito* "little compass", etc.), or indeed straight derivatives (*arro[h]* "rice" ~ *arro[s]al* "rice field" ~ *arro[s]ero* "rice grower"). What is obviously happening is that in the relevant accents aspiration is bled by ONSET **word-internally**, but **not across words**. The expression of this result through transderivational B-I[h] would clearly be awkward, as well as brute force. In particular, B-I[h] correctly yields *me.[h] ese* "that month", but mistakenly predicts **me.[h]es* "months" cf. singular *me[h]*) for correct *me.[s]es*. One solution consistent with a single evaluation involves making aspiration in *mes* sensitive to the phrase-level word boundary: it would apply in *me.[**h**]# ese*, but not in *me.[s]es#*, all as desired. However, we know that aspiration is consistently sensitive to **syllable structure**, since it only takes place in codas, not necessarily word-final: cf. *e[**h**].te#* "this", for instance. So, this approach would lead to environment duplication: __# and __C, precisely a classical argument for syllables. The difficulty can be avoided by reversing the

---

[19] There do not seem to be any segmental effects associated with either parse, onset or coda. The onset parse falls out from the present ranking, independently established, and therefore we assume its correctness in the absence of contrary evidence. Notice, in any event, that an alternative parse *ve[h].u* would not invalidate the need for the additional word-bounded evaluation, our main point here.

rankings: IDENT >> B-I[h] word-internally vs. B-I[h] >> IDENT phrasally, respectively. However, this just reintroduces the two levels, and thus sequential evaluation: word-bounded evaluation first, and then phrase-bounded evaluation, indeed what we are proposing.

The word-bounded evaluation of *h* aspiration contrasts with the phrase-bounded evaluation of coda *r* strengthening established in the previous section. Formally, the required rankings are *s. >> IDENT >> *ɾ. in the word domain, but *ɾ. >> IDENT phrasally (the mutual ranking of *s. and IDENT is immaterial at phrasal level, since no coda *s* is allowed to exit the word stratum). This domain contrast makes an obvious dent in the supposed globality of parallelism.

The *h* aspiration facts also indict the SPC, given that in some /s/ aspirating accents, Río Negro among them, /h/ is not part of the underlying inventory (it may be in some other accents): *caja* "box", for instance, is *ca[x]a* (hence underlying *ca/x/a*) in Río Negro, not *ca[h]a* (in principle compatible with *ca/h/a*).[20] Therefore, a non-lexical segment (coda [h]) needs licensing at the lexical level in Río Negro-like accents, in contradiction of the SPC.

5.   *Onset /i/ evidence for multiple evaluation*

In this section we discuss the onset syllabification of /i/. Onset /i/ undergoes consonantalization in a word-bounded domain, but not in a phrase-bounded domain, precisely the opposite of what the SPC predicts. The concomitant need for double evaluation in turn militates against global parallelism.

5.1   *Word-bounded consonantalization*
The forms in (33) exhibit phonetic [i] (spelled *i* or *y* word-finally):[21]

(33)   [i]   cre.c**i**ó, Para.gua**y**   "he grew, Paraguay"

However, in onset position a consonantal segment ([j], [ɟ], [dʒ], [ʒ], [ʃ], depending on context and/or accent) shows up instead:[22]

(34)   [j], [ɟ],[dʒ], [ʒ], [ʃ]   cre.**y**ó, paragua.**y**o   "he believed, Paraguayan"

---

[20] Note that the change /s./ → [h.] is also most likely allophonic in accents with word-internal intervocalic [h], since in these accents coda [h.] from /h/ is unlikely: *relo/h/* "clock" (*<reloj>*), plural *relo[h]es*, for instance, is most probably [reló], with no phonetic [h.].
[21] *<y>* is common orthography for [i] word-finally following a peak (note, however, *samurái*, and a handful of others). The reader must emphatically not infer that a grapheme *y* necessarily stands for a consonantal segment.
[22] The specific choice among the alternative realizations in question falls outside our present remit. In a few accents, [i] has been reported in onset position, at least intervocalically: Northern Mexico, Yucatán, US South West, Central America (except Panama), Colombian coasts, and Ecuador, according to Canfield (1981). We are not concerned with these accents here either.

    These data are accounted for with a ranking of both O<small>NSET</small> and *H/O (=
no high vowel in the onset)[23] above I<small>DENT</small>cons, to force realization of /i/ as [y̆], an
ad hoc cover symbol we adopt here for the range of consonantal realizations.[24]
The tableau in (35) illustrates. We signal the onset-nucleus division with a slash
where relevant:

(35)   *paraguayo* "Paraguayan" *y* = [y̆]

guaio	*H/O	ONSET	IDENTcons
gua./io		*!	
gua.i/o	*!		
☞ gua.y̆/o			*
guai.o		*!	

    The contextual complementarity of [i] and [y̆] across Spanish is
painstakingly argued for in H&K99. As a consequence, onset [i] also needs
banning from non-alternating forms like *yate* "yacht" or *hoyo* "hole in the
ground": richness of the base enforces freedom of underlying representation with
respect to well-formedness, and therefore illegitimate surface realizations need to
be blocked by constraints, *H/O here. The desired ban obviously falls out from
the present ranking, in a manner parallel to *paraguayo* in (35) above.[25]

5.2   *Cyclic effects*
    /i/ strengthening exhibits the cyclic effects with prefixes we are familiar
with from our discussion of *r* in section 2.3 above:[26]

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[23] Our constraint *H/O is obviously a cover for *i/O and *u/O, i.e. no [i] or [u] in the onset. See
Baertsch (2002) for a useful development of Prince & Smolensky's (1993) harmonic alignment-
based margin hierarchy.

[24] "y̆" has the advantage of graphic proximity to (without being identical with) the letter *y* that
typically (although not exclusively) represents this consonantal sound in Spanish orthography.

[25] A handful of forms with surface hiatus, e.g. <h>*i.ato* "hiatus", necessitates a lexical syllable
peak on H, appropriately protected by the domination of a constraint M<small>AX</small>- P<small>EAK</small> over O<small>NSET</small> (for
precedents, see e.g. Guerssel 1986, Roca 1991, 1997b, Harris & Kaisse 1999). In this context,
McCarthy's (2002) suggestion of a universal ban on all lexical syllable structure obviously needs
some tempering.

[26] Forms like *ab.yecto* (**a.biecto*) "abject", *in.yección* (**i.niección*) "injection" or *cón.yuge*
(**co.niuge*) "spouse" are built on a stem, not a word: **yecto*, **yección*, **yuge* (although compare
yugo "yoke"). The situation is similar to that of *subrepticio* or *subliminal*, discussed in fn 13
above, albeit not identical: we construed these as built on a bound word, rather than on a stem
proper. In *ab-yecto*, etc., cyclicity ought thus to be ruled out, following the established assumption
in generative phonology (originating in Brame 1974) that only words cycle. An OT interpretation
in terms of output-output faithfulness is also not viable, precisely because bound stems do not
manifest as independent surface words. Note that, unlike *sub-* in *subliminal*, etc., the present
prefixes are semantically opaque, thus unproductive. Nonetheless, they are readily recognized as
prefixes, in contrast with, e.g. *ab* in **abeto* "fir tree" or **abuelo* "grandfather", or *in* in **Iniesta*, a
surname, which are not. Consequently, we could in principle extend our previous solution and

(36)   a. *subyacer* "to underlie", *subyugar* "to subjugate", *adyacente* "adjacent",

b. *sub.y/acer*   NB not **su.bia.cer* (cf. Italian *a.dia.cente* "adjacent")
   | |
   ∅[y̆]

Assuming underlying /i/ on grounds of the noted complementary distribution, the consonantalization of /i/ presupposes an onset parse, which in turn requires that the preceding /b/ be syllabified outside the onset, along lines by now familiar. The evaluation is as follows:

(37)   *subyacer* "to underlie"   *y* = [y̆]

sub{ia	*H/O	ONS	AL (Wd, σ)-L	NoCod	IDENT	NoCom ons
su.b{/ia			*!			
su.b{i/a	*!		*			*
sub.{/ia		*!		*		
sub.{i/a	*!			*		
☞ sub.{y̆a				*	*	

The onset syllabification of /i/ (realized as [y̆]) triggers the expected effects in the previous coda in the relevant accents. These effects include aspiration of *s* and strengthening of *r*: cf. e.g. *deshielo* [de**h**.y̆e] "thaw" and *super**h**ielo* [pe**r**.y̆e] "super-ice", respectively.

Comparison with monomorphemic *desierto* [de.sier] "desert" and *superior* [pe.ɾior] "superior" is of course instructive. On the ranking being proposed, the difference is a function of ALIGN(Wd, σ)-L. This constraint has no effect in the monomorphemic forms, and as a consequence /i/ parses outside the onset in *supe.rior*, by *H/O (cf. **supe[r.y̆]or*, with /i/ onset parse): here ONSET is already satisfied by *r*, and is thus orthogonal to the syllabification of /i/. By contrast, in prefixed *sub{yacer* ALIGN(Wd, σ)-L needs satisfying, hence *sub.{yacer*, with *y* fulfilling ONSET and emerging as [y̆] to also obey *H/O, at the expense of IDENTcons, crucially ranked lower.

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assume that in the derivatives the prefix induces Wd status on the stems. Alternatively, we could postulate underlying /y̆/, indeed as favored by lexical optimization, but with the concomitant formal economy loss: H&K99 deliberately omit /y̆/ from the underlying Spanish inventory. A third solution, with a lexical syllable division, /ab.iekto/, implies lexical syllable structure and is therefore less preferred, as is a further alternative with the surface [y̆] represented as a "glide" /j/ lexically. These last two formalizations are in fact equivalent, the latter with the additional disadvantage of countenancing a segment that clearly does not exist, at least in Spanish, in effect being a cover for lexical syllable structure (cf. e.g. Roca 1997b).

5.3   *Postlexical effects*

The copulative conjunction *y* /i/ > [i] "and" predictably parses as a syllable peak between consonants, as illustrated by the pronunciation of the phrase *Pilar y Pepe* "Pilar [a woman's name] and Joe" as *Pila[ri]Pepe*: the systematic realization of *r* as [ɾ] across accents attests to an onset parse here, and this obviously presupposes a peak parse of [i] (orthographic *y*). We illustrate in tableau (38), where, following e.g. Selkirk (1995), we assume irrelevance of ALIGN(Wd, σ)-L to *y* "and", as a clitic:

(38)

Pilar y Pepe "Pilar and Joe"			*y* = [i]		
laɾ i {pe	*H/O	ONSET	ALIGN (Wd, σ)-L	IDENT	NOCODA
☞ la.ri.{pe					
la.ri.{pe				*!	
lar.i.{pe		*!		*	*

In *Pepe y Andrés* "Joe and Andrew", *y* syllabifies with the following vowel (*Pepe.* [i]*Andrés*),[27] because of pressure from ONSET: the present ranking indeed imposes such a parse.[28]

(39)

Pepe y Andrés "Joe and Andrew"			*y* = [i]	
pe i {an	ONSET	ALIGN (Wd, σ)-L	IDENT	NOCODA
☞ pe.i{an		*		(*)
pe./i{an	*!	*		(*)
pei.{an	*!			(*)?
pe.i.{an	*!*			(*)

Despite its onset parse, the underlying /i/ of *y* surfaces as vocalic ([i], not [ĭ]), at least in most accents and styles or registers.[29] Revealingly, it does not

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[27] Likewise for a word-final non-peak high vowel: ***voy a** Londres* [bo.ia] "I go to London".

[28] Our present ranking prevents both an exclusive parse of [i] in the previous syllable (as part of a complex nucleus or as a coda: this choice is orthogonal to our concerns) and a parse in both syllables, ambisyllabically. This formal result matches speakers' behavior: [i] is most naturally syllabified in the onset, with no trace of it in the previous syllable, the gap between the two syllables lengthened at will (cf. Navarro Tomás's 1959:151 comment that "las conjunciones *y*, *o*, *u* se unen ordinariamente a la vocal que las sigue" ["the conjunctions *y*,*o*, *u* usually link to the vowel that follows them", IMR]). This answers a question posed by an anonymous reader as to whether [i] in *Pepe y Andrés* could be both nucleus and onset. Regrettably, we do not have the space to expand on the analysis of the Spanish syllable here.

[29] There is actually some confusion on the matter. For instance, Martínez-Celdrán et al. (2003) transcribe *y* "and" as the fricative [ʝ] ([ʝ el 'sol] *y el sol* "and the sun"), ultimately on the footsteps of Navarro Tomás (1959:50) ("between vowels [*y* 'and'] takes approximately the sound of the palatal fricative **y**: *éste y aquel* **éste y**a**kél** [my translation, IMR]"). By contrast, Quilis (1999:182) considers *y* in this context a vowel ("between two vowels [*y* 'and'] is realized […] as a

coronalize in Argentinian Spanish, in contrast with both word-initial and word-internal intervocalic <y>, which do:[30]

(40)   Argentinian realisations:
   a.   *yeso* "plaster"   = [ʒ/ʃ]*eso*
           creyó "he believed"   = *cre*[ʒ/ʃ]*ó*
           ya "already"   = [ʒ/ʃ]*a*
           etc.

   b.   *y Antonio* "and Anthony"   = [i] *Antonio*
           rey o no "king or not"   = *re*[i] *o no*
           etc.

Now, onset parse of [i] is unobtainable on the present dominant ranking of *H/O, deliberately omitted from tableau (39) above for ease of presentation:

(41)   *Pepe y Andrés* "Joe and Andrew"   *y* = [i]

pe i {an	*H/O	ONSET	ALIGN (Wd, σ)-L	IDENT	NOCODA
☺ pe.i/{an	*!		*		(*)
☞ *pe. y̆{an			*	*	(*)
pe./i{an		*!	*		(*)
pei.{an		*!			(*)*
pe.i.{an		*!*			(*)

This negative result compels demotion of *H/O below IDENT (a fortiori also below ONSET), to allow the onset parse of [i]:[31]

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semiconsonant [i.e. a glide, i.e. a non-peak vowel in our formal construal; IMR]: [miró jató] *miró y ató* ['he looked and tied up'; my translation, IMR; Quilis's [j] = prevocalic glide = [i] in our construal]". For Martínez Celdrán (1994:333) the acoustic difference between the two sounds lies in the absence of formants in the consonant [j], in contrast with their presence in the vowel [i], but the spectrograms in Martínez Celdrán (1998:72) and Quilis (1999:262) do not clearly attest to this difference. Intuitively, the *y* of *y eso también* "and that also" can be (and most often is) vocalic, whereas that of *yeso también* "plaster also" cannot, in accents that possess the [y̆] sounds. Indeed, in Argentinian Spanish the realizations are [i] and [ʒ/ʃ], respectively (cf. (40) below). For Monroy (1980:130), based on instrumental analysis and phonological argumentation, "the conjunctions [*y*, *u*] are *always* vocalic phonemes [my translation, IMR]". The bottom line is that the lexical consonantalization of /i/ before V is obligatory, and vigorous ([j̊, ɟ, ʒ, ʃ]), whereas its postlexical equivalent is optional (contingent on accent, style and speed) and weak (normally no more than [j̊]). For our purposes here, the two processes must therefore be kept distinct, exactly as we are proposing.

[30] Cf. H&K99:155: "Resyllabified [j] [= our non-peak [i], IMR] does not undergo either Coronalization or Consonantalization. For example, in normal connected speech the word-final [j] in phrases like *ré*[j] *odióso* "hateful king" […] resyllabifies (*ré.*[j] *o.dió.so* […]) but is not then realized as [ž] or [y] [= IPA [ʒ] and [j], respectively; IMR], as might be expected of syllable-initial [j]".

(42)   *Pepe y Andrés* "Joe and Andrew" y = [i]

pe i {an	ONSET	ALIGN (Wd, σ)-L	IDENT	NOCODA	*H/O
☞ pe.i/{an		*		(*)	*
pe.y̆{an		*	*!	(*)	
pe./i{an	*!	*		(*)	
pei.{an	*!			(*)?	
pe.i.{an	*!*			(*)	

The obvious upshot is the need for two separate evaluations, each associated with a distinct ranking in a distinct domain, the word and the phrase, respectively.

6.   *Conclusion*

In this paper we have shown that the Spanish processes of *s* aspiration and /i/ consonantalization render problematic the SPC of LP. We have also shown that both these processes require a word-bounded evaluation distinct from its phrase-bounded counterpart. More technically, we have justified the following non-uniform rankings:

> *s.
Word: *H/O >> IDENT >> *ɾ.
Phrase: *ɾ. >> IDENT >> *H/O

These contradictory rankings make stratum separation inevitable. Importantly, the Spanish data are sufficiently simple and well known, and readily verifiable in a language currently spoken by hundreds of millions. Consequently, it does not seem possible to maintain the single fully parallel evaluation of current mainstream OT (cf. McCarthy 2002:163, quoted on p. 2 above). This outcome, however, need not lead to a general surrender of parallelism. In particular, the word and the phrase are empirically distinct phonological domains, whence their potential to correlate with different grammars. The bottom line is, thus, that a minimal lexical-postlexical stratal division needs acceptance in OT,[32] arguably not with regret, but with the joy inherently associated with truthfulness.

In addition, the data we have examined from both *s* aspiration and /i/ onset parsing militate against the SPC, the latter in the strongest possible way. As we have seen, a segment that can plausibly be argued not to be underlying ([y̆]) is selected at lexical word level. By contrast, this very same segment is blocked from emerging anew postlexically, even though its emergence there would be fully compatible with the SPC. The situation is paradoxical from the perspective

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[31] Such postlexical demotion of *H/O has no effects on the facts of *r* liaison referred to in section 3 above, to which *H/O is orthogonal.

[32] Cf. also the arguments in Booij (1997), Rubach (1997, 2000), Itô & Mester (2003), and Kiparsky (2003), among others, referred to in fn 2 above.

of the SPC, but not from that of OT, precisely as expressed in McCarthy's (2002:74-75) quotation on p. 201-202.

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DURATIONAL ASYMMETRIES AND THE THEORY OF QUANTITY
TEMPORAL PROPORTIONS AT PHONETIC INTERFACE

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1.   *Introduction*

The general aim of this paper is the unification of the theory of quantity as a temporal dimension at the phonology-phonetics interface.

Contrary to the unitary nature of its realization, phonological quantity is separately defined on the one hand as (a) the property of segments (long/short) and, on the other hand, as (b) the property of syllables (heavy/light). The conceptual problem is that syllable weight is not uniformly derived from the segmental constituency of the syllable nor by a moraic theory incorporating an exceptional rule of Weight by Position (Hayes 1989). Either formalization of syllable weight, moreover, leaves unaccounted empirical cases that weaken its universal theoretical import (cf. Hayes 1995, chapter 7).

One such case is the strict durational asymmetry between a stressed vowel and the following consonant ($^{\prime}$V:C/$^{\prime}$VC:/*$^{\prime}$V:C:/*$^{\prime}$VC) observed in the temporal rhythm of languages like Italian *fato/fatto* "destiny/made".[1] This restriction on the nature of quanity in natural languages is not predicted by the segmental sub-theory of quantity (a), without assuming an additional rule that states directly the complementary timing facts of the vowel with respect to the following consonant(s) (Saltarelli 1983, 2003a). Correspondingly, the Italian phenomenon of *raddoppiamento fono-sintattico (RF)* or "doubling" of word peripheral consonants, which follows from the same durational asymmetry (cf. footnote 1), is not in principle accountable from syllable weight theory (b), without assuming an additional rule (Saltarelli 1970:83, but cf. 2003a) or a diacritically abstract mora (Repetti 1991).

In this paper I claim that quantity restrictions are uniformly defined as output constraints on the temporal realization of the speech sequence, without recourse to special rules or the stipulation of latent segments or moras. I propose, accordingly, that the appropriate domain for the computation of quantity, mapping

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[1] Asymmetries can be defined as follows: given {a,b} as maximum/minimum sonority peaks/valleys in a sonority cycle S, there is a durational relation $<\alpha,-\beta>_{DUR}$, if and only if a,b are in S and in a correspondence relation with α,β. Markedness protection obtains.

phonological structure at phonetic inerface, is the phonetic VC sonority cycle. In the course of the paper, I argue that the serial VC hypothesis predicts the durational (a)symmetries (and collateral phenomena) observed in Latin, Romance (Italian, Marsican) and Germanic (Icelandic). Cross-linguistic verification and perceptual substantiation are pending.

The following is the organization of the paper. In section 2 the empirical evidence for the temporal asymmetry observed in Italian in its Neo-Latin distributional context is established. In section 3 a cross-linguistic appraisal for the realization of quantity restrictions in Icelandic is discussed in contrast with Italian. The historical evolution of asymmetries is outlined as a collateral prediction of the VC hypothesis. In 4 an assessment of the VC hypothesis regarding the unification of the theory of quantity, its empirical viability, the computation of duration and the implications of temporal/spatial asymmetries in the perception of speech are discussed. The analytic viability of the VC hypothesis is concluded in section 4.3.

2.   *Durational (a)symmetries in 'VC sequences: Latin and Romance*

2.1   *"Duration rhythm" in Italian 'VC sequences*

Studies measuring speech sequences report systematic (a)symmetries in the duration of vowels and consonants that appear to be blind to higher order units such as the syllable and word boundaries.[2] Early experimental measurements of Italian speech focus on stressed 'VC sequences delimiting the time interval spanning from a stressed vowel onset to the next vowel onset, a domain that intersects with syllable and word boundaries. Early kymograph tracings by Josselyn (1900) show a proportional difference in duration between a stressed vowel and the following consonantal segment(s). The results are reported in table 1 for the Italian phonetically near minimal pair *pane/panni* "bread/clothes" in isolated words (Josselyn 1900) and in the context of a phrase (Parmenter & Carman 1932).

One can observe in table 1 that in the stressed 'VC sequence there is a complementary proportion in duration between the stressed vowel 'V and the immediately following consonantal segment(s) C, namely long-short in *pane* and short-long in *panni*. Moreover, observe that the long vowel in *pane* is slightly longer (26hs) than the long (geminate) consonant in *panni* (24hs). In complementary contrast, the short consonant in *pane* is slightly shorter (14hs) than the short vowel in *panni* (17hs). The crucial factor to be noted in this respect is that, in spite of the variation just mentioned, the complementarity of duration of the 'VC/ 'VC$_2$ sequences remains constant.

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[2] The term "duration" is used here as the phonetic time measure of segments and "length" as the phonological category feature. The term "quantity" refers in general to duration and length, as well as to prosodic rhythm/weight specific to the phonological syllable on issues of quantity-(in)sensitivity.

		V	C	Josselyn (1900)
'V + C	(*pane*) "bread"	26	14	
'V + C₂	(*panni*) "clothes"	17	24	
		V	C	Parmenter & Carman (1932)
'V + C	(*pane*)	1.8	1	
'V + C₂	(*panni*)	1.4	2.2	

Table 1: *Duration of a stressed 'V and the following single/geminate C(C)* [3]

This asymmetry between the vocalic and consonantal portion in the sonority cycle of Italian speech is established in early measurement (table 1) and confirmed in later laboratory experiments and phonetic manuals (Farnetani & Kori 1986; Smith 1992; Albano Leoni & Maturi 1998; McCrary 2004). This compelling empirical evidence about Italian duration leads to the hypothesis that quantity relations between a vowel the following consonant(s) are precisely and more generally defined as a function of the constant duration of the supra-segmental 'VC domain. Apparently blind to the intersecting phonological syllable boundary, the phonetician's VC domain includes the stressed vowel *a* plus the following consonant(s): a single nasal in *pane* "bread" as opposed to a long or geminate nasal in *panni*.

More recent instrumental studies agree with the general findings of these initial measurements in the complementarity of temporal distribution between vowels and consonants. Fava & Magno Caldognetto (1976) report that the average for three subjects is 207 ms in duration for the vowel in 'V:C and 107.7 ms for the vowel in 'VC:. They also report that a stressed vowel in final position is 113 ms and an unstressed vowel in the same position is equal in duration.[4] Moreover, an unstressed vowel in 'VC is approximately as long as final (unstressed) vowels. In a study of syllable structure and segmental duration, Farnetani & Kori (1986:17) state explicitly, "the unit tending to be constant in duration is the temporal interval from vowel onset to vowel onset."

The perceptual relevance of the phonetic 'VC sequence (distinct from the more familiar phonological syllable 'CV) has been independently considered to be a more precise parse for understanding Italian poetic metre, termed the "duration

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[3] Josselyn's measurements are in hundredths of a second (hs), whereas in Parmenter & Carman's 1 is the segmental unit measure. The breve(˘) and macron (¯) are used to indicate short/long value of duration along with the length mark (:), which is also used for consonants along with geminate notation (CC).

[4] This general statement about the duration of the final stressed vowel needs finer instrumental confirmation, contextual qualification and a phonological characterization. Informal measurements of the author's speech show that stressed word final vowels before pause are consistently longer than unstressed vowel in the same context. It's methodologically crucial to obtain reliable comparative data on the durational values of finally stressed vowels before pause as well as in syntactically merged phrases where the second word begins with a consonant or with a vowel. Recent studies by Rebeka Campos (2004) and Kristie McCrary (2004) confirm, with empirically compelling results, that final stressed vowels are significantly longer than unstressed counterparts.

rhythm" of the Italian language (Porena, 1908).[5] As a typological template the ˈVC domain has also been found useful in describing the quantitative system of Latin (Spence 1965) and its diachronic relation to daughter languages such as Italian and Spanish (Saltarelli 1977). An extended durational typology of ˈVC sequences is adopted as a working domain for defining constraints governing durational (a)symmetries in the phonetic realization of languages exhibiting contrastive vowel and/or consonant length like Latin (and Italian), Old Icelandic (and Modern Icelandic). [6]

2.2   *Quantity in Latin, Italian and Spanish*

In table 2(a) we observe that the full expression of ˈVC duration permutations accounts for the set of ˈVC realizations that can be observed in Classical Latin and Romance.

	Latin			Italian	Spanish[c]
ˈVːC	Vīnum	[ˈwiː.num]	"wine"	[ˈviː.no]	[ˈbiː.no]
ˈVCː	Bŭccam	[ˈbuk.kam]	"mouth"	[ˈbok.ka]	[ˈboː.ka]
ˈVC	Pĭlum	[ˈpi.lum]	"hair"	[ˈpeː.lo]	[ˈpeː.lo]
ˈVːCː	Vīllam	[ˈwiːl.lam]	"town"	[ˈvil.la]	[ˈbiː.ʎa]

Table 2 (a) : *Quantity Shift from Latin to Romance*[7]

It will turn out to be descriptively appropriate to classify the logical permutations in terms of acoustically measurable ˈVC duration rhythm distribution; namely, a complementary subset ("asymmetric rhythm": HL, LH) and an equipollent subset ("symmetric rhythm": HH, LL). This phonological characterization of duration typology is supported by an account of the evolution from Latin to Italian and Spanish. Accordingly, the diachronic shift in quantity from Latin to Italian can be described as a reduction to the complementary/asymmetric subtype (HL, LH, *HH, *LL) in one fell swoop. Spanish, and more appropriately some varieties of Andalusian Spanish that lack geminates altogether represents a further reduction of the Italian-like subtype (HL,

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[5] Porena's concept of "duration rhythm" identifies the durational alternation ˈVːC/ˈVCː, which is typical of Italian among the Romance languages. A similar durational restriction is found in Scandinavian languages, such as Icelandic, Faroese, Norwegian and Swedish. The durational alternation has been informally described as follows "… stressed syllables are all long or 'heavy' and the distribution of segmental length follows from simply statable rules: long vocalism + short consonantism or short vocalism + long consonantism." (Árnason 1980:12).

[6] Josselyn's pioneering measurements, along with a time-honored phonetic tradition, target the acoustic sonority-delimited unit ˈVC (rather than the conventional phonological syllable unit ˈCV). They reveal and confirm the durational proportion between the stressed vowel and following consonant(s) in word medial position that is typical of Italian.

[7] Superscripts c̲ and a̲ identify Castilian and Andalusian varieties of Spanish.

*LH) along the same rhythmic cline (cf. table 2(b).[8] The gradual, but systematic, nature of the duration shift in Romance is summarized in table (2b).

	Latin	Italian	Spanish[c]	Spanish[a]
ˈVːC	x	x	x	x
ˈVCː	x	x	(x)	
ˈVC	x			
ˈVːCː	x			

Table 2(b): *Quantitative distribution of* ˈVC *in Latin, Italian and Spanish*[9]

The sample data presented in table 2(a) and the summary in table 2(b) show that the distribution of quantity for the languages in question covers the full typology of duration in the context of the phonetic ˈVC domain.[10] Namely it consists of the "asymmetric" (LH, HL) and the "symmetric" (LL, HH) quantity sub-types. The latter sub-type defines the minimum-maximum duration of the base VC sequence. In this respect the adopted set-theoretical notation predicts that tri-moraic syllables are possible in this quantitative system, as illustrated by Latin *vīllam* [ˈwiːl.lam] "town", where the first syllable measures three moras[11]. Classical Latin fully instantiates the orthogonality of the phonetic feature duration most appropriately in basic ˈVC sequence domains.

3.   *Comparative consequences of the* ˈVC *domain beyond Romance*
We have suggested that the algorithm for the calculation of timing in Romance is not precisely defined in the domain of the canonical syllable CV, a concept whose underpinnings are arguably based on a the feature of articulatory stricture, without clear experimental evidence. We have proposed, on evidence from Latin and Romance a new domain for the computation of duration at phonetic interface. The VC conceptualization of duration is derived from the recurring peaks and valleys of acoustic sonority observed in the stream of speech. The selection of an articulatory or an acoustic platform for the computation of a phonological grammar is obviously not a matter of ideology. Rather, the choice is motivated by the predictive power of the formalism hand in hand with its concrete foundations and empirical substantiation. In what follows, we consider the consequences of the proposal in a comparative perspective. We discuss the distribution and evolution of quantity in Germanic and Romance in view of the

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[8] *Los perros* "the dogs" is [losˈperos] in Castilian and [loˈpɛɾo] in Andalusian (Penny 2000:74). The two systems are distinguished in terms of different quantity types (8'd) vs. (8'e).

[9] Table 2(b), as well as table (3) and 4(a), show quantitative distribution and attrition, obviously without implication for phylo-genetically derived diachronic relations.

[10] To emphasize the rhythmic possibilities of durational alternations available for natural and esthetic effects, I use L(ight) for a short segment and H(eavy) for a long one.

[11] For the purpose of this paper singletons or short segments count as one temporal unit or mora, geminates two.

analysis of duration presented in the previous section and its cross-linguistic projections.

3.1   *Quantity distribution in Germanic languages*

The cline in durational restrictions that I have proposed for defining the development from Latin to Italian and two Spanish varieties (table 2(b)) appears to be remarkably similar to the quantity readjustments in the Germanic languages, in particular from Old Icelandic to Modern Icelandic (table 3).

	Old Icelandic	Modern Icelandic.	Danish German	English
ˈVːC	x	X	x	x
ˈVCː	x	X		
ˈVC	x			
ˈVːCː	x			

Table 3: *Quantitative distribution of ˈVC in Germanic*[12]

3.2   ˈ*VC domain durational (a)symmetry in Icelandic*

In stressed vowel+consonant(s) domains, Modern Icelandic exhibits the same restriction in duration as in Italian (table 2(b)). Namely, "the distribution of segmental length follows simply statable rules: long vocalism + short consonantism or short vocalism + long consonantism" (Árnason 1980:12). This general statement, identifies the complementary or uneven duration of a vowel segment with respect to the following consonantal segment(s): ˈVːC or ˈVCː. Scholars of Scandinavian languages seem to agree that the durationally even types are not found in Modern Icelandic: *ˈVːCː, *ˈVC. Given the quantity minimal words [manː] and [maːn] (1a,b), it is predicted that hypothetical forms like [maːnː] or [man] would not be bona fide lexical items in today's Icelandic. Old Icelandic, on the other hand, is reconstructed as exhibiting all four logical types in the distribution of quantity in a stressed ˈVC domain, owing arguably to the free (phonemic) status of both vowel and consonant length. As we observe in (1a,b): a vowel is short when it is followed by two consonants (1a). Both geminates and clusters require a preceding short vowel. Complementarily, a stressed vowel is long when it is followed by one (1b) or no consonant (1c). The source for all facts, examples and transcriptions presented in this section is Árnason (1980).

(1)   (a)   *mann*   [manː]   "man"
              vinna   [ˈvinːa]   "work"
              hestur   [ˈhɛsd̥ʏr]   "horse"
              vors   [vɔr̥s]   "spring" (gen.sing.)

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[12] We limit our discussion to Icelandic as an appropriate exemplar. The reader is referred to Árnason (1980) for discussion of quantity in other Icelandic-like Scandinavian languages, Danish and German with distinctive vowel length, and English.

(b)	*man*	[maːn]	"slave"
	vina	[ˈviːna]	"friends" (gen. pl.)
	vor	[vɔːr]	"spring" (nom.sing.)
(c)	*ný*	[niː]	"new"
	te	[tʰɛː]	"tea"
	búa	[ˈbuːˑ⁽ʷ⁾a]	"to live"

A comparison of the diachronic cline in quantity relations between vowels and consonants in Germanic languages (table 3) is reminiscent of the historical evolution in Romance (table 2(a)). The reduction in the ˈVC quantity types is attributed to a shift in quantitative distribution, namely from a "free" (phonemic) status for both vowels and consonants to consonant only or vowel only. This change reduced also the ˈVC types, eliminating the even types (ˈVC, ˈVːCː) in Icelandic as in Italian.

The traditional view of the "quantity shift" from Old to Modern Icelandic can be summarized as involving the loss of distinctive vowel length and a concomitant reduction from four stressed syllable types in Old Icelandic to the two uneven complementary types in Modern Icelandic. The even types, i.e. the heaviest and the lightest, are eliminated. and all stressed syllables are heavy (cf. Árnason 1980: 121-122). The parallelism observed in the development of Icelandic and Italian is surprising, but not unexpected given the phylogenetic connection. The surprise may come from significant difference in the sound structure of the two languages. Namely, while in Italian geminates are lexically found word medially, Icelandic has no such restriction, arguably owing to the vocalic exponence of grammatical gender in the Neo-Latin language. Diametrically opposed is the realization of length of the word final vowel in monosyllabic lexical items. In Icelandic the specification is long (1c), but in Italian word final vowels (unstressed) are generally considered to be short if unstressed.

3.3 *Constraints and enhancement in Italian and Icelandic*
Given the assessment of the distribution of duration in Latin, Romance and Germanic I formulate the following constraint interaction account of quantity in (2).[13]

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[13] A constraint interaction grammar of quantity is formulated in an optimality framework in the vein of optimality theory (Prince & Smolensky 1993, McCarthy 2002). In (2) a grammar of quantity is predicated of one prosodic markedness cover constraint: Quantity-Form). Under the ˈVC hypothesis it generalizes to *XX (X=V,C). The faithfulness constraint, i.e. Identity (duration), interacts with markedness to protect lexically long segments and their positional distribution (cf. Kager 1999: 407). The ˈVC theory of quantity requires a simpler articulation of Quantity-Form, in contrast with the CV hypothesis (cf. Kager 1999:271).

(2)   Markedness and faithfulness constraints in Italian and Icelandic
         (a)   ⟦IDENT(dur) >>*VV,*CC ⟧   Latin, Old Icelandic
         (b)   ⟦IDENT(dur/C) >> *CC>>*VV >> IDENT(dur)⟧   Icelandic, (Marsican)
         (c)   ⟦IDENT(dur/Cm) >>*VV>> *CC >> IDENT(dur)⟧   Italian

        Briefly, Old Icelandic and Latin exhibit distinctive vowel and consonant
length. Hence, the "free" un-ranked constraints on geminates ⟦*VV,*CC ⟧ (2a)
derive all four durational permutations of the relative apportionment for
consonants and vowels in both quantitative systems (table 2b, 3). Lexical
contrasts are preserved in this analysis by an un-dominated durational identity as
an input-output constraint ⟦IDENT(dur) ⟧ . In the evolution to the modern languages,
Italian and Icelandic retain only consonant length as distinctive, hence only the
complementary types ˈV:(C), ˈVC: are preserved (table 3 and table 2(b)).

        The difference between the two languages is that geminates are restricted
to word medial position in Italian (2c), but not in Icelandic (2b) where they can
appear word medially and word finally, as can be gathered from (1a), hence, the
positional codicil /Cm in the definition of the durational identity constraint of the
Neo-Latin language. This positional detail is crucial in defining the different
distribution of durational enhancement of vowels and consonants that occurs in
the two languages in question. Icelandic lengthens a stressed vowel before at most
one consonant (Árnason 1980:22). Italian also lengthens stressed vowels before at
most one consonant (open syllable). In addition and in contrast with Icelandic,
Italian under *raddoppiamento* conditions lengthens consonants (not the stressed
vowel) at the periphery of the word, a position in which Italian has no distinctive
(lexical) geminates. In the constraint grammar (2c), the anti-geminate markedness
constraint ranking ⟦*VV>> *CC⟧ prefers the enhancement of the consonant in non-
contrastive peripheral positions (RF) to enhancement of the vowel (Saltarelli
2003b). Note that Italian consonants in medial position, where the contrast in
length is lexically distinctive, is preserved by an un-dominated faithfulness
constraint ⟦ IDENT(dur/Cm) >>*VV>> *CC >>⟧. This variation in the positional
distribution of geminates in otherwise quantitatively similar systems is the
system-internal reason for the occurrence of *raddoppiamento fono-sintattico (RF)*
in Italian but not in Icelandic where the markedness constraints are in reverse
ranking order ⟦*CC>>*VV⟧. Note that there is a collateral descriptive bonus in the
variation in constraint grammars (2). Namely, Italian RF obtains in both word
peripheral positions: in the beginning of the word *città pulita* [cittàppulíta] "clean
city", as well as at the end of the word *tram elettrico* [tràmmeléttriko] "electric
tramway". A uniform account of RF including word-final "reverse" RF (an
intractable and often neglected issue (Chierchia 1986)) is not predicted in a
syllable-based framework. This comparative evidence lends cross-linguistic
confirmation and descriptive support for the ˈVC domain based hypothesis of

quantity proposed in this paper, as opposed to the maintream CV syllable based framework.[14]

3.4   *Marsican is like Icelandic*

The articulation of the quantity distribution between Italian and Icelandic just described helped us construe from the different positional distribution of geminates a principled explanation of other quantitative differences, such as the puzzling non-occurrence of *raddoppiamento* in a language like Icelandic. This is a relevant issue given that its absence in northern Italian and Spanish, for example, may be attributable to their lack of geminates, *raddoppiamento* being, arguably, an instance of gemination. In addition, and more importantly, on the basis of this comparative discussion one may construe a possible answer to the ineffable question as to why RF occurs at all, an elusive desideratum in linguistic endeavors. The descriptive answer for Icelandic hinged on the fact that this Scandinavian language has contrastive geminates both word medially and word finally *(man/mann)*. Hence lengthening a consonant in this position would violate a faithfulness constraint preserving lexical distinctiveness. In contrast, Italian contrastive geminates only occur medially, where they are protected by faithfulness of output to input. Hence, consonants in intervocalic contexts across word boundary are durationally inert and must be enhanced if stressed in order to satisfy a prosodic prominence visibility requirement at phonetic interface. ˈV:C/ˈVC: satisfies this only in strictly uneven duration rhythm languages like Italian and Icelandic, governed by the respective phonological grammars (2).

Another piece of the quantity distribution puzzle falls into place when we consider the case of Marsican within the optics of the supra-segmental ˈVC domain of phonology proposed in this paper. In Marsican the standard word initial *raddoppiamento* of Italian *chiamò Maria* [kjamò**m**maría] "(s/he) called Mary" is not observed. Instead of satisfying the prosodic requirement by C-length enhancement ˈVC:, Marsican resorts to ˈV:C as in word medial position. This difference in enhancements correlates with the positional distribution of lexical geminates.

In table 4 the distribution of quantitatively contrastive consonants, positional specification (m=medial, p=peripheral) in the word, and the occurrence of RF is plotted. We observe that the presence of geminates is a necessary but not a sufficient condition for RF to occur. Northern Italian and Spanish do not meet the necessary condition for RF. On the other hand both Icelandic and Marsican do have geminates, like Italian. Marsican and other dialects from western Abruzzo have developed final geminates through final vowel schwa reduction and deletion, as can be observed in table 3. Typologically, then, Marsican is like Icelandic in

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[14] The quantity grammar of Italian differs from Icelandic and Marsican by an un-dominated Stress-to-Weight prosodic markedness constraint (cf. Kager 1999:268), reconfirming the ˈV:C asymmetry at phonetic interface, the RF phenomenon (Saltarelli 2003a).

that it must protect lexical geminates in word final position, as can be observed in the distributional chart (table 4). It can be surmised that the appearance of final geminates in Marsican is a diachronic event collateral with final vowel reduction and deletion. Prior to this changes, RF would have been active in this central Italo-Romance variety.

