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PREFACE

ANTONIETTA BISETTO
and FRANCESCO E. BARBIERI

The “*Incontro di grammatica generativa*”, in 2007 at its 33rd edition, started in the 70's as an informal meeting for Italian scholars working on this, at time quite new, grammatical approach. Evolved into an important international meeting at the beginning of the 90s, it has since then remained a significant moment of debate for scholars interested in formalization in grammar.

The proceedings here collected are just a part of the talks given at the *33rd Incontro*, held in Bologna from 1st to 3rd March 2007. The talks there presented were numerous and ranged over a wide varieties of fields of research in grammar: not only those that we could call ‘traditional’ as phonology, morphology, syntax and semantics, but also language acquisition and pathology have been taken into account.

Contributions in these proceedings, even though limited in number, are an excellent example of richness in contemporary linguistics research and evidence of the attraction that formal linguistics holds on young researchers, which a part of relations was reserved for.

We have chosen to divide this collection into subject fields: phonology, morphology, syntax and language acquisition.

Problems of phonology are tackled in the proceedings by Stefano Canalis, Maria Rosa Lloret, Attila Starčević; morphology is represented by the work of Susanna Padrosa Trias, while to syntax is dedicated the widest range of contributions: Theresa Biberauer with Anders Holmberg and Ian Roberts, Vincenzo Moscati, Ía Navarro Ibarra, Andrew Radford with Michèle Vincent, Francesca Ramaglia, Balázs Surányi; about acquisition's problems argue instead the contributions by Elisa Di Domenico with Elisa Bennati and by Andrea Gualmini.

Phonology

Stefano Canalis' paper is on the quantity-sensitivity of Albanian stress and the possibility of predicting stress position within stems. Apparent counterexamples are argued to depend on the presence of intrusive, weightless vowels and of latent final syllables.

Maria-Rosa Lloret's argument is about the interaction between the constraints governing the production and the perception of speech while focusing on the issue of vowel harmony. The analysis presented is cast in Optimality Theory (OT), that allows predicting the direction of the spreading from the type of harmony.

Attila Starčević' s paper is an attempt to adding some new insights into the pool of Middle English quantitative vocalic changes. The author suggests that there was no general open syllable lengthening and that Middle English words had to abide by a ... V C V ... template. It is also argued at some length that Middle English quantitative changes were templatic in nature.

Morphology

The sole paper on morphology is *Susanna Padrosa Trias'* one: The author tries to provide evidence for the view according to which different order of constituents implies different semantics, an issue already argued for by numerous scholars. To that goal, several types of compounds in English, Catalan and Spanish are examined.

Syntax

The paper by *Maria Theresa Biberauer, Anders Holmberg and Ian Roberts* focuses on the disharmonic word-order pattern in which a superficially head-initial phrase is dominated by a superficially head-final one. The authors' aim is one of gaining a better understanding of the nature of FOFC i.e. the Final-over-Final Constraint.

Vincenzo Moscati's paper explores the possibility that the PF-realization of negation corresponds to its logic scope. The overt realization of sentence negation is in fact variously realized across languages thus raising the question of whether surface differences have an effect at LF.

Ía Navarro Ibarra's paper concerns the formation of what she calls *le*-predicates, viz. the complex predicates formed by transitive or intransitive agentive verbs plus *le* clitic. The author states that in such constructions the clitic doesn't behave as a 3rd person singular pronoun but as a syntactically visible verb modifier. *Le*-predicates are described as the result of *le*'s evolution involving verb modification.

Andrew Radford and Michèle Vincent's contribution provides a Minimalist analysis of past participle agreement in French transitive clauses. The authors posit that the head *v* of *vP* in such structures carries an (accusative-assigning) structural case feature and that in structures where a goal is extracted from *vP*, *v* also carries an edge feature, and may carry a specificity feature and a set of (number and gender) agreement features.

Francesca Ramaglia discusses the syntax of monadic and polydefinite DPs in Modern Greek. She proposes that the monadic construction represents the unmarked pattern for adjectival modification. Polydefinite DPs, where the articulated adjective is interpreted as contrastive, are instead analyzed as marked structures.

Balázs Surányi outlines of a novel account of subject islands that is able to account for the variability in the opacity of subjects both across languages and across constructions. It is argued here that Transfer takes place after each application of Merge, provided that the label of the syntactic object SO to which Transfer applies has no uninterpretable feature. The account predicts that subjects that have undergone movement do not necessarily display a Freezing Effect.

Language Acquisition

The paper by *Elisa Di Domenico and Elisa Bennati* is about the acquisition of L2 English 's Genitive Constructions with Bare Proper Name possessors by native speakers of Italian. The results of the investigation of original L2 English data -coming from a group of 94 Italian teen-agers learning L2 English in a formal environment- indicate that in the acquisition of these structures both Universal Grammar and transfer from the L1 are implied.

Andrea Gualmini presents the results of an experiment investigating children's interpretation of 'some' and of negation in the two arguments of the universal quantifier 'every.' The author shows that English-speaking children's interpretation of sentences containing negation is not limited to surface scope interpretations. Moreover, findings are used by the author to adjudicate between alternative theories about children's interpretation of universally quantified sentences.

To what extent is Albanian word stress predictable?

STEFANO CANALIS*

Abstract

While previous analyses have claimed that Albanian word stress is not wholly predictable, or depends in part on vowel quality, it is argued here that Albanian stress is quantity-sensitive, and an uneven trochee is sufficient to account for stress position within stems. Apparent counterexamples are discussed, arguing that they can be described as depending on the presence of intrusive, weightless vowels and of latent final syllables.

1. INTRODUCTION

The goal of this paper is offering an explanation of Albanian word stress, trying to deduce its properties from a limited set of assumptions.

After a sketch of the relevant data and a presentation of the preceding analyses, it will be shown that the latter contain some flaws, and an alternative analysis will be proposed instead, proposing that Albanian stress is wholly accountable adopting an uneven trochee. Apparent exceptions will be discussed, arguing that they are not real counterexamples at a closer scrutiny.

1.1 *Previous works on Albanian stress*

Albanian stress – as Albanian phonology, more in general – is a comparatively little studied field: to my knowledge there are only two theoretical works – Bevington (1974) and Trommer (2004) – which aim at providing an explanation of it, and which will be discussed in § 3.1 and 3.2 respectively. On the other hand, descriptive grammars of Albanian usually state that stress is, to a greater or lesser extent, unpredictable, and that there are only some tendencies at most, offering a fairly wide range of opinions.

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I would like to thank Paola Benincà, Laura Vanelli and the participants in IGG 2007, especially Maria-Rosa Lloret, for their comments. Last but not least, the very large amount of information about Albanian Marinela Sotiri gave me has been fundamental. All remaining errors are my own.

According to Dodi and Gjinari (1983: 129) there is not a general rule, but they admit a tendency to penultimate word stress. The tendency is to penultimate stress within the stem according to Buchholz and Fiedler (1987: 53), while in the opinion of Newmark, Hubbard and Prifti (1982: 15) stress tends to fall on the final vowel of the stem; according to Camaj (1984: 8) stress cannot be predicted in uninflected stems but, at least in nouns, it falls on the penultimate syllable of the ‘definite form’ (i.e. the form inflected for a kind of suffixed definite article, roughly speaking). All these generalizations usually are followed by lists of ‘exceptions’.

2. THE DATA

In this section I will set forth some informal, descriptive observations on Albanian stress.

2.1 *Stress and morphology*

A peculiarity Albanian stress possesses, when compared to many other Indo-European languages, is its immovability with respect to inflection. In inflected words stress always falls on the same syllable of the stem, whichever the inflectional morphemes attached; in other words, any syllable following the stem is irrelevant to stress assignment.

For instance, the stress position found in the nominative indefinite form (i.e. the bare stem) of nouns is always preserved throughout inflection (1-4)¹. This implies that oxytones (e.g. 3a), paroxytones (like 1a, 2a, 3b, 4a) and proparoxytones (1b, 2b, 3c) as well are possible words in Albanian (and even a few words with stress on the fourth syllable from the last, like (4b)).

- | | | |
|-----|----------------------|-----------------------------|
| (1) | a. púně ² | <i>work</i> |
| | b. púněve | <i>work-dat.-pl.</i> |
| (2) | a. végël | <i>tool</i> |
| | b. véglave | <i>tool-dat.-pl.</i> |
| (3) | a. bilbíl | <i>nightingale</i> |
| | b. bilbíli | <i>the nightingale</i> |
| | c. bilbílěve | <i>nightingale-dat.-pl.</i> |
| (4) | a. kúmbull | <i>plum</i> |
| | b. kúmbullave | <i>plum-dat.-pl.</i> |

On the other hand, most derivational morphemes move stress to the right (although there are a few unstressed derivational morphemes, all creating adverbs: *-azi*, *-as*, *-thi*).

- | | | |
|-----|---------|-------------|
| (5) | a. púně | <i>work</i> |
|-----|---------|-------------|

¹ As a norm I will cite Albanian forms according to standard Albanian orthography, but, unlike it, I will mark the stressed vowel; as for the symbols which for our purposes will be most relevant in the following pages, *ë* stands for [ə], *ll* for [l̥], *r* for [r] and *rr* for [r̥].

² While word-final schwa is pronounced in standard Albanian, many speakers drop it and lengthen the preceding vowel, at least in colloquial speech; so for them *puně*, *borě* would be [ˈpu:n], [ˈbo:r].

- b. punë-tór *worker*
- (6) a. díje *knowledge*
 b. dije-tár *learned person*
- (7) a. qytét *city*
 b. qytet-ár *city (adj.)*
 c. qyte-tar-í *citizenship*
 d. qytet-ër-ím *civilization*
- (8) a. kalím *passage*
 b. kalím-thi *to be passing through*

This state of affairs, as shown in § 1.1, has often led to the conclusion that Albanian stress is basically unpredictable, being possible on any of the last four syllables of a word, and consequently must be lexically marked. But this opinion is based on the observation of whole words only; if vowels belonging to inflectional morphemes are left aside, and only stems are considered, a much clearer and restricted pattern emerges: stress virtually always is on the last or penultimate vowel of the stem. Hence we have to look at the stem as the relevant stress domain, not at the inflected word, and vowels of inflectional morphemes, which are always unstressed, have not to be considered.

The distinction between words and stems restricts the syllable-window for stress, but obviously still leaves unanswered the problem of determining stress position within stems. Which principle selects the final rather than the penultimate syllable?

2.2 Stress within stems

At a descriptive level, already from a brief inspection of Albanian lexicon it is evident that in most cases uninflected stems ending in an open syllable have stress on the penultimate vowel (9), and stems ending in a consonant have final stress (10).

- (9) a. púnë *work*
 b. lúle *flower*
 c. rádio *radio*
 d. bóre *snow*
 e. yndýrë *fat*
 f. anembánë *everywhere*
 g. prápa *behind*
 h. brénda *inside*
 i. cíli *who, which*
 j. gáti *almost*
- (10) a. endacák *wanderer*
 b. dembél *lazy*
 c. rrogóz *mat*
 d. bilbíl *nightingale*

An exception to the descriptive generalization we can draw from (10) are most of the stems ending in schwa+consonant (usually a sonorant, but in a few cases a fricative), or in -

ull [uɫ] and *-ur* [ur], which have stress on (what is standardly assumed to be) the penultimate syllable.

- | | | | |
|------|----|---------|------------------|
| (11) | a. | végël | <i>tool</i> |
| | b. | zémër | <i>heart</i> |
| | c. | ëndërr | <i>dream</i> |
| | d. | móllëz | <i>cheekbone</i> |
| | e. | shékull | <i>century</i> |
| | f. | vétull | <i>eyebrow</i> |
| | g. | flútur | <i>butterfly</i> |
| | h. | dáshur | <i>lovely</i> |

Stem-final stressed vowels are attested too, including stressed [ə]. Besides, standard Albanian has no phonemic long vowels, but several varieties have them (cf. § 3.7), and in such varieties words as in (12) usually have a final long vowel (or penultimate stress, e.g. (12e) is [ˈdeve]).

- | | | | |
|------|----|--------|----------------|
| (12) | a. | shtëpí | <i>house</i> |
| | b. | barí | <i>sheperd</i> |
| | c. | kalá | <i>castle</i> |
| | d. | vëllá | <i>brother</i> |
| | e. | devé | <i>camel</i> |
| | f. | kopé | <i>herd</i> |
| | g. | byró | <i>bureau</i> |
| | h. | apó | <i>or</i> |
| | i. | ashtú | <i>so</i> |
| | j. | atý | <i>there</i> |
| | k. | tashmé | <i>already</i> |

2.3 Marginal exceptions

Toponyms like *Scútari* are exceptions to the generalization that stress is limited to one of the last two vowels of the stem; but in several languages toponyms form a sub-system with different principles (for example Turkish stress is mostly final, but we have *Ánkara*, *Istánbul*, etc.; see for instance Kabak and Vogel (2001)).

3. DISCUSSION OF PREVIOUS EXPLANATIONS

From the data above the rightward orientation of Albanian word stress emerges clearly: what is relevant is the content at the right end of the stem (light vs. heavy syllables, presence of a schwa, etc.). Moreover, within a stem stress never falls on a syllable to the left of the penultimate. The large number of stems behaving as in (9) and (10) suggests the hypothesis of a quantity-sensitive system, since a final heavy syllable is stressed and a final light syllable isn't, although examples like in (11), that is unstressed final heavy syllables, and in (12), stressed final light syllables, indicate that the solution is not so straightforward.

The generalizations of descriptive grammars are not sufficient to cover all the data above in an exhaustive manner. One of the problems in the arguments of several grammars is the failure to recognize the stem as the domain of stress assignment, which easily leads to stating that stress position is unpredictable. Even when the stem is proposed as the proper domain to predict stress position, as in Newmark, Hubbard and Prifti (1982), only a tendency to final stress is admitted.

3.1 Bevington (1974)'s proposal

On the other contrary, the only two works in generative phonology dealing with Albanian stress, Bevington (1974) and Trommer (2004), explicitly state that stress is assigned to stems, not to words. Both recognize the stem as the proper domain for stress assignment, and in different ways both propose to link stress in part to syllable weight and in part to vowel quality. Bevington's theoretical framework is classical generative phonology, and stress is represented with the disjunctive rules in (13): stress is final by default, but under certain conditions it is assigned to the penultimate vowel, if the stem is not a verb.

- (13)
- a. $V \rightarrow [+stress] / _C_0 \left\{ \begin{array}{c} e \\ a \\ o \\ \ddot{e}(C) \\ -as \\ -ull \end{array} \right\}]_{STEM-V}$
- b. $V \rightarrow [+stress] / _C_0]_{STEM}$

(adapted from Bevington, 1974: 24-25)

The problems raised by these rules are several: first, rule (13a) does not represent a natural class, since it collapses various different entities within its braces; second, stress of verbs is assumed to be determined by different principles than other stems.

As for empirical accuracy, stem-final /a/ is more often stressed than not, contrary to what stated in rule (13a), and stems ending in unstressed *-ur* [ur] are not mentioned. Some words remain unexplained and demand a further elaboration of the rule, which becomes rather complex. For example monosyllables are a problem, because all non-verb stems consisting of a single syllable and ending in one of the endings listed within the braces in rule (13a) (for instance the word *fe* 'faith') cannot receive stress – it should fall on the penultimate vowel, but by definition monosyllables do not have a penultimate vowel – and their stress has thus to be assigned separately.

Diphthongs too demand another refinement of rule (13a) (not shown here), requiring another symbol and an assumption on the ordering of the rules, to avoid stress to be assigned to the second half of the diphthongs (Bevington, 1974: 26), contrary to what happens in standard Albanian.

Anyway, there still are some stems not conforming to his predictions (e.g. stem-final stressed /e o ə/, like (12e-h) and (12k)); the technical solution proposed for stems not conforming to his rules – a diacritic mark [-stress rule] assigned to such stems, which blocks rules from applying – seems basically circular.

3.2 Trommer (2004): Albanian stress and OT

Trommer (2004)'s analysis is couched in Optimality Theory: summarizing his ideas, we could say that in his opinion Albanian stress depends on the interaction of weight and vowel quality. These two factors should justify both the different stress position in open and closed syllables, and the presence of many stem-final stressed /a/s and /i/s. The most important constraints of his analysis and their ranking are shown in (14):

- (14) * \ddot{e} _σstem >> WSP_{stem} >> *[-hi -lo]_σstem >>
ALIGN(σ, Right, Stem, Right) >> *[+hi]_σstem >> *[+lo]_σstem

The constraint ALIGN(σ, Right, Stem, Right), aligns stress to the right edge of the stem, securing the rightward orientation of Albanian stress, but a ban against stressed mid vowels prevents them from being stressed when stem-final (*[-hi -lo]_σstem). The constraint WSP_{stem} – Weight-to-Stress Principle, heavy syllables are prominent – wants to capture that stem-final heavy syllables are usually stressed, and being ranked above *[-hi -lo]_σstem, allows for mid vowels too to be stressed, provided that they are in a closed syllable; since schwa is only rarely stressed, he suggests a higher prohibition against stressing such vowel, thus ruling out it even in closed syllables (* \ddot{e} _σstem).

There are some problems with this proposal. Some involve further constraints, which are required for stems not accounted for by the constraints in (14), and which look more descriptive than explicative. For example, since some stressed schwas exist, and usually are followed by a velar stop (e.g. *jastëk* ‘pillow’), he proposes the constraint STRESS([...DORS]_σstem), ranked above * \ddot{e} _σstem, with the result of assigning stress to any vowel, including [ə], before a velar stop; but this solution seems a mere formal restatement of the facts, since there is no independent reason to assume influence of this consonant on stress (and anyway there are some stressed schwas not followed by a velar stop: *këllëf* ‘holster’, *tashmë* ‘already’ etc.). Neither the proposal that they could belong to a different stratum of the lexicon, with a different constraint ranking, seems to be convincing: it is true they are loanwords from Turkish, but nowadays they are fully integrated in Albanian.

No explicit explanation for stems ending in unstressed *-ull* [uɫ], which have penultimate stress in spite of having a final heavy syllable, is given. As for stem-final unstressed *-ur* [ur], it is suggested that it is a lexicalized participle, hence inflection outside of the stem: this is wholly sensible for adjectives like *hapur* ‘open’, given that we have *hap* ‘I open’, but clearly not for nouns like *popull* ‘people’ or *lepur* ‘hare’, which are monomorphemic.

With regard to one of his central claims, that regarding the influence of the quality vowel on stress position, from a typological point of view stress systems influenced by vowel quality are attested, and markedness constraints have been proposed to explain them (cf. Kenstowicz 1996, de Lacy 2006). But they are all based on the sonority scale: more sonorous vowels tend to attract stress, and less sonorous vowels tend to avoid it. Instead according to Trommer in Albanian there would be a hierarchy of stressability /i u a y/ > /e o/ > /ə/ (going from the most easily stressable vowels to the least stressable), since central vowels would avoid stress more than peripheral vowels. Now, in numberless languages [ə] is typical of unstressed vowels, but this proposal is much less well-grounded for mid non-central vowels. As a matter of fact, in several languages mid vowels are possible only if stressed, changing to high or low (hence peripheral) vowels if stress moves to another vowel (cf. for example

(Harris, 2005) on vowel reduction). On the contrary, according to Trommer's hierarchy, an unstressed mid vowel should be preferred to a stressed one.

Moving from more theoretical problems to the empirical, factual correctness of the predictions he makes regarding Albanian stress, the validity of his constraints is only statistical: /e/, /ə/ and /o/ are often unstressed when stem-final, and /a/ and /i/ are usually stressed (15), but this pattern is anything but categorical (incidentally, word-final /y/ and /u/ are infrequent in Albanian, thus it is difficult to make a generalization, but again some forms with non-final stress exist, although they are high, hence peripheral vowels).

(15) Vowel quality in vowel-final stems and final stress

	a	i	u	o	e
final stress	65 (78.3%)	991 (93.6%)	10 (66.7%)	25 (29.1%)	104 (7.9%)
non-final stress	18 (21.7%)	68 (6.4%)	5 (33.3%)	56 (70.9%)	1206 (92.1%)
all	83	1059	15	86	1310

(from Trommer (2004: 10); in the column regarding /o/ the total is not consistent with the figures above; if the total is 81, stressed and unstressed final /o/s are 30.9% and 69.1% respectively)

As the figures show, stem-final unstressed /a/ and /i/ – as (9g-j) – and stems-final stressed /ə e o/ – as (12e-h , 12k) – remain unexplained. They are less common than the stressed option, but do exist. Even more dangerously, the different ratios could be due to a morphological reason: the relative scarcity of unstressed final /i a/ is evident only for noun stems, for example the three non-monosyllabic prepositions ending in /a/ (*pára* ‘in front of’, *prápa* ‘behind’, *brénda* ‘inside’) all have penultimate stress. The overall low proportion of unstressed /i a/ in the figures is influenced by the high number of nouns with respect to other classes, rather than a phonological ban against their being unstressed. Unstressed final /i/ is the default marking of the definite form of nominative masculine singular nouns (e.g. *mal-mali* ‘mountain-the mountain’) and unstressed final /a/ is the default marking of the definite form for nominative feminine singular nouns (e.g. *fishë-fusha* ‘plain-the plain’). This suggests that unstressed final /i a/ are extremely rare in nouns not because of their phonetic quality, but simply because they are interpreted as inflectional endings: a word ending in unstressed /i/ or /a/ is interpreted as a definite form.

The adaptation of the Italian word *forza* is revealing in this respect: it has two meanings, since as a noun it means ‘strength’ and as an interjection it means ‘hurry up, come on’. Both were borrowed in Albanian, like many other Italian words, but were adapted in two different ways: ‘strength’ is *forcë* [ˈfortsə] in Albanian, while ‘hurry up’ is *forca* [ˈfortsa]. The Italian noun [ˈfortsa], due to its final [a], in all likeness was perceived as the definite form [ˈfortsa] of a hypothetical stem [ˈfortsə], and not incidentally was classified as a feminine noun, as final unstressed [a] usually implies. On the contrary in the interjection the final vowel was preserved, because there was no reason to interpret it as inflection. The difference in the adaptation of the final vowels cannot be due the phonetic input – the two words are phonetically identical – and the unstressed [a] in the interjection goes against the hypothesis that [a] attracts stress; the only reason why it is preserved just in the latter case is morphological.

Another reason for the very high number of stem-final stressed /i/s (the only case in (15) where a stem-final vowel is stressed more than 90% of the occurrences) is morphological again: a stressed /i/ is the exponent of a derivational morpheme deriving

abstract or collective nouns from nouns and adjectives (for instance *mal-malësi* ‘mountain-chain of mountains’, *bukur-bukurí* ‘beautiful-beauty’). This morpheme being very productive, the lexicon contains a lot of noun stems ending in a stressed /i/.

4. QUANTITY, INTRUSIVE VOWELS, LATENT SYLLABLES

From the previous analyses, I keep the suggestion that stress position depends on the phonological content of the stem only, and it is influenced by syllable weight. But if other factors, like vowel quality, are not relevant, weight remains the only candidate to account for the behaviour of Albanian stress. I want to propose the following principles to account for its behaviour:

- (16)
- a. Albanian is a quantity-sensitive language
 - b. The Albanian foot is a trochee
 - c. The main foot is the rightmost
 - d. Syllables to the right of the stem are metrically irrelevant

It follows that

- (17) Within a word, the main stress always falls on the rightmost uneven trochee of the stem, i.e. on the syllable including the stem’s penultimate mora: $\acute{\text{~}}\text{~}]_{\text{stem}}$, $\acute{\text{~}}\text{~}]_{\text{stem}}$, $\acute{\text{~}}\text{~}]_{\text{stem}}$

Assumptions (16c) and (16d) have already been discussed and motivated above. Assumption (16a) is suggested primarily by final stress on (C)VC(C) stem-final syllables, and assumption (16b) is suggested primarily by penultimate stress when the final syllable is light, but both require further justification.

This proposal is unproblematic with many stems, like those in (9) and (10): they have stress on the penultimate syllable, if the last is light, and on the last syllable, if it is heavy, that is on the penultimate mora of the stem, in both cases being consistent with an uneven trochee.

But clearly stem-final unstressed *-ëC*, *-ull*, *-ur* (11), and stem-final stressed vowels (12) are problematic: the former group has penultimate stress, albeit the final syllable is (apparently) heavy, and as for the latter no weak syllable after the stressed one is (apparently) present, making it difficult to analyse them as a trochaic binary foot.

4.1 The weightless status of [ə] in *-ëC* unstressed final sequences

With regard to the first group of stems, those ending in unstressed schwa+consonant, it must be observed that schwa in these sequences is in several aspects unlike ‘normal’ vowels. Its phonetic realization has high variability, and in some Gheg varieties such sequences are not analyzed as a vowel-consonant sequence, but simply as a syllabic consonant (Lowman 1932).

Most, importantly, when a vowel is added to these stems (for example to create their definite form), the schwa disappears:

- | | | |
|------|--------------------------------|------------------------------|
| (18) | indefinite singular nominative | definite singular nominative |
| | a. vegël | vegl-a |
| | b. lakën | lakn-a |
| | c. ëndërr | ëndrr-a |

This suggests that this unstressed schwa is only an intrusive vowel (in the sense of (Hall, 2006), for instance), which appears as a phonetic consequence of the transition between two consonants when the second is a syllabic nucleus, but is not present when the second consonant is not syllabic (the loss of syllabicity of such consonants when a suffix is present is not unexpected in Albanian, since sequences of two nuclei are often avoided: for example when *-a* appears after stem-final *-e*, the latter becomes a glide: *lule-lulja* ‘flower-the flower’).

Schwa+consonant sequences can be accordingly viewed as the phonetic counterpart of a single syllabic consonant, without the vowel being present underlyingly. A stem like *vegël* is thus represented as in (19):

- (19)
- | | | |
|--|------|------|
| | σ | σ |
| | / | / |
| | O | N |
| | | |
| | [v e | g ə] |
- /veglə/³

The intrusive status of [ə] in this context entails that it does not contribute to weight, being absent in the lexical representation of the stem. But if the representation in (19) is correct, stress falls on the penultimate syllable, as predicted, because the final syllable is light and consequently has only one mora.

- (20)
- | | | |
|--|------|------|
| | σ | σ |
| | / | / |
| | μ | μ |
| | | |
| | [v e | g ə] |

In some cases it seems that [ə] is preserved also in case of suffixation, contrary to what predicted. Bevington (1974: 115-116) lists some of these apparent exceptions:

- | | | | |
|------|------------------------|---------------|---|
| (21) | indef.form | definite form | |
| | a. bohçallék | bohçalléku | <i>gift the bride brings for the men of her husband's house</i> |
| | b. lapkër ⁴ | lapkëra | <i>ear lobe</i> |
| | c. éngjëll | éngjëlli | <i>angel</i> |
| | d. éndëz | éndëza | <i>fruit blossom; spider web</i> |

³ Incidentally, the representation in (19) entails that syllabification is underlying – since the last consonant is already specified as syllabic nucleus – contrary to what most phonologists would assume. Motivating this claim would lead us too far away, but see *e.g.* Goldston (1996) for several arguments in favour of underlying syllabification.

⁴ This word is not present in the dictionaries we used, neither is known by the native speakers we consulted.

Actually, the first two words are not counterexamples, since they have a stressed [ə]. The generalization above is based on the prediction that there cannot be a final unstressed heavy syllable, thus a schwa in a final *stressed* heavy syllable is not a violation; moreover, in Albanian [ə] is a transition vowel in the context discussed above, but phonemic /ə/ is part of the vowel inventory of this language, and the fact that it is not deleted after suffixation is just what is expected.

The other two examples appear to be more difficult at first sight, since [ə] is not stressed but is nonetheless preserved after suffixation, when the last consonant of the stem loses its syllabic status. Yet *ndz* *[ndz] and *ngjll* *[ŋjɫ] are not possible onsets (for a list of phonotactic constraints of Albanian cf. Buchholz and Fiedler (1987: 47-52); rather surprisingly, nasal+obstruent sequences are syllabified as onsets of the subsequent vowel in Albanian, possibly because they rather are a single complex segment), thus the presence of a [ə] can be explained again as due to a phonotactic reason, but of a different kind.

4.2 The weightless status of [u] in -ur, -ull unstressed final sequences

Unstressed stem-final *-ull* and *-ur* obviously do not have a schwa, thus they seem to be ‘real’ heavy syllables. Nevertheless, they show several affinities with the phenomena discussed in the preceding section.

First, in colloquial speech in many cases there is the same vowel/zero alternation: *shekull/shekulli* [ʃekuɫ]/[ʃekɫi] ‘century/the century’, *lepur/lepuri* [ˈlepur]/[ˈlepri] ‘hare/the hare’, etc. Actually, the standard preserves [u] also when suffix vowels follow the stem, apparently leaving no room for the ‘intrusive vowel’ argument, since the stem-final consonant is no more a nucleus: we have *shekulli*, *lepuri*, etc. Nonetheless, while here [u] is prescribed in the standard, and represented in the written form, in the spoken language it is often absent, to the extent that children usually write *sheklli*, *lepri* and school grammars have to explicitly warn students to write such words with a grapheme <u>.

Second, there is some amount of free variation between [ə] and [u] in this context. Different speakers pronounce the same word either with the former or the latter vowel, for instance *hisëll* ‘nettle’ is the standard (written) form, but it can be heard both as [hisəɫ] and as [hisuɫ]⁵.

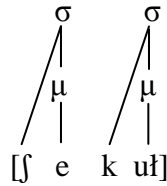
Third, for speakers who have no unstressed *-[ə]ll*, unstressed *-ull* is in complementary distribution with unstressed *-ëC*: an unstressed vowel in closed final syllable can be [u] only before [ɫ], otherwise we find a schwa.

Being subject to the same processes, free variation and complementary distribution are the most common arguments in phonology to argue that two phones are realization of the same phoneme. Presence of [u] instead of [ə] is easily explained by the nature of the following consonant: they have a secondary articulation, and influence of the secondary articulation of a consonant on a adjacent vowel is very common, particularly if the vowel is intrusive.

This suggests that [uɫ] and [ur] are underlyingly syllabic /ɫ/ and /r/, with spreading of their back articulation on the intrusive vowel which surfaces to phonetically realize before the consonant. If in this context [u] is intrusive, just as schwa is before the other sonorants, also in this case stress is on the penultimate mora: [ʃekuɫ] is /ʃekɫ/, for instance.

⁵ Marinela Sotiri, p.c.

(22)



4.3 Problems

More precisely, consonantal influence on the intrusive vowel is evident with regard to /ʎ/, which is a velarized consonant: a transition vowel [u] is unsurprising in this context. On the other hand it is less clear why /r/ should cause the appearance of [u], for two reasons: in several stems [ə] is present (for example *zémër* ‘heart’), thus [u] is not a wholly automatic result of an assimilation from this consonant, and maybe is at least in part lexicalized (while, as said above, [ə] before *ll* is rare, and in substandard styles is often realized as [u] anyway).

The second reason is that /r/ seem not to be a velarized consonant as /ʎ/ is, thus it unclear where [u] comes from. In this respect, up to now I have transcribed /r/ as an alveolar flap or tap (opposed to the alveolar trill /r/), according to the standard analysis of this consonant of Albanian, but to my knowledge it has never been examined whether it has some degree of retraction of the tongue; for example American English flap has raising and retraction of the tongue tip during the preceding vowel (Ladefoged and Maddieson 1996: 231-232), and such an articulation, if present in the Albanian segment as well, would be consistent with the appearance of [u] instead of [ə].

4.4 Stem-final stressed vowels

Stem-final stressed vowels seem to conspicuously contradict the claim that stress is always on the penultimate mora, since apparently there is no weak mora at all after the stressed vowel.

Nevertheless, there are several remarks to make: standard Albanian has no length contrast, but Albanian is divided into two major dialects, or better dialect areas, Tosk (upon which the standard is mostly based) in the south and Gheg in the north. Gheg has long vowels, and they were present in Old Albanian as well. In Gheg, stem-final stressed vowels are almost always long, hence bimoraic. Sometimes a word with final stress in Tosk has a final short vowel in Gheg, but penultimate stress: *deve* ‘camel’ T. [de've], G. ['deve], *kafe* ‘coffee’ T. [ka'fe], G. ['kafe] (usually these words were borrowed from Turkish).

Tosk (or rather most Tosk varieties) has not long vowels: stem-final stressed vowels are short. But at a closer inspection the picture is not so clearcut: in several varieties of Tosk, as in Gheg, final [ə] is dropped and compensatory lengthening takes place, lengthening the preceding vowel. Thus a word like *punë* is often realized as [pu:n] (cf. also n. 2). This pattern can also surface in the standard, although at least in a formal style [ə] is preserved.

Nevertheless, compensatory lengthening is not universal among Albanian speakers, and in any case stem-final vowels remain short. We could say that stress is predictable only when the stem ends in a consonant, while there is no way to predict in vowel-final stems whether stress falls on the last or penultimate syllable.

An alternative solution is available pursuing a more abstract view. Also varieties and (formal) styles which retain final schwa and lack long vowels show an interesting phenomenon: several suffix formatives, normally consisting of a consonant only, when attached to a stem-final stressed vowel are followed by an additional schwa. For example the

formative of the plural morpheme of the ‘definite form’ usually is [t], but is the syllable [tə] immediately after a stressed vowel. The context of this alternation is purely phonological: a schwa appears if and only if there is a stem-final stressed vowel.

(23) nominative plural indefinite nominative plural definite

bilbílë	bilbílët	<i>nightingales/the nightingales</i>
tópa	tópat	<i>balls/the balls</i>
rádio	rádiot	<i>radios/the radios</i>
lúle	lúlet	<i>flowers/the flowers</i>
shkólla	shkóllat	<i>schools/the schools</i>
shamí	shamítë	<i>handkerchief/the handkerchiefs</i>
kalá	kalatë	<i>castles/the castles</i>
byró	byrótë	<i>bureaus/the bureaus</i>
devé	devétë	<i>camels/the camels</i>

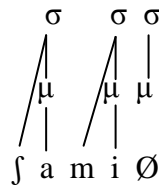
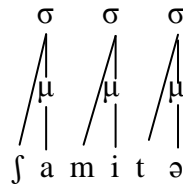
A similar behavior is present in verbal morphology as well: /-m -t -n/ are inflectional verbal endings, but they are /-mə -tə -nə/ after a stressed vowel.

(24)	lyej	<i>I paint</i>	pi	<i>I drink</i>
	lye-m	<i>we painted</i>	pi-më	<i>we drank</i>
	lye-t	<i>you (pl.) painted</i>	pi-të	<i>you (pl.) drank</i>
	lye-n	<i>they painted</i>	pi-në	<i>they drank</i>

In varieties with schwa drop and compensatory lengthening, a word like *shamitë* is [ʃa'mi:t], a long vowel surfacing when an inflectional suffix is added after a stem-final stressed vowel. Actually, we could say that in these varieties a stem-final stressed vowel is long, but length is visible only when a suffix is present.

As for varieties without compensatory lengthening, the unexpected presence of a final schwa needs explanation. But schwa and stress behaviour are both explained if a stem-final uneven trochee is present in this context as well, that is if the stressed short vowel is followed by a weak syllable: given the impossibility of long vowels or [Və] sequences in standard Albanian, the second syllable of the foot remains phonetically empty when the stem has no suffixes⁶. But when a new suffix finds a syllable node void of segmental material, it fills it (just as in Gheg the suffix /t/ fills the coda position when attached to /shami:/, yielding [ʃa'mi:t]); when the suffix is made of just one consonant, it occupies the available onset, and the vocalic nucleus is free to emerge, not being contiguous to the preceding vowel anymore. Being featurally unspecified, the least marked vowel of Albanian vowel system, [ə], is the obvious choice for this nucleus when it is phonetically realized.

⁶ For theoretical discussions concerning the proposal of feet including ‘silent’ nodes, cf. for example Anderson and Ewen (1987: 119-120) or Kager (1995).

(25) *shami* [ʃa'mi](26) *shamitë* [ʃa'mitə]

With his representation, stress is fully regular: within a stem, it always falls on the stem's penultimate mora (which sometimes is the last segmentally realized mora, while the final weak mora emerges under certain conditions).

Incidentally, this latent syllable seems to be confirmed also by Albanian folk meter. It is a syllabic meter, usually including eight syllables in each line, but the last foot is quantity-sensitive: a line of eight syllables can end in a disyllabic CV(C).CV foot, but also a seven-syllable line ending in a heavy syllable CV(C) is well formed; interestingly also a seven-syllable line ending in CV is acceptable as well (Pipa 1978: 25-26). This equivalence cannot be explained with a principle requiring a stressed seventh syllable regardless of the number of following syllables of the last word, since a nine-syllable line ending in a proparoxytone is not allowed, and receives an additional stress (line-final *málevet* > *màlevét*). On the other hand, it is straightforwardly accounted for counting a latent syllable, hence a mora, after a line-final CV.

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On the nature of vowel harmony: spreading with a purpose

MARIA-ROSA LLORET*

Abstract

This paper discusses the interaction between constraints governing production of speech and those governing perception of speech, focusing on the issue of vowel harmony. Three different cases of vowel harmony within Romance languages are reviewed to show that configurations of the harmonic domains can be triggered either by demands of articulation or by demands of perception. The former pattern entails improvement of perception as a side effect; the latter may show secondary gains on articulation and typically has the primary function of preserving a relevant paradigmatic distinction. I present an analysis cast in Optimality Theory (OT) that allows predicting the direction of the spreading from the type of harmony, following previously established patterns based on the notions of Positional Faithfulness and Positional Markedness. Conditions on targets and triggers are derived from general restrictions placed on the harmonic elements. The selection of the harmonic feature is instead derived from specific properties that features have in each system.

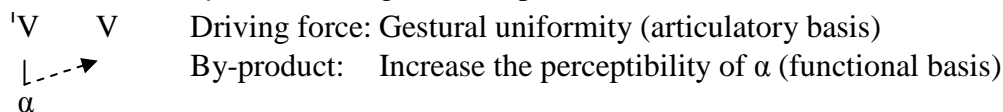
1. INTRODUCTION

Harmony has the effect of making segments that are not necessarily adjacent more similar to each other in some domain (typically, the word or the foot), at the cost of changing input properties. One central point in the study of harmonic properties is to find out the reasons for the spreading. There are at least three approaches to answering such a question. One is articulatorily based: harmony results from languages attempting to minimize resetting of articulators (e.g. Smolensky, 1993, Pulleyblank, 2002). Under this view, the general prediction is that the harmonic feature occurs in a strong position and spreads to weak positions to minimize the articulatory effort (within OT, this is an instance of *Positional Faithfulness*; e.g. Beckman, 1998, Baković, 2000). The figure in (1) illustrates such a pattern with stressed (strong) and unstressed (weak) vocalic positions.

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This work was prepared by the author as a contribution to the *33rd Incontro di Grammatica Generativa*, but is part of a broader study on vowel harmony in the Romance languages of Spain carried out with Jesús Jiménez, from the Universitat de València (cf. Jiménez and Lloret, 2007a, b). The research was supported by grants HUM2004-01504/FILO (<http://www.ub.edu/lincat/>) from the Spanish Ministerio de Educación y Ciencia and the FEDER, and 2005SGR01046 from the Generalitat de Catalunya.