	Icelandic	Marsican	Italian	N. Italian	Spanish[15]
CC	x	X	x		®
CC/m	x	X	x		
CC/p	x	X			
RF			x		

Table 4: Geminates, position, *raddoppiamento*

(3)   Marsican consonant contrasts in medial and final position

['roːta] / ['rotta]   "weel/broken"
['vaːk] / ['vakk]   "grape/cows"
['fʉːs] / ['fuss]   "spindle/hole"
['ᵐbʉːk] / ['ᵐmukk]   "(you) put fire/spill"
['vʉːt] / ['vutt]   "(you) turn/push"
etc.

The erosion of the gender exponent in Marsican and the collateral baring of geminates in word final position engenders blocking of C-lengthening (*raddoppiamento)* across word boundary in favor of vowel lengthening, the only other orthogonal ranking possible in the theory we are proposing. The descriptive result is a re-ranking on the grammatical status line of the universal markedness constraints banning geminates (4) in Marsican, as in Icelandic (cf. table 2b).

(4)   Inverse constraint ranking: ⟦ *CC>>*VV⟧
          Vowel (not Consonant) lengthening across word boundaries in Marsican:
          kjamὲ#maría   "I called Mary"

'V#C /kjamὲ#maría/	SWP	*CC	*VV
(a)'V.C kja.mὲ.ma.rí.a	**!		
(b)'VC.C kja.mὲ**m**.ma.rí:.a		*!	
☞(c)'V:.C kjamὲ:.ma.rí:.a			*

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4.   *The VC hypothesis: (a)symmetries, rhythm, and the computation of duration*

In sections 2 and 3, I have argued that the distributional behavior of duration strongly favors a combined "supra-segmental" VC account of quantitative phenomena over separate "segmental" treatments of vowels and consonants. The VC hypothesis, as the appropriate prosodic domain for the computation and grammaticalization of temporal functions in the temporal organization of speech, is supported by a diverse set of facts and is testable beyond the languages considered in this paper. If substantiated, the VC hypothesis leads to significant implications about the nature of speech as a function of human physiology and perception.

4.1   *Concrete evidence for the VC hypothesis*

The VC domain is the phonological characterization of a concrete and well-defined fact about the sound stream: the cyclical alternation of sonority peaks (V) and valleys (C) characterizing the intrinsic rhythmicity of human language at phonetic interface. The VC domain has been a familiar venue of research for phoneticians. Stevens (1998:246) reports the spectrogram of the English sentence *Semantha came back on the plane*. Below the spectrogram he plots the frequency of F1 vs. time identifying eight vocalic peaks where the frequency maxima correspond with the peaks in amplitude. With respect to Italian, Farnetani & Kori (1986:27), cf. also section 1.1) in a study of segmental duration conclude, without elaborating, that the "rhythmical syllable" is the temporal interval from the onset of a vowel to the onset of the following one. The seeds of the VC hypothesis were visible in the published results of Josselyn's pioneering study reported in table 1, perhaps the first measurements of the phenomenon in the field of experimental phonetics. It was a reading of this data that first suggested to me the VC hypothesis and the rhythmic constraints on the distribution of length in Italian (Saltarelli 1970:27-28).

4.2   *Phonological viability and projections of the VC hypothesis*

The second compelling argument for the VC hypothesis is its formal viability for a phonological theory of quantity. The proposed hypothesis makes available a restricted class of quantity sub-types, namely the four binary length permutations: {ˈVC, ˈVːC, ˈVCː, ˈVːCː}. I have discussed in 1.2 that the four logical possibilities fall into two "rhythm types". The temporally equipollent rhythms, namely the first and the last one in the list represent the lightest ˈVC and the heaviest ˈVːCː. The other two types are complementary and their weight (temporal duration) is predicted by the hypothesis to be constant. This steady temporal requirement on HL/LH is amenable to a Euclidean proportion between the long (H) segment and the short (L) segment defined by an optimal ratio. The simplicity of the VC hypothesis of quantity makes it empirically testable. The VC hypothesis also leads toward a rich theory of human rhythm as the projection of

grammaticalized VC durational proportions, propagated by the lexicon and temporally realized in the sound stream.

The predictions of the VC hypothesis are born out by the observed facts. Josselyn's data and Farnetani & Kori's conclusions confirm the hypothesis that complementary rhythms are constant, in spite of the durational alternation (longV/shortC vs. shortV/longC). The same formal prediction is cross-linguistically validated for Italian, Icelandic and Marsican. Beside synchronic adequacy, the proposed VC hypothesis shows a comparable parallelism in the evolution of the quantitative systems of Romance (table 2(a)) and Germanic (table 3). Early stages of both phylogenetic families are reconstructed as durationally "free" systems fully employing the predictions of the VC hypothesis. Italian and Icelandic exemplify theoretical attrition from a free quantity system to a complementary rhythmic system. This shift in quantity restrictions is predicted as the complementary types identify a single/constant temporal dimension with two sub-rhythms: HL/LH. If this is correct, the phonetic cue in the Italian lexicon would be characterized by the inverse order of temporal VC rhythms, rather than by vocalic or consonantal weight. In a constraint interaction view of language, quantity restrictions and their variations are grammaticalized as in (2).

4.3   *The calculus of temporal distribution in Italian at phonetic interface*

Linguistic hypotheses, like most ideas, come to mind as attempts to explain observations made in the natural world, arguably through sensory perception. The VC hypothesis was prompted by the observation of a proportional temporal asymmetry HL/LH phonetically perceived and instrumentally measured and confirmed in Italian (see section 1.1). One remarkable fact about this temporal asymmetry is the proportion between the long (H) and the short (L) segment characterized by a fixed ratio. The other intriguing fact is that the duration of the entire supra-segmental unit VC is constant, leading to the question: to what extent, if any, the duration of the whole VC unit relates to the asymmetric proportion of its constituent parts and how can it be calculated?

The answer to the question about the ratio between the whole and its parts has intrigued biologists, architects, psychologists and artists among others in the history of ideas and should also intrigue linguists regarding the partition of time in the speech sequence, if formal theory of language aims at considering the interface with more general systems of knowledge. Euclid[16] is said to be the first to define optimal proportions in a simple division of a line *AB A-------------C--------B,* where the ratio of the whole line *AB* is to the longer segment *AC*, as the longer segment *AC* is to the shorter segment *CB*. Based on the idea of the Euclidean cut the value of the ratio between *AC* and *CB* is calculated at 1.61…, an irrational number that is widely found in the realization of natural systems (Livio 2002:4).

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[16] The source for this section is principally Mario Livio (2002).

The spatial proportionality of the Euclidean cut appears to stand in analogy to the durational asymmetries in the temporal organization of speech, suggesting a parallelism between the realization of human language and other systems found in nature.

In a manner of programmatic illustration, in (5) we calculate the ratio of the rhythmic unit of sound VC (analogous to the Euclidean line *AB*) in relation to the longest segment (VC in (5a) and C_2V in (5b)). Proportionally, we calculate the ratio of each of the longest segments ((5a), the vowel, and (5b), the consonants) in relation to the respective shortest segments ((5a), the consonant, and (5b), the vowel). We see that the value of the derived ratios are comparable with the Euclidean optimal value, favoring the long vowel over the geminate consonant. The median value for the complementary asymmetry of Josselyn's minimal VC pair *pane/panni* approximates the optimal ratio 1.61 with a deviation in favor of the vocalic segment.[17] The calculation based on Josselyn's pioneering data are, of course, only illustrative of the Italian asymmetry. Substantiation of the proposed VC hypothesis in Italian and cross-linguistically must wait for data obtained under an appropriate experimental design and state of the art instrumentation.

(5)   Calculating the ratio of V and C from Josselyn's measurements (cf. table 1).
            Mean ratio of the whole to the greater cut and of the greater to the lesser:

(a) $[{}'V\ldots\ldots.C\ldots\ldots]V$ (*pane)* ${}'VV \div {}'VC = {}'VC \div CV$ 1.69
(b) $[{}'V\ldots\ldots C_2\ldots\ldots.]V$ (*panni*)${}'VV \div C_2V = C_2V \div {}'VC_2$ 1.62

4.4   *Modeling (a)symmetries*

Modeling durational proportionality in a theory of human speech has implications for the phonology/phonetics interface. Durational (a)symmetry in a VC hypothesis is defined by the mean ratio of the alternating rhythm, which is durationally constant. Arguably, in a VC hypothesis the projected property of a rhythm (RH) is evaluated by an un-dominated temporal principle RHρ at phonetic interface (6a) as a requirement on VC outputs. We presume that this principle is physiologically based, arguably a function of chest pulse activity. The apparently constant nature of the rhythmic principle in speech governs the duration of the categorical segments of RHρ, in approximation with an optimal ratio presumed to be based on human auditory perception (6b).[18] The typology of duration follows from the interaction of lower ranked markedness and identity constraints

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[17] The optimal ratio of the Euclidean cut, as a measure of geometrical distinction, suggests that there may be an optimal perceptual ratio for distinguishing complementary asymmetries (HL,LH) exemplified in Italian and Icelandic. However, no concrete laboratory evidence is available to my knowledge for verification.

[18] The interface between speech and physiological and perceptual interface of the human systems are only speculations at this stage of the investigation that follow as logical consequences of the VC hypothesis.

motivated in (2) for the phonological grammars of Latin, O. Icelandic, Icelandic, Marsican and Italian and reproduced in (6c).

(6)   Accounting for duration in a VC hypothesis

(a)   A sonority rhythm RHρ is the interface domain ρ projected by a VC sequence where the durational time t is a constant.

(b)   The duration of the short t(L) and long t(H) segment in a given RHρ is a function of the time t of the projected t(RHρ) relative to an optimal ratio r.[19]

	Grammars of Quantity (geminates)	Language	RHType
(a)	⟦IDENT(dur) >>*VV,*CC ⟧	Latin, Old Icelandic	HL, LH, LL, HH
(b)	⟦IDENT(dur/C) >> *CC>>*VV >> IDENT(dur)⟧	Icelandic, (Marsican)	HL, LH medial and final
(c)	⟦IDENT(dur/Cm) >>*VV>> *CC >> IDENT(dur)⟧	Italian	HL,LH medial
(d)	⟦IDENT(dur/C*r*) >>*VV>> *CC >> IDENT(dur)⟧	Spanish[c]	HL,LH(*rhotics*)
(e)	⟦*VV, *CC >> IDENT(dur)⟧	NE Andalusian[20]	HL

Table 5: *Duration grammars and their rhythmic typology* (cf. 5)

Under the VC hypothesis, the formalization of duration is expressed as the permutation of the base categories V and C. The phonologically and phonetic "free" expression of duration is realized in the organization of the lexicon in languages like Latin (table 5(a)) where the high ranking Identity constraint protects all four logical duration rhythms under the VC hypothesis. Languages lacking the singleton/geminate consonantal contrast altogether, as in a variety of NE Andalusian, are defined by the unitary lower ranking of Identity with respect to the anti-geminates constraints (table 5(e)). In the duration grammars (table (b)-(d)) asymmetric (complementary) rhythm types are defined by a split-ranking formulation of Identity involving codicils referring to major category restrictions /C, positional restrictions /Cm (table 5(c)) for Italian, as well as residual rhotic category geminates /C*r* (table 5(d)) for Spanish. Table 5 characterizes, through a constraint interaction formulation, a clear typological cline in the distribution of

[19] The index of deviation from the optimal Euclidean cut, sometimes called the "golden" ratio (Livio 2002) is an empirical issue when we consider human speech. If substantiated, the ratio may turn out to represent an optimal index of auditory discrimination of sound distinctions with respect to time. If this is correct, one would expect that intrinsic property of the segments involved, rate of speech and system stability (cf. Hansen 2004, for Persian geminates), as well as the individual's speaking/hearing endowment.

[20] North Eastern Andalusian lacks all lexical geminates. This variety of (general) Spanish is lexically a simple LH duration system (cf. Penny 2000:124, Saltarelli 2003b for NE Andalusian III). It is a simplification with respect to Castilian Spanish, a residual asymmetric system HL, LH(rhotics) where only the singleton (flap)/geminate contrast [ɾ]/[r] exists inter-vocalically. However, this phonological analysis of Spanish is controversial, owing to the maximization of [r] in word peripheral positions: *caɾo, carro, rápido*.

duration in the evolution of Romance and Germanic languages (cf. table 2(b) and table 3). The uniformity of the cline is accountable under the optics of the VC hypothesis, provisionally formalized in (5).

As a concluding note, it's important to point out that under the VC hypothesis, no specific vowel or consonant lengthening rules are needed. The distribution of duration is uniformly derived as a function of the ratio between a vowel and the following consonantal segment in relation to the temporally constant rhythm $t(\text{RH}\rho)$ of speech. Metaphorically, V and C in an RH domain vie for the same space-time (6b), in accordance with the typological grammar selected by the language (table 5). Marked (XX) segments take the lion's share of the space-time unit of quantity, to satisfy lexical contrast and integrity. Unmarked segments take the remaining space-time of RH to satisfy the duration-constant rhythmic principle of speech (6a).

This paper has dealt with temporal asymmetries involving geminates and related phenomena like *raddoppiamento*. The VC case involving consonant clusters, and the temporal delay due to co-articulation, is not treated here. It's assumed that temporal co-articulation effects on duration are accountable under the VC hypothesis, but confirmation is pending. The issue is empirical. In a VC hypothesis it relates to the general principle of the constant nature of speech rhythms (6a). Namely, the following question is posed. Is the temporal interval in a VC sequence that is found to be constant in asymmetric geminate pairs like *fato/fatto* also constant when the C constituent is a cluster, as in *asfalto, parto, campo, quando, quanto, canto, casto*? An experimental design focusing on the geminate vs. cluster effects on duration would independently provide knowledge of yet unexplored aspects on the use of temporality in human speech and invalidate or confirm the concrete underpinnings of the VC hypothesis proposed in this paper (6) as well as the unification of the theory of quantity: our general aim.

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WHAT LENITION AND FORTITION TELL US ABOUT GALLO-ROMANCE *MUTA CUM LIQUIDA*

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1.   *Introduction*

Obstruent-liquid clusters are a classical object of study in approaches of all theoretical orientations. They raise interest in all quarters because they are double agents: *muta cum liquida* sometimes pattern with single consonants, while at other times going along with the notorious Coda-Onset sequences RT, TT and RR.[1] Theories have always tried to assign a uniform syllabic representation to TR clusters, which are supposed to be fundamentally homosyllabic. In this view, different syllabic identities can only come into being through an extra operation performed on the default value.

The three representations under (1) are candidates for the representation of *muta cum liquida*. All of them have been advocated in the literature.

(1)   possible syllabic identities for *muta cum liquida*
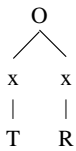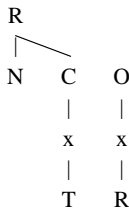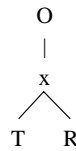
Contrary to the dominant analysis which accepts a homosyllabic default, we believe that the objects under (1) are recorded in the lexicon as such: there is no computation transforming one into another. Also, the three structures at hand, while phonetically identical, can co-occur in the same language. Finally, their distribution within a given system appears to follow certain positional regularities:

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[1] T is shorthand for obstruents, R for sonorants. For expository reasons, we refer to the set of RT, TT and RR sequences as Coda clusters in the remainder of the article.

(1c) likes the Strong Position (i.e. occurs either word-initially or after Codas), while (1a) is rather found intervocalically. In this article we concentrate on the first issue, arguing that there is no default. We only briefly touch on the two latter questions, which call for further study. In any event, we submit that *muta cum liquida* betray their syllabic identity when evidence regarding their behaviour is measured with the positional meter: in quite some cases, lenition and fortition will tell us who is who when coming across a TR cluster, and also offer a line of explanation.

   (1a) is the structure that classical syllabification algorithms produce for TR sequences. In the generative tradition that goes back to Kahn (1976), mainstream theory has assumed that the lexicon contains unsyllabified strings of segments, which are assigned syllable structure in the computational chamber of the phonology. The backbone of all syllabification algorithms is the so-called Maximal Onset Principle, which nowadays features in all textbooks (e.g. Spencer 1996:88ss, Gussenhoven & Jacobs 1998:151ss, Roca 1994:151ss): make the Onset as big as you can, and put up the remaining segments in Codas. "As you can" means "as long as sonority increases within the branching Onset". This makes sure that a V_1TRV_2 sequence will always come out as $V_1.TRV_2$.

   If a specific pattern in some language shows that V_1 stands in a closed syllable, the original syllabification needs to be undone by some rule (or constraint), and the T reinterpreted as the Coda of V_1. In doing so, it may either preserve its association to its original Onset, in which case it is "ambisyllabic", or it departs completely from its original constituent. The operation at hand is called Coda Capture; it is a typical generative mechanism implemented in various flavours since Kahn (1976) (Harris 1999 provides an overview).

   The fact that syllabification algorithms have an in-built (1a)-generator corresponds to the unmarked character of homosyllabic TR (where unmarked means "most frequent").[2] Therefore, it is argued, (1a) is the "true" identity of TR, from which all other structures are derived only in case of need.

   Against phonological mainstream (embodied since a decade by Optimality Theory where markedness is even more central), we do not believe that theories ought to encode what is frequent and what is not. Frequency is irrelevant. Rather, theory ought to describe what a *possible* grammatical system is (e.g. Lass 1984:278s, Newmeyer 1998).[3] Therefore, neither of the structures under (1) is

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[2] This is indeed what appears when TR clusters are looked at through Indo-European glasses. If these are removed, however, a slightly different picture emerges. For example, in many languages *muta cum liquida* are instances of (1b): this is the typical Semitic pattern.

[3] Note that this does not mean that we reject markedness altogether. Only the most commonly used aspect of markedness, frequency, is irrelevant for theory. We believe that functional markedness, on the other hand, needs to be reflected in theoretical terms: if structure X implies the existence of structure Y while the reverse is not true, structure Y is more fundamental, and should be recorded in the theory as such. Brandão de Carvalho (1994, 2002a,b) elaborates on this issue.

more fundamental or more "real" than any other. Hence Coda Capture is out of business: none of the structures under (1) is transformed into any other. If any one occurs in a language, it is present since the lexicon. There is also a theory-specific reason to reject Coda Capture: in Government Phonology, the theory that we endorse (see below), syllable structure is recorded in the lexicon, and there is no computational mechanism that builds or modifies constituents.

TR clusters have also been advocated to represent (1c). This was either done on language-specific grounds (Hirst 1985, Steriade 1994), or with a more general ambition (Rennison 1998, Rennison & Neubarth 2003, Lowenstamm 2003).

As far as we can see, however, it has never been argued that (1b) is the unmarked, true or otherwise favoured syllabification of TR clusters.

In sum, thus, our purpose is to show that (1a), (1b) and (1c) exist in nature; any of these structures can cohabitate within the same language, and neither is more fundamental than any other. Phonetic information is sufficient in order to discover the syllabic identity of Coda clusters (RT, TT, RR). It does not buy us anything when we come across a TR sequence. *Muta cum liquida* betrays its syllabic identity only through its phonological behaviour. We argue that looking at relevant evidence through the positional prism reveals individual identities of TR clusters: a theory of lenition and fortition may shed light on their syllabic status that otherwise remains inconclusive.

The Gallo-Romance playground is especially well suited for the illustration of the chameleon-like behaviour of TR clusters: the trouble that they cause is well documented since the 19[th] century. In section 3, we first recall one central piece of evidence which has caused a lot of (inconclusive) debate: the *colubra* paradigm, where the TR cluster of the last syllable in some respects behaves as a homosyllabic item, while in others shows heterosyllabic behaviour.

Another case of obstruent-sonorant clusters is reviewed next (section 4): C+yod (e.g. r**a**b**i**a > ra**ge**).[4] Here, we argue that the only possible analysis is heterosyllabic for all clusters, including those where the obstruent is dental or velar (Scheer & Ségéral 2001b).

Finally, we turn to another well-known issue of the evolution of French: the *cam(e)ra* paradigm where epenthesis has occurred (> *cham**b**re*) (section 5). This phenomenon is usually absent from the discussion of the status of Gallo-Romance TR clusters, a fact that may reasonably surprise since it creates new TR units. We show that in this case *muta cum liquida* must be contour segments (1c). The insertion of a stop is not a reaction against some "bad" contact between two sonorants. Rather, it is the result of a positional effect: [r] strengthens to the

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[4] Even though C+yod clusters are not exactly an instance of *muta cum liquida*, they are also assumed to represent branching Onsets by default. In Modern French for instance, they behave as homosyllabic items.

affricate (1c) [br] because it has come to stand in a Strong Position, thanks to syncope.[5]

The possible cohabitation of monopositional TR clusters (1c) with the two other options (1a) and (1b), then, paves the way for a uniform account of various phenomena that appear to be unrelated at first sight: the "spontaneous" metathesis of liquids (e.g. temp(e)**ra**re > *tremper*) and the appearance of "parasitic" [r] (e.g. viti̲cula > *vrille*).

As a result, then, Gallo-Romance has accommodated certain TR clusters that are necessarily heterosyllabic (1b) (C+yod), while others must instantiate affricates (1c) (epenthesis: ca̲m(e)**r**a > *chambre*). Finally, a third group of *muta cum liquida* that was present in the language shows wavering homo-and heterosyllabic behaviour (the *colubra* paradigm).

Before entering the actual demonstration, however, section two exposes the general frame of our analysis.

2.   *CVCV and the Coda Mirror*

2.1   *Adjacency vs. positional effects: the fate of Latin obstruents in French*
The evolution of Latin consonants in French is shown in (2) (e.g. Pope 1952:96, Bourciez & Bourciez 1967:147).[6]

(2)		a. #__: word-initial		b. Coda__: post-consonantal	
	p	**p**orta	**p**orte	ser**p**ente	ser**p**ent
	b	**b**ene	**b**ien	her**b**a	her**b**e
	t	**t**ela	**t**oile	can**t**are	chan**t**er
	d	**d**ente	**d**ent	ar**d**o̲re	ar**d**eur
	k	**c**o̲r	**c**œur [k]	ran**c**ore	ran**c**œur [k]
		ce̲ra	**c**ire [s]	mer**c**e̲de	mer**c**i [s]
		***c**a̲pu	**ch**ef [ʃ]	a̲r**c**a	ar**ch**e [ʃ]

---

[5] Here and henceforth, we use the plastic term *affricate* in order to refer to monopositional contour segments (1c).

[6] Vowels that are lost at some (early) stage of the evolution appear in brackets, those that bear stress are underscored (vowel length is not indicated). Words are spelt. Latin and French <c> is [k], Latin <ph> is [f]. In each column, the Latin forms precede their French reflexes.

Glosses for table (2), a) #__ "door, well, cloth, tooth, heart, wax, head, mouth, people, leg, hunger, destiny, king, moon, sea, nose, wine, war, game"; b) C.__ "snake, grass, to sing, ardour, rancour, thanks, arch (of a bridge), anxiety, silver, rod, hell, to pour, earth, room, blackbird, loft, weapon, horn, mallow, little tower, rage"; c) Coda __C "road, elbow, plane (tree, dialectal), root, done (fem), rigid, burden, Stephen, flee, beard, dawn, leg, to sing, to swim"; __# "wolf, head, where, I drink, husband, naked, friend, we, to have, to love, thread, bottom (human), hunger, no, ox, May"; d) V__V "past participle to know, shore, sky, broad bean, life, tail, to rent, free time, to pay, August, non-believer, outside, thing, pear, canvas, to love, moon, peacock, to wash, jackdaw, groove".

(2)

	a. #__: word-initial		b. Coda__: post-consonantal	
g	**gu**la	**gu**eule [g]	an**g**ustia	an**g**oisse [g]
	gente	**ge**nt [ʒ]	ar**ge**ntu	ar**ge**nt [ʒ]
	gamba	**ja**mbe [ʒ]	vir**ga**	ver**ge** [ʒ]
f	**f**ame	**f**aim	in**f**ernu	en**f**er
s	**s**orte	**s**ort	ver**s**are	ver**s**er
r	**r**ege	**r**oi	te**rr**a	te**rr**e
			ca**m**(e)**r**a	cha**mbr**e
l	**l**una	**l**une	me**r**(u)**l**a	me**r**le
			cu**m**(u)**l**u	co**mbl**e
m	**m**are	**m**er	ar**m**a	ar**m**e
n	**n**asu	**n**ez	co**rn**a	co**rn**e
B	**v**inu	**v**in	ma**lv**a	mau**v**e
w	***w**erra	**gu**erre	*skar**w**ahta	échau**gu**ette
j	**j**ocu	**j**eu	ra**bj**a	ra**ge**

	c. Coda				d. V__V: intervocalic	
		__C		__#		
p	ru**p**ta	route	lu**p**(u)	loup / leu	*sa**p**utu	OFr. sëu
			***c**ap(u)	chef	ri**p**a	ri**v**e
b	cu**b**(i)tu	coude	u**b**(i)	où	*nu**b**a	nue
			bi**b**(o)	OFr. boif	fa**b**a	fè**v**e
t	pla**t**(a)nu	plane	mari**t**(u)	mari	vi**t**a	vie
d	ra**d**(i)cina	racine	nu**d**(u)	nu	co**d**a	queue
k	fa**c**ta	faite	ami**c**(u)	ami	lo**c**are	louer
					li**c**ere	loisir
					pa**c**are	pa**y**er
g	ri**g**(i)da	raide			*a**g**ustu	août
	sa**g**ma	somme			pa**g**anu	pa**ï**en
f	ste**ph**(a)nu	Etienne			de**f**oris	dehors
s	mu**s**ca	mouche	no**s**	nous [nu]	cau**s**a	chose [z]
r	ba**r**ba	barbe	habe**r**(e)	avoi**r**	pi**r**a	poi**r**e
			ama**r**(e)	aimer		
l	a**l**ba	aube	fi**l**(u)	fi**l**	te**l**a	toile
			cu**l**(u)	cul		
m	ga**m**ba	jambe	fa**m**(e)	faim	a**m**are	ai**m**er
n	ca**n**tare	chanter	no**n**	non	lu**n**a	lu**n**e
B	na**v**(i)**g**are	nager	bo**v**(e)	bœu**f**	pa**v**one	paon
					la**v**are	laver
w					*ca**w**a	OFr. choue
j			ma**j**(u)	mai	ra**j**a	ra**i**e

The philological underpinning of this evolution is discussed at greater length in Ségéral & Scheer (2001a). The raw data may be recast in a synoptic table as under (3).[7]

(3)		Strong Position		Coda		intervocalic
	a. #__	b. Coda__	c. internal __.C	d. final __#	e. V__V
p	p	p	ø	ø / f	ø / v
b	b	b	ø	ø / f	ø / v
t	t	t	ø	ø	ø
d	d	d	ø	ø	ø
k	k / s / ʃ	k / s / ʃ	I	ø	ø / I / ¹z
g	g / ʒ	g / ʒ	I / U		ø / I
f	f	f	ø		ø
s	s	s	ø	ø	z
r	r	r / EPENTH.	r	ø / r	r
l	l	l / EPENTH.	U	ø / l	l
m	m	m	~ ø	~ ø	m
n	n	n	~ ø	~ ø	n
B	v	v	ø	ø / f	ø / v
w	g	g			U
j	ʒ	ʒ		I	I

The following regularity may be read off table (3): the five relevant positions divide into two major groups, one where the French result is either identical with the Latin input, or has been strengthened. This is what happens to word-initial and post-consonantal consonants. On the other hand, the reflex of Latin consonants in both Coda positions as well as intervocalically is unchanged at best. If any variation is encountered, the output is weaker.

This is the reason why Romanicists, since the 19th century, have classified the relevant contexts into strong and weak positions as under (4).

The attentive reader will have noticed under (3) that there are two cells which do not appear to observe this regularity: depending on the melodic environment, [k] and [g] are either maintained or appear as palatalised fricatives even in Strong Position. However, although the French result is objectively weaker than the Latin input, there is a differential between the strong and the weak position: for a given melodic environment, the result is always stronger word-initially and after consonants than in the three weak positions: Lat. k produces [s] before Lat. e and [ʃ] before Lat. a in the Strong Position, but only a

---

[7] Upper case I, U indicate that the segment in question has "imploded", leaving a palatal (I) or a velar (U) trace on neighbors. "~ ø" means that the nasal consonant has been lost in the modern language, but left a nasal trace on the preceding vowel: this is where the characteristic modern alternations *bon* [bɔ̃], *bonté* [bɔ̃te] vs. *bonne* [bɔn] "good, id. noun, id. fem" come from: VN > V[+nas] / __{C,#}, against VN > V[-nas]N / __V.

palatal reflex on neighbouring segments (represented as I under (3)) or nothing at all is found elsewhere (Lat. g also follows this pattern).

(4)   the positional regularity

Strong Position		Weak Position Coda		
a. #__	b. C.__	c. __.C	d. __#	e. V__V
result: ≥ original segment: integrity or [max.] strengthening (*fortition*)		result ≤ original segment: weakening (*lenition*) or [max.] integrity		
STRENGTH		WEAKNESS		

We may therefore conclude that the positional regularity is not challenged. Only is it relative, rather than absolute: all (melodic) things being equal, the French reflexes of Latin consonants in the Strong Position are *always* stronger than in weak positions. Or, in other words, there is a natural hierarchy among the two kinds of processes: whatever the melodic influence, it can never produce a result that violates the positional regularity.

Along the same lines, we may observe yet another fact: some diachronic processes under (3) are exclusively due to lenition and fortition: no melodic parameter has any bearing on the result. On the other hand, there are cases where the French output has been produced by the conjoint influence of positional and melodic forces. But there is no case on record where the fate of a Latin consonant depends exclusively on its melodic environment: melodic effects are unmistakably paired with a positional differential.

2.2   *Strong positions enjoy a uniform identity: the Coda Mirror*

The evolution of Latin obstruents in French is just one piece of evidence for the Strong Position {#,C}__; more material is exposed in Ségéral & Scheer (2001a) and Scheer (2004:§110). In its face, the challenge for phonological theory is twofold.

(5)   challenges raised by the Strong Position {#,C}__
   a. the Strong Position is disjunctive. As was the case with the Coda context __{#,C} in the late 70s, phonological theory must be able to reduce the disjunction to a unique phonological object.
   b. the Strong Position and the Coda are opposite in both structural description and effect: {#,C}__ produces strength, while __{#,C} promotes weakness. This can hardly be accidental. Therefore, an adequate theory must not only reduce {#,C}__ to a non-disjunctive reality, but this reality must also be in some way opposite to the phonological identity of the Coda.

The familiar syllabic arborescence is unable to meet (5a), not to mention (5b). Consonants may belong to either Onsets or Codas. Onsets occur in three

environments: word-initially #__, after Codas C.__ and intervocalically V__V. The Strong Position, however, explicitly excludes the latter context: intervocalic consonants are weak. Therefore, regular syllable structure is able to characterise the Strong Position as a single (i.e. non-disjunctive), but not as a unique phonological object (i.e. different from all others). In other words, it is unable to account for the regularity at hand.

We argue in Ségéral & Scheer (2001a) that this obstacle may not be overcome unless the familiar syllabic arborescence is abandoned. An alternative approach to syllable structure is Government Phonology (Kaye et al. 1990, Kaye 1990, Charette 1991, Harris 1994), where syllabic generalisations are expressed by lateral relations among segments (this is the core of the theory: lateralisation of structure and causality, see Scheer 2004:§165). A recent development of this line of thought is so-called CVCV, which takes the lateral strategy to its logical end: constituency boils down to a strict sequence of non-branching Onsets and non-branching Nuclei.[8] Table (6) shows the representation of some basic phonological objects in CVCV.[9]

(6)   closed   Coda-Onset
       syllable   geminate   long vowel   […C#]   sequence
     O N O N   O N O N   O N O N … O N   O N O N
     | | | | \ / | | \ / | | | | | |
     C V C ø   C   V   C   V   C ø   R ø T V

On this analysis, syllable structure is a function of two lateral forces: Government and Licensing, which are defined as under (7).[10]

(7)   Government and Licensing are antagonistic forces
       a. Government inhibits the segmental expression of its target.
       b. Licensing enhances the segmental expression of its target.

As in Standard Government Phonology, empty Nuclei play a central role in the definition of basic syllabic objects. The conditions under which empty Nuclei may occur are defined under (8).[11]

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[8] CVCV is more carefully introduced in Lowenstamm (1996), Scheer (1999,2004), Ségéral & Scheer (2001a) and Szigetvári (1999,2001).

[9] (6) not withstanding, we continue using the familiar syllabic vocabulary for the sake of exposition: branching Onset, Coda cluster, open syllable, closed syllable and so forth. In all cases, we actually refer to the representations under (6). Also, the role of the skeleton appears to be redundant when CVCV is assumed: since nothing branches anymore and in absence of conflicting evidence, there is a one-to-one relationship between constituents and skeletal slots. Therefore, the skeleton does not appear in representations anymore. We might, however, refer to it informally in its familiar sense as a timing unit.

[10] Note that these definitions do not exist in order to suit the particular analysis presented here: they have more general value (Ségéral & Scheer 2001a, Scheer 2004:§§125,135).

(8)   Empty Category Principle
        a Nucleus may remain phonetically unexpressed iff it is
        a. governed or
        b. domain-final (word-final)

Every contentful Nucleus can dispense Government and Licensing. Word-final (domain-final) empty Nuclei enjoy a special status, which reflects the well-known fact that the right edge of the word is peculiar.[12]

We are now in a position to introduce the Coda Mirror (Ségéral & Scheer 2001a, Scheer 2004:§§110,556). Consider first the situation of both internal and final Codas, which is depicted under (9).

(9)   consonants in Codas: ungoverned and unlicensed
        a. internal Coda __.C   b. final Coda __#
                Gvt   Gvt

        … V   C   V   C   V   … V   C   V   #
           | | | | | | | |
           V   R   ø   T   V   V   C   ø

                Lic   Lic
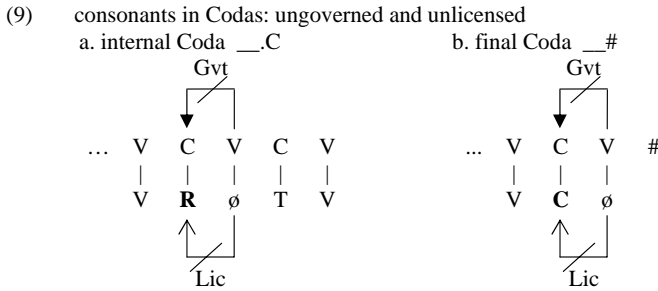
As may be seen, Coda consonants are followed by an empty Nucleus. This is what the Coda context "word-finally and before a (heterosyllabic) consonant" reduces to in CVCV. The identity at hand is as non-disjunctive as the familiar arboreal solution which recurs to the constituent "Coda": of all possible consonantal positions, only two meet the description "before an empty Nucleus": __{#,C}.[13]

Intervocalic consonants for example are different because they precede a phonetically expressed vowel. Their situation is shown under (10).

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[11] A third proviso concerning homosyllabic TR clusters is not mentioned under (8): Infrasegmental Government. Since it is orthogonal to the discussion in the present article and would require quite some space in order to be exposed, we do not go into any further detail. A more careful introduction is available in Scheer (1999, 2004:§14).

[12] In particular, it allows for heavy consonant clusters, something that is usually dealt with by extrasyllabicity (see Scheer 2004:§339 on this notion and its relation with CVCV). Like extrasyllabicity, thus, the properties of the right edge of the word (i.e. of final empty Nuclei) are subject to parametric variation (see Scheer 2004:§524).

[13] This statement needs to be slightly refined when TR clusters (branching Onsets) are taken into account: Coda consonants then occur "before *governed* empty Nuclei" only. This difference is discussed at length in Scheer (1999,2004:§14).

(10)   intervocalic consonants: governed and licensed

$$
\begin{array}{ccc}
& \text{Gvt} & \\
\ldots\ V_1 & C & V_2\ \ldots \\
| & | & | \\
V & \mathbf{C} & V \\
& \text{Lic} &
\end{array}
$$

Intervocalic consonants are both governed and licensed: their Nucleus V_2 is contentful and hence has both governing and licensing abilities. Since V_1, the Nucleus preceding intervocalic consonants, is phonetically expressed as well, V_2 has no governing duties to observe. Hence it exhausts both its governing and licensing abilities on its own Onset.

The last category of consonants are those that occur in the Strong Position {#,C}__, i.e. word-initially and after Codas. Their representation under (11) includes the idea that the phonological identity of the beginning of the word is an empty CV unit. We come back to this equation "# = CV" shortly.

(11)   consonants in Strong Position: ungoverned but licensed
a. word-initial consonant #__   b. post-Coda consonant C.__

$$
\begin{array}{ccccc}
& \text{Gvt} & & & \\
C\ \ V & - & C\ \ V & \ldots & \\
& & | \quad | & & \\
\# & & \mathbf{C} \quad V & & \\
& & \text{Lic} & &
\end{array}
\qquad
\begin{array}{ccccc}
& & \text{Gvt} & & \\
\ldots\ V & C & V & C & V\ \ldots \\
& | & | & | & | \\
V & R & & \mathbf{T} & V \\
& & \text{Lic} & &
\end{array}
$$

On this analysis, a consonant in Strong Position in fact occurs after an empty Nucleus: all and only those consonants that appear in {#,C}__ are preceded by an empty Nucleus. The disjunction that characterises the Strong Position has thus been reduced to a non-disjunctive statement.

As a consequence of this situation, the contentful Nucleus that follows the consonant in strong position has a governing duty to observe: it must silence the empty Nucleus that precedes the strong consonant. Since its governing ability is bound, thus, its own Onset, the strong consonant, remains ungoverned - hence undamaged. Licensing applies as before, which produces an overall situation where strong consonants are ungoverned but licensed.

Let us now have a closer look at the "initial CV". Lowenstamm (1999) has introduced the idea that the phonological identity of the beginning of the word is

an empty CV unit. We follow this line of reasoning. In the context of (11), the initial CV may appear to serve the only purpose of creating the unity of the post-consonantal and the initial location. This impression, however, arises only when looking at (11) out of context: the initial CV is but one aspect of a more general approach to the representation of morphological information in phonology (Scheer 2004:§§83, 402, forth). Traditional diacritics such as "#", "+" and the like do not qualify as linguistic objects. At best, they are placeholders for a linguistic reality that phonologists do not understand. Given the modular character of grammar and the fact that phonology does not speak the same language as higher modules (phonology does not know what "case" or "animate" is, no other module can interpret "labial", see Jackendoff 1997), morpho-syntactic information must somehow be translated into the phonological language in order for phonology to be able to parse it. Diacritics are therefore out of business.

Also, diacritics do not make any prediction as to what may or may not happen at the beginning of the word: since they are arbitrary and unparsable by the phonology, anything and its reverse could be triggered by "#". This, however, is not how natural language works. The beginning of the word has clearly identifiable and cross-linguistically stable effects: if it is any special at all (there are languages where the behaviour of the left edge of the word is not any different from the one that is observed word-medially), it provokes 1) a ban on #RT clusters (like in typical Indo-European languages: English, French etc.), 2) the strength of the initial consonant (as illustrated above) and 3) the stability of the first vowel of the word (in many languages, vowel deletion is blocked if the target vowel is the first vowel of the word).

When the object "#" is taken seriously, however, there is no reason why vowel deletion (V $\rightarrow$ ø / #C__C), rather than vowel-insertion (ø $\rightarrow$ V / #C__C), should be blocked word-initially. As a matter of fact, there are languages where vowels are inserted between two word-initial consonants - however, no language has been reported where the word-initial context triggers the deletion of the first vowel.

Scheer (2004:§83) discusses this issue at greater length, showing that the three non-arbitrary effects of the beginning of the word all follow from the existence of an empty CV unit that precedes the first consonant.

Let us now summarise the overall situation regarding the positional identity of consonants in CVCV.

(12)

	position	usual name	phonological identification	lateral situation	segmental health
a.	#__V	word-initial	⎫ Strong	⎫	licensed and	splendid
b.	VC.__V	post-Coda	⎭ Position ⎰ = ø__ ⎭	ungoverned	
c.	V__.CV	internal Coda	⎫ Coda = __ø ⎫	unlicensed and	unfavourable
d.	V__#	final Coda	⎭ ⎭	ungoverned	
e.	V__V	intervocalic	= else-where	licensed and governed	unfavourable

It appears that the angle stone for the definition of syllabic positions are empty Nuclei: a consonant occurs in a Coda when it is *followed* by an empty Nucleus; it stands in the Strong Position in case it is *preceded* by an empty Nucleus; finally, it is intervocalic if it is not adjacent to any empty Nucleus.

As was mentioned earlier, both relevant disjunctions are reduced: the phonological identity of the Coda is "__ø", the one of the Strong Position is "ø__". Both requirements that have been identified under (5) are thus met: the Strong Position is a non-disjunctive and unique phonological object (5a), and it is exactly symmetric in regard of the Coda (5b). On account of this absolute symmetry in both structural description and effect, we refer to the Strong Position as the Coda Mirror.

But there is still one question remaining: causality. Why is the Coda weak and its mirror strong, rather than the reverse? The answer is contained in table (12): the relative strength of consonants is a function of the two lateral forces that act on them. Given that Government spoils the melodic content of its target while Licensing backs it up (see (7)), the most comfortable position for a consonant is certainly the Coda Mirror: this is where consonants escape spoliation (they are ungoverned), but enjoy support from Licensing. The Coda Mirror is thus certainly more inviting than either the Coda or the intervocalic position: in the former environment, consonants are neither spoiled nor supported, while they are both attacked and backed up in the latter. On the other hand, it is not immediately obvious how the two weak positions should be ranked: are you better off when experiencing neither damage nor support, or when you are subject to both? There is actually some reason to believe that the Coda is weaker than the intervocalic position, but this question does not need to be pursued here. We can simply note that Coda Mirror theory makes no firm prediction.

It is important, however, to understand that the Coda Mirror does make a clear distinction between both weak positions: they are distinct phonological objects. Being able to differentiate the Coda and the intervocalic situation while uniformly characterising their association as the Weak Position is actually another challenge raised by the empirical record: lenition sometimes affects only Codas (and sometimes even only half of it), but at other times produces the same effect on Codas and on intervocalic consonants. In any event, the empirical situation shows that there are two ways of being weak: some phenomena take place in intervocalic position, but are unheard of in Codas (e.g. the voicing of obstruents),

and vice-versa (e.g. devoicing). Ségéral & Scheer (2001a) and Scheer (2004:§131) enlarge on this issue.

Table (13) summarises the correlation between the two lateral forces and their effect.[14]

(13)   Government, Licensing and their effect on consonants

Licensing	Government	position	segmental health according to predictions
+	−	Coda Mirror	splendid
	+	V__V	unfavorable
−	−	Coda	unfavorable
	+	impossible	—

We are now prepared to look at TR clusters and the trouble they cause in Gallo-Romance.

3.   *The Gallo-Romance trouble with TR clusters:* colubra

The trouble that TR clusters cause in general and in the evolution of Gallo-Romance in particular may be illustrated by a well-known set of data, which we call the *colubra* paradigm. Latin words that belong to this pattern are trisyllabic or longer and bear a TR cluster between the short penultimate and the final vowel. The size of this paradigm is relatively small: all grammars quote the same five items[15]: *colubra*, *cathedra*, *tonitru*, *integru*, *palpetra*. Six additional words whose modern reflexes suppose more intricate evolutions may be added: *tenebras*, **alacru / *alecru, pullitru, -tra*, *feretru, podagru*, **taretra, -tru / taratru* (< Cl. Lat. *terebra*, Fr. *tarière*). The pool of words that we will work with below thus bears eleven items.

3.1   *TR was already ambiguous in Latin*

Words of the *colubra* class receive regular antepenultimate stress in classical Latin (*colubra*) according to the Latin stress rule "stress is antepenult unless the penultimate syllable is closed or bears a long vowel, in which case it is penultimate".

However, it is to be noted that the behaviour of the TR cluster has already been ambiguous in Latin. This may be seen when looking at the reduction of short vowels in word-internal syllables, so-called internal apophony (Niedermann 1985:

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[14] Note that the fourth logically possible configuration (governed but unlicensed) is excluded on formal grounds: if an Onset is not licensed, its Nucleus must be empty. Therefore, it cannot be governed either since empty Nuclei are unable to govern. Scheer (2004:§543-545) discusses this issue in regard of the special properties of Final Empty Nuclei.

[15] See for example Meyer-Lübke (1890:I.523), Vendryes (1902:94-fn.1), Nyrop (1904:I.161-162), Clédat (1917:2), Bourciez (1930:37), Elcock (1960:40), Pope (1952:100), Bourciez & Bourciez (1967:27), Fouché (1969:II.151-153), Lanly (1971:38-fn.1), Carton (1974:144), de La Chaussée (1974:164), Väänänen (1981:34), Niedermann (1985:16-17), Zink (1986:178-179), Allières (2001:20).

18-31). Internal apophony produces different results in open and closed syllables: in the former position, only high vowels i,u are found,[16] while a only raises to e and o to u in the latter environment (where e remains unchanged). This may be illustrated by *facio - conficio* vs. *factus - confectus*. In the former case, the a which occurs in a word-initial syllable is raised to i in internal open syllable, while it is only taken to e in the closed syllable of the latter example.

This means that the medial vowel of the *colubra* paradigm (unless followed by r) should always be high: it occurs in an internal open syllable. This is indeed true for *tonitru* and *pullitra*. However, *cathedra*, *tenebras*, *palpetra*, *feretru* and *integru* show a mid vowel.[17] The regular conclusion that needs to be drawn, then, is that the high vowels of the former two items are free, while the mid vowels of the five latter words occur in closed syllables. And, thus, that the following TR cluster is monosyllabic (1a) in two, but heterosyllabic (1b) in five cases.[18]

3.2   *Self-contradictory evidence from the (Gallo-)Romance evolution of Latin TR clusters*

TR clusters in the *colubra* paradigm also provoke ambiguous results diachronically. The evolution of Gallo-Romance offers four criteria that allow to

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[16] But before r where the result is always e: inf**e**rus, num**e**rus, leg**e**ris (*vs.* leg**i**tur), op**u**s / op**e**ris.

[17] Some words of the *colubra* paradigm bear a short a in internal syllable, which appears to contradict the apophonic regularity: al**a**cre, pod**a**gru and perhaps tar**a**tru. Short a is indeed sometimes maintained in internal syllables (Vendryes 1902:289-292 offers a list). Some cases are borrowings from Greek (for example *podagru*) where the original vowel has been taken over without modification. Another explanation that is commonly provided invokes a harmony effect whose origin is the initial vowel (Vendryes 1902:291, Maniet 1975:129, Niedermann 1985:30). It is noteworthy that these abnormal classical Latin words are paralleled by reflexes in individual Romance languages which suppose regularly apophonized forms: OFr. *haliegre*, it. *allegro* suppose *al**e**cre / -u; OFr. *tariedre* invites to think of *tar**e**tru.

[18] The syllabic ambiguity of TR sequences also appears in Latin scansion: it is well known that the quantity of the syllable which precedes *muta cum liquida* (*positio debilis*) has been, according to the period, short or "free", i.e. possibly long. Timpanaro (1965) offers more detailed discussion of this question.

In the literature, the variation in the the quality of short vowels in internal syllables before TR clusters is sometimes simply left unmentioned (Grandgent 1934; Palmer 1968; Monteil 1970). Elsewhere, the existence of apophonic e before *muta cum liquida* is admitted without indicating the contradiction with the general pattern (contrasting result in open and closed syllables) or the presence of counter-examples (of the kind *tonitru*) (Juret 1938:77, Niedermann 1985:29). Ernout & Meillet (1985: 695 *s.u.* tono) and Fouché (1969: 152 rq2), while trying to account for the "abnormal" vowel in *tonitru*, also fall into this category. On the other hand, Vendryes (1902: §344) does not make any reference to the syllable. According to him, the result is e simply "before consonant clusters", and he does not mention *tonitru* either. Finally, Meillet & Vendryes (1963:§193rq2, §202 and rq), Timpanaro (1965:1090 "nel latino preistorico la sillabazione del tipo *in-teg-rum* è per noi guarantita dal vocalismo"), Maniet (1975:§57 rq2 and §10 rq2) and Väänänen (1981:§49) examine the question of apophonic e before TR clusters, conclude on the heterosyllabic status of the latter, but leave the *tonitru* pattern unexplained.

test their syllabic status. These are 1) stress shift, 2) the development of the preceding tonic vowel, 3) the evolution of the obstruent and 4) the evolution of the word-final vowel in case it is different from a.

Let us begin with the stress shift. It is a remarkable feature of the *colubra* paradigm that the vowel which was stressed in Latin is not tonic in Gallo-Romance anymore. Antepenultimate *colubra* has become penultimate **colobra* in late Latin[19], a fact that follows from the Gallo-Romance reflex: the diphthong ue in OFr. *coluevre* (> Mod. Fr. [œ], cf. Lat. *cor* > OFr. *cuer*, Mod. Fr. *cœur*) is the regular result of Latin tonic short o.

Table (14) shows the evolution of the 11 relevant words.

(14)   stress shift

    a. proparoxyton > paroxyton

colubra	>	*colobra	OFr. *couluevre*
cathedra	>	*cathedra	OFr. *chaiere*
tenebras	>	*tenebras	OFr. *teniebles*
tonitru	>	*tonitru	OFr. *tonoire*
*taratru	>	*taratru	OFr. *tarere*
podagru	>	*podagru	OFr. *pouacre*
alacre	>	*alecru	OFr. *(h)aliegre*

    b. unshifted

pullitra, -tru	>	—	*poutre* (but It. *puledro*)
feretru	>	—	OFr. *fiertre*

    c. doublets

1. palpetra (Varr.)	>	*palpetra	*paupière*
	>	—	OFr. *paupres*
2. integru	>	*integru	*entier*
	>	—	OFr. *entre*

(14a) illustrates the stress shift described. The two words under (14b), however, do not follow this pattern: the original Latin stress has been preserved in their Gallo-Romance reflexes. Finally, the two words under (14c) show both shifted and unshifted reflexes.[20]

The situation thus seems confusing: stress has been shifted sometimes, but at other times remained stable. On the assumption that the stress-assigning algorithm is the same as in Latin (section 3.3 below reviews the relevant literature regarding this question), the TR cluster of shifted *colubra* items must be

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[19] See Bourciez (1930 : §72 rq.1) on the evolution open o < closed o (< Cl. Lat. tonic short u) before labials.

[20] Fouché (1966:153,629) argues for r metathesis in order to account for OFr. It. entre: integru > *intregu (cf. Romanian *întreg,* Span. It. intregar < integrare). OFr. paupres < *palpretas < palpetras may also be treated along these lines. In this case, stress indeed would have no reason to move. In any event, however, metathesis is out of the question for pullitru and feretru.

heterosyllabic: stress is penultimate if the penultimate syllable is closed. We are thus left with heterosyllabic *colub.ra* for late Latin.

The second test that indicates the syllabic status of *muta cum liquida* is the evolution of the preceding tonic vowel. Gallo-Romance regularly produces different results for tonic vowels in closed and open syllables (e.g. Bourciez & Bourciez 1967:48). Contrary to what might be expected when looking at the stress shift, the middle vowel of the *colubra* paradigm always shows the regular evolution of a tonic vowel in open syllables.

Tonic a remains unchanged in closed syllables (p<u>a</u>rte > *part*), but produces e in open syllables (pr<u>a</u>tu > *pré*). Both relevant members of the *colubra* paradigm, *tar<u>a</u>tru > OFr. *tarere* and *al<u>a</u>cru > OFr. *alaigre*, follow the latter evolution. In the same way, tonic open ɛ (< Lat. short e) comes out unchanged in closed syllables (h<u>e</u>rba > *herbe*), but diphthongises to je in open syllables (p<u>e</u>de > *pied*). And again, all words of the *colubra* paradigm that are concerned show the diphthong: *ten<u>e</u>bras > OFr. *ten**ie**bles*, *cat<u>e</u>dra > OFr. *cha**ie**re*, *int<u>e</u>gru > *ent**ie**r*, *al<u>e</u>cru > OFr. *hal**ie**gre*, *palp<u>e</u>tra > *paup**iè**re*. The situation for the back mid vowel is parallel: tonic open ɔ (< Lat. short o) is handed down without modification in closed syllables (m<u>o</u>rte > *mort*), but produces the diphthong we in open syllables, which is represented by [œ] in Modern French (m<u>o</u>la > OFr. *muele*, Mod. Fr. *meule*). The only relevant representative of the *colubra* paradigm, *colubra* itself, shows the diphthong: *col<u>o</u>bra > OFr. *col**ue**vre*, Mod. Fr. *couleuvre* [kulœvʁə]. Finally, tonic closed e (< Lat. short i and long ee) appears as e in closed syllables (v<u>i</u>rga > *verge*), but is represented by wa in open syllables (p<u>i</u>ra > *poire,* t<u>ee</u>la > *toile*). As before, the only relevant word of the *colubra* paradigm follows the open syllable pattern: *ton<u>i</u>tru > OFr. *ton**oi**re*.

The result is thus unambiguous: all tonic vowels follow the evolution in unchecked syllables, hence supposing homosyllablic TR.[21]

The third criterion concerns the evolution of the obstruent within TR. For the reasons exposed in note 21, labial + lateral clusters [pl, bl] will be lain aside. For labials, we are thus left with sequences involving [r]. The argument here builds on the fact that the fate of labials varies according to whether they are Codas or occur in intervocalic position. In the former situation, they are lost altogether: r<u>u</u>pta > *route*,   subt<u>i</u>le > OFr. *sotil*, c<u>u</u>b(i)tu > OFr. *cote, code*. Intervocalically, on the other hand, they appear as [v]: r<u>i</u>pa > *rive*, f<u>a</u>ba > *fève*, c<u>a</u>pra > *chèvre*, l<u>e</u>p(o)re > *lièvre*, l<u>a</u>bra > *lèvre*. Hence the fate of the labial

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[21] TR clusters where T is labial and R lateral, i.e. [pl, bl], are misbehaving throughout the entire language: Lat. f<u>a</u>b(u)la, c<u>a</u>p(u)la > *fable*, OFr. *chable* should bear an e instead of the unaltered a, and the stops should spirantize, which they do not: [pl] Lat. d<u>u</u>plu, > Fr. *double*; [bl] Lat. f<u>a</u>b(u)la, t<u>a</u>b(u)la, > Fr. *fable*, *table* etc. Bourciez & Bourciez (1967:221) provide an obvious explanation for the deviant behaviour of [bl, pl]: the expected spirantized result, [vl], is "illegal" in French (the cluster does not occur in the language at all). Therefore, the constitution of a homosyllabic cluster was blocked.

indicates the syllabic status of the cluster: it will be lost in case the following [r] is heterosyllabic, but appears as [v] if [r] belongs to the same syllable.[22]

The only item of the *colubra* paradigm that can be run against this record is *colubra* itself. And as before, the spirantised labial indicates that *muta cum liquida* here is homosyllabic.

Finally, the fourth criterion concerns the evolution of the final vowel, which in Gallo-Romance has survived only if it was Lat. a or occurred after a homosyllabic cluster. In this case, the reflex is a schwa (spelt e). Elsewhere, final Latin vowels are lost.[23]

Compare for example febre > *fièvre*, duplu > *double*, inflo > *enfle* where *muta cum liquida* demands the presence of some vocalic substance to its right. By contrast, vowels other than a are lost altogether after RT (ventu > *vent*, portu > *port*, arcu > *arc*), RR (caballu > *cheval*, ferru > *fer*) and TT (factu > *fait*).

Analyses commonly appeal to the "heaviness" of TR clusters, as opposed to other sequences: the former, but not the latter, need a vocalic crutch in order to exist.[24] For the *colubra* paradigm, this means that a CCV# cluster must have been homosyllabic if the final vowel has survived into Gallo-Romance and was different from Lat. a. As a matter of fact, all relevant items of the *colubra* paradigm all appear with a final schwa in Gallo-Romance: tonitru > OFr. *tonoire*, podagru > OFr. *pouacre*, alacre > OFr. *(h)aliegre/ alaigre*, feretru > OFr. *fiertre*, *taretru > OFr. *tariedre / tarere*.[25] Hence the test offered by the evolution of the final vowel also hints at a homosyllabic status of the preceding TR cluster.

On the bottom line, thus, the only troublemaker appears to be the stress shift: not only is its result different from the one of the other tests; it is also ambiguous since the eleven items do not behave in uniform fashion. In contrast, the other three criteria provide a perfectly homogeneous result across the paradigm: TR clusters are homosyllabic.

The following section reviews possible interpretations of this situation.

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[22] Dentals are lost in Codas as well as in intervocalic position (see table (3)) and may therefore not be used in order to test the behaviour of dental TR clusters. The same holds true for velars: they usually "reduce to yod" in Codas as much as they do intervocalically (see table (3)).

[23] The detail is a little more intricate, but does not impact the present discussion (see Bourciez & Bourciez 1967:§13-15, Fouché 1966:502-506).

[24] This impairment is still visible in modern French: word-final TR clusters are unstable and very commonly lose their R: *autre, livre, ministre* are pronounced *aut', liv', minist'* (Dell 1973:224ss, 1976). By contrast, final RT sequences such as in *porte* [pɔrt], *larve* [larv] or *parc* [park] do not show any tendency towards cluster simplification.

[25] The reflex of *integru > *entier* lacks the expected final schwa, even though schwa seems to be regular with velar TR clusters: agru > *aire*, cicere > OFr. *çoire*, soceru > OFr. *suere*, *suire* (and most probably, against Fouché 1966:626s and Bourciez & Bourciez 1967:§116-H, the result of the infinitives facere, legere, dicere, ducere, *bragere, *ragere, *cocere, etc. > *faire, lire, dire, -duire, braire, raire, cuire*). Cases such as nigru > *noir* (not *noire*) (Bourciez & Bourciez 1967:§132 rq2) remain unclear (Fouché 1966:502 treats *integru on a par with nigru).

3.3   *Solutions offered in the literature*

Recall from section 3.1 that TR clusters had already an ambiguous behaviour in Latin. We also know that the stress shift must be an early event in Gallo-Romance since it is supposed by all further evolutions such as diphthongisation. Therefore, a natural solution seems to be one where TR clusters switched back and forth between homo- and heterosyllabic periods: classical Latin V.TRV > late Latin VT.RV (stress shift) > (Gallo-)Romance V.TRV (other events). For instance, this is the analysis promoted by Loporcaro (in press) and Timpanaro (1965):

> Se si ammette dunque per il latino arcaico e tardo l'eterosillabicità, si deve ricostruire un'evoluzione in quattro fasi : a. lat arcaico -VC.RV-, b. lat class. -V.CRV-, c. lat tardo/proto-rom. -VC.RV, d. lingue rom. -V.CRV-. (Loporcaro (in press:§3))

> Piuttosto che ad una netta separazione tra una pronunzia popolare in-té-grum, mantenutasi dall'epoca preistorica fino al sorgere delle lingue romanze, e una pronunzia dotta ín-te-grum, mantenutasi con altrettanta costanza almeno per tutta l'età classica, io credo a une prevalere ora dell'una ora dell'altra accentazione (in conseguenza di sillabazioni diverse) in diverse epoche. (Timpanaro (1965:1093ss))

According to this scenario, syllable structure is the motor of stress shift. Another approach, to be discussed below, argues that the movement of stress has got nothing to with syllable structure. This appears to be the major fraction line in the literature regarding the *colubra* paradigm.

One version of the syllabic analysis supposes that *muta cum liquida* has been geminated: *cólubra* > **colúbbra* > **colúbra*.[26] Stress being assigned as in Latin, the penultimate syllable receives regular stress in the geminated period since it is checked (Fouché 1969:152). Bourciez & Bourciez (1971:§6 rq1) also favour a solution that implies gemination, but no chronological order of events: both types *colubra* (from the *sermo cotidianus*) and **colubbra* (from the *sermo rusticus*) have coexisted and finally "merged" into **colubra*.

Another option on the syllabic side is the emergence of an anaptyctic vowel. On this analysis, an epenthetic (or "parasitic") vowel has developed in the middle of *muta cum liquida*, taking *colubra* to **colobera*. The unchanged Latin stress rule then applied to the result, making it a proparoxyton: *colobera*. After the stress shift, the anaptyctic vowel has been lost like all other post-tonic internal vowels in Gallo-Romance. Vendryes (1902: 94 fn.1), who traces this solution back to Neumann (1896) and without adhering, says it is "une hypothèse fort ingénieuse" [a very clever hypothesis]. More recent defenders of the anaptyctic

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[26] This is the "Italian" solution: TR clusters where T is labial come out geminated in Italian, e.g. *febbre* "fever" < *febre*, *fabbro* "smith" < *fabru*, *nebbia* "fog" < *neb(u)la*, *fibbia* "buckle" < *fib(u)la* (*cf.* Rohlfs 1966: §§247, 261), while simple intervocalic labials do not geminate (*faba* > *fava* "bean").

vowel are de Groot (1921), Richter (1934:45ss) and Niedermann (1985:16-17). At first sight anaptyxis may look like a deus ex machina: its only trace is the event that it is supposed to explain, i.e. the stress shift. Nevertheless, it seems appealing to us because it avoids oscillating syllabic interpretations of TR clusters while maintaining a direct causal relation between syllable structure and the stress shift. Furthermore, it has the advantage of directly correlating the effect observed and the salient property of TR clusters: *muta cum liquida* is unstable and therefore beaks up, developing a vocalic crutch.

The other family of explanations contends that the Latin stress rule has changed: it was syllable-sensitive in Latin, but became syllable-insensitive in Gallo-Romance. Pope (1952:100) formulates the new algorithm as follows: "the penultimate syllable is stressed whenever it contains a long vowel, a diphthong, or a vowel of any kind followed by any two consonants or a double consonant". The original Latin rule thus made a crucial difference between TR and RT clusters: CVCVTRV were proparoxytons, while CVCVRTV ended up as paroxytons. Since all items of the former pattern, i.e. the *colubra* paradigm, have become paroxytons as well, Pope correctly renders the new observational situation: the penultimate vowel is stressed when followed by *any two* consonants, no matter what their sonority slope.

This stance is expressed, with some minor variation in detail, by Ward (1951:484), Steriade (1988:399) and Bullock (2001). The latter author supposes a parallel and dissociated functioning of the syllabic and the prosodic world, something that she calls "double prosody". The basic claim here is that theory needs to recognise two separate levels of representation for syllable- and prosody-related phenomena, which sometimes may overlap (i.e. in Classical Latin), but at others times function separately (i.e. in Gallo-Romance: stress is syllable-insensitive, while syllable-related processes such as diphthongisation etc. obey syllabic conditioning).

Finally, Pulgram (1975:168-171) who also puts aside syllable structure, grounds the idea of a "general trend towards paroxytony". This scenario is mainly built on the loss of internal unstressed vowels (lep(o)re > *lièvre*, tab(u)la > *table* etc.) and the stress shift in certain proparoxytons (mul<u>i</u>ere > mulj<u>e</u>re). Lahiri et al. (1999) follow this line of thought: they argue that the Latin stress rule, being deprived of its empirical basis, could not survive and broke down.

It is certainly true that the various approaches which subscribe to a syllabic solution have this or that weak point. The alternative, however, merely records the observation as such. It certainly provides a correct description - but it does not attempt at looking behind the curtain: a view is admitted whereby all relevant processes of the language but one are conditioned by syllable structure - the stress shift. We believe that merely counting the consonants instead of evaluating their hierarchical relation is a form of capitulation in the face of adversity. It may get

the data right, but does not promote our understanding of either syllabic theory or Gallo-Romance.

But be that as it may: as was stated at the outset of the article, going through the classical case of *colubra* and the related stress shift only serves the purpose of evidencing the trouble with TR clusters in general, and in Gallo-Romance in particular.

Therefore, the most important result of the foregoing discussion is the fact that the syllabification of a TR cluster cannot be discovered by looking at its phonetic properties or its sonority slope - while RT, TT and RR clusters are always heterosyllabic no matter in which language they are found and what the local environment looks like. Only the behaviour of TR clusters will betray their syllabic value. Even within a given language, several patterns may cohabitate: the split of the *colubra* paradigm into those items where stress moves and those where it remains stable witnesses the syllabic ambiguity of *muta cum liquida*. Any account must somehow accommodate this fact. Hence a uniform analysis of TR clusters is ill-advised.

In the remainder of the article, we discuss two other instances of Gallo-Romance obstruent-sonorant clusters. Both show entirely unambiguous behaviour, but which calls for opposite analyses: Gallo-Romance C+j sequences, we argue, are necessarily heterosyllabic (1b), while *muta cum liquida* that is produced by epenthesis (cam(e)ra > chambre) represents an affricate (1c).

4.   *C+j sequences in Gallo-Romance*

Latin short high and mid vowels have become glides in late Latin when occurring before a vowel. For example, trisyllabic *filia* "daughter" and *vidua* "widow" have been reduced to bisyllabic fil**j**a, ved**w**a.

We have argued elsewhere (Scheer & Ségéral 2001b) that this glidification can only be understood if *all* C+j sequences are heterosyllabic. This analysis is commonplace for clusters involving labials: rabia > *rage* [ʁaʒ], sepia > *seiche* [sɛʃ], cavea > *cage* [kaʒ], simiu > *singe* [sɛ̃ʒ]. Nobody believes that the labial obstruent has been palatalised by the following yod: labials do not palatalise in Gallo-Romance, nor in any other language. Hence the solution is not melodic: no palatal agent penetrates into the labial. Rather than an assimilation, we face a positional phenomenon. That is, C+yod is heterosyllabic. Yod therefore occurs after a Coda, hence in the Coda Mirror. It strengthens for this reason, and only for this reason, [j] > ([t͡ʃ], [d͡ʒ] >) [ʃ, ʒ], just as much as it does in the other half of the Coda Mirror, i.e. word-initially: jocu > *jeu* [ʒø] (cf. (3)). The fate of the preceding labial confirms this analysis: like everywhere else in the language, it is lost in Coda position (rupta > *route*, cub(i)tu > *coude*, cf. (3)).

As far as dentals and velars are concerned, however, our analysis contrasts with the classical account. Since dentals and velars may be palatalised, it is commonly assumed that their evolution before yod is the result of a palatalisation: montanea > *montagne* [ɲ], palea > *paille* [paʎə] (Mod. Fr. [paj]). This scenario

leaves us with an identical triggering situation (C+yod), but two different causalities: positional in the case of labials, assimilatory as far as dentals and velars are concerned. The latter solution is taken to be the default, which labials do not follow because they are intrinsically non-palatalisable. C+yod being outlawed, another strategy, i.e. strengthening of yod, eliminates the offending sequence.

Contrary to this analysis, we believe that all developments of C+yod clusters are driven by the same motor: positional strength. Melodic contaminations of course exist, but they are secondary and opportunistic: they hook on the result of the positional mechanism, which is acquired in absence of any melodic influence. Due to space restrictions, we must refer the reader to Scheer & Ségéral (2001b) for the further detail.

If our analysis is correct, then we have come across a case where a Gallo-Romance obstruent-sonorant cluster shows uniform heterosyllabic behaviour. This is at variance with Onset Maximisation, which is supposed to first syllabify all C+yod sequences into homosyllabic (1a) clusters, so that the obstruent can be captured as the Coda of the preceding syllable in a further derivational step (cf. section 1). We believe that there is no need for either Onset Maximisation or Coda Capture here, since the result is consistently heterosyllabic (1b). Rather, the devices mentioned are generative artefacts that root in the philosophy of Chomsky & Halle (1968) where everything (or, at least, as much as possible) was procedural. In our opinion, the syllabic status of obstruent-sonorant sequences, given its variability, is not decided by the computational module of the grammar. Rather, it is a lexical property, just as much as the rest of syllable structure.

Thus far, we have come across a case where TR clusters have a wavering syllabic status (the *colubra* paradigm), and one where they are uniformly heterosyllabic. The remaining pages look at another instance of *muta cum liquida* that has stable syllabic properties, but this time as an affricate (1c).

5.   *TR is an affricate: Gallo-Romance epenthesis cam(e)ra > **chambre**

The discussion of problematic *muta cum liquida* in Gallo-Romance does not usually call on the facts known as consonantal epenthesis, i.e. ca̅m(e)ra > *chambre*. This is quite surprising since the development at hand produces new TR sequences: the analyst has the opportunity to examine the conditions under which TR clusters are born. Therefore, epenthesis ought to be an important piece of evidence for the interpretation of *muta cum liquida* in general and their Gallo-Romance status in particular.

On our analysis, epenthesis is no epenthesis: the regularly invoked "bad contact" between two sonorants has no bearing on the insertion of the obstruent at all. Rather, the emerging group [br] in *chambre* is the strong version of the original [r] in *cam(e)ra*, which has come to stand in Strong Position after the loss of the post-tonic vowel. The new TR cluster represents one single consonant and

occupies the same space as its ancestor [r], i.e. one single skeletal slot; hence it instantiates an affricate (1c).[27]

5.1   *Gallo-Romance epenthesis: well-known facts*

Relevant data regarding the Gallo-Romance epenthesis may be retrieved from any textbook. Latin post-tonic, as well as pre-tonic non-initial vowels, have been lost in the evolution towards French. This created an arbitrary contact between all sorts of consonants: $C\acute{V}C_1VC_2V$ reduces to $C\acute{V}C_1\o C_2V$, and $VC_1VC_2\acute{V}CV$ comes out as $VC_1\o C_2\acute{V}CV$, irrespectively of the quality of C_1 and C_2 (see for example Bourciez & Bourciez 1967:§§158,189,197, Pope 1934:§§369-370, Fouché 1966:822-3, 840). If the resulting cluster C_1C_2 is m-l, m-r, n-l, n-r, s-r, z-r or l-r, a stop appears in the middle of the sequence. This stop will then be homorganic with C_1, and also adopt its voice value (voiced after sonorants and [z], voiceless after [s]). Table (15) offers some illustration (L is shorthand for "liquid").[28]

(15)   French epenthesis of a homorganic stop

	a. N__L			b. s__L		
m-r	cam(e)ra	*chambre*	s-r	*ess(e)re	*être*	
	num(e)ru	*nombre*		dix(e)runt	OFr. *distrent* (Fr. *dirent*)	
m-l	sim(u)lare	*sembler*	z-r	laz(a)ru	*ladre*	
	cum(u)lu	*comble*		*miz(e)runt	OFr. *misdrent* (Fr. *mirent*)	
n-r	cin(e)re	*cendre*	c. L__L			
	pon(e)re	*pondre*	l-r	mol(e)re	*moudre*	
n-l	spin(u)la	*épingle*		*vol(e)r+ayo	OFr. *voldrai* (Fr. *voudrai*)	

The classical analysis explains epenthesis by an alleged uneasiness of the contact between two sonorants (with a special proviso for [s,z]): depending on the flavour, this "bad contact" is said to be phonetic or syllabic. By contrast, a "good contact", i.e. one where either a well-formed branching Onset TR (ung(u)la > *ongle*, perd(e)re > *perdre* etc.) or a regular interlude RT (poll(i)ce > *pouce*, ver(e)cundia > *vergogne*) is created, does not trigger any "repairing" epenthesis.

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[27] A parallel case is reported from Madagascan, showing that there is no typological ban against a system where *all* TR clusters are mono-positional, and that the appearance of a stop "ex nihilo" may well be the result of a fortition. In Madagascan compound formation the last vowel of the first word is lost, and the initial consonant of the second word strengthens in strong post-consonantal position (see section 2). Hence fufun(a) "smell" + **f**ati "corpse" → fufum**p**ati "disgusting smell" or fufun(a) "smell" + **s**avuni "soap" → fufun**tˢ**avuni "smell of soap". In case the second word begins with [r], fortition produces [dr]: manan(a) "to have" + **r**eni "mother" → mamand**r**eni "to have a mother". That is, [dr] must be viewed as the strong version of [r] which has been created by fortition and is necessarily mono-positional. The process is described at greater length in Ali (2003) and Ségéral & Scheer (in press).

[28] Note that the nasal of resulting VNTL clusters has regularly nasalized the preceding vowel; the sequence appears as $\tilde{V}$TL in Modern French.

5.2   *Syllabic units do not fall from heaven*

We believe that this analysis is wrong: the reason for the appearance of the stop is not a bad contact. Rather, the stop emerges because the following liquid, of which it is an organic part, stands in Strong Position.

Our argument is based on a consequence of the traditional view, which we believe is unacceptable in regard of fundamental autosegmental principles. The classical interpretation, based on Onset Maximisation and the sonority slope of the resulting TR cluster, makes the [br] of *chambre* (< c<u>am</u>(e)ra) a regular branching Onset. On this analysis, thus, a skeletal slot needs to be added to the input *cam(e)ra* in order to accommodate the output: the sequence RR occupies two skeletal slots before epenthesis applies, against three after it has produced RTR.

We believe that this operation is impossible: skeletal slots do not fall from heaven.

(16)   syllabic units do not fall from heaven
    a.   their exclusive origin is the lexicon.
    b.   phonological computation can eliminate, but not create syllabic positions.

Although (16) is not usually made explicit, it is a fundamental underpinning of autosegmental theory. The heart of autosegmentalism is the insight that a syllabic unit may be present in absence of a melodic representative, and vice-versa. Countless analyses crucially rely on this representational possibility. However, the fact that a chunk of melody, or a tone, or some other non-syllabic object floats never causes the creation of a skeletal or a syllabic unit. Did it, the very notion of "floating object" would not make any sense since floating material would immediately create its own landing site and hence stop to float. This is not how natural language works. Phonology does not insert skeletal slots in order to accommodate some floating object that "would like to" be phonetically realised.

Illustration may be provided by typical floating consonants such as in the French words *petit*, *gros* etc. (but also in the English indefinite article: *a coffee* vs. ***an** apple*): these adjectives end in a floating *-t* and *-z*, respectively, which are pronounced before vowel-initial words (*un peti[t] enfant*, *un gro[z] enfant*), but have no phonetic realisation before consonant-initial words (*un peti(t) café*, *un gro(z) café*) and when *petit* appears before a pause (*il est peti(t)*, *il est gro(z)*). Table (17) shows that the existence of the floating melody does not trigger the appearance of skeletal material: otherwise the *-t* of *petit* would be audible all the time (here and henceforth, inserted syllabic material is grey-shaded).

(17)   floating consonants do not trigger the insertion of skeletal material

```
    C   V   C   V                    C   V   C   V   C   V
    |   |   |   |          →         |   |   |   |   |   |
    p   e   t   i   t                p   e   t   i   t
```

The same holds true for floating tones: they parachute on existing vowels, are lost or remain floating. There is no case on record where the "pressure" of a floating tone that "wants to be pronounced" provokes the appearance of a vowel.

Also, Brandão de Carvalho (in press) describes a situation in the Portuguese verbal system where a morpheme without prosodic support cannot make it to the surface unless it is offered enough space by a certain class of verbs.

This is not to say, however, that syllabic space may never be added in the course of a derivation. The only condition on the insertion of timing units is their lexical origin: a morpheme may consist of nothing but syllabic space. This situation may be argued to occur in Latin where the only difference between the present and the perfect of a verb such as *venio* is length: *venit* "he comes" vs. *vēnit* "he came". In the same way, French floating consonants may be promoted to phonetic existence by a morpheme that arguably is made only of skeletal space: the feminine form of the adjective *petit* [pəti] is *petite* [pətit]. The melodic material that makes the difference between the masculine and the feminine, [-t], is present in the lexical entry of the masculine form (we hear it in liaison contexts, cf. above). Hence, it cannot be the feminine marker itself. Rather, the feminine morpheme provides the syllabic space that the floating *-t* needs in order to acquire a phonetic existence.

Typical templatic morphology of the Semitic kind may also illustrate this pattern. In Classical Arabic for example, the semantically unmarked measure I forms follow the template $C_1V_1C_2V_2C_3$- (e.g. katab-a "he has written"). Measure II forms (causative/ intensive meaning) geminate C_2 (kattab-a), while measure III forms (reciprocal / conative meaning) lengthen V_1 (kātab-a). The two latter forms obviously suppose the insertion of additional skeletal material. On the analysis of CVCV, the inserted object is a CV unit in both cases (see Guerssel & Lowenstamm ms): in addition, measure II forms give order to spread C_2, while measure III forms demand the spreading of V_1. Table (18) shows how the extra CV unit that morphology provides is exploited by the phonology of the language.

(18)   Semitic templatic morphology: CV inserted by morphology

```
    k               t       b
    |               |       |
    C   V   C   V   C   V   C   V
        |               |
        a               a
```

Finally, stress may also materialise as skeletal space. This is the classical analysis of Italian Tonic Lengthening (Nespor & Vogel 1979): vowels lengthen in open syllables if they are stressed (e.g. Chierchia 1982,1986, Bertinetto 1981, Repetti 1991). For example, /fato/ "destiny" will appear as [fáato]. Here again, the extra CV unit on which the lexically short vowel spreads is not created by any phonological process: it is the material incarnation of stress, and hence has a lexical origin, as shown under (19).[29]

(19)   Tonic Lengthening: stress materializes as a CV unit

```
C   V   C   V   C   V
|   |_____>   |   |
f   a           t   o
```
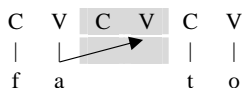
We may now examine the Gallo-Romance epenthesis in the light of the preceding discussion.

5.3   *Gallo-Romance "epenthesis": strengthening, not a "bad contact"*

If it is true that phonological processes cannot provoke the insertion of syllabic material, the interpretation of [br] in c<u>am</u>(e)ra > *chambre* as a branching Onset must be rejected. The process at hand neither occurs at a morpheme boundary nor involves any independent morpheme, and the "epenthesised" consonant has no lexical origin. The only alternative for the representation of [br], then, is a contour segment (1c).

In this case, however, the process at hand can hardly be called epenthesis: on constant syllabic volume, a simplex sonorant develops a second branch under the same skeletal slot, thereby becoming an affricate. Rather, we are facing an fortition in the same way as for example in certain Italian dialects where n-s sequences develop a [t], taking the fricative [s] to the affricate [t͡s]: napolit. [pent͡sare], against It. *pensare* (cf. Rohlfs 1966:§§ 266). Parallel cases may also be quoted from Provençal, where [w] strengthens to [gʷ] in C-w clusters (*tenguísti* < tenuisti, cf. Mok 1977:42), and from Gallo-Romance where the affricate [d͡ʒ] is the reflex of [j] in C+yod sequences (see section 4).

These fortitions all occur in the same context: after a heterosyllabic consonant. We know that this position, together with the word-initial context, is strong (cf. the Coda Mirror in section 2). Now pre- and post-tonic syncope puts the second liquid of the *cam(e)ra* paradigm precisely into this position: it comes to stand after a heterosyllabic consonant. Therefore, "epenthesis" has got nothing to do with some "bad contact" between two sonorants. Rather, weak liquids undergo fortition in a context where this process is regular: the Coda Mirror. The whole object TR represents the strong version of the weak sonorant R, whereby

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[29] We actually believe that the identity of stress is *always* a CV unit. Space restrictions preclude further discussion of this issue (see Larsen 1998, Scheer 2000:140ss).

the "epenthesised" T is an organic part of the R, and the sequence TR as mono-positional as the original R. Table (20) illustrates the process at hand.

(20)   Gallo-Romance "epenthesis": strengthening of R to TR in Strong Position
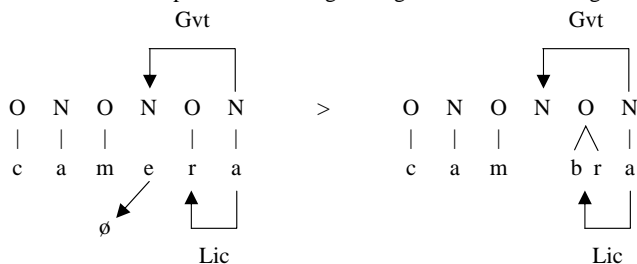
Another aspect of this evolution is the fact that the "epenthesised" stop inherits place and voice value from the preceding consonant.[30] This means that strengthening merely creates a second branch under the skeletal slot of the original sonorant, whose only specification is stopness. Place and voice values are then supplied by the preceding consonant.

The absence of strengthening when RT clusters are created by syncope is unsurprising: as before, the second consonant of the cluster, T in this case, stands in Strong Position. But T is already strong, and may therefore not undergo any further strengthening. There is no strengthening either when syncope produces TR clusters. The reason here is the same as in the classical scenario: the cluster TR, unlike RT and RR, is a well-formed branching Onset, whose members can acquire solidarity.[31]

Epenthesis usually stands off-side in the Gallo-Romance evolution: on the classical account, it is not related to any other process or regularity. By contrast our interpretation has the conceptual advantage of making "epenthesis" but an expression of the central regularity that governs Gallo-Romance diachronics, i.e. positional strength (see section 2.1).

Also, beyond this generalisation, the existence of affricate TR clusters in Gallo-Romance allows to envision a novel analysis of other phenomena that are commonly regarded as marginal and ill-integrated into the guiding lines of Gallo-

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[30] The fact that sonorants spread their voicing to other segments is problematic in itself, and for all theories. On account of the difference between spontaneous and non-spontaneous voicing (i.e. absence of voiceless counterparts for sonorants, unwillingness of sonorants to undergo final devoicing etc.), it is often assumed that only obstruents possess phonologically active voicing; sonorants are supposed to be voiced by default (Chomsky & Halle 1968 *et passim*) and should therefore be unable to transmit their voice value.

[31] In the same way as ordinary syllabic models, CVCV encodes the solidarity of branching Onsets - only is this done in lateral, rather than in arboreal terms. The detail of the representation of branching Onsets in CVCV does not matter here; it is exposed at length in Scheer (1999, 2004:§14).

Romance evolution: parasitic r (e.g. thes<u>au</u>ru > *trésor*) and metathesis of r (e.g. be<u>r</u>b<u>i</u>ce > *brebis*). Like "epenthesis", these developments create new TR clusters and therefore cannot stand aside when *muta cum liquida* is examined.

5.4   *Parasitic r and metathesis*

In French, words sometimes bear an r that has no etymological source, so-called parasitic r (e.g. *trésor* < thes<u>au</u>ru). Since the appearance of parasitic r is everything but systematic or regular, the classical attitude is to simply mention its existence without offering any interpretation (e.g. Fouché 1969:756-760, Bourciez & Bourciez 1967:§178). Some examples (from all periods of French history) appear under (21).