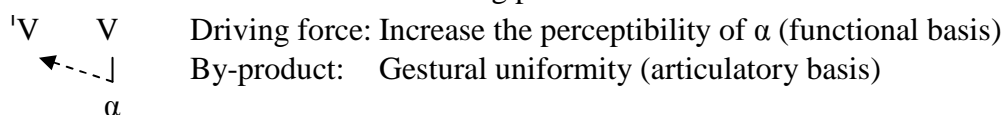
- (1) *Positional Faithfulness*: strong → weak pattern



In the previous example, strong/weak positions refer to stressed/unstressed positions, but classical harmonies of this type also involve the dependence of affix vowels (morphologically weak positions) —typically suffixes— on the vowels in the root (a morphologically strong position).

The alternative approach is perceptually based: harmony results from languages attempting to license contrasts in maximally perceptible positions (e.g. Steriade, 1995, Zoll, 1997). Under this view, the general prediction is that the harmonic feature appears in a weak structure and is attracted to strong positions to become more perceptible (within OT, this is an instance of *Positional Markedness*; e.g. Walker, 2005, 2006). The figure in (2) illustrates such a pattern with unstressed (weak) and stressed (strong) vocalic positions.

- (2) *Positional Markedness*: weak → strong pattern



As in the previous case, strong/weak positions may also involve morphological positions. In this case, the assimilation affects root vowels under the influence of affixes.

A further view is that harmony attempts both to maximize perceptibility and to minimize changes in the state of articulators. This approach favors larger spans of features, which are nevertheless protected by faithfulness to preserve certain input contrasts. Unlike the two previous approaches, this view fails to predict the directionality of the spreading, which has to be somehow stipulated (within OT, this is an instance of *Optimal Domains Theory*, Cole and Kisseberth, 1994 or *Span Theory*, McCarthy, 2004). The issue, then, is whether the three types of harmony actually exist. In this paper I review three examples of vowel harmony (VH) within Romance that have been previously discussed in the OT literature (i.e. Ascrea Italian, Valencian Catalan, and Eastern Andalusian Spanish) to show that, although it is true that certain harmonic patterns improve both perception and articulation (e.g. Valencian VH and certain cases of Ascrea and Andalusian VH), others only improve perception in certain contexts (e.g. certain cases of Ascrea and Andalusian VH). It is also shown that in all cases there is a clear initiator, whether articulatory (Valencian VH) or perceptual (Ascrea and Andalusian VH). Hence, only types (1) and (2) exist and directionality of the spreading can be deduced from the harmonic pattern they follow. The examples further show that the perceptual component is favored when the initiator is articulatory (Valencian VH), but articulation can be favored or not as a side effect when the initiator is perceptual (Ascrea and Andalusian VH).

A related issue discussed in this paper that is not always properly addressed in the study of harmony is the selection of the harmonic feature. The examples analyzed here support Archangeli and Pulleyblank's (2007: 357) viewpoint according to which "evidence suggests that there is no a priori list [of harmonic features], but rather that the differential behavior of features vis-à-vis harmony is an artifact of other properties of those features and their interactions, not specific to harmony itself." In contrast, limitations to the characteristics of targets and triggers are derived from general restrictions placed on harmonic elements.

The paper is organized as follows. Section 2 shows asymmetries encountered in the effects of VH, section 3 analyzes three cases of VH within Romance languages to illustrate different harmonic patterns, and section 4 brings the results together and presents the conclusions.

2. ASYMMETRIES INVOLVING THE FINAL EFFECT

Positional Faithfulness and Positional Markedness are two complementary approaches independently necessary to account for other types of phonological processes that can be used to explain harmonic patterns with distinct motivations. The Positional Faithfulness VH pattern is characterized by predominance of the faithfulness constraints that preserve the features (F) that occur in strong positions (i.e. the IDENT(F)-StrongPosition constraint family; cf. (3a)) (4a). The Positional Markedness VH pattern is instead characterized by predominance of the markedness constraints that favor the association of features to strong positions (i.e. the LICENSE(F)-StrongPosition constraint family; cf. (3b)) (4b).

- (3) a. IDENT(F)-StrongPosition: A segment in a strong position in the output and its correspondent in the input must have identical specification for a feature [F] (cf. Beckman, 1998).
 b. LICENSE(F)-StrongPosition: Feature [F] is licensed by association to a strong position (cf. Walker, 2005).¹
- (4) a. Positional Faithfulness VH pattern:
 IDENT(F)-StrongPosition >> IDENT(F), LICENSE(F)
 b. Positional Markedness VH pattern:
 LICENSE(F)-StrongPosition >> LICENSE(F), IDENT(F)

As said, a well-known asymmetry between the two views concerns the predicted directionality of the spreading: under Positional Faithfulness, the spread takes place from strong to weak positions; under Positional Markedness, the spread takes place from weak to strong positions. A less noticed and interesting asymmetry concerns the final effects of the change. Under Positional Faithfulness, the harmonic process reinforces a feature that already appeared in a strong position by spreading it over other positions. Hence, the weak gets weaker by assimilating to the strong and the strong gets stronger by spreading its features. It thus follows the prototypical pattern according to which strong elements are attracted to strong positions, with the overall effect of turning stronger strong elements. Under Positional Markedness, though, the harmonic process reinforces a feature that appeared in a weak position by spreading it over strong positions. Hence, not only a weak element becomes stronger through the spread, but also a strong element becomes weaker because it is altered through the assimilation and acquires the weak feature. This is a striking effect that merits taking a closer look at the reasons for such spreads, which in my view depend on the properties of the trigger.

Walker (2005, 2006) states the phonetic conditions that features have to satisfy to be characterized as perceptually weak and instigate a spread through licensing. According to her, they have to satisfy one or more of the restrictions mentioned in (5).

¹ Walker (2006), upon Rose and Walker (2004), reformulates LICENSE in terms of correspondence relations (Generalized Licensing). Here, I follow the formulation in Walker (2005) for simplicity, although nothing hinges on this.

- (5) Featural conditions on triggers (*f* is an occurrence of a [F] in an output):
- a. *f* is a specification that is perceptually difficult
 - b. *f* belongs to a prosodically weak position
 - c. *f* occurs in a perceptually difficult combination

The idea I will put forth here is that features have to satisfy a further condition to initiate the spread through licensing: the perceptually threatened trigger (under conditions in (5)) has to convey a relevant *paradigmatic* distinction, whether underlyingly contrastive or not, that harmony improves or preserves. As we shall see, Ascrea VH and Andalusian VH illustrate this situation. Valencian VH shows instead that harmonies initiated from strong positions do not have this functional restriction. Both types of harmonies, though, can share other type of limitations placed on targets and triggers.

3. HARMONIC PATTERNS

3.1. Ascrea Italian

Walker (2005) analyzes different cases of vowel harmony in varieties of Italy in light of the Positional Markedness view, on which I heavily draw the example presented in this section. One of the dialects Walker studies is Ascrea, which has a seven-vowel stressed system (/i, u, e, ε, o, ɔ, a/) but a reduced five-vowel unstressed system (/i, u, e, o, a/). Height characteristics of the vowels in Ascrea are presented in (6). (I follow Walker's binary feature characterization, with the height binary features [high], [low], and [ATR].)

(6)

	i	u	High
[+ATR]	e	o	
[-ATR]	ε	ɔ	
	a		Low

Ascrea illustrates a typical case of perceptually grounded harmony, triggered by a contrastive low-perceptible value of a feature ([+high]) that appears in a weak prosodic position (word-final unstressed vowels) and targets strong positions (stressed vowels) to become more perceptible. The examples in (7) show how a final high vowel triggers assimilation in a stressed mid vowel to its left.

- (7)
- | | | | | | |
|--|-------|---------------|-----|-------|---------------|
| | víʃti | ‘this (m pl)’ | cf. | véʃte | ‘this (f pl)’ |
| | súrdu | ‘deaf (m sg)’ | cf. | sórda | ‘deaf (f sg)’ |

Walker's primarily concern is to show that in this kind of harmonies perceptually threatened phonological contrasts are improved through harmony. The pattern is analyzed as an instance of the markedness constraint LICENSE(+high)- $\acute{\sigma}$ ranked above the faithfulness constraint IDENT(high). The tableau in (8), adapted from Walker (2005), illustrates the basic ranking at work.

(8)

/véʃti/	LIC(+high)-ó	ID(high)
a. véʃti	*!	
☞ b. víʃti		*

Markedness constraints such as LICENSE(+high)-ó only evaluate outputs. Hence, there exists the possibility that the spread takes place from strong to weak positions (with the result [véʃte]), as a means to satisfy gestural uniformity and avoid crucial evaluation of the markedness constraint. In Walker’s analysis, this ungrammatical candidate is ruled out by the action of a high-ranked local constraint conjunction of the markedness constraint *ǫ/Son \geq e,o and the faithfulness constraint IDENT(high) (9). The constraint *ǫ/Son \geq e,o penalizes mid vowels in unstressed syllables, where corner vowels (i.e. [i, u, a]) are favored (cf. Crosswhite, 2004). The constraint IDENT(high) penalizes discrepancies between inputs and outputs with respect to the specifications of the feature [high]. A local constraint conjunction is violated only when both constraints are violated in a given domain (the segment in the case under study) and it is obligatorily ordered before the constraints that conform the conjunction.

- (9) *ǫ/Son \geq e,o &_{seg} IDENT(high): If a segment violates *ǫ/Son \geq e,o it must not violate IDENT(high), and vice versa.

The local conjunction *ǫ/Son \geq e,o &_{seg} IDENT(high) ensures that [e, o] only occur as instances of /e, o/ inputs (i.e. as instances of faithfulness relations); they can never be derived from other input segments as a result of a change (i.e. they cannot arise as an effect of markedness constraints penalizing mid vowels). The effects of this local constraint conjunction are shown in (10).

(10)

/véʃti/	*ǫ/Son \geq e,o & ID(high)	LIC(+high)-ó	*ǫ/Son \geq e,o	ID(high)
a. véʃti		*!		
☞ b. víʃti				*
c. véʃte	*!		*	*

Association of the relevant feature to a strong position minimally satisfies licensing conditions. It is possible, then, that pre-stressed vowels (11a) as well as non-final post-stressed vowels (11b) remain unaffected by harmony, as is the case in Ascrea. Note that the latter, (11b), gives rise to a gapped, discontinuous configuration (i.e. [túrewu]: [... ú_[+high] ... e_[-high] ... u_[+high]], which does not benefit gestural uniformity as far as articulation is concerned.

- (11) a. prefúnnu ‘profound (m sg)’ cf. prefónna ‘profound (f sg)’
 b. túrewu ‘cloudy (m sg)’ cf. tórewa ‘cloudy (f sg)’

In addition to the limits placed on the trigger, Walker (2005) discusses and analyzes other restrictions placed on targets (i.e. only mid vowels are affected) as well as on the resulting change (i.e. it is a stepwise raising). In other words, mid-close vowels /e, o/ are

raised to [i, u] (cf. (7)) and mid-open vowels /ε, ɔ/ are raised to [e, o] (12a), but the low vowel, /a/, does not change (12b).

- (12) a. méti ‘reap (2sg pres ind)’ cf. méto ‘reap (1sg pres ind)’
kapóti ‘overturn (2sg pres ind)’ cf. kapóto ‘overturn (1sg pres ind)’
b. mánni ‘send (2sg pres ind)’ cf. máнно ‘send (1sg pres ind)’

This is an interesting result, since both perceptibility and gestural uniformity favor the change to [i, u] in all cases. There exist, however, input-preserving limitations that control the effects of harmony: sharp raisings are prevented to partially maintain the input properties of the vowels. In Walker’s analysis, this is captured through the local constraint conjunction of two faithfulness constraints: IDENT(high) &_{seg} IDENT(ATR). This combined constraint prevents that a segment changes the feature [high] (a violation of IDENT(high)) and the feature [ATR] (a violation of IDENT(ATR)) at the same time (13).

- (13) IDENT(high) &_{seg} IDENT(ATR): If a segment violates IDENT(high) it must not violate IDENT(ATR), and vice versa.

Additional licensing constraints involving the other height properties (i.e. Low and ATR) are further needed to get the proper stepwise change. For expositional convenience, the cover constraint LICENSE(height)-ó is used instead of appealing to the individual licensing constraints with respect to the height features [high], [ATR], and [low], with the result of spreading to the targets as many height features as possible from the low-perceptible high vowels.² The tableau in (14) illustrates these constraints and ranking at work with the case of a mid-open vowel target.

(14)

/méti/	Id(high) & Id(ATR)	LIC(height)-ó	Id(high)	Id(ATR)
a. méti		**!		
☞ b. méti		*		*
c. míti	*!		*	*

The fact that the low vowel, /a/, never raises impelled by a high vowel (e.g. /mánni/ [mánni] in (12b)) is not due to a restriction on feature incompatibility, since the stepwise raising could turn /a/ into [ε] (we shall see a case of feature co-occurrence restriction in §3.3 with respect to Andalusian VH). This limitation is comparable to many other cases of harmony that require certain degree of similarity between the trigger and the target to apply: Archangeli and Pulleyblank (2007) cite several languages with vowel or consonant harmonies that show such restrictions and the case of Valencian VH presented below also fits this pattern. In Ascrea, vowels of contradictory height (i.e. low and high vowels) are too dissimilar to interact, and the height harmony only applies between non-low ([–low]) vowels. In Walker’s analysis, this is interpreted as a consequence of high ranking the faithfulness constraint IDENT(low), as illustrated in (15).

² Note that ‘height’ is not an arbitrary set of individual features but rather has phonetic basis, an assumption carried over from traditional feature theory (cf., among others, Clements, 1985, Clements and Hume, 1995). Padgett (2002) recasts this view within Feature Class Theory, where ‘Height’ and ‘Color’ are considered feature classes for vowels.

(15)

/mánni/	ID(low)	LIC(height)- $\acute{\sigma}$	ID(high)
☞ a. mánni		*	
b. ménni	*!	*	
c. ménni	*!	*	
d. mínni	*!		

As Maiden (1991) points out, an additional and relevant condition for the spreading concerns the grammatical nature of the vowels that cause the change: the feature of the vowel that instigates the change is not only phonologically contrastive but also morphologically contrastive; that is, the trigger is not any final high vowel but is a suffix vowel that is the sole carrier of a morphological distinction (e.g. masculine or second-person singular present). Therefore, in Ascrea, a phonological *and* a morphological contrast are perceptually improved through harmony. Walker (2005) disregards this grammatical condition and argues for the purely phonological character of the process.³ In my view, however, in Ascrea, this grammatical contrast is the *additional* condition required to the (weak) trigger to instigate a change that is capable of altering elements in strong positions. The paradigmatic condition (16), which adds to the feature conditions presented in (5) on triggers, captures this extra limitation.

- (16) Paradigmatic condition on triggers:
f preserves a paradigmatic distinction

In Ascrea, this condition is morphological and the relevant feature is underlyingly contrastive (similar cases are reported for other Italian varieties in Maiden, 1991 and for other Romance varieties in Dyck, 1995).⁴ The Andalusian case analyzed in §3.3 will show, though, that condition (16) is not necessarily morphological but can protect a derived contrast that somehow preserves relevant input information.⁵

3.2. Valencian Catalan

The VH system of Valencian Catalan is analyzed in Jiménez (1998) within the OT model of Optimal Domains (Cole and Kisseberth, 1994).⁶ Valencian VH illustrates a typical case of articulatory harmony, triggered by the color features (i.e. [front] and [back]) that appear in a strong prosodic position (stressed vowel) and spread over weak positions (unstressed vowels)

³ Walker's (2005) viewpoint lies on the existence of a few cases she reports from other Veneto varieties where root vowels and non-final post-stressed inflectional vowels are capable of triggering harmony as well. All the examples are proparoxytones and show alternative non-harmonized variants (Central Veneto: g[ó]m(b)i-o ~ g[ú]m(b)i-o 'elbow', fas[é]-vimo ~ fas[i]-vimo 'have (1pl impf ind)'; Grado: s[ó]ri[ʃ]-o ~ s[ú]ri[ʃ]-o 'mouse'), which suggest an interpretation in terms of analogical extension from the regular (non-alternating) cases.

⁴ Dyck's (1995) cross-dialectal and cross-linguistic study of metaphony confirms that phonetically high vowels trigger harmony only under circumstances of high/mid contrasts in suffixes.

⁵ Campos-Astorkiza (2007) also modifies Walker's (2005, 2006) analysis by including the notion of 'minimally contrastive features', which helps to account for the facts observed in Ascrea as well as those encountered in certain northern Spanish varieties that Campos-Astorkiza studies. The proposal I put forth here has a wider scope than Campos-Astorkiza's, since it incorporates not only input contrast requirements (such as the ones found in Ascrea and in varieties of northern Spain) but also surface derived distinctions that convey relevant paradigmatic information (such as those entailed by the Andalusian variety analyzed in §3.3).

⁶ The examples and insights of this section owe much to Jiménez (1998, 2002) and discussion with him.

to smooth the articulation. The relevant facts are as follow. Valencian has a seven-vowel stressed system (/i, u, e, ε, o, ə, a/) and a reduced five-vowel unstressed system (/i, u, e, o, a/) as Ascrea. The characteristics of the Valencian vowels are presented in (17).⁷

(17)

		Back	
	i		u High
[+ATR]	e		o
[-ATR]	ε	ə	
		a	Low
	Front		

In the harmonic process, mid-open stressed vowels (/ε, ə/) extend their color features to the following unstressed /a/, triggering [ε, ə] in unstressed positions (18a). The example in (18b) shows that, in the same context, words with low vowels remain unaltered.

- (18) a. /télə/ [télε] ‘cloth’ cf. /péra/ [péra], *[pére] ‘pear’
 /kóza/ [kózə] ‘thing’ cf. /tóta/ [tóta], *[tóto] ‘all (f sg)’
 b. /káza/ [káza] ‘house’

Walker (2005) proposes an interpretation of Valencian VH in terms of Positional Markedness based on an observation made by Jiménez (1998: 148): “Our hypothesis is that harmony is a process whose goal is to make the marked vowels /ε/, /ə/ more perceptible.” Along these lines, Walker (2005: 965) suggests that “here, the weakness lies strictly in featural content, not prosodic position. Because [ε, ə] occur contrastively only under stress [...] and an imperative to maximize extension of perceptually difficult features [...] drives harmony”. In my view, this is an unnecessary move, since Valencian VH is better analyzed as a typical instance of harmony driven by Positional Faithfulness, that is, as a spread of features from strong (stressed) to weak (unstressed) positions to homogenize articulation. The tableau in (19) shows the basics of such pattern: the faithfulness constraint IDENT(Color)-σ is ranked above the markedness agreement constraint AGREE-[-ATR](Color), which ensures that [-ATR] vowels agree in color features. More general IDENT (and LICENSE) constraints are ranked lower.

(19)

	/télə/	Id(Color)-σ	AGR-[-ATR](Color)	Id(Color)
a.	téla		*!	
☞ b.	télε			*
c.	tála	*!		*

⁷ As in the case of Ascrea, I follow Walker’s (2005) binary feature characterization: the height binary features are [high], [low], and [ATR]; the color binary features are [front] and [back] (on feature classes, see note 2). Jiménez (1998) uses [RTR] instead of [-ATR] and Round instead of [+back]. Other authors use Coronal and Labial instead of binary [front] and [back], respectively, with the benefit of unifying the place features for vowels and consonants (cf., among others, Clements and Hume, 1995). Although nothing in the explanation presented in this paper hinges on a particular feature specification, see the Andalusian example discussed in §3.3 for an interesting case of interaction between vowel and consonant features.

In addition to the pattern involved (i.e. spread taking place from strong to weak positions), a firm piece of evidence for the Positional Faithfulness view comes from another observation made by Jiménez (1998: 159): “The existence of vowel harmony triggered by /ε/ and /ɔ/ seems to be linked to the extraordinary openness of these vowels in Valencian (Recasens, 1991: 99-100). They are considerably more open than in the other Catalan dialects.” This specific characteristic of the vowel system of Valencian explains the feature conditions placed on the harmonic elements, i.e. why the triggers are mid-open vowels, why they only target /a/, and why the harmonic features involve the color features. The feature condition regarding the trigger is explained in terms of prominence. More sonorous (open) vowels better fit strong (stressed) positions. Their articulatory influence, hence, is stronger than that of close segments and they are more prone to spread. (Note that in the case of stressed /a/ —the most open, sonorous vowel—, the effects of the harmony remain unnoticed because /ε, ɔ/ do not occur in unstressed position; hence, only [á]...[a] sequences from /á/.../a/ inputs exist.) It is, thus, a typical instance of strong, prominent features spreading from strong, prominent positions. Regarding the feature conditions on targets, the restriction to the low vowel is not surprising in light of the Valencian vowel system characteristics: since [ε, ɔ] and [a] are [–ATR] vowels and they have a very close height in Valencian, they are more prone to assimilate among them.⁸ It is a requirement of similarity between target and trigger comparable to the one found in Ascrea: in Ascrea, the harmonic vowels were non-low vowels; in Valencian, the harmonic vowels are [–ATR] vowels.⁹ As a result of the harmony leading to homogenize articulation between similar [–ATR] segments, color features of the weak (unstressed) vowel (/a/) adapt to the ones associated to the strong (stressed) vowels (/ε, ɔ, a/). A secondary effect of this extension is indeed the gain in perception of the [ε, ɔ] vowels. An extra cost of the harmony is the violation of structure preservation (Kiparsky, 1985), since the change gives rise to [ε, ɔ] allophones in unstressed position (a similar situation will be discussed regarding Andalusian VH in §3.3).

Since in this view of the facts the primary motivation for Valencian VH is articulation, the prediction is that there should not be gapped, discontinuous configurations, as it is the case; cf. (20). For example, /tétrika/ does not change to [tétrikε] because the vowel in between, [i], breaks the homogeneity of the [ε] gesture, and [i] is not similar enough to the trigger ([ε]) to become harmonized too; likewise, /rótula/ does not become [rótulɔ] because [u] breaks the homogeneity of the [ɔ] gesture, and [u] is not similar enough to the trigger ([ɔ]) to be harmonized, and so on.¹⁰

⁸ As said, the effects of such an assimilation only overtly surface in the case of stressed /ε, ɔ/ followed by unstressed /a/, because /ε, ɔ/ do not occur in unstressed position.

⁹ According to some authors, similarity is a means to differentiate local spread (or assimilation) from long-distance spread (or harmony through correspondence relations, i.e. feature extension as a copying mechanism): long-distance agreements require a certain degree of similarity between targets and triggers, while local agreements usually do not impose such conditions (Rose and Walker, 2004). Another means to differentiate long-distance agreements from local agreements is that the former may operate on specific phonological classes (only vowels or only consonants, e.g.) although the sets of features involved may clearly interact phonetically with other non-affected, transparent classes (as is the case for features such as [labial] and [coronal]).

¹⁰ As Jiménez (1998) points out, there only exists one example of proparoxytone words with penultimate /a/ preceded by /é, ó/ and followed by /a/, and it is a learned word: *apòstata* ‘apostate’. In this case, speakers vacillate between a harmonized non-gapped pronunciation (*apòstata* [apóstatɔ]) and a non-harmonized one

(20)	/tétrika/	[tétrika]	(*[tétrike])	‘gloomy (f sg)’
	/pérdua/	[pérðua]	(*[pérðue])	‘loss’
	/rótula/	[rótula]	(*[rótulo])	‘kneecap’
	/kómika/	[kómika]	(*[kómikə])	‘comical (f sg)’

In the prototypical Valencian VH pattern the domain of the harmony is the foot (F), which contains the stressed syllable and all post-stressed ones (Cabré, 1993, Jiménez, 2002). Hence, pre-stressed vowels are not affected by the spread and the harmony surfaces as progressive (21a). Jiménez (1998, 2002) notes that in certain southern varieties the harmonic domain extends to the whole word, giving rise to fully harmonized words. In this case, the harmony surfaces as bi-directional (21b).

(21)	a.	/aféкта/	[a(fékte) _F]	‘affect (3sg pr ind)’
		/tovaλόλα/	[tova(λόλο) _F]	‘towel’
	b.	/aféкта/	[éfekte]	
		/tovaλόλα/	[təvəλόλο]	

3.3. Eastern Andalusian Spanish

The VH system of Eastern Andalusian Spanish is analyzed in Jiménez and Lloret (2007a) within the Positional Markedness licensing view, on which the analysis presented in this section is mainly drawn.¹¹ Andalusian VH is an instance of perceptually grounded harmony, spreading from weak (unstressed) to strong (stressed) positions to improve the perceptibility of the harmonic feature ([–ATR] in vowels). Unlike the Ascrea example, though, the feature that spreads is not inherently weak nor is it present underlyingly, but it derives from local assimilation. Another interesting difference with respect to the previously analyzed cases is that the harmonized words can improve articulation or not, since there exist vacillating pronunciations with gapped (i.e. discontinuous) and non-gapped (i.e. non-discontinuous) configurations in proparoxytones. The basic facts are as follows. Spanish has a five-vowel stressed and unstressed system: /i, u, e, o, a/, with the characteristics shown in (22).

		Back	
		i	u High
e		o	
Front		a	Low

Many Spanish varieties have cases of final consonant weakening with concomitant optional and inconsequential laxing of the preceding vowel, but Eastern Andalusian shows a stable process of word-final /s/-weakening (i.e. aspiration and further loss, depending on the variety) involving systematic opening of the preceding vowel (23a), which becomes [–ATR],

([apóstata]), but a gapped realization is not possible (*[apóstato]). On variation conditioned by homogeneity in the gestures (an instance of *GAP), see §3.3.

¹¹ Jiménez and Lloret (2007a) cast the analysis within General Licensing, with correspondence relations, along the lines established by Rose and Walker (2004) and Walker (2006). Here, however, for simplicity and parallelism with the Ascrea case presented in §3.1, I recast the analysis along the lines of Walker (2005). Nothing hinges on this, though (see note 1 too).

and further fronting of the low vowel /a/, which becomes [-ATR, +front] (23b). (The data presented here are from educated people from Granada, with systematic loss of /s/.)

(23)	a.	-/is/:	[i]	mis	[mɨ]	‘my (pl)’
		-/us/:	[u]	tus	[tʊ]	‘your (pl)’
		-/es/:	[ɛ]	mes	[mɛ]	‘month’
		-/os/:	[ɔ]	tos	[tɔ]	‘cough’
	b.	-/as/:	[æ]	mas	[mæ]	‘plus’

In this context, preceding mid and low vowels harmonize with respect to opening (i.e. [-ATR] is the harmonic feature) (24a). Preceding high vowels do not harmonize (24b).

(24)	a.	tienes	[tjéɛɛ]	‘have (2sg pr ind)’	lejos	[léhɔ]	‘far’
		monos	[mónɔ]	‘monkeys’	asas	[ásæ]	‘handles’
		tesis	[tésj]	‘thesis’	Venus	[béɲu]	‘Venus’
	b.	crisis	[krísj]	‘crisis’	míos	[míɔ]	‘mine (pl)’
		muchos	[múʃɔ]	‘many’	tules	[túle]	‘tulles’

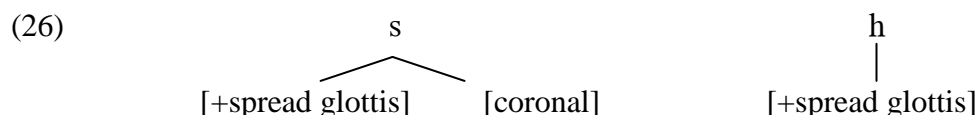
The harmonic spread takes place from the last syllable to the stressed syllable. Pre-stressed (25a) and non-final post-stressed (25b) vowels can be affected or not by harmony. In both cases, there is a strong tendency to harmonize the whole word when the vowels are identical, as in (25c).

(25)	a.	momentos	[moméntɔ] ~ [móméntɔ]	‘instants’
	b.	tréboles	[tréβole] ~ [tréβole]	‘clovers’
	c.	tenéis	[tenéj]	‘have (2pl pr ind)’
		monótonos	[mɔnótɔɔ]	‘monotonous (pl)’

In Spanish, there are very few words ending in *-j /h/* (*reloj* ‘watch’, *boj(e)* ‘box tree, boxwood’, (*h*)*erraj* ‘coal dust’, *sij* ‘Sikh’), but they all show the same behavior as *-s* words (e.g. *reloj* [relɔ] ~ [relɔ]).

As illustrated by the previous examples, the grammatical nature of the final consonant that initiates the opening is irrelevant in the variety under study, since it can be the sole exponent of a suffix (e.g. *monos* [mónɔ], where *-s* is the plural marker), part of a suffix (e.g. *tenéis* [tenéj], where *-is* is the second-person-plural marker) or part of the stem (e.g. *reloj* [relɔ]). In all cases, the harmonic process applies as expected.

The opening and further fronting of /a/ are local assimilations derived from the feature characteristics of the two fricatives involved in the process (i.e. /s/ and /h/). Jiménez and Lloret (2007a) depart from the feature characterization of /s/ and /h/ proposed in Vaux (1998), cf. (26), which is also followed by Gerfen (2002) to account for other cases of /s/-aspiration (and concomitant lengthening) that Eastern Andalusian shows in word-internal coda position (cf. *casta* [ká^ht.ta] ‘caste’).



The representation of /s/ as [+spread glottis] is phonetically supported by the well-known fact that voiceless fricatives are produced with a greater width than are voiceless stops. Under this view, /s/-aspiration is interpreted as loss of supralaryngeal features (i.e. debuccalization). In the variety under study, [s, h] are not allowed word-finally, neither are aspirated vowels (-[V^h]). In Jiménez and Lloret, this limitation is derived from the interaction of different licensing constraints with conditions on codas, which are not of focal interests for present purposes. For expositional convenience, here I use the constraint *-s/h (a coda condition banning [s], [h] and any other instance of aspiration in word final position) as a cover constraint for such effects. The interesting facts to be discussed concern the way the features characterizing -/s/ and -/h/ are preserved in the outputs. The claim is that the laryngeal feature [+spread glottis] surfaces as the vocalic feature [-ATR], because the opening of the glottis contributes to the raising of the first formant (i.e. opening) in vowels. Hence, the extension of [+spread glottis] as [-ATR] on the previous vowel guarantees preservation of the laryngeal feature present in /s/ and /h/. It is a way of satisfying MAX(LaryngealF) (“A laryngeal F in the input has a correspondent in the output”; Gordon, 2001: 19) under loss of the trigger (i.e. under loss of /s, h/ due to *-s/h).¹² Additionally, the feature [coronal], present in /s/, is preserved by association to the previous vowel too, as a means to comply with MAX(Place). On the preceding vowel, [coronal] is interpreted as the vocalic feature [front]. The effects, though, are only visible in the case of /a/, which turns to [æ], because /e, ε, i/ already are front vowels and back vowels, which are all round (labial) in Catalan, cannot be front (*ROUND/FRONT: ‘Round vowels are not Front’; cf. Archangeli and Pulleyblank, 1994).¹³ This is a typical case of feature co-occurrence restrictions preventing certain changes, or blocking harmony when it would apply to one of the dispreferred target configurations. On the whole, new [-ATR] vowels arise, which violate the markedness constraint against the occurrence of [-ATR] vowels, i.e. *V/-ATR (‘No [-ATR] on vowels’). The crucial ranking needed to account for the local output expression of the deleted -/s, h/ is shown in (27).

- (27) * ROUND/FRONT, *-s/h >> MAX(LarF), MAX(Pl) >> *V/-ATR >> MAX

The tableau in (28) illustrates how this ranking works. Any candidate ending in [s, h] or in any other instance of aspiration is discarded by *-s/h (cf. (28a-c, e-g, i-k)). Candidates that incorporate the [coronal] feature of -/s/ in the preceding back (round) vowel are discarded too due to feature incompatibility (cf. (28i-l)). In this situation, candidate (28h) wins over candidate (28d) because it preserves as many features as possible from -/s/ on the previous vowel (i.e. the laryngeal feature [+spread glottis], implemented on vowels as [-ATR]).

¹² An alternative way of satisfying MAX(LaryngealF) involves aspiration in the offset of the previous vowel with concomitant vowel and consonant compensatory lengthening effects, a situation typically encountered in internal coda position; e.g. *casta* [ká^ht.ta] ‘caste’ (Gerfen, 2002).

¹³ As mentioned in note 7, in certain feature systems vowel and consonant interactions can be derived from the same set of features.

(28)

/tós/	*ROUND/FRONT	*-s/h	MAX(LarF)	MAX(Pl)	*V/-ATR	MAX
a. tós		*!				
b. tóh		*!		*		
c. tó ^h		*!		*		
d. tó			*!	*		*
e. tós		*!			*	
f. tóh		*!		*	*	
g. tó ^h		*!		*	*	
☞ h. tó				*	*	*
i. tọ́s	*!	*			*	
j. tọ́h	*!	*			*	
k. tọ́ ^h	*!	*			*	
l. tọ́	*!				*	*

The tableau in (29) illustrates the same ranking at work in the case of a final low vowel, which can incorporate the [coronal] feature from *-s/*. Here, the winning candidate, (29f), shows a [-ATR, +front] vowel, [æ̣], which satisfies both MAX(LarF) as well as MAX(Pl) and does not violate *ROUND/FRONT. (From now on, I only include the relevant candidates in the tableaux for the sake of simplicity.)

(29)

/más/	*ROUND/FRONT	*-s/h	MAX(LarF)	MAX(Pl)	*V/-ATR	MAX
a. más		*!				
b. máh		*!		*		
c. má ^h		*!		*		
d. má			*!	*		*
e. mą̣				*!	*	*
☞ f. mą̣̣					*	*

When fricatives occur in intervocalic position, they are maintained because they appear in onset position and hence do not violate the word-final coda condition on *s/h*. In these circumstances, there is no need to implement vowels with the [-ATR] feature and the most faithful candidate, (30a), wins.

(30)

/tóse/	*ROUND/FRONT	*-s/h	MAX(LarF)	MAX(Pl)	*V/-ATR	MAX
a. tóse						
b. tóhe				*!		
c. tóe			*!	*		*
d. tóse					*!	
e. tóe			*!	*	*	*

Tableaux (28) and (29) have illustrated how *-s, h/* are preserved on the phonetic characteristics of the previous vowels as an instance of local feature extensions giving rise to a novel (surface) vowel contrast through the derived [ATR] feature. This is not the case for the other assimilated feature —i.e. [coronal] (on consonants), [front] (on vowels)—, because [front] is already contrastive in the input vocalic system of Spanish (cf. (22)). The claim is that [-ATR] spreads, and not [+front], because it constitutes a weak trigger for two reasons. It does not convey an input contrast but bears a surface distinction and furthermore, it occurs in a weak (word-final) position. Hence, despite its morphological nature (it can be the expression of a morpheme or not) and its phonetic nature ([-ATR] is not an inherently weak property), it spreads to strong positions (i.e. stressed syllables) to become more visible. Note additionally that the new [ATR] contrast emerges in the unstressed (weak) system of Andalusian Spanish, while other Romance languages with [ATR] input distinctions show this contrast in the stressed (strong) system (we saw this distribution, e.g., in the vowel systems of Ascrea Italian and Valencian Catalan). The long distance assimilation is accounted for by ranking the licensing constraint LICENSE(-ATR)- $\acute{\sigma}$, which demands the association of [-ATR] to a stressed syllable, above *V/-ATR (the markedness constraint that penalizes [-ATR] vowels). The fact that high vowels ([i, u]) remain unaffected by harmony is captured by high ranking the co-occurrence feature restriction *HIGH/-ATR ('High vowels are not [-ATR]'; cf. Archangeli and Pulleyblank, 1994). The basic relevant ranking is presented in (31).

(31) ... MAX(LarF), MAX(Pl) >> *HIGH/-ATR >> LICENSE(-ATR)- $\acute{\sigma}$ >> *V/-ATR ...

The tableau in (32) illustrates a regular case of [-ATR] spreading from the final unstressed syllable to the previous stressed syllable, which contains a mid vowel that can associate the [-ATR] value (cf. (32c)). The tableau in (33) illustrates the same situation in the case of a high stressed vowel, which does not associate the [-ATR] value due to feature incompatibility (cf. (33c)). The winning candidate, though, presents a [-ATR] word-final high vowel (cf. (33b)) in order to satisfy the high ranked MAX(LarF) constraint, that is, in order to preserve the laryngeal feature of the deleted *-s*. (In the tableaux below I do not include candidates with final [s] or aspiration for simplicity.)

(32)

/tjénes/	MAX(LarF)	MAX(Pl)	*HIGH/-ATR	LIC(-ATR)- $\acute{\sigma}$	*V/-ATR
a. tjéne	*!				
b. tjéne				*!	*
c. tjéne					**

(33)	/krísi/	MAX(LarF) : MAX(Pl)	*HIGH/-ATR	LIC(-ATR)-ó	*V/-ATR
a.	krísi	*!			
b.	krísi		*	*	*
c.	krísi		**!		**

If Andalusian VH is well interpreted as an instance of Positional Markedness harmony, the prediction is that it may give rise to gapped configurations in proparoxytone words, because the weak feature can be properly licensed just through association to the strongest position (i.e. the stressed syllable). The data match this prediction, since Andalusian shows gapped configurations with unaffected post-stressed vowels, although they alternate with non-gapped variants with harmonic realizations; cf. (34). The example in (34b) shows that the harmonic domain includes the clitics. In this context, if more than one syllable appears in non-final post-stressed position, either all of them harmonize or only the stressed vowel assimilates.

- (34) a. tréboles [tréβole] ~ [tréβole] ‘clovers’
 b. cómetelos [kómetelo] ~ [kómetelo] ‘eat them’
 (*[kómetelo], *[kómetelo])

The analysis presented so far can straightforwardly handle this variation by the specific ranking of the *GAP constraint on feature linkage (upon Archangeli and Pulleyblank, 1994), which expresses an articulatory condition against discontinuous gestures. If *GAP is ranked below *V/-ATR, it gives rise to discontinuous outcomes (cf. (35a)), whereas when it is ranked above *V/-ATR, it gives rise to homogeneous outcomes, with the side effect of further highlighting the harmonic feature (cf. (35b)). This analysis also ensures that either all the non-final post-stressed vowels harmonize (a maximal pattern that favors articulation as well as perception) or only the stressed vowel harmonizes (a minimal pattern that benefits perception in detriment of articulation) (cf. (34b)). The tableaux in (36) and (37) illustrate both situations.

- (35) a. Unaffected post-stressed: ... LICENSE(-ATR)-ó >> *V/-ATR >> *GAP ...
 b. Affected post-stressed: ... LICENSE(-ATR)-ó, *GAP >> *V/-ATR ...

(36)	/tréboles/	LIC(-ATR)-ó	*V/-ATR	*GAP
a.	tréβole		**	*
b.	tréβole		***!	

(37)	/tréboles/	LIC(-ATR)-ó	*GAP	*V/-ATR
a.	tréβole		*!	**
b.	tréβole			***

The last issue to address concerns pre-stressed vowels, which may also be affected by harmony or not, as illustrated in (38).