(21) parasitic r in French

a. #T__V		c. C.T__V	
vit<u>i</u>cula	*vrille*	perd<u>i</u>ce	*perdrix*
thes<u>au</u>ru	*trésor*	celt. *d<u>e</u>rb(i)ta	*dartre*
néerl. tingel	*tringle*	*t<u>e</u>rm(i)te	*tertre*
		*c<u>a</u>n(a)pu	*chanvre*
b. V.T__V		sp<u>e</u>lta	*épeautre*
patte X dial. gadrouiller	*patrouille*	calend<u>a</u>riu	*calendrier*
flam. pleute (??)	*pleutre*	reg<u>e</u>sta	*registre*

The reason for the appearance of parasitic r is quite unclear: even when extensively drawing on "analogical pressure", the existing of parasitic r in this, rather than in that word remains largely erratic. Even a given root may have forms with and without intrusion: *arbalète* "crossbow" (< arc(u)ball<u>i</u>sta) is virgin, but *arbalétrier* "the one who shoots with a crossbow" has incorporated an r.

A well-known modern instance of parasitic r is *entartreur* "someone who puts a cream pie in the face of somebody else". The derivational basis is *tarte* "cream pie", but speakers produce very regularly *entartreur*.[32] The intrusion here is even more surprising when considering that they are obviously prepared to neglect a semantic barrier when producing *entartreur*, which may be construed as an agentive of *tartre* "tartar"; *entartreur*, then, would mean "somebody who spills tartar on somebody else".

If the cause of intrusion remains unclear (and we do not have anything to say about this), one aspect of parasitic r strikes the observer: its landing site is perfectly regular. Parasitic r indeed always appears after stops, and these stops occur in the Strong Position, i.e. either word-initially (sometimes) or in post-Coda position (most frequently). By contrast, no intrusion is reported for stops in weak position: r never docks on Coda consonants, and the two examples in intervocalic

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[32] Typically when talking about Noël Godin, a Belgian (nickname: "Le Gloupier") who attacks ridiculous and/ or morally abject persons with cream pies (Bill Gates, Stéphanie de Monaco, Bernard-Henri Lévy, Patrick Poivre d'Arvor, Nicolas Sarkozy etc.).

position mentioned under (21b) appear to exhaust the record of intervocalic cases - and yet they are quite obscure.

The process whereby parasitic r creates *muta cum liquida* is not a fortition: TR is not the strong version of T (recall that TR is the strong version of R). Nevertheless, the fact that parasitic formation of TR clusters occurs only in Strong Position is probably better understood when there is reason to believe that the language accommodates mono-positional TR clusters (1c). The origin of the parasitic r is as puzzling as before - but its "choice" to parachute on this, rather than on that consonant, makes sense only when looking at the process through the positional prism, and when allowing parasitic r to land without modifying syllable structure or augmenting the overall skeletal volume.

Another phenomenon that we believe may be analysed along these lines are the various metatheses of liquids that have occurred all through the evolution of Gallo-Romance (Pope 1952 : §124, Fouché 1969: 751-753, Bourciez & Bourciez 1967: §§178, 180). As parasitic r, this phenomenon is erratic, and its cause obscure: of all items that present the relevant input structure, only some words show metathesis. Consider the data under (22).

(22) metathesis in Gallo-Romance
   a. from post-Coda TR to word-initial: c. b. from Coda to word-initial:
      VC.TRV → #T__   VR.CV → #T__
      temp(e)**r**are   *t**r**emper*   to**r**c(u)lu   *t**r**euil*
      fimb**r**ia   *f**r**ange*   *be**r**bice   *b**r**ebis*
      *fim(o)**r**iare   OFr. *f**r**ambaier*   *fo**r**mat(i)cu   *f**r**omage*
      fund(u)**l**a   *f**r**onde*   *tu**r**b(u)lare   *t**r**oubler*
                                                      *to**r**sare   *t**r**ousser*
   b. from intervocalic TR to word-   *be**r**tjolu   OFr. *b**r**eçuel*
      initial: VTRV → #T__   fu**r**lone (< frk   *f**r**elon*
      *bib(e)**r**at(i)cu   *b**r**euvage*   *hurslo)

As may be seen, r always migrates to a word-initial T[33], and its origin is almost always a Coda.[34]

The latter observation may be interpreted as a simple lenition whereby r is lost in weak position, i.e. the Coda. This process, then, is but one aspect of what generally happens to Coda consonants in Gallo-Romance: they are systematically eliminated (only most of the labials and the lateral survive, see (3)). R generally resists lenition in Coda position, but some cases where it falls prey to deletion

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[33] Note that this is only the Gallo-Romance situation. In Italo-Roamnce for example (Rohlfs 1966:I.§322), the landing site may also be an intervocalic T (p**r**atica → pàt**r**iga OPadov.), and even a Coda (f**r**atello → fa**r**delo Rovig.), though Rohlfs indicates that these varieties are rare.

[34] The lists shown under (25a) and (25b) are close to exhaustive, while (25c) renders only a fragment of the record: e.g. *f**r**elater* (< dutch ve**r**laten), *cravache* (< germ Ka**r**batsche), *cramoisi* (< span ca**r**mesí), *calemb**r**edaine* (< calembou**r**daine), *f**r**ipe* (OFr. frippe, fe**r**pe, fe**l**pe from *faluppa), *f**r**edaine* (< fa**r**d-), etc.

word-finally are on record: the infinitive marker of the first verbal group *-er* comes out as [-e], and r is also lost in *léger, premier* [-e] etc. More sporadically, r is dropped in internal Codas: OFr. *berfroi*, Mod. Fr. *beffroi* [bɛfrwa], pop. [mɛkrədi] instead of [*mercredi*] (cf. Bourciez & Bourciez 1967: §180).

Hence metathesis may be conceived as an instance of lenition of r in Coda position. Its peculiarity, then, is the fact that the segmental information of the lenited object is not lost: r does not disappear; it migrates. But this, again, is not really surprising since all other consonants that fall prey to lenition in Coda position follow the same strategy: one of the most consistent characteristics of Gallo-Romance is the fact that the melodic information of eliminated Codas tends to be preserved: at least a part of it hooks on some neighbour (see (3)).

The most obvious example are nasal consonants: they are lost in internal and final Codas as such, but hand down their nasality which to date appears on the preceding vowel. In the same way, the lateral, which was first velarised and then eliminated from internal Codas, continues its existence on the preceding segment, which has been "velarised". Finally, obstruents must go in Codas as well. Even though they are unable to deposit their melodic information on a neighbour, they survive, at least word-finally, as floating consonants, and surface in liaison contexts.

The peculiar property of the lenition of r in Coda position thus is not the fact that its melodic information tends to be preserved - it is the means of this conservation. The information is not "stocked" on an adjacent segment, but travels a greater distance in order to end up docking on a consonant, rather than on a vowel.

Our analysis contributes to the understanding of this funny way of conserving segmental information: the conditions that allow for its existence are created. That is, the scenario discussed supposes the existence of affricate TR clusters in the language (and in the theory).

Finally, the choice of initial consonants as the landing site for migrating r is but further illustration of the distribution of affricate TR clusters that has already been evidenced: affricate TRs like the Strong Position. This is true for "epenthesis" (c<u>am</u>(e)ra > *chambre*) and the intrusion of parasitic r where the target is post-consonantal, as well as for metathesis, where r lands on word-initial consonants.

6.   *Conclusion*

In this article, we have reviewed three situations: one where TR clusters are always heterosyllabic (C+j sequences, r<u>a</u>bja > *rage*), one where they are always affricates ("epenthesis" c<u>am</u>(e)ra > *chambre*) and one where they endorse wavering homo- and heterosyllabic coats (the *colubra* paradigm).

In all cases, it is only when phonological arguments are considered that the syllabic status of *muta cum liquida* may be discovered. Unlike for RT, RR and TT sequences which are always heterosyllabic, surface information such as the

sonority slope or phonetic properties tells us nothing at all about the syllabic identity of TR clusters. *Muta cum liquida* is a plastic syllabic object, and a reasonable means to uncover the identity of individual TR clusters is to look at them through the positional prism: the interpretation of their behaviour in terms of a theory of lenition and fortition may be enlightening.

Therefore, we argue, phonological theory must not feature any pre-determining device that favours some particular syllabification of TR clusters. Even if it is true (and it may well not if one puts down the Indo-European glasses) that there are more TR clusters in this world which instantiate branching Onsets than there are *muta cum liquida* with Coda-Onset or affricate status, this statistical information is irrelevant. We follow Newmeyer (1998) on this issue, who recalls that linguists committed to the concept of competence define what a possible, not what a frequent grammar is. Therefore, the traditional devices Onset Maximisation, ambisyllabicity and Coda Capture, in whatever modern coat, are ill-inspired: they produce a grammar with in-wired branching Onsets.

Turning now to the general picture of Gallo-Romance diachronics, we believe that the foregoing discussion can reintegrate a number of scattered phenomena that are usually thought of as unrelated and marginal into an overall scenario where they appear as an instance of the central regularity that governs Gallo-Romance: the action of positional (syllabic) forces that cause lenition and fortition.

Beyond what could be treated in the present article, the Gallo-Romance situation described raises an interesting question for phonological theory: if it is true that *muta cum liquida* can appear in different coats in the same synchronic state of a language (a hypothesis that is fed by our analysis), is their distribution random, or does it obey certain rules? We are reluctant to accept that the syllabic status of TR clusters is an idiosyncratic and unpredictable property of each lexical item. If, then, the various types of TR clusters like to appear in certain positions, the data reviewed give quite clear indication as to how they line up: all cases of affricate *muta cum liquida* discussed occur in the Coda Mirror, i.e. word-initially or after Codas. Hence they seem to be uneasy in weak positions (i.e. intervocalically and in Codas). It may be speculated, then, that homosyllabic TR clusters (1a) rather elect home in intervocalic position. And, of course, heterosyllabic *muta cum liquida* (or rather, its first member) is the natural candidate for Codas. Further study must run these hypotheses against a greater empirical record.

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THE LAZY FRENCHMAN'S APPROACH TO THE SUBJUNCTIVE
SPECULATIONS ON REFERENCE TO WORLDS AND
SEMANTIC DEFAULTS IN THE ANALYSIS OF MOOD

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1.   *Introduction*

When philosophical logicians attempted to give a semantics for Modal Logic (Kripke 1963), they observed that they could base their models on *possible worlds,* entities that determine the truth of every conceivable sentence. When formal semanticists attempted to analyze modal expressions in natural language (e.g. attitude reports), they naturally resorted to the same device. This was by no means a natural choice. From the start, the possible worlds framework was plagued with severe problems, which to this day have not found a satisfactory solution. In particular, *John believes that p* entails on the possible worlds account that for every clause *p'* which is logically equivalent to *p, John believes that p'*, with the obviously undesirable result that *John believes that two plus two is four* ends up entailing that *John believes that Fermat's conjecture is true* (as it happens, Fermat's conjecture is indeed correct; since *two plus two is four* and *Fermat's conjecture is true* are two true mathematical statements, they are true in all possible worlds, and hence the two clauses are indeed equivalent). It is thus a surprising and significant result that, despite these difficulties, the possible worlds approach turned out to be fruitful. Some striking results were obtained in recent years, and can be lumped together under what I shall call the "Referential Approach" to modal semantics. Its main tenet is that *the same devices of reference are used to refer to individuals and to possible worlds.* When one refers to individuals, one uses three types of linguistic mechanisms: (a) pronouns, which are standardly analyzed as free or bound varibles; (b) definite descriptions, which are now commonly analyzed along Fregean or Strawsonian lines, whereby *the P* fails to denote (or as I will say: denotes #) unless there is exactly one P-individual d in the domain of discourse, and otherwise denotes the one and only P-individual in the domain of discourse. The third element, which is crucial for the analysis of both (a) and (b), is (c) a notion of presupposition. (In an extended sense, one also uses quantifiers to "refer" to individuals, but to keep the discussion manageable I will mostly leave these out of the present discussion).

The Referential Approach, then, seeks to analyze modal semantics using only these devices. It has produced some surprising results:

(i) Stone (1997) suggested that mood can fulfill each of the functions that pronouns normally do. In this way he extended to mood an argument that Partee (1973) originally applied to tense, making the notion of *anaphora* pervasive in natural language.

(ii) Bittner (2001), Lycan (2001) and Schlenker (2004) (following insights that were first stated in Lewis 1973) suggested that *if*-clauses can literally be analyzed as definite descriptions of possible worlds, and that one can derive in this way all the details of the "non-monotonic" analysis of conditionals offered in the classic theory of Stalnaker (1968).

(iii) It was also suggested -somewhat less systematically- that the semantics of mood could be developed by analogy with the semantics of tense (Iatridou 2000), and that the resulting theory could explain certain systematic syncretisms between tense and mood. Some attempts were made to analyze modal features, tense features and person features in a uniform way, as presuppositions on the value of certain terms or variables (Schlenker 2004).

Although the Referential Approach is appealingly simple, it is entirely open whether and how it could be extended to the harder problems in modal semantics, in particular to the analysis of the subjunctive. In this paper I shall suggest that the mechanisms in (a)-(c) are almost enough to provide a plausible account, *provided* they are supplemented with the device of a *semantic default* (Heim 1991b, Sauerland 2003, Schlenker 2003), according to which *certain forms* - in particular, the French subjunctive- have no semantics or have a vacuous semantics, but are to be used just in case competing forms give rise to a semantic failure. This line of analysis has been or is being investigated by others, in particular Portner (1997) and Siegel (2004). I will offer a particular development of it, leaving open many difficult problems along the way. The basic claim, then, is that the subjunctive does not appear in a natural class of environments, but rather in the *complement of a natural class* (specifically: in the complement of those environments in which the indicative, the imperative and the infinitive must be inserted). Although obvious enough, this point leads to change perspectives somewhat, turning the question *What is the semantics of the subjunctive?* into the question *What is the semantics of the indicative (and infinitive and imperative)?*

I shall first apply the Referential Approach to the distinction between so-called "indicative" and "subjunctive" conditionals in English (as it happens, most "subjunctive" forms are in fact homophonous with the past tense, a fact that was crucial for Iatridou 2000 and for the approach outlined below). Then I shall give initial arguments for treating the French subjunctive as a semantic default: (a) there are very clear cases in which it competes with the imperative; (b) there are also cases in which it appears to compete with the infinitive (as suggested in Farkas 1992). The default-based analysis can also explain why (i) the subjunctive does not appear to have a unified semantics, while by contrast (ii) the indicative

almost always has something to do with the expression of someone's commitment (Farkas 2003). The analysis is developed by assuming that the indicative introduces a presupposition on the value of a term w, of the form *w {CS(x', t', w')}*, indicating that the term *w* denotes a world that lies in the "Context Set" of individual x' at time t' in world w', i.e. that it is compatible with what x' believes or says at t' in world w'. A consequence of the analysis for the "Konjunktiv I" in German is sketched in the last section: following the insights -though not the implementation- of Fabricius-Hanse & Saebø (2004), we suggest that the Konjunktiv I is (despite its name) a reportive indicative. Although the present analysis contains many loose ends, part of the exercise is to push to the limits the Referential Approach, possibly with the aim of determining exactly where it breaks down.

2.   *The Referential Approach*

2.1   *Reference to Individuals*

To introduce the Referential Approach, it is easiest to start with the semantics of pronominal features. Let us assume that the grammar makes available the features *masculine, feminine, author* (i.e. first person), and *hearer* (i.e. second person). A standard analysis, due to Cooper (1983), is to treat gender features as presuppositions on the value of individual variables. Thus *she$_i$* triggers a presupposition that the value of the pronoun under the relevant assignment function is a female individual. In quantified sentences, this produces the desired results given standard rules of presupposition projection. For instance, it is accepted that in universally quantified sentences -say, *Every director admires herself* - the rule is that *every element that satisfies the restrictor* (here: *director) must satisfy the presuppositions of the nuclear scope* (here: *admires herself*). In other words, it must be presupposed that every individual in the domain of discourse who is a director is female - apparently the correct result. Formally, we can state the following rules for a term t that carries feminine features, written as presuppositions within curly brackets. e* is the context of utterance, s is an assignment function, and presupposition failure is denoted by #. For mnemonic convenience we will often use the same symbols in the object language and in the meta-language. Thus in the definition in (1) *e** plays the role of a context parameter in the meta-language (it represents the speech event). But in addition we will see shortly that *e** is also a variable of the object language, which by convention denotes the speech event.

(1)   For any individual term t, $[\![t\{fem\}]\!]^{e^*,s}=\#$ iff $[\![t]\!]^{e^*,s}=\#$ or $[\![t]\!]^{e^*,s}\neq\#$ and $[\![t]\!]^{e^*,s}$ is not female at the time of e* in the world of e*. If $\neq\#$, $[\![t\{fem\}]\!]^{e^*,s}=[\![t]\!]^{e^*,s}$

As is standard, we assume that an atomic formula yields a presupposition failure just in case one of its arguments denotes #. Thus *she$_i$ smokes* yields a

presupposition failure just in case the individual denoted by the index i is not female. In our formal implementation, we will systematically assume that predicates (be they verbs or nouns) take as suffixes one event/state argument and one world argument in addition to their individual arguments. As announced, in the object language $e*$ is a distinguished event variable that denotes the actual speech act, and that $e*_a$, $e*_h$ and $e*_w$ denote respectively its speaker (=agent) hearer, and world of occurrence (we will also use the same notations in the meta-language). $e' \approx e$ *is* understood to mean that e' occurs in the same world and at the same time as e. $e' \geq e$ indicates that e' occurs in the same world as e and no earlier than e. In most of the discussions (with the exception of Section 3) the event argument could be seen just as well as a time argument. This leads to the following analysis:

(2)   a.   She smokes.
         a'. x_i\{fem\} smoke-e-$e*_w$
         b. $[\![a']\!]^{e*,s}$ =# iff $[\![x_i\{fem\}]\!]^{e*,s}$=#, iff $s(x_i)$ is not female. If ≠#,
                 $[\![a']\!]^{e*,s}$ =1 iff $s(x_i)$ smokes at s(e) in $e*_w$.

By adding the above rule of presupposition projection (*every element that satisfies the restrictor must satisfy the presuppositions of the nuclear scope),* we further obtain an analysis of *Every director admires herself* (as is usual, we write $s[x_i \rightarrow d]$ for the assignment of values to variables which is identical to s, with the possible exception that it assigns to the variable x_i the value d).

(3)   a.   Every director admires herself.
         a'.   [every x_i: director-e-$e*_w$ x_i] x_i admire-e-$e*_w$ x_i\{fem\}
                 $[\![a']\!]^{e*,s}$ =# iff for some element d satisfying $[\![$director-e-$e*_w$
         b. $x_i]\!]^{e*,\ s[x_i \rightarrow d]}$ =1, $[\![x_i$ admire-e-$e*_w$ x_i\{fem\}$]\!]^{e*,\ s[x_i \rightarrow d]}$ =#, i.e. iff for some element d which is a director at s(e) in $e*_w$, d is not female. If ≠#, $[\![a']\!]^{e*,s}$ =1 iff for each element d satisfying $[\![$director-e-$e*_w$ $x_i]\!]^{e*,\ s[x_i \rightarrow d]}$ =1, $[\![x_i$ admire-e-$e*_w$ x_i\{fem\}$]\!]^{e*,\ s[x_i \rightarrow d]}$=1, i.e. iff for each element d which is a director at s(e) in $e*_w$, d admires d at s(e) in $e*_w$.

It has sometimes been suggested (e.g. Schlenker 2003) that the same analysis can profitably be extended to first and second person pronouns.
        That these should be treated as *variables* is suggested by the availability of bound readings in examples such as *Only I did my homework* or *Only you did your homework,* as was suggested in Heim (1991a) (the point is that in each of these cases one of the available readings entails that *John didn't do <u>his</u> homework,* as is expected on the bound reading).
        In addition, the presuppositional analysis is useful to treat examples in which two occurrences of a second person pronoun denote different individuals, e.g. *You* [pointing] *should stop talking to you* [pointing]. The presuppositional analysis has no difficulty with this example: *you* may refer to any individual, as long as it is an addressee of the speech act. By contrast, this example would be

harder to analyze if we postulated, as in standard treatments (e.g. Kaplan 1989), that in any context c *you* denotes the (one and only) addressee of c.

These considerations lead to the following rules of interpretation for the features *author* and *hearer*; these rules are formally analogous to those we introduced earlier for gender:

(4)   For any individual term t (in fact, variable),
      a. $[\![t\{author\}]\!]^{e^*,s}=\#$ iff $[\![t]\!]^{e^*,s}=\#$ or $[\![t]\!]^{e^*,s}\neq\#$ and $[\![t]\!]^{e^*,s}$ is not the
            speaker of e*. If $\neq\#$, $[\![t\{author\}]\!]^{e^*,s}=[\![t]\!]^{e^*,s}$
      b. $[\![t\{hearer\}]\!]^{e^*,s}=\#$ iff $[\![t]\!]^{e^*,s}=\#$ or $[\![t]\!]^{e^*,s}\neq\#$ and $[\![t]\!]^{e^*,s}$ is not a
            hearer of e*. If $\neq\#$, $[\![t\{hearer\}]\!]^{e^*,s}=[\![t]\!]^{e^*,s}$

But we still need an account of third person pronouns. We might be tempted to introduce the negative features *non-author* and *non-hearer*, which act as presuppositions that the value of the relevant variable denotes neither the speaker nor the addressee. But this leads to immediate problems in two cases.

(a) In the sentence *Everyone (including me) admires himself,* the bound variable *himself* ranges, among others, over the speaker. If the pronoun $himself_i$ carries a presupposition that it does not denote the speaker (nor for that matter the addressee, though we disregard this point), we can represent the sentence as in (5):

(5)   a.   Everyone (including me) admires himself.
      b.   [every x_i: human-e-e*$_w$ x_i] x_i admire-e-e*$_w$ x_i{non-author}

Applying the rule of presupposition projection that was introduced earlier for universally quantified structures, we obtain a requirement that *every human in the domain of discourse should be different from the speaker.* But this is clearly incorrect, since in (5a) *himself* clearly ranges, among others, over the speaker.

(b) A second problem arises in situations of uncertainty, for instance if I see from the distance a scene in a mirror, wondering about the identity of a particular individual. I may at some point come to say: *This individual looks like me... in fact, he is me!* Certainly we do not want this last sentence to come out as a presupposition failure, which would be the case if *he* carried a presupposition that it denotes a non-speaker.

The solution is to assume that third person features have no semantic contribution at all, and *a fortiori* do not introduce any presuppositions[1]. But of

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[1] It might be a better idea to state that *there are simply no third person features,* as is often assumed in the morphological literature. But for present purposes we will assume instead that there exists a feature *3rd* which has no semantics. Note also that the present proposal correctly handles cases of quantification such as (5). In order to handle cases of referential uncertainty (e.g. *He looks like me... in fact, he is me*), a more elaborate framework is needed. See Dekker (2000) for further considerations on this topic, and Schlenker (2004) for an implementation that includes an analysis of third person features.

course we still need to explain why in case it is known that the person referred to is the speaker or addressee, first or second person features *must* be used. This can be achieved by postulating a principle *Maximize Presupposition!,* which requires that the strongest possible presuppositions (short of referential failure) be marked on variables (this principle, which is designed to apply only to grammatical features, is introduced in Heim 1991b for the analysis of indefiniteness; it is further applied to plural features in Sauerland 2003). When it is known that the person referred to is a speaker or addressee, the features *author* or *addressee* must be used, by *Maximize Presupposition!* In case of uncertainty, as in (b) above, the semantic default must be used. And similarly in the quantified sentence *Everyone (including me) admires himself$_i$*, the features *author* and *hearer* cannot be introduced because they would trigger a presupposition failure, and as a result we predict that the third person pronoun should be acceptable even though it does range, among others, over the speaker (and possibly the addressee).

To sum up, we have given evidence for three main components in the analysis of reference to individuals: (a) variables, (b) features that introduce presuppositions on the value of these features, and (c) a principle of *Maximize Presupposition!*, which allows for the existence of semantic defaults. We also add as a fourth component the well-known device of (d) definite descriptions. We shall now see that each of these components has a counterpart in the analysis of reference to possible worlds.

2.2   *Reference to Worlds*[2]

2.2.1   *Variables and Definite Descriptions* Stone (1997), who applied to mood an argumentation that was originally designed for tense by Partee (1973), suggested that mood should often be analyzed as a world-denoting pronoun. Just as Partee showed that the major uses of pronouns are paralleled by analogous uses of tense, Stone suggested that mood can behave as a bound or free variable, and may also act as an "E-type pronoun". For the sake of brevity, I shall only illustrate the use of mood as a free variables whose value is provided "deictically" by the extra-linguistic context.

(6)   a.   My neighbors would kill me (Stone 1997)
        b.   my neighbors kill-e_k-w_i me

In the scenario for (6), one of the guests at a party starts turning up the volume of the stereo. The host disapproves, and utters (6a). The intended meaning is that "my neighbors would kill me *in that world or in those worlds in which your action is completed*". The extra-linguistic context (the guest's gesture) is enough to provide a value for the free world variable w_i. Stone's conclusion is that mood, like tense and pronouns, can be used deictically.

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[2] This subsection is a modification of the theory of Schlenker (2004).

When we talk about individuals, two major devices of reference are available in addition to variables: (i) quantifiers, which have an *analogon* in modal auxiliaries and modal adverbs (these are frequently analyzed, following Lewis 1975, as restricted generalized world quantifiers). For simplicity we shall leave these out of the present study. In addition, individuals are denoted through (ii) definite descriptions, which are generally analyzed in Fregean/Strawsonian terms. The surprising discovery, which was sketched in Lewis (1973) and further developed in Bittner (2001), Lycan (2001) and Schlenker (2004), is that *if-clauses can, quite literally, be analyzed as definite descriptions of possible worlds.* The basic argument is as follows:

(a) It is a standard observation that natural language conditionals do not share the logical behavior of the material or strict implications of formal logic. For example, when $\rightarrow$ is interpreted as a material or as a strict implication, one can infer from $p \rightarrow q$ that $(p \& p') \rightarrow q$. But crucially the same property does not hold of natural language conditionals, as shown by the fact that the following discourse is not contradictory (note that it has the form: *if p, q; but if (p&p'), not q*, a pattern that should yield a contradiction if the above property held):

(7)   If the USA threw its weapons into the sea tomorrow, there would be war; but if the USA and the other nuclear powers all threw their weapons into the sea tomorrow, there would be peace.

(b) Lewis (1973) noticed that a similar problem arises in the analysis of definite descriptions. Suppose, to be concrete, that we analyzed definite descriptions in the Fregean fashion that was outlined above. Then we would predict -incorrectly - that the following should either be a presupposition failure or a contradiction:

(8)   The dog is barking, but the neighbor's dog is not barking (Lewis / McCawley)

The prediction follows because (8) is of the form *The P Q, but the (P & P') not-Q,* where P=*dog*, P'=*that belongs to the neighbor*, and Q=*is barking*. For a Fregean, if *the dog* is uttered felicitously, there must be a single dog d in the domain of discourse; and by the same token there must be a single dog d' that belongs to the neighbors - whence d=d'. Hence whatever is predicated of d should also hold of d' (since d=d'!). But if so, (8) should come out as a contradiction.

(7) is of the form *if p, q but if (p & p'), not q*, and is incorrectly predicted to be a contradiction; (8) is of the form *the P, Q but the (P & P'), not Q,* and is incorrectly predicted to be a contradiction (or a presupposition failure). These are two sides of the same semantic coin, Lewis argued. Following this insight and borrowing the frameworks developed in Stalnaker 1968 (for conditionals) and von Heusinger 1996 (for definite descriptions), we may construct the theory as follows:

(a) *the P* does not (as on the Fregean analysis) denote the one and only P-individual in the domain of discourse, but rather the P-individual that is *highest* on a scale of salience. From the observation that the most salient dog is barking, it certainly does not follow that the most salient dog *that belongs to the neighbors* is barking (compare: *the smartest student understands mathematics* certainly does not entail that *the smartest literature student understands mathematics).*

(b) Analogously, *if p* is taken to denote *the p-world that is highest on a scale of similarity to the world of evaluation.* Once again one can block in this way the unwanted inference: from *if p, q,* analyzed as *the highest world on a scale of similarity which is a p-world is also a q-world,* it does not follow on this analysis that *if (p & p'), q,* analyzed as *the highest world on a scale of similarity which is both a p-world and a p'-world is also a q-world.*
(See Schlenker 2004 for further arguments that conditionals and definite descriptions display the same semantic behavior, as well as for alternative ways of analyzing the similarity).

2.2.2 *Reference to Worlds* Let us now come to the behavior of semantic features, which according to the Referential Analysis should be analyzed as presuppositions on the value of certain world-denoting terms. We shall henceforth assume the analysis of *if*-clauses given by Stalnaker and reinterpreted in terms of definite descriptions: *if p* evaluated in a world w denotes the most similar p-world to w. With this background in mind, consider the following three-way distinction between indicative, subjunctive and "double subjunctive" conditionals in English (the context is one in which the speaker addresses a tennis player, who might or might not participate in a competition which is to be held tomorrow):

(9)   a.   If you play tomorrow, you will win
         b.   If you played tomorrow, you would win
         c.   If you had played tomorrow, you would have won (Schlenker 2004; see also similar examples in Ippolito 2003).

All three sentences can be uttered felicitously, but not in the same contexts:

(9a) is naturally uttered if I take it to be possible that my interlocutor will play tomorrow. For instance the sentence would be natural if one had just said: *I don't know whether you will play tomorrow. But ...*

(9b) would among others be uttered felicitously in a situation in which I take it that the addressee will not play tomorrow: *I know you won't play. This is too bad - ...* Thus the sentence is most naturally interpreted as counterfactual (this is not its only possible use, though we will largely disregard this fact in what follows[3]).

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[3] The sentence can also be uttered felicitously in situations it is not presupposed that the addressee won't play tomorrow. Part of the phenomenon appears to be related to the fact that this is a future conditional (Iatridou 2000 uses the term "Future Less Vivid" to refer to "subjunctive" conditionals

(9c) involves what is morphologically a pluperfect, although it is clear from the content of the assertion that the resulting interpretation is purely modal, since the event which is denoted is to take place "tomorrow". This conditional could naturally be asserted if the addressee is in his hospital room after an injury, and will thus clearly be unable to participate in tomorrow's competition. Saying simply *If you played tomorrow, you would win* results in a deviant or a false sentence. With the pluperfect, the sentence becomes entirely natural.

We should observe that although (9b) is called a "subjunctive" conditional, it involves a morphological past tense (if the verb were *be*, for instance in the third person, we would obtain a distinction between the subjunctive form *he were* and the past tense form *he was*; still, even in this case many dialects of English use the past tense form *was*). Iatridou (2000) shows that this is no accident: many languages indeed use a past tense to express counterfactual conditionals (Iatridou further points out that when there is a choice between a perfective and an imperfective form, it is the latter that is chosen for this modal use; we have nothing to say about this further fact). How should this syncretism between past and "subjunctive" be explained? Following insights of both Iatridou (2000) and, less directly, Lewis (1973), we may reason as follows (see Schlenker 2004 for further details):

(a) In Stalnaker's analysis of conditionals, we need to make reference to an ordering of possible worlds with respect to their similarity to the world of evaluation (*if p* denotes the most similar p-world to the world of evaluation).

(b) In any analysis of the past tense (and pluperfect), reference is made to an ordering of moments in time.

(c) We can explain the systematic syncretisms between temporal and modal readings of the past tense by postulating that in the languages under study morphological past tense always expresses the relation $<$, where $<$ is an ordering that could be (i) temporal priority (when it applies to event terms), or (ii) modal distance from a world of evaluation (when it applies to world terms).

This line of analysis has two further advantages:

It suggests a natural account of the modal pluperfect which, in effect, indicates "further modal distance" from the world of evaluation. Intuitively, in (9c) the pluperfect indicates that the closest world in which the addressee plays is not just remote, but *very* remote, or as we will say shortly: more remote than a

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of this sort). But part of the phenomenon applies to subjunctive conditionals quite generally. Stalnaker (1975) discusses the following example, uttered at the scene of a murder (from Anderson 1951):

(i) If the butler had done it, we would have found just the clues which we in fact found.

As Stalnaker writes, "here a conditional is presented as evidence for the truth of its antecedent. The conditional cannot be counterfactual, since it would be self-defeating to presuppose false what one is trying to show true." In other words, we must accept that some subjunctive conditionals are not counterfactual.

salient possible world (or some salient possible worlds) that is or are already remote.

It might also explain why the present tense often has both temporal and modal interpretations. In particular, in (9a) the present tense is used to indicate that the world picked out by the *if*-clause (i.e. the closest world in which the interlocutor plays tomorrow) is "close enough" to the actual world, so to speak. How should this notion of "close enough" be cashed out semantically? Stalnaker 1975 introduced the notion of *a Context Set,* which is simply the set of worlds compatible with what the speaker presupposes. In his view, then, what the indicative marks in indicative conditionals is that the world picked out by the *if*-clause is compatible with what the speaker presupposes. Once this notion of "close enough" is accepted, we can suggest that, both in its temporal and in its modal uses, the morphological present can be used to indicate that an element that is denoted is "close enough" to the context of speech, i.e. that it is (i) at or around the time of utterance if the relevant term is time-denoting, or (ii) in the Context Set if the term is world denoting (note that in many temporal uses of the Present Tense, there is no requirement that a present tense sentence should hold at the time of utterance, but only that it should hold around it - e.g. in *Whenever John comes to visit, Mary is happy*).

Indicative vs. Subjunctive

How should these ideas be implemented? Starting with the indicative, we can recast the classic analysis of Stalnaker (1975) by stating that in an indicative conditional the mood features trigger a presupposition that the *if*-clause denotes a world that lies in the Context Set of the speech act. We can assume that indicative features introduce in the object language a presupposition of the form {CS}, which indicates in a context e* that the world term this presupposition applies to must denote a world which is in the Context Set of e* (i.e. within the Context Set of the speaker of e* at the time of e* in the world of e*). We thus arrive at the following semantic rule:

(10)   For any world term w,
        $[\![w\{CS\}]\!]^{e^*,s}=\#$ iff $[\![w]\!]^{e^*,s}=\#$ or $[\![w]\!]^{e^*,s}$ is not in the Context Set of e*.
        If $\neq\#,[\![w\{CS\}]\!]^{e^*,s}=[\![w]\!]^{e^*,s}$

Let us illustrate with an example. Consider first the expression *if it rains* alone, considered as a world-denoting definite description. It triggers two presuppositions: first, that the extension of the description is not empty; and second, that the world picked out by this description satisfies CS, as indicated in (11) (note that *if$_w$* binds the world variable of the verb *rain-e-w*):

(11)   a.   [if$_w$ rain-e-w]{CS}
        b. $[\![$ a $]\!]^{e^*,s}=\#$ iff (i) there is no possible world in which it rains at s(e), or (ii) the

closest world from the world of $e*$ in which it rains at $s(e)$ is not in the Context Set of $e*$. If $\neq\#$, $[\![a]\!]^{e*,s}$=the closest world from $e*_w$ in which it rains at $s(e)$.

If it rains, it will snow is then analyzed as a simple structure of predication, in which the world predicate *it snows* is applied to the denotation of the *if*-clause (in other words: the closest world from the world of utterance in which it rains is a world in which it snows). For there to be no presupposition failure, there must of course be at least one world in which it rains in the Context Set. This captures formally the intuition that an indicative conditional presupposes that the antecedent *might* be true.

 With this background in mind, we may analyze the English subjunctive as introducing on a world term w a presupposition of the form $\{<w'\{CS\}\}$, indicating that w is more remote than w', which is itself in the Context Set. In the object language the variable w' may denote a salient world or it may be bound by an operator. We need a simple rule for the relation $<$, analyzed as an ordering of worlds relative to their similarity to the word of evaluation, we will take to be the world of the context. In the meta-language we write *a is more remote$_{e*_w}$ than b* for: a is less similar to $e*_w$ than b is.

(12)   For any world terms w and w', $[\![w\{<w'\}]\!]^{e*,s}=\#$ iff $[\![w]\!]^{e*,s}=\#$ or $[\![w']\!]^{e*,s}=\#$ or $[\![w]\!]^{e*,s}$ is not more remote$_{e*_w}$ than $[\![w']\!]^{e*,s}$. If $\neq\#$, $[\![w\{<w'\}]\!]^{e*,s}=[\![w]\!]^{e*,s}$

 Here we will take w'=$e*_w$ (=the actual world). *If it rained* is then analyzed as follows:

(13)   a. $[if_w$ rain-e-w$]\{< e*_w\{CS\}\}$
       b. $[\![a\ ]\!]^{e*,s}=\#$ iff (i) there is no possible world in which it rains at
            $s(e)$, or (ii) $e*_w$ is not in the Context Set of $e*$, or (iii) the closest world from $e*_w$
            in which it rains at $s(e)$ is not more remote$_{e*_w}$ than the world of $e*$.
            If $\neq\#$, $[\![a]\!]^{e*,s}$=the closest world from the world of $e*_w$ in which it rains at $s(e)$.

 The details of the relation $<$ ("is more remote than") are left vague at this point, and should be further investigated in future work (one difficulty is to account for the fact that *if it rained* is *normally* but not *systematically* interpreted as counterfactual[4]).

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[4] Thus we do not attempt to provide an account of Anderson's example (*If the butler had done it, etc.*), discussed in an earlier footnote. An analysis could be developed along the following lines: *w < w'* is given a semantics according to which for all the speaker knows, *it might be* that the world denoted by *w* is more remote than the world denoted by *w'*. But a much richer semantic framework is necessary to give a formal analysis that incorporates this idea. See Schlenker (2004) for an example of the kind of framework we have in mind.

Subjunctive vs. Double Subjunctive

Let us now attempt to analyze "double subjunctive" features. The analogy with the semantics of the temporally interpreted pluperfect suggests that we should, if possible, apply the same abstract analysis to both cases (the relation < will be interpreted as modal remoteness when it applies to worlds, and as temporal priority when it applies to time terms). For the pluperfect I will follow the analysis of Stechow (2003) and Schlenker (1999/2000), according to which a pluperfect on an event-denoting term e introduces a presupposition of the form $\{<e'\{<e''\{pres\}\}\}$, where e' and e" are themselves event-denoting terms, and where e" is presupposed to occur at the present moment. By parity of reasoning, I will propose that a modal pluperfect applied to a world term w introduces a presupposition of the form $\{<w'\{<w''\{CS\}\}\}$, indicating that w denotes a world which is more remote than a world w' which is itself more remote than a salient world in the Context Set. Taking w"=w* (which denotes the actual world), we obtain the following result for the *if*-clause *if you had played tomorrow* (for simplicity I treat *you-play-tomorrow* as an unanalyzed proposition):

(14)   a.   If you had played tomorrow (... you would have won)
        a'.   [if$_w$ you-play-e-w]{<w' {w"{CS}}
        b. $[\![$ a' $]\!]^{e*,s}$=# iff (i) there is no world in which e*$_h$ plays at s(e), or
                   (ii) s(w") is not in the Context Set, or (iii) s(w') is not more remote$_{e*_w}$ than s(w"),
                   or (iv) the closest world from e*$_w$ in which e*$_h$ plays at s(e) is not more
                   remote$_{e*_w}$ than s(w'). If ≠#, $[\![$ a' $]\!]^{e*,s}$= the closest world from e*$_w$ in which e*$_h$
                   plays at s(e) .

        Thus we obtain the result that the world picked out by the *if*-clause is presupposed to denote a world more remote than a salient world which itself should be more remote than the actual world. What could such a salient world be? In the example at hand, it could for instance be *the closest world in which John is not injured,* and thus can participate in tomorrow's competition. If so, the presupposition that we predict is that the *if*-clause denotes a world which is more remote than this salient world. This is roughly as it should be - this analysis explains why the context we provided (one in which John is injured) makes the sentence acceptable, as it provides a natural candidate for the value of w' (=the closest world in which the addressee is not injured)[5].

3.   *The French Subjunctive as a Semantic Default*

        Having illustrated some of the strengths of the Referential Approach in the analysis of indicative, subjunctive and double subjunctive conditionals in English,

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[5] Note that it is also plausible that the closest world in which the addressee plays tomorrow is one which is more remote than w' - say, because the closest world in which the addressee is not injured is likely to be one in which he fails to participate in tomorrow's competition, as is the case in the actual world. Thus in order to find a world in which the addressee participates, one might have to reach still a bit further...

we should try to assess its chances for the hairier case of the Romance Subjunctive, reduced in this little paper to the French Subjunctive. One might want to analyze the French Subjunctive as introducing a certain presupposition on the value of a world term. However there have been no really successful attempts to state a unified semantics for the French Subjunctive. Although it is often thought that the use of the subjunctive has something to do with the fact that the clause it appears in is taken to be false, this is clearly incorrect. First, in some exclamatives, the proposition at hand is not asserted, and its truth is certainly not presented as being in doubt (it might even be presupposed to be true). Still, the subjunctive is used, and the indicative is ungrammatical:

(15)   *Que Jean soit /#est malade de la tuberculose en 2003!*
            That Jean be /#is sick with the tuberculosis in 2003!
            "For Jean to be sick with tuberculosis in 2003!"