- (38) *momentos* [moméntɔ] ~ [mɔméntɔ] ‘instants’
 reloj [reló] ~ [rɛló] ‘watch’
 relojes [relóhɛ] ~ [rɛlóhɛ] ‘watches’

When harmony spreads up to the initial syllable, a complete homogeneous domain arises. This is the maximal-extension pattern of VH. The question now is which factor induces the maximal spreading. It can be interpreted either as a matter of articulation (to homogenize the gestures) or as a matter of perception (to further reinforce the visibility of the harmonic feature). Under the former view, these cases are analyzed as instances of laziness (LAZY: ‘Minimize effort’; cf. Kirchner, 1998), which subsumes the effects of *GAP. Under the latter view, they are analyzed as instances of a licensing constraint involving all vowels to maximally reinforce the visibility of the harmonic feature. Examples with intervening high vowels (cf. (39)), which cannot associate the [-ATR] value due to the feature co-occurrence restriction *HIGH/-ATR, provide clear support for the licensing view.

- (39) *cojines* [kohíne] ~ [kɔhíne] ‘cushions’
 cotillones [kotizóne] ~ [kɔtizóne] ‘cotillions’

In words like *cojines* /kohínes/, for example, the stressed vowel is not affected by the [-ATR] spread because it is high (an effect of the ranking *HIGH/-ATR >> LICENSE(-ATR)-ó; cf. (31)). This word nevertheless shows two optional vowel-harmonic variants. It can display the minimal stress-targeted pattern and, under the impossibility of licensing [-ATR] in the stressed (high) vowel, a non-gapped configuration arises: [kohíne], with the non-discontinuous configuration [...o_[+ATR] ... í_[+ATR] ... ɛ_[-ATR]]. Or it can display the maximal-extension pattern by assimilating the initial vowel, in which case a gapped configuration arises: [kɔhíne], with the discontinuous configuration [...ɔ_[-ATR] ... í_[+ATR] ... ɛ_[-ATR]]. If articulation (governed by LAZY-type of constraints, for instance) were the decisive factor of harmony, there would be no need to extend the harmonic [-ATR] feature to pre-stressed vowels when an intervening [+ATR] vowel occurs. Since it does, it is because licensing considerations impel harmony, which in this case fits the pattern of maximal extension. In Jiménez and Lloret (2007a), assimilation of pre-stressed vowels is analyzed as an instance of the licensing constraint LICENSE(-ATR)-V, which favors the association of the weak feature to all vocalic (strong) positions in order to maximally reinforce the visibility of this phonetic property.¹⁴ LICENSE(-ATR)-V (impelling [-ATR] association to all vowels) has a wider scope than LICENSE(-ATR)-ó (impelling [-ATR] association to the stressed vowel only); therefore, it must be ordered lower (inclusive relation). Its position with respect to *V/-ATR shapes the two patterns: if *V/-ATR is ranked above LICENSE(-ATR)-V, pre-stressed vowels remain unaffected (40a); if it is ranked below it, they harmonize (40b). The tableaux in (41) and (42) illustrate the patterns in (40a) and (40b), respectively.

¹⁴ Vowels are the peaks of the syllable and as such appear in a stronger position than consonants, which occur in the margins of the syllable.

- (40) a. Unaffected pre-stressed: ... LIC(-ATR)-σ >> *V/-ATR >> LIC(-ATR)-V ...
 b. Affected pre-stressed: ... LIC(-ATR)-σ >> LIC(-ATR)-V >> *V/-ATR ...

(41)

/kohínes/	*HIGH/-ATR	LIC(-ATR)-σ	*V/-ATR	LIC(-ATR)-V
☞ a. kohíne		*	*	**
b. kōhíne		*	**!	*
c. kōhíne	*!		***	

(42)

/kohínes/	*HIGH/-ATR	LIC(-ATR)-σ	LIC(-ATR)-V	*V/-ATR
a. kohíne		*	**!	*
☞ b. kōhíne		*	*	**
c. kōhíne	*!			***

The interpretation under licensing also predicts that if more than one vowel appears in pre-stressed position either all of them harmonize or none, as it is the case; cf. (43). The tableau in (44) illustrates the minimal stress-targeted pattern. The tableau in (45) illustrates the maximal-extension pattern.

- (43) monederos [moneðéɾɔ] ~ [mɔneðéɾɔ] ‘purses’
 (*[moneðéɾɔ], *[mɔneðéɾɔ])

(44)

/monedéros/	LIC(-ATR)-σ	*V/-ATR	LIC(-ATR)-V
☞ a. moneðéɾɔ		**	**
b. mɔneðéɾɔ		****!	
c. moneðéɾɔ		***!	*
d. mɔneðéɾɔ		***!	*

(45)

/monedéros/	LIC(-ATR)-σ	LIC(-ATR)-V	*V/-ATR
a. moneðéɾɔ		**!	**
☞ b. mɔneðéɾɔ			****
c. moneðéɾɔ		*!	***
d. mɔneðéɾɔ		*!	***

When pre-stressed and non-final post-stressed vowels occur in the same word, as in (46), either only the stressed vowel harmonizes (the minimal stress-targeted pattern, cf. (46a)), or stressed and post-stressed vowels harmonize (in order to satisfy *GAP, cf. (46b)), or all of them harmonize (the pattern that maximally satisfies LICENSE(-ATR)-V, cf. (46c)). It is impossible, though, that pre-stressed vowels harmonize but not the post-stressed ones, cf. (46d).¹⁵

- (46) /rekóhelos/ recógelos ‘pick them’
- a. [rekóhelɔ]
 - b. [rekóhɛɔ]
 - c. [rɛkóhɛɔ]
 - d. *[rɛkóhɛɔ]

These cases are particularly important for the analysis put forth here. *GAP (an articulatorily based constraint) and LICENSE(-ATR)-V (a perceptually based constraint) are not instances of a unique constraint; however, they interact in a significant way: when *GAP is violated LICENSE(-ATR)-V is violated as well, but not vice versa. Hence, the prediction is that there is no way of avoiding the effects of *GAP while satisfying LICENSE(-ATR)-V, as shown in (47).

(47)	/ e ó e o /	LIC(-ATR)-ó	*GAP	LIC(-ATR)-V	
a.	e ó e ɔ	satisfied	violated	violated	Minimal-extension pattern
b.	e ó ɛ ɔ	satisfied	satisfied	violated	Medium-extension pattern
c.	ɛ ó ɛ ɔ	satisfied	satisfied	satisfied	Maximal-extension pattern
d.	ɛ ó e ɔ	satisfied	violated	violated	<i>Unattested pattern</i>

The striking result is that under Jiménez and Lloret’s account none of the possible rankings is compatible with the unattested pattern illustrated in (47d). In other words, through constraint re-ranking the results in (47a-c) can emerge, but the unattested result in (47d) is impossible to achieve. (48) summarizes the key rankings of the attested patterns. (Recall that the ranking of the constraint LICENSE(-ATR)-ó above LICENSE(-ATR)-V is universally fixed due to their inclusive relation.)

- (48) a. *Minimal-extension pattern* (only the stressed vowel agrees in [-ATR]):
 LIC(-ATR)-ó >> *V/-ATR >> LIC(-ATR)-V, *GAP
- b. *Medium-extension pattern* (vowels up to the stressed syllable agree in [-ATR]):
 LIC(-ATR)-ó, *GAP >> *V/-ATR >> LIC(-ATR)-V
- c. *Maximal-extension pattern* (all vowels agree in [-ATR]):
 In this pattern the relevant ordering is: LIC(-ATR)-V >> *V/-ATR
 Hence: LIC(-ATR)-ó >> LIC(-ATR)-V >> *V/-ATR, *GAP, or
 LIC(-ATR)-ó >> LIC(-ATR)-V, *GAP >> *V/-ATR, or
 LIC(-ATR)-ó, *GAP >> LIC(-ATR)-V >> *V/-ATR

¹⁵ As previously said, when all the vowels are equal, they are more prone to assimilate, as in *monótonos* ‘monotonous (m pl)’, with the pronunciation [monótɔnɔ] favored over the others. This is just another instance of the aforementioned requirement of similarity between targets and triggers in long-distance assimilations, comparable to the ones previously reported for Ascrea and Valencian VH.

Adopting an articulatory view of harmony by deriving the effects of *GAP and LICENSE(-ATR)-V from LAZY-type constraints, for instance, does not make the right prediction, because in this case factorial typology cannot preclude the inexistence of the pattern presented in (47d). This remarkable result confirms the adequacy of the analysis presented here in terms of licensing, as well as the need for a model that allows the interaction between articulatory and perceptual restrictions to account for all the effects harmonic phenomena present.

4. CONCLUSION

In §3 I have sketched the analysis of three cases of VH in Romance. The review leads us to the conclusion that configurations on VH can be triggered either by demands of articulation or by demands of perception. Valencian illustrates a typical case of articulatory VH driven by Positional Faithfulness, with the spread taking place from strong to weak positions. Ascrea and Andalusian are instead instances of perceptual harmony driven by Positional Markedness, with the spread going from weak to strong positions. Since Valencian VH is articulatory driven, discontinuous (gapped) configurations are predicted not to emerge and the gains on the perceptibility of the harmonic feature are considered to be a side effect. Contrariwise, in perceptually driven VH patterns, discontinuous configurations are predicted to be able to exist and secondary gains on articulation coexist in accordance with these configurations: Ascrea VH illustrates a case of gapped configurations while Andalusian illustrates a case with restricted (and predicted under the account presented here) variation. In sum, using both articulatory and perceptual approaches to harmony provides a more grounded analysis of VH and yields a more robust understanding of the phenomenon.¹⁶

Feature content alone does not trigger harmony, but there is an array of properties that induce the spread regarding gestural, perceptual, and contrastive factors. In each case, the selection of the harmonic feature depends on specific properties that features have in each system, such as the extraordinary openness of mid [-ATR] vowels in Valencian. Along these lines, I have claimed that perceptually driven VH needs an extra paradigmatic reason for the spread: in Ascrea, the harmonic feature is phonetically inherently weak ([+high]), appears in a weak position (in a word-final unstressed vowel), and is the sole exponent of a morphological contrast; in the Andalusian variety under study, the harmonic feature is not phonetically inherently weak ([-ATR]), it does appear in a weak position (in a word-final unstressed vowel), and, although [ATR] is not an input contrastive feature, it ends up conveying a derived distinction in a weak position.

Whatever the pattern, limitations regarding similarity between targets and triggers are common in this type of long distance agreements and play a crucial role when delimiting the scope of harmony: in Ascrea the harmonic vowels are non-low, in Valencian the harmonic vowels are [-ATR], and in Andalusian unstressed vowels are more prone to show the maximally assimilated pattern if all vowels are alike.

¹⁶ Revithiadou *et al.* (2006) propose an insightful analysis of vowel harmony for Asia Minor dialects of Greek using both kinds of mechanisms to explain harmonic patterns in which the Greek and the Turkish patterns coexist within the same variety and word due to language contact.

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Middle English Quantity Changes – a ME Template

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Abstract

The article attempts to add some new insights into the pool of Middle English quantitative changes, a topic described from various perspectives. The aim is to give an overview of the problems and suggest a tentative solution in the framework of CV/VC phonology. The aim is to question some of the age-old suppositions on Middle English vocalic changes, such as open syllable lengthening, trisyllabic laxing, shortening before consonant clusters, compensatory lengthening following the loss of Middle English word-final schwa, etc. It is suggested that there was no general open syllable lengthening (this is also supported by some of the rarely mentioned and/or overlooked cases of Middle English open syllables followed by vowels other than swa). It is tentatively suggested in the end of the article that Middle English words had to abide by a ... V C V ... template (the word template is not used in the traditional sense known from the morphology of the Semitic languages and is ambiguous between a CV or VC unit because the minute details of the analysis are still wanting). All in all, it is argued at some length that Middle English quantitative changes were templatic in nature.

Keywords: Middle English, Old English, quantitative changes, open syllable lengthening, trisyllabic shortening, homorganic lengthening, template, CV/VC phonology

0. Introduction: late Old English and Middle English sound changes

Late Old English (OE) and Middle English (ME) up until approximately the fourteenth century is a period characterised by a number of sound changes that have presented phonologists working in various frameworks, ranging from possibly the first all-encompassing Neogrammarian attempt by Luick (1914) to the contemporary Optimality Theoretic approach (e.g. Bermúdez-Otero 1998), to devise a complete picture for what appears to have been a series of interrelated quantitative changes. Between these two ‘extreme’ points of reference, various SPE-type of analyses have been presented in the past (see 1.1). The issue was also taken up by Trubetzkoy (1939) and Murray (2000), for example, arguing for syllable cut prosody. More recently, the interest has also been revived in the

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framework of Natural Phonology as presented in Ritt (1994), for example, from whom the short-hand terminology to be used has been adopted. The principle of mora-preservation, foot structure (and closely connected to it, the so-called Germanic foot) and the like have been argued for (Dresher & Lahiri 1991, Lahiri & Fikkert 1999, etc.). Open syllable lengthening and trisyllabic shortening coupled with analogy, to be discussed shortly, has also been resorted to as a means of explaining the somewhat irregular behaviour of open syllable lengthening (Lahiri & Dresher 1999). These changes, in a rather non-chronological fashion, include MEOSL (the topic of this paper), TRISH (trisyllabic shortening), SHOCC (shortening before consonant clusters) and HOL (homorganic lengthening). Some of these issues have been tackled in Starčević (2006) where the possibility of an analysis couched in terms of CVCV phonology is sketched out. A somewhat revised version will be presented in what follows.

1. MEOSL

This section offers a discussion of MEOSL, concerning its result on OE short vowels, some of the attempts made to describe it and its place in the history of the language with respect to other OE and ME changes.

1.1 MEOSL – some of the attempts

Middle English Open Syllable Lengthening, or MEOSL, is one in a series of sound changes affecting ME which, in standard textbook analysis, affects the OE short stressed vowels in open syllables. The change seems to have started earlier in the North (twelfth century) than in the South (thirteenth century). The five inherited short vowels of OE, i.e. /i/, /e/, /a/, /o/ and /u/, were lengthened to /e:/ ē, /ɛ:/ ē̄, /a:/, /ɔ:/ ṡ and /o:/ ṡ̄ (e.g. Moore 1929, Brunner 1970, Wright & Wright 1928, Wardale 1958). There is general disagreement over how and when the two high vowels /i/ and /u/ were lengthened and/or lowered. In standard textbook analyses these two vowels are not invariably included as target vowels for MEOSL. What seems certain is that by the thirteenth century, in a first wave, the three non-high vowels lengthened in open syllables spreading to the South. Somewhat later in the thirteenth century, in a second wave, in the Northern dialects the two remaining OE short vowels also underwent MEOSL also spreading to the South but never affecting as many words as in the case of the non-high vowels (see, for example, Lieber 1979).

If MEOSL had simply involved a change in the quantity of the vowels affected, the following ME rhyming pairs would be expected, the first one showing the ME continuation of the OE short vowel, the second an original OE long vowel (adapted from Lieber 1979: 5f; examples from the same source):

(1) ME rhyming pairs

ME ī (< OE i) – ME ī (< OE ī)
 ME ū (< OE u) – ME ū (< OE ū)

ME ē (< OE e) – ME ē (< OE ē)¹
 ME ō (< OE o) – ME ō (< OE ō)
 ME ā (< OE a) – ME ā (< OE ā)²

Yet, the only possible rhyming pairs attested in the thirteenth and fourteenth century are those listed below:

(2) attested ME rhyming pairs

ME ē (< OE i) - ME ē (< OE ē)
 ME ō (< OE u) - ME ō (< OE ō)
 ME ē (< OE e) - ME ē (< OE ē)
 ME ō (< OE o) - ME ō (< OE ā)
 ME ā (< OE a) - ME ā (< OE ā) (cf. footnote 2)

The following pairs are all attested in Barbour's *Bruce* and *Cursor Mundi*: *stere* - *were*, with *stere* showing ME ē (OE *styrian* 'to stir' with the regular late OE change *i* < OE *y*)³ rhyming with *were* (OE *were* 'man'),⁴ *gome* - *dōme*, the former representing OE *guma* 'man', the latter OE *dōm* 'judgement' (the vowel here being ME ō). Since the traditional sources take the lengthening (and lowering) of the OE non-high short vowels to be uncontested, explicit rhyming data are lacking on these vowels. Yet, according to MEOSL, the following words were possible rhymes: *beren* (< OE *beran* 'to bear') - *leren* (OE *lāran* 'to teach'), the rhyming vowel being ē; *bore(n)* (OE *boren* 'born') - *stroke(n)* (OE *strācian*), with ō as the rhyming vowel. For a classical SPE-type of analysis involving ordered rules, disjunctive environments, the Elsewhere Condition (Kiparsky 1973, 1985) see Anderson 1974, Lieber (1979) and Malsch & Fulcher (1975), for example. As an illustration, consider Minkova's (1982) formulation of MEOSL:

¹ Note that in OE there was no opposition between ē and ē. The vowel shown as ē was /e:/. This is also supported by the ME rhymes cited in (2).

² This last rhyming pair would only be viable in the Northern dialects where the spontaneous (in other words, environment-independent) change OE ā > ME ō (e.g. OE *bān* > ME *bone* ō 'bone') did not occur or was sporadic. Wardale (1958: 49) claims that this 'isolative' (i.e. not 'combinative' in her use of the term) change appears first in the East Midlands from where it spreads gradually but never reaches those areas beyond the Humber. See also Dobson (1968: 469, §7 and Note 1 and 2) on the question of quantity variation inherited from ME in sixteenth to eighteenth century English.

³ In citing OE data the following standard conventions are assumed: <ȝ> /y/, <ġ> /j/, <þ/ð> /θ/ or /ð/ (depending on the environment), <sc> /ʃ/, <æ̃> /æ(:)/ and <eo> /eo/ or /e:o/ as one member of the contested class of the so-called long diphthongs.

⁴ Note that, strictly speaking, this particular rhyming pair given by Lieber (1979: 6) is incorrect and does not support her general analysis of MEOSL and, especially, the contested lowering of the high vowels. This is shown by her reluctance to give the actual rhyming sound (ē vs. ē). The problematic bit is disentangled once the three-fold development of OE ȝ is taken into account: it shows dialectal variation in OE continued into ME (*ȝ remains ȝ in the South-West (as represented by the so-called classical West Saxon variety of OE), in the South-East (Kentish) it surfaces as ē and in the Midlands (Anglian) it is recorded as ȝ). Since ME *were* can only be the continuation of OE *were*, the other party of the rhyme must show the south-eastern variety of OE *y*. In all likelihood, the rhyming sound is ē. Correctly then the pair is ME *wēre* (< OE *were*) - *stēre* (Kentish *sterian*) (cf. Dobson 1968: 566f).

(3) MEOSL - traditional formulation

$$[_1(C)V[_2C_1^1]_1 e \#]_2$$

Some clarification is in order at this point: the round bracket shows the optionality of the word-initial consonant (C), the second C enclosed in square brackets is ambisyllabic, i.e. it belongs to both the first ((C)VC) and the second syllable (C e) indicated here with subscript '1' and '2' that encroach upon each other's domain; in addition, the notation suggests that the rule applies only to words that contain a singleton intervocalic consonant; the 'e' at the end of the structural description stands for /ə/, the '#' for a (strong) morpheme boundary. The process in Minkova (1982: 167) is claimed to involve rhythmic weight conservation whereby the initial stressed vowel acquires an additional mora: the stressed syllable becomes heavy to preserve the perceptual isochrony of the foot. From the point of the disyllabic trochaic foot this is tantamount to compensatory lengthening: the schwa is lost and its mora is transferred to the stressed short vowel. There is no difference in the number of morae between the input and the output of the rule. The motivation (however teleological it might seem to be) behind the rule is the preservation of the overall weight of a word. Some of the claims and implications made in Minkova (1982) were revisited by Lass (1985) and Minkova (1984, 1985).

One of the drawbacks of Minkova's (1982) analysis, as pointed out by Kim (1993), is the general consensus on the dating of schwa loss. Schwa loss is traditionally taken to be a later change than MEOSL and as such is still considered to be part of Chaucer's and Gower's poetry and as such it is hardly likely to have been completely lost by the thirteenth century (for further details see Minkova 1982). If schwa then coexisted with a lengthened vowel, the analysis relying on mora-preservation and metrical compensatory lengthening is at best suspect: on the face of it, if schwa (and every pronounced vowel) is granted a mora, then the OE word *boren* (2 morae) yielded ME *bōren* (3 morae). If anything, schwa can be seen as a catalyst for MEOSL, not as a contributor to (moric) weight (the formal problems with the transference of the mora linked to schwa to the stressed vowel will not be discussed). A similar situation is encountered in the continental Germanic languages such as German and Dutch which also underwent open syllable lengthening in the thirteenth century but the schwa is still present (Prokosch 1938): e.g. Middle High German *pflēgen* > Modern German *pflēgen* with unstressed <e> representing /ə/. This is not a conclusive counter-evidence to Minkova's claim on the moric-swap and augmentation between the stem final schwa and the stressed vowel in ME because this process may be parametrically controlled, but certainly points in the direction of an alternative view: the analysis of MEOSL as 'merely' lengthening in open syllables is not exhausted by this approach (for reasons to be discussed), as opposed to MHG which is 'merely', as the term suggests, OSL, i.e. open syllable lengthening.⁵

There is room to consider yet another traditional explanation of MEOSL, Kim's (1993: 276) solution, essentially a reformulation of Minkova's (1982) original wording, is given in (4a) and (4b):

(4a) Kim's environment for MEOSL:

$$\# C_0 V][C_1 \emptyset \#$$

⁵ For further arguments on the general dating of MEOSL, its dialectal extension and, crucially, the loss of schwa see Dobson (1962/1963: 132).

(4b) Kim's final formulation of MEOSL⁶

$$V \rightarrow [+lg] / C_0_] [C_1\text{ə}\#$$

In other words, MEOSL is considered a case compensatory lengthening which was only activated when the vowel of disyllabic words was weakened to schwa. Crucial here is the identification of the environment: the change is not linked to the loss of schwa, but rather to the second vowel's weakening to schwa. As such, the rule circumnavigates some of the major problems of MEOSL, viz. the absence of MEOSL in disyllabic words whose second vowel is not weakened to schwa (the usually cited example is that of the OE suffix *-ig* which appears as *-y* in ME). Note that Kim's (1993) formulation in (4b) does not restrict the number of C's after the stressed vowel (and before schwa) that undergoes MEOSL, which is certainly a drawback since MEOSL applies only to words containing a singleton intervocalic C, or, possibly, clusters like *st/sp/sk* (data from Minkova 1982): *host, taste, yeast, feast*. Of these, *yeast* (< OE *ġest/ġist*) is the only candidate that contains an OE short vowel which could be fed into the rule (the actual ME long vowel is due to the disyllabic form this word had in the oblique forms), the rest is of Old French origin and may already have entered the language with a long vowel.⁷

1.2 MEOSL – a historical perspective

MEOSL is part of a chain of processes, both lengthening and shortening in their effect, that have defied a unified representation over the centuries.⁸ These changes are usually summarised chronologically under the following four headings:

(5) HOL (Homorganic lengthening)

OE	ME	
clīmban	clīmbe(n) ⁹	'climb'
wīndan	wīnde(n)	'wind (verb)'
cīld	chīld	'child'
sāng/sōng	sāng/sōng ¹⁰	'sang, pt.'

⁶ Note that the notation [+lg] in (4b) means, in all likelihood, that the stressed vowel acquired an additional mora, i.e. it was lengthened.

⁷ The other examples supplied by Kim (1993: 275; taken from Wright 1898; data appear as in the original source), *hasp* [ha:sp], *cast* [ka:st] and *fast* [fa:st], are outside the frame investigated here. Lengthening in monosyllables like *casp* [ka:sp] (as opposed to [kæsp]) is not a ME change at all. If it had been (assuming the word had a bisyllabic pronunciation in its oblique forms and thus a long stressed vowel) it should be [ke:st] after the Great Vowel Shift, which translates as /keɪst/ in mainstream phonological representation.

⁸ See Ritt (1994: 2), for example, for an explanation on why the Neogrammarian attempt failed. Paradoxically, it was the very notion of 'sound laws' that initially sparked off the non-intuitive thinking about (diachronic) linguistic changes in the first place, coupled with the rather varied picture of OE and ME sound changes that made the unification attempt impossible: vowels undergoing the changes were both long and short, they both lengthened and shortened in environments that simply could not be subsumed under one all-encompassing rule.

⁹ For expository reasons, OE short vowels have been marked with a breve. Traditionally, it is only the long vowels that are philologically disambiguated with a macron. In citing ME data, breves and macrons are also used for expsitiroy reasons. In neither of these periods is there a systematic differentiation of long and short vowels in the orthography.

cǎmb/cǒmb	cōmbe/cāmb	‘comb’
fěld	fēld	‘field’

This change seems to have taken place in late OE. The input vowels were short, the output vowels long. The conditioning environment, in all traditional descriptions, is the voiced cluster after the vowel, i.e. /mb/, /nd/, /ŋg/, /rd/, /rð/ and /rz/.¹¹ Note that although this change seems natural in the sense that a vowel before a voiced cluster is longer than the corresponding vowel in a voiceless environment (cf. Kavitskaya 2002), a fact which has been noted a long time ago and has become a commonplace in many modern phonetically-oriented accounts, the phonological structure is rather marked: a long vowel is followed by a falling sonority cluster, i.e. a coda cluster which creates a closed syllable.

(6) MEOSL (Middle English open syllable lengthening)

OE	ME	
wīcu	wēke	‘week’
wūdu	wōde	‘wood’
mēte	mēte	‘meat’
tālu	tāle	‘tale’

Some aspects of this change have already been covered in the foregoing section.

(7) SHOCC (Shortening before consonant clusters)

OE	ME	
lǣdan ~ lǣdde	lēde(n) ~ lēdde ¹²	‘lead ~ led’
fēdan ~ fēdde	fēde(n) ~ fēdde	‘feed ~ fed’
mētan ~ mētte	mēte(n) ~ mētte	‘meet ~ met’
sōfte	sōfte	‘soft’

The following examples show a common ME characteristic in the verbal paradigm: shortening of the original long vowel before a consonant cluster in infinitive ~ past tense alternations. This change is not bound to the class of verbs alone; it occurs across-the-board before all those clusters that could not tolerate a long vowel, i.e. before non-HOL clusters. The vowel that appears in the past tense, for example, is short as a consequence of the consonant cluster that follows.¹³

¹⁰ On the ME variation between \bar{a} (< OE a) and \bar{q} (< OE \bar{a}), as well as their short counterparts a/o in case they underwent shortening, is a complex issue which is due to dialectal variation. The present-day English picture, as on many other occasions, shows a ‘cross-contaminated’ state, to use a metaphorical expression (see Dobson 1968, §7 and §71).

¹¹ Campbell (1959) assumes some further voiced cluster in late OE. These will not be discussed here because they are of no relevance.

¹² The vowel in the past tense is also recorded as ‘short a ’, *lǣdde* (see Moore 1929, for example). This alternative vowel appears as a consequence of the time of the dialectal appearance of SHOCC: *lǣdde* points to an early shortening when the OE vowel was not yet raised to ME \bar{e} ; the shortening of OE \bar{a} resulted in ME a . This has no bearing on the present discussion, however.

¹³ There are other clusters, too, before which shortening occurred, usually containing a velar as their first member: e.g. OE *þōhte* > ME *tho(u)ghte* ‘thought’. The modern sound shows a ME diphthong which is due to the glide that

There is yet another process that is not exclusively of ME provenance but also occurs in late OE (see Luick 1914, Lahiri & Fikkert 1999, for example), called TRISH.

(8) TRISH (Trisyllabic shortening)

OE	late OE (early ME)	
cīcen	cīcenu	‘chicken, sg. ~ pl.’
hāring	hǣringas	‘herring, sg. ~ pl.’
sūþerne	sūþerne	‘southern’

This process, which is responsible for the short vowel in the third last syllable, can also be seen at work in compounds:

(9) TRISH in compounds

OE	ME	
hālidæg	hōliday/hāliday	‘holiday’
bēoferlic	Bēverly	‘a personal name’
frēondscipe	frēndshipe	‘friendship’

TRISH, as we will see below, counteracted MEOSL. TRISH has been a recurrent problem in the history of English phonology and its consequences can still be observed in etymologically related pairs of words like *sane* ~ *sanity*, *divine* ~ *divinity*, etc. The issue of whether TRISH is still an active process is intimately linked to the issue of how much leeway one allows etymology to have in a synchronic analysis. There is little synchronic validity behind linking the stressed vowel of *divine* to that in *divinity*. Needless to say, an SPE-type analysis can readily come up with a rule that derives one from the other, but the validity of such rules can be questioned: in synchronic English phonology there is nothing apart from the rule itself (TRISH) that makes reference /aɪ/ and /ɪ/, for example, and not, say, /əʊ/ and /i/. The alternating vowels in *flower* /aʊ/ ~ *florid* /ɒ/ ~ *floral* /ɔ:/ can also be related, but hardly in a synchronic sense of the term ‘rule’. With the advent of Lexical Phonology (see Kiparsky 1985 and McMahon 2000 on the implications this has on historical phonology), TRISH essentially became a Level 1 rule which is only a step away from the lexicon. As a lexical rule it TRISH can show exceptions (*obese* ~ *obesity*) and it is also curtailed by the Revised Alternation Condition which prohibits abstract SPE-type representations that lead to absolute neutralisation on the surface in case a word shows no alternations (this is why *nightingale* is stored with underlying /aɪ/ and cannot be fed into TRISH: TRISH cannot be activated because the word is underived). For further elaboration on how Natural Phonology can handle the TRISH issue, as well as how phonology has become lateralised and how the burden on the lexicon has increased as the

appeared between the ‘short o’ (a consequence of SHOCC) and the velar fricative (conventionally spelt <gh> when citing ME data) modified by later sound changes. Other clusters before which SHOCC occurred are more difficult to assess because these clusters could support a long vowel before them in ME: e.g. OE *fēng* ‘seized’, *fēnd* ‘fiend’, *frēnd* ‘friend’, etc., of which the last two can still have a long vowel before the cluster (the cluster is coronal), as opposed to *fēng* (the cluster is non-coronal and before such clusters only a short a vowel is possible in present-day standard English). In non-standard British dialects (as well as in American English), a long vowel can appear before /ɪ/: e.g. *long* /lɔ:ɪ/. This lengthening is a post-ME development (cf. Dobson 1968: §53, especially Note 2).

means of derivation and feature-manipulation have been impoverished in the last few decades see Scheer (2004; Ch. 3).

2. MEOSL – the details

The following sections will give an overview of how MEOSL worked and in what way it was blocked by TRISH.

2.1 The various ME ‘templates’¹⁴

One of the changes leading up to early ME is the levelling of unstressed vowels to a vowel spelled <e> and, by common consent, pronounced /ə/. Although the actual phonetic reality behind <e> has not been contested, its phonemic status certainly has (cf. Minkova 1982, 1985, 1991). This issue of the phonemehood of schwa, however, has no bearing on the discussion.

The table in (10) shows the only one point in the process of MEOSL which can be taken for granted: if the early ME stressed short vowel is followed by schwa, lengthening will take place:

(10) OE stressed short vowels in the $C_0V_1CV_2$ ($V_2 = /ə/$) template

OE INPUT	ME OUTPUT	CONDITIONING	EXAMPLES
SHORT	LONG	MEOSL	tǣlu > tǣle mēte > mēat

This corresponds to the traditional formulation of MEOSL. The rest of the picture, however, is less straightforward and shows that original OE short and long vowels can end up both short and long in ME. The tables in (11) offer a summary of the changes affecting OE vowels in bisyllabic words whose first vowel is either short or long.

(11) The $CV(V)_1CV_2C$ template

(11a) OE short vowels in ME in the $C_0V_1CV_2C$ template

OE INPUT	ME OUTPUT	CONDITIONING?	EXAMPLES
SHORT	SHORT	MEOSL vs. TRISH	ōfen > ōven sǣdol > sǣddle
SHORT	LONG	MEOSL vs. TRISH	ǣcer > ācre crǣdol > crǣdle

(11b) OE long vowels in ME $C_0VV_1CV_2C$ template

¹⁴ The term ‘template’ in this section will be used to describe superficially adjacent vowels and consonants, hence the inverted commas.

OE INPUT	ME OUTPUT	CONDITIONING?	EXAMPLES
LONG	LONG	original vowel vs. TRISH	bēacen > bēakon ǣfenn > ēven(ing)
LONG	SHORT	original vowel vs. TRISH	bōsm > bōsom dēofol > dēvil

The summary of changes in (12) below show that original OE short vowels in monosyllabic words can surface as both short and long in ME.

(12) The C₀VC template

OE INPUT	ME OUTPUT	CONDITIONING?	EXAMPLES
SHORT	SHORT	original vowel vs. MEOSL	gōd > gōd þǣc > thǣtch
SHORT	LONG	original vowel vs. MEOSL	hwǣl > whāle hōl > hōle

As opposed to the indeterminacy of the ME outcome for OE bisyllabic words with stressed short and long vowels, as well as OE monosyllabic words with a short stressed vowel, there is no change affecting the original OE long vowels in monosyllabic words:

(13) OE long vowels in monosyllabic words

OE INPUT	ME OUTPUT	CONDITIONING	EXAMPLES
LONG	LONG	no ME rule can apply	mǣd > mead fūl > foul

The vowel cannot be shortened because it is not followed by a shortening cluster and there are no disyllabic suffixes that could create a trisyllabic environment with the original vowel.

2.2 Further details

The following declensional charts show how the effects of MEOSL were counteracted by TRISH or by the original vowel. As can be seen, the MEOSL proper is only found in cases where the original short stressed vowel is followed by a schwa.

(14) unpredictable vowel length in the C₀V₁CV₂C template

(MEOSL vs. TRISH)

‘saddle/cradle’

	<i>Singular</i>	<i>Plural</i>
Nom.	sādel/crādel	sādeles/crādeles
Acc.	sādel/crādel	sādeles/crādeles
Gen.	sādeles/crādeles	sādeles/crādeles
Dat.	sādele/crādele	sādeles/crādeles

(15) unpredictable vowel length in the C₀VV₁CV₂C template

(MEOSL vs. TRISH)

‘herring/beacon’

	<i>Singular</i>	<i>Plural</i>
Nom.	hēring/bēken	hēringes/bēkenes
Acc.	hēring/ bēken	hēringes/bēkenes
Gen.	hēringes/bēkenes	hēringes/bēkenes
Dat.	hēringe/bēkene	hēringes/bēkenes

From the point of view of ME synchronic grammar, these two tables are identical. They show that a long vowel (either originally long or lengthened by MEOSL) can be counteracted by TRISH.

(16) unpredictable vowel length in the $C_0\boxed{V}C$ template

(MEOSL vs. original vowel)
'hole/god'

	<i>Singular</i>	<i>Plural</i>
Nom.	hōl/gōd	hōles/gōdes
Acc.	hōl/gōd	hōles/gōdes
Gen.	hōles/gōdes	hōles/gōdes
Dat.	hōle/gōde	hōles/gōdes

On the face of it, no detail in the environment can explain why lengthening is preserved in one word, but lost in the other. The examples that follow show those environments in which the ME vowel length is predictable.

(17) predictable vowel length in the $C_0\boxed{VV}C$ template

'boat'

	<i>Singular</i>	<i>Plural</i>
Nom.	bōt	bōtes
Acc.	bōt	bōtes
Gen.	bōtes	bōtes
Dat.	bōte	bōtes

(18) predictable vowel length in the $C_0\boxed{V_1}CV_2$ template if $V_2 = \text{ə}$
(MEOSL proper)

'tale'

	<i>Singular</i>	<i>Plural</i>
Nom.	tāle	tāles
Acc.	tāle	tāles
Gen.	tāles	tāles
Dat.	tāle	tāles

Strictly speaking, another table should be added. The description applies to original trisyllabic words (with a short stem vowel, as in *wīdewe* 'widow, or a long one, as in *ǣrende* 'errand'). Such stems are extremely rare in Germanic. Trisyllabic forms are due to suffixation and, if they survive into ME, they show no alternation as they satisfy TRISH.

(19) predictable vowel length in original OE trisyllabic words

'widow/errand'

	<i>Singular</i>	<i>Plural</i>
Nom.	wīdewe/ǣrende	wīdewes/ǣrendes
Acc.	wīdewe/ǣrende	wīdewes/ǣrendes
Gen.	wīdewes/ǣrendes	wīdewes/ǣrendes
Dat.	wīdewe/ǣrendes	wīdewes/ǣrendes

2.3 Can this pattern be explained?

Lahiri & Drescher (1999; 4.4.) propose analogical restructuring because there is simply no way in which a phonological rule can be salvaged from the alternating patterns presented above. They contend further that disyllables with an original long vowel surfacing with a short vowel (e.g. OE *wāpen* ‘weapon’) are matched in almost the same proportion by disyllables with original short vowels having long vowels (*cradol* ‘cradle’). They discuss Kuryłowicz’s (1945-49) first law, according to which a distinction is likely to be preserved in cases where it serves the purpose of enhancing morphological distinctions between members of related words. German offers an example for this: umlaut as a marker of plural (*Kopf* ~ *Köpfe* ‘head sg. ~ pl.’) is a process which was generalised to originally non-umlauting plurals (*Topf* ~ *Topfe* → *Töpfe* ‘pot’) where it now enhances the difference between singular and plural (which is now doubly marked). In ME, however, this morphological rule is not available because lengthening does not go hand in hand with number marking. The long vowel can be a property of both the singular and the plural.¹⁵ Thus, a morphological rule is not available either.

It is also assumed that late in ME schwas were lost in plural markers, first after vowels to avoid hiatus (*tree-(ə)s*), later in polysyllabic words (*argument(ə)s*) and finally across the board (cf. Lass 1992: 111), and thus the once transparent system was disturbed leaving the learner at a loss as to the phonological grounding of the process. In (14) Lahiri & Drescher’s (1999: 698) Table 33 is reproduced.

(20) Expected vowel length alternations before and after schwa loss in plural

a) Before loss of inflected vowel

SG	PL	SG	PL	SG	PL	SG	PL
stōn	stōnes	bōdi	bodies	bēver	beveres	god	gōdes

b) After loss of inflected vowel

SG	PL	SG	PL	SG	PL	SG	PL
stōn	stōns	bōdi	bodis	bēver	bevers	god	gōds

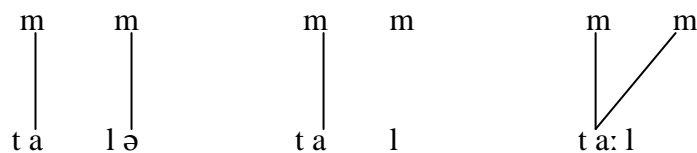
As expected original OE monosyllables with a long vowel will show no alternation. The rest of the words will, in a bidirectional fashion, once the motivation for the long vowel (as a result of MEOSL) and the short one (as a result of TRISH) was lost. ‘On our account, the language learners despair of a rule, and opt instead to choose a consistent vowel quantity on a word-by-word basis’ (Lahiri & Drescher 1999: 698). The modern pattern of short and long vowels vis-à-vis their OE

¹⁵ One must mention at this point the *staff* - *staves* pair which, for some speakers, not only shows the (now lexicalised) retention of the voiced fricative in the plural but also the length of the vowel. Note that in standard British English the length of the vowel in *staff* is a post-ME development. This would be a unique example for the retention of length as an added plural marker (cf. the case of synchronically ‘exceptional’ Dutch plurals, discussed in Lahiri & Drescher 1999: 681, such as *dag* ~ *da:gen* ‘day, sg. ~ pl.’ where both lengthening and the regular plural *-en* marker coexist). The only surviving diachronically regular pattern of this kind is disturbed in English, however: *staff* and *stave* are differentiated semantically and both have acquired the synchronically regular plurals, *staffs* and *staves*. In English, there are other, derivationally related, examples of this pattern: *grass* ~ *graze*, *glass* ~ *glaze*, etc.

counterparts are reflections of patterns of quantity levelling that followed MEOSL (counteracted by TRISH: *bōdi* ~ *bodies*) and TRISH (in the case of long vowels: *bēver* ~ *beveres*). In the case of CVC stems, MEOSL could be counteracted by the original vowel, as here there is no possibility for TRISH to apply (*god* ~ *gōdes*).¹⁶ As can be seen, in this analysis both MEOSL and TRISH were ME phonological rules obscured by the later loss of schwa, followed by analogical restructuring (lexicalisation of one of the alternating forms) in response to finding a unique underlying representation on the part of the speakers.

Lahiri & Dresher (1999) also tackle the various proposals made to account for MEOSL. They remark that Minkova's (1982) account of MEOSL in terms of compensatory lengthening (also tackled in section 1 above) begs the question of why the mora formerly associated to the lost schwa is not salvaged by re-associating it to the word final consonant. Hayes' (1989) formulation of this ME process is shown below:

(21) Hayes' representation of MEOSL (simplified)



If schwa had been re-associated to the final consonant it would have made it moraic. Lahiri & Dresher (1991) remark that a possible ***tal* would qualify as a minimal word, similarly to OE *hwæl* 'whale' and *šēip* 'ship'. They also assume that English word of the C_0V size are sub-minimal, so a word like *ship* must contain a moraic consonant.

Against this interpretation, one can argue that since word-final singleton C's allow both a short and a long vowel before them (cf. *hot* vs. *heat/shine*), they do not make the preceding syllable heavy (i.e. they do not form a complex rhyme with the preceding vowel(s), which essentially means that there can be superficial super-heavy word-final syllables seen in *heat*, for example. Traditionally, this was analysed as word-final consonant extrametricality: *heat* is actually *hea*<*t*> and as such the phonotactic rules of English are blind to its existence (<*t*> is later integrated into a higher-level constituent, the foot, for example). Since extrametrical material is only allowed at the edges of words, this would explain why word-internal long vowel/diphthong plus coda sequences do not generally occur in English (apart from some exceptions involving coronal clusters). So, the fact that the mora was re-associated to the vowel, rather than to the word-final C, seems to be a matter of parameter. If it had associated to the C, one would expect a change to have taken place in English phonotactics, as a consequence of which long vowel/diphthong sequence word-finally would be banned from that point on. This, however, was not the case: during the ME period (and

¹⁶ In connection with OE CVC stems (usually a-stem masculine and neuter nouns, like *god* cited above) Lahiri & Dresher (1999: 700) say that "it is no mystery that almost all CVC stems having *vocalic endings* in the singular and plural end up with long vowels, while the CVC a-stems with *no vocalic ending* in the singular show more variation due to analogy" [emphasis mine]. It is not clear at all what the authors mean by this. All CVC a-stem nouns (like *hole* and *god*) would have had to have vocalic endings in both the singular and plural (e.g. *gōdes*, *hōles*). Their Appendix 1 shows two such CVC a-stem nouns: *whale* (<*hwæl*>) and *hole* (<*hol*>), both of which have a long vowel. *God* is not listed (an a-stem masculine/neuter noun), but it is highly unlikely that this noun (and other CVC nouns of this class) should have had no vocalic ending(s) in the singular.

continuing), English adopted a large number of words which still allow superficial super-heavy rhymes word-finally (e.g. *sane*, *vain*, etc.)¹⁷ in addition to those continued from OE (e.g. *boat*).

Ritt (1994: 95f) working in a version of Natural Phonology tries to give a unified picture of the various ME processes and offers an apologetic explanation for Luick's failed Neogrammarian account. He states the changes in a probabilistic formula shown in (15).

(22) ME quantity adjustment

The probability of vowel lengthening was proportional to

- a. the (degree of) stress on it
- b. its backness
- c. coda sonority

and inversely proportional to

- a. its height
- b. syllable weight
- c. the overall weight of the weak syllables in the foot.

The probability of vowel shortening is inversely proportional to the probability of lengthening.

Ritt argues that this probabilistic formula accounts more appropriately for the varying degree of the implementation of the various ME changes as represented by the modern English reflexes.

Bermúdez-Otero (1998: 176f) argues in favour of compensatory lengthening in word of the *tale*-type, i.e. in the only type which unfailingly shows lengthening after the loss of schwa. To account for the variable degree of lengthening in the original CVC-type of words, he argues that monosyllables with a long vowel were more harmonic. They better satisfied a proposed set of constraint hierarchy. This strive towards harmonicity, via lexical diffusion, provided a pressure for original OE words of the CVC-type to assume a long vowel. Admittedly, this did not affect all the eligible words in the lexicon at the time: *lot*, *bath* (the length in standard British English is not a ME development) and *fish* still have a short vowel.¹⁸

Bermúdez-Otero (1998) goes on to posit a third mechanism to account for the long vowels in words like *raven*. He assumes that the second syllable varied between a syllabic and a non-syllabic pronunciation of the sonorant, i.e. /ravən/ ~ /ravŋ/. If, 'through an accident of performance', the listener perceived a stimulus /ra:vŋ/, the listener's grammar could then parse this as a well-formed representation for original /ravən/. It seems that somehow the mora associated with the underlying non-syllabic sonorant was attracted into the stressed vowel. The problems with this is that something essentially non-phonological (performance accident) is used to explain something essentially phonological (lengthening). In addition, /ravən/ went from a two-mora stage to three-mora stage. If the same process is at work in the *tale*-type of words, one would expect a non-syllabic pronunciation for the sonorant in *raven* after the mora-transfer (similarly to the lost schwa in *tale*). This is not the case, however. In addition to this, this analysis goes against

¹⁷ The observation that word-final C do not count as coda consonants has received an explanation in Government Phonology (X), where a word final singleton C is actually the onset of the following unpronounced nucleus.

¹⁸ Some words such *hen* (OE < *henn*), *cat* (< *catt*), for example, can be exempted from this process because presumably at the time of MEOSL, these words still contained a geminate and as such the stressed vowel was never in an open syllable when the process was active.

Bermúdez-Otero's own analysis that ME allowed mora-transfer but not mora-insertion. He does not account for the shortening of original long OE vowels either.

2.4 MEOSL – a summary of what we know and what has gone unnoticed

In what follows a short summary is given on what is known for fact about MEOSL:

- (i) MEOSL operates unfailingly only in C₀VC_ə words (*talū > tāl*)
- (ii) OE C₀VVC (*bāt*) words surface with a long V in ME; original trisyllabic words come down with a short vowel (*wīdewe*)
- (iii) TRISH operates in OE C₀VVCVC(C)VC words turning them into C₀VCVC(C)VC words (*hāringas > hēringes*)
- (iv) TRISH counteracts the effects of MEOSL (ME *sādəl ~ sādeles; hāringas > hēringes*);¹⁹ in other words, the processes in (iii) and (iv) are in complementary distribution

The problematic areas concern the following issues (cf. also Starčević 2006):

- (i) ME words in -y (OE < *iġ* or vocalised /g/ in a palatal environment) seem to inhibit MEOSL: e.g. OE *belġ* > ME *belly* 'belly', *felġ* > *felly* 'outer rim of a wheel', *byrġan* > *burye(n)* 'bury', *bisiġ* > *bisy* 'busy', *bodiġ* > *body* 'body', *myriġ* > *mirry* 'merry', etc.

In these words there is variation in ME (Wright & Wright 1928, §91, Dobson 1968; Ch. VI): both original long and short vowels appear as both short and long, respectively: e.g. OE *ānig* > ME *ēny/ěny/āny* 'any', *bodig* > *bōdy/bōdy*) but in standard English there are no long vowels surviving before the OE suffix -*iġ*. One of the explanations for the prevalence of short vowels in these words is secondary stress on the suffix (Lass 1992: 73).

- (ii) There is another source of complications: the vocalisation of OE /w/ and /g/ > /u/ or /o/ (Dobson 1968; §295).²⁰ In such cases there is hardly any convincing evidence for long vowels (Dobson 1968; Ch. VI): e.g. OE *ār(e)we* > *arrow*, *sceādwe* > *shād(o)we*, *bēlgan* > *bēll(o)we(n)* 'roar', *bēlga* > *bēllow* 'belly', *būrg/būrh* > *būrow* 'borough', *fēalg/fēalh* >

¹⁹ Note again that, from the point of view of ME, *hāringas* can as well be taken to come from OE ***hēring* with regular lengthening in open syllables (MEOSL). It is only OE that disambiguates the situation.

²⁰ The best formulation would be to say that OE [ɔ] (an allophone of /g/) merged first with /w/ from where they share the same path of development. Already in late OE West-Saxon texts (before the vocalisation of the velar fricative) a 'parasitic' vowel (Campbell 1959; §365) /i/ <i> or /u/ <u> develops after a short syllable and before /j/ <ġ> and /w/ which later appears as <i> (or less frequently <e>) and <u> (which is also recorded as <o> or <e>), respectively: *heriġas* (< *herġas*) 'armies', *byriġ* (< *byrġ*) 'city, dat.sg.', *byriġan* (< *byrġan*) 'bury', *beaduwe* (< *beadwe*) 'beetle, dat.sg.', *seonuwa* (< *seonwa*) 'sinews', *swaluwe* (< *sw(e)alwe*) 'swallow'. Campbell says that /ij/ can be monophthongised to *i* (sic!): *byriweard* (< *burġweard*) 'townguard', *fylīan* (< *fylīġan* < *fylġan* < **fylġjan*) 'follow'. It is not clear whether he means /i/ or /i:/, but the ME developments (the stability of this *i* to reduce to schwa, cf. *belly* < *beliġ* < *belġ*) suggest a long vowel. If this monophthongisation already took place in OE, then the long vowel may also have joined the short vowels in the reduction process between OE and ME, the only difference being that here reduction meant loss of length. If so, this vowel is short in ME. Campbell is silent on whether the same happened to /uw/ > /u:/. Yet, the ME developments show that this vowel also failed to become a schwa. Also, the <w> that appears in spelling may simply show a hiatus filler: /folu(:)wən/.

fǣllow ‘fallow’, *fēlga* > *fēllow* ‘outer rim of a wheel’, *fēalwe* > *fǣllow* ‘red’, *tǣlg* > *tǣllow* ‘tallow’, *wǣlwian* > *wǣll(o)we(n)* ‘wallow’, *spēarwe* > *spārwe* ‘sparrow’. etc.

These examples are usually grouped together under the label of “other words that present some kind of special circumstance” (Lahiri & Dresher 1999: 694), such as the presence of a consonant cluster after the vowel or the presence of a trisyllabic form, which for ME *shadwe* ‘shadow’ seems impossible (***shadweas* ‘pl.’); there is no evidence (e.g. metrics and scansion) to support a trisyllabic pronunciation. Secondary stress, to my knowledge, has not been claimed to account for the absence of lengthening in (ii).

These two sources are the only native sources for ME unreduced unstressed vowels. The rest of the unstressed vowels, i.e. *a*, *o*, *e* and *u*, were levelled to schwa between OE and early ME and disappeared altogether in late ME. Note that none of modern English word-final schwas is of ME origin.²¹

(iii) One of the other overlooked or rarely discussed issues is the shortening of original OE long vowels before ME /i/ and /u/ (from the sources in (i) and (ii) above): e.g. *ǣnig* > *any*, *sārig* > *sorry*, (*ge)rǣdig* > *ready*, *mǣdwe* > *meadow*, *hāligdæg* > *holiday*, *hālybut* (recorded in the thirteenth century) > *halibut* (also as *holibut*) ‘flatfish’, *hāligdom* > *halidom* ‘holy relics’, *hālig* > *holly* ‘holy, dial.’. These words also show a great deal of variation between short and long vowels in ME.

The problematic areas listed in (i) - (iii) will be tackled in 3.

(iv) HOL is traditionally claimed to be counteracted by SHOCC: cf. *chīld* vs. *children/childer* (dial.), *wīld* vs. *wilderness/bewilder*, *old* vs. *alderman* ‘high ranking council official’ (<a>/ɔ:/ is a later development). In view of a ‘natural’ phonetic account of lengthening in closed syllables before a voiced cluster, it is difficult to understand why another voiced consonant (a sonorant, which is either syllabic or not, cf. Dobson 1968; §319-§332) should shorten the very same vowel. If anything, it should support the length of the affected vowel.

Closely connected to this is the absence of lengthening before OE sonorant geminates: e.g. OE *wīlla*, *sēllan*, *tēllan*, *w(e)āll*, *sūnne* > ME *sēlle(n)*, *tēlle(n)*, *wāll*, *sūnne* ‘will, sell, tell, wall, sun’. This also seems to run counter to the expectations that a short vowel was perceived longer (and later lexicalised as such) in a (fully) voiced environment.²²

It has also gone unnoticed that OE monomorphemic words whose vowels would qualify as input to HOL have not undergone lengthening and there is almost no variation recorded in the sixteenth to the eighteenth century (cf. Dobson 1968). Some modern

²¹ Apart from, for example, *borough* /bʌrə/, which is standard pronunciation now (but the rest of the words in this group can also end in schwa in certain dialects or sociolects, especially *fellow*). Even granting this, these schwas do not originate in ME schwas.

²² One could argue that degemination postdates MEOSL, i.e. the short vowel was in a closed syllable when the rule operated. This would bring it in line with OE words containing a non-sonorant geminate (e.g. *bedd*; ME *bed* ~ *beddes*), as well as the class of newly created non-sonorant (monomorphemic) geminates (OE *mētan* ~ *mētte* > *mēte(n)* ~ *mētte* ‘meet ~ met’). As can be seen, original obstruent geminates fell together with the new geminates. The absence of lengthening can be explained by closed syllable shortening. Yet, the question remains: why were sonorant geminates as opposed to sonorant plus voiced consonant clusters (subject to HOL) less sonorous, not allowing for phonetic (and phonological) reinterpretation of the short vowel as long.

examples follow: *behīnd* vs. *hinder*, *clīmb* vs. *clāंबर*, *bound* vs. *asunder*, *wīld* vs. *bewīlder*, etc.

- (v) There is another source of indeterminacy in the outcome of the OE short vowel: cf. *saddle* (< *sadol*) vs. *cradle* (< *cradol*). In Bermúdez-Otero's (1998) account, as pointed out earlier, the sonorant of the coda (cf. /ravən/ ~ /ravŋ/) contributed to lengthening. Ritt (1994), see above, similarly, attributes the probability of lengthening to coda sonority. Jones (1989: 118) comes to the opposite conclusion: when the coda of the second syllable is a sonorant, lengthening is blocked. Whatever the exact phonological conditioning behind this change, both approaches have to face the fact that levelling occurs in both directions. The descendants of disyllabic nouns with a short stressed vowel and a sonorant coda are both long and short in modern English (cf. Lahiri & Dresher 1999: 691). It seems as if the theories on the relevance of the coda consonant describe two disparate events. The phonological reason (as opposed to various dispersion theories of individual lexical items) for the varied modern English picture probably lies in a better understanding of how MEOSL was implemented in the various dialects of English in ME.

These problems will not be tackled in this paper.

3. Was there a ME template in a phonological sense?

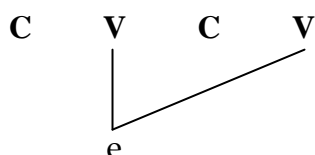
In this section some evidence will be given in support of a ME template. This template will be a CVCV template. Now the word template is not understood as a description for surface-adjacent vowels and consonants, but as a CVCV template in the strict sense of the term.

3.1 *The background in a nutshell*

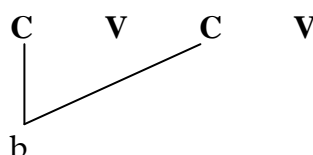
The following sections will investigate whether there existed a ME template responsible for some of the changes described in the foregoing section. The analysis will be couched in terms of CVCV phonology which aims at being maximally lateral, local, non-derivational and doing away with disjunctive contexts in favour of uniform phonological explanations behind apparently disparate contexts (such as 'l-vocalisation happens word-finally and before a consonant'). This means in essence that complex arboreal structures characteristic of post-SPE decades revolving around the rediscovery of the syllable as a unit of phonological analysis have been completely done away with. CVCV phonology is an offspring of Government Phonology (Kaye *et al.* 1985, 1990) but is even more radical than its predecessor and brings some of its conclusions to a maximal level of generality. Every string of adjacent consonants (C's) and vowels (V's) is only virtual (for a full exposition of these ideas see Scheer 2004). There is the skeleton that is built of C's and V's. Below the skeleton is the melody that is responsible for such contrasts as /a/ vs. /o/, for example. Above the skeleton there is government and licensing, the only two 'forces' that CVCV phonology admits into its toolbox. It is also assumed that these two forces always operate from right to left. Metaphorically speaking, licensing is a 'good' force (as suggested by its name), it supports C's in their melodic integrity (a C which is targeted by licensing is backed up by the following V and is, both synchronically and diachronically, more resistant to melodic decomposition; C's are strong in

word-initial position and after a consonant).²³ Government, on the other hand, is a ‘bad’ force which destroys melodic material and leads to lenition.²⁴ Of the two phonological primes, it is pronounced V’s that (generally speaking) can always license and govern; C’s are less endowed: they cannot license a V, nor govern it and C-to-C government and licensing is a disputed issue (cf. Sheer 2004: 176 for a more elaborate discussion). Consider the following representations of long V’s/diphthongs and geminate C’s in (16).

(23) long vowel/diphthong²⁵



geminate



3.2 V-to-V licensing and government

Licensing was described above as a force which supports melodic material (or, at least, make sit less prone to reduction/simplification). Government, on the other hand, was a destructive force which is responsible for melodic decomposition. If government from a V hits another V, this V is expected to undergo lenition, which in the case of a V means that it will alternate with zero. This is called syncope or vowel-zero alternation. This means that a V will disappear if hit by government, if it is followed by another vowel. In case it is not followed by a V, it will surface again, i.e. there will be no syncope. Consider the examples shown in (24) where \emptyset shows an unpronounced/syncope or zero vowel.

(24) V-to-V government (vowel-zero alternation/syncope)

DESCRIPTION	OPEN SYLLABLE	CLOSED SYLLABLE
PHENOMENON	\emptyset	V
examples/languages		
English	<i>fest</i> \emptyset <i>ring</i> / <i>festriŋ</i> /	<i>fester</i> / <i>festə</i> /
Hungarian	<i>kar</i> \emptyset <i>mot</i> ‘claw’	<i>karom</i> ‘id. acc.’
Croatian	<i>saj</i> \emptyset <i>ma</i> ‘fair ground’	<i>sajam</i> ‘id. gen.’

²³ This may sound like a typical disjunctive context known from SPE times, but this is merely a description with a unique explanation behind it: licensing, which can be observed word-initially and after a consonant (also known as the Coda Mirror in CVCV phonology).

²⁴ This division of labour does not mean that a C hit by government will necessarily be less complex at any given stage of a language than a C targeted by licensing. A C hit by government can be as complex as one hit by licensing and can survive as such for an indeterminate amount of time (from a diachronic perspective). The opposition between licensing and government means that one can predict what will happen to a C and where (the when part is left out of the equation, of course, because the actuation of a process is beyond phonology as yet): word-initially and after a C, if followed by a V, C’s are strong and as such one can predict that these C’s will be relatively stronger than their intervocalic, pre-consonantal or word-final peers when a change sets in. The difference between the two sources allows one to make predictions.

²⁵ The difference between the two is just a matter of how many melodic ‘bundles’ there are: one (associated to two V’s) in the case of a long V and two associated to two V’s in the case of a diphthong. A similar explanation pertains to full (e.g. bb/b:) and partial geminates (e.g. mb): again, two C positions are occupied by either one or two melodic ‘bundles’, respectively.

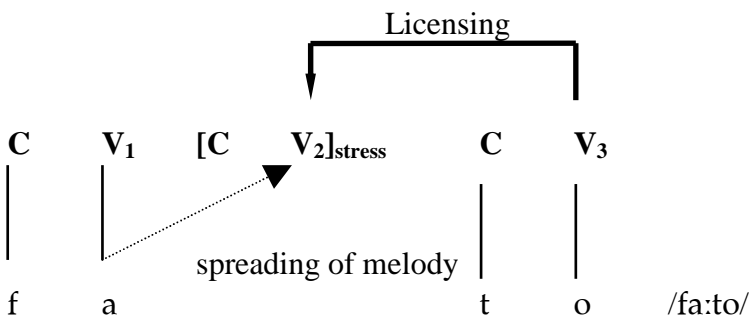
As opposed to this, V-to-V licensing is the exact opposite of the pattern in (17). Here, a long V is found in an open syllable, i.e. when it is supported by the following vowel (recall: all forces apply from right to left), and a short one in a closed syllable (i.e. when no support is possible). A selection of examples is taken from Scheer (2004: 180).

(25) V-to-V licensing

DESCRIPTION	OPEN SYLLABLE	CLOSED SYLLABLE
PHENOMENON	VV	V
examples/languages		
Czech	<i>žába</i> /ʒa:ba/ 'frog'	<i>žab</i> /ʒab/ 'id. gen. pl.'
Icelandic	<i>lúða</i> /lu:ða/ 'halibut'	<i>harka</i> /harka/ 'severity'
Italian	<i>fato</i> /fa:to/ 'fait'	<i>parco</i> /parko/ 'park'
Southern French	<i>fêter</i> /fete/ (+ATR) 'to celebrate'	<i>fête</i> /fet/ (-ATR) 'feast'

Scheer (2004) claims that open syllable lengthening and tonic lengthening is the same process because there appears to be no examples for open syllable lengthening unless the vowel is stressed. It is also claimed that open syllable lengthening involves the addition of an empty CV unit to the stressed vowel in case this unit is licensed by the following vowel. The V part of this additional CV unit will be the target of spreading of melody from the preceding V: in other words, lengthening can only be found in open syllables if the melody-to-spread linked to V is stressed.²⁶ Consider the representation in (26).

(26) Tonic/Open syllable lengthening in Italian



If Italian allowed lexical words to end in consonants, the expectations are that this vowel would surface as short, i.e. as /fat/.²⁷ This expectation is borne out in Czech: *žába* vs. *žab*. As can be seen,

²⁶ It is claimed (Scheer 2004: 176) that “it would be bewildering if closed syllable lengthening were found in natural language”. It seems then that HOL in ME is a process unexpected. As we have seen, HOL seems to be blocked exactly in those circumstances in which some clever trick (typically a homorganic voiced cluster counted as a single C, as in Ritt 1994) could produce an open syllable: cf. *behind* vs. *hinder*. This aspect of the process will not be discussed here.

²⁷ The issue is complicated by alternating and non-alternating long vowels, which coexist in Czech, for example: *žába* ~ *žab* vs. *flámové* ‘Flemish person, nom.pl.’ ~ *flám* ‘id. nom.sg.’, respectively. Date like this suggests a different representation for these two phonetically identical vowels. Scheer suggests a difference between head-final (*flám*) and

V-to-V licensing is CVCV phonology's answer to open/tonic syllable lengthening: V_3 licenses (supports) the introduction of a CV unit into the structure onto which the original melody linked to V_1 spreads creating a long V (superficially a V_1V_2 structure).

3.3 Has there ever been a CVCV template in English?

The discussion of this topic would present too much of a diversion at this point (for details see Starčević 2007b forthcoming) because ME processes would have to be evaluated against OE and Germanic data.

There is, however, indication that OE shows a number of regularities that are sensitive to the so-called Germanic foot, proposed by Dresher & Lahiri (1991). The Germanic foot is an attempt to demonstrate that a heavy syllable (H) is phonotactically identical to a sequence of a light syllable (L) followed by either a light or a heavy syllable. This can be seen in (20)

(27) The Germanic foot

H = L X, where **X** is either **H** or **L**

The proof for this equation comes from a number of sources in OE:

- (i) *High Vowel Deletion*: this process deletes pre-OE **i* and **u* if followed by either a stressed H syllable or a L syllable and another syllable. They remained after a stressed L syllable or a stressed H syllable followed by a L syllable: e.g. *word* (< **wordu* H) 'words' vs. *scipu* (< **scipu* L) 'ships', *fēt* (< **fēti* H) vs. *hnytē* (< **hnytī* L, with <e> representing pre-OE **i* not lost to this process), *we(o)rod* (< **weorodu* L L) 'troops', *færeld* (< **færeldu* L H) 'journeys', *hēafodu* (< **hēafodu* H L) 'heads'. As can be seen, *word* (H) patterns together *we(o)rod* (L X),²⁸ cf. Campbell 1959, §345-§354 for further details.²⁹ So, phonotactically **H** is identical to **L X**.
- (ii) *Main stress assignment*: *hēafod*, *wéorod*, etc.
- (iii) *Resolution* in poetic meter (Sievers 1893, Kuryłowicz 1948/1949, etc.) discussed in Lass 1983, Dresher & Lahiri 1991, Fulk 2002, Cable 2003, etc.

Lahiri & Dresher (1991: 261) claim that "The correspondence between H and L X is evident in the rule of Resolution [...] which plays a role in Old English verse: in a metrical pattern, a light stressed syllable followed by any unstressed syllable is considered equivalent to a single heavy stressed syllable". Their examples, taken from *Beowulf*, are *sel* (H) = *hete* (L L) = *sigor/cyning* (L H).

head-initial long vowels (*žába*). Note that this does not help in deciding what sort of a long vowel Italian /a:/ is (it cannot be tested).

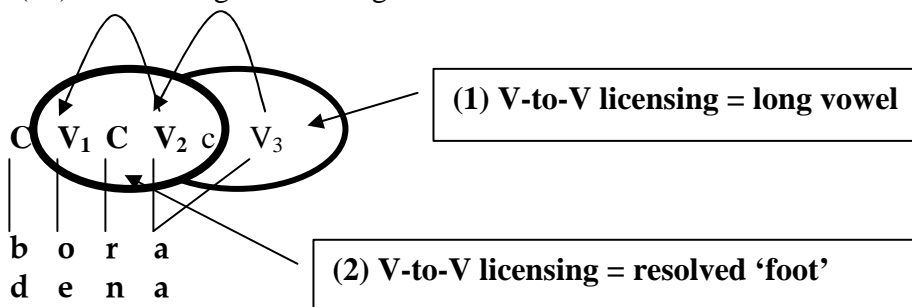
²⁸ The stressed syllable of *weorod* does not contain a diphthong, as suggested by the spelling <eo>. These controversial sounds are the so-called short-diphthongs that were L, hence the notation *we(o)rod* at this point.

²⁹ Note that *hēafodu* (up to the plural suffix *-u*) is H L and as such preserves the **u* (H L L). Similar forms are *nītenu* 'creatures', *mægdenu* 'girls'. A monomorphemic word having the H H pattern followed by **u* where the second H is supplied by a long V or diphthong is a possibility to consider. Such examples are impossible to find as unstressed long vowels and diphthongs underwent shortening in pre-OE times. The expectations are that **i/*u* would have been lost in such cases as they are preceded by a H syllable. There are, however, examples where the second H syllable is supplied by a consonant cluster, e.g. *īsern* 'iron'. Again, the loss of **u* is expected.

Fulk (2002) comes up with a generalisation: (i) under primary stress resolution is obligatory, (ii) under secondary stress, it is optional, but if it occurs, it is only possible if the endings involved after the stressed vowels are etymologically short and (iii) if no stress, there is no resolution. The remark on etymologically short vs. long endings is in order at this point: etymologically short endings come historically from Germanic short vowels or long vowels with the so-called normal tone, whereas etymologically long vowels come from the so-called trimoraic vowels of Germanic, those with abnormal intonation or Schleifton (see Campbell 1959, Ch. VII for further clarification).³⁰

This distinction seems to have been preserved until very early OE and was later maintained in poetic tradition although by the earliest written documents its phonological basis was probably lost altogether (cf. Hogg 1992: 232). As a result of this, in OE poetry there is no resolution in words like *bora* (OE *-a < *-ô*) ‘ruler’ and *Dena* (OE *-a < *-ô̄m*) ‘of the Danes’. The reason for this is the (original) length of the second vowel. More precisely then, *borā* and *Denā*. The question arises why resolution (H = L X) is banned if the vowel to be resolved is long. CVCV phonology’s answer that I propose reads as follows: no sharing of licensing between vowels.³¹

(28) ‘No sharing of licensing’



Fulk (2002: 333), discussing evidence from OE poetry, remarks that unresolved sequences like *Dena lēodum* ‘to the Danish people’ in either half of an OE line are vanishingly rare and can be treated as textual corruption. This is not surprising in view of the constraint proposed above. Resolution is in fact impossible if there is a vowel (V₂ above) that would have to straddle two domains (a resolved foot and a long vowel). This lends some evidence in favour of regarding some phenomena of OE as templatic.³² For lack of space, other possible evidence in favour of a template

³⁰ Some examples follow: short endings (*ô̄*-stem nom. sg. fem. OE *-u < Germanic *-ô̄*, *i*-stem nom. sing. masc. OE *-e < *-i < Germanic *-iz*) vs. long endings (*a*-stem gen. pl. OE *-a < Germanic *-ô̄m*; *ô̄*-stem nom. pl. OE *-a < Germanic *-ô̄m*). Probably, abnormal tone was reinterpreted as length, so vowels with abnormal tone counted as long; by this time, however, the original long vowels (with normal intonation) fell together with the short ones. The shortening of vowels with abnormal intonation is later (pre-OE) than the West-Germanic shortening of long vowels with normal intonation (cf. Campbell 1959, §331 and §355). Note that long vowels with abnormal intonation are only found in suffixes, never word-internally. As observed in the previous footnote, this is why in OE it is impossible to find long unstressed vowels/diphthongs supplying the second H in the Germanic foot.

³¹ A similar ‘no share’ constraint is proposed by Szigetvári (1999). This one, however, bans a long vowel before a coda-onset cluster, i.e. it explains a common phenomenon in language, closed syllable shortening.

³² Fulk also discusses resolution in *Poema Morale*, a very early ME piece of poetry, which shows that two L syllables were resolved and were equivalent to a H syllable in the same position. The possibility of resolution is lost altogether in later ME poetry.

will not be considered here. Yet, this argumentation will hopefully put in perspective the ME changes.

4. MEOSL as template superimposition

The following sections will try to account for MEOSL in terms of a CVCV template inherited from OE.

4.1 What we know and how we can account for it

It would be impossible to assess the changes affecting the various dialects of English, but what we do know about standard British English is that there are no long vowels before *-ow* in words of OE origin (cf. *wallow*, *fallow*, *borough*, etc.)³³ and there are also no long vowels in monomorphemic words before *-y* (*belly*, *felly*, *body*). Dobson (1968) does record ME variation before *-y* continued into the sixteenth century, but variation before *-ow* is almost non-existent. This fact could be explained by the fact that *-ow* was never regarded as a suffix (which is certainly true from the diachronic perspective) and words containing it were analysed (or rather, were continued to be analysed) as morphologically simplex since there was no ground for morphological reanalysis. As opposed to this, words having the suffix *-y* (< *-ig*) in which case, regardless of the fact whether the word was originally monomorphemic like *body* or morphologically complex like *holy*, a greater degree of variation is to be expected. Even granting this source of variation, standard British English shows no long vowels before monomorphemic words ending in *-y*.

If one assumes that a monomorphemic word showed no lengthening in open syllables, this can be an indication of a ME template that looked for melodically specified vowels to ‘hook onto’. Melodically specified here means a vowel other than schwa (which stands for a melodically empty V which is not governed and thus has to be pronounced). This is disputed by Scheer (2004) but is not directly relevant for this analysis.

If two melodically specified V’s were found, the CVCV template was superimposed and there was no lengthening. The only two melodically specified V’s word-finally in disyllabic words were /i/ and /u/. The templatic account is shown in (22).

(29) ME /beli/ and /falu/ < *bel(i)ġ* and *fealg*

C	V ₁	C	V ₂
b	e	l	i
f	a	l	u
C	V ₁	C	V ₂

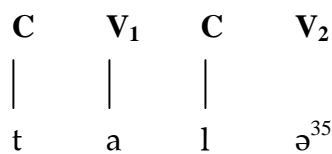
This would explain one of the often-cited exceptions to MEOSL.

³³ A word like *halo* (forming a ‘minimal pair’ with *hallow*) was first recorded in the sixteenth century (ODEE). It probably entered the language with a long stressed vowel.

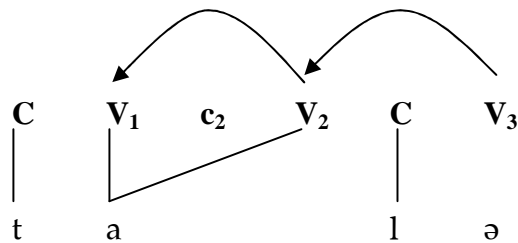
In case, the word-final vowel in disyllables was a schwa, the template looked for the nearest melodically specified V, which could only be found word-initially, as the continuation of the original OE stressed short vowel. In this case, there was an additional CV to be occupied (shown as c_2V_2 below)³⁴ and the melody of the initial vowel was free to spread onto it creating thus a long vowel. Note that this is only possible if there is a pronounced vowel (a schwa in our case) after the template that licenses the template and, indirectly, the spreading of melody. This is reminiscent of Italian Tonic lengthening. The ME vowel was a head-initial vowel under this analysis.

(30) MEOSL ‘proper’

Before the application of the template



After the application of the template



This case of MEOSL was referred to above as MEOSL ‘proper’, i.e. lengthening that applies unfailingly.

This process explains why there is no templatic superimposition in monosyllables. There is no schwa to license the template. Of course, one of the problematic areas of MEOSL is presented by OE monosyllabic words that end up with a long vowel in ME (e.g. OE *hōl* > ME *hōlā*). This class of words was analysed by Lahiri & Dresher (1999) as analogical levelling from the oblique forms (cf. *hōl* ‘nom. sing’ ~ *hōlās* ‘nom. pl.’). Under the analysis suggested here, and allowing phonology to explain phonological effects, one has to admit that the OE word *hōl* was lexicalised as *hōlā* before MEOSL became active. After this moment, *hōlā* is just like *tālā* (< *tālu*). Monosyllables, under this account, are just apparently problematic.

4.2 Shortening in sorry-type words

The problems concerning words like *sorry* (< *sāriġ*) and *meadow* (< *mādwē*) will not be exhaustively described here because it seems to be one of those problematic areas that are intertwined with the notion of TRISH, both in native and French loan words.

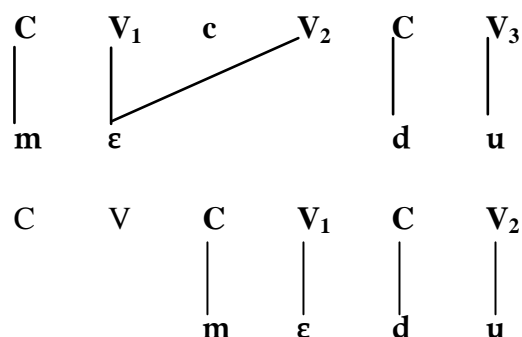
³⁴ In VC phonology (Szigetvári 1999) ‘c’ represents an empty, i.e. unpronounced consonant, as this one found inside a long vowel.

³⁵ The absence of an association line above schwa is not accidental: schwas can be considered to be the realisations of V’s having no melodically specified melody, as already discussed.

In the previous section the direction of template superimposition was not mentioned, but it was assumed that it proceeded from the left edge of the word. This would be in line with the Germanic pattern of stress placement which is fixed on the stem of the word in case of non-compound words. Whether the suggested CVCV template and stress placement are coextensive still awaits further research, but there is indication that OE secondary stress depended on the vowel that followed the actual secondary-stressed vowel (for details see Campbell 1959, §87-§92): it seems that secondary stress only appeared on vowels followed by a vowel. This suggests that primary and secondary stress were calculated differently: primary stress was fixed (and dependent on morpho-syntactic information, such as noun vs. verb), whereas secondary stress was calculated from the end of the word if the right environment was met (i.e. if there was a following vowel after an eligible unstressed one). The calculation of stress in English in the ME period was disturbed by French loan words whose stress pattern in some case was radically different from the Germanic pattern: generally, it was more back-stressed than fore-stressed (the usual pattern in OE). Some aspects of TRISH are discussed in Lahiri & Fikkert 1999. Romance loans had a great impact on the pattern of stress placement and this is mirrored in theory by the fact that stress is calculated from the end, i.e. the right edge of the word (cf. Hogg & McCully 1987 and the references cited therein) involving extrametricality that works differently for nouns as it does for verbs. Actually, Germanic words hardly ever feature prominently in such analyses because they are simply too short to be subjected to various tests.

One impact that Romance loans might have exercised on ME was the change in which the inherited ME template was superimposed. This could explain the shortening in monomorphemic words like *sorry* and *meadow* (shown below). This issue cannot be taken up here but some discussion, albeit not in terms of a template, is offered in Kim (2002) who takes up the problem of the simultaneous application of the Germanic and the Norman French stress rules to native and borrowed words. It is argued, in essence, that there was a tug of war between the old Germanic and the new Romance accentuation pattern with the observable drive to place primary stress on the first syllable. It is conjectured here that this may also have resulted in changes in the native vocabulary (contra Kim who claims that native words can only be subject to the Germanic stress rule and as such are always stem-stressed or, less typically, prefix-stressed). The relationship between the two stress rules and the supposed templatic superimposition cannot be satisfactorily answered here.

(31) Shortening in *sorry* and *meadow*



As can be seen, the template is applied from the right edge and as a result the vowel is shortened. This also involves re-lexicalisation, because the initial CV slot is now empty and gets deleted. This is a diachronic process which is reflected in the synchronic reality of the language. This analysis

leaves many questions open, e.g. (i) how exactly is the material found under the first C moved to the originally empty c, (ii) was this right-to-left template superimposition a feature of some dialects only, (iii) can TRISH in ME be re-analysed along this templatic line (note that *sanity* was originally stressed on its last syllable when adopted into ME, as it still is in French, and was preceded by two syllables, of which the stressed one comes down as short in modern English). Some doubts about TRISH are tackled in Starčević 2006.