Second, after the expression *the fact that,* which appears to be factive, the subjunctive as well as the indicative can be used, as shown in (16a). Similarly, the proposition that follows *bien que* ("although") is presupposed to be true, and yet it appears in the subjunctive; only with great difficulty can it appear in the indicative, as shown in (16b). Finally, it is typically thought that the complement of *regret* is presupposed to be true, and yet it has to appear in the subjunctive (the indicative is rather degraded, at least to my ear), as shown in (16c).

(16)   a.   *Le fait que Jean soit/est incompétent ne fait aucun doute*
              The fact that Jean be-subj/is incompetent does not do any doubt
        b.   *Bien que Jean soit/??est incompétent, je vais l'embaucher*
              Although Jean be-subj/is incompetent, I am going to hire him
        c.   *Marie regrette que Jean soit/??est incompétent*
              Marie regrets that Jean be-subj/is incompetent

The suggestion we would like to make is that it has proven difficult to find a common denominator to all the uses of the French subjunctive because *these simply do not form a natural class.* Being a semantic default, however, the subjunctive appears in environments that are the *complement* of a natural class, namely the *complement* of those environments in which the indicative, the infinitive and the imperative can be inserted[6].

In what follows we will present what we take to be the strongest arguments for the analysis of the subjunctive as a semantic default. They stem from the analysis of the competition between the subjunctive, the imperative and the infinitive:

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[6] An anonymous reviewer gives several arguments about what he/she calls the "alleged 'vacuity' of the subjunctive". But the arguments misfire because he/she does not take into account the competition principle (namely *Maximize Presuppositions!),* which *prevents* the subjunctive from being used whenever competing moods can be. As a result, although the lexical entry of the subjunctive has a vacuous semantics, its *use* is severely constrained.

It appears that the subjunctive can have an imperative meaning, but *only when no designated imperative form is morphologically available*.

Similarly, Farkas (1992) has suggested that *Jean veut qu'il parte* (lit. Jean wants that he leave-subj) cannot be read with coreference *because* there exists an infinitive form with the same meaning, namely *Jean veut partir* (lit. Jean wants to leave).

In both cases the argument for a competition mechanism has the same form:

▪ given certain assumptions, a subjunctive form is expected to be grammatical in environment E.

▪ however, the subjunctive is ungrammatical in E

▪ E is precisely the environment in which another mood M is available. In non-E environments M is not morphologically available. This argues for an analysis based on competition: M and the subjunctive are in competition.

We shall give two such arguments, with E=the imperative in one case, and E=the infinitive in the other. The precise nature of the competition mechanism will be discussed as we go along. We then briefly discuss the competition between the subjunctive and the modally interpreted past tense, though this is a topic we mostly leave for future research.

3.1   *Subjunctive vs. Imperative*

Consider the following paradigm:

(17) a.   *Que votre Altesse soit prudente!*
           That your Highness be-subj cautious!
           (= "Let her Majesty be cautious!")
     b.   *#Que tu sois prudent!* | *Sois prudent!*
           #That you be-subj cautious! | Be-2nd-sg-imp cautious!
     c.   *#Que nous soyons prudents!* | *Soyons prudents!*
           #That we be-subj cautious! | (Let's) be-1st-pl-imp cautious
     d.   *#Que vous soyez prudents!* | *Soyez prudents!*
           #That you-pl be-subj cautious! | Be-2nd-pl-imp cautious!

The subjunctive can have imperative uses, as in (17a). However this is possible only in persons for which an imperative form does not exist. Thus the subjunctives in (17b-d) are all sharply deviant. A natural explanation is that the imperative forms compete with and win over the subjunctive forms, which are used as defaults. Thus (17a) is grammatical because there is no third person imperative to compete with it.

Assuming that this paradigm indeed shows that there is some sort of competition between the subjunctive and the imperative, this still does not tell us which precise mechanism should be posited to account for these data. Several hypotheses present themselves.

(a) It is a common observation in morphology that (i) the same morphological affixes can be used in very different syntactic environments, but

(ii) there often appears to be a unifying factor to these environments. In various morphological theories -in particular, Distributed Morphology (Halle & Marantz 1994)- this observation has been taken to argue that affixes typically express, or "are specified for", a subset of the features of the syntactic environments in which they occur. Consider for instance the zero affix that appears in the English present tense. It can be used in every case, except in the third person singular. Although it would be possible to posit a number of homophonous affixes with different feature specifications, it is more elegant to posit that there is a single zero affix, which is simply specified for the feature *present tense*. The suffix *-s*, for its part, is specified as *3rd person singular present*. This gives us the following lexical entries:

(18)   a.   /-s/   ↔   [3rd, sg, pres]   b. Ø   ↔   [pres]

The requirement, then, is that the features for which a suffix is specified be a subset of the features that are found in the syntax. Thus the assumption is that the syntax delivers fully specified terminal nodes (i.e. terminal nodes that contain all the features that may be syntactically or semantically relevant); while affixes are typically underspecified. Still, this leaves open too many possibilities in case the specifications of several affixes are compatible with a given terminal node. Take for instance the masculine third person singular present. Both /-s/ and Ø are specified for features that are compatible with (i.e. are a subset of) the features found in this syntactic environment. This is where the notion of competition kicks in: in such cases, *the form which is most highly specified is the one that gets inserted* ("Subset Principle"). For our purposes we may consider an affix A to be more highly specified than an affix A' just in case the features of A are a proper superset of the features of A'. This will not decide all the conceivable cases of competition, but for our purposes it will do. To apply this little mechanism to the English masculine third person present, we reason as follows:
  ▪ the features found in the terminal node are [masc, 3rd, sg, pres]
  ▪ both /-s/ and Ø have feature specifications that are compatible with these features
  ▪ since the features of /-s/ form a proper superset of the features of Ø, /-s/ gets inserted.

Suppose that we applied this model to the imperative/subjunctive competition in French. We would be forced to posit that the imperative affix is specified for a proper superset of the features for which the subjunctive affix is specified. *But this requires that the imperative and the subjunctive suffix be different to begin with.* However this does not appear to be the case. In the examples in(17), all the singular forms, be they imperative or subjunctive, are pronounced in the same way. By the logic of underspecification, this suggests that a single underspecified form occurs in all cases. Nevertheless, we can ascertain that (17a) involves a subjunctive rather than an imperative because it includes a

full subject and a complementizer *que* (*que* is almost always present with the French subjunctive). Note also that this is not just a point about the morphology of *sois*, as the syncretism between imperative and subjunctive holds of all verbs whose infinitive ends in -er (e.g. *fumer*, whose second person imperative and subjunctive is pronounced as *fum*, despite an irrelevant orthographic difference between imperative *fume!* and subjunctive *fumes*[7]). The conclusion is that a morphological mechanism of competition does not seem to stand a good chance to explain these examples.

(b) Given the failure of the morphological analysis, we should try to apply to the imperative / subjunctive distinction the mechanism of semantic competition that was outlined in Section 2. Crucially, this approach does *not* consider the feature content of underspecified affixes, but rather compares the presupposition expressed by the features found in the terminal nodes (before the lexical items are inserted) in alternative syntactic derivations. An immediate problem for our theory is that there is simply no consensus on the semantics of the imperative, which obviously makes it difficult to provide a cogent analysis. However it will be enough for our purposes to assume that a Logical Form that is understood as imperative includes *at least* an operator meaning: *I require that _____.* I will systematically treat attitude verbs as quantifiers over events of a particular sort: speech or thought acts (this is in essence the analysis developed in Schlenker 2003 in terms of quantification over contexts, but reinterpreted in terms of events following suggestions by B. Schein and J. Higginbotham). I will indicate event variables on complementizers, writing for instance *I require-e-w that-e' p* to mean that *for each thought event e' compatible with what the speaker requires at e_w in world w, p holds <of e'>.* Furthermore, I will employ the same rule of presupposition projection as was introduced in (3): *every context that satisfies the restrictor, i.e. that is compatible with what the speaker requires at e in e, must satisfy the presuppositions of p.* Stated in general form, this yields the following rule:

(19)   For any individual term x, event term e, and world term w:
        $[\![\text{x require-e-w that-e' p}]\!]^{e^*,s}$=# iff $[\![\text{x}]\!]^{e^*,s}$=# or $[\![\text{e}]\!]^{e^*,s}$=# or $[\![\text{w}]\!]^{e^*,s}$=#, or for some thought
        event c compatible with what $[\![\text{x}]\!]^{e^*,s}$ requires at $[\![\text{e}]\!]^{e^*,s}$ in $[\![\text{w}]\!]^{e^*,s}$, $[\![\text{p}]\!]^{e^*,s[e' \to c]}$=#.
        If ≠#, $[\![\text{x require-e-w that-e' p}]\!]^{e^*,s}$=1 iff for every thought event ccompatible with what $[\![$
        $\text{x}]\!]^{e^*,s}$ requires at $[\![\text{e}]\!]^{e^*,s}$ in $[\![\text{w'}]\!]^{e^*,s}$,$[\![\text{p}]\!]^{e^*,s[e' \to c]}$=1.

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[7] Even liaisons that might be triggered by an underlying *-s* in the second person singular of the indicative present sound extremely strange or bookish to me:
(i) #Tu fumes (z) une cigarette
This contrasts sharply with other cases where a plural marking appears to be underlyingly present, and can thus surface in the right phonological environment:
(ii)   a. les parents (no *z* pronounced on the determiner)
          b. les enfants (z pronounced on the determiner)

Before we come to the contribution of imperative and subjunctive features, let us start with a dry run - a partial analysis of a Logical Form that involves an imperative prefix but no mood features. I shall write in capital letters elements that remain unpronounced in the imperative. As mentioned earlier, I do not exclude that a Logical Form interpreted as imperative may contain additional prefixes, which I shall disregard here. The following gives a very rough approximation of the desired semantics:

(20)　　a.　　　Smoke! (analyzed as: I require that you smoke)

　　　　a'.　　　e^*_a REQUIRE-e^*-e^*_w THAT-e [$\exists e'$: $e' \approx e$] e^*_h smoke-e'-e_w

　　　　b.　　　$\llbracket a' \rrbracket^{e^*,s} \neq \#$ (because no element contained in the sentence triggers
　　　　　　　a presupposition).
　　　　　　　If $\neq\#$, $\llbracket a' \rrbracket^{e^*,s}=1$ iff for every thought event c compatible with what e^*_a requires at
　　　　　　　e^* in e^*_w, $\llbracket [\exists e'$: $e' \approx e]$ e^*_h smoke-e' $e_w \rrbracket^{e^*,s[e \to c]}=1$, iff for every thought event c
　　　　　　　compatible with what e^*_a requires at e^* in e^*_w, there is an event e' co-occurring
　　　　　　　with c such that e^*_h smokes at e' in e_w.

Let us now come to the presuppositions introduced by subjunctive and imperative features. As announced, I shall assume that the French subjunctive simply has no semantic contribution. For lack of a more refined alternative, I posit that imperative features on a world-denoting term w introduce a presupposition that w is compatible with an order given by the speaker.

(21)　　For any world term w,
　　　　a.　　　$\llbracket w\{subj\} \rrbracket^{e^*,s}=\llbracket w \rrbracket^{e^*,s}$
　　　　b.　　　$\llbracket w\{imp\} \rrbracket^{e^*,s}=\#$ iff $\llbracket w \rrbracket^{e^*,s}=\#$ or $\llbracket w \rrbracket^{e^*,s}$ is not compatible with
　　　　what e^*_a requires at e^* in e^*_w. If $\neq\#$, $\llbracket w\{imp\} \rrbracket^{e^*,s}=\llbracket w \rrbracket^{e^*,s}$

Of course in order to derive the person asymmetries we observed above, we must discuss the interaction of mood and person features. Let us consider in turn the third person and the second person case.

　　　1. For the third person imperative, we obtain the following Logical Form, where *x* is taken to denote a salient individual that is neither the speaker nor the addressee:

(22)　　　e^*_a REQUIRE-e^*-e^*_w THAT-e [$\exists e'$: $e' \approx e$] x smoke-e'-e_w

The question is what presuppositions should be included in the embedded clause.
　　　If we choose some imperative form (be it first person singular, second person singular or first person plural), we shall get a Logical Form such as (23):

(23)　　　e^*_a REQUIRE-e^*-e^*_w THAT-e [$\exists e'$: $e' \approx e$] x{F} smoke-e'-e_w{imp}, with F=author or
　　　　F=hearer

It is clear that a presupposition failure is now predicted due to the presence of F (=*author* or *hearer*), since by hypothesis *x* neither denotes the speaker nor addressee. As a result, no imperative form can be used.

No problem arises if we choose a third person subjunctive form instead. We obtain the Logical Form in (24):

(24)   e*$_a$ REQUIRE-e*-e*$_w$ THAT-e [∃e': e'≈e] x{3rd} smoke-e'-e$_w${subj}

Since both 3rd and *subj* are semantically vacuous, we do not predict any presupposition failure.

In view of the morphological resources of French, no other possible derivations yield strictly stronger presuppositions. Therefore this Logical Form is not blocked by any other, and the sentence is predicted to be acceptable.

2. Consider now a second person imperative. Again the question is what feature should appear on the embedded subject and on the embedded verb:

(25)   e*$_a$ REQUIRE-e*-e*$_w$ THAT-e [∃e': e'≈e] e*$_h$ smoke-e'-e$_w$

Let us again reason by cases. I assume that the second person imperative expresses both a second person feature and an imperative feature.

If we choose a second person imperative form, we obtain the Logical Form in (26):

(26)   e*$_a$ REQUIRE-e*-e*$_w$ THAT-e [∃e': e'≈e] e*$_h${hearer} smoke-e'-e$_w${imp}

(i) The imperative feature on the world argument e$_w$ triggers a presupposition that *each world compatible with what the speaker requires at the time and in the world of utterance is compatible with ... what the speaker requires at the time and in the world of utterance.* This is vacuously true. Therefore no presupposition failure is caused by the imperative feature.

(ii) Similarly the *hearer* feature that appears on the embedded subject does not trigger any presupposition failure, since by hypothesis e*$_h$ denotes the hearer of the actual speech act e*.

Let us now see what would happen if we chose a subjunctive instead of an imperative. The subject would also be a second person pronoun, and the subjunctive features would express no presuppositions at all:

(27)   e*$_a$ REQUIRE-e*-e*$_w$ THAT-e [∃e': e'≈e] e*$_h${hearer} smoke-e'-e$_w${subj}

Here too no presupposition failure is predicted. However the presupposition expressed on the world variable is stronger in (26) than it is in (27) (since the subjunctive expresses no presupposition whatsoever). By *Maximize*

Presupposition!, we should thus choose (26) over (27) - which is the correct result.

There is an interesting extension of the present analysis to the English imperative. The candidates to consider in this case are the *let* subjunctive and the normal imperative form. As it happens, when (and only when) a morphological imperative is available, the *let* form is prohibited from expressing an imperative meaning (in particular, as is the case in French, but somewhat more marginally, the *let* form can to some extent be used when a Queen is addressed in the third person). There is an interesting twist, however: unlike French, English has no imperative in the first person plural, and as a result the semantic default - here, the *let* form - can be used felicitously. In French, by contrast, the first person plural imperative blocks the first person subjunctive.

(28)   a.   #Let you go!
        b.   Let us go!
        c.   Let him go!
        d.   ?Let her Majesty go!
        e.   Go!

3.2   *Subjunctive vs. Infinitive*

Let us now come to the choice between the infinitive and the subjunctive. Here too we will argue that the subjunctive is a semantic default, to be used just in case the infinitive cannot yield the same meaning. This is in essence the suggestion made in Farkas (1992), a theory we modify and extend somewhat.

3.2.1   *Motivation for a competition-based analysis* Farkas's point of departure is the prohibition against coreference between the embedded subject and the matrix subject in (some) structures that involve the subjunctive:

(29)   a.   *Jean$_i$ veut qu'il$_{*i, k}$ parte*
                Jean wants that he leave
        b.   *Jean$_i$ veut PRO$_i$ partir*
                Jean wants   to-leave

Farkas observes an interesting cross-linguistic generalization: in those languages and constructions that admit a subjunctive structure such as (29a), but no infinitive, coreference is in fact allowed. Thus she suggests that there is nothing intrinsically ill-formed about (29a) understood on a coreferential reading; all that happens is that *to express this reading, the infinitive structure in (29b) is preferred.*

An alternative line has sometimes been pursued in syntax, to the effect that the prohibition against coreference in (29a) results from a Condition B effect. Of course Farkas's line of explanation suggests that this is not so, since the syntactic explanation would be missing the generalization that coreference is blocked precisely in those constructions in which an infinitive form is available to express

the same meaning. But in any event, the syntactic analysis makes an incorrect prediction about disjoint reference effects, as shown in the following paradigm:

(30)   a.   *#Tu vous admireras*
                you-sg you-pl will-admire
        b.   *#Tu vous trouveras intelligents*
                you-sg you-pl will-find intelligent
        c.   *#Tu voudras que tu partes*
                you-sg will-want that you-sg leave-subj
        d.   *Tu voudras partir*
                you-sg will-want to-leave
                "You will want to leave"
        e.   *#Tu voudras que tu te rases à 7h*
                you-sg will-want that you yourself shave at 7am
        f.   *Tu voudras te raser à 7h*
                you-sg will-want to yourself shave at 7am
                "You will want to shave at 7am"
        g.   *Tu voudras que vous vous rasiez à 7h*
                you-sg will-want that you-pl you-pl shave at 7am
                "You will want for you (plural) to shave at 7am"
        h.   *≠Tu voudras vous raser à 7h*
                you-sg will-want you-pl to-shave at 7am
                "You (singular) will want to shave you at 7am"

Condition B effects such as those in (30a-b) prohibit not just coreference, but more generally *overlapping* reference between the subject and the object. No such effect holds in embedded subjunctive clauses: even though (30e) is deviant, (30g) is acceptable. This is entirely unexpected on the Condition B analysis. By contrast, the result is unsurprising given Farkas's theory, since the corresponding embedded infinitive structure in (30h) has a different meaning (*you-singular will want to shave you-plural*, where the proposition which is the object of the desire involves only one shaver, so to speak).

Still, it must be explained why the infinitive blocks the coreferential subjunctive clause. From the present perspective, this is because the infinitive has a more "specific" meaning than the subjunctive. We will try to formalize this theory in terms of *Maximize Presupposition!,* though additional assumptions will be needed to obtain the desired result. For the moment, let us observe that there are two respects in which an infinitive expresses a more "specific" meaning than the corresponding subjunctive clause with a coreferential pronoun.

(i) First, when embedded under an attitude verb, the unpronounced subject of the infinitive can only be read "De Se" (a term which is explained below). By contrast, the subject of a subjunctive clause can "in principle" be read either "De Re" or "De Se" (we will argue below that the De Se reading is blocked by the infinitive, however).

(ii) Second, it would appear that the infinitive also has a kind of "De Se" reading with respect to its event argument (a related idea was first applied by Higginbotham 2000 to the English gerund). While this is not the standard

description of the generalization, we will discuss new data that suggest that it is in fact reasonable to generalize the De Re/De Se distinction to event arguments.

Given these general observations, the spirit of the competition-based theory leads to the following expectations, which will be made more precise as we go:

a) when an embedded clause is intended as being De Se both with respect to the subject and with respect to the event argument of the embedded verb, the infinitive should be preferred to the subjunctive clause.

b) in other cases the subjunctive should be admissible.

We now apply this analysis in some detail to the case of individual De Se and event De Se.

3.2.2 *Individual De Se* We should first say what De Se readings are. For presentational purposes it is expedient to start with cases in which both the infinitive and a full indicative clause are allowed (for reasons to be discussed below, the infinitive never blocks the indicative structure, and therefore the full range of possible readings for the latter - in particular for its subject pronoun - can be seen with great clarity).

(31)   a.   George hopes PRO to be elected
        b.   George hopes that he is elected

Morgan (1970) and Chierchia (1987) observed that there is an interpretive difference between (31a) and (31b). Suppose that George is drunk, and has forgotten that he is a candidate in the election. He watches TV and sees a candidate that he finds appealingly reactionary, hoping that this person -none other than himself, as it turns out- should be elected. (31b) might provide a passable way of reporting truly this admittedly unusual situation; (31a) would not. Somehow (31a) requires that the candidate be in a position to utter the first person statement: *I should get elected.* The reading we obtained in this way has been called, after Lewis (1979) and Chierchia (1987), a "De Se" reading. The reading in (31b) which is true in the situation at hand is the "De Re" reading.

Using the quantificational analysis of attitude verbs that was introduced earlier, we can account for the difference by positing that *PRO* embedded under an attitude verb binding an event variable e always corresponds to the term e_a (for simplicity I treat *to* as a complementizer which, like *that*, introduces an event/state variable)[8]:

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[8] PRO also occurs in environments that do not involve attitude reports, such as *John forced Mary PRO to open the door.* In these cases PRO cannot be analyzed as spelling out the author coordinate of a context variable (since only attitude operators manipulate context variables).

(32)   a.   He hopes PRO to be elected (preliminary analysis, to be refined
                    below)

       a.'   he$_i$ hope-e-e*$_w$ to-e' [∃e": e"≈e'] e'$_a$ be-elected-e"-e'$_w$

       a."   〚a'〛^{e*,s}≠#. Furthermore, 〚a'〛^{e*,s}=1 iff for each thought event e'
                    compatible with what s(x$_i$) hopes for at s(e) in e*$_w$, there is an
                    event e" co-occurring with e' such that e'$_a$ is elected at e" in e'$_w$.

       b.   He hopes that he is elected

       b.'   he$_i$ hope-e-e*$_w$ to-e' [∃e": e"≈e'] x$_i$ be-elected-e"-e'$_w$

       b."   〚b'〛^{e*,s}≠#. Furthermore, 〚b'〛^{e*,s}=1 iff for each thought event e'
                    compatible with what s(x$_i$) hopes for at s(e) in e*$_w$, there is an event e" co-
                    occurring with e' such that s(x$_i$) is elected at e" in e'$_w$.

        In other words, (32a) is true just in case George hopes to be in a position
to say truly: "I am elected" - which is not the case in the somewhat complicated
TV situation we created above. By contrast, (32b) is true just in case George
hopes to be in situation in which he can truly say about George: "He is elected" -
and the latter condition is in fact satisfied in our TV situation.
        At this point two further questions can be asked:
I. Entailment Question: There are situations compatible with a De Re reading that
are not compatible with a De Se reading (the scenario we just discussed is one
such example). But is every situation compatible with a De Se reading compatible
with the corresponding De Re reading? The accepted answer is *yes*, which means
that a De Se reading *entails* the corresponding De Re reading.
II. Ambiguity Question: Is *he* always unambiguously read De Re, or is it
ambiguous between a De Se and a De Re reading? The accepted answer is that *he*
is in fact ambiguous, and thus that *He hopes that he is elected* can be given *both*
the Logical Form in (32b') and that in (32b).
        To address the entailment question, let us consider (following
Zimmermann 1991) a group of candidates that includes George, who is in the very
same situation as in the previous scenario. By contrast, each of the other
candidates thinks about himself: "I should be elected". It is then possible to say:

(33)   Each candidate (including George) hopes that he is elected.

        Could the embedded clause have a De Se reading, i.e. a De Se Logical
Form? No, because this would automatically require that the VP *hopes that he$_{De Se}$
is elected* hold true of each candidate, which by assumption is not the case since
George's hope is of the form: *He should be elected*.
        Therefore the embedded clause must be read De Re. But since the other
candidates each think *I should be elected*, they have a De Se hope. Still, the VP
hopes that he$_{De Re}$ is elected (with a De Re embedded clause) is true of each of
them. Therefore a De Re reading must be true in a De Se situation.
        This result makes it a bit difficult to address the ambiguity question, but
fortunately Percus & Sauerland (2003) have done the work for us. To make their
argument, we need to consider a somewhat more complicated scenario:

John, who is not drunk, thinks about himself: *I should be elected*. George, who *is* drunk, thinks about himself: *He should be elected*. Furthermore, having forgotten that he is a candidate in the election, he does *not* think: *I should be elected*. Finally Ralph, who is mischievous, secretly hopes: *John should be elected*. Knowing that he would be unable to rule the country, he does not think: *I should be elected*.

In this context we utter the following sentences, which [according to Percus & Sauerland's generalization] are both assessed as true:

(34)   a.   Only John hopes to be elected.
       b.   Only John hopes that he is elected.

Let us call $VP_{De\ Se}$ the De Se Logical Form for the Verb Phrase, $VP_{De\ Re\text{-}strict}$ its De Re Logical Form on a strict reading, and $VP_{De\ Re\text{-}sloppy}$ its De Re Logical Form on a "sloppy" (i.e. bound variable) reading. Given our earlier observations, (34a) must have the form *Only John $VP_{De\ Se}$*, which is clearly true in our situation (since no other individual than John has a thought of the form *I should be elected*). What about (34b), then? If *he* were unambiguously De Re, the sentence could only be of two forms:

It could be understood as *Only John $VP_{De\ Re\text{-}strict}$*. But this should be false, since Ralph hopes that John is elected, hence John cannot be the only person that hopes that John is elected.

Alternatively, the sentence could be understood as *Only John $VP_{De\ Re\text{-}sloppy}$*. But this should be false as well, since George thinks that George should be elected, and therefore John is not the only x such that x thinks (De Re) that x should be elected.

Thus the only way to account for the truth of (34b) is to assume that it has, among others, a De Se reading (note that the judgments are delicate, however).

A further point which will be of interest shortly is that in some languages, such as Ewe (Clements 1975), there is (what is believed to be) a morphological distinction between De Se and De Re pronouns (the De Se pronouns have been called "logophoric" since Hagège 1974). The basic data are as follows:

(35)   a.   *kofi*   *be*   *yè-dzo*   (Ewe, Clements 1975)
             Kofi   say   LOG-leave
             "Kofi says that he (=Kofi) left"
       b.   *kofi*   *be*   *e-dzo*   (Ewe, Clements 1975)
             Kofi   say   he/she-left
             "Kofi says that he (≠Kofi) left"

As described by Clements and other researchers, the non-logophoric pronoun yields a disjoint reference effect in a standard situation in which Kofi says: *I left* (I do not know of data concerning Ewe when Kofi says about himself: *He left*. In some languages that show a similar pattern, the non-logophoric pronoun apparently becomes acceptable to express the coreferential reading; see

Kusumoto 1998). But given what we saw in our discussion of the Entailment Problem, this result is unexpected, since a De Re Logical Form (here: one with a non-logophoric pronoun) should be compatible with a De Se situation. We must conclude that some other principle, presumably a pragmatic one, *requires* that the speaker choose a De Se Logical Form whenever this is compatible with the situation he is reporting:

(36)   Prefer De Se!
        Whenever this is compatible with the situation which is reported, prefer a De Se over a De Re Logical Form.

        Now a crucial fact for our discussion is that disjoint reference effects obtained with subjunctive clauses *disappear when a non-De Se reading is intended*. In other words, (37a) is in fact acceptable if George's hope is of the form: *He should be elected:*

(37)   a.   *George$_i$ voudrait qu'il$_i$ soit élu*
                George would-want that he be-subj elected
        b.   *George$_i$ voudrait être élu*
                George would-want to-be elected

        The acceptability of the subjunctive on a De Re reading is unsurprising on Farkas's theory: since the infinitive only has a De Se reading, it does not compete with the subjunctive for the non-De Se reading, and therefore the subjunctive can be used. Still, this does not explain why on a De Se reading the infinitive *does* block the subjunctive. Our account is based on the combination of *Maximize Presupposition!, Prefer De Se!* and the following assumptions:
        (i) An indicative introduces a presupposition on the value of a world variable. Therefore it cannot be blocked by any form that does not carry the same presupposition (or a stronger one).
        (ii) A subjunctive introduces no presupposition whatsoever.
        (iii) An infinitive is ambiguously De Se or non-De Se both with respect to its individual argument and with respect to its event argument. In addition, one of the two - say, the event argument- carries a *presupposition* that it is De Se.
Calling *ind* the presupposition triggered by the indicative for the world variable and calling *inf* the De Se presupposition introduced by the infinitive for the event variable, we can summarize the situation as in (38) (as before we write presuppositions between curly brackets):

(38)   a.   Infinitive: George hopes / want PRO$_{De\ Se}$ to-be-e$_{De\ Se}$\{inf\}-w   elected
        b.   Indicative: George hopes that he$_{De\ Se/De\ Re}$ is-e-w\{ind\}   elected
        c.   Subjunctive: George wants that he$_{De\ Se/De\ Re}$ be-e$_{De\ Se/non\text{-}De\ Se}$-w   elected

The logic of our argument is now as follows.

A. An indicative and an infinitive are never blocked by anything (because each of them triggers a presupposition that no other form can introduce).

B. If a situation is De Se both with respect to the individual and with respect to the event argument of the embedded clause:

i) *Prefer De Se!* requires that a De Se Logical Form be used.

ii) *Maximize Presupposition!* requires that the De Se presupposition on the event argument be marked, which makes the infinitive preferable to the subjunctive since the latter does not mark any presupposition.

C. When the embedding verb allows an indicative presupposition to be marked on the embedded verb, *Maximize Presupposition!* entails that the indicative blocks the subjunctive.

3.2.3 *Event De Se* Let us now consider in greater detail the motivation for positing a kind of "De Se" reading for the event argument of the embedded verb. Farkas (1992) suggests that in general the disjoint reference effect obtained with a coreferential subjunctive clause is weakened (independently of the De Se issue, which she doesn't discuss) if the degree of "agentivity" of the subordinate or main clause subject decreases:

(39)   a.   *Je veux que je puisse partir tôt.*
              I want that I can-subj leave early
      b.   *Je veux que je sois autorisé à partir tôt.*
              I want that I be-allowed to-leave early
      c.   *Je veux que je guérisse aussi vite que possible.*
              I want that I get-better as soon as possible
      d.   *Je voudrais que je parte tôt.*
              I would-like that I leave early

Summarizing her own earlier results, Farkas (1992) suggests that semantically the infinitive involves a relation of "responsibility" (RESP) between an agent and a situation described by the embedded clause. She writes that "the RESP relation obtains between an individual and a situation if the individual brings the situation about (...). Thus, one would say [(39d)] rather than [*Je voudrais partir tôt*] *just in case it is not up to the speaker whether he leaves or not.*"

Farkas's generalization might have to be refined somewhat in view of the following example:

(40)   [Talking about cyclists]
      a.   *Jean accepte qu'il parte en dernier.*
              Jean accepts that he leave last.
      b.   *Jean accepte de partir en dernier.*
              Jean accepts to leave last.

Out of the blue it would seem that the two statements have different truth conditions: (40a) is typically understood to mean that Jean is committed not to challenge a particular line-up that is agreed upon. By contrast, (40b) is understood to mean that Jean will take some action to the effect that he leaves last. It could be argued that this supports Farkas's generalization, in the sense that in the first case Jean need not be responsible for the line-up. But in fact (40a) remains good even if Jean is the team's boss, and is thus responsible for the line-up himself. So the generalization should at least be refined.

There are more serious difficulties, however. If Jean regrets that he is handicapped, there is no obvious sense in which the RESP relation holds between him and his being handicapped. And yet the infinitive is almost obligatory in this case:

(41)   a.   *#Jean ne se console pas qu'il soit handicappé.*
                 Jean cannot console himself that he be handicapped.
        b.   *Jean ne se console pas d'être handicappé*
                 Jean cannot console himself to be handicapped.
        c.   *Jean ne se console pas que son fils soit handicappé.*
                 Jean cannot console himself that his son be handicapped.

(42)   a.   *#Jean est triste qu'il soit handicappé.*
                 Jean is sad that he be handicapped.
        b.   *Jean est triste d'être handicappé.*
                 Jean is sad to be handicapped.

A key to the correct generalization might be offered by (43), in which the infinitive and the subjunctive clause yield different truth conditions:

(43)   a.   *J'ai forcé Jean à ce qu'il m'ouvre.*
                 I have forced Jean to it that he to-me open.
        b.   *J'ai forcé Jean à m'ouvrir.*
                 I have forced Jean to to-me open
        c.   *(?) J'ai forcé Jean à ce que son fils m'ouvre.*
                 I have forced Jean to it that his son to-me open

Suppose that that I am standing in front of Jean's house. (43c), which is only slightly marginal, is assessed as true if I applied pressure on John to get his son to open the door for me. (43b) is naturally interpreted as true if I applied physical pressure to the door (or possibly to Jean himself) to get it to open. (43c) is deviant in such a situation. But it becomes much more natural if I indirectly caused Jean to open the door, for instance by issuing threats that he took sufficiently seriously to comply with my orders.

We may account for these facts by positing that the event argument of the embedded verb must be read "De Se", i.e. it must be bound by the complementizer (note that this requirement was not satisfied in the preliminary analysis we gave in (32a')). For simplicity we treat *open-the-door* as an

unanalyzed predicate, and we assume that *force* has a quantificational semantics akin to that of attitude verbs (though it need not quantify over speech or thought events, of course):

(44)   a.   *lit.* I forced you to open the door

         a'. e^*_a force-e-e$^*_w$ e$^*_h$ to-e' e'$_a$ open-the-door-e'-e'$_w$

         a". $[\![a']\!]^{e^*,s} \neq \#$. Furthermore, $[\![a']\!]^{e^*,s}=1$ iff for each event e' compatible with what e$^*_a$ forces e$^*_h$ to do at s(e) in e$^*_w$, the agent of e' opens the door at e' in e'$_w$.

         b.   *lit.* I force you that you open the door (non-De Se reading for the embedded event argument)

         b'. e^*_a force-e-e$^*_w$ e$^*_h$ to-e' [∃e": e"≥e'] e$^*_h$ open-the-door-e"-e'$_w$

         b". $[\![b']\!]^{e^*,s} \neq \#$. Furthermore, $[\![B']\!]^{e^*,s}=1$ iff for each event e' compatible with what e$^*_a$ forces e$^*_h$ to do at s(e) in e$^*_w$, for some event e" that is contemporaneous or follows e' in the world of e', e$^*_h$ opens the door at e" in the world of e'.

         While this analysis is extremely preliminary, it does yield a semantic difference between the De Se reading of the embedded event argument, as in (44a'), and the non-De Se reading, represented in (44b'). Of course the logic of our argument suggests that the grammar also generates a reading for the subjunctive clause which is identical to (44a'). We must now explain how this reading can be blocked. Once again *Maximize Presupposition!* will be the key. We assume that the infinitive triggers the appearance on the embedded event argument of a presupposition of the form *{=e'}*, which is vacuously satisfied. We can now reason as follows:

         When the situation to be described is compatible with the De Se reading, *Prefer De Se* requires that we use the Logical Form represented in (44a')' or a variant of it in which *to* is replaced by *that.*

         By itself the grammar generates two structures that have the desired reading, one involving the infinitive and the other involving the subjunctive.

         The infinitive marks a presupposition (namely *{=e'}*) that the subjunctive does not carry, and therefore *Maximize Presupposition!* requires that we use the subjunctive.

3.3   *Subjunctive vs. Modally Interpreted Past Tense*

         So far we have only discussed the competition between the subjunctive, the imperative and the infinitive. But just as in English, "counterfactual" conditionals are expressed in contemporary French using a modally interpreted past tense. In the simple cases the subjunctive is entirely impossible in this environment:

(45)   a.   *Si Jean était ici, nous serions contents.*

             If Jean was here, we would-be happy

             "If John were here (right now), we would be happy"

         b.   **Si Jean soit ici, nous serions contents.*

             If Jean be-subj here, we would-be happy

The account we gave for the modally interpreted past tense in English carries over to French. But this does not explain why the subjunctive is unacceptable in this environment. We speculate that the reason is as follows:

(i) the actual world is always salient when one uses a conditional *if p*, which makes it possible to use a Logical Form such as *if p {<w*{CS}}*, where w* denotes the actual world.

(ii) *Maximize Presupposition!* requires that this Logical Form rather than one with no presupposition at all be used, which rules out the subjunctive.

It is noteworthy, however, that a subjunctive *can* in fact be used in a counterfactual conditional, as long as it is not immediately embedded under *if*:

(46)   a.   *#Jean a rencontré une personne qui soit malade, et il l'a réconfortée.*
               Jean has met a person that be-subj sick, and he her has comforted
        b.   *#? Si Jean rencontre une personne qui soit malade, il la réconfortera*
               If Jean meets a person that be-subj sick, he he comfort-will
        c.   *Si Jean rencontrait une personne qui soit malade, il la réconforterait*
               If Jean met a person that be-subj sick, he her comfort-would

(47)   a.   *Si Jean vient et qu'il est malade, nous le soignerons.*
               If Jean comes and that he is sick, we him will-take-care-of
        b.   *? Si Jean vient et qu'il soit malade, nous le soignerons.*
               If Jean comes and that he be-subj sick, we him will-take-care-of
        c.   *Si Jean venait et qu'il était malade, nous le soignerions.*
               If Jean came and that he was sick, we him would-take-care-of
        d.   *Si Jean venait et qu'il soit malade, nous le soignerions.*
               If Jean came and that he be-subj sick, we him would-take-care-of

While these examples should be investigated in greater detail, we speculate that in these cases either condition (i) or condition (ii) above fails to hold, which makes it possible to use the subjunctive. But at this point this is nothing more than a re-description of the facts.

4.   *The Indicative*

Let us now turn to the indicative/subjunctive contrast itself. The argument that the subjunctive is a semantic default is in this case much less direct than was the case in our discussion of the subjunctive/imperative or the subjunctive/infinitive competition. Our argument will be one of simplicity: we can give a unified semantics for the indicative, but doing so for the subjunctive appears to be very difficult. The facts can be explained and the theory can be kept simple if the subjunctive is a semantic default.

So what does the indicative mean? Traditional grammarians as well as contemporary researchers have often explored the intuition that *the indicative marks some notion of commitment on somebody's part* (see Farkas 2003 for a recent analysis along these lines). If we wish to develop the analysis in semantic terms, we are forced to posit that a semantic failure of some sort arises when this requirement is not met. A natural candidate to trigger such a failure is a

presupposition. However the most direct way to implement the analysis leads to immediate difficulties. Suppose that we claimed that an indicative that appears in a proposition p is responsible for a presupposition that p is asserted by someone (this analysis is in fact applied to the German "Konjunktiv I" by Fabricius-Hansen & Saebø 2004; we return to this point below). When p is asserted on its own, we get the incorrect result that p must be presupposed; but clearly some propositions that are asserted are not presupposed! Things are no better when embedded clauses are considered. *John says that p* certainly need not *presuppose* that p is asserted. Rather, the assertion of the entire proposition entails that p is asserted by someone (namely John), but this is certainly not a presupposition of the entire sentence.

4.1   *Basic Analysis*

Since the direct route fails or at least requires non-trivial stipulations, we explore a more devious one, which has the advantage of being a very simple generalization of Stalnaker's analysis of the English indicative (it might also turn out to be *too* simple, as we will see at the end of this article). Remember that for Stalnaker indicative features trigger a presupposition that the world denoted by the *if*-clause lies in the Context Set of the actual speech act. We modify this analysis minimally by allowing the indicative to specify that the value of a certain world term lies in the Context Set of a speech or thought act e, where e is a free or bound variable. We thus give the following definitions:

(48)   For any world term w and event variable e:
        $[\![w\{CS(e)\}]\!]^{e^*,s}=\#$ iff $[\![w]\!]^{e^*,s}=\#$ or s(e) is not a speech or thought act or $[\![w]\!]^{e^*,s}$ is not in the Context Set of s(e). If $\neq\#$, $[\![w\{CS(e)\}]\!]^{e^*,s}=[\![w]\!]^{e^*,s}$

By taking e=e*, we obtain as a   special case Stalnaker's analysis of indicative conditionals. This special case also derives the correct result when a simple sentence is asserted, for instance *It is raining*:

(49)   a.   Il pleut (lit. it is-raining)
        a'.   rain-e-e*$_w${CS(e*)}
        b. $[\![a']\!]^{e^*,\,s}=\#$ unless e*$_w$ belongs to the Context Set of e*.
                Otherwise, $[\![a']\!]^{e^*,\,s}=1$ iff it rains at s(e) in e*$_w$

We also obtain the correct result for *Jean thinks that it is raining.* As before, presupposition projection requires that every thought event e' compatible with what Jean thinks in e must satisfy the presupposition of *it is raining,* which is taken to contain a world term e'$_w${CS(e)}   which carries a presupposition indicating that e'$_w$ lies in the Context Set of Jean's thought act. If Jean's Context Set is simply taken to be the set of worlds compatible with what Jean believes in e, we get a tautologous presupposition (*every world compatible with what Jean believes in e is compatible with what Jean believes in e*). Thus indicative marking

can always be used under *believe*, and hence, by *Maximize Presupposition!*, it must be used. (Unlike French, Italian allows the subjunctive to be used after *believe*. I do not have an account of this difference).