4.3 *The cradle/saddle ~ beacon/herring problem*

This is also one of the problematic areas that can only be mentioned in passing here. If one believes that phonology still deals with phonological matters at the stage when a process is active (this leaves disturbing background noises such as analogy and the like out of the picture), then one has to assume that modern English shows a ‘cross-contaminated’ state which translates into how and when, if at all, the various ME dialects implemented the suggested CVCV template. This is probably one of the aspects that no account can ever hope to handle satisfactorily. The predictions, however, can still be salvaged and this is what phonology is about. Note that OE final vowels were all merged into schwa. If we accept that the template looked for melodically specified V’s, then *saddle* (< *sadol*) can come from a dialect which had not levelled its unstressed vowels into schwa when the template was superimposed. If such a dialect existed, it treated *belly* and *sadol* alike. This explains the short vowel in *saddle*. *Cradle* (< *cradol*), on the other hand, comes from a dialect which levelled its OE unstressed vowels into schwa before the template was superimposed. The issue is also connected to syllabic consonant formation, a process which had already begun in OE, was continued into ME and later stages. The issue is described at length in Dobson (1968: 887-915). A similar assumption can be made about *beacon/herring*. The details of this analysis are still in its infancy.

4.4 *Conclusion: what is MEOSL then?*

This discussion has hopefully shed some new light on MEOSL: it may be a ME process but it is far from being purely an instance of OSL. The data simply speak against it. It has been argued that MEOSL is actually a templatic change that had its roots in OE and was continued into ME. In the absence of melodically specified vowels (*belly/shadow*), the CVCV template looked for the nearest vowel which was lengthened as a result of melodic spreading to the empty CV slot. This spreading was only possible if the template was licensed by the following vowel (schwa in our case). The template explains why lengthening never fails if the original vowel is followed by schwa and also why there are no long vowels in standard English before *-ow* and *-y*. The rest of the data still defy a unified analysis, but some signposts for further research have been set.

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Morpho-Syntactic Competition in Germanic and Romance Compounding

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Abstract

This paper provides more evidence for the view according to which different order of constituents implies different semantics (cf. e.g. Mithun, 1984, 1986; Sadock, 1986; Rosen, 1989; Pinkster, 1990; Rice & Prideaux, 1991, a.o.).

The competition analysis between syntax and morphology, as put forward by Ackema & Neeleman (2004, 2007), can be partially assimilated to the earlier analyses which seek to explain the coexistence of analytic and synthetic structures (syntactic and morphological structures in Ackema & Neeleman's terms), which, on the morphosyntactic competition account, is explained either by appealing to a difference in the semantics of the two structures or by a different merger of categories in the two constructions.

Several types of compounds in Germanic (English) and Romance (Catalan and Spanish), together with their syntactic counterparts, are examined to assess the morphosyntactic competition. It is argued that the current understanding of the competition analysis cannot account for all the data.

1. INTRODUCTION

It has very often been claimed that there are languages with completely free word order. Latin has been claimed to be a case in point. Mainly due to the presence of cases, it has been argued that Latin shows no restrictions on word order. However, it has been proved that such a statement is not correct. Its word order is determined by several factors, such as the interaction of sentence type (e.g. imperative, interrogative) with the distinction between main sentence and subordinate clause. Metrical and aesthetic factors can also play a role. They can override the syntactic principles of the language and change their default word order. In short, Latin shows that a sentence is dependent on the word order of its constituents to convey a particular semantics (see Pinkster, 1990 for discussion of Latin word order, a.o.). The same

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happens in languages closer to our days. For example, in languages like German (1) and Catalan (2-3), the constituents will occupy different positions in a sentence depending on whether they present old vs. new information.

- (1) a. Ich habe gestern ein Auto gekauft
 I have yesterday a car bought
 'I bought a car yesterday'
 b. Ich habe das Auto gestern gekauft
 I have the car yesterday bought
 'Yesterday I bought the car'

In German, an OV language, the new information will tend to immediately precede the V, whereas the old information will be further away from the V. Accordingly, the car is usually interpreted as new information in (1a) but as old information in (1b). Notice that, in addition to the different position of the internal argument in the sentence, the difference between the indefinite vs. definite article introducing the following N (i.e. *ein Auto* vs. *das Auto*) reinforces the idea of new vs. old information.

A similar contrast is found in the following Catalan sentences. (2a) represents the unmarked order of constituents when they all constitute new information, whereas in (2b) the placement of the PP *to Blanes* before the internal argument makes the phrase *els llibres* 'the books' more prominent and is taken as the new information the hearer is interested in.¹

- (2) a. La Joana ha enviat els llibres a Blanes
 The Joana has sent the books to Blanes
 'Joana has sent the books to Blanes'
 b. La Joana ha enviat a Blanes els llibres
 The Joana has sent to Blanes the books
 'To Blanes Joana has sent the books'

Another contrast in interpretation given by the different word order of constituents is presented in (3):

- (3) a. La Joana va enviar el noi a Boston l'any passat
 The Joana went send the boy to Boston the+year last
 'Joana sent the boy to Boston last year'
 b. La Joana l'any passat va enviar el noi a Boston
 The Joana the+year last went send the boy to Boston
 'Last year Joana sent the boy to Boston'

In (3a) it is not clear whether the boy who was sent to Boston is still there or has returned, whereas in (3b) it is assumed that, by the time the sentence is uttered, the boy has already returned from Boston.

The minimal pairs of sentences presented so far illustrate the intricate relationship between the word order of constituents in a sentence and the semantics available for such sentence. That is, a specific word order of constituents will derive a specific semantics. Notice that some specific semantics can also be obtained by the presence or absence of incorporation in incorporating languages. It has long been established that incorporation has

¹ Notice that no detailed analysis of word order is intended here. The main point of the examples illustrated in this section is to show that the different word orders of constituents have an effect on the resulting interpretation.

an effect on the semantics of the resulting construction (cf. e.g. Mithun, 1984, 1986; Sadock, 1986; Rosen, 1989; Rice & Prideaux, 1991). Irrespective of whether the compounded form is a result of syntactic movement (cf. Sadock, 1986) or of direct merger of the simple forms in morphology (cf. Mithun, 1984, 1986; Rosen, 1989; Rice & Prideaux, 1991), the different analyses which have been proposed in the literature all agree that the incorporated form is not equivalent to its syntactic paraphrase.² As Mithun's (1984, 1986) puts it:

- (4) (...) all languages which exhibit such morphological structures also have syntactic paraphrases. (...) *It would certainly be inefficient for languages to preserve exactly equivalent expressions so systematically.* The fact that productive morphological constructions of this type never exist in a language without syntactic analogs indicates that *the morphologization itself must be functional.* A comparison of the process across languages reveals that, in fact, *speakers always incorporate for a purpose (...).* <emphasis mine: SPT>
(Mithun, 1984: 847-848)
- (5) A basic point is that *incorporation is not an arbitrary formal alternative to a syntactic paraphrase; rather, the different structures serve different functions.* (...) The point is that *there is a difference. Whether an incorporated form or its analytic counterpart is more idiomatic in a language is (...)* not an arbitrary switch in the grammar. In many instances, the only idiomatic way to express a certain fact is, indeed, with incorporation. <emphasis mine: SPT>
(Mithun, 1986: 33)

Let us consider one of the examples provided by Mithun (1984) to illustrate the difference in semantics between the incorporated and nonincorporated form.

- (6) Ponapean (example from Rehg, 1981, cited in Mithun, 1984)
- a. I kanga-la wini-o
I eat-COMP³ medicine-that
'I took all that medicine'
- b. I keng-winih-la
I eat-medicine-COMP
'I completed my medicine-taking'
- (Mithun, 1984: 850)

² There are different versions as to how many types of Noun Incorporation (NI) exist. For example, Mithun (1984) identifies four types of NI, each of which with a distinct discourse function. Her first type refers to a name-worthy institutionalized activity; her second type is used to background an argument within a clause while giving more prominence to an otherwise oblique argument. Mithun's third type of NI is also used to background old information but now within portions of discourse. Finally, her fourth type of NI is used to classify an external NP. Contrasting with this four-way distinction, Rosen (1989) argues for a two-way NI classification. She groups Mithun's first three types into one type ('Compound NI' in her terms) while leaving Mithun's fourth type as a distinct type in her classification (which she calls 'Classifier NI'). A different approach is taken by Rice & Prideaux (1991), who do not classify the different types of NI, but identify several motivating factors for incorporation, such as analogy, newspaper style, text cohesion, metaphorical interpretation, metalinguistic value and speaker preference. I will not examine the plausibility of each approach to NI, since it is orthogonal to the present discussion, but see Mithun, 1984, 1986; Rosen, 1989; and Rice & Prideaux, 1991, for examples and details of each account.

³ COMP stands for a completive suffix.

From the examples in (6) it is clear that having or not having incorporation of an object has consequences for the final interpretation of the sentence. With a non-incorporated object, the sentence means exhaustion of the medicine; with an incorporated object, it indicates that the activity has been completed, regardless of whether there is still some medicine left in the bottle or not.

Mithun (1984) also provides some examples to show that some compounded forms contrast with their syntactic counterparts in the sense that they are not compositional but have taken on some specialized meaning. Some examples are Fijian *taro-gi* ‘ask’ + *sotia* ‘soldier’ > ‘enlist’ (from Arms, 1974, cited in Mithun, 1984: 852) and Comanche *waa-hima-* (lit. cedar+tree.take) ‘to celebrate Christmas’ (from Canonge, 1958, cited in Mithun, 1984: 855).

In addition to the difference in meaning between incorporated and non-incorporated forms, there are also some semantic constraints imposed on both the element which undergoes incorporation and the V which hosts the incorporated element. For example, according to Mithun, animate nouns are rarely incorporated, except for her first type of NI (cf. see footnote 2), where the N can be very generic in examples like ‘to be a good person’ (Mithun, 1984: 863); or verbs which have narrow scope tend to incorporate less than those that are very vague by themselves and take their meaning from their arguments. In short, semantic factors, like animacy and agentivity, seem to be crucial for the existence or absence of NI.

The main goal of this paper is to assess the competition analysis between syntax and morphology as put forward by Ackema & Neeleman (AN) (2004, 2007), by examining some morphological constructs, generally termed ‘compounds’, in Germanic and Romance along with their syntactic counterparts.⁴ English, on the one hand, and Catalan and Spanish, on the other, will be the languages considered in this study on which some conclusions will be drawn regarding the morphosyntactic competition. This competition analysis can be seen as a similar enterprise to the one undertaken by Mithun (1984, 1986) in the sense that it also tries to account for the coexistence of syntactic and morphological structures, which, on the morphosyntactic competition account, is explained either by appealing to a difference in the semantics of the two structures (similar to Mithun’s) or by a different merger of categories in the two constructions.

The paper is structured as follows. Section 2 contains the theoretical framework within which this study is framed and the basics of the competition analysis between syntax and

⁴ There is a debate in the literature as to how the division between derivation and compounding should best be treated. For some linguists, these two processes are two distinct word formation processes (e.g. two different levels in a stratal model, cf. Allen, 1978; for more recent approaches, see e.g. Anderson, 1992; Fradin, 2005). If the distinction between derivation and compounding is defined in terms of bound affixes vs. free morphemes, some items change their status historically. Some words become affixal and some affixes become words (although change in this direction is rarer), giving rise to the processes known as grammaticalization and degammaticalization. For example, the former can be exemplified by the bound forms *-type* in English (e.g. *blue-type version*) and *mal-* in Spanish (e.g. *malherido* ‘badly injured’), which are based on the free forms *type* and *mal* ‘badly’ respectively (cf. see Bauer, 2005 for concrete cases of grammaticalization and degammaticalization in English, and Buenafuentes, 2001-2002 for the grammaticalization process undergone by the Spanish word *mal* ‘badly’). The processes of grammaticalization and degammaticalization do not necessarily mean that there is no real difference between derivation and compounding, but simply indicate that some forms change status. At some point in time they have affix-like properties and at some other point in time they behave like free morphemes. In contrast to the view according to which derivation and compounding are two distinct word formation processes, some authors believe that the boundary between derivation and compounding is not clear-cut in the sense that lexical units and affixal morphemes have the same function and should be treated equally. Such an approach is taken, for example, by Construction Grammar (see for e.g. Booij, 2005) and cognitive models (e.g. Štekauer, 2005). I leave this debate open since it has no bearing on the results of this study.

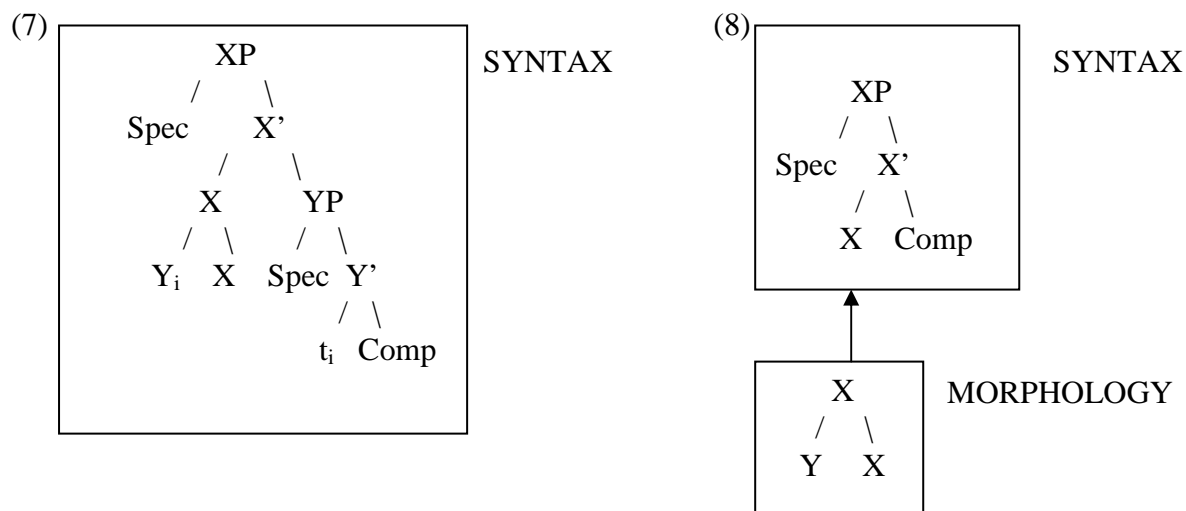
morphology, as is understood by AN (2004, 2007). Section 3 presents the data against which the morphosyntactic competition is assessed. The last section provides the paper with the main results of this study and opens up some questions for further research.

2. THEORETICAL FRAMEWORK: THE MORPHOSYNTACTIC COMPETITION

2.1 Theoretical Framework

I follow AN (2004, 2007) in the sense that I assume a model of grammar in which morphology is distributed across three independent modules, i.e. syntax, semantics and phonology. Each contains two submodules, which generate phrasal and word-level representations (cf. Jackendoff, 1997).

By assuming a model of grammar in which syntax has two subcomponents: one for phrasal syntax and one for word syntax (which will be referred to as S for ‘syntax’ and M for ‘morphology’ for expository reasons henceforth), the question of where complex words are formed arises naturally. S and M can be seen as two potential components in which complex words can be generated. On the one hand, there are theories like those of Roeper & Siegel (1978), Baker (1988), Hale & Keyser (1993), Halle & Marantz (1993) and Brunelli (2003) in which complex words are formed by syntactic movement and which do not postulate an independent morphological system. On the other hand, there are theories like those of Selkirk (1982), Di Sciullo & Williams (1987), and AN (2004, 2007) which have independent components for S and M and claim that complex words can be generated by an independent morphological system. The two different theories of word formation can be illustrated with the following trees: (7) illustrates that the complex word is derived by head-to-head movement of Y, which adjoins to the higher head X; (8) shows how the complex word is derived in an independent morphological component and is then inserted into S (cf. AN 2004: 18).



Several factors like stranding, referentiality, possible functions of non-heads, prototypical features of incorporating languages, headedness and derivational economy provide some

evidence for the view according to which complex words are generated by an independent morphological system.⁵

In short, S and M are seen as two different components with their own principles, some of which may be shared by the two modules (cf. Jackendoff, 1997; AN, 2004, 2007). This position is shared by a number of authors. For example, Ralli & Stavrou (1998) argue that morphological and syntactic expressions share some principles, such as headedness and binary branching. Similarly, Bok-Bennema & Kampers-Manhe (2006) believe that S and M respect the same rules and principles of UG and consider that the morphological component is an impoverished version of the syntactic component. Although some authors also argue for two distinct modules of S and M, they add a third module in between them to account for certain constructions which have both word and phrase properties. For example, Booij (1990) claims that particle verbs in Dutch are dealt with in this intermediate component. On AN's (2004, 2007) account, though, there is no need to postulate a third module to account for Dutch particle verbs. In their competition model, the word and phrase properties associated with such verbs follow from their non-uniform realization, i.e. particle verbs will be underspecified with respect to the locus of merger and competition will establish whether they are realized in S or M in each case.

2.2 *The Morphosyntactic Competition (AN, 2004)*^{6,7}

AN endorse a view according to which S and M are two competitive generative systems, since they argue that in principle two lexical items can be combined in either component. Whether there is a syntactic or morphological preference to combine lexical items depends on the type of language. In languages like English syntactic merger will be the unmarked option, whereas in polysynthetic languages morphological merger will be the preferred option. Although AN propose that all else being equal in languages like English and Catalan S wins over M, morphological merger is also possible under certain conditions, i.e. when there is no syntactic competitor. There is competition between S and M when both the categories merged and the semantic relation obtained are the same in the syntactic and morphological structure. AN (2004: 51) provide the constraint in (9), which summarizes the formal and semantic conditions just mentioned.

- (9) Let α_1 and α_2 be syntactic representations headed by α . α_1 blocks α_2 iff
- (i) in α_1 (a projection of) α is merged with (a projection of) β in syntax, while in α_2 (a projection of) α is merged with (a projection of) β in morphology, and
 - (ii) the semantic relation between α and β is identical in α_1 and α_2 .

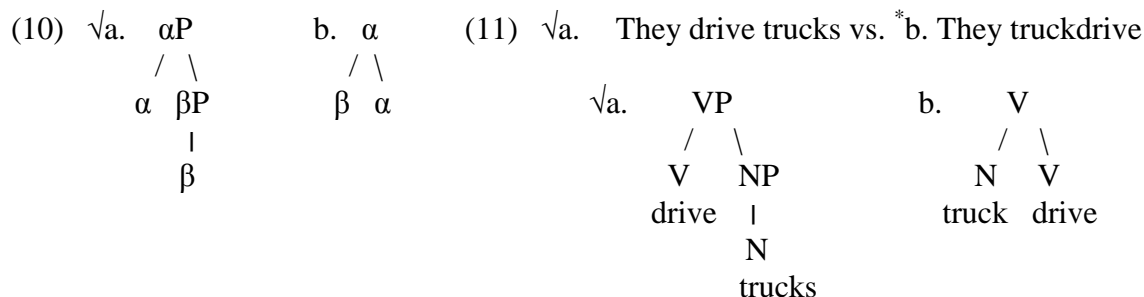
When AN establish the morphosyntactic competition in terms of semantic identity between the morphological and syntactic structures (cf. (9ii)), they initially refer to the fact that the elements forming part of the two structures must bear the same argumental or adjunct relation in the two derivations. For example, it cannot be the case that a N is an argument of the V in the syntactic construction, and an adjunct in the morphological construction. If the latter scenario were the case, there would be no competition and the two structures would be

⁵ For discussion of these factors as applied to Catalan verbal compounds and to English adjectival and verbal compounds, I refer the reader to Padrosa-Trias (2007), who shows that the Catalan and English compounds are best treated as being the result of direct merger in a morphological component, rather than being the result of syntactic merger.

⁶ This section is a slightly revised version of Section 3 in Padrosa-Trias (2007).

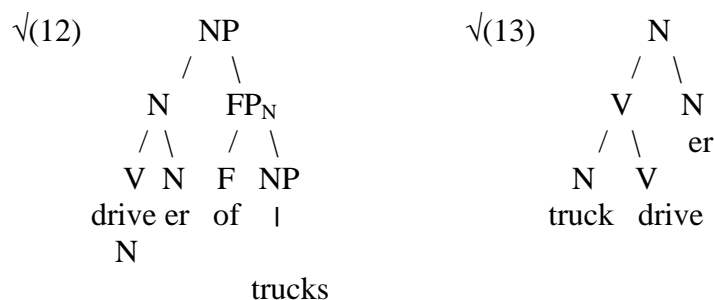
⁷ The examples and tree representations of this section are taken from AN (2004).

allowed to exist. However, it will be seen that AN's initial proposal for semantic identity has to be refined to account for the coexistence of certain syntactic and morphological structures sharing the same argument structure. I will take up the issue of refining the semantic part of the constraint in (9) in Section 3.2. For the time being let us consider AN's initial proposal for the constraint in (9), which is illustrated in (10) abstractly and in (11) with a concrete example.



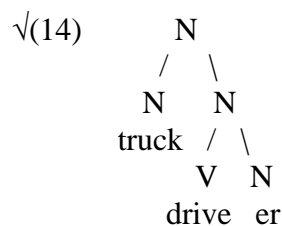
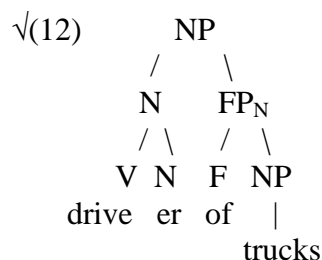
In both (10) and (11) there is competition between the two structures. As for (10), the same categories, α and β , are merged and the semantic relation between them is the same in the two generative systems. Similarly, in (11) the same categories merge, i.e. a N and a V, and in both structures the N is interpreted as the object of the V. Competition is at work and gets the syntactic structure to be the winner.

As already said, morphological merger is allowed in certain circumstances, i.e. when different categories merge or the semantic relation between them is different in the two structures. AN (2004: 52) express the difference in semantics in the following terms: “Morphological merger of α and β may result in a semantics that cannot be expressed by the result of syntactic merger of the two”. (Recall that they associate having the same or different semantics with having the same or different argument structure in the two structures). To illustrate how the constraint in (9) works, let us look at some examples. First, let us consider the syntactic derivation in (12) and contrast it with its morphological counterpart in (13).



Although they both involve the same semantics (i.e. *truck* is understood as the internal theta-role of *drive* in the two cases), the merger of different categories in the two structures makes the morphological merger viable. In (12) the merger of *drive* and *-er* results in a N, which in turn merges with the N *trucks* (functional projections do not count). In contrast, in (13), the merger of *truck* and *drive* crucially results in a V, which subsequently merges with the nominalizing suffix *-er*. To put it differently, only in (13) are *truck* and *drive* merged directly, which is what makes the morphological structure possible.

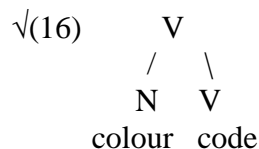
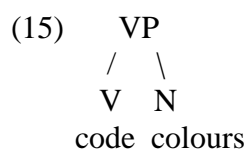
Let us consider (12) again and now contrast it with (14), another possible morphological derivation.



In this case, the two structures have the same categories merged. That is, in the two structures the V *drive* merges with the nominalizing suffix *-er*, resulting in a N, which is subsequently merged with the N *truck* in the two tree representations (recall from above that the functional projection of *of* does not count). However, (12) and (14) differ in their semantics, which allows the existence of the morphological derivation. Whereas *truck* is interpreted as the internal argument of *drive* in (12), it is a modifier in (14). In short, (14) is only allowed iff *truck* is not the internal argument of *drive*, but a modifier. The compound *truck driver* could refer to a driver of a car who has a picture of a truck on his T-shirt (cf. Lieber, 2003: 250).

Focusing now on the two morphological representations (i.e. (13) and (14)), there are some arguments, such as inheritance, which favour the structure in (13) and not the one in (14) for synthetic compounding. Put it differently, if *truck* is the internal argument of *drive*, the correct morphological derivation is (13) and not (14). AN (2004) show that “compounds do not allow inheritance of arguments of their nonheads” (see AN, 2004: 57-58, for discussion and examples) and assume that the same mechanism is at work with derivational morphological processes. This is illustrated in (14). In the derivation of *driver*, the nonhead is *drive*, which means that its argument cannot be inherited. As a consequence, the N *truck* in (14) must necessarily have unpredictable semantics, because otherwise it would be blocked by (12), the syntactic counterpart which has the same merger of categories but has compositional semantics.

AN adopt the general assumption that lexical storage should be the minimum, with the consequence that only unpredictable information will be stored. Given that syntactic merger blocks morphological merger where both can apply, morphological merger must be triggered. The trigger may be related to unpredictable or idiomatic readings of the morphological derivation. AN specify the morphological locus of merger with the diacritic M, as in $\langle_M \alpha\beta \rangle$. This will suspend the M-S competition and the morphological merger will be possible. That is the case with the root compound *colour code* in English. Contrast (15) with (16).



The structure in (16) is possible because *colour code*, due to its unpredictable semantics, is stored in the lexicon, which gives the possibility of being morphologically realized. The semantics involved in (16) can only be derived in S via the P *with*. The expression *code with colours* is not in competition with *colour code*, due to the fact that different categories merge in the two derivations. The syntactic derivation contains the lexical preposition *with*, which is absent in the morphological structure (see AN, 2004: 48-88 for the details of their morphosyntactic competition analysis).

The following section presents the morphosyntactic competition interacting with some English data in Section 3.1 and some Catalan and Spanish data in Section 3.2.

3. THE MORPHOSYNTACTIC COMPETITION REVISITED

3.1 English

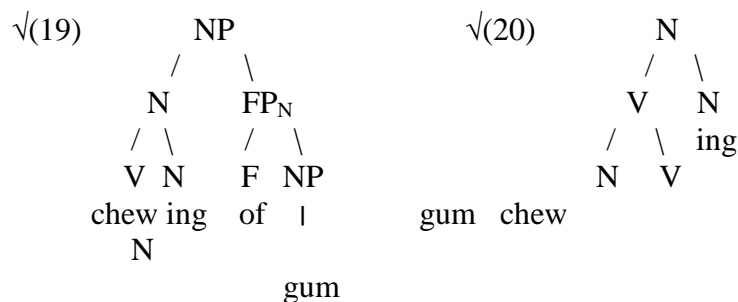
Given the competition model just outlined in the previous section, if two lexical items can be combined both syntactically and morphologically, they should have different semantics, or the two derivations should involve merger of different categories. This seems to be the general picture for English, a language in which syntactic merger is the preferred option. Let us consider some examples.

- (17) a. a child-molester
a'. a molester of children
b. a story-teller
b'. a teller of stories
c. the child-bearing
c'. the bearing of the child⁸
d. the gum-chewing
d'. the chewing of gum
e. the habit-forming
e'. the forming of habits
f. a trendsetter
f'. a setter of trends
(Examples (a-e) from Roeper & Siegel, 1978)

- (18) a. a time-saver
a'. a saver of time
b. the cake baker
b'. the baker of cakes
c. the trash removal
c'. the removal of trash
d. the housecleaning
d'. the cleaning of the house
e. the consumer protection
e'. the protection of the consumer
f. the task assignment
f'. the assignment of the task
(Examples from Selkirk, 1982)

The morphological merger of the lexical items in (17) and (18) is allowed in each case, because the compounds are not in competition with their corresponding syntactic counterparts. The two derivations involve merger of different categories, as can be seen in the following representations (which are the same representations as those given for *driver of trucks* and *truck driver* in (12) and (13)).

⁸ For those speakers who interpret *the bearing of the child* as 'putting up with the child' rather than 'as having a child', the difference in semantics between the morphological and syntactic structures further supports the suspension of the M-S competition.



The element responsible for having different merger of categories is a category-changing suffix (i.e. the nominalizing suffixes *-er*, *-ing*, *-al*, *-tion* and *-ment* in (17) and (18)). In the case of (19), the nominalizing suffix *-ing* merges with the underived V *chew*, the result being a N, which is crucially merged with another N subsequently; in (20) the suffix merges with a compound V (i.e. *gumchew*), the result of merging the N *gum* with the V *chew*. In short, only in the morphological representation do *gum* and *chew* merge directly.

Other examples in which syntactic and morphological mergers of lexical items involve different categories are those in which the first element of the compound is not the internal argument of the base V but an adjunct which is introduced by a lexical preposition in S, as is shown in (21).

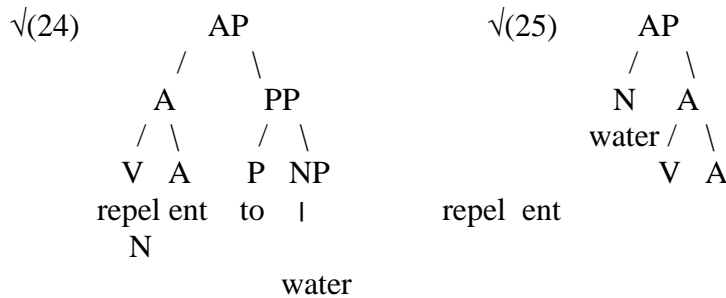
- (21) a. home-grown
 a'. grown at home
 b. handmade
 b'. made by hand
 c. feather-filled
 c'. filled with feathers

The preposition introduces a new category in the syntactic derivation and prevents the morphosyntactic competition, which explains why the two derivations (e.g. 21a vs. 21a') are possible. There are also some cases which present a mixture of the properties found in (17-20) and (21) in the sense that there is a category-changing suffix in the two derivations and also a lexical preposition in the syntactic derivation. The second factor suspends the competition between the morphological and syntactic structures, thus allowing both of them. (22) and (23) include some of these cases, and (24) and (25) illustrate the first example (22a-a') with tree diagrams.

- (22) a. water-repellent
 a'. repellent to water
 b. germ-resistant
 b'. resistant to germs
 c. hand washable
 c'. washable by hand
 d. machine readable
 d'. readable by machine
 (Examples from Selkirk, 1982: 23)

- (23) a. sea-going
 a'. going to sea
 b. cave-dweller

- b'. dweller in a cave
 - c. apartment-living
 - c'. living in an apartment
 - d. schoolteacher
 - d'. teacher in a school
- (Examples (a-c) from Roeper & Siegel, 1978: 207)



As can be seen, the two derivations involve different merger of categories. Only in the syntactic structure (24) does the adjective *repellent* (the result of merging the adjectivalizing suffix *-ent* with the V *repel* in the two structures) merge with the lexical preposition *to*, absent in (25), thus necessarily giving rise to merger of different categories.

All the examples in this section so far illustrate that the formal condition of the constraint in (9) seems to be really at work when there are two possible structures (one morphological and one syntactic) with the same semantics. When it comes to the semantic part of the constraint, (9ii) also seems to correctly distinguish between those morphological structures which are allowed from those which are not, by comparing their semantics to that of their syntactic counterparts. Let us consider one example to illustrate how the semantic condition of the constraint in (9) explains the coexistence of (26a) with (26b).

- (26) a. to manhandle a referee
- a'. to handle a man

In this case, the two structures are allowed because the V *manhandle* is not interpreted literally, which is how the syntactic alternant in (26a') is interpreted, but roughly as 'handling roughly'. The idiosyncratic meaning attached to the compound V allows it to be listed in the lexicon, which in turn gives the possibility of being morphologically realized.⁹

Rice & Prideaux (1991) reach the same conclusion as AN (2004): they observe that compound stems of the form NV rarely show up as finite verbs. They illustrate their observation with sentences like those given in (27), in which verbs used in present simple and past tense (b), infinitival form (c) and present progressive (d)¹⁰ are ungrammatical, while

⁹ Even if the two derivations of (26a) could be interpreted literally, one could then argue that *man* has a different function in the two structures, namely a modifier in (26a) (given that the V is still transitive and needs an internal argument present in S) and an argument in (26a'). Because the semantic relation between the elements merging would be different in the two derivations, there would be no competition between the two structures and both would be allowed.

¹⁰ The speakers consulted find this sentence ungrammatical. In addition, a google search for the progressive of *piano-move* was unsuccessful.

those in participial constructions (e, f) and nominalizations (g) are acceptable (Rice & Prideaux, 1991: 284, ex. 3).

- (27) a. They moved pianos during the music festival.
b. *They piano-move/piano-moved during the music festival.
c. *They used to piano-move during the music festival.
d. ?They're piano-moving during the music festival.
e. The piano-moving company was hired during the festival.
f. Piano-moving is hard work.
g. The piano-movers were well paid.

The paradigm established in (27) is exactly what the competition model predicts to exist. On this model the ungrammaticality of (27b, c, d) is explained because there is a syntactic counterpart with the same meaning and merger of categories. Rice & Prideaux (1991: 284, ex. 1), though, present some more controversial data for the competition model and for their own conclusion that compound verbs of the type NV hardly ever show up as finite forms.

- (28) a. He lifts/lifted weights professionally.
b. *He weightlifts/weightlifted professionally.
c. ??He used to weightlift professionally.
d. He's weightlifting as part of his training program.
e. The weightlifting competition is next.
f. Weightlifting is a good complement to aerobic exercise.
g. He's a champion weightlifter.

The grammatical judgements given in (28) for (b) and (c) do not quite match those of the speakers consulted and the results of a google search, some of which follow:

- (29) a. He weightlifts and jogs every single day to look healthy and fit.
b. He weightlifted for approximately 7 years and recently completed 4 years in the Marine Corps (...).
c. I used to weightlift and do lots of hiking in the mountains out west (...).

These finite verbs with an incorporated N are predicted not to exist because they involve the same merger of categories as their syntactic equivalents. Rice & Prideaux (1991: 285-288) provide more examples which present the same problem.

- (30) a. He bullfights for a living.
b. He lipreads because he can't afford a hearing aid.
c. Next Tuesday, they'll sightsee.

d. He bartends for a living.
e. He beachcombs every morning before work.
f. He stagemanages the company.¹¹

¹¹ This sentence as such would not constitute a real problem for the M-S competition analysis. Recall the discussion for *manhandle* in footnote 9. The word *stage* in the compound (30f) seems to be a modifier since the compound V still requires an internal object (*the company*), which contrasts with the syntactic counterpart (*to manage the stage*), in which *stage* would be the internal argument of the V *manage*. This difference in argument structure between the two derivations is sufficient to suspend competition between them. Note, though, that

- g. He's deerhunting regularly now.
 h. As on previous Christmas Eves, they'll be carol-singing for appreciative audiences.
 i. (...) the generous members of the public who supported the Scouts when they were carol singing.¹²

To rescue the M-S analysis, one might appeal to the fact that some of these verbs are defective in the sense that they cannot bear past tense inflection (e.g. **bullfought*) or that new formations on the basis of some of these words are difficult to create (e.g. **mapcombs*). Having said that, one would still want to explain why some compound verbs can coexist with their syntactic counterparts if the compounded form has transparent semantics and there is no category-changing affix present in the structure. One could also try to explain the existence of such unexpected morphological constructions by referring to the fact that most of them can only express habitual action of the event. However appealing this semantic restriction may seem, it does not cover all cases. Consider the verbal forms in (30g-i), which clearly make reference to a specific occasion. In addition, notice that the generic reading is also available to the syntactic constructions: all compound verbs in (30) can be paraphrased as V+N with a generic interpretation (e.g. *He fights bulls for a living; They sing carols on Christmas Eve every year*). There is no consistent semantic difference between the morphological and syntactic structures to account for their coexistence.

To account for (30g-i) one might also appeal to the formal condition of the constraint in (9) and try to argue that the *-ing* ending of (30g-i) is a category-changing suffix on a par with the suffix *-er* and *-ing* found in (17), (18), and (23). There are, though, some differences between the two types of suffixes. While the latter clearly change the category of the items they attach to (i.e. they are nominalizing or adjectivalizing suffixes: e.g. *molest_V – molest_N*), the role of the former is not so clear. The *-ing* suffix attaches to a V to derive another V, which together with the V *be* forms the progressive. In such cases, the *-ing* ending seems to be best treated as a functional category with no repercussions on the categorial structure of the base it attaches to. If such approach is correct, forms like (30g-i) are also left unexplained on the competition model.¹³

Some examples of the final set of English data we will consider are given in (31).

- (31) a. well-written
 b. carefully-considered
 c. smartly-dressed
 d. beautifully-danced
 e. frequently-noticed
 f. wide(ly)-spread

there is one use of the compound verb which is more difficult to accommodate within the competition model. Consider the sentence *John stagemanages for the Royal Theatre*. In this compound *stage* seems to act as the internal argument of the verb in the same way as it does in its corresponding syntactic structure.

¹² A google search for the past progressive of 'to carol-sing' showed that such a form is widely attested. One of the results is the sentence in (30i), which can be found at <http://www.greatnotley.com/news27.html>.

¹³ Peter Ackema (p.c.) observes that there are some derivational affixes which can be considered heads even though they are non-category changing. For example, the suffix *-hood* can be considered a (semantic) head because the semantics of *neighbourhood* is different from *neighbour*, which can only be attributed to the presence of the suffix. If the suffix *-ing* in (30g-i) could be considered a head on a par with *-hood*, then the existence of the verbal forms *deerhunting* and *carolsinging* would no longer be problematic for the competition model. Further study of such a suffix may confirm this hypothesis, but for the time being it is not clear to me how the *-ing* suffix of such forms can be argued to be a head.

- g. quick(ly)-dried
 - h. nicely-articulated
 - i. oft(en)-heard
- (Examples from Roeper & Siegel, 1978)

At first sight, all the forms in (31) constitute counterexamples to the morphosyntactic competition analysis. They all seem to have syntactic counterparts with the same meaning and merger of categories (i.e. a V in its participial form seems to be merged with an adverb). Contrast (32a) with (32b).

- (32) a. a well-written book
b. a book written well

Closer inspection of these forms, though, reveals a formal difference between the two participial forms, which explains why the two structures are allowed. As will be seen next, some tests show that *written* is an adjective in (32a) but a V in (32b).

Wasow (1977) and Williams (1982) provide some criteria to distinguish between two distinct past participles in English: one adjectival and one verbal. One test is *un-*prefixation. The non-changing category affix *un-* can be attached to both verbs (e.g. *to lock/to unlock*) and adjectives (e.g. *unhappy*). When *un-*prefixation is applied to the past participial forms in (31), the result is as follows:

- (33) a. *to unhear vs. unheard
b. *to unconsider vs. unconsidered
c. *to unwrite vs. unwritten
d. to undress vs. undressed

Although *un-* can be attached to the V *dress* and it could be suggested that the prefix *un-* attaches to the verbal and not adjectival base, the same explanation cannot hold for the other prefixed forms, which means that *heard*, *considered* and *written* must be adjectival and not verbal participles.

Another criterion which distinguishes between the two past participles is the different types of degree modifiers each participial form can take. *Very* can modify adjectives; *very much* can modify verbs. When this test is applied to the forms in (31), *very* is the only modifier accepted.

- (34) a. a very well-written story
b. *a very much well written story

(See Wasow, 1977 and Williams, 1982 for other tests which distinguish between the two distinct types of participles in English and Ackema, 1995 for an application of these criteria to Dutch, a language which also shows that a verbal participle must be differentiated from an adjectival one). In short, the compounds in (31) and their syntactic counterparts are not real counterexamples to the competition model. The former are the result of merging an adverb with an adjectival participle and the latter are the result of merging an adverb with a verbal participle.

To recap, most of the English data considered in this section pose no problem to the M-S competition analysis. There is either a difference in semantics or a difference in the category merging in the two structures. However, there is a set of data (28-30) which is

difficult to accommodate within the competition model. Further examination of such forms may be needed to prove that there is a difference between the morphological and syntactic structures, but as it now stands these forms remain unexplained in the theoretical model under study.

In the following section, some Catalan and Spanish compounds will be considered to further assess the M-S competition model.

3.2. Catalan and Spanish

Padrosa-Trias (2007) concludes that the competition analysis between S and M (AN, 2004) cannot be really tested by looking at Catalan [NV]_V compounds, mainly due to their low presence in the language. This section presents another type of Catalan compounds, i.e. [AdvV]_V, which together with their syntactic counterparts will also be used to further test the competition theory.

Authors such as Cabré & Rigau (1986), Mascaró (1986), and Adelman (2002) list the compounds below as being [AdvV]_V compounds. Several subtypes of compounds can be distinguished among them, though.

- | | |
|---|-------------------------------|
| (35) a. benparlat
well+spoken
'of somebody who speaks without swearing' | a'. parlar bé
speak well |
| b. benestant
well+being
'well-being' | b'. estar bé
be well |
| c. versemblant
truly+seeming
'credible, plausible' | c'. semblar ver
seem true |
| d. primmirat
thinly+looked
'of somebody who is really meticulous' | d'. mirar prim
look thinly |
| (36) a. menystenir
less+have
'to underestimate' | a'. tenir per menys
for |
| b. viltenir
vilely+have
'to underestimate' | b'. tenir per vil
for |
| (37) a. carcomprar
expensively+buy
'to buy at an expensive price' | a'. comprar car |
| b. carvendre
expensively+sell
'to sell something for more than it is worth' | b'. vendre car |
| c. primfilar ¹⁴ | c'. filar prim |

¹⁴ Note that the adjectival participle *primfilar* (thin+spun) (derived from *primfilar*) is possible and used in the language. Recall that such a form does not constitute a problem for the competition model, because the adjectivalizing suffix present in the compound prevents competition from taking place.

thinly+spin
 ‘to be really meticulous’

The first set of compounds (35) are deverbal but can only be used as adjectival participles. The corresponding infinitival and conjugated verbal forms are ungrammatical (e.g. **benparlar* (to well+speaking), **benparlo* (well+speaking.I)). As a result, the category-changing suffix (i.e. the adjectivalizing suffix) in each structure explains why each compound is allowed under the competition theory. In the corresponding syntactic structures an adverb merges with a V and not an adjectival participle (e.g. *Ell parla bé* ‘He speaks well’). Similar results have been found for Catalan [NV]_V compounds (cf. Mascaró, 1986; Padrosa-Trias, 2007).

The same explanation is valid for the compounds in (36), i.e. the syntactic and morphological structures have different merger of categories. In the two structures a V merges with an adverb, but the syntactic structure has an additional merger due to the lexical preposition *per*, which prevents competition between the two structures.

The data in (37) might seem more controversial. Both syntactic and morphological structures involve the same merger of categories and, according to dictionaries (e.g. DIEC) and speakers’ intuitions, the two structures have the same semantics. Accordingly, examples like those in (37) should be taken as real counterexamples to the M-S competition theory. The actual use of these expressions, though, shows that the potential competition between the morphologically and syntactically derived expressions is non-existent. Let us consider why. The compounds *carcomprar*, *carvendre* and *primfilar* are hardly ever used if used at all, and when they are used, they contrast with their syntactic counterparts in the sense that both derivations are used in different registers. As a consequence, the competition analysis cannot be activated, thus explaining the existence of both morphologically and syntactically derived forms.

There is a further set of data which is formed by the adverb *mal* and a V (or a derivative of it).¹⁵ Buenafuentes (2001-2002) identifies four different meanings of the adverb *mal* in Spanish compounds of the same form, which are quantitative, privative, intensive and qualitative. The same four readings can also be found in Catalan. Some examples of each type are given in (38).

(38) i. Quantitative

Cat. a. *malmenjat*¹⁶
 badly+eaten
 ‘to be undernourished’

¹⁵ These compounds should not be mixed with forms like Cat./Sp. *malaventurat/malaventurado* (badly+ventured) ‘unfortunate’ and *malhumorat/malhumorado* (badly+humored) ‘bad-tempered’. In these cases *mal* is an adjective which modifies the underlying N, on which the compound is based. This type of compound will not be considered here, but note in passing that the examples just given are not problematic for the competition theory. *Malaventurat/malaventurado* has idiosyncratic semantics, which allows morphological merger independently of whether there is an equivalent syntactic expression with the same merger of categories; the syntactic counterpart of *malhumorat/malhumorado* would be *de mal humor* (of bad humor), the result of merging an adjective with a N, which contrasts with the merger of two adjectives in the compound.

¹⁶ In addition to the different semantics of *mal* when found in some compounds in (38) and in their syntactic counterparts, some compounds also have a different merger of categories. For example, *malmenjat* (38ia) and *malagraït* (38iia) only exist as adjectival participial forms. The adjectivalizing suffix of such forms is not present in the syntactic merger.

- a'. *menjar malament*¹⁷
 eat badly
 'to eat badly, which can be attributed to the fact that the food was not good enough, or because you were standing while eating, or because you ate in a hurry (among many other possibilities)'
- Sp. b. *malcomer*¹⁸
 badly+eat
 'to eat little because of the bad quality of the food'
- b'. *comer mal*
 eat badly
 (the explanation in (38a') also applies here)

ii. Privative

- Cat. a. *malagraït*
 badly+been grateful for
 'to be ungrateful'
- a'. *agraïr malament*
 thank for badly
 'to thank somebody for something improperly, maybe because you shouted at the person, or you used swearwords (the bad manner in which you thanked somebody is not specified)'
- b. *malencertar*
 badly+get right
 'to get (something) wrong'
- b'. *no encertar*
 no get right
 'to get (something) wrong'
- c. *malfiar-se*
 badly+trust.CL
 'to mistrust'
- c'. *no fiar-se*
 no trust.CL
 'to mistrust'
- Sp. d. *malograr*
 badly+achieve
 'to fail'
- d'. *no lograr*
 no achieve
 'to fail'
- e. *malparir*¹⁹
 badly+to give birth
 'to have an abortion'

¹⁷ I take *mal* and *malament* as being two variants of the same form.

¹⁸ The Spanish examples are taken from Buenafuentes (2001-2002).

¹⁹ Some speakers do not accept the compound *malparir*.

e'. parir mal
 to give birth badly
 'to have a complicated delivery (the reason for the complicated delivery is not specified)'

iii. Intensive

Cat. a. malferir
 badly+hurt
 'to hurt badly'
 a'. ferir malament
 hurt badly
 'to hurt not in the way it was planned'

Sp. b. malherir
 badly+hurt
 'to hurt badly'
 b'. herir mal
 hurt badly
 'to hurt not in the way it was planned'

Concerning the first three meanings (i.e. quantitative, privative, intensive), *mal* can be interpreted as having one of them only when compounded. The difference in interpretation between these compounds and their syntactic counterparts (when existing) is sufficient to suspend the M-S competition and allow the morphological forms. Notice that some compounds, especially those with a privative meaning (38ii), have no corresponding syntactic paraphrases with the same lexical items. In these cases it is clear that there cannot be any competition between the two derivations even though they have the same semantics.

Let us now consider [AdvV]_V compounds with a qualitative meaning.

iv. Qualitative

Cat. a. malvendre badly+sell 'to sell (something) cheap'	a'. vendre malament
b. malgastar badly+spend 'to waste money'	b'. gastar malament
c. maltractar badly+treat 'to ill-treat'	c'. tractar malament
d. malcriar badly+bring up 'to spoil (sb)'	d'. criar malament
e. malparlar badly+speak 'to speak ill of somebody'	e'. parlar malament
f. malpensar badly+think	f'. pensar malament

	‘to think badly’	
	g. malencaminar	g’. encaminar malament
	badly+direct	
	‘to misdirect’	
	h. malacostumar	h’. acostumar malament
	badly+get used to	
	‘to spoil (somebody)/to get sb into a bad habit’	
	i. malentendre	i’. entendre malament
	badly+understand	
	‘to misunderstand’	
Sp.	j. maleducar	j’. educar mal
	badly+raise	
	‘to spoil (sb)’	
	k. malinterpretar	k’. interpretar mal
	badly+interpret	
	‘to misinterpret’	

The compounds with a qualitative meaning are a real problem for the morphosyntactic competition if the semantic condition in (9) is not refined (recall the discussion in Section 2.2). In other words, a V merges with an adverb which can be taken as a modifier both in compounds and in their syntactic equivalents, the result being that the same lexical items and argument structure are shared by the two components. If the semantic condition is not refined beyond identity of argument structure, all the examples in (38) are problematic for the competition model. AN (2004) are aware of this difficulty and assume that, despite having the same merger of categories and the same argument structure, some syntactic and morphological counterparts can coexist because, for example, the syntactic structure is interpreted literally while the morphological one figuratively or because, despite having the same exact meaning, the morphological structure is used for official documents while its syntactic counterpart is used for more informal situations. They illustrate the literal/figurative contrast with some verb-particle constructions in Swedish (from Holmes & Hinchliffe, 1994: 321). The syntactic derivation in (39) is interpreted literally while the morphological structure is interpreted figuratively.

- (39) a. Jag bryter av kvisten.
 I break off the-branch
 ‘I break off the branch’
 b. Jag avbryter samtalet.
 I off-break the-conversation
 ‘I interrupt the conversation’

However, if one wants to maintain AN’s (2004) theory, even finer refinements of the semantic constraint are needed to account for the Catalan and Spanish data in (38iv). As will be seen shortly, the compounds in (38iv) can be divided into three subgroups.

One could argue that some syntactic derivations allow a wider range of interpretations than the morphological derivations. In other words, the semantics of the morphological construct can be viewed as a subset of the possible set of interpretations associated with the

syntactic derivation.²⁰ That is the case of *malvendre*. Compare the semantics of the following sentences.

- (40) a. Els propietaris van *malvendre* el cotxe.
 ‘The owners sold their car cheap’
 b. Els propietaris van vendre *malament* el cotxe
 ‘The owners sold the car {cheap / in a bad condition / in an unprofessional manner (e.g. maybe the seller was swearing)}’

Even then, one would like to know why the two derivations are not competing for the shared reading.

In some other cases, although the two expressions seem to have identical semantics, they cannot be freely exchanged in some contexts, which means that there is a semantic difference between them, not visible at first sight. The Spanish verb *maleducar* would belong to this second subgroup. Consider (41).

- (41) a. Quan surts sempre {malgastes (badly+spend) / gastes malament} els diners
 ‘When you go out you always waste your money’
 a’. Ell va {malgastar (badly+spend) / #gastar malament} la joventut
 ‘He wasted his youth’
 b. No {maltractis (badly+treat) / tractis malament} el nen
 ‘Don’t ill-treat the child’
 b’. No {#maltractis (badly+treat) / tractis malament} la taula que és molt cara.
 ‘Don’t damage the table because it is an expensive one’

Again, one would like to know why the reading shared by M and S is allowed under the competition model. Note that one might argue that the data in (40) and (41) are not a real problem for the competition model on the following grounds. In principle, one would expect the same range of interpretations in the two derivations if both have compositional semantics. If the compound has one particular reading out of the possible readings the syntactic derivation has, this can be taken as evidence for the listing of the compound, which will be due to its idiosyncratic nature. Bear in mind that accepting such argumentation implies that a really fine-grained semantics analysis is needed for the M-S competition theory to work, which clearly shows that identity vs. distinctness of argument structure (AN’s (2004) initial proposal for the semantic constraint in (9ii)) is not sufficient.

Finally, there are some compounds, like Catalan *malentendre* ‘to misunderstand’ (42a), *malacostumar* ‘to spoil (somebody)’ (42b, b’) and Spanish *malinterpretar* ‘to misinterpret’ (42c), which cannot be distinguished from their syntactic counterparts in any semantically relevant way.

²⁰ This subset relationship could be related to Kiparsky’s (1997: 482-483) distinction between those verbs that are named after a thing, which involve a canonical use of the thing, and those that are not named after a thing and can have interpretations other than the one just mentioned. Contrast the semantics between *to saddle a horse* and *to put the saddle on a horse*. The denominal verb can only mean that you have put the saddle in such a way that now you can ride the horse. Although this interpretation can also be derived from *putting the saddle on a horse*, this expression can also have other interpretations (e.g. the saddle is on the horse but you cannot ride the horse because the saddle is not fitted in the appropriate/canonical way). The denominal V (the morphological derivation in our case) seems to have prototypical/canonical semantic features associated with it, not present in the analytic variant (the syntactic derivation in our terms).

- (42) a. Ells ho han {malentès (badly+understood) / entès malament}
 ‘They have misunderstood it’
 b. No {malacostumis (badly+get used to) / acostumis malament} el nen
 ‘Don’t spoil the child’
 b’. Un nen malacostumat (badly+got used to) / acostumat malament}
 ‘A spoiled child’
 c. El públic lo {malinterpretó (badly+interpreted) / interpretó mal}
 ‘The audience misinterpreted it’

Further examination of the two derivations may reveal a difference in their semantics. Note that even if such difference is found, the argument structure between the two expressions will remain the same. A change in the original definition of AN’s (2004) semantic constraint is needed anyway, as they themselves acknowledge by pointing out that, for example, the contrast between formal and informal registers is enough to suspend competition between morphologically and syntactically derived expressions.

4. CONCLUSIONS

This paper has provided more evidence for the view according to which the order of constituents different from the unmarked one is allowed only because it has different semantics, a long established generalization (cf. e.g. Mithun, 1984, 1986; Sadock, 1986; Rosen, 1989; Rice & Prideaux, 1991).

The competition analysis between S and M, as put forward by AN (2004, 2007), can be partially assimilated to the earlier analyses which seek to explain the coexistence of syntactic and morphological structures, which, on the morphosyntactic competition account, is explained either by appealing to a difference in the semantics of the two structures (similar to Mithun’s) or by a different merger of categories in the two constructions.

It has been shown that the M-S competition theory can explain most of the data examined in this paper provided the semantic condition of the constraint in (9) is refined. There were a few cases, though, which were left unexplained both in the current understanding of the competition model and even after the semantic constraint was refined. More data should be taken into account to further assess the morphosyntactic competition theory. To this end, the Catalan and Spanish [NA]_A compound could be contrasted with its syntactic counterpart (e.g. Catalan *un noi cama-llarg* (a boy leg-long) ‘a long-legged boy’ with *un noi llarg de cames* (a boy long of legs), which for space reasons was not considered in the present study (cf. García Lozano, 1978; Cabré & Rigau, 1986; Mascaró, 1986; Gavarró, 1990; Rainer & Varela, 1992; Gràcia & Fullana, 1999; Gil Laforga, 2006)

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Disharmonic word-order systems and the Final-over-Final-Constraint (FOFC)

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Abstract

*This paper focuses on a disharmonic word-order pattern that has not previously received specific attention in either the generative or the typological literature, namely that in which a superficially head-initial phrase is dominated by a superficially head-final one. Unlike the opposite disharmonic pattern (head-initial over head-final), final-over-initial appears to be curiously absent in various clausal and nominal contexts and in unrelated languages/language families which permit a range of word orders (e.g. Germanic, Finnish, Basque). On the strength of this observation, a constraint is formulated which rules out final-over-initial orders: the Final-over-Final Constraint (FOFC). The primary aim of the paper is to gain a better understanding of the nature of FOFC and also to consider what insights it may offer in respect of the structure underlying disharmonic orders and the manner in which such structures are linearized. Consideration of both cases conforming to FOFC and those which apparently do not do so (e.g. head-initial DPs and PPs in OV languages like German, clause-final particles and final negation in VO languages, circumpositional structures) suggests that a phase- and LCA-based analysis may facilitate understanding of the relevant gaps and occurrences. More specifically, it is proposed that phase-heads determine the linearization properties of categorially non-distinct heads in their phasal domain. Unattested FOFC-violating structures like *VOAux and *SVOComplementizer are therefore ruled out, while the counterexamples are shown to be derivable by virtue either of the categorial distinction between the dominating and dominated phrases or of the fact that the head of the dominating phrase is deficient, i.e. not a phase-head. The conclusion is therefore that a properly formulated version of FOFC seems to hold as an absolute principle across languages, and that more detailed and systematic study of FOFC may, in addition to its typological interest, (a) reveal a great deal about the linearization of syntactic structure and (b) provide an empirical basis for developing a greater understanding of the nature of syntactic categories.*

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1. INTRODUCTION

So-called “harmonic” word orders, which reflect either consistent head-initial or head-final order (cf. Hawkins 1983, Dryer 1992), have received much attention in both the generative and the typological literature. Thus, for example, it is now well known that some of Greenberg’s “word-order universals” represent robust generalisations which hold across the majority of languages surveyed to date (cf. Dryer 1992, Haspelmath et al. 2005). The generative account of these recurring patterns is also well-established: assuming the hierarchy-governing X-bar principle in (1a) and “across-the-board” unidirectional setting of the linearization-determining Head Parameter (HP) in (1b), we expect head-initial structures (e.g. V(erb)-O(bject), Aux(iliary)-V(erb), C(omplementizer)-Sentence and prepositions preceding their complements) to cluster together in VO languages, while the opposite clustering is expected to be found in OV languages.

- (1) a. Principle: $X' \rightarrow \{X, YP\}$
 b. The Head Parameter: $X > YP$ (head-initial languages)
 $YP > X$ (head-final languages)

As noted i.a. by Dryer (1992: note 17), “disharmonic” systems or those exhibiting a mix of head-initial and head-final orders, in fact, outnumber harmonic ones among the world’s languages, a state of affairs which clearly raises questions as to the role of (1b) in these languages, and possibly also more generally. One possibility suggested by the existence of disharmonic languages is that the HP may not in fact always be set in the acategorical, “across-the-board” manner proposed above, but that it may, at least in some cases, be differently set for different syntactic heads. Thus German and Dutch instantiate two languages which have, since Koster (1975), been assumed to exhibit category-sensitive HP settings: while CP, DP and NP and most PP are head-initial, VP and IP and also some AP and PP are head-final. Allowing for this possibility, then, it can be seen that the HP does not require languages to be consistently harmonic and that disharmonic orders are readily generable if one postulates a(n at least optionally) category-sensitive linearization parameter.

Allowing this possibility, however, still leaves various questions unanswered. As Baker (forthcoming) notes, *always* relativizing the HP – or a feature-based “microparametric” equivalent – to categories leads us to expect “a relatively smooth continuum of languages” in the context of which harmonic languages have no special status, merely constituting systems for which the relativized HP happens to have been set identically for all categories. This approach is clearly at odds with typological findings, which do indicate skewings in favour of certain harmonic patterns (see Baker, forthcoming for further discussion). A similar question arises in connection with the small number of head-complement pairs that have been shown to be responsible for the majority of the inconsistencies in disharmonic systems. Thus Dryer (ibid.), for example, notes that N(oun)-Rel(ative) is the crosslinguistically preferred order, independently of the relative ordering of V and O and the consistency of the other dyads. OV plus N-Rel, then, is a very common disharmonic pattern, but it is not clear why this should be if head-complement ordering can always be either initial or final. Evidently, then, there are skewings *in favour* of certain patterns, both harmonic and disharmonic, that require explanation. Similarly, there are also skewings *away* from a given pattern, but these have, to the best of our knowledge, received far less attention to date than the former. Accordingly, this paper will focus on a disharmonic word-order pattern which is readily generable if we employ a category-sensitive HP, but which consistently fails to surface and which therefore appears to constitute a gap in the range of structural options available in language. In short, our aims are to:

- (i) formulate and motivate a generalization about disharmonic systems which we conjecture has universal validity for word-order typology; and to
 (ii) show how this generalization can be derived from current notions of cyclicity and linearization.

The following section introduces the generalization in descriptive terms. Section 3 then illustrates its operation on the basis of data from a range of synchronic and diachronic varieties, while section 4 focuses on apparent counterexamples. Section 5 presents a minimalist analysis of both the generalization and the instantiations of and exceptions to it, and section 6 concludes.

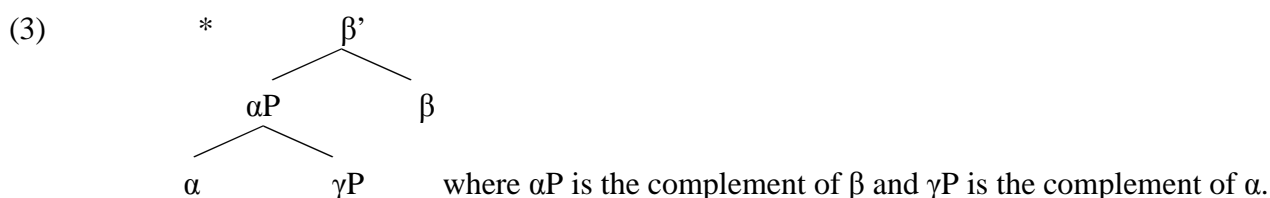
2. THE FINAL-OVER-FINAL CONSTRAINT (FOFC)

Holmberg (2000: 124) states the following descriptive generalization about word-order patterns:

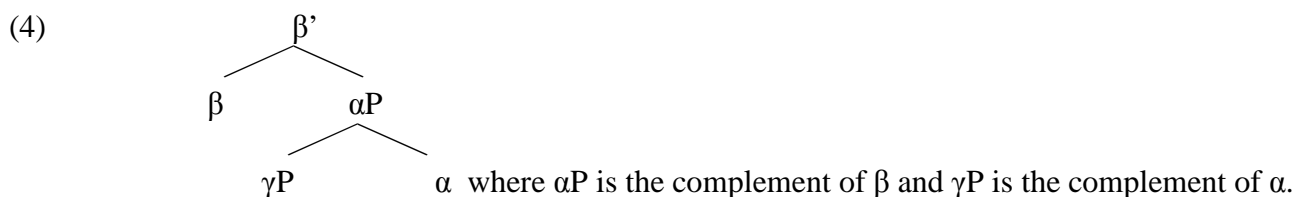
(2) **The Final-Over-Final Constraint (FOFC)**

If α is a head-initial phrase and β is a phrase immediately dominating α , then β must be head-initial. If α is a head-final phrase, and β is a phrase immediately dominating α , then β can be head-initial or head-final.

(2), which we dub the *Final-Over-Final Constraint (FOFC)*, rules out structures like that in (3):



As (3) clearly shows, the problematic structure is one in which a head-initial XP is immediately dominated by a head-final one, i.e. a structure which one can very straightforwardly generate by appealing to a relativized HP: all that is required is that the category to which α belongs be one that is head-initial, while that to which β belongs be head-final. As we shall see below, disharmonic orders of the opposite type – where α is head-final and β is head-initial as in (4) are commonly attested. The absence of (3)-type structures therefore constitutes a noteworthy asymmetry within the context of disharmonic word orders.



3. EMPIRICAL MOTIVATION FOR FOFC

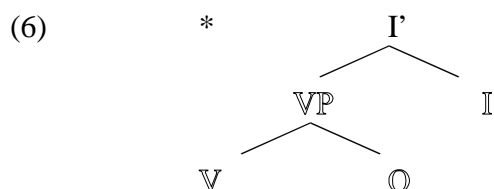
3.1 Clausal Word Order Gaps

Germanic varieties, both synchronically and diachronically, exhibit a mix of head-initial and head-final orders (cf. i.a. Travis, 1984, den Besten, 1986, Kiparsky, 1996, Pintzuk, 1999, Hróarsdóttir, 2000). Thus, for example, it is well known that the elements O, V and Aux may be ordered in a range of ways relative to one another in these varieties. These are listed in (5):

- (5) a. **O-V-Aux** or consistently head-final order in VP and TP: German and dialects of German, Dutch and its dialects, Afrikaans; Old English, Old Norse

- b. **O-Aux-V** or so-called *verb-raising/VR* structures (cf. Evers 1975): Swiss German dialects, Dutch and its dialects, Afrikaans; Old English, Old Norse
- c. **Aux-O-V** or so-called *verb-projection raising/VPR* structures which involve a head-initial TP and a head-final VP (cf. Haegeman & van Riemsdijk 1986): Swiss German dialects, Dutch dialects, spoken Afrikaans; Middle Dutch, Old High German, Old English, Old Norse
- d. **V-Aux-O**: required for CP-complements in German, Dutch, Afrikaans and their dialects; possible with PP-complements in Dutch and Afrikaans and, to a lesser extent, German; also possible with DPs in Old English and Old Norse
- e. **Aux-V-O** or consistently head-initial order in VP and TP: English, Mainland Scandinavian, Icelandic; also possible in Old English and Old Norse

We see here that disharmonic orders are not excluded *per se*: the VPR ordering in (5c) requires a head-initial TP dominating a head-final VP, i.e. the structure illustrated in (4) above, and is frequently attested. Crucially, however, the reverse pattern, with head-final TP dominating head-initial VP, fails to surface: **V-O-Aux** is a pattern which is strikingly absent among the attested ordering possibilities in Germanic (cf., among others, the works cited above). As illustrated in (6), this pattern is the one which violates FOFC for $\alpha = V$ and $\beta = T$:



As noted by Holmberg (2000: 128), the “Germanic” gap is also found in Finnish. In this language, the unmarked ordering of V, O and Aux is consistently head-initial Aux-V-O. OV order is, however, possible where a category is fronted by *wh*- or focus-movement. Thus both disharmonic Aux-O-V orders and also harmonic O-V-Aux ones occur in focused and *wh*-structures, with the latter showing that VP-fronting across Aux is available in Finnish. Significantly, however, VP-fronting is unavailable in structures where the object has remained in situ/to the right of V. Thus FOFC-violating V-O-Aux ordering is once again barred in Finnish. The relevant pattern is illustrated in (7) (object underlined; Aux **bold**; V *italic*):

- (7)
- | | | | | |
|----|--|---------------------|----------------------|------------|
| a. | Milloin Jussi olisi | <i>kirjoittanut</i> | <u>romaanin?</u> | [Aux-V-O] |
| | <i>when Jussi would-have</i> | <i>written</i> | <i>novel-DEF</i> | |
| b. | Milloin Jussi olisi | <u>romaanin</u> | <i>kirjoittanut?</i> | [Aux-O-V] |
| | <i>when Jussi would-have</i> | <i>novel-DEF</i> | <i>written</i> | |
| c. | Milloin Jussi <u>romaanin</u> | <i>kirjoittanut</i> | olisi? | [O-V-Aux] |
| | <i>when Jussi novel-DEF</i> | <i>written</i> | <i>would-have</i> | |
| | “When would Jussi have written a novel?” | | | |
| d. | * Milloin Jussi <i>kirjoittanut</i> | <u>romaanin</u> | olisi? | *[V-O-Aux] |
| | <i>when Jussi written</i> | <i>novel-DEF</i> | <i>would-have</i> | |

As illustrated in (8), Basque exhibits a similar pattern: (harmonic) V-Aux ordering in affirmative clauses (cf. (8a)) and (disharmonic) Aux-V ordering in their negative counterparts (cf. (8b); data from Haddican 2004):

- (8) a. Jon-ek Miren-i egia *esan* **dio** [O-V-Aux]
Jon-ERG Miren-DAT truth say-PERF Aux
 “Jon has told Miren the truth”
- b. Jon-ek ez **dio** Miren-i egia *esan* [Aux-O-V]
Jon-ERG not Aux Miren-DAT truth say-PERF
 “Jon has not told Miren the truth”

In negative clauses, VO-ordering is also a possibility, delivering a consistently head-initial Aux-V-O structure. In the affirmative, however, VO is impossible, as shown below:

- (9) a. Jon-ek ez **dio** *esan* Miren-i egia [Aux-V-O]
Jon-ERG not Aux say-PERF Miren-DAT truth
 “Jon has not told Miren the truth”
- b. *Jon-ek *esan* Miren-i egia **dio** [V-O-Aux]
Jon-ERG say-PERF Miren-DAT truth Aux
 “John has told Miren the truth”

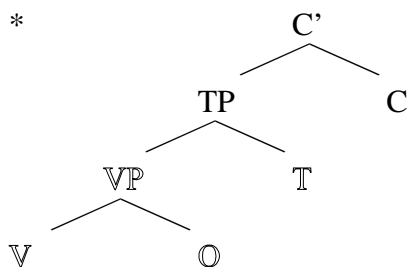
Thus Basque, like Finnish and Germanic, permits both harmonic and disharmonic word orders, but systematically bars the FOFC-violating V-O-Aux ordering.

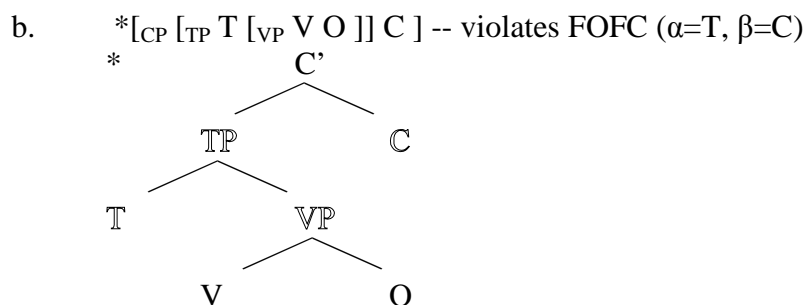
3.2 Ordering Gaps in Other Domains

A frequently observed fact about VO-languages is that they do not permit sentence-final complementizers (cf. i.a. Dryer, 1992: 102, 2006: 30, Hawkins, 1990: 256-7). The *World Atlas of Language Structures* (WALS), for example, registers just 2 VO-languages out of 599 showing final “adverbial subordinators” and Zwart (2007) investigates 214 of these languages and finds no “true” final co-ordinating conjunctions at all (cf. his Table 3), noting that the few elements apparently serving as clause-final Cs are either comitative/instrumental markers (i.e. case-markers or postpositional elements; see discussion in section 5 below) or summary/linking markers of some description (e.g. pronouns, quantifiers, plural or dual number markers, copulas, force-markers, etc.).

Based on what we have said so far, it is not clear why VO-languages should be incompatible with final complementizers: the constraint in (2) only explicitly rules out a head-final phrase which immediately dominates a head-initial one and CP is not generally thought to directly dominate VP. Closer consideration, however, reveals that VO-languages necessarily violate FOFC at some point in their structure. Consider (10) in this connection:

- (10) a. *[_{CP} [_{TP} [_{VP} V O] T] C] -- violates FOFC ($\alpha = V$, $\beta = T$)



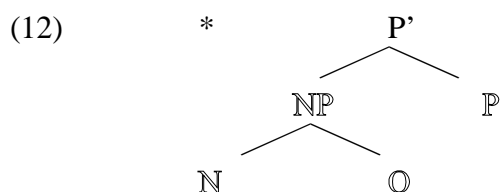


As shown in (10a), VO-languages with a head-final TP and CP violate FOFC in the same way as the languages discussed in sections 3.1-3.3: head-final TP illegitimately dominates head-initial VP in this case. Languages with head-initial TPs, like the one diagrammed in (10b), meanwhile, violate FOFC at the TP/CP level: head-final CP illicitly dominates head-initial TP. Regardless of the directionality of TP, there is therefore no FOFC-compliant way for VO-languages to feature clause-final complementizers. It is, however, worth noting that this is not true for analyses which do not appeal to HP-based linearization, instead postulating “massive” or “clausal piedpiping” in order to derive head-final orders (cf. the sorts of analyses that have been proposed in particular by those working within the so-called “Kaynian” paradigm, within which Kayne, 1994 is the point of departure). In this case, “massive piedpiping” of a head-initial TP into Spec-CP will, of course, derive the impossible structure. We return to this point in section 5.

Looking beyond the clausal domain, we see parallel FOFC-related gaps in the nominal domain. Consider Finnish once again. This language features both prepositions and postpositions and also permits nominal complements to surface both pre- and postnominally. A range of orderings are therefore possible in the nominal domain, as illustrated in (11) (O = nominal complement here):

- (11) a. P N O: *kohti kuvaa Stalinista* [harmonic head-initial]
towards picture Stalin-ABL
 “towards a picture of Stalin”
- b. P O N: *kohti Stalinin kuvaa* [disharmonic head-initial over head-final]
towards Stalin-GEN picture
 “towards a picture of Stalin”
- c. O N P: *Stalinin kuvaa kohti* [harmonic head-final]
Stalin-GEN picture towards
 “towards a picture of Stalin”
- d. N O P: **kuvaa Stalinista kohti* [disharmonic head-final over head-initial]
picture Stalin-ABL towards

As shown above, all orderings of P, N and O are possible, except the one which violates FOFC for $\alpha = N$ and $\beta = P$:



Further, FOFC also seems to operate in the morphological domain. So-called *bracketing paradoxes*, in the context of which the semantically motivated structural analysis of a compound lexical item in fact clashes with that imposed by regular morphological considerations, famously arise in the context of compound nominals like *generative grammarian*, *historical linguist* and *rocket scientist*. As also noted by Ackema and Neeleman (2004: 164ff), bracketing paradoxes do not arise wherever the base-form (*generative grammar*, *historical linguistics* and *rocket science* above) is N+complement. Consider (13) in this connection:

- (13) *[history of science]ist]; *[philosophy of science]ist]

If the suffix in (13) is β and the head-initial NP is α in (3), these examples all constitute FOFC-violations which are therefore expected to be ruled out. Ackema and Neeleman (op.cit.) propose a specifically morphological analysis to deal with these gaps, but the wider absence of structures of this type opens up the possibility that the morphological gaps may in fact represent just another case of a more generally unavailable pattern. Regardless of whether this is the case or not, however, we have seen in this section and in the one preceding it that FOFC-violations do appear to be curiously absent in a range of syntactic domains.

3.3 FOFC in the diachronic domain

The discussion in section 3.1 of the word-order possibilities available in Germanic varieties has already shown that FOFC-violating orders do not appear to have been available at any stage of any Germanic variety's history. Here we note the fact that FOFC makes two very strong diachronic predictions: firstly, that change from head-final to head-initial order must proceed "top-down" as given in (14a), and secondly, that change in the opposite direction must follow the "bottom-up" route diagrammed in (14b):

- (14) a. [[[O V] T] C] \rightarrow [C [[O V] T]] \rightarrow [C [T [O V]]] \rightarrow [C [T [V O]]]
 b. [C [T [V O]]] \rightarrow [C [T [O V]]] \rightarrow [C [[O V] T]] \rightarrow [[[O V] T] C].

Let us firstly consider the case of a language which undergoes change from head-initial to head-final ordering. If the change were to start at the bottom, with VP, we would have a period during which head-final CP dominates head-initial VP. Structures of this type are, however, ruled out by FOFC, as shown in (10a) above, with the FOFC violation in this case being at the VP/TP level. If the directionality of TP were to be the first to change (i.e. if the change were to start "in the middle"), we would, in turn, have a period during which head-final CP dominates head-initial TP, another FOFC violation. And the same would be true for any other intermediate categories that one might need to postulate in addition to T. The only consistently FOFC-respecting possibility with this type of change, then, is for CP to change first, thereby resulting in head-initial CPs which dominate head-final TPs – as noted in section 2, this represents a legitimate structural option, despite the fact that it is disharmonic. Thereafter, TP may change and only then may VP change. For changes in which head-initial systems become head-final, the opposite is true: if TP changes before VP, there will be a stage in which the language in question permits head-final TPs to dominate head-initial VPs, *contra* FOFC; and so on.

In contrast to Lightfoot's (1999) proposal that syntactic change involves a "random walk through parametric space", the proposal made here therefore defines a "pathway" of diachronic changes which is determined by synchronically impossible stages. To the extent that evidence is available to us at this stage, the predictions in (14) would seem to hold up. Thus both the earliest attested stages of Germanic (Gothic, Old Norse and Old English) and of Romance (Latin) exhibit C-

TP order, i.e. clause-initial complementizers surfacing while the TP and VP are (at least optionally) head-final. Consider (15) in this connection:

- (15) a. **ef** han hefði þat viljað fága [Old Norse]
if he has it wanted clean
 “if he had wanted to clean it”
 (from: *Guðm*, cited in: Hróarsdóttir, 2000: 178)
- b. ... **þæt** hie mihton swa bealdlice Godes geleafan bodian [Old English]
that they could so boldly God’s faith preach
 “... that they could preach God’s faith so boldly”
 (from: *The Homilies of the Anglo-Saxon Church I 232*, cited in: van Kemenade, 1987:179)
- c. .. qipandans þatei sa manna dustodida timbrjan ... [Gothic]
.. saying that this man began build
 “... saying that this man began to build ...”
 (from: *Luke 14:30*, cited in: Ferraresi, 1997: 36)
- d. accidit perincommode **quod** eum nusquam **vidisti** [Latin]
happened-3SG unfortunately that him nowhere saw-2SG
 “It is unfortunate that you didn’t see him anywhere”
 (from: Cicero, *At.* 1, 17, 2)

As noted in section 3.1, TP and VP in Germanic also permitted mixed orderings, but the FOFC-violating V-O-Aux order (i.e. head-final TP dominating head-initial VP) is never attested in any of these languages. Furthermore, detailed studies of the history of English and the Scandinavian languages have also shown that mixed VP orderings were still possible at the stage at which IP had become consistently head-initial (cf. i.a. Pintzuk, 1999, Kroch and Taylor 2000, and Hróarsdóttir, 2000), i.e. IP became head-initial before VP, as predicted. Available evidence from Germanic in particular therefore seems to point to the diachronic predictions made by FOFC being borne out.

3.4 Conclusion

In sum, then, there appears to be a wide range of evidence pointing to the existence of a systematic gap in the range of word-order patterns permitted in the world’s language: while harmonic and non-FOFC-violating disharmonic orders surface readily, even in the same language, there appears to be one order which is not possible – that which violates FOFC. As the following section will show, this statement is not actually exceptionlessly true and therefore requires modification.

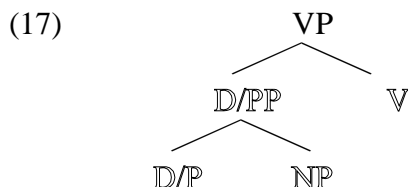
4. APPARENT COUNTEREXAMPLES TO FOFC

Many OV languages feature head-initial DPs and PPs which will therefore be dominated by head-final VPs wherever they occur as verbal complements. German is a very familiar case in point:

- (16) a. Johann hat [VP [DP den Mann] gesehen]
John has the man seen
 “John has seen the man.”

- b. Johann ist [_{VP} [_{PP} nach Berlin] gefahren]
John is to Berlin driven
 “John has gone to Berlin.”

As illustrated in (17), the structures in (16) violate (2) for $\alpha = \text{D/P}$ and $\beta = \text{V}$ and therefore appear to constitute counterexamples to FOFC:



Further apparent counterexamples can be found in the numerous VO-languages which feature clause-final force particles. The Mandarin Chinese examples in (18) illustrate (data from Li, 2006):

- (18) a. Xià yǔ le **ma**?
fall rain PART Q
 “Is it starting to rain?”
- b. Hufei chi-le sheme **ne**
Hufei eat-ASP thing Q_{WH}
 “What did Hufei eat?”
- c. Zánmen kuài zǒu **ba!**
1PL quick go EXCLAM
 “Let’s leave immediately!”