(50)   a.   Jean pense qu'il pleut (disregarding the indicative features on the matrix verb)
        a'.   Jean think-e-e*$_w$ that-e' [∃e": e"≈e'] rain-e"-e'$_w${CS(e)}
        b.   ⟦a'⟧$^{e^*, s}$ =# unless for each thought event e' compatible with what
                Jean thinks at s(e) in e*$_w$, e'$_w$ belongs to the Context Set of s(e). Otherwise,
                ⟦a'⟧^{s}=1 iff for every thought event e' compatible with what Jean thinks at s(e) in
                e*$_w$, there is an event e" co-occurring with e' such that it rains at e" in e'$_w$

Up to this point we have been rather vague about the precise notion of "Context Set" that should be used. Although we just suggested that Jean's Context Set could be taken to be the set of worlds compatible with what Jean believes (=Jean's "belief set"), the result we needed would have been derived just as well if we had said that the Context Set was a superset of Jean's belief set. But it is likely that in the general case we will need to resort to different notions of Context Set, for instance to the Context Set of a thought act (as before) and to the Context Set of a speech act - which corresponds more precisely to Stalnaker's original notion. If one is sincere, the worlds compatible with one's utterance must also be compatible with one's beliefs; but the opposite need not hold: what one believes is in general much more specific than what one says, and thus there are worlds compatible with one's beliefs that are not compatible with one's utterances. Assuming sincerity, we could *try* to "generalize to the worst case", and assume that the one and only notion of Context Set we need is the set of worlds compatible with one's speech act. If we followed this (misguided) course we could analyze *say* in exactly the same way as *believe* (the truth conditions would be analogous):

(51)   a.   Jean dit qu'il pleut
        a'.   Jean say-e -e*$_w$ that-e' [∃e": e"≈e'] rain-e"-e'$_w${CS(e)}

Although it is appealing, this analysis gives short shrift to a sad but important fact of life: it is possible to lie, and thus sincerity sometimes fails to hold. In such regrettable cases, what one says may bear no relation to what one believes. For this reason it might seem reasonable to bite the bullet and state that there are simply two notions of Context Set that can enter in the analysis of the French Indicative (when I wish to distinguish between these notions, I will use as features different symbols such as *CS* and *CS'*). Obviously if the relevant notions of "Context Set" are multiplied *ad libitum* the analysis will end up being contentless, which should be avoided.

4.2   *Minimal Pairs*

4.2.1   *Lament ("se lamenter")* The theory we have sketched so far can also derive some interesting semantic contrasts in case a verb optionally embeds either the subjunctive or the indicative. The observation is that in many such cases the indicative version is somehow reinterpreted as involving a speech act (similar observations were made about the Konjunktiv I in German in Fabricius-Hansen & Saebø 2004, which we discuss shortly). Take for instance the verb lament.

(52)   a.   *Jean se lamente qu'il pleuve*
              Jean SE laments that it rain-subj
        b.   *Jean se lamente qu'il pleut.*
              Jean SE laments that it rains
              $\rightarrow$ speech act reinterpretation

To my ear the subjunctive version is rather neutral, but the indicative version requires a particular situation - one in which Jean says something, to others or to himself, to the effect that he is unhappy that it is raining. Without the indicative, no such speech act reinterpretation is forced.

How is this observation to be explained? Simplifying the syntax, we may consider *se lamenter* as a unit, which has the same kind of quantificational semantics that we attributed to other attitude verbs. Obviously the subjunctive version will not trigger any presuppositions (though it will remain to be explained -later- why the subjunctive version can at all be used). Let us now consider what happens if Jean is the only salient individual in the domain of discourse.

(53)   a.   Jean se lamente qu'il pleut (disregarding the indicative features
              on the matrix verb)
        a'.   Jean lament-e-e*$_w$ that-e' [∃e": e"≈e'] rain-e"-e'$_w${CS(e)}
        b. $[\![a']\!]^{e^*, s}$ =# unless for each thought event e' compatible with what
              Jean laments at s(e) in e*$_w$, e'$_w$ belongs to the Context Set of s(e). Otherwise,
              $[\![a']\!]^{s}$=1 iff for each thought event e' compatible with what Jean laments at s(e) in
              e*$_w$, for some event e" co-occurring with e', it rains at e" in e'$_w$.

As before, the semantics does not specify which kind of lexical semantics might make it plausible that all the worlds compatible with what Jean laments are compatible with Jean's Context Set. But certainly this presupposition will be met if a speech act reinterpretation is obtained, one in which *lament* means: *says lamenting.* In other words, the speech act reinterpretation appears to be one way to insure that the presupposition of the embedded clause is satisfied. *Without* such a speech act reinterpretation, *lament* means something like: *is unhappy that.* But now it is a general fact about French that *all the emotive verbs select the subjunctive,* a point that we try to derive below[9].

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[9] To my ear the following paradigm provides supporting evidence for the analysis:

4.2.2 *Deny ("nier")* The strengths of this analysis are best illustrated with the various possibilities found under the verb deny ("nier"). Superficially it might appear that nier can optionally select the indicative or the subjunctive. However there is a surprising tense/person asymmetry: in the first person present, the subjunctive is preferred over the indicative (again the judgments reported here are my own):

(54)   a.   *Jean nie qu'il pleut*
               Jean denies that it rains
       b.   *Jean nie qu'il pleuve*
               Jean denies that it rain-subj
       a'.   *<#>Je nie qu'il pleut*
               I deny that it rains => becomes Ok if it is made clear that
               someone asserted that it's raining
       b'.   *Je nie qu'il pleuve*
               I deny that it rain-subj
       a''.   *J'ai nié qu'il pleuvait*
               I have denied that it rained
       b''.   *J'ai nié qu'il pleuve*
               I have denied that it rain-subj

       When one considers the data in greater detail, however, we observe that the sentence in (54a) improves considerably -and in fact becomes quite acceptable - in a situation in which someone else claimed: "It is raining", or alternatively if somebody's claim or belief that it is raining was mentioned in the previous discourse.

       How can we account for these contrasts? Given the present analysis, the subjunctive is easy to analyze because it does not carry any presupposition. It comes as no surprise, then, that it should be semantically unmarked (note, however, that *Maximize Presupposition!* will require that the indicative be used if it can be, which does indirectly constrain the uses of the subjunctive). I give in (55) an example whose subject is *Jean* (if it were *I*, things would not be significantly different):

(i)   a. Jean a cessé de se lamenter que Marie soit incompétente
           Jean has stopped to lament that Marie be-subj incompetent
        => Marie's incompetence doesn't affect him any more.
        b. Jean a cessé de se lamenter que Marie est incompétente
           Jean has stopped to lament that Marie is incompetent
        => may be true because Jean doesn't say any more that he is unhappy that Marie is
        incompetent
Unlike (ia), (ib) can be true even though Jean is still unhappy that Marie is incompetent, but simply has stopped saying it. This naturally follows if in (ib) *se lamenter* is reinterpreted as *says lamenting,* i.e. as a conjunction of *say* with something else (the point is that it is enough for a conjunction to stop being true that one of the conjuncts stops being true).

(55)   a.   Jean nie qu'il pleuve (subj.) [disregarding the indicative features on the
             matrix verb]
       a'.   Jean deny-e*-e*$_w$ that-e' [∃e": e"≈e'] rain-e"-e'$_w$
       b.   ⟦a'⟧$^{e*, s}$ ≠#. Furthermore, ⟦a'⟧$^{e*, s}$ =1 iff for each thought event e' compatible with
             what Jean denies at e* in e*$_w$ (=for each world that Jean rejects), for some event
             e" co-occurring with e', it rains at e" in e'$_w$

Now consider what happens when the embedded clause is in the indicative mood:

(56)   a.   Jean nie qu'il pleut (ind.) [disregarding the indicative features of
             the matrix verb]
       a'.   Jean deny-e-e*$_w$ that-e' [∃e": e"≈e'] rain-e"-e'$_w${CS(e''')}
       b.   ⟦a'⟧$^{e*, s}$ =# unless for each thought event e' compatible with what
             Jean denies at s(e) in e*$_w$ (=for each thought event that Jean rejects), e'$_w$ belongs
             to the Context Set of s(e'''). If ≠#, ⟦a'⟧^{s}=1 iff for each thought event e' compatible
             with what Jean denies at s(e) in e*$_w$, for some event e" co-occurring with e', it
             rains at e" in e'$_w$.
             In other words: It is presupposed that the worlds that Jean is rejecting are all
             compatible with what is assumed in the Context Set of s(e'').

By the rule of presupposition projection we have used throughout, *every
thought event compatible with what Jean denies must have its world coordinate
within the Context Set of s(e''').* But what could s(e''') be?

For simplicity, let us analyze *deny that p* as *claim that not p.* If so, the
worlds compatible with what Jean denies are the worlds compatible with what
Jean thinks is *not* the case. On this basis, let us distinguish three cases.

(a) Suppose first that e'''=e*. Then we obtain a presupposition that the
worlds compatible with what Jean claims not to be the case are all compatible
with what the speaker assumes; in other words, the worlds that Jean rejects are all
taken to be open by the speaker. A special case is provided by a situation in
which the worlds rejected by Jean are precisely those worlds in the speaker's
Context Set in which it rains. This is compatible with a factive reading of *deny*,
under which what is denied by Jean is presupposed to be true (although this
interpretation is indeed very natural, it is only a special case of the interpretive
constraints predicted by the present account)

(b) Suppose now that e'''=e. In this case we obtain a rather puzzling
presupposition, namely that the worlds compatible with what Jean claims not to
be the case are all compatible with what Jean took for granted up to this point. I
take it that the pragmatic situation that this requires is unusual enough to make
this interpretation unavailable.

(c) Finally, suppose that the context makes salient some third individual
thought or speech act e''', different both from e and from e*. The presupposition is
now that the worlds compatible with what Jean takes not to be the case are all
compatible with what is taken for granted in e'''. This is natural if Jean is trying to
challenge what is thought or said in e'''.

Now consider the situation that arises if *Jean* is replaced with the first person pronoun *je*, while the verb remains in the present tense of the indicative:

(57) a.   Je nie qu'il pleut (ind.) [disregarding the indicative features of the matrix verb]
      a'.   e*$_a$ deny-e*-e*$_w$ that-e' [∃e": e"≈e'] rain-e"-e'$_w${CS(e''')}
      b.   [[a']]$^{e*, s}$ =# unless for each thought event e' compatible with what e*$_a$ denies at e*
              in e*$_w$ (=for each thought event that the speaker rejects), e'$_w$ belongs to the
              Context Set of s(e). If ≠#, [[a']]^s=1 iff for each thought event e' compatible with
              what e*$_a$ denies at e* in e*$_w$, for some event e" co-occurring with e', it rains at e"
              in e'$_w$. *In other words:* It is presupposed that the worlds that the speaker is
              (hereby) rejecting are all compatible with what is assumed in the Context Set of
              s(e''').

Case (a) collapses into case (b), which is pragmatically deviant. Hence if no other individual is made salient in the discourse, the sentence should be somewhat unnatural, which is exactly what we observed in (54a'). If some other individual d is salient whose claims are being challenged by Jean, the sentence should improve, as this helps make case (c) pragmatically plausible. This is indeed what we find in situations in which it was made clear that d claims that it is raining, to which I reply: *I deny that it is raining.* (Note however that the prediction we make is not entirely accurate. We predict that no matter what the content of the embedded clause is, the sentence should be acceptable as long as Jean is challenging what d said. I am not sure that this is correct. Rather, we seem to get a presupposition that d thinks or claimed *that it is raining.*)

If the first person is retained but the verb is changed to past tense, we regain a difference between case (a) (e'''=e*) and case (b) (e'''=e). As before, case (b) is pragmatically deviant, but case (a) need not be if the speaker is challenging a belief he used to hold or a claim he made in the past but now considers to be incorrect.

4.3   *Hope vs. Want*

French *hope* ("espérer") shares certain semantic properties with *want* ("vouloir") - notably, *x hopes p* presupposes that *x believes that p is possible,* and similarly for *x wants p.* By contrast, the presupposition of *x wishes that p* (which in French is expressed using the conditional form of *want,* e.g. *voudrait*) appears to presuppose that *x believes that not-p.* If John believes, as we do, that the earth is round, this analysis explains the following contrasts:

(58)   Hope/Want vs. Wish (cf. Giorgi & Pianesi 1997:213; cf. Portner 1994)
        a.   # John hopes that the earth is flat
        a'.   # Jean espère que la terre est plate (ind.)
        b.   # John wants the earth to be flat.
        b'.   # Jean veut que la terre soit plate (subj)
        c.   John wishes the earth were flat.
        c'.   Jean voudrait que la terre soit ronde (subj)

Still, there is a major difference between *espérer* and *want*: the latter can only select the subjunctive, while (in my dialect) the former can only select the indicative[10]. What could account for this difference between *hope* and *want*?

Given our analysis of the indicative, the Logical Form of a sentence with *hope* must be as follows, with a presupposition *{CS(e''')}* on the embedded world term e'_w:

(59) a.   Jean espère qu'il pleut
              Jean hopes that it is-raining
      a'.   Jean hope-e-e$*_w$ that-e' [∃e'': e''≈e'] rain-e''-e$'_w${CS(e''')}
      b. $[\![a']\!]^s$=# unless for each thought event e' compatible with what Jean hopes for at s(e) in e$*_w$, e$'_w$ belongs to the Context Set of s(e'''). If ≠#, $[\![a']\!]^s$=1 iff for each thought event e' compatible with what Jean hopes for at s(e) in e$*_w$, for some event co-occurring with e', it rains at e'' in e$'_w$.

Two thought events are salient, namely e and e*. In general there need be no relation between what Jean hopes and what the speaker or addressee take for granted, so the only reasonable assumption is that e'''=e*. If so, it must be the case that *every world compatible with what Jean hopes for lies in Jean's Context Set.* We obtain immediately two results, one positive and one potentially devastating. To simplify the exposition, let us call H(x) the set of worlds compatible with what x hopes for, and CS(x) the set of worlds compatible with what x claims or believes.

(i) On the positive side, the fact that H(x)⊆CS(x) does yield the result that *x hopes p* entails *x believes that p is possible* (modulo the trivial assumption that H(x)≠Ø). Proof: *x hopes p* is true just in case H(x)⊆$[\![p]\!]$. Since H(x)≠Ø , for some h, h∈H(x), and hence h∈$[\![p]\!]$. But since H(x)⊆CS(x), it is also the case that h∈CS(x), and therefore x holds it as possible that p (since CS(x) has a non-empty intersection with $[\![p]\!]$).

(ii) On the negative side, note that if CS(x) is interpreted as the set of worlds compatible with what Jean believes, we get the clearly undesirable result that *x believes that p* entails that *x hopes that p* (since on this interpretation *x believes that p* yields CS(x)⊆$[\![p]\!]$; since H(x)⊆CS(x), we also obtain H(x)⊆$[\![p]\!]$, i.e. *x hopes that p*).

The solution might be to distinguish between what is asserted and what is presupposed by *hope*. Suppose we give the following analysis[11]:

(i) *x hopes that p* asserts that x takes p to be plausible.

(ii) *x hopes that p* presupposes that has a desire that p be the case.

With the additional assumption (not a trivial one) that the feature CS constrains the computation of (i) but not (ii), we obtain the desired result: every world that x

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[10] For reasons that I do not understand, *to have the hope that* ("avoir l'espoir que") can select either the indicative or the subjunctive.

[11] Thanks to S. Beck and A. von Stechow for helpful discussion of this point.

takes to be plausible should be compatible with what x believes, hence indicative marking should be licensed.

Is there independent evidence for this analysis? First, note that both in English and French "to lose hope" ("perdre espoir") does not mean "to stop having the relevant desire", but rather "to stop holding as plausible that the desired outcome will come about". Less anecdotally, consider the difference between the following dialogues:

(60)   a.   *Jean espère toujours que Marie va venir.*
              Jean hopes still that Marie will come
              -Non, il pense désormais qu'il y a très peu de chances pour cela.
              -No, he thinks now that there are very few chances for that
        b.   *Jean désire toujours que Marie vienne.*
              Jean hopes still that Marie come-subj
              -#?Non, il pense désormais qu'il y a très peu de chances pour cela.
              No, he thinks now that there are very few changes for that
        c.   *Jean veut toujours que Marie vienne.*
              Jean hopes still that Marie come-subj
              -??Non, il pense désormais qu'il y a très peu de chances pour cela
              No, he thinks now that there are very few chances for this

(60a) is entirely natural, (60b) much less so, and (60c) stands somewhere in the middle. In other words, it is natural to deny *x hopes that p* by claiming that *x does not believe that p is plausible.* This is consistent with the present analysis, because the latter claim entails the denial of hope, so to speak. Clearly, however, much further research will be needed to support this analysis[12].

4.4   *Counterfactual reasoning and emotives*

It is a standard observation that emotive verbs systematically select the subjunctive - including those that are factive or near-factive. For instance in French *regret* selects the subjunctive, even though *x regrets that p* presupposes that *p* or, more accurately, presupposes that *x believes that p* (that the latter is the correct presupposition can be ascertained by observing the coherence of the following discourse: *Jean incorrectly believes that France is a monarchy, and he regrets that the King of France didn't support the US during the war in Irak).* In order to explain this generalization, I argue (following the spirit of Quer 1997) that emotives and more generally causatives select the subjunctive because their lexical semantics involves counterfactual reasoning, which requires that the

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[12] The following dialogue is fairly natural, which does not follow from the present theory:
(i)   Jean espère toujours que Marie va venir.
         Jean hopes still that Marie will come
         -Non, il pense désormais qu'il est préférable qu'elle ne vienne pas
         No, he thinks now that it is preferable that she NE come-subj not
Given our theory, we have no choice but to analyze the second sentence as denying the presupposition of the first. I do not have independent evidence that this is correct.

embedded clause be evaluated at worlds that are not, in general, in any salient individual's Context Set.

Consider the example of *be happy that*, which is factive or rather near-factive[13]. The details of the lexical semantics of this predicate do not matter very much, as long one agrees that they require some kind of counterfactual reasoning. Suppose for instance that *Jean is happy that it is raining* is analyzed as the conjunction of (i) Jean believes that it is raining, and (ii) Jean believes that, if it were not raining, he would be less happy than he is (i.e. he believes that the closest world in which it is not raining is a world in which he is less happy than he is). Clause (ii) involves counterfactual reasoning, and therefore forces one to consider worlds that are outside Jean's Context Set. As a result, marking the embedded world term as indicative would in general yield a presupposition failure. Therefore indicative marking cannot be used, and subjunctive marking becomes the only available option. With this analysis, the sentence can be analyzed roughly along the following lines:

(61)   a.   Jean est heureux qu'il pleuve / *pleut
            Jean is happy that it rain-subj / rains
       b.   Jean be-happy-e -e*$_w$ that-e' [∃e": e"≈e'] rain-e"-e'$_w$
       c. $[\![b]\!]^{e*,\,s} \neq \#$ since no term triggers any presupposition.
            Furthermore, $[\![b]\!]^{e*,\,s} = 1$ iff
            (i) Jean believes that it is raining, i.e. for each thought event e' compatible
            with what Jean believes at s(e) in e*$_w$, for some event e" co-occurring with e', it
            rains at e" in e'$_w$
            (ii) Jean believes that if it didn't rain, he would be less happy than he is, i.e. for
            each thought event e' compatible with what Jean believes at s(e) in e*$_w$, the
            closest world w from e'$_w$ in which it does not rain is such that John is less happy
            in w than he is in e'$_w$.

The same analysis can be applied to the contrast between *alors que* ("while") and *bien que* ("although"). The former selects the indicative and can (like English "while") have a temporal reading. The latter selects the subjunctive, and cannot have a purely temporal reading, in the sense that some opposition is always understood between the first proposition and the second.

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[13] The following examples suggest that *x is happy that p,* like *x regrets that p*, presupposes that *x believes that p* but not necessarily that p is true.
(i)   a. Jean est persuadé qu'il pleut, et il est heureux qu'il pleuve. (Mais bien entendu il ne pleut pas!)
         Jean is convinced that it rains, and he is happy that it rain-subj. (But of course it doesn't rain.!)
         b. Jean est persuadé qu'il pleut, et il regrette qu'il pleuve. (Mais bien entendu il ne pleut pas!)
         Jean is convinced that it rains, and he regrets that it rain-subj. (But of course it doesn't rain!)

(62)   a.   *Jean se promène alors qu'il pleut.*
            Jean is-taking-a-walk while it is-raining.
       b.   *Jean se promène bien qu'il pleuve.*
            Jean is-taking-a-walk although it is-raining-subj.

I would suggest that the meaning of *p alors que q* is something like: *p holds at a time at which q holds.* In other words, the temporal reading is primary, and the reading of opposition that one obtains is only an implicature. By contrast, *p bien que q* has a more complex meaning, something like: *p holds and q holds and in the closest world q-world in which certain assumptions are met, p does not hold.* The meaning of *bien que* involves counterfactual reasoning, and thus the subordinate clause is in the subjunctive.

5.   *Extension: The German Konjunktiv I as a Reportive Indicative*

Fabricius-Hansen & Sæbø (2004) observe that the German Konjunktiv I often triggers an implication that the clause it appears in has been asserted by someone[14]. This characterization alone makes the Konjunktiv I much closer to the French indicative than to the French subjunctive (despite the name "Konjunktiv", which just means... "subjunctive"). The following example (also discussed in Schlenker 2003) gives a good feel for the contribution of the Konjunktiv I:

(63)   a.   *Er sagte, sie sei schön. Sie habe grüne Augen.* (Jäger 1971)
            He said she be pretty. She have green eyes.
       b.   *Er sagte, sie sei schön. Sie hat grüne Augen.* (Jäger 1971)
            He said, she be pretty. She has green eyes

As Jäger (1971) observes, in a., which involves a Konjunktiv I form of "have", the second sentence must be read from the standpoint of the attitude holder, so that it is interpreted as: "He says/thinks that she has green eyes". No such reading is forced in b. As Fabricius-Hansen & Sæbø (2004) state the generalization, a clause in the Konjunktiv I must be "the object of a verb of saying (claiming, asking, commanding), *or it is understood as if it were*". Particularly strong evidence for their generalization is provided by cases of coercion: certain verbs that do not "normally" select the Konjunktiv I can be made to accept it when given a speech act reinterpretation (the reinterpretation requires the syntactic representation of an agent, hence - presumably - the deviance of (64d)).

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[14] An anonymous reviewer points out some counterexamples to this generalization:
(i)   a. Das Kind weint, als ob es große Schmerzen habe
           "The child is crying as if he was in great pains." (Helbig & Buscha 1987:200)
           b. Sei es nun früh oder späte, ich muß jetzt nach Hause gehen
           "Either it's early or late, I have to go home now." (Helbig & Buscha 1987: 204)
           c. Er lernte viel, damit er dir Prüfing bestehe (Gierden Vega 2000: 185)
           "He studied a lot in order to pass the exam."
Other counterexamples can be found in Schlenker (1999/2000:51).

(64) a. *Sie hat sich geärgert, dass er sich verspätet hat.*
          she has REFL annoyed that he REFL belated have[PresInd]
          "She was annoyed that he was late."
      b. *Sie hat sich geärgert, dass er sich verspätet habe:*
          she has REFL annoyed that he REFL belated have[PresSub]
          "She was annoyed that he – as she said – was late."
      c. *Es hat sie geärgert, dass er sich verspätet hat.*
          it has her annoyed that he REFL belated have[PresInd]
          "It annoyed her that he was late."
      d. *# Es hat sie geärgert, dass er sich verspätet habe.*
          it has her annoyed that he REFL belated have[PresSub]

There is a further piece to this puzzle. As noted in Schlenker (2003) and Fabricius-Hansen & Sæbø (2004), the Konjunktiv I cannot be used when the thought or assertion is attributed to the speaker at the time and in the world of utterance:

(65) a. **Ich   glaube, daß   Maria   krank   sei*
          I   believe that   Maria   sick   is-KONJ1
      b. *Ich   glaubte, daß   Maria   krank   sei*
          I   believed that   Maria   sick   is-KONJ1
          "I believed that Maria was sick"
      c. *Peter   glaubt, daß   Maria   krank   sei*
          Peter believes   that   Maria   sick   is-KONJ1
          "Peter believes that Maria is sick"
      d. *Peter   glaubte, daß   Maria   krank   sei*
          Peter   believed that   Maria sick   is-KONJ1
          "Peter believes that Maria is sick"

This suggests that the Konjunktiv I is -despite its name- *an indicative*, though with the special requirement that the Context Set it refers to should *not* be that of the actual speaker at the time and in the world of his utterance. We also obtain in this way the observation that the Konjunktiv I cannot occur in conditionals, since the Context Set which is relevant for conditionals is always that of the speaker at the time and in the world of utterance.

* * *

If they are on the right track, these speculative remarks suggest that a very simple analysis of mood can be maintained: mood contributes certain presuppositions on the value of world variables. But for this theory to have any chance of dealing with the subjunctive, it must be supplemented with the assumption that certain moods have a trivial semantics, and can be used only when their richer competitors would trigger a presupposition failure. Under these assumptions, the indicative can be treated along the lines of Stalnaker's classic theory, but somewhat generalized: an indicative feature introduces a presupposition that a term denotes a world within a salient individual's Context

Set, though this individual need not be the speaker. It remains entirely open, however, whether this analysis can be extended to derive more subtle facts about the indicative/subjunctive distinction, especially when the fine-grained semantics of various attitude verbs is taken into account.

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VOWEL CENTRALIZATION IN ROMANIAN VERBS
OF SLAVIC ORIGIN
DELIBERATE EXPLOITATION OF AN INDIGENOUS SOUND CHANGE?[*]

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1.   *Introduction*

In this study, I observe how a regular, phonologically conditioned sound change in Romanian appears to affect a group of verbs, mostly Slavic loanwords, that do not provide the exact phonological environment otherwise required for the change to take place. The resulting phonological split throughout large parts of the inflectional paradigm has led to the de facto creation of an additional conjugation, consisting predominantly of verbs with Slavic roots.

After presenting the basic data, I discuss some potential causes and explanations that have been put forward by various scholars. As none of these attempts is fully satisfactory, I then propose that the extension of this sound change, although originating from an internal phonological development, is sensitive to the etymological origin of individual lexical items.

I then argue that this is by no means a unique case, as other languages have similar ways of marking loanwords by exploiting structures that are in principle available, but otherwise infrequent. Such developments, it appears, are favored by socio-cultural contexts in which there is at least passive familiarity with the source language, as well as an awareness of ethnic or cultural identity.

I conclude that it is possible for an originally indigenous development to be extended specifically to etymologically foreign words, and that it is this mechanism that has contributed to the rise of the "Slavic conjugation" in Romanian.

2.   *The regular sound change*

Though absent from most varieties of modern Romanian[1], an opposition between tapped /r/ and trilled or "fortis" /r/ survived[2] into the 16th century and is

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[1] Instances of trilled /r/ can be found, to the present day, in northern Ardeal and Maramureş. Rosetti (1966: 258) gives examples such as *rău* and *uřăsc*.
[2] It is thought that geminate RR became a "fortis" consonant in Late Latin (Vasiliu 1968: 88-89 cited in Fischer 1969: 41, footnote 5).

represented consistently in certain documents from this period, such as the *Psaltirea Hurmuzachi*. The trill, derived primarily from Latin R- and -RR-[3], caused following /i/ and /e/ to centralize regularly to /ɨ/ and /ɐ/, respectively[4].

(1)   RIVUM   > *râu*
         REUM   > *rău*

It is not entirely clear when this occurred; on the one hand, Rosetti (1966: 258) points out that the centralized vowels are used consistently after /r/ in the *Psaltirea Voroneţeană*, whilst many other texts from the 16th century, e.g. the *Texte Măhăcene*, are far less consistent in this respect; apparent instances of centralized vowels might even be modifications by later copyists. On the other hand, the fact that Arumanian shares this innovation (*arâu<RIVUM, arău<REUM*) with Daco-Romanian would suggest a far earlier date for the change, some time during the "common Romanian" period before diversification took place (Sala 1964, cited in Rosetti 1966: 259). Regardless of when this centralization process began, it did not, generally, occur after single or tapped /r/.

Only one commonly used verb, *a urî* < *HORRIRE, changes its thematic vowel due to this phonological process. The resulting inflectional paradigm differs from that of verbs ending in -i to a considerable extent, for instance in the present tense forms:

(2)   ***a iubi* "to love"**   ***a urî* "to hate"**
         Sg.   1st   *eu iubesc*   *eu urăsc*
               2nd   *tu iubeşti*   *tu urăşti*
               3rd   *el iubeşte*   *el urăşte*
         Pl.   1st   *noi iubim*   *noi urâm*
               2nd   *voi iubiţi*   *voi urâţi*
               3rd   *ei iubesc*   *ei urăsc*

3.   *Spread of the **urî**-pattern*

The pattern of *a urî* is also found in certain verbs with lenis /r/, as in *a amărî* < *AMARIRE.[5]

What is of particular interest, however, is the fact that out of the basic list of 3700 Romanian verbs (Uricaru & Goga 1995), 14 of the 16[6] verbs that have acquired this pattern have Slavic roots; only *a amărî* has a (reconstructed) Latin etymon and *a hotărî* is a loan from Hungarian.

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[3] Cf. Lausberg 1956: §229, Puşcariu 1943: 72

[4] These phonemes are represented by *î/â* and *ă*, respectively, in modern Romanian spelling.

[5] There is some evidence that the root *amarr-* might have had a fortis /r/, as we find *amarră* in the *Psaltirea Hurmuzachi* (ps.63).

[6] The colloquial verb *a borî* "to throw up" does not appear in Uricaru & Goga's list; its etymology is unknown, possibly onomatopœic.

(3)

a amărî	"to make bitter" < Lat. *AMARIRE (id.)[7]
a coborî (var. *pogorî*)	"to descend" < Serb. *pogorje* "mountanous terrain"
a doborî (var. *oborî*)	"to throw down, to fell" < Slav. oboriti (id.)[8]
a hotărî	"to decide" < Hung. *határ* "border, demarcation line", *határoz* "to decide"
a izvorî	"to spring, have one's source" < Slav. *izvor(ŭ)* "spring, source"
a mohorî	"to turn dark (red), get gloomy" < *mohor* "red saxifrage, mat grass, millet" < Slav. *mohar* "millet"[8]
a ocărî (var. *ocări*)	"to scold, abuse" < Slav. *okarjati*[8]
a omorî	"to kill" < Slav. *umoriti* (id.)[8]
a oţărî (var. *oţări, oţerî, oţeri*)	"to snap at sb." < Bulg. *ocerea*[8]
a pârî	"to tell on sb." < Slav. *p(ĭ)rěti*[8]
a posomorî (var. *posomori*)	"to sadden, make gloomy" < Slav., eg. in Dalmatia: *nasumoriti* "to become gloomy"
a tăbărî	"to fall upon sb.; to (put up) camp" < *tabără* "camp" < Slav. *tābor(ŭ)* (id.)
a târî (var. *târâi)*	"to drag, pull, creep, crawl" < Slav. *trěti*[8]
a vârî	"to thrust, push into; to scare, annoy" < Slav. *vreti*[8] "to boil, ferment, seethe"
a zădărî (var. *zădări*)	"to provoke, worry" < Bulg. *zadarjam*[8]*, Scr. zadirati* "to rip, cut, provoke"
a zăvorî (var. *zăvori*)	"to bolt, shut oneself up" < *zăvor* "bolt" < Slav. *zavor(ŭ)* (id.)

On the other hand, there are 97 different roots and a total of 112 verbs, listed in the appendix, that retain the non-centralized vowel. They can be classed according to origin as follows:

(4)
- 51 Latin
- 19 Slavic
- 7 unknown etymology
- 6 Turkish/Greek
- 6 French/Italian calque or loan
- 4 German
- 3 Albanian
- 1 Hungarian

Clearly, most of the verbs in which *-ri* has not become centralized do not have a Slavic etymon; inherited Latin roots dominate, even more so if we disregard recent borrowings, in particular the French and Italian calques and loans, such as *a conferi* < Fr. *conférer* / It. *conferire*.

Furthermore, it should be pointed out that twelve of the verbs that do not themselves have a Latin etymon are, nevertheless, denominal verbs derived by means of the suffix *-ări*, a compound of the Latin agentive suffix -ARIU(S) and the deverbal suffix -IRE.

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[7] Etymology taken from Coteanu et al., 1998.
[8] Cf. Skok 1972, vol. II, 477-478.

(5)   *a meşteşugări*   "to work in ones trade" < *meşteşug* < Hung. *mesterség* "craft"
       a plutări "to raft" < *plută* < Bulg. *pluta* "raft"
       copilări "to spend ones childhood" < *copil* < Alb. *kopil* "child"

Though these verbs contain root morphemes from sources other than Latin, they can, to some extent, be viewed as hybrid formations in which the borrowed element is integrated into the indigenous morphological system to a considerable extent.

Summing up, the data presented in this section shows that the centralization of thematic vowels, originally caused only by preceding trilled /r/ < -RR-, has spread to environments where the preceding rhotic is not derived from -RR-. The change has by no means spread to all verbs providing this phonological environment, and the verbs affected are, intriguingly, almost exclusively loans from Slavic.

4.   *Explanatory attempts*

Whilst the link between vowel centralization and Slavic origin of the respective verbs has, to my knowledge, not previously been examined in much detail, several different attempts to explain the occurrence of this sound change in verbs lacking the otherwise required phonological feature, the trilled /r/, have been proposed in the literature.

4.1   *Analogical extension*

Perhaps the most straight-forward explanation is that of simple analogical transmission from *-rrî* to *-rî*, as proposed by Densusianu (1938: 199):

Des formes […] avec *-î* provenant de *-i* après *rr* ou transmis, par analogie, aussi aux formes contenant dans le radical une seule *r*.

Whilst this is, in principle, a plausible explanation, Densusianu does not discuss what may have motivated such analogical extension, nor does he address the fact that the process primarily affected verbs of Slavic origin.

4.2   *Metaphony/vowel harmony*

A different explanation is put forward by Tagliavini (1923: 19,163). He observes that in Old Romanian, /i/ becomes /î/ after a "vocale aspra" (by which he presumably means a non-front vowel) in the preceding syllable, as in *ţărîşoară* "little country" < *ţară* + dim. suff. *-işoară*. This, he claims, survives now only in the verbs in *-rî*.

It is interesting to observe that all the verbs of the *urî*-type do, indeed, have a back or central vowel in the syllable preceding the stem vowel – but so do 85 out of the 112 verbs ending in *-ri* listed in the appendix. Why would only some verbs be affected by this metaphonic process, and why would these be of predominantly Slavic extraction?

4.3   *Borrowing of the vowel with the verb*

Nandris (1963: 54) acknowledges that certain verbs in *-rî* are Slavic loans, and he believes the central vowel is borrowed directly from the source language as part of the verb, stating that "*Î* s'est développé à partir de […] la désinence slave *ry* (omorî « tuer », doborî « abattre »)." It may be presumed that he is referring specifically to Ukrainian and perhaps Belarusian[9], where the depalatalization of /r'/ caused following /i/ to centralize (Wexler 1977: 128, 152-3). The merger of /ɨ/</ə/ and /ɨ/</i/ in several Ukrainian dialects bordering on Romanian-speaking areas, among them those of Galicia and Bucovina (Shevelov 1979: 422-8), could also have provided the centralized thematic vowel in the Romanian verbs.

However, it appears unlikely that the central vowel was borrowed from Ukrainian or Belarusian as part of the respective verbs, as the regional distribution of the *-ri* and *-rî* forms documented in Old Romanian texts suggests that centralization of the thematic vowel did not originate in the northeastern Romanian areas that would have had the most intense contact with these East Slavic languages. Chivu (1997: 131 ff., 334) observes that *-ri*-forms are predominant in northern texts, whilst *-rî* is more typical of southern Transylvania, Țara Românească (except Oltenia) and Banat-Hunedoara, i.e. roughly the southern, central and western regions of present-day Romania. This observation is supported by Densusianu's (1938: 199) list of instances of these verbs spelt with *-ri*, the vast majority of which are found in texts from Maramureş or northern Transylvania, whilst texts published by Coresi in Braşov (Southern Transylvania) tend to have *-rî*.

A further indication that the centralized thematic vowel was not borrowed as part of the respective verbs is the fact that its incidence in Old Romanian texts generally coincides with that of centralization caused by a preceding etymological *rr* or "fortis" /r/, which according to Nandris (1963: 28) was still a "tendance en pleine évolution" at the time. Such a parallel distribution would be highly unlikely if the central vowel had been borrowed as part of the *-rî*-verbs, whilst otherwise having originated language-internally.

4.4   *Borrowing of trilled or "fortis" /r/*

An alternative explanation based on phonological borrowing would be the possible realization of Slavic *r* as a trill, or at least something akin to the fortis /r/ that triggered the centralization process in Romanian. Having entered the language as part of the loanwords, this trill could have the same effect on the following vowel as the trill derived from Latin -RR-.

Whilst there are some cases of Slavic loanwords written with *rr* in 16th century texts (Rosetti 1966: 258), there is no evidence that this originated in the

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[9] Many Moldavian charters were "patterned on the standard language of the Li[thuanian] chancery" (Shevelov 1979: 404), which was essentially Belarussian.

source language: non-syllabic /r/ is clearly a tap/flap in modern Bulgarian, Serbian and Macedonian in unmarked, non-emphatic contexts, as it is in modern Romanian. Furthermore, no phonological opposition between /r/ and /ɾ/ has been observed diachronically in these languages.[10]

The most convincing evidence that the surrounding Slavic languages did not have a trilled /r/, however, is the fact that in 16th century northern Romanian texts from Maramureş, a new character "σ", representing *rr*, was added to the Cyrillic alphabet (Rosetti 1966: 154). As this character, probably derived from the Glagolitic character for "*r*" (Bărbulescu 1928: 124 ff., cited in Rosetti 1966: 258), consistently represents trilled /r/, the existing Slavic ρ must almost certainly have represented and been realized as /ɾ/.

5.   *Exploitation of existing structures to mark loanwords*

The reason why none of the explanations discussed in the previous section is fully satisfactory is that they do not account for the fact that the centralization process spreads selectively, predominantly to verbs with Slavic roots. In this section, I argue that that the process is sensitive to the etymology of the respective word, and that it is exploited to mark words as loans.

With centralization of the thematic vowel being triggered by a preceding trilled /r/, it is a reasonable assumption that this could have occurred in the verbs of the "Slavic conjugation" via an interim stage, during which the /ɾ/ became /r/. There is evidence that words of Slavic origin were prone to fortition of /ɾ/ to /r/, e.g. *izvoarrele* < *izvoarele*[11]. Quoting Candrea (1916: 165), Nandris (1963: 143) observes that intervocalic "r fort existe [...] dans quelques mots, le plus souvent d'origine slave, dans lesquels, « nous ne savons sous quelles influences, l'*r* primitif a été prononcé *rr* »", a phenomenon that cannot have been due to a trilled pronunciation in the source languages, as shown in section 4d above.

Thus we can tentatively reconstruct the following evolution for *a omorî* "to kill":

(6)   *umoriti > a omori > *a omorri[12] > *a omorrî > a omorî*

Contrary to the widespread view that adaptation is the natural destiny of loanwords, phonological and morphological differentiation of borrowed items is, in fact, by no means unique to this case. Loans can be marked overtly as soon as they are borrowed, or they can be subjected to different treatment at a later stage, after seemingly having become integrated into the recipient language.

For example, Romanian 16th century texts document that in the northern "rhotic dialects" (northern Ardeal, Maramureş, Bucovina), intervocalic /-n-/

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[10] Cf. e.g. Gardiner 1984: 19, Bidwell 1963, Koreman 2002.

[11] *Psaltirea Hurmuzachi*, ps.17.16, ed. S. Candrea, cited in Rosetti (1966: 258).

[12] Corresponding *a oborri* is actually attested in the *Psaltirea Hurmuzachi*, ps.105.27, cited in Densusianu (1938: 199).

changed to /-r-/ (*bine > bire)*, but generally only in words with Latin etyma (Iordan et al. 1962: 155). As a considerable number of Slavic loans are found in all dialects of Romanian, which means they must have been borrowed before the /-n-/>/-r-/ change took place in the "rhotic dialects"[13], speakers of Romanian appear to have retained some (possibly subconscious) awareness of whether a word was indigenous or borrowed, and were therefore capable of treating loanwords differently.

Brink (1977, cited in Labov 1994: 534) makes a similar observation regarding raising of long [a:] in Danish, which does not occur in loanwords from Swedish or German. Labov (1994: 534) states that "…the findings of Brink and Lund indicate that […] foreign status can influence the course of low-level output rules."

Returning to the Balkans, Romani maintains "a structural dichotomy between inherited and borrowed vocabulary" (Matras 2002: 128) by adding a special morpheme to the verb stem.[14] Unlike the vowel centralizing phenomenon in Romanian, however, verbs borrowed from any source language, be it Greek, Romanian, Slavic or German, are marked in this way.

An example that will be more familiar to many speakers of English is the treatment of certain English loanwords in French. In words like *club, pub, fuck, fun, punk* etc., English /ʌ/ is not realized as /a/, the phonetically closest French phoneme[15], but is instead rounded and fronted to /œ/. In German, a similar phenomenon can be observed in words borrowed from English in the early 20th century, possibly via French: *cut* "cutaway coat", *pump* "pump shoe", both pronounced with /œ/.

This alteration of vowel quality is not necessitated by the phonological systems of the recipient languages, as both have the phoneme /a/; pronunciation according to spelling would yield /y/ and /u/, respectively – not /œ/. What we are dealing with here is a phenomenon that resembles the treatment of Slavic loan verbs in Romanian to a certain extent: a sound change affecting items borrowed from a specific language, triggered not by actual differences between the respective languages' phonetic inventories, but instead by the simple fact that the items are borrowed from that particular source language.

In French (and German), the resulting phonological combinations are rare or exceptional, but do not actually break any clear phonotactic rules. Based on Juilland (1965), Aiden Coveney (personal communication) observes that French has very few closed word-final syllables with /œ/. The sequences /œk/, /œd/,

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[13] Capidan (1925: 45,51-52), cited in Puşcariu (1943: 356) observes that 72 Slavic loans are common to all Romanian dialects, and he concludes that they must have been borrowed before the 10th century A.D., when Aromanian had become separated.

[14] These loanword markers are derived from Greek tense/aspect markers that were borrowed with Greek verbs, mostly present tense and aorist markers.

[15] Spectrographic evidence in Steinlen (2003) shows that, despite differing transcription conventions, English /ʌ/ has the same acoustic vowel quality as German (and French) /a/.

/œm/, /œs/, /œʃ/, /œt/, /œz/; /œg/, /œp/, /œɲ/, /œʒ/ are virtually non-existent in French vocabulary, except in acronyms (/dœg/ *DEUG = Diplôme d'Études Universitaires Générales*) and abbreviations (/dœʃ/ *deuche* "2CV car").

In the Romanian case examined here, we can observe a similar exploitation as loanword marker of a structural pattern that is in principle possible, but nevertheless extremely rare: *a urî*, though the result of a regular sound change, is odd both in terms of its phonology and morphology. Word-final tonic /-ɨ/ is not found anywhere except in the infinitive of *urî*-type verbs (Nandris 1963: 55), which means that not even a handful of words would have this phonotactic pattern, were it not for the Slavic loans. The same can be said of the inflectional paradigm of *a urî*, outlined in section 1 above, which has an extremely low functional load.

What remains to be investigated are the socio-linguistic conditions that facilitate this type of process. Whilst we do not have a precise knowledge of all aspects of society and interaction between the different ethnic groups in the Balkans in and before the 16th century, we do know that there was considerable contact, and in some areas almost certainly a degree of bilingualism.

In the case of French, there is a varying degree of contact with English, and the situation for the majority of speakers is perhaps best described, in the terms of Thomason's (2001: 139-142) mechanisms of contact-induced change, as "passive familiarity"; at the same time there is a clear awareness of separate cultural identity.

Loanwords that undergo rounding and fronting of /ʌ/ when borrowed into French generally belong to lexical fields associated with Anglo-American culture and lifestyle (*club, pub, punk*)[16], or they are used to evoke feelings associated with this lifestyle ("*je veux avoir du fun")*. The continued association of the loanwords with the culture of their source language, a likely motivation to mark them as borrowings, is also mirrored by the choice of vowel replacing /ʌ/: French /œ/, phonetically extremely similar to the frequent English phoneme /ɛ/[17], is perceived as "typically English" by French speakers.

Whether a similar association of a particular "typical" sound with the source language plays a part in the creation of the Romanian "Slavic conjugation" is hard to determine, as we cannot ask 16th century speakers what they consider typical of Slavic. However, it is often argued that the emergence of /ɨ/ in Romanian "can reasonably be traced to the introduction of Slavic loanwords containing the high central back unrounded /ɨ/…" (Hall 1974: 73). Though this claim is disputed by Petrucci (1999: 66-69), the high incidence of /ɨ/ in Slavic loans may nevertheless have been perceived as a typical feature, which could in turn have had a facilitating effect in the process leading to the emergence of /ɨ/ in Slavic loans.

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[16] An intriguing case is the use of *chum* /ʧœm/ "boyfriend" in Canadian French.
[17] See vowel quadrilaterals in Handbook of the IPA (2000: 42,78).

Perhaps one of the most intriguing aspects is the question why a language like Romanian, having borrowed a wide range of lexical items and morphology from Slavic, applies double standards to certain loanwords from the same source, treating indigenous items one way and borrowed ones another.

A possible motivation might be the desire to protect and assert one's cultural identity. By pronouncing a loanword in such a way that it sounds slightly marked within the structure of his own language, a speaker shows that he is aware of its foreignness. In how far this can be considered deliberate, or perhaps a "semi-deliberate" process, is unclear.

Such a strategy may work as a socio-linguistic convention for some time, but eventually a process of bleaching will set in; a generation of learners will no longer perceive the socio-linguistic implications, but simply take what they hear at face value, thereby turning the originally rare or odd linguistic structure into an unmarked, common part of the language.

Thus, we may expect the sequence /œ/+consonant in word-final position eventually to become phonotactically unmarked in French, just as the "Slavic conjugation" in Romanian is no longer perceived as phonologically or morphologically unusual.

That we are dealing with a socially conditioned phenomenon is supported by the fact that ongoing variation can be observed in at least six of the verbs affected[18], which are conjugated as -*ri*-verbs by some speakers and as -*rî*-verbs by others. Such variation is a typical feature of lexical diffusion, a type of change often associated with "a high degree of social awareness" (Labov 1994: 542), where a particular change spreads through a linguistic community speaker by speaker, item by item, and the old and the new form can coexist.

Today, diffusion of the *urî*-pattern has clearly run out of momentum. Since the original motivation is no longer socially relevant, and speakers have ceased to associate the pattern with Slavic loans, it can be expected that no more verbs will shift to the *urî*-pattern on these grounds. Whether the verbs that can, at present, follow either pattern will eventually be assigned exclusively to one or the other class remains to be seen.

6. *Conclusion*

In this paper, I have shown how a new verbal inflectional paradigm emerges as the result of phonological change, and how the newly created pattern is extended to a number of other verbs.

What makes this case interesting is the fact that the new morphophonemic pattern is extended predominantly to loanwords from one linguistic source. The reason appears not to be any particular feature in the source language or in the individual borrowed items, but the mere fact that they *are* borrowed.

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[18] *a ocărî/ocări, a oţărî/oţări/oţeri/oţeri, a posomorî/posomori, a târî/târâi, a zădărî/zădări, a zăvorî/zăvori* (Coteanu et al. 1998)

I argue that a low incidence and functional load of an available linguistic structure can lead to its exploitation as marker of loanwords, and that this is the case here: speakers wish to assert their own cultural identity by marking borrowed items in a way that is distinctive, but nevertheless compatible with their own linguistic system. Eventually, the respective structure looses its socio-linguistic implications and markedness, becoming a standard part of the language's inventory.

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APPENDIX: Etymologies of 112 verbs in *-ri*

aburi	to steam, become damp, cover with droplets of condensation
	< abur < Alb. *avull*
acoperi	to cover
	< Lat. ACO(O)PERIRE
acri	to turn sour, to go off
	< acru < Lat. ACRUS
adeveri	to confirm, prove
	< adevăr < Lat. AD+DE+VERUM
ăspri	to harden
	< aspru < Lat. ASPER
asupri	to oppress, exploit
	< asupra < Lat. AD+SUPRA
auri	to gild
	< aur < Lat. AURUM
batjocori	to make fun of, insult, assault, rape
	< batjocură < a bate + joc < Lat. BATT(U)ERE + JOCUS
bărbieri	to shave, brag
	< bărbier < Mod.Grk. *barbéris*
	< Med.Lat. BARBARIUS (cf. *barbă <* Lat. BARBA)
călări	to ride
	< călare < Lat. CABALLAREM
călători	to travel
	< călător < cale + -ător < Lat. CALLIS
căsători	to marry
	< căsător < casă + -ător < Lat. CASA
cântări	to weigh
	< cântar < Tc. *kantar*
conferi	to confer, grant; talk, discuss
	< Fr. *conférer* / It. *conferire*
copilări	to spend ones childhood
	< copil < Alb. *kopil*
cuceri	to conquer, subjugate, win
	< Lat. *CONQUERIRE <* CONQUIRERE
datori	to owe
	< dator < Lat. DEBITORIUS / Lat. DARE + -TOR
deferi	to defer
	< Fr. *déférer*

descoperi	to discover
	→ *acoperi*
despăduri	to disafforest
	→ *împăduri* (calqued on Fr. *déboiser*)
despături	to unfold
	→ *împături*
dogori	to burn, scorch
	< Bulg. *dogorja* / Scr. *dogoreti*
dori	to desire, want, wish
	< *dor* < CLat. DOLOR
dumeri	to understand, see the truth
	< Bulg. *domerja*
făuri	to make, construct, produce
	< *faur* < Lat. FABER
feri	to protect
	< Lat. FERIRE (?)
flecări	to chatter, make small talk
	< *fleac* < Germ. *Fleck*
frunzări	to leaf through
	< *frunză* < Lat. *FRONDIA < FRONS
fugări	to chase, run
	< *fugă* < Lat. FUGA
găuri	to puncture, make a hole
	< *gaură* < Lat. *CAVULA < CAVUS
gânguri	to babble, coo
	onomatopoeic ?
gospodări	to manage, keep house
	< *gospodar* < Bulg, Scr. *gospodar*
grădinări	to garden
	< Bulg. Scr. *gradina*; Germ. *Garten*; Alb. *gardh*
hoinări	to wander about
	< *(h)oină* < ?
huzuri	to live in plenty
	< *huzur* < Turk. *hüzur*
împăduri	to afforest, plant trees
	< *în+pâdure* < Lat. IN + PADULE
împătri	to quadruple
	< *în+patru* < Lat. IN + QUATTUOR
împături	to fold
	< *în+pături* < *pătura* < Lat. *PITTULA < PITTA
împietri	to petrify, turn to stone
	< *în+piatră* < Lat. IN + PETRA
împroprietări	to give land to
	< *în+proprietar* < Fr. *propriétaire* < Lat. PROPRIETARIUS
înăcri	to turn sour, to go off
	< *în+acru* < Lat. IN + ACRUS
înăspri	to harden
	< *în+aspru* < Lat. IN + ASPER
încuscri	to become related due to ones children's marriage
	< *în+cuscru* < Lat. IN + CONSOC(E)RUM
înflori	to blossom, make blossom, shine, embellish
	< Lat. INFLORIRE

înmărmuri	to turn to stone
	< *în+marmură* < Lat. IN + MARMOR
înmuguri	to bud, grow leaves
	< *în+mugur* < Alb. *mugull*
înnegri	to blacken
	→ *negri*
înrîuri	to influence
	calque on Fr. *influer* / Germ. *beeinflussen*
însori	to become sunny, to sunbathe
	< *în+soare* < Lat. IN + SOL
înstări	to enrich, get rich
	< *în+stare* < Lat. IN + STARE
întări	to harden, confirm
	< *în+tare* < Lat. IN + TALEM
întineri	to rejuvenate
	< *în+tânăr* < Lat. IN + TENER
întipări	to imprint
	→ *tipări*
întrezări	to catch a glimpse, foresee
	calqued on Fr. *entrevoir*
lămuri	to explain, clear up
	< *lamură* < Lat. *LAM(I)NULA < LAMINA
lăstări	to sprout
	< *lăstar* < Bulg. *lastar*
licări	to glitter, glimmer
	< ?
maimuțări	to ape, mimic
	< *maimuță* < ModGk. *maimú* / Turk. *maymun*
măcelări	to butcher, massacre
	< *măcelar* < Lat. MACELLARIUS
măiestri	to master, be good at
	< *măiestru* < Lat. MAGISTER
mări	to increase
	< *mare* < Lat. MARIS (MAS)
meșteri	to make (with ones hands)
	< *meșter* < Germ. *Meister* / Hung. *mester*
meșteșugări	to work in ones trade
	< *meșteșug* < Hung. *mesterség*
mândri	to pride oneself
	< *mândru* < Slav. *mondrŭ*
murdări	to soil, stain, make dirty
	< *murdar* < Turk. *murdar*
muri	to die
	< Lat. MORIRI
năzări	to occur, dawn upon
	< Slav. *nazirati*
nedumeri	to puzzle, perplex
	→ *dumeri*
negri	to blacken
	< *negru* < Lat. NIGER
negustori	to trade
	< *negustor* < Lat. NEGOTIATORIUS

nemuri	to immortalize
	→ *muri*
nimeri	to hit
	< Bulg. *nameria*
nutri	to nourish
	< Lat. NUTRIRE
oferi	to offer
	< It. *offerire*
opări	to scald, boil
	< Bulg. oparja / Scr. opariti
opri	to stop
	< Slav. *oprěti*
păstori	to graze
	< *păstor* < Lat. PASTOR
pieri	to perish
	< Lat. PERIRE
pângări	to defile
	< *păgân* < Lat. PAGANUS
plugări	to plough
	< *plug* < Germ. *Pflug* / Slav. *plugŭ*
plutări	to raft
	< *plută* < Bulg. *pluta*
ponegri	to slander
	→ *negri*
popri	to stop, hinder
	< Slav. *poprěti*
potlogări	to swindle, cheat
	< *potlog* < Bulg. Scr. *podlog*
preamări	to extol, glorify
	→ *mări*
răcori	to cool down
	< *răcoare* < *rece* < Lat. RECENS
rări	to thin out
	< *rar* < Lat. RARUS
răsări	to rise, come up
	→ *sări*
recăsători	to remarry
	→ *căsători*
recuceri	to reconquer, win back
	→ *cuceri*
redescoperi	to rediscover
	→ *acoperi*
referi	to report, lecture; refer
	< Germ. *referieren* / Fr. *référer*
retipări	to reprint
	→ *tipări*
sărbători	to celebrate
	< *serba* < Lat. SERVARE
sări	to jump
	< Lat. SALIRE
slugări	to serve, be servile
	< *slugă* < Bulg. *sluga*

smeri	to be humble
	< Slav. *sŭmĕriti*
spori	to increase
	< *spor* < Bulg. *spor*
stingheri	to disturb, hinder, embarrass
	< *stingher* < ?
suferi	to suffer
	< VLat. SUFFERIRE < CLat. SUFFERRE
şcolări	to study
	< *şcoală* < Lat. SCHOLA
şmecheri	to cheat, fool, hoax
	< *şmecher* < Germ. *Schmecker*
ştrengări	to play a prank
	< *ştreang* < Germ. *Strang*
tipări	to print
	< Slav. *tiparŭ*
tâlhări	to rob, to lead a robber's life
	< *tâlhar* < ?
tresări	to start (from surprise)
	→ *sări* (half borrowed from, half calqued on Fr. *tresaillir*)
umbri	to shade
	< *umbră* < Lat. UMBRA
urmări	to follow
	< *urmă* < Lat. *ORMA
văicări	to lament
	< *vai* < Lat. VAE
zări	to catch sight of, come into view, appear
	< *zare* < Slav. *zarja*
zgîndări	to irritate, annoy, rile
	< ?
zori	to hurry
	< *zor* < Turk. *zor* "effort"

ON THE RUMANIAN *kt > pt* SHIFT
CODA LENITION OR MELODIC CONTAMINATION?

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1. *How to describe the phenomenon?*

The phenomenon we are dealing with in this paper has been very debated in studies on the Rumanian diachrony. It is commonly described as the regular shift of a velar into a labial before *t*, (*d*,) *s*, *n*. Relevant data in Table 1:

	Latin	Rumanian	*gloss*
kt > pt, dialectally **ft**	lucta	luptă	*struggle*
	pectu	piept	*chest*
	octo	opt	*eight*
	lactem	lapte	*milk*
(gd > bd)	*rig(i)dare[1]	răbda	*to bear*
gn (> bn) > mn	pugnu	pumn	*fist*
	lignum	lemn	*wood*
	signum	semn	*sign*
	cognatum	cumnat	*brother in law*
ks > ps	coxa	coapsă	*thigh*

Table 1: *Latin-Rumanian labialisations*[2]

This change has been active between the 3rd and the 6th centuries A.D. The beginning of the period is fixed by the fact that other Romance languages do not attest it, but every Rumanian dialect displays it: Latin *nocte* ~ Daco-Rumanian and Arumanian *noapte*; ~ Megleorumanian *noapti / noafti*, ~ Istrorumanian *nopte*. The end of the period is given by the fact that Slavic loans are not affected by the change. (For further details, see for instance Sala 1976: 24).

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[1] According to Meyer-Lübke (1935): **regere+idare*, but **rab(i)dare* according to Puşcariu (1937). This is the only input in proto-Rumanian.
[2] Data from Sala (1976: 24), Nandris (1963: 155), Densusianu (1975: 486).

1.1   *About the substratum*

Similar phenomena - a velar becoming a labial before a coronal - also occur in Albanian, Dalmatian and Greek: in Latin loans in Albanian (*trocta > troftë*, *lucta > luftë*, *coxa > cofshë*, *metaxa > mëndafshë*) except after an anterior vowel (Nandris 1963: 261, Rosetti 1965: 232, Densusianu 1975: 49); in Vegliotian Dalmatian (*octo > guapto, coxa > kopsa* quoted by Densusianu 1975: 49); in Greek settlements in the South of Italy (*octo > ofto*; cf. Nandris 1956: 232, 1963, Rosetti 1965). Most of authors concluded to a possible influence of the substratum: Nandris (1963: 259, 265) writes: "les évolutions *cs>ps*, *ct>pt*, *gd>bd* (…) révèlent indirectement certaines caractéristiques du système phonétique préroman en Dacie". (See also Densusianu 1975: 48-50). Rosetti (1956: 232) argues for a "caractéristique de la péninsule balkanique". On the other hand, Sala (1976: 25, 171, 185) rejects such a hypothesis.

One cannot but admit that the geographical coverage of the phenomena begs the question. The fact that very similar phenomena happen in different languages in one geographical area – Romance, as well as Greek or in Albanian loans, whereas they are rare anywhere else, forbids to rule out the possibility of a substratum influence. However, there is no direct information about Illyrian, by which any substratum influence could be evaluated. Moreover, there is no possible control on the nature of the impact of a substratum in phonology. Finally, accepting a substratum influence does not exempt from a phonological explanation.

1.2   *Two possible descriptions*

At first view, any velar becomes a labial before a heterosyllabic coronal, as summed up under (1)[3]:

(1)   K>P/_.T

The velar-to-labial shift (henceforth K>P) has indeed occurred before a coronal, and only before a coronal. This is how most of the authors (but see Nandris 1963, 1971, section 2.3) have described the phenomenon. This correctly covers the facts, and yet the given description of the context might be *too tight*, excluding some contexts which are possible even if not empirically attested.

In this paper, we assume that the change *might have occurred before any hetero-syllabic consonant,* and not only before coronals. This description is formalized under (2):

(2)   K>P/_.C

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[3] K stands for any velar, P for a labial of the same manner of articulation as the velar and T for [s], [t] or [n].

The phenomenon can be described this way because of a phonotactic Latin gap. In Latin, the only consonants that occur as second part of a cluster whose first element is a velar were coronals: after *k* and *g*, the only possible consonants were *l*, *r*, *n*, *t*, (*d*) and *s*. The two liquids were part of tautosyllabic clusters *kr*, *gr*, *kl*, *gl*; the other three consonants were part of heterosyllabic clusters *gn*, *kt*, (*gd*) and *ks*[4]. The same phonotactic restrictions were observed for clusters whose first element is the labial *p*, and most Indo-European languages display this phonotactic constraints: hence *kt*, *pt*, *gn*, *kn* (>*gn* in latin) but *tk, *kp, *pk in Classical Greek, Common Germanic, Latin.

Secondary clusters that had appeared by prefixations have evolved in the same way: if the second element of the cluster was not a coronal, the cluster became a geminate: *op-(i)ficīna > officīna*, *ad-ferō > afferō*, *ec-ferō > efferō* (cf. Niederman 1991: 132-137; 142-143).

In sum, the only inherited heterosyllabic clusters with a velar as their first member were *kt*, *kn*, *gn* in Latin. Although interesting, the issue of why no other consonant may occur as a second member of a heterosyllabic cluster is not relevant here.

What is important in the analysis is that Latin velars were *de facto* not followed by any consonant other than coronals. And this situation prevailed during the period when K changed to P.

Hence nothing proves that the shift would not have occurred before other heterosyllabic consonants, if such a situation had arisen. In sum, the Late-Latin / Proto-Rumanian phonotactic gap enables two different descriptions, formulated in (3):

(3)   "tight" (usual) description: K>P/_.T
        "broad" (here proposed) one: K>P/_.C

None of the two formulations can be rejected by reference to *facts* because of the Latin phonotactic restrictions.

1.3   *Two possible analyses: melodic influence or weakening.*

At first sight one might wonder what the benefits of the new formulation given in (3) are, since both formulas prove to be empirically right. And yet, although they are equivalent from a descriptive point of view, they are not equivalent regarding the analysis that they imply. Indeed, because of the "K>P/_.T" formulation, authors have searched for the link that may exist between the velar to labial change and the following coronal (see section 3). They offer different analyses, all based on the idea that the K>P change has to be explained by the segmental material of the following consonant: a coronal (or "anterior consonant", as labeled by the reviewed authors): assimilation for most of them,

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[4] One might argue that *Ks* is tautosyllabic, and it was maybe in Latin, but the parallel behaviours of *Kt* and *Ks* in Rumanian tend to posit the same syllabification for both in this language.

dissimilation (or differentiation) according to Nandris (1963, 1971). These proposals will be evaluated in section 3.

On the contrary, in the "broad" formulation that we are exploring here, coronality can't have played any role in the change since we postulate that the same change might have happened before any consonant, should Latin have displayed any other consonant but coronals as the second member of a heterosyllabic cluster.

From this perspective, it is not conceivable anymore to explain the K>P change by the coronality of the following consonant, i.e. by its melodic properties.

We aim at showing that this K>P shift is a case of lenition due to the coda position, which is a notoriously weak position. In other words, the hypothesis we explore postulates that the only role of the coronal consonant was to place K in a weak position, and that this segment did not bring any segmental material: the change of Rumanian velars to labials is purely a loss of material.

2.   *Coda weakness in world languages*

The fact that consonants are more or less subject to weakening processes depending on their position in the word is something known since the 19th century and usually accepted in the literature: implosive position (= preconsonantal/coda) and intervocalic position are recorded to be weaker than word-initial and post-consonantal positions (Bourciez 1926, Pope 1952, Bec 1970). This contrast between strong and weak position was given a theoretical account by Ségéral & Scheer (2001b), who recorded them in non-Indo-European languages and proposed the contrast to be universal: this theory gives the same representation for the two strong contexts, but two different representations (hence different behaviors) for the two weak contexts: coda and intervocalic. And indeed, no one would hold that a weakening process occurring in intervocalic position has to occur in coda too, or the reverse[5]. Hence, the fact that no weakening is recorded intervocalically in Rumanian diachrony is not in contradiction with the interpretation we are going to develop now: the Rumanian K>P shift is coda weakening, which has to be compared with the shifts exhibited by the same Latin cluster in other Romance languages.

2.1   *Coda weakness in the KT>PT shift*

The K>P shift only occurred in coda position (or implosive position): in every other position, whether strong (word initial) or weak (intervocalic position), *k* remained *k*[6], as shown in Table 2 below.

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[5] Cf. Seigneur-Froli (2001) for an independent argumentation in favour of a graduation between the two weak positions: the coda may be weaker than the intervocalic.

[6] The fate of the voiced velar is less clear: *g* remained *g* in strong positions, i.e., word initially and after a heterosyllabic consonant but has received different treatments in intervocalic position; either it remained *g* (*fuga > fugă*) or it weakened (*ego > eu, magis > mai*) (Nandris 1963: 156).

Syllabl.context	Latin	Rumanian	*gloss*	Latin	Rumanian	*gloss*
#_	costa	coastă	*hill, rib*	cum	cu	*with*
_#	joc(u)	joc	*game*	lac(u)	lac	*lake*
V_V[7]	picula	păcură	*peach*	secale	secară	*secară*
(#)_sonorant	clave	cheie	*key*	acru	acru	*sour*

Table 2: *Latin-Rumanian* k *diachrony in other contexts*

The positional (syllabic) aspect of the phenomenon did not escape the authors. The fact that the shift only occurs in heterosyllabic clusters is indeed obvious to all of them: while they postulate a melodic influence of the following coronal, none of them, however, is surprised by the fact that the shift did not occur before *r* nor *l*, while they are coronal too. The heterosyllabicity condition is obvious for every author and most often not even made explicit.

The idea itself that the K>P shift is linked with the weakness of its position is not, to a certain extent, new either: none of the reviewed authors asks why the (melodically influenced) shift segment is the first one rather than the second one. From a purely "melodic" perspective, both an intolerance to a certain configuration (dissimilation) - either new or influenced by the substratum, and an exchange of elements from two adjacent segments (assimilation) would likely change indifferently the first or the second segment. The relevance of the weak coda position in the shift is obvious.

In sum, there is no doubt on the relevance of the weakness of the coda position, and the absence of an explicit reference to it in the literature confirms its evidence. However, although relevant, this fact as been so far neglected. In a certain way, the obviousness of the weak coda position has hidden its crucial part in the shift in most studies.

2.2   *Coda weakening in Romance languages and in Rumanian*

Sala (1976: 22sq) points out very explicitly the importance of the weak position in the Rumanian KT>PT shift. He compares it with the development of the same Latin cluster in other Romance languages.

He considers Rumanian *opt*, with Italian *otto*, Portugese *oito*, French [ɥit] (< Latin *octo*) as different manifestations of the weakness of the weakness of the first consonant of heterosyllabic clusters ("implosive position"), and links those shifts with the weakness of this position, referring to both the informative value ("moindre quantité d'information", Malmberg 1971: 141-143) and the phonetic one (Straka 1970: 22). He concludes : "En roumain tout comme dans les langues romanes occidentales a eu lieu un processus phonologique de réduction des distinctions en position implosive" (Sala 1976: 185). Thus, the importance of the weakness of the position does not escape him. But in his view, the Rumanian shift is a partial assimilation favoured by the weakness of the position rather than a weakening process: "phénomène d'assimilation partielle, tant du point de vue articulatoire que du point de vue acoustique" (Sala 1976: 24).

We follow him on the importance of the weakness of the "implosive" position. We even radicalize it: this shift, rather than being a melodic assimilation which would be made easier by the weak coda position, is nothing else but a weakening. Before exploring this hypothesis, let us notice that Rumanian's behavior of consonants in coda conforms to the behaviour which is attested in both Romance languages and world languages, by displaying lenitions in Coda position. Consider the following correspondences: Latin ***adm**issarius* > Rumanian *ar**m**ăsar*, standard Rumanian *a**d**vocat*, *logo**dn**ă*, *clopo**tn**iţă*, *răsa**dn**iţă* > dialectal *ar**v**ocat*, *logo**rn**ă*, *clopo**rn**iţă*, *răsa**ln**iţă* respectively. Sala gives them as examples of dissimilations. What kind of dissimilation is not clear. Admitting the homorganicity of the coronal clusters may have produces the shift of *d* and *t* to a lateral *l* or a trill *r* in the concerned forms, which common feature can have produced the shift in *dm* and *dv* clusters (*ar**m**ăsar*, *a**d**vocat*)? The shift of a coronal plosive to a coronal lateral or trill is more likely an instance of coda lenition in all this examples.

Section 2 showed that heterosyllabicity indeed is a necessary condition for the K>P shift, through the contrast between tautosyllabic and heterosyllabic clusters. It also showed that Rumanian conforms with other Romance and world languages by displaying consonant lenitions in coda position. While the weakness of the position is implied, there is no empirical evidence for the coronal influence, as shown in section 1, because of the proto-Rumanian/Latin phonotactic gap. But this gap also forbids to reject it. In sum, Rumanian facts cannot help to decide between the context given in (2): before heterosyllabic coronal, which involves melody and syllabic position, and the one in (3): before heterosyllabic consonant, which only involves the syllabic position. Let us examine the melodic hypothesis.

3.   *Melodic hypothesis*

Considering the context /_.T (before a heterosyllabic coronal), the authors have tried to answer to the following question: *What in* t*,* d*,* s *and* n *did provoke the shift from K to P?*

3.1   *Underspecification and unlikely coronal influence*

Most authors postulated a regressive assimilative influence by the coronal on the velar so that it becomes a labial. Thus Sala (1976: 24), referring to Jakobson (1939) assumes:

> "Nous sommes en présence d'un phénomène d'assimilation partielle, tant d'un point de vue articulatoire que du point de vue acoustique : *les labiales sont plus proches des dentales*[7] que les vélaires".

And Rosetti (1965: 232) writes:

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[7] The emphasis is ours.

"Roman Jakobson et dernièrement Martinet ont montré que, du point de vue acoustique, les occlusives vélaires et labiales ont en commun un résonateur long et indivis tandis que pour les palatales et les dentales il se forme dans l'orifice buccal deux résonateurs. *k* est une consonne grave postérieure, tandis que *t* et *s* sont des consonnes aiguës antérieures. Le passage de *k* à *p* se fait donc par assimilation partielle, la consonne grave postérieure conservant sa gravité tout *en devenant antérieure*"[8].

In other words, according to Rosetti (1965) and Sala (1976) the labial kept the velar's gravity, but gained the dentals anteriority.

The fact that labials and velars have some shared feature is not dubious, be it gravity in an acoustic view (cf., e.g., Ladefoged 1997), or a common prime in monovalent theories (cf. below).

What is dubious on the other hand is the supposed melodic influence by a coronal segment on another segment. Indeed, coronals are the most often assimilated consonants (Kiparski 1985: 97-98), whereas labials and dorsals hardly ever assimilate to coronals (Iverson & Kim 1987: 186, also Rice 1996: 494-495, Paradis & Prunet 1991: 9). It is worth noticing that a phenomenon like Italian *pt>tt*, *kt>tt* (Lat. *septem>t͡ʃette*, Lat. *factem>fatto*), which could appear to be an assimilation by the coronal, is generally represented in recent studies (for instance Szigetvári 1994) as the occupation of an empty segmental spot by the melodic material of the second consonant, and not as an assimilation by the first consonant of the segmental material of the following coronal.

Many studies concluded that coronal's inability to assimilate other segments follows from the fact that they are underspecified (For other arguments in favor of this view cf. Paradis & Prunet 1991 and references therein, Hall 1997 and references therein, Lombardi 2003 and references therein, Pagliano 2003: 119-143 and references therein). An inventory of neutralizations in languages confirms the thesis of coronals underspecification. (See for instance, De Lacy 2002: 268, "the output of neutralization is shown to always be glottals or coronals, never labials or dorsals".)

The notorious underspecification of coronals leads some linguists in monovalent theories of segmental content (Particle Phonology (Schane 1984), Government Phonology (Kaye et al. 1985, 1990), Dependency Phonology (Anderson & Ewen 1987)) to propose that there is no prime of the coronality by contrast with labiality or velarity (Szigetvári 1994, Scheer 1996). Despite their differences, most of the proposals hold that all the primes included in *t* are also in *p* and *k* (while the reverse is obviously not true). If there is no prime of coronality, a coronal cannot give any segmental material to a velar.

In view of the general data and recent research, postulating a melodic influence of the following coronal in the K>P shift is hard to support.

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[8] The emphasis is ours.

3.2   *Nandris (1963, 1971):* K > P *before anterior consonant*

That a melodic influence would have come into the process is even unlikely if Nandris (1971, 1963)'s marginal proposal is right. He does not limit the Rumanian K>P shift to the context "before coronal". Indeed, he puts the treatment of KT>PT in relation with Rumanian output P of Latin Kw[9] (Table 3) which is usually handled separately[10].

kw>p			gw>b		
Latin	Rumanian	*gloss*	Latin	Rumanian	*gloss*
aqua	apă	*water*	lingua	limbă	*langauge*
quattuor	patru	*four*	*inter(ro)guare	întreba	*to ask*

Table 3: *Latin* Kw > *Rumanian* P

Nandris (1963: 264) writes : "*kw* et *gw* étant des groupes insolites, et par conséquent la consonne implosive *k*, *g*, étant menacée d'assimilation, elle a été transformée en labiale, comme dans *cs*, *ct*, (*gd*), *gn*. En ce qui concerne *w*, son sort a été celui de *w* plus voyelle : il a disparu ultérieurement". Thus according to him, the Kw>P change is to understand as follows: Kw>Pw>P. Then *w* disappeared, as it did in all contexts in Rumanian. So this shift exactly parallels the KT > PT shift. We summarize below in (4):

(4)   Kw   >   K.W   >   P.W
        =   K.T   >   P.T

In sum, Nandris (1963) assumes that Kw>P and KT>PT are two manifestations of the same phenomenon. This supposes an account of the Kw>P change quite different from what is usually assumed. While P is generally considered as the result of a strengthening of the segment *w* (cf for instance Densusianu 1975, Rosetti 1965), Nandris assumes that P is the output of the segment K[11]. In other words, he suggests that the melodic contents of the new P originates in the primary velarity, while the other authors, whatever the details be, claim the labial plosive to be the melodic descendant of the labiovelar appendix.

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[9] Although there is not general accordance on the reason why the shift is only attested before the vowel *a*, most authors agree that *a* did not have any effect on it. The issue may be diachronic: *kw* had been eliminated before other vowels by shifting to *k*. The *w* appendix was deleted before front vowel, and merged with following back vowel (see Seigneur-Froli 2002 for argumentation and reference on this issue).

[10] For instance Sala (1976: 49-50, 171-185), Densusianu (1975: 411-414), Rosetti (1965: 231-232).

[11] In both hypothesis a change from the monosegment *k*[w] to a heterosyllabic *k.w* is postulated and the fact that the *p* development of Latin *kw* did sporadically not occur word-initially, for instance in Latin *kwale* > Rumanian *care*, is a *a contrario* argument in favour of this postulation.

If, as Nandris (1963, 1971) proposes, those changes are one single phenomenon[12], the melodic influence of the following consonant in the K>P shift is very dubious. If we follow him on this issue, we cannot accept the melodic side of his proposal: indeed, it is difficult to see which common property shared by coronals and *w* (anteriority according to him) is able to have any common influence on the preceding segment.

Be Nandris right or wrong on the question if Kw>P and KT>PT are two independent phenomena or one phenomenon, in both cases proposals implying a coronal influence in the KT>PT shift are not convincing, as was shown in section 3.1.

The heterosyllabicity condition is supposed in all accounts for the K>P Rumanian shift, and the relevance of the weakness of the coda position is recognized in all the literature concerning this shift. The question then was: is the weakness sufficient in order to explain the shift or is there any melodic supply of the next coronal? We gave good supports against the last one. Hence only the weakness of the (coda) position is involved in the shift. Before exploring the consequences of such an assertion, an issue is still to be debated.

3.3   *On final "coda": vocalic arguments in favor of final onset*

The attentive reader may have noticed that a seemingly deciding context, namely the word final coda, has not yet been put under focus. Indeed, according to our proposal, if the K>P shift is lenition, then it has nothing to do with following consonants, it is only influenced by its position as a coda. We would then expect the same phenomenon to occur in *every* coda position existing in Rumanian, including word-final coda. Yet such a phenomenon is not attested: word-final velars due to vocalic the Vulgar Latin's apocope appear in Rumanian as velars and not as labials (data from Nandris 1963: 109; 151):

(p > p /_#)			**k > k /_#**			**g > g /_#**		
Latin	Rum.	*gloss*	Latin	Rum.	*gloss*	Latin	Rum.	*gloss*
lup(u)	lup	*wolf*	joc(u)	joc	*game*	frig(u)	frig	*cold*
cap(ut)	cap	*head*	lac(u)	lac	*lake*	long(u)	lung	*long*
crep(o	crăp	*to crack*	sicc(u)	sec	*empty, dry*	jug(u)	jug	*yoke*

Table 4: *Latin final "coda" in Rumanian*

Some K ~ P alternations are attested in this position: Nandris (1963: 156) refering to Philippide (1927: 182-183) gives *cotrog ~ cotrob, cârciog ~ cârciob* (also *coroagă ~ corobană*). But the presence of another velar in these words favors a dissimilation hypothesis, as proposed by Nandris (1963). Note that dissimilated the segment is the one which is in weak positions (word-final and intervocalic). But it may be unsafe to hold a hypothesis on so sporadic examples.

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[12] See Seigneur-Froli (2002) for arguments in favour of a unified treatment of Kw and KT in Rumanian.

We have to admit that the K>P shift has occurred only in word-internal codas. At first sight, this fact counters our proposal. This, however, is not the case. Actually, internal closed syllables and final closed syllables are known to have different syllabic behavior in some languages. Two types of languages are distinguished on this basis:

- Type α - Languages exhibiting the same behavior at the end of words and in internal codas.
- Type β - Languages exhibiting different behaviors in the two "closed syllables": in that case, the phenomenon occurs word-internally and not at the end of words.
- The third logically conceivable type, (type γ) in which a phenomenon occurs at the end of words but not word internally, is not attested.

The empirical opposition between type α and type β, and the fact that no language of the type γ is ever attested, have led theoreticians to establish a parameter among final "closed syllables": in some languages, they behave as the first consonant of a syllable, that is, as an onset; everything happens as if this surface "coda" was actually the onset of a following syllable, whose nucleus lacks segmental material. Famous cases are shortening in word-internal closed syllables (but not word final closed syllable), as in English for instance, or the fact that some consonant occurring word-finally do not occur before a consonant word-internally (that is in real coda position).

In order to account for these facts, final consonants have been proposed to be the onsets of a following empty nucleus (Kaye et al. 1990). The last consonant of a word in type β languages is not in a coda position, rather in an onset.

Since k at the end of Rumanian words has not undergone the same shift as it has word-internally, it behaved as an onset and not as a coda. Rumanian therefore belongs (and belonged at the k>p shift period) to type β languages. Two separate phenomenologies confirm it.

The first one is the phonotactic freedom at the end of Rumanian words: indeed, the losing of word-final Latin vowel created some sequences of two stops (*pt*: *opt*), two sonorants (*mn*: *pumn*) or a sonorant followed by a stop (*nt*: *vânt*; *ng*: *lung)*. Then Rumanian exhibits the same clusters at the end of words, as word-internally.

The second evidence is given by the development of Latin short stressed ĕ in proto-Rumanian: ĕ did not behave in word-final "closed" syllables as it did in genuine (internal) closed syllables, rather as if it was in open syllables, as shown in table 5.

open syllable			word-internal **closed syllable**			word-final "**closed syllab**."		
Latin	Rum.	*gloss*	Latin	Rum.	*gloss*	Latin	Rum.	*gloss*
pĕdica	piedică	*obstacle*	lĕmpu	limp	*clear*	mĕdiu	miez	*pulp*
hĕri	ieri	*yesterday*	vĕrso	vărs	*pour*	fĕrrum	fier	*iron*
pĕtrae	pietre	*stone*	(*but* pĕctus	piept	*chest*)			
regular diphthongization			no regular diphthongization			regular **diphthongization**		

Table 5: *Rumanian diphthongization of stressed* ĕ[13].

Latin short stressed *ĕ* regularly diphthongized to *je* in open syllables, whereas it regularly did not[14] in word-internal closed syllables. Crucially, in word-final "closed" syllable, the diphthongization occurred regularly. The contrast with genuine (internal) closed-syllable and the parallel with open syllable confirm that the apparent word-final "coda" is in fact an onset. Rumanian is a type β language.

In Rumanian, the word-final consonant is not in a genuine coda. It is rather in the onset. This explains why the K>P shift did not occur in this position. Hence we can definitely hold that this shift occurred in every coda position.

4.   *From weakness to weakening*
We hold that the Rumanian K>P shift is a weakening without any melodic supply. If our Rumanian analysis is correct, it implies the adoption of a theoretical framework in which a change of place of articulation can be a process of lenition.

4.1   *Underspecification and unlikely coronal influence*
The most immediate objection against our proposal may be that this shift exhibits a change of place of articulation, while only shifts in manner of articulation are usually considered as instances of lenitions: from stops to fricatives (eg. *b> β* or *v*), from stops to sonorants (eg. *d>r* or *l*), from voiceless to voiced consonants (eg. *p>b*), etc.

As long as these shifts are envisioned as a loss of articulatory strength, considering the K > P shift as a lenition is not possible, since the difference between a velar and a labial cannot be a difference in the articulatory strength, both consonants being of the same manner of articulation, i.e., stops.

But recent research on segmental composition suggested for independent reasons that segments are made of monovalent primes; among them we can quote Particle Phonology (Schane 1984), Government Phonology (Kaye et al. 1985, 1990) or Dependency Phonology (Anderson & Ewen 1987). In these frameworks, lenition is defined as a loss of one or more primes (cf. Harris 1994). For instance, lenition from *k* to *x* consists, in such a monovalent theory, in the loss of the "stop"

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[13] No diphtongization of short stressed *ŏ* has occured in Rumanian.

[14] See however Densusianu (1975:393) who holds a context-free diphtongization, so (here supposed abnormally) diphtongized forms such as *pĕctus>piept* would represent the regular development, and non-diphtongized forms such as *vĕrso> vărs* would be explained by analogy with unstressed forms.

prime (most often represented as /ʔ/, but its representation does not matter in our argument). Lenition from *t* to *r* is due to the loss of the "obstruent" prime (/h/) and the "glottal" one (/ʔ/).