If the highlighted particles above and their counterparts in other languages permitting similar structures are C-related particles, these examples will violate FOFC (cf. (10) above).

Similarly, if the VP-final aspect particles in languages like Mandarin, Lugbara, Mamvu and other VO-languages and the final modals that have been identified for Vietnamese (cf. Duffield, 2001) are v or T-elements, they will also violate FOFC. Relevant cases are illustrated in (19):

- (19) a. Wo-men daoda shung- ding **le** [Mandarin Chinese]
1SG-PL reach mountain-top PART
 “We have reached the top of the mountain” (data cited in Soh and Gao, 2004)
- b. b̥is sa ja **ga** [Bagirmi]
dog eat meat COMPLETIVE
 “The dog has eaten the meat.” (data cited in Dryer, 2006: 56)
- c. Znàsɔ dé baasé Ranti **ni** [Mumuye]
Znaso PERF mimic Ranti IMMED. FUT
 “Znaso is about to mimic Ranti” (data cited in Dryer, 2006: 57)

- d. Ông Quang mua cui nha đươc [Vietnamese]
PRN Quang buy CLASS house can
 “Quang can/is able to buy a house” (data cited in Duffield, 2001: 1)

Further, clause-final negation of the kind that Reesink (2002) and Dryer (2006) have noted as a phenomenon that is particularly strongly represented in Papuan and Austronesian languages and in many VO-languages spoken in central Africa would also constitute a counterexample to FOFC if these negation elements can be shown to be final heads taking VP, TP or CP as a complement. Four points are, however, worth noting in connection with languages exhibiting clause-final negation.

Firstly, there are languages, like German and Chinese, which only permit negation to surface clause-finally in certain structures, but not others. Consider those in (20) and (21), for example:

- (20) a. Er hat das Buch **nicht** gelesen [German]
he has the book not read
 “He hasn’t read the book”
 b. Er las das Buch **nicht**
he read the book not
 He didn’t read the book”
- (21) a. Zhangsan mai shu **bu** mai shu? [Mandarin Chinese]
Zhangsan buy book not buy book
 “Did Zhangsan buy the book or not?”
 b. Zhangsan mai shu **bu** [~~mai shu~~]?
Zhangsan buy book not
 “Didn’t Zhangsan buy the book?”

As the examples indicate, negation may surface both clause-internally and finally in both German and Chinese. In both cases, final positioning is, however, only possible under very specific circumstances. In German, *nicht* is merged at the left edge of VP (cf. Weiss 2002), therefore negation will only surface finally where the verb has undergone raising to second-position (C) and the object has undergone scrambling out of the VP. Structures of this type do not, however, violate FOFC as Neg does not dominate the head-initial CPs that give rise to surface SVO (=V2) order; thus the example in (20a) does not instantiate the FOFC-violating configuration. The Mandarin example in (21b) illustrates a further superficially FOFC-violating structure that does not in fact pose a problem: it is well known that some languages – notably, the various Chinese dialects (cf. Cheng et al., 1996) feature a so-called *A-not-A* question strategy in the context of which negative question particles can end up surfacing in clause-final position as the consequence of what appears to be an ellipsis operation (cf. Huang et al. 2006). The possibility that negative markers may surface clause-finally as a consequence of ellipsis also therefore has to be borne in mind.

A second point worth noting about clause-final negation structures is the intriguing fact that some of the VO-languages featuring clause-final negation are in fact mixed OV/VO-languages which could, like Basque, have avoided SVO ordering in negative contexts, but do not do so. Ma’di and Lugbara are two cases in point, systematically requiring SVONeg order in negative clauses, despite the fact that OV ordering is available in these languages¹. Lugbara examples in (22) illustrate:

¹ It should, however, also be noted that there also mixed OV/VO African languages which behave more like Basque in barring VO in negative contexts. Various Surmic (Nilo-Saharan) languages exemplify this state of affairs, with negative clauses necessarily showing SOVNeg ordering. The following Me’en examples illustrate (data cited in Dryer, 2006: 40):

- (22) a. drùšǐ mâ zâ jaa rá
tomorrow I meat eat AFFIRMATIVE
 “Tomorrow I will eat meat”
- b. drùšǐ á jaa zá kö
tomorrow I eat meat NEG
 “Tomorrow I will not eat meat” (data cited in Heine & Nurse, 2000: 208)

As (22a) shows, SOV orders are available in affirmative contexts in Lugbara; negative clauses, however, obligatorily require SVO ordering, with the negative particle occupying clause-final position.

Thirdly, it is also worth noting that many of the VO-languages with clause-final negation either obligatorily or optionally feature so-called *bipartite negation* structures (cf. Bell 2004) in which the clause-final negator is in fact paired with a “real” negator which linearly precedes it. In these cases, then, the final negator is a concord element.

Finally, and once again of greater relevance in the context of languages that systematically require clause-final negation, there is the fact, noted by Dryer (2006: 54-5), that “VONeg languages tend to be VOQ (i.e. have clause-final question particles too – TB/AH/IR)” and, additionally, that VOAux ordering where “Aux is a particle indicating tense or aspect” is a further phenomenon that frequently occurs in these languages. In the case of Ma’di at least, this last consideration undoubtedly determines the placement of the negation particle, which always surfaces in inflected form in the position usually reserved for auxiliary particles. The latter are accordingly not independently realized in negation structures. This is illustrated in (23) (cf. Blackings & Fabb, 2003: 469):

- (23) m’- awí dǰóǰí kurù
1SG- open door NEG.PAST
 “I did not open the door”

For present purposes, the primary significance of Dryer’s observation is that it highlights the fact that FOFC violations may cluster within a single language.

Returning to the nominal domain: it is worth noting that the Finnish adposition-complement pattern illustrated in (11) is not one that is universally instantiated; languages like Slovene, for example, permit all the possible P and N-Complement (O) orderings with the adpositions *nasproti* (“towards”) and *navkljub* (“despite”) (M. Hladnik, p.c.²). This is shown below:

- (24) a. PNO: nasproti slik -i Stalin-a
towards picture-DAT Stalin-GEN

-
- | | | |
|----|---|-------|
| a. | ede or kobu- o
<i>they see chicken-PL</i>
“They see the chickens” | [SVO] |
| b. | ede kobu- o or- on
<i>they chicken-PL see-NEG</i>
“They don’t see the chickens” | [SOV] |

² It is worth noting that Slovene is a very strongly prepositional SVO language which does not feature postpositional elements other than *nasproti* and *navkljub* (M. Hladnik, p.c.). As such, it contrasts sharply with Finnish, which, while also SVO, is predominantly postpositional.

“towards a/the picture of Stalin”

- b. PON: nasproti Stalin-ov -i slik -i
towards Stalin-POSS.FEM-GEN picture-GEN
 “towards Stalin’s picture”
- c. ONP: Stalin-ov -i slik -i nasproti
Stalin- POSS.FEM-GEN picture-GEN towards
 “towards Stalin’s picture”
- d. NOP: slik -i Stalin-a nasproti
picture-DAT Stalin-GEN towards
 “towards a/the picture of Stalin”

Remaining in the nominal domain, circumpositional structures of the kind found in West Germanic and also quite commonly in a wide range of unrelated languages represent a final apparent counterexample to the generalization in (2):

- (25) a. **auf** den Berg **hinauf** [German]
up the-ACC mountain DIR-up
 “up onto the mountain”
- b. Àsíbá zé kwé **dó** távò ló **jí** [Gungbe]
Asiba take-PERF money PREP table DET POSTP
 “Asiba put the money on the table” (data cited in Aboh, 2004: 117)

In sum, then, it is clear that (2), as stated, cannot be viewed as an exceptionless constraint, even though it is also clear that it accurately characterizes a wide range of structures that are systematically absent from languages. The following section aims to propose a theoretical account of both the gaps and the fact that (2) appears to be too restrictive.

5. ACCOUNTING FOR FOFC

5.1 The FOFC-respecting cases

Our analysis is formulated within current Probe/Goal/Agree minimalist theory (Chomsky, 2000 et seq.) and rests on three core theoretical assumptions. Firstly, we assume that linearization is cyclically determined by phase-heads in accordance with (the strict version of) the Phase Impenetrability Condition (PIC) given in (26):

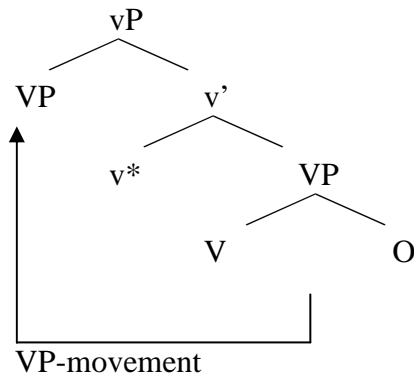
- (26) The *Minimalist Inquiries* PIC (Chomsky, 2000: 108)
 In a phase α with head H, the domain of H is not accessible to operations outside α ; only H and its edge are accessible to such operations.
 i.e. [ZP ... Z⁰ [XP ... X⁰ [HP ... **H**⁰ [YP ... Y⁰ [WP ... W⁰ ...
 where only **bold material** is accessible to X⁰, Z⁰, etc; material in outline font has already been sent to Spellout

In terms of (26), then, material within the complement to a phase-head is sent to Spellout upon completion of that phase. Thus, for example, if we assume minimal functional structure, the

complement of v , namely VP, will be sent to Spellout upon completion of the vP -phase, leaving the heads merged within the next (i.e. CP) phase unable to probe material located in VP. Crucially, we, unlike Chomsky and others, assume that completion of a phase leads to the *radical removal* from the computation of the material in the spellout domain associated with that phase (VP, TP, etc.). Thus VP in the example mentioned above is, for example, no longer present in the computation after the completion of a (nondefective) vP phase. Consequently, it cannot be moved into the TP-domain if vP undergoes movement to Spec-TP; instead, it is sent to Spellout and linearized immediately, resulting in its being spelled out as a clause-final string.

Our second theoretical assumption is that phrase-structure is uniformly head-initial and that linearization proceeds in accordance with Kayne's (1994) Linear Correspondence Axiom (LCA), with asymmetric c-command determining linear precedence. Finally, we assume that any head may independently have a movement-inducing linearization feature. In current terminology, movement-triggering features are generally referred to as *EPP-features*, but it is worth highlighting the fact that the features we have in mind here are purely linearization instructions and, as such, do not need to "piggyback" on operations such as Agree in the manner that is often assumed for EPP-features. Essentially, they may be thought of as movement diacritics which may, when associated with a particular probing feature (e.g. the ϕ -features on T), trigger Agree-related movement, but which can also function independently of an Agree operation. In this latter case, the movement diacritic in question (henceforth represented as a subscripted _{EPP}) signals that the material in the complement to the head with which it is associated must be moved into that head's specifier, thereby resulting in the phrase-final occurrence of the heads in question. This is illustrated in (27) below:

- (27) $v_{EPP} = v$ bearing a linearization instruction/movement diacritic



Clearly, this proposal raises the question of how one is to deal with A' -movement, which is, within the Probe/Goal/Agree framework, often thought to differ from A -movement in precisely the manner that we have proposed our linearization-driven movement does, i.e. in not involving an associated Agree relation (cf. Chomsky, 2004 et seq. for discussion of the Agree-independent *Edge Features* assumed to drive A' -movement). The specifics of this question fall beyond the scope of this paper, but it is worth noting that linearization features are diacritics which are *consistently* associated with the heads on which they occur, whereas A' -movement triggers will necessarily only surface in structures featuring A' -movement. For present purposes, however, it is sufficient to note that we draw a distinction between linearization-determining features and those which bring about A' -movement.

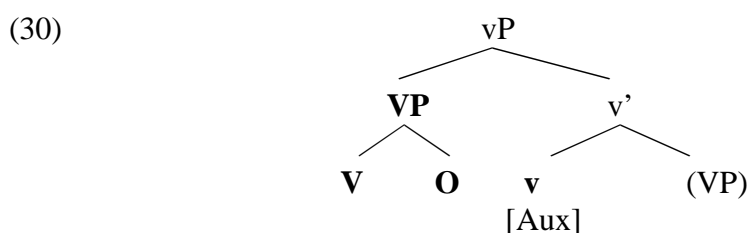
Against the theoretical background sketched above in place, we now propose (28) as a generalization aimed at capturing the constraint in (2):

- (28) If a phase-head PH has a linearization-determining EPP-feature, then all the heads in its complement domain must bear this linearization feature.

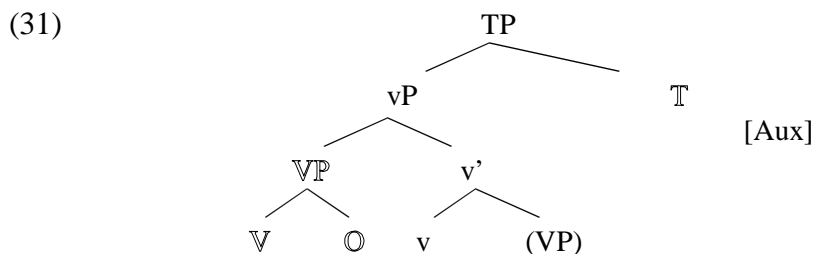
Applying (28) to the vP phase, we arrive at the following:

- (29) a. $v_{EPP} \quad V_{EPP} \rightarrow [[VP \ O \ V] \ v]$ (consistent head-final order)
 b. $v \quad V_{EPP} \rightarrow [v \ [VP \ O \ V]]$ (disharmonic non-FOFC-violating order)
 c. $v \quad V \rightarrow [v \ [VP \ V \ O]]$ (consistent head-initial order)
 d. $*v_{EPP} \quad V \rightarrow [[VP \ V \ O] \ v]$ (FOFC-violating order)

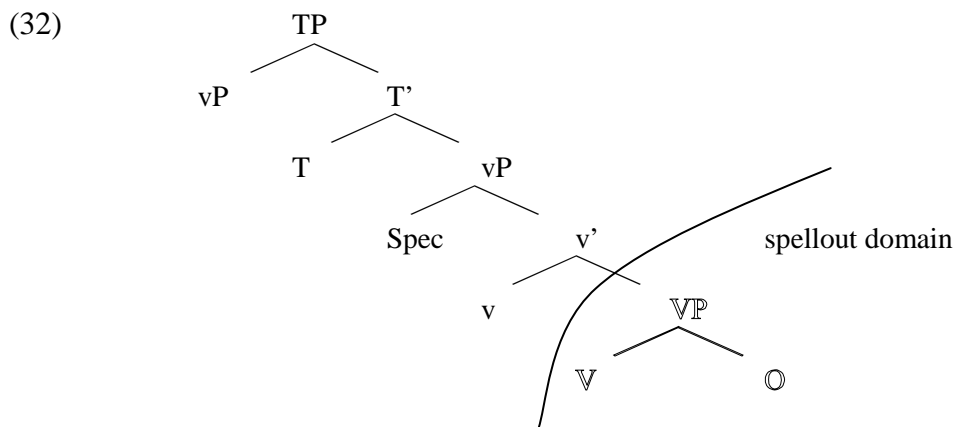
The FOFC violations in section 3.1(*VOAux) clearly fall under (29d): for $[_{VP} \ V \ O]$ to precede an auxiliary, it must move either to or through the specifier of vP, i.e. v must have an EPP-feature, while V does not, in violation of (28). If auxiliaries are exponents of v , VOAux therefore violates (29d) directly, as shown in (30) (elements in brackets () indicate moved elements and material in **bold** indicates structure that violates FOFC as stated in (29d)):



If auxiliaries are exponents of T, (29d) and thus the structure in (30) above clearly cannot be an intermediate stage of the derivation. A VOAux structure such as that in (31) is therefore ruled out (formatting as for (30)):



Given the above, the only possibility for deriving VOAux ordering is via raising of a consistently head-initial vP as in (29c) to Spec-TP. This possibility is, however, precluded by the fact that, under the phase-based linearization assumptions outlined above, head-initial VP will be spelled out and linearized upon completion of a (non-defective) vP phase. Wherever a consistently head-initial vP is attracted to Spec-TP, it will therefore no longer contain the head-initial VP that has already been linearized and that will thus appear clause-final position, having been “frozen in place” by the PIC; the only material that will undergo raising will therefore be v and its edge. This is illustrated in (32) below (formatting as for (30) and (31), with outline font here indicating material that has already been sent to Spellout and linearized):



VOAux therefore cannot be derived if (29d) and our linearization assumptions are to be respected, a desirable outcome in the context of section 3.1 above. We return below to the counterexamples discussed in section 4 and also to the matter of VP-topicalization structures, which seem, at this point, to be incorrectly excluded by our proposals.

Turning now to the case of clause-final complementizers: we saw in section 3.2 that these structures would necessarily involve a head-initial VP, with a TP which could then either be head-initial (FOFC violation involving CP and TP; cf. (10b)) or head-final (FOFC violation involving TP and VP; cf. (10a)). On the system assumed here, the latter violation is ruled out in the same way as that just outlined for SVOAux with Aux in T: unless a head-initial VP is fronted under A'-movement (cf. discussion below), it will necessarily be spelled out and linearized string-finally wherever vP is consistently head-initial (VO). Languages in which SVOAuxC is a discourse-neutral structure are therefore underivable, even on a “massive piedpiping” analysis of the kind mentioned in section 3.2. Likewise, SAuxVOC languages, or those featuring a head-initial TP, but final CP, are equally underivable as they once again require the head-initial VP to be available for raising to Spec-CP. Regardless of the superficial “headedness” of TP, therefore, the proposal outlined here will rule out final complementizers in VO-languages, once again a welcome result. We return to the matter of the apparently clause-final C-elements which nevertheless do occur in VO-languages in section 5.2.

Before we turn to the unattested nominal structures discussed in section 3.2, let us briefly address the matter of VP-topicalization structures, which, as we noted above, would seem to be just as underivable as the actually unattested structures in the clausal domain. As noted in the discussion of our theoretical assumptions, we crucially assume that the linearization diacritics associated with phase-heads and therefore also with non-phase-heads in their domain are distinct from the movement diacritics which trigger A'-movement. VP-fronting to the edge of vP, even of a head-initial VP, is therefore not ruled out where it is triggered by an A'-movement trigger. Our prediction is simply that VP-fronting structures in VO languages are necessarily associated with interpretive effects as the movement trigger would have to be an A'-movement trigger. This certainly appears to be correct for English. Also worth noting in this connection is that the availability of A'-driven fronting of head-initial VPs means that our analysis does not *completely* exclude the possibility of VOAux and VOAuxC orderings, as suggested above: if A'-driven VP-fronting is available in a null-subject language, VOAux ordering will be possible and if it is possible in a null-subject language with final complementizers, VOAuxC would likewise be expected to surface. Importantly, though, these structures would not be discourse-neutral (thanks to Olaf Koenenman for bringing this point to our attention). Krzysztof Migdalski points out that the VOAux structures that are possible in Macedonian do in fact meet this expectation, consistently requiring a topicalization reading, as illustrated below:

- (32) kupeno knigite gi imame
buy-PART books-DEF them-CL have
 “Buy the books we did!” (data from Migdalski, 2006: 136)

To conclude on the matter of the missing structures that we discussed in section 3.4, let us finally consider the nominal case exemplified by Finnish. The absence of NOP structures such as that illustrated in (11d) once again follows from (29d); the only difference here is that the categories in question are *n* and *N*. (11d) is therefore barred as it would, on the system proposed here, require an EPP-bearing *n* (the postposition; Finnish postpositions are distinctly nominal categories) which fails to determine the EPP-property of the *N* in its complement domain.

In sum, then, the gaps highlighted in section 3 all appear to be amenable to an explanation which appeals to the very simple phase-based linearization system stated in (28). Obviously, however, it cannot account for the observed exceptions which were the focus of section 4 and to which we now turn.

5.2 The counterexamples

The central observation regarding the exceptions to (2) is that many of them appear to involve a categorial distinction between the phase-head and the moved category. This is very clear for the German cases in (16): PP/DP are generally viewed as nominal categories, serving argument-related functions, whereas *v* and *V* are verbal. Given this insight, let us modify the generalization in (28) as follows:

- (28') If a phase-head PH has an EPP-feature, then all the heads in its complement domain **from which it is non-distinct in categorial features** must have an EPP-feature.

It is worth noting that (28') is very much in the spirit of Chomsky's (2005) idea that the phase-head determines many of the properties of the heads in its phasal domain, including their ability to act as probes and/or movement triggers. Here we specifically assume that phase-heads determine the linearization properties of categorially alike heads in their domain.

Given (28'), we would expect the following pattern of cases conforming and not conforming to FOFC (*n/N* and *v/V* are simply intended to indicate categorially like or unlike heads here):

- (34) a. n_{EPP} *N* -- FOFC violation
 b. v_{EPP} *V* -- FOFC violation
 c. n_{EPP} *V* -- allowed
 d. v_{EPP} *N* -- allowed

With one obvious exception, all the counterexamples in section 4 would seem to fall (at least partially) under (34c,d). The German case in (16) is clearly an instance of (34d), where we would not expect EPP-bearing (= “head-final”) *v* to determine the linearization properties of nominal categories in its domain. As regards the clause-final force and other markers that appear to be final C-elements occurring in VO-languages (cf. (18-19) above), it is worth noting that it has previously been proposed that C may be either nominal or verbal in nature (cf. i.a. Holmberg 1986). We therefore predict FOFC violations wherever (i) C is nominal and the associated clause is clearly not and (ii) nominal categories are strictly head-final (i.e. n_{EPP}) whereas verbal categories are not (i.e. *v*). This latter state of affairs seems to hold in Mandarin and the other Chinese varieties that we have considered so far; therefore the existence of a categorial distinction between the clause and the relevant C-particles could be the factor underlying this exception (although see below for further discussion). As regards the final negation elements surfacing in VO-languages, at least some of

clause-/phrase-finally and, in this alternative position, serve an entirely different function. Thus, for example, Afrikaans features circumpositional structures involving phonologically identical adpositional elements which, however, contribute very different meanings to the structure (cf. prepositional *in* which is a locative element meaning “in” and postpositional *in* which is directional and means “into”). Similarly, clause-final *le* in Mandarin Chinese has been said to play a different role to immediately postverbal *le* (cf. Soh & Gao, 2004 for discussion), and the Vietnamese modal illustrated in (19d) can in fact appear in three different positions, each time contributing different types of modal meaning, depending on its positioning within the clause (cf. Duffield, 2001 for further discussion). Given these facts, it may be the case that lexical item-specific linearization instructions which serve a lexical disambiguation function can result in a language exhibiting structures which appear to violate FOFC. Alternatively, it could also be that some of the relevant phrase-final elements are defective phase-heads which would then, once again, not necessarily be expected to dictate linearization properties. Clearly, if the particle-like elements, “deficient” auxiliaries, aspect markers and negation elements discussed above can also be shown to be nonphase-heads, this explanation could also extend to those cases. These are, however, all matters requiring a great deal of further research. Nevertheless, it seems fair to say that they are matters which are highlighted in an interesting and potentially illuminating way by the phenomena with which we have been concerned here.

6. CONCLUSION

This paper has sought to highlight the widespread effects of a constraint which specifically relates to the word orders found in disharmonic systems. Properly formulated, this constraint (FOFC) bars the generation of structures in which a head-initial XP is immediately dominated by a categorially identical head-final XP (cf. (28')). FOFC is therefore assumed to hold as an absolute principle across languages, with apparent counterexamples falling out under three possible circumstances:

- (a) the presence of a final element which is in fact structurally lower than the head-initial XP that is spelled out adjacent to it;
- (b) the presence of a phase-head which is categorially distinct from its complement; or
- (c) the presence of a nonphase-head or a defective phase-head which independently bears an EPP-feature (=linearization instruction) which it need not pass onto the head(s) it dominates, regardless of whether these are categorially identical or not.

If the above is correct, the study of FOFC (both its violations and nonviolations) may, in addition to its obvious typological interest, tell us much about the linearization of syntactic structure. What already seems clear at this stage is that the LCA in some form must be assumed: FOFC cannot be stated by appealing to the Head Parameter as this can only rule out non-occurring patterns via stipulation and it is also not obvious how a unified account of the violations and nonviolations could be formulated in terms of this parameter. Finally, the study of FOFC may provide an empirical basis for distinguishing those categories which are phase-heads from those which are not and it may even provide a useful and previously unexplored basis for developing a greater understanding of the nature of syntactic categories.

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LF-Negation Raising in Double Modal constructions

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Abstract

The overt realization of sentence negation is variously realized across different languages and even languages that share many common features often differ with respect to the structural position where the negative marker surfaces. This variation raises the question of whether those surface differences have an effect at LF. In order to try to answer this question, this paper will explore the possibility that the PF-realization of negation corresponds to its logic scope. This hypothesis will be tested against modal constructions, showing that surface variations of NegP are not relevant in the computation of the scope of negation with respect to intentional operators. Direct empirical support for the possibility to covert move negation at LF will be given considering double modal constructions in German.

1. SURFACE VARIATION AND LOGIC MAPPING

It is relatively uncontroversial in the literature that languages show a great variability in their means to express negation. It is well known, for example, that some languages convey a negative sentential meaning by using a verbal affix which directly attaches to a verbal host, while other languages adopt a self-standing negation which can be separated from the verbal complex and which shows characteristics similar to the ones of adverbials. Among the romance languages, Standard French is famous as it negates a sentence showing both the affix *en-* which is part of the verbal morphology and the adverb *pas* which surfaces in a different and lower structural position

- (1) Jean n'a pas lu
J. Neg aux Neg read
'Jean didn't read'

This is a clear case of redundancy, probably due to diachronic variation (Jespersen 1917), which reveals that even a single language may switch between two different settings of the mechanism governing the expression of the negative operator.

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The duplication of *ne-* and *pas* in French also illustrates another important characteristic, which is the possibility of negation to surface in different structural positions. In the case of French, the difference in the positioning of *ne-* and *pas* can be related, following Haegeman (1995) to the X/X' difference which allows the head *ne-* to move together with the auxiliary in the functional projection hosting this latter element. Even if it is possible in French to support an analysis which base-generates two different elements in a unique structural position between TP and AgrP (Belletti 1990, revisiting Pollock's 1989 proposal), a single fixed position is not sufficient to account for the broad cross-linguistic variation related to the position of NegP.

This is clear if we compare negative markers of the same kind, both head or both adverbials, in languages with a similar syntactic structure. Ouhalla (1991) notes, for example, that Turkish and Berber express negation by means of a verbal affix, but he also notes that this affix appears in reverse order with respect to Tense in the two languages:

- (2) a. Jan elmarlar-i ser-me-di-∅ (Turkish)
 J. apples-ACC like-**neg**-past-agr
- b. Ur-ad-y-xdel Mohand dudsha (Berber)
 neg-fut-agr-arrive M. tomorrow

In (2a) the negation *me* is closer to the verb stem than the affix expressing Past, while in the Berber example (2b) the situation is the opposite, with the Future affix *ad* being closest to the verb with respect to the negative morpheme *ur*. This contrast is hard to account unless we do not assume that the structural position where NegP is realized is subject to parametrical variation. This claim is further supported if we compare negative markers which are both adverbial like and show ordering differences with respect to the position of the past participle and other adverbial elements. Consider the other minimal pair from Zanuttini (1997):

- (3) a. l'a semper pagà no i tas (Milanese)
 s.cl. has always paid neg the taxes
 'It's always been the case that he hasn't paid taxes'
- b. da 'ntlura, a l'ha pi nen sempre vinciu (Piedmontese)
 from then, s.cl. s.cl. has more neg always won
 'since then, he has no longer always won'

In sentence (3a) from Milanese, the sentential negative marker *no* follows the adverbial *semper* 'often' and the past participle *pagà* 'paid'. In (3b) instead, the negation *nen* precedes the adverbial and the participle. Once again two varieties, in this case two Northern Italian dialects, which share all the relevant syntactic features, show a difference in the order of the negative marker with respect to other elements. A complete survey of the syntactic range of variation is not possible here but there are many crosslinguistic data (see Moscati 2006) in support of the idea that negation may be syntactically realized from positions as low as the VP, as in the case of Milanese, up to position CP-internal, as in some Irish varieties (McCloskey, 2001).

This variation in the PF realization of NegP opens up a series of questions regarding the interaction between this level of representation and the semantics. One of those questions which I will address here is how the mapping between PF and LF might be done, given that PF is subject to a great degree of cross-linguistic variation. The null hypotheses is that there

exists a direct mapping between the two levels of representations, but this view is extremely problematic, as I will try to show, both on conceptual and on empirical ground. Firstly, given the fact that languages differ in their PF realization of NegP, we will be forced to conclude that languages also differ in the logic scope that the negative operator might have, with all the consequences that derive from the idea that languages vary in their logic representation and in their expressive power. However, this view cannot be rejected *a priori* and, if the observation that two different PFs trigger two different LFs is made, we should carefully consider the null-hypothesis of an isomorphic PF-LF mapping. On the other hand, if differences in the surface realization of negation do not reflect variations in meaning, we have to discard the idea that LF is sensitive to variations of NegP.

In the following sections I will provide evidence in favour of this last possibility, supporting the idea that it is the correct approach and that the logic representation of negation is not bound by its surface realization.

2. INVERSE SCOPE OVER MODALITY

One standard argument in favour of movement in Logic Form has traditionally been built on the presence of the ambiguity stemmed from the presence of two scope-bearing elements within a single clause. This has been the case for Quantifier Raising (May 1985) which, independently of its specific formulations (Beghelli & Stowell 1997, Hornstein 1995, Fox 2000, Reinhart 2006) can be characterized as an indispensable syntactic operation able to multiply at LF the interpretable sites available for quantificational elements. In the presence of an ambiguity, one resort is to formulate the presence of two competing logic representations, where a semantic operator might occupy different structural positions. This logic might be applied to account for sentences where a modal operator is combined with negation, a combination which in certain cases gives rise to an ambiguity solvable only by admitting that some covert operations apply at LF. I will focus next on a sub-case of this more general problem and I will consider the inverse scope readings of negation over modality.

In order to find the desired configuration where negation has inverse scope over modality, it is necessary to individuate a language where negation surfaces in a low structural position, below the syntactic projection where the expression of modality appears. I will consider here two cases, from Milanese and from Standard German. Both languages have an adverbial negative marker which surfaces in a structural position immediately above the vP and which is overtly C-commanded by a modal. Consider first Milanese:

- (4) El *gà* de studià *no*
 s.cl must of to-study neg
 a. he is not required to study $\neg > \square$
 b. he is required not to study $\square > \neg$

Sentence (4)¹, taken from Zanuttini (1997) results ambiguous between the two readings (4a) and (4b), where the first reading is the inverse scope reading. In sentence (4) the modal verb *gà*, similar in meaning to the English quasi-modal 'to have' overtly c-commands the negation *no*. We already saw in (3) that this particle follows low verbal forms such as past participles and low adverbial like 'always', two facts that suggest that among Romance varieties,

¹ Thanks to Leonardo Gatti and Federico Misirochi for judgments.

Milanese belongs to the group with the lowest expression of negation within the Inflectional System. The structural representation of (3), repeated as (5), is the following:

(5) *l'a semper pagà no i tas*

$$\text{AgrP}[\text{I}'_j \text{ a}_k \quad \text{TP} [\text{t}_k \quad \text{AspP}[\text{semper} \quad [\text{PartP} \text{ pagà}_v \quad \text{NegP}[\text{no} \quad \text{VP}[\text{t}_j \text{ t}_v \text{ i tas}]]]]]]]$$

The representation in (5) results from standard assumptions on verb movement. For example, the possibility that the modal verb is originated in a ModP situated below NegP is excluded since under this view the auxiliary *a* needs to cross the past participle *pagà* which is another head element. This possibility is not desirable given the presence of intervention effects on movement (Head Movement Constraint Travis, 1984). Those considerations ultimately favour the order ModP > NegP in (5). Under this analysis, which straightforwardly applies also to sentence (4), is problematic to derive the inverse scope reading presented in (4a).

The second case I wish to discuss is given by the interaction of negation and modality in German, which *mutatis mutandis* closely resembles the problem posed for Milanese. In German the sentential negative marker is realized immediately above the vP but when presented in combination with a verb expressing modality, it can take wide scope over this latter element:

(6) Hans muss Julia nicht sehen

H. must J. neg to-see

a. Hans is not required to see Julia

$\neg > \square$

b. Hans is required not to see Julia

$\square > \neg$

(7) ...dass Hans Julia nicht sehen muss

that Hans Julia neg see-inf must

'...that it is not necessary that Hans sees Julia'

a. Hans is not required to see Julia

$\neg > \square$

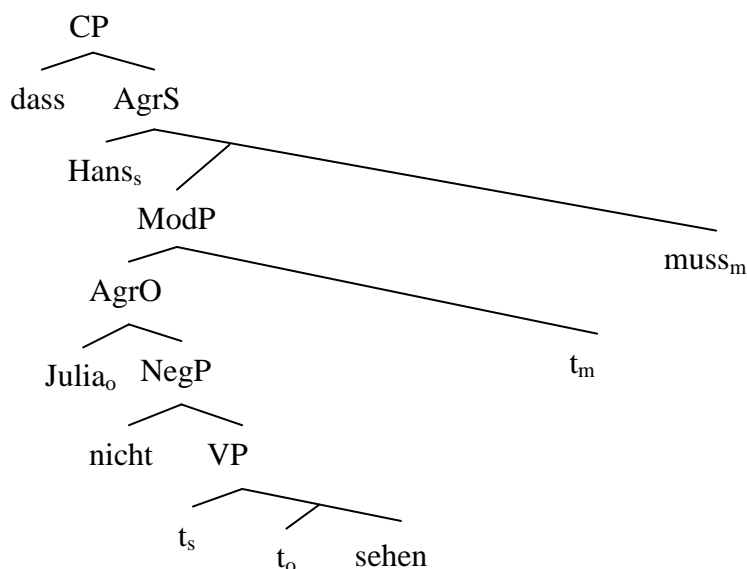
b. Hans is required not to see Julia

$\square > \neg$

In sentence (6) the modal verb appears in V2 position, thus c-commanding negation but taking narrow scope below it at LF. The preferred –if not the only– reading is the inverse one given in (6a)². If we cancel the V2 effect by embedding (6) and transforming it in a subordinate clause, again negation might take scope over the same modal (7a). Many different analyses for SOV languages have been proposed, stemming from the original head-final analyses or from Keyne's *remnant movement* analysis (Zwart 1993, Den Dikken 1996, Haegeman 2002, Koopman & Szabolcsi 2000) but a common feature is that there is a substantial agreement in considering the position triggered by Object-Shift below ModP and above NegP. For the point at issue here, nothing changes if we derive (7) through remnant movement (Moscati 2006) or adopting the head-final analysis as long as this choice does not have consequences on the relative ordering of the relevant functional projections ModP and NegP. Let us adopt the head final analysis and give sentence (7) the following representation:

² Thanks to Christian Biemann, Patrick Grosz and Wolfgang Meyer for judgments and discussions.

(7')



Looking at (7') it is evident that we are in the same situation already presented for Milanese: negation is c-commanded by modality at PF, but it might be interpreted with wide scope at LF. At this point the problem posed by the existence of inverse scope readings (4a) and (6a-7a) should be clear and it is evident that those readings cannot be accounted for by the representations given in (5) and (7').

We need a mechanism that can create a configuration in which the negative operator c-command the modal operator at LF. In principle there are two means to achieve this result: either reconstructing the modal in a position below negation or raising negation above the modal operator. Next I will consider the first hypothesis, showing that it is not void of problems and it faces at least one important empirical problem in double modal constructions.

3. RECONSTRUCTION OF MODALITY

Let us explore the first of the two possibilities presented in the previous paragraph. As just said, one way to derive the problematic inverse scope readings is by reconstructing the modal verb in a position below negation. If this solution is on the right track, it follows that negation does not play any special role in the derivation of inverse scope readings and that it is instead the operator expressing modality that will be affected by some kind of covert movement. We may refer to this hypothesis as the *Reconstruction Hypothesis*. This hypothesis relies on the possibility that there exists at least one position below NegP where the modal can reconstruct and I will show that this prerequisite has important consequences on the analyses of modal verbs.

Moreover, if we assume that the mechanism required to derive inverse scope is based on the reconstruction of the modal, we also expect that whenever such a mechanism cannot apply, also inverse scope should be impossible. We can state the following prerequisite and consequence for the Reconstruction Hypothesis:

- i) there exists a reconstruction site below the position where NegP is realized
- ii) the inverse scope readings are impossible when reconstruction is blocked

In order to evaluate Reconstruction, in this section I will consider if there is evidence supporting i) and if the empirical prediction in ii) is borne out.

3.1. VP-internal reconstruction

If we want to derive the inverse readings in (4a) and (6a-7a) by diminishing the scope of the modal operator, one way to obtain this result avoiding counter-cyclic lowering movements is to recur to the reconstruction of the modal verb in a lower position. This is an alternative to the representation given in (7'), where the modal is base-generated in its functional projection ModP, which is the view proposed by Cinque (1999). An alternative is that the modal has been moved in this position through possibly successive head movements (Lechner, to appear). At *prima facie* this seems to be a tenable position, but I will show that it encounters several problems when we try to determine the original position from where the modal verb has been moved.

One possibility is that modals are lexical verbs, originating within the vP, but this solution has important consequences on the treatment of 'restructuring constructions'. It is known that sentences with a modal verb selecting an infinitive clause show certain kinds of monoclausal effect (Rizzi 1976, 1982). This can be illustrated looking at some properties of Italian:

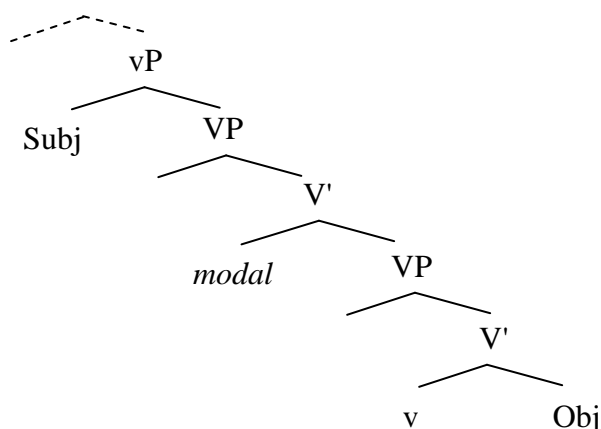
- (8) a. *lo odio fare *t* di notte
 obj.cl. I-hate to-do by night
- b. lo posso fare *t* di notte
 obj.cl. I-can to-do by night
 'I can do it by night'

Sentences in (8) show that clitic climbing, a phenomenon that is considered to be clause bounded (8a), might be found with a special class of verbs as the ones expressing modality, volition and motion. This observation, together with other special properties of the verbs belonging to this set (Rizzi 1982, Burzio 1986, Cinque 1988, 2006) suggests that modals in sentences such as (8b) are 'transparent' with regard to a series of syntactic phenomena. In their original formulation, monoclausal effects were derived through a 'restructuring rule' which takes a bi-clausal construction and which transforms its input in a monoclausal sentence. I will not refer to this formulation here, rather but I will consider a more recent proposal by Cinque (2004) according to which modal verbs are functional heads³ in opposition to a competing analysis which considers modal verbs as being lexical verbs base-generated in vP. Wurmbrand (2004) refers to this opposition as one between *lexical* and *functional* restructuring. Since the discussion here will be based on Wurmbrand's original work, I will maintain this denomination.

According to a lexical restructuring analysis, modal verbs are normal lexical verbs originating within the vP and taking as complement a reduced clause. Thus the transparency effects related to the lack of a clause boundary are a consequence of the properties of the selected complement:

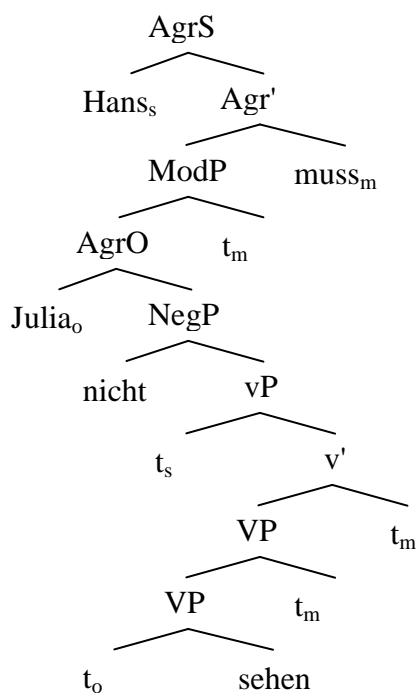
³ It is possible to re-cast the restructuring mechanism in terms of functional projection (Cinque, 2006). It will empirically differ only with respect to the optionality of restructuring (Rizzi p.c.).

lexical restructuring



The hypothesis of modal reconstruction is directly related to the lexical restructuring just presented, since lexical restructuring makes available a vP-internal site where the modal might reconstruct. In this way the semantic interface has access to an additional position constituted by the lower trace of the modal without any further need to covert-move the negative operator in order to generate the inverse scope readings. Therefore, an alternative for (7) is the following representation with the presence of different traces left behind by the movement of the modal verb:

7''



If the representation (7'') is on the right track, we can straightforwardly account for the inverse scope interpretation (7a). As it is possible to see looking at (7''), the modal moves to ModP leaving behind a certain number of traces, depending on the richness of the functional structure we assume. The crucial observation is, however, that the lowest of those traces is inside the VP, in a position lower than NegP.

The inverse scope readings are then problematic only for the first representation we have given in (7'), which is instead consistent with *functional restructuring*. Functional restructuring, in fact, assumes that modals are fixed and base generated in the functional domain. Under this view, there are no traces and, by consequence, no other interpretable sites.

At first sight, the hypothesis of lexical restructuring seems to be superior to the functional restructuring alternative in deriving the inverse scope readings with respect to negation, proviso that head-movement of the modal comes for free. One might argue that this is the case, since modals must rise in order to reach a spec-head configuration with the subject in AgrP. But notice that if this is the only reason for moving the modal out of the vP, it will not be easy to explain the ordering restrictions active on modals.

- (9) a. Er *dürfte* zu Hause sein *müssen*
 He might at home be must
 'He might have to be at home'
- b. * Er *muß* wieder singen *dürften*
 He must again sing might
 'It must be the case that he might sing again'

This pair shows that modals cannot be freely ordered and that the linear order is constrained in some way. If modal movement is motivated by some sort of general syntactic mechanism (i.e. Subject criterion, Rizzi 2004), it will be impossible to explain why only one modal can be attracted in the relevant position. A solution is to consider that modal movement is feature-driven in dedicated structural positions (a proposal similar to the one of Beghelli & Stowell for QR). But notice that if we resort to this mechanism, modal movement is not free anymore, but additional stipulations have to be made. The hypothesis of functional restructuring, on the other hand, might account for the facts in (9) assuming the same extended ordering of functional projections but without movement.

The real argument against base-generating modals within vP comes, however, from a series of empirical facts presented in Wurmbrand (2004), which strongly argues against the lexical restructuring hypothesis which relies on two assumptions: firstly, that modals, being lexical verbs, express thematic relations; secondly, that modals take a (reduced) clausal complement.

With regard to the first assumption, it is at dubious that modals are capable of θ -role assignment. It is not easy to determine if modals have an internal object, given that they obligatorily select an infinitive complement, but when we turn to the external argument, there are clear indications that they behave as raising predicates. Consider the case of German. Here unergatives intransitive predicates can be passivized whereas unaccusatives cannot

- (10) a. unergative
 Es wurde einen Abend lang getanzt
 it was an evening long danced
 'they danced for an evening'
- b. unaccusative
 * Es wurde am Flughafen angekommen
 It was at the airport arrived
 'They arrived at the airport.'

This difference seems to be a diagnostic for the presence/absence of the external argument. In (10a) the verb *tanzen* 'to dance' selects an external object, allowing passivization, while in (10b) such possibility is blocked with the unaccusative verb *kommen* 'to come'. Modal verbs behave exactly like unaccusatives with respect to passivization:

- (11) * Der Wagen wurde (zu) reparieren gemusst/müssen
 the car-NOM was (to) repair must-PART/INF
 'they had to repair the car'

In (11) the transitive verb *reparieren* is embedded under the modal, but despite of the possibility of having long-passives in German in restructuring context, passivization is not allowed in constructions involving a modal matrix verb as (11)⁴.

Support for the raising predicate analysis for modal verbs comes from the possibility to have non-thematic subjects as *weather-it* subjects:

- (11) a. Es muß morgen schneien
 It must tomorrow snow
 'It must snow tomorrow'
- b. * Es plante zu schneien
 it planned to snow
 'It planned to snow'

In (11a) the modal verb, similar to functional restructuring verbs and raising predicates in general, is compatible with the expletive *es* 'it' while a non restructuring verb (11b) which assigns an external θ -role cannot appear with a vacuous expletive. The impossibility of passive constructions, combined with this last observation that a semantically vacuous expletive subject might be licensed by modals, indicates that modal verbs lack an external argument.

What is harder to demonstrate is that the internal argument is also absent. In fact modals always take what can be considered a clausal complement and one can always assume that this complement absorbs the θ -role assigned to the internal object. But remember that the lexical restructuring analysis considers the complement of the modal verb as being clausal. We can then check if this complement has clausal properties. One way to do so is to consider the possibility to pied-pipe a relative clause. This possibility is given in German with non-restructuring verbs, but is blocked in restructuring modal context:

⁴ The ungrammaticality of modal passives does not seem to be limited to German, but appears to be a more general property of modals (Aissen and Perlmutter 1983, Burzio 1986). Also in Italian passivization has a degraded status, as shown in the following sentences:

- i. *L'esercizio è stato dovuto riscrivere
 the exercise is been required to rewrite
- ii. *Quel tramonto non fu più potuto rivedere
 that sunset not was anymore can see-again

Again the ungrammaticality of (i-ii) might be related to the purely functional role expressed by modals. Cinque (2004) suggests that the ungrammaticality of (11) is due to the fact that modals are base generated outside the vP shell, above the functional projection VoiceP responsible for passivization.

- (12) a. . . .der Roman [den zu lesen]INF der Hans plante
 . . . the novel [that to read]INF the John-NOM planned
 . . . ‘the novel that John planned to read’
- b. * . . .der Roman [den lesen]INF nur der Hans muß
 . . .the novel [that read]INF only the John-NOM must
 . . . ‘the novel that only John must read’

The contrast seen in (12) follows if we assume that only full-clauses can pied-pipe and that in (12b) the pied-piped element is only a fragment of the main clause, in conformity with the functional restructuring hypothesis.

To summarize, the idea that modal verbs originate outside the vP allows us to explain i) all those properties as the lack of passivization and the presence of expletive subjects related to the absence of the external argument, ii) the impossibility of pied-piping the infinitival complement of a modal verb, and iii) the ordering restrictions in force on the relative ordering of modals. From this discussion, it seems that there is no evidence –but instead counterevidence- that modals reconstruct VP internally.

3.2. Double modal constructions

Even if we have several arguments against the idea that modals originated within the vP-shell, this is not enough to exclude the possibility that modals reconstruct in a some other position lower than negation. Next I will present an argument against this last possibility and against reconstruction in general.

So far we have focused on some specific properties of modals, but a more general line of reasoning might be followed to exclude lowering of the modal operator. Remember that what we want to account for is the inverse scope readings for sentences (4), (6) and (7). We repeat (7) as (13):

- (13) ...dass Hans Julia nicht sehen muss
 that Hans Julia neg see-inf must
- a. Hans is not required to see Julia $\neg > \square$
 b. Hans is required not to see Julia $\square > \neg$

What we want to check is if whether the inverse reading (13a) can be derived through an operation able to reconstruct the modal verb below negation. Obviously this configuration must obey general principles of syntax. For example, the idea that there exists a ban for a linguistic object to establish a distance relation across another object of the same kind is less controversial. This principle, which has taken several formulations in the literature (*Minimal Link Condition*, Chomsky 1995; *Relativized Minimality*, Rizzi 1990), should also govern the reconstruction of the modal operator. Therefore we expect that if another modal operator is present, reconstruction (or raising) will be impossible:

- (14) $OP_{mod\alpha}$ $OP_{mod\beta}$ $OP_{mod\alpha}$

This expectation is confirmed if we consider double modal constructions, and in fact, in cases where there are two expressions of modality, scope relations are rigidly fixed and the only possible reading is the one visible at PF. This observation seems to exclude any instance of covert movement. Consider the following Italian sentences:

(15) Gianni deve poter parlare

G. must can to-speak

a. it is necessary that G. can talk

 $\square > \diamond$

b. *it is possible that G. must talk

* $\diamond > \square$

(16) Gianni può dover parlare

G. can must to-speak

a. *it is necessary that G. can talk

* $\square > \diamond$

b. it is possible that G. must talk

 $\diamond > \square$

In (15) the linear order is the modal *deve* 'must' preceding *poter* 'can' and the logic scope of this sentences is isomorphic to the observable PF representation, with the only possibility being to interpret the highest modal as taking scope over the lowest one. This is not an idiosyncratic property of the modal *dovere* but seems to hold in general. In fact, if we reverse the linear order, the inverse interpretation holds in (16). This suggests that some kind of intervention effect is really in force on the interpretation of double modal constructions. This observation is not restricted to Italian, but is also seen in German. Consider (17):

(17) ...dass ich einschlafen können muss.

...that I fall.asleep can must

a. ...that I must be able to fall asleep

 $\square > \diamond$

b. *...that I can necessarily sleep

* $\diamond > \square$

The only interpretation possible is the one given in (17a), where the modal *muss* which c-commands at PF the other modal verb *können* asymmetrically takes scope over it. Again this shows that the possibility of disjoining the LF interpretation of a double modal sentence from its surface realization is impossible. This directly follows if we assume that this is due to a violation of the Minimal Link Condition.

Given this state of affairs, we expect that if the reconstruction of the modal is the operation responsible for the inverse wide scope interpretation of negation, this reading will be unavailable when reconstruction is impossible. But this conclusion is disproved by negative double modal sentences:

(18) a. Karl muss nicht schwimmen können

Karl must not swim can

'it is not necessary that Karl is able to swim'

 $\neg > \square > \diamond$

b. ... dass Karl einen Kilometer nicht schwimmen können muss

I believe that K. one Kilometre not to swim able must

'... that it is not necessary that Karl is able to swim one kilometre'

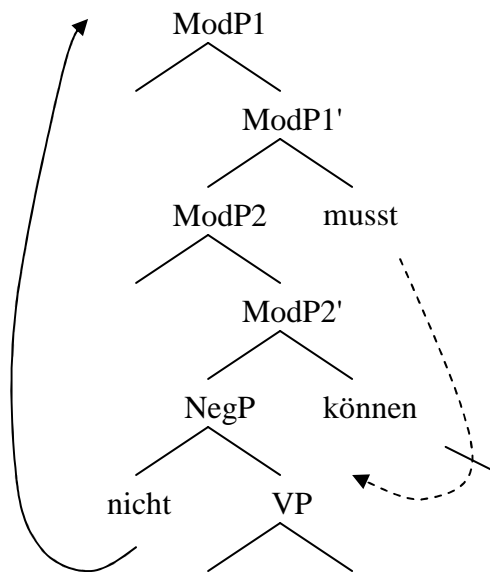
 $\neg > \square > \diamond$

Sentences in (18) present the two modals *können* and *müssen* that are interpreted, as already shown for sentences (15-17), in accordance with their surface scope. But those sentences also present another scope bearing element, the negative marker *nicht*, which occupies the specifier of the low projection NegP, crucially lower than the position where modals surfaces (see § 1). The low position of NegP is also confirmed by Austrian German (as pointed out to me by Patrick Grosz) where the position of negation is clearly situated in a low portion of the middle-field, as suggested by its position following the low-particle *ja*:

- (19) a. Der Karl muss **ja** nicht schwimmen können
 the Karl must ja not swim can
 'Karl (as you know) doesn't have to be able to swim'
- b. ...dass du **ja** nicht einschlafen können musst
 ...that you PRT not fall.asleep can must
 'that you are (as you know) not required to be able to fall asleep'

Sentences in (19) also show that in this variety negation does not obey with an isomorphic mapping between LF and PF but instead it is interpreted with the widest scope among the three logic operators. The interpretation of (18) and (19) is then unexpected if it relies on the reconstruction of the modal. I suggest that the only way to derive the wide scope reading of negation over the modal complex is to covert-move negation in a position where it c-commands at LF both modal verbs. I will refer to this operation as LF-Negation Raising⁵. It is now possible to derive the interpretations in (18) and in (19) without any need to move the modal and in conformity with the functional restructuring hypothesis. The mechanism is illustrated in (18b') below:

(18b')



The dashed line in (18b') indicates the impossibility to reconstruct the modal in ModP1 in a position below ModP2 while the black arrow expresses LF-Negation Raising in a position c-commanding ModP2.

Adopting this derivation, we can capture the fact that the scope relations between two modal verbs are fixed by their superficial c-command ordering and that this constraint doesn't apply to the negative operator. It is reasonable then to assume an operation as the one illustrated in (18b') which raises only negation. This alternative allows us to straightforwardly account for

⁵ This operation is different from *Negative Raising* (Horn 1989) and actually it is the exact inverse. Negative raising has been proposed to account for scope diminishment of sentences as i., interpreted as equivalent to ii.:

i. I do not believe that John will come
 ii. I do believe that John won't come

In sentence i. the negative marker surfaces in a position higher than the one where it could be interpreted.

the problematic sentences (4) and (7) presented in the first paragraph. We repeat here (4) and (7) as (20) and (21):

(20) ...dass Hans Julia nicht sehen muss
'that Hans is not required to see Julia'

(21) El g \grave{a} de studià *no*
'he is not required to study'

Remember that the problem is to establish how those sentences can receive the interpretation with negation taking wide scope. The solution proposed here is to adopt a derivation similar to the one presented in (18b'), moving at LF the negative operator in a position where it c-command modality. The two representations given below show how inverse scope reading might be derived moving the negative operator but keep fixed the position of the modals:

(21') ...dass $\text{AgrP}[\text{Hans } \text{XP}[\text{Op}_{\text{neg}} \text{ModP}[\text{AgrOP}[\text{Julia } \text{NegP}[\text{nicht } \text{t}_{\text{OPneg}} \text{VP}[\text{sehen}]]]] \text{OP}_{\text{mod}}]] \text{muss}_i]$

(22') $\text{AgrP}[\text{El } g\grave{a}_i \text{XP}[\text{Op}_{\text{neg}} \text{ModP}[\text{t}_i \text{TP}[\text{de studià } \text{NegP}[\text{no } \text{t}_{\text{OPneg}} \text{VP}[\dots]]]]]]]$

In those representations negation is dislocated in a projection generically labelled XP while the modal is left in the position where it is base generated, allowing us to avoid all the problems related with modal movement previously discussed.

CONCLUSIONS

The account proposed here for the inverse scope readings of negation allows us to derive the problematic interpretations without assuming any LF-movement for modal verbs. This proposal has the advantage of being consistent with the observation that modal heads respect strong ordering restrictions, with regard to both surface order and logic scope (Cinque 1999). If this observation holds, this implies that in the case of modal verbs there is an isomorphic mapping between LF and PF that must be respected. We saw that, aside from this consideration, there are also several empirical problems that make the option to lower the modal operator at least problematic. All those drawbacks can be avoided if we allow the negative operator to raise, with the welcome consequence of having a unified explanation for other phenomena (see Rullmann, 1995; De Swart, 2000; Penka, Doris & Hedde Zeijlstra, 2005) involving negation and modality.

Another advantage related with the introduction of Negation Raising is that it allows us to unify the scope of the negative operator regardless of the broad parametrical variation found across languages since variations in its realization might affect only the superficial level but its logic scope is free to be widened at LF by means of covert movement.

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On the semantics of *le*-predicates in Mexican Spanish

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Abstract

*This paper focuses on a productive linguistic phenomenon of Mexican Spanish that concerns complex predicate formation by clitic Semantic Pseudo Incorporation in the spirit of Dayal (2003) and Espinal (to appear). We introduce the term *le*-predicate to define those complex predicates formed by a transitive or intransitive agentive verbal base and *le* clitic that don't behave canonically as a 3rd person singular pronoun but as a syntactically visible verb modifier. Following Company Company (2002, 2004) and Torres Cacoullós (2002) we assume that *le* clitic has lost its pronominal and anaphoric status concomitant to the *le* grammaticalization of an oblique thematic role. Further, we describe *le*-predicates as a phenomenon of *le*'s evolution, which involves verb modification. *le* contributes with a new property to the predicate, which we define as *locus*, i.e., the set of the cases satisfying the condition of denoting some part or point of the predicate's differential value (Hay, Kennedy and Levin 1999). This is a modifying operation that produces an activity intransitive-like predicate that denotes an abstract locus. This is a syntax-semantic interface phenomenon, which shows high productivity with non-stative agentive and non-internally caused verbal bases.*

1. INTRODUCTION

In this paper we will talk about complex predicates in Mexican Spanish that concern the cases in which a non referential *le* clitic (that is, canonically, a 3rd person, singular clitic pronoun) becomes part of a complex activity predicate denoting some *locus* as a thematic property. We define *locus* inspired by its mathematic meaning, i.e. as a set or configuration of all the points or cases satisfying a particular condition; as we will see, the *locus* in the *le*-predicates satisfies the condition of denoting some part or point in a path, scale or surface that is a thematic property of some predicates with *differential value* (cf. Hay, Kennedy and Levin 1999). In this sense, the *locus* meaning is also related with its etymological connotation of a particular position, point or place¹.

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¹ In geometry, *locus* is the set of all points (and only those points) that satisfy certain conditions. E.g. the locus of all points in space one foot from a given point is a sphere having a radius of one foot and having its center at the given point. The locus of all points in a plane one foot from a given point is a circle having a radius of one foot and having its center at the given point.

We introduce the notion of *le-predicates* describing complex conceptual predicate units composed by a *verbal base* that is either a transitive (cf. (1), (2)) or an intransitive verb (cf. (3)), and a non-referential and non-anaphoric *le* clitic.

- (1) Si no vas a usar el agua, ¡**ciérrale!**
 If NEG goes to use the water, closeLE!
 “If you are not going to use the water, close-the-locus-of-the-source-of-the-water!”
- (2) Pero, ¡**le pintó** horrible este señor! ¿Cuánto le pagaste?
 But, LE (he)-painted horrible this mister_i! How-much PRO_i (you)-payed?
 “But, this guy painted-the-locus-of-the-painting horrible! How much did you pay him?”
- (3) En coche hay que **rodearle** mucho, mejor ve a pie.
 In car has that roundLE much, better go by foot.
 “By car you have to round-the-locus-of-the-path a long way, it is better if you go by foot.”

Le-predicates from transitive verbal bases may co-occur with an oblique PP that has been described as an *erstwhile accusative*, i.e. an object that behaves as the accusative internal argument of a non-complex predicate (cf. Torres Cacoullós 2002). This oblique PP can optionally appear in order to specify within which path, scale or surface we can identify the *locus*, it appears post-verbally and is preceded by the preposition *a* (cf. (4), (5)). This PP has been described as denoting the *place* of the action (cf. Idem); but nothing more has been proposed for the formal status or the PP and its predicate relationship².

- (4) Le moví (**al teclado**) para ver si jalaba la computadora.
 LE (I)-moved (to-the keyboard) to see if worked the computer.
 “I moved-the-locus-of-the-moving **at the keyboard** to see if the computer was running.”
- (5) –A ver, levántale poquito para ver qué hay debajo.
 To see, (you)-liftLE a-little to see what there-is below.
 “Let’s see, lift-the-locus-of-the-lifting so we can see what is below.”
 –¿**A la tapa**?
 To the lid?
 “**the lid.**”
 –**A la tapa**, nomás.
 To the lid, no-more.
 “Just **the lid.**”

So far, *le* has been analyzed as an expletive that causes verb intensification (cf. Torres Cacoullós 2002). This intensification is related with some *bleaching process* in which the clitic has

² Quoting Torres Cacoullós’ (2002:28): “(the) erstwhile participant (PP) has become a locus for the realization of the action.” Here, she refers to *locus* in a more vague sense than we use it. We say that the *locus* is denoted by the complex predicate itself, and the “erstwhile” PP denotes the “set” within the *locus* is evaluated.

lost its anaphoric and co-referential status (cf. Torres Cacoullos 2002, Company Company 2004)³. However, there is nothing said about the semantic status of what we call *le*-predicates that we propose to analyze as complex units with meaningful and formally relevant constituents. We dismiss the expletive analysis of *le*, and affirm instead that these predicates result from a process of predicate modification by Semantic Pseudo-Incorporation (SPI) in the spirit of Dayal (2003) and Espinal (*to appear*). SPI composition involves an XP non-referential syntactic argument modifying an incorporating verb (or verbal base). The XP remains as the syntactic internal argument, but semantically, it is both a verb modifier, and part of the meaning of a complex predicate.

The goal of this paper is to describe the *le*-predicates paradigm as an important part of Mexican Spanish grammar, as well as to account for the predicate modification that involves the *le* cliticization. We propose a syntax-semantic approach to the *le*-predicate formation describing this phenomenon as a case of complex predicate formation similar to (bare) noun Semantic Pseudo Incorporation, and we will state a formal status for the erstwhile accusative oblique PP.

This paper is organized as follows: in the §2, we will describe the different possible uses of *le* in Mexican Spanish, in §2.1 we will review the previous analysis, and in §2.2, we will see what has been said about similar clitic phenomena, as well as the adequate formal status of *le*. §3 is about the main semantic and syntactic properties of *le*-predicates, and §4 we continue with the verbal bases characterization. Finally in §5 we propose *le* as a verb modifier, and in §6 we will state our semantic proposal, i.e. the *le*-predicate formation as a case of Semantic Pseudo-Incorporation. At last, in §7 we present our conclusions.

2. THE USE OF *le* AND ITS FORMAL STATUS IN MEXICAN SPANISH

The first issue that we have to make clear is the difference between the cases in which *le* is used as a dative clitic pronoun –that corresponds to its canonical use, e.g. (6)a-b – and the cases in which *le* is a non (co)referential clitic in Mexican Spanish, e.g. (7)a-c. The non-referential uses of *le* occur in idiomatic phrases as discursive markers (cf. (7)a) or interjections (cf. (7)b) as well as in complex predicates (cf. (7)c). We will focus on the complex predicate cases which we call *le*-predicates (cf. (7)c).

- (6) a. Le_i di dos besos a Alelí.
 CL_{DAT} (I)-gave two kisses to Alelí_{DAT}.
 “I gave Alelí two kisses.”
- b. Le_i quitaste la mancha a la blusa_i.
 CL_{DAT} (you)-take-off the spot to the blouse_{DAT}.
 “You take off the blouse’s spot.”

³ This *bleaching process* is related with the expansion of the IO to oblique contexts concomitant to the grammaticalization of those oblique thematic properties. In our cases, the obliques that are inanimate goals (e.g. *Le pegué un buen golpe a la mesa*/ “(I) le_i give a good hit to the table;”) or surfaces (*¿Tú crees que debo dibujarle un adorno al letrero?*/ “(Do) you believe that (I) must draw le_i some decoration to-the signboard;”) are specially relevant (cf. Company Company 2002, 2004).

- (7) a. *Ándale, ve con tu mamá.*
 WalkLE, (you)-go with your mom.
 “*Come on, go with you mom.*”
- b. *¡Híjole! Ya es bien tarde.*
 INTERJ, already is good late.
 “*Dear me! It is too late.*”
- c. *Tenemos que pintarle con mucho cuidado.*
 (We)-have to paintLE with very carefull.
 “*We have to paintle very carefully.*”

Company Company (2002, 2004) and Torres Cacoullós (2002) affirm that *le* has lost its referential and pronominal status due to the extended use of *le* in oblique contexts; it has become a sort of agreement marker for the cases in which the predicate has an indirect object (cf. Company Company 2004), and it is an expletive verb intensifier for the cases in which the predicate has neither direct nor indirect object (cf. Torres Cacoullós 2002). We state there are two uses of *le* in Mexican Spanish (cf. (8)), an anaphoric and co-referential one, and a non-referential -and formally non-anaphoric- one (cf. Company Company 2004); the last case can be found in both idiomatic constructions, and in what we call complex *le*-predicates.

- (8) Uses of *le* in Mexican Spanish:
Le has an anaphoric use with:
- Ditransitive predicates
 - Transitive predicates with human dative or goal dative
 - Transitive with inalienable dative
 - Transitive with ethic dative
 - Transitive with locative / inalienable oblique argument
 - Intransitive predicates that admit IO realization
- Le* has no anaphoric use with:
- Idiomatic phrases
 - Discursive markers
 - Interjections
 - Complex *le*-predicates

Contrary to the cases in which *le* is just a fossilized part of an idiom –as in idiomatic phrases, discursive markers or interjections–, in complex predicates *le* has a syntactic and semantic significance: it saturates a syntactic argument position and it modifies the semantics of the predicate. This saturation works differently depending on the verbal base: *le* either saturates the syntactic internal argument of a causative verbal base, or it is applied to an intransitive agentive verbal base. In the case of transitive verbal bases, its presence has consequences on the syntax: accusative or dative argument realization is ungrammatical and some optional oblique adjunct PP can co-occur denoting some kind of erstwhile direct object that is not a predicate’s participant but

serves to denote the sort of path, scale or surface within the *locus* can be identified, or is a part of, e.g. (9).

- (9) a. Tenemos que pintarle con mucho cuidado **a la pared**.
 (We)-have to paint_{LE} with very careful to the wall.
 “*We have to paint-the-locus-of-the-painting very carefully on the wall.*”
- b. Cuidado con moverle demasiado **a la antena**.
 Careful with move_{le} too-much to the antenna.
 “*Be careful in moving-the-locus-of-the-moving at the antenna.*”

2.1. Some previous analysis

So far, there is not an exhaustive analysis for the cases such as (1)-(5), (7)c and (9), except for three proposals that have tried to provide an explanation to the behavior of *le* in Mexican Spanish: the intensification analysis, Torres Cacoullós (2002); the syntactic incorporation hypothesis, Masullo (1992); and the diachronic perspective, Company Company (2002, 2004) (see also Kany (1976)).

Torres Cacoullós (2002) proposes that *le* is a sort of *verb intensifier* that denotes “the doing of the action”, however, formally *le* is nothing more than an expletive. *Prima facie le* causes intensification, but we think that this “intensification” is only a pragmatic consequence of something else. First, we detect that the presence of *le* in the sentence causes accusative blocking as we see in (10)a-b, second; we observe that there is a difference in meaning between a simple predicate and the corresponding *le*-predicate, as we show in the contrast (11)a-b; and third, the *le*-predicate includes *le* as part of a complex conceptual unit (cf. (11)b).

- (10) a. Escribí con tinta azul (**el poema**).
 (I)wrote with ink blue (the poem_{ACC}).
 “*I wrote the poem with blue ink.*”
- b. Le escribí con tinta azul (***el poema**).
 LE (I)wrote with ink blue (*the poem_{ACC}).
 “*I le wrote (*the poem) with blue ink.*”
- (11) a. To write: “*to have the ability to mark coherent symbols or letters*”, or “*to compose.*”
 b. To write_{le}: “*to write the locus of the writing surface.*”

The intensification analysis does not clarify what “intensification” formally means, it doesn’t give an explanation for the change of meaning produced nor for the syntactic behavior of the predicate and the formation of a complex predicate. We will propose an adequate analysis for that in §0.

Even if Torres Cacoullós doesn’t propose an explicit analysis for both the predicate with *le* and the PP, her ideas about the non-(co)referentiality constitute an important basis for further investigations. Other key question in her proposal is the idea that the oblique PP that co-occurs in

this kind of sentences embodies the ‘locus of the action’ (see note 2); nevertheless, she doesn’t relate this *locus* with the meaning of the complex predicate in a concrete way.

We have taken the term *locus* inspired by this author, but our definition includes a more elaborated idea; we call *locus* a set or abstract configuration of all the points satisfying the condition of denoting some part or point in a path, scale or surface. This is a condition for the event realization that is manifested as a thematic property of the predicate. For the cases in which the nature of the *locus* is necessary to specify, we can bring out an adjunct PP that denotes the larger set within the *locus* is calculated (see §3, 0.)

One more proposal is that of Masullo (1992) who analyzes the cases of transitive predicates with this kind of *le* in Mexican Spanish. He proposes that these predicates involve syntactic incorporation of an empty internal head; as result, the erstwhile accusative is realized instead as a dative argument co-referential with *le*. We detect some important problems with this proposal, namely, that *le* and the PP are neither co-referential nor anaphoric, the PP is optional and formally unnecessary for the predication; furthermore, *le*-predicates blocks datives (12)b, and there is a difference in meaning between (12)a and (12)b illustrated in (13)a-b, that doesn’t have to do with empty accusative syntactic incorporation.

- (12) a. ¿Regresaste la película / el dinero?
 (Did you)-give back the movie_{ACC} /the money_{ACC}?
 “Did you give back the movie / the money?”
- b. ¿Le regresaste a la película /*al dinero /*a Teresa /*a mí /*a él?
 LE give-back to the movie_{OBL} / *to the money/ *to Teresa_{DAT} /to me_{DAT} / to him_{DAT}
 Did you go back-to-the-locus-of-something at the movie /*the money /*Teresa /*me
 /*him?
- (13) a. Regresar: “to give back something to someone/place”
 b. Regresarle: “to go back on some point of a scale”

Another issue that remains unexplained is the fact that the oblique PP cannot be any possible erstwhile accusative; as we see in (12)a both *la película* (“the movie”) and *el dinero* (“the money”) are direct objects, other than in (12)b, only “the movie” can appear as oblique PP, and it is not a direct object but the *place* where the action takes place. Hence, we identify that there is some oblique PP restrictions that are related with the *locus* condition, this is, that the predicate has to express a *locus*, which is only evaluated over scales, paths or surfaces. In the case just referred *regresar la película* (cf. (12)a) it can also means “to rewind the movie” (which corresponds to the meaning of *go back to some point of a scale*), in this case the direct object is not an affected object or theme that denotes a telic change of state, but something else having *differential value* of the change or expressing a scale (cf. Hay, Kennedy and Levin 1999, Levin 1999, §0).

Even if Masullo’s hypotheses might explain the syntactic behavior for the transitive verbal bases, it doesn’t explain the change of meaning and the semantic restrictions of the oblique PP realization. Also, his analysis entails that *le* is co-referential with the PP, and this is contradictory with the fact that the PP is not a participant in the predication, it is optional and ungrammatical in some cases (if the activity verbal base cannot express a path, scale or surface as the DO, e.g.

buscarle, “to look for *le*” see §0). On the other hand, the intransitive verbal bases cases with *le* remains unexplained.

Finally, Company Company (2002, 2004) has copiously examined the behavior of *le* diachronically, and her work has been illuminating for our *le*-predicates analysis. Even though she focuses on the transitive predicates and the idiomatic phrases with *le*, her analysis can also account for the complex predicate cases. She explains that *le* has suffered a grammaticalization process in which the clitic has acquired some thematic meaning related with the oblique-dative thematic role. For the cases of transitive predicates Company Company proposes that *le* is an agreement marker that legitimates the presence of an oblique or goal object, then the presence of *le* is obligatory in the cases as (14)⁴.

- (14) Voy a cortar *(les_i) los tallos a las rosas_i.
 (I’m)-going to cut_{CL_{PL/OBL}} the stems to the roses_{OBL}.
 “I’m going to cut the roses stems.”

She says that *le* status is between agreement marker and affix. The evidence of that is the progressive loss of the plural form *les*, and the clitic obligatory requirement in the case of non-ditransitive predicates with IOs (cf. (14)); in this case the clitic is legitimating an extra argument to the predication. There is a final stage of the grammaticalization process in which *le* has completely lost its syntactic and semantic status and it is just part of idiomatic expressions, as discursive markers as *ándale*, or interjections as *¡híjole!*, *¡épale!*, and other idiomatic expressions as *no le aunque*. The problem with this analysis is that it doesn’t explore the *le*-predicates as a syntactically productive paradigm.

We assume, based on Company Company (2002, 2004), that the use of the dative has been diachronically extended to contexts in which the predication involves a second goal oblique object, this extended use of the dative concomitant to the use of *le* is probably some way to solve the absence of a locative pronoun in the Spanish pronoun paradigm. We observe that the use of *le* as a doubled can legitimate an oblique as an (locative) argument as we see in (15)a-b. The other consequence of the dative extended use and the use of *le* is the complex predicate formation (cf. (15)c); in this case *le* completely loses co-referentiality but it is able to behave as the syntactic argument; furthermore, *le* can occur with intransitive verbal bases.

- (15) a. No cierras el compartimento **de la caja**.
 NEG close the compartment_{ACC} of the box_{ADJ}
 “Don’t close the box’s compartment”
- b. No le_i cierras el compartimento **a la caja**_i.
 NEG CL_{OBL} close the compartment_{ACC} of the box_{DAT}
 “Don’t close the compartment to the box”

⁴ These cases –in which *le* is explained as an agreement marker (cf. Company Company 2004) – can also be explained within the framework of Distributed Morphology. From this perspective the clitic would be analyzed as an applicative head that allows the predicate to have an extra argument, then the presence of the head, this is, the *le* clitic, is obligatory (cf. Cuervo 2006). However this analysis doesn’t explain the missing of agreement between the clitic and the doubled. This is well explained in the Company Company’s analysis (2002, 2004).

- c. No **le cierres** al compartimento de la caja.
 NEG LE close the compartment_{OBL} of the box_{ADJ}
 “Don’t le close at the compartment of the box”

Other contexts in which *le* has been studied is in the direct object lexicalization contexts (Ortiz Ciscomanni 2006): those cases in which the direct object is syntactically incorporated to the predicate, and the dative argument become the internal argument of a complex predicate (e.g. *La plática dio lugar a cosas más profundas*, “The talk gave place to more deeply issues”). On the other hand, Cuervo (2003) proposes that in dative doubled clitic constructions with non-ditransitive verbs the clitic constitutes an applicative head that adds other argument to the predicate. There are also cases in which *le* is used to promote an oblique to an argument position in the possessive/oblique alternation (cf. (15)b, Demonte 2002).

All these facts are apparently puzzling and unconnected, however, we notice that all point out to three interesting facts that are related with the *le*-predicate phenomena: first, the use of *le* as a recycling device in order solve the missing of a locative pronoun in the Spanish clitic paradigm; second, the *le* grammaticalization of an oblique thematic role, and third, the ability of *le* to behave as the real internal argument of a predicate. We cannot analyze each one of these facts that so far have been studied separately without setting up the theoretic relationship that exists between them. But we want to point out the fact that the *le*-predicate formation have to do with the evolution of the *le* clitic pronoun in general, it is not a residual or isolated process in the Spanish grammar, but a highly productive syntactic process.

2.2. On formal status of *le*

There are some other studies that explain the use of clitics in atypical contexts as a strategy for filling gaps in the clitic paradigm or as a device to make semantic or modal contributions to the predication. One of them is the Recycling Clitic Hypothesis (Longa, Lorenzo and Rigau 1996) that explains how some clitics in Romance languages, as Catalan, Spanish or Gallego, can be recycled within contexts in which there is not a constituent available to produce some modal effects.

Other studied case is the one of Greek *marginal clitics*. Following an approach to the composition of lexical entries based on Minimalist assumptions Bibis and Roberge (2004) analyze clitics that are not formally relevant for the predication or that are syntactically defective and yet they can contribute semantically. The general idea is “that regular clitics can acquire a marginal status as the result of an alteration of their formal feature composition which triggers compensation from the semantics” (Bibis and Roberge 2004:2); this is the case of *le* and the grammaticalization of the thematic properties of the oblique-dative thematic role. Bibis and Roberge propose that marginal clitics include a semantic component that is not found in the descriptions of regular clitics; and that the development of a semantic component in the lexical entry of a regular clitic is accompanied by a fixation and/or reduction in its formal feature composition, in the case of *le* it loses its co-referential status and include a new grammaticalized semantic component. The *marginalization* occurs with the absence of a referential antecedent in the discourse, and then there is nothing to legitimate the formal features in the clitic lexical entry. Due to this absence, argument instantiation cannot occur, but the clitic can contribute with the semantic information included in its lexical entry.

Le-predicates bare clitic recycling because *le* affixation is a strategy to form *locus*-predicates using a clitic which formal features are defective; this strategy involves syntactic saturation but not a semantic argument instantiation, for there is not referential antecedent; on the other hand, *le* predicates are also instances of semantic clitic contribution in the spirit of the marginal clitics as the *le locus* makes a contribution to the predicate meaning. However, *le*-predicates hold a formal contribution, this is, the clitic is not syntactically expletive but saturates the internal argument of a transitive verbal base. This fact makes *le* differ from the Greek *marginal clitics*, *le* saturates the internal argument of the verbal base but only syntactically, and the Greek marginal clitics are formally expletive. This formal contribution is not observed for the cases of recycled clitics in Longa, Lorenzo and Rigau (1996), in which cases there is only a modal effect.

The *le* formal contribution as a non co-referential clitic is possible because of the fact that *le* is not a typical clitic. Company Company (2004) says, for instance, that *le* syntactic status is ambiguous between an affix (i.e. the clitic is able to add thematic information) and a pronoun (i.e. the clitic can saturate an internal argument). This behavior is well explained by the Dechaine and Wiltschko (2002) proposal: the *l*-clitics are ambiguous between DP and NP, they can function either as predicates or as arguments, and their binding status is that of free variables. *L*-clitics just spell out ϕ features, so they are ϕ Ps. In the case of *le* the Formal features have been bleached (cf. Torres Cacoullos 2002, Company Company 2004), nevertheless, the lexical entry includes a new thematic value *locus*, so *le* can predicate over individuals (being a sort of agreement marker) or