In sum, modern theoretical perspectives enable us to treat the K>P shift as a case of lenition. Indeed, if lenition is defined as a loss of melodic material, there is no *a priori* reason why this loss could concern some primes to the exclusion of others. So lenition can also be thought of as the loss of a prime which is responsible for a place of articulation too. It is worth noticing that debuccalisation is also identified as a lenition process (Harris & Kaye 1990), while it involves a change of place of articulation. So the idea that a change in place is an instance of lenition is not absolutely isolated. The only innovation consists in the proposal that a shift from an oral place to another oral place may also be a lenition. This is possible in a conception considering internal structure of segments as primes.

Another possible objection may be that our proposal implies that the whole melodic material of the labial is part of the velar, that is, all the content of /p/ is in /k/ and there is no specific prime responsible for labiality.

Although this was not proposed for labiality, the proposal that some "place feature" has no specific prime was already made: thus Szigetvári (1994) and Scheer (1996) have proposed there is no specific prime in *t*. We roughly formulize it as in (5).

(5) $p = t + \alpha$

This means that there is no specific prime responsible for coronality, and that all the melodic material content in *t* is content in *p*.

In the same way, we postulate that all the segmental material which is in *p* is in *k*, as under (6):

(6) $k = p + \beta$

Although the proposal *k = p plus something*, laying on the Rumanian phenomenology, might appear rash at first sight, it makes the following prediction (7), which seems to be unfalsified:

(7)   No lenition can shift *p* to *k*.

In other words, a P>K shift will not be observable without a melodic gain[15]. Let us give an example: since coronals are not able to give any material to

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[15] Note that the shift *p, b, m, f, v >* respectively *k'/č, g', n'/ŋ', h, j*, which occurs in lots of daco-Rumanian and Southern dialects (e.g. Rosetti 1965: 210), is not in contradiction with this assumption: in that case, the shift only occured before a front vowel or a glide: here the melodic supply is obvious. See Scheer & Ségéral (2001a) for their account of similar phenomena in Italian dialects and in French diachrony.

adjacent segments and since the coda is a weak position, then a direct change such as *pt > kt* is predicted not to occur in any language.

One can argue that lots of analyses have required so far a specific prime for labiality. And yet, it is notable that phenomenologies involving coronal segments can be taken into account without any specific coronal feature/prime in recent works, while it seemed to be unavoidable in the past. Then, the same possibility may be discovered for labials: further works may show that the additional prime/s specific to labial segment can be ridden of analyses which so far postulated it/them. What is the nature of the prime(s) symbolized here by β? For the time being, we are not able to answer this question, and further researches remain to be done.

4.2 *Philological contribution*

The proposal that the K>P Rumanian shift a no more than a weakening in coda position has consequences on philological Rumanian inquiries.

Densusianu, Candrea-Hecht (1902) quoted by Nandris (1963) and Pfister (1960) quoted by Rosetti (1965) propose the following steps for the KT>PT Rumanian shift:

(8)   *kt > *xt > *ht > * ft > pt*.

Densusianu (1975: 415) gives two reasons for assuming such steps. It seems to be more likely that the velar to labial shift occurred in a fricative stage of the consonant, because the place of articulation is assumed to be less noticeable, on the auditory as well as on the articulatory levels. Moreover, some of the intermediate stages are attested in some Rumanian dialects as well as in some other unrelated languages (See Table 6 below). This intermediate fricative stage is "not necessary" according to Nandris (1963: 260), "superflu" according to Rosetti (1965:231). We harden their position, by assuming that they are not even possible. While processes such as *p > f, k > x* in coda position are usual (for example Modern Greek *epta > efta* "seven", *okto > oxto* "height") and conform to the weakening tendency in this position, the reverse way, that is, from *f* to *p* in coda position, requires a strengthening which is not compatible with the behavior of the same consonant *f* in other positions in Rumanian.

Crucially, although the first supposed stages are indeed attested, the last one, i.e. * *ft > pt* postulated in (8) is not recorded.

Latin ~ Rum.	Latin ~ Megleo-Rum.	Anc. ~ Mod. Greek	**No language**
kt (>?) > pt	kt (>?) > ft / ht	kt > xt	***ft >pt**

Table 6: *Attested* versus *non-attested diachronic shifts*.

Let us point at the fact that a strengthening, although improbable in this position, is not rejected *a priori*. As Ségéral & Scheer (2001b) argue, the positional strength is relative: no strengthening can be observed in a weak position

if it is not also observed in strong positions. This means that *f* cannot be strengthened in a coda position if it is not also strengthened in strong positions, namely word-initially (#_) and post-coda position (C._). Rumanian *f* remained a fricative in every position. This rules out the hypothesis of a fricative stage before the labial stop.

Therefore the dialectal Rumanian *ft* reflex of Latin *kt* is not to be analyzed as an intermediate stage in the supposed *kt* >(...) *ft* > *pt* postulated in (8). It is rather the next stage of the *kt* > *pt* lenition, as described in (9):

(9)   *kt* > *pt* > *ft*

5.   *Conclusion*

Although the melodic influence hypothesis that is usually proposed for the K>P Rumanian shift cannot be definitely disproved, the supposed coronal influence is highly improbable. We submit another possible account for it: a weakening of the velar due to its weak position as a coda, without any melodic material supply.

Showing the necessary part of the weakening and of the syllable position in this evolution invalidates the intermediate fricative stages sometimes postulated for the Rumanian K>P development. The dialectally attested fricative *f* reflex of Latin *k* cannot be anything else than a later development.

In addition to this philological and dialectal contribution, this proposal opens up onto new questions concerning the segmental structure. It can arouse according to modern conceptions of internal structure of segments as primes, and it raises their prospect: if lenition is a loss of one or several primes, there is no scientific reason why this loss would concern only primes responsible for "manner" shifts or debuccalization to the exclusion of primes responsible for "place" shifts. Phenomenologies involving coronal segments are in recent works accounted for without any specific coronal feature/prime, while it seemed to be unavoidable in the past. The same research must be done on labiality in order to enforce the proposal that we here formulated very roughly by *p = k + something*. Will this proposal resist to a confrontation with specific proposals concerning the composition of segments and the phenomenologies that they account for? What is the segmental material which is in *k* and not in *p*? Our analysis of the Rumanian phenomenology lead us to ask those questions. They remain to be answered by studies on other languages and by the comparison with specific theories of internal structure of segments.

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EVICENCE FOR A CUE-BASED THEORY OF LANGUAGE CHANGE AND LANGUAGE ACQUISITION
THE NULL OBJECT IN BRAZILIAN PORTUGUESE[*]

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1.   *Introduction*

We focus here on the grammatical change that occurred in Brazilian Portuguese (BP) in object constructions where the loss of the third person clitic gave way to a null element in that position. We also examine the acquisition of the null category. The aim of this paper is to show that a feature that was relevant for language change is still operative in language acquisition, which should empirically confirm its importance for the change and its cue-like character.

One striking aspect of the BP null object is that it occurs more freely when the antecedent has a [-animate] feature. In fact, this feature has been shown to drive the diachronic change. Our data suggest that the positive evidence for the child changed through time - she heard more and more cases of null elements in a structure in which a neuter clitic used to be allowed by the adult grammar in very low referential contexts and, as a consequence, extended the null possibility to contexts where the clitic antecedent also had the [+ specific, - animate] features. Our hypothesis is that if such features still play a role in the acquisition of the object, then this shows their cue-like character for the development of grammar. Diachronic data from comedies and light plays raging from the XVIth to the XXth centuries were examined (see Cyrino, 1997), as well as the spontaneous speech production of two children acquiring BP, aged 1;8 to 3;7.

There are some points we want to highlight in this study. The first one is to show how a cue can be operative after a change occurred in a language, thus adding evidence for cue-based theories of change and acquisition. Second, we will show how change in frequency can become an important factor for language change through the process of language acquisition.

We sustain here that there is a diachronic relationship between propositional ellipsis and the null object, which supports the idea that the null

element is a reconstruction of the antecedent features of a nominal element at LF while they are elided at the Phonetic Form (PF) (see Fiengo & May, 1994). Thus, we assume, after Cyrino (1997), that the null object in BP is a case of nominal ellipsis.

Although the null object in BP appears in any syntactic context, it is constrained by the semantic features of the antecedent, involving the interplay between animacy and specificity features: An animate and specific antecedent never occurs as a null category. However, since the language no longer has 3rd person clitics, such objects can be realized by a strong pronoun, originally from the nominative paradigm.

Overt strong pronouns will be considered here as the "audible" realization of the features of the antecedent, once they do not undergo reconstruction and ellipsis.

Since the semantic features of the antecedent played a role in the diachronic change, in order to attest their cue nature in molding the child's grammar, the acquisition data is expected to show a clear-cut tendency to associate the inanimate feature with null objects, as expected from the high frequencies of such constructions in the input, as well as to associate the animate feature with strong pronouns.

This paper will be organized as follows. In section 2 we show the state of affairs with regard to the null object in BP nowadays. In section 3 we present the diachronic and acquisition data, while the discussion is found in section 4. Section 5 brings our final remarks.

2. *The null object in Brazilian Portuguese*

As is well known, BP exhibits null objects in any syntactic context (1), as opposed, for example, to European Portuguese (EP), which, according to Raposo (1986), does not allow the null object in islands. Hence, a sentence like (2) is ungrammatical in EP, but grammatical in BP:[1]

(1)   a.   *Comprei   o   casaco depois   que   experimentei   [ ]*
             Bought_1ps   the coat   after   that   tried_on_1ps   [ ]
             "I bought the coat, after I tried (it) on"
      b.   *Tirei   o dinheiro do   bolso   e   mostrei   [ ] ao   guarda*
             Took_1ps the money from_the pocket and showed_1ps [ ] to_the policeman
             "I took the money from my pocket and showed (it) to the policeman"

(2)   *O   rapaz que   trouxe   [ ] agora mesmo da*
             The boy   that brought_3sg   [ ] now   just   of_the
             pastelaria   era o tteu afilhado
             pastry_shop   was the your godson
             "The boy that brought (it) just now from the pastry shop was your godson"

---

[1] For a comprehensive review on the null object in BP, see Cyrino & Reich (2002) and references therein.

But although the syntactic contexts in which the null occurs in BP are quite loose, there are constraints on the use of nulls according to the semantic features of the antecedent. It involves the interplay between animacy and specificity: An animate antecedent never occurs as a null category (see 4), unless it is non-specific (see 5b):

(3) *O Emilio perdeu [a carteira] e não consegue achar [ ]/?ela*
     The Emilio lost_3sg the wallet and not can_3sg find_inf [ ]/?strong_pronoun_fem
     em lugar nenhum
     in place none
     "Emilio lost his wallet and can't find (it) anywhere"

(4) *A Clara não quer que [o filho] veja TV,*
     The Clara not wants that the son watch_3sgSubj TV,
     *então ela sempre leva *[ ]/ele no parquinho*
     so she always takes *[ ]/strong_pronoun_masc in_the park_little
     "Clara doesn't want her son to watch TV, so she always takes him to the playground"

(5) a. *O policial insultou [o preso] antes*
        The policeman insulted_3sg the prisoner before
        *de torturar *[ ]/ele*
        of torture_inf *[ ]/strong_pronoun_masc
        "The policeman insulted the prisoner before torturing him"
    b. *O policial insulta [presos] antes*
        The policeman insults prisoners before
        de torturar [ ]/?eles
        of torture_inf [ ]/strong_pronoun_masc_pl
        "The policeman insults prisoners before torturing (them)"

The default null cases, then, replace [- animate] antecedents as in (3). It should be noticed that the pronominal realization of an object is guaranteed through the use of strong pronouns, since 3rd person clitics are no longer available in the language.
A striking effect of the null is that it makes strict and sloppy readings available (6), whereas the pronoun makes the ambiguity go away, leaving only the strict interpretation option (7):

(6) *De noite, João liga seu aparelho de som, mas Pedro desliga [ ]*
     At night, João on_turns his sound system, but Pedro off_turns [ ]
     "At night, João turns on his sound system, but Pedro turns (it) off"

(7) *De noite, João liga seu aparelho de som, mas Pedro desliga ele*
     At night, João on_turns his sound system, but Pedro off_turns it
     "At night, João turns on his sound system, but Pedro turns it off"

In (6) Pedro can be understood to turn off his own sound system as well as João's, while in (7) only the latter interpretation is possible.

Some researches have proposed that the null object in BP is an empty pronoun, *pro*, but the recurrent problem with these proposals is that there is no agreement on the requirements of identification and licensing of the empty category (cf. Barra Ferreira, 2000; Bianchi & Figueiredo, 1994; Farrell, 1990; Galves, 1987, 1989; Kato 1993, 2000, among others). Besides, these proposals are unable to capture the animacy constraints we have discussed, invariably offering a stipulation on this aspect of the null object. In order to fully appreciate its effects, a comparison between (8a) and (8b) can be helpful:

(8)   a.   *Eu nunca vejo o meu pai. Não me lembro d[a cara dele]ᵢ.Vou esquecer [ ]ᵢ*
              "I never see my father. I don't remember [his face]. I'm going to forget it"
        b.   *Eu nunca vejo [o meu pai]ᵢ. Não me lembro da cara dele. Vou   esquecer eleᵢ*
              "I never see [my father]. I don't remember his face. I'm going to forget him"

The only possible interpretation for the null in (8a) is the [- animate] *his face*, contrary to the one in (8b) where the use of the strong pronoun forces the interpretation with the [+ animate] *my father*.[2]

We will depart from the proposals that treat the null object as *pro*, not only because they cannot satisfactorily explain the facts, but also because they may be hard to maintain if we consider diachronic facts and acquisition data. We will rely, instead, on the findings of a diachronic study for the null object in BP, Cyrino (1997), in which the author sustains that the null object is the result of ellipsis. This analysis not only explains the change in BP, but it also accounts for the acquisition facts we will describe below, since the animacy feature seems to be relevant for the acquisition of the null object. The analysis follows the hypothesis that certain expressions could be the result of reconstruction of the antecedent at LF, which could be elided in PF. We will return to the analysis briefly, after considering the data.

3. *Factoring the data*

3.1 *Diachronic facts*

According to Cyrino (1997) using propositional ellipsis or the neuter clitic *o* in its place seems to have always been possible in Portuguese – both European and Brazilian:

(9)   a.   *[Foi   que D. Tibúrcio com a pena de se ver cometido de*
              "It happened   that Mr. Tibúrcio ran the risk of ending up with
              três mulheres],   como vossa mercê sabe [ ] ...
              three wives,   as   you sir   know (it)"
        b.   *Que é isto sobrinho? ⎯ Eu o não sei, em minha consciência.*[3]
              What is this, nephew? ⎯ I it not know, in my conscience.
              "What is this, my nephew? ⎯ I honestly don't know it"

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[2] Examples from Schwenter & Silva (2002).

[3] Both examples from the same play: Antônio José, *Guerras do Alecrim e da Manjerona*, 1737.

However, in BP the neuter clitic has disappeared, and it has been replaced by ellipsis. Furthermore, the null object has spread to other contexts as we have seen in the previous section.

Cyrino's results can be summarized as follows: a) there was a decrease in filled positions for direct object through time (table 1); b) the first null object to appear is the one whose antecedent is propositional (table 2); c) the [- animate] feature of the propositional null is extended in the grammar generating null objects in such contexts, and d) the specificity feature starts to play a role in the extension of the null element (table 3).

Century	null positions		filled positions		TOTAL	
	n.	%	n.	%	n.	%
XVI	31	11	259	89	290	100
XVII	37	13	256	87	293	100
XVIII	53	19	234	81	287	100
XIX	122	45	149	55	271	100
XX	193	79	51	21	244	100

Table 1: *Distribution of null vs. filled positions, in Cyrino (1997)*[4]

While 89% of all third person direct objects were filled with clitics in the XVIth century, that figure decreases to 21% in the XXth century. As pointed above, the first null object to appear is the one whose antecedent is propositional, that is, the object that could be realized by the neuter clitic *o*, as we see in the *propositional* column in Table 2.[5]

Century	[+specific] DP	[-specific] DP	Propositional
XVI	3% (4/139)	9% (3/34)	23% (23/99)
XVII	4% (4/100)	18% (16/90)	21% (14/68)
XVIII	8% (9/120)	6% (2/33)	45% (41/90)
XIX	31% (38/121)	4% (1/24)	83% (81/98)
XX	67% (64/95)	86% (31/36)	91% (97/107)

Table 2: *Null objects according to type of antecedent, adapted from Cyrino (1997), excluded: VP ellipsis and exopro. (Numerator = null; Denominator= null +overt objects)*

Propositional null objects range from 23% to 91% along the five centuries examined (see Table 2). The interesting fact is the impact of the specificity feature of the antecedent on the null. The [- specific] antecedents become null only in the XXth century, while the [+ specific] ones increase quite remarkably in the XIXth century.[6] When animacy and specificity of the antecedent are crossed, an increase

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[4] Data from comedies and light plays.

[5] An explanation about the disappearance of the neuter clitic is beyond the scope of this paper. See Cyrino (1997) and references therein.

[6] Sentence (i) illustrates cases of [+ specific] DPs, and (ii) [- specific] DPs:

(i) Vou lá em cima buscar [a "Vida Doméstica"] para dona Maricota, que ela me pediu [ ].

in the occurrences of the null objects with antecedents which are DPs [+specific, -animate] are observed in the XIXth century, while the increase in the null objects with [-specific] antecedents happens only in the XXth century (see Table 3). Comparing the results for the specificity feature shown in Table 2 with those in Table 3, one can only conclude that the animacy feature, especially the [-animate], is playing a vital role in the change, elevating the percentage of null objects from the XIXth century on.

Summarizing the results, then, we observed that in the XVIth century, one had the option of using or not using the neuter clitic, but the preference was for the clitic (77% of clitics in the data). However, if this is just an option in the grammar, one would expect no changes through time, which is the picture for EP (see Cyrino, 1992). Nevertheless, in BP a shift in use occurred and in the XXth century the situation was reversed, with the preference for the ellipsis (9% of clitics in the data). As a result of the shift the positive evidence for the child changed through time – the *input* would present more and more cases of ellipsis in a structure in which a neuter clitic used to be allowed by the adult grammar. The hypothesis advanced is that the child extended the ellipsis possibility to the structure of the other pronouns whose antecedent also had the [+ specific, -animate] features. In other words, such features started cuing the child's grammar eventually leading her to consider structures with the other 3rd person clitics as structures allowing ellipsis.

Century	[+spec, +ani] DP		[+spec, -ani] DP		[-spec, +ani] DP		[-spec, -ani] DP	
XVI	1%	(1/78)	5%	(3/61)	3%	(1/8)	8%	(2/26)
XVII	7%	(2/31)	3%	(2/69)	4%	(1/24)	23%	(15/61)
XVIII	5%	(1/21)	8%	(8/99)		0	6%	(2/32)
XIX	2%	(1/46)	49%	(37/75)		0	8%	(1/12)
XX		0	87%	(64/74)	57%	(4/7)	93%	(27/29)

Table 3: *Null objects according to specificity and animacy features in the antecedent.*
(Numerator = null; Denominator = null + overt objects)

3.2   *The acquisition of the null object*

Lightfoot (1994) states that "there can be no change in grammars without change in trigger experiences" (p. 130). According to him, shifts in trigger experience consist in changes in frequency, in other words, "changes resulting from the way that grammars were used rather than changes in the grammars themselves" (p. 130). Such shifts may become critical for language acquisition, cuing a new grammar. That seems to be the case at hand.

(I)'ll go upstairs get [(the book) the "Vida Doméstica"] for Ms. Maricota, 'cause she requested (it) from me.

(ii) Está faltando um copo dos novos, Dona Lurdes. —— Se está faltando, é porque você quebrou [ ].

There is [one of the new glasses] missing, Ms. Lurdes. —— If (it) is missing, that is because you've broken (it).

As we have seen, the historical data suggest that the positive evidence for the child changed through time. This constitutes a shift in frequency, which, in turn, given UG architecture, cued the child in extending the ellipsis possibility to the structure of the other pronouns whose antecedent also had the [+ specific, -animate] features.

According to the analysis to be presented here, such expressions are the result of reconstruction of the antecedent at LF and can be elided at PF. On the other hand, the strong pronoun is the "audible" realization of the features of the antecedent, being reserved for [+ animate] antecedents in the language. We have to bear in mind, then, that this is the picture for acquisition and from it one should expect that children will use the null option from the onset. We should also bear in mind that our aim is to check whether such features, which seemed to be relevant for the change in the trigger experience, still play a role in the acquisition of the null object nowadays. In other words, have those features become the cue for grammar stabilization?

The spontaneous speech production of two children was examined. They are both daughters of highly educated parents. One of them, R., from São Paulo – a southeastern state of Brazil – was recorded from 1;9 to 2;8 years of age. The other, AC, from Rio Grande do Sul – the extreme southern state of the country – was recorded from 1;8 to 3;7 years of age.[7] There are no observable dialectal differences in both varieties of Brazilian Portuguese with regard to the null object.

For the analysis of the data, only transitive, ditransitive and ECM verbs were considered, those that in other Romance languages would require a clitic in anaphoric complements. Categorically null objects, such as in sentence ellipses (10) or short answers (11) were disregarded:

(10)   A(dult):   *E o   que acontece   na história do Príncipe do Egito?*
                   And   [what happens in the story of the Egyptian prince]?
        C(hild):   *Já esqueci [ ].* (AC, 3;7)
                   Already forgot_1ps
                    "I've already forgotten it"

(11)   A: *A senhora aceita um suco?*   (adult and child are pretending to host a tea-party)
              The madam accepts [a juice]?
              "Would you, madam, like a glass of juice?"
        C: *Aceito [ ].* (AC, 2;1)
              Accept_1ps
              "Yes, I do"

We will start with the general results for both children in Table 4.

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[7] Databases are available at CEDAE/IEL/UNICAMP and CEAAL/PUCRS, respectively.

Null		Strong pronouns		DPs + bare Ns		Total	
N	%	N	%	N	%	N	%
275	29.2	93	9.8	575	61	943	100

Table 4: *General results for both children*

Although both children use null objects, they are still quantitatively far from the target grammar, where null objects reach around 60% and strong pronouns, 15%, according to Duarte (1986). We will return to that point.[8]

Table 5 considers only the null and pronominal realizations of the object. When DPs and bare Ns are excluded, and the option, thus, is between a strong pronoun or a null category, it becomes clear the child's preference for the null.

Child	Null		Strong pronoun		Total	
	N	%	N	%	N	%
R.	134	75.2	44	24.8	178	100
AC	141	74.2	49	25.8	190	100
Both	275	74.7	93	25.3	368	100

Table 5: *Mean results for null and pronominal realizations of the object*

But as we will discuss below this does not mean that the child's null is always the same one. We will examine the behavior of null and pronominal elements during development using Table 6.

Age	AC		R		Total
	Null	Pronoun	Null	Pronoun	N
1;8-1;9	100	0	100	0	9
1;10	100	0	75	25	17
2;1	100	0	69.7	30.3	95
2;3	85	15	84.7	15.3	85
2;8	73	27	64	36	52
3;0	64	36			78
3;7	81	19			32
Total	74.2	25.8	73.5	24.7	368

Table 6: *Percentage of nulls and pronominal objects for each child over time*

Table 6 clearly shows an increasing pattern of the use of pronouns over time, while a decrease on the use of nulls is observed. The next natural question is: are we dealing with one and the same null category or does its status change over time? The results show a very interesting behavior in both children, albeit taking place in different age groups. Both of them start out with a production of 100% of null objects, but obviously such figure decreases when pronouns kick in. For R. that happens when she is 1;10 and for AC, when she is 2;3.

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[8] For a discussion about the high percentages of anaphoric DPs in early child language, see Lopes (2003). We will not explore these findings here.

Looking at the data, what we see is that the initial null objects are instances of deictic-like elements in imperative contexts, but when pronouns start to be produced in object position, the null category becomes anaphoric. This should be clearer when we cross such results with the animacy feature of the antecedent. For now, we will compare (12) – a deictic use of null – to (13), an anaphoric null.

(12)   a.   *Garda (= guarda) aqui.* (R., 1;9)
            Keep   [ ]   here
            "Keep it here" (The child says the sentence while holding her pacifier, obviously referring to it)
       b.   *Tila (= tira) umbassu* (= embaixo) (R., 1;9)
            Take [ ] from_under
            "Take it from under (the tape recorder)" (When the child asked her mother to keep the pacifier, the mother placed it behind the tape recorder. Now the child points to the pacifier while asking for it.)

(13)   *Não   vou guardar.* (AC, 3;7)
            not   will_1sg keep [ ]
            "I won't put them away" (referring to her toys. The child wants to watch a movie on TV, so she comes to her mother in order for her to turn the TV on. But the mother knows that the child was playing in her room and that there are toys all over the place. Her mother tells her to put the toys away before watching the movie. The child walks away, while muttering the sentence in (13).)

We now finally get to the relevance of the semantic features [± animate] and [± specific] of the antecedent, considering only the null objects (Tables 7 and 8). The most important result to be brought to light is the high percentage of [-animate] null objects, especially with [+ specific] antecedents (70 instances over 30 with the [- specific] feature) for one child (see table 7).

Comparing Table 7 to Table 3, we see that the results for the [- animate] feature are close to the XXth century data, as expected, while the unexpected case is for the [+ animate] feature. When [+ specific], the child should use a filled element and not the null. In any event, there are only 8 instances of such antecedents recovered by a null element. This is probably an overgeneralization of the animacy feature, which seems to be the real cue for the acquisition not only of the null element, but for the object pronominal system as a whole. Meanwhile, the child still has to deal with the specificity feature. This should explain why the child's grammar is still quantitatively far from the adult one. It also points to a piecemeal process involving semantic interpretation – fine-grained subtle differences for the child to grasp.

Turning to the use of pronouns, on the other hand, we get a neater picture. The [+ animate] feature on the antecedent was divided into human and nonhuman. The nonhuman cases are the 8 instances found in Table 7; as to the human ones, there are 14 instances (63.6%) all realized as a strong pronoun; nevertheless, they show up later.

Age	[- animate]		[+ animate]		[+ specific]		[- specific]	
1;8	100%	(2/2)		0	100%	(2/2)		0
1;10	100%	(1/1)		0	100%	(1/1)		0
2;1	100%	(3/3)		0	100%	(3/3)		0
2;3	100%	(17/17)	50%	(1/2)	88.9%	(8/9)	100%	(10/10)
2;8	78%	(25/32)	100%	(1/1)	72%	(18/25)	100%	(9/9)
3;0	66.7%	(36/54)	25%	(3/12)	53.5%	(30/56)	100%	(9/9)
3;7	61.5%	(16/26)	42.8%	(3/7)	51.7%	(15/29)	100%	(4/4)

Table 7: *Average use of null objects according to the semantic features of the antecedent for one child (AC), during development.*[9] *(Numerator=null; Denominator=null pronominal)*

(14)   *E   sabe quem pegou ele no final?* (AC, 3;7)
        and know who caught him in the end
        "And do you know who finally caught him?" (referring to a child)

As we pointed out before, age 2;3 seems to be the critical period for the acquisition of the null object for AC. That is the age group when pronouns start to be used productively, therefore when animacy of the antecedent becomes expressible by the child. According to our hypothesis, then, that's the period in which the child moves away from the deictic null category towards an adult-like representation of the null object cued by the semantic features on the antecedents.

We turn now to R´s results.

Age	[-anim/+spec]		[+anim/+spec]		[-anim/-spec]		[+anim/-spec]
1;9	100%	(4/4)		0		0	0
1;10	92.3%	(12/13)	0%	(0/2)	0%	(0/1)	0
2;1	75.3%	(52/69)	57%	(4/7)	46%	(6/13)	0
2;3	95.5%	(42/44)	45.5%	(5/11)	33.3%	(1/3)	0
2;8	70%	(7/10)	100%	(1/1)		0	0
Average	83.6%	(117/140)	47.6%	(10/21)	41.2%	(7/17)	0

Table 8: *Average use of null objects according to the semantic features of the antecedent for one child (R), during development. (Numerator = null; Denominator = null + pronominal)*

As discussed before, R. starts using pronouns in object position quite early, when she is 1;10. Thus, this seems to be the relevant age in which the following correlations apply: [+animate] antecedents are mostly expressed by a strong pronoun and the null element is generally used to express [-animate] antecedents. That's probably the age in which the child starts to move away from the deictic-like null to the anaphoric one.

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[9] There are 33 cases of null elements not present in the table (compare to table 5). Those were cases where it was impossible to know the reference of the antecedent, therefore we have opted not to count them.

Although the age in which such phenomena crosscut the data in both children is different, the same strong correlations apply; in other words, the data comparison reveals a clear acquisition pattern.

Table 9 compares the semantic features of antecedents for null in both children, considering their averages for all ages, to the historical results for the XXth century.

Child	[-anim/+spec]		[+anim/+spec]		[-anim/-spec]		[+anim/-spec]	
AC	66.6%	(70/105)	33.4%	(8/22)	100%	(30/30)		0
R	83.6%	(117/140)	47.6%	(10/21)	41.2%	(7/17)		0
XX	87%	(64/74)		0	93%	(27/29)	57%	(4/7)

Table 9: *Mean percentages of null for each child and results for XXth century*

The clearest result involves [-animate, +specific] features. Undoubtedly those are the most relevant features and the first ones to be manifested in acquisition, probably due to their cuing effect. However, it should be noted that the deictic-like nulls found in initial production fall into this category. As should be expected, the problem lies with the [+animate] feature. Children still use null categories for the [+animate, +specific] ones whereas adults would prefer a pronoun, although the percentages are not very high. The unexpected results have to do with R's low production of null with [-animate/-specific] antecedents. As for the [+animate/-specific] antecedents, there are few instances of them even in the historical data; therefore it doesn't seem to be a productive scenario for nulls, which should explain their absence in the children's data.

Summarizing our results, we observe that the [- animate] feature has already stabilized, since specificity does not interact with it. The [+ animate] is still not there, probably due to its correlation with the specificity feature, although we should bear in mind that the children examined reserve the strong pronouns for [+ animate] antecedents only. The problem lies in the use of a null element with such antecedents, which is not adult-like.

4. *Null as ellipsis*

In section 2 we dismissed *pro* as a proper analysis for the null object in BP. Here we argue, after Cyrino (1997), that the null object is the result of ellipsis, but a nominal ellipsis. Cyrino´s proposal for the null object in BP is based on the analysis of ellipsis constructions in Fiengo & May (1994), according to whom ellipses are subject to a more general principle at LF: reconstruction. For these authors, reconstruction is understood as a set of token structures, occurrences of a (sub)phrase marker in a discourse, over a given terminal vocabulary. The members of the reconstruction may or may not be (phonologically) explicit.

Fiengo & May also propose a Dependency Theory that may be integrated in their theory of reconstruction and thus account for the strict and sloppy reading phenomena present in ellipsis constructions. They propose that the strict or sloppy reading is a consequence of the type of occurrence of a pronoun, that is,

pronouns may have independent or dependent occurrences. A pronoun is an alpha occurrence if it is independent of an antecedent in the same phrase marker, whereas it is a beta occurrence if it is dependent of an antecedent. If the occurrence is independent, reconstruction copies the occurrence of the index. If it is dependent, reconstruction copies the dependency. Reference for α-occurrences is established independently for each occurrence, even if they are coindexed. β-occurrences are indexical dependencies, being well formed when there is another occurrence with the same index value upon which the occurrence can depend; thus, a pronoun with a β-type index gets its reference from the element it is connected to.

(15)   John$_1^\alpha$ told his$_1^\beta$ wife$_2^\alpha$ that she$_2^\beta$ is beautiful.
            $<[_{NP}$ John$]^\alpha$, $[_{NP}$ his$]^\beta$, 1$>$
            $<[_{NP}$ his wife$]^\alpha$, $[_{NP}$ she$]^\beta$, 2$>$

        The analysis for the null object in BP as ellipsis comes up due to historical facts, but also due to the possible interpretations of the empty category. Cyrino (1997) assumes that some pronouns which have low semantic value, such as *it* in English and the neuter clitic *o* in Portuguese, can also be thought of as reconstruction at LF, and, because of that, they can be null in languages which allow nominal ellipsis. Such a pronoun depends on its antecedent for the interpretation of its contents, as we can see in paycheck sentences (16), for the pronoun *it*, or sentences like (17) with the neuter clitic in Portuguese, cases where strict and sloppy readings are possible:[10]

(16)   The man who gave his paycheck to his wife was wiser than the man who gave it to his mistress.

(17)   *Pedro pediu   para ser   o professor da   turma Y, antes de Jane solicitar [ ]*
            Pedro asked_3sg for   be_inf the teacher   of_the class   Y, before of Jane solicit_inf [ ]
            "Pedro asked to be the teacher of class Y, before Jane asked for (it)"

        Sentence (17) can receive two interpretations: Either Jane asked for Pedro to be the teacher (strict reading) or Jane asked for herself to be the teacher of class Y (sloppy reading).
        Posing there is reconstruction in such constructions nicely accounts for the interpretation of the null, since it stands for different strings, involving gender agreement:[11]

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[10] For a distinction between VP-ellipsis and cases of null ellipsis in Portuguese, see Cyrino & Matos (2002).
[11] It is important to notice that in Fiengo & May's account lexical content is not relevant for identity of dependencies, but categorial identity is. In their terms, the strict reading involves reconstruction of α-occurrences and the sloppy one, reconstruction of β-occurrences.

(18)   a.   *antes de Jane solicitar   [ele ser   o   professor   da   turma Y]*
               before of Jane   solicit_inf   he be   the teacher_masc of_the class Y
               "before Jane asked that he be the teacher of class Y"

         b.   *antes de Jane solicitar [ela ser a professora   da   turma Y]*
               before of Jane solicit_inf she be the teacher_fem of_the   class Y
               "before Jane asked that she be the teacher of class Y"

        The example in (18) shows that the null object cannot be a *pro*, or else, *pro*
should behave exactly as ellipsis in this case, with respect to the ambiguity of
readings, but not in other structural positions.
  The hypotheses explored here allow us to make some predictions. First of all, it
seems plausible that the child, having to deal with semantic features that bear a
subtle effect for semantic interpretation, should start out with the least referential
elements. That is the case for BP, but it also seems to be the case for English – a
language which does not allow null objects but in which the pronominal paradigm
for objects is restricted to strong pronouns.

Child	Age	"it"/other pronouns	Null
E.	1;6	37 (53,6%) / 3 (4,3%)	4 (5,8%)
N.1	1;11	29 (18,3%) / 2 (1,3%)	3 (1,9%)
N.2	1;6 – 1;10	8 (30,7%) / 1 (3;9%)	1 (3,9%)

Table 10: *Adapted from Fujino & Sano (2002), table 5, p. 17.*

        We assume that some pronouns which have low semantic value, such as *it*
in English and the neuter clitic *o* in EP can also be thought of as reconstruction at
LF, and, because of that, they can be null in languages which allow nominal
ellipsis – the BP case. Table 10 clearly shows the child's initial use of a neuter
pronoun, exactly the picture found for BP, with the exception that in BP a null
category is the natural choice in the paradigm.
        The next prediction has to do with the extension of the [-
animate/+specific] features. The null object, which started out as a propositional
null, was extended to any null object with the same type of features. Hence, those
should be the first anaphoric uses of null objects to be observed. As we have seen,
this prediction also holds.
        Apparently, the XIXth century child made another move with regard to the
clitic. Probably due to the homophony of the 3rd person clitic *o* between a neuter
interpretation and an animate one, she also extended the null to all contexts for the
3rd person.
         As we have discussed, for most objects whose antecedents are [+animate]
the null element is not an option. But somehow the specialization of features
seems to take place in a piecemeal fashion, the [+animate] feature taking longer to
converge on the child's grammar. However, we will not assume that this point has
to do with spelling the pronoun out. On the contrary, we will assume that the
pattern found in both children reveal their acquisition of the pronominal paradigm

for the object position. When strong pronouns start to be used by the children, they are strongly tied to the animacy feature of the antecedent, while the null element is reserved to [- animate] ones.

What the acquisition data show is a clear-cut tendency to associate the [-animate] feature with null objects, as expected from the input, as well as to associate the [+animate] one with strong pronouns. As hypothesized, this pattern clearly attests the cue nature of such features in molding the child's grammar.

Going back to the previous point, though, it is never really obvious why the strong pronoun became an option for object position during the diachronic change in BP. The hypotheses entertained above can account for the null appearance, but not for the strong pronoun becoming an option in the language. Language acquisition data gives the key to the puzzle. If the null became associated with the [-animate] feature, the child's grammar had to find a way to express its [+ animate] counterpart, choosing elements from the nominative paradigm to do so, since they are strongly associated with such feature due to the agentive/experiencer roles of external arguments.

Another possible prediction is that there can be an extension of the [+ animate] feature to other strong pronouns other than the 3rd person in object position in replacement for the entire clitic system, and in fact that seems to be the case, especially for the 1st singular person:

(19)   *Azuda (= ajuda) eu?* (R.; 1;10)
         Help   I
         "Would you help me?"

It should be pointed out that the null phenomenon during the acquisition of BP should not be confused with the object-drop period normally found in children acquiring languages which have a full clitic system for the object, such as Spanish or French. In BP the null element is part of the grammar, while in those languages it is an omission of the clitic, probably due to independent reasons.[12] We assume, then, that the Brazilian child does not go through an object-drop period as the Spanish or French children do. In fact, in languages where the accusative pronouns are strong, children also do not seem to go through such a stage. According to Fujino & Sano (2002), objects were dropped only 3.8% in children acquiring English.[13] That is a very low rate when compared to object-drop in Spanish (see Table 11).

The percentage of object-drops in stage I is much higher than the average of null elements found in our data (29.2% - see Table 4). Besides, it seems that there is a different pattern going on. While the Spanish children start out with high rates of drops and move away from it, when clitics kick in, the Brazilian children start out with a rate of 100% of nulls – albeit all the cases fall into the deictic

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[12] See Avram (2001) for such an account for Romanian within a Multiple Spell-Out assumption.
[13] They analysed data from three children (ages 1;6 – 1;10).

category –, decreasing over time as strong pronouns become an option. In the BP case, then, there is really a specialization on the use of the null category. Therefore, the BP child grammar goes from a all-deitic-null stage to an anaphoric one with the appearance of strong pronouns, when the relevant features are detected. In other Romance languages, where the null is not an option, the child goes from a clitic-dropping stage to the production of clitics.

	Lexical NPs	Clitics	Nulls
Stage I	102 (52,3%)	10 (5,1%)	83 (42,6%)
Stage II[*]	187 (56,2%)	106 (31,8%)	40 (12%)

* Stage II is considered close to adult grammar, according to the authors.
Table 11: *Mean results for three children acquiring Spanish (ages 1;7 – 3;9).*
Adapted from Fujino & Sano (2002)

One last point should be noted. When discussing ambiguity between a sloppy or strict reading in ellipsis, it was pointed out that it goes away when there is an overt pronoun. Example (7) is repeated below as (20).

(20)   *De noite, João liga   seu aparelho de som, mas Pedro desliga ele*
        At night, João on_turns his sound system,   but Pedro off_turns it
        "At night, João turns on his sound system, but Pedro turns it off"

In (20) the sloppy interpretation disappears, and only the strict interpretation becomes available.

Foley at al. (2003), in an experimental study of VP-ellipsis knowledge with small children acquiring English (86 children, ages 3;0 – 7;1), have shown that although both readings are available for most of the tested children, nevertheless they show a high preference for sloppy readings. According to them, the strict interpretation is accessed less often during development. For the authors, the strict interpretation is subject to pragmatic inferences and only older children are sensitive to them.

In the framework assumed here, under Fiengo & May's (1994) terms the strict reading involves reconstruction of α-occurrences while the sloppy one, reconstruction of β-occurrences. We hypothesize that children start out with a general β indexation, and we take it to be an across-the-board initial strategy.[14]

If the child β indexes across-the-board, then ellipsis is always a possibility, even when the antecedent bears the [+ specific] feature value (which should be an α-occurrence).

The diachronic change, then, became possible due to the child's initial tendency for sloppy readings. The input already provided evidence for the [-animate] cases. The child extended that into [+ specific] as well. In developmental terms, when the strict reading becomes available, and, therefore, the α-indexation

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[14] See also Thornton & Wexler (1999)'s experiments on VP-ellipsis and pronoun interpretation for a similar assumption.

for [+ specific] antecedents, then null decreases in such contexts moving qualitatively towards the target grammar.

5. *Final Remarks*

We have showed here that a feature that was relevant for a change in BP is still operative in language acquisition.

Changes are not always grammar-driven. What happened in BP was a shift in the frequency of use of the neuter clitic *o* – having propositions as antecedent – and its null counterpart. Once the null was high enough, probably around the XXth century on, the animacy feature was extended to other null elements, working as a cue for the new grammar to be set.

We believe there are important points brought to light with this study. The first one has just been pointed out: It takes cue-based theories seriously and tries to show how a cue can be operative after a change occurred in a language. Secondly, this study shows how the change in frequency can be an important factor in language change and acquisition.

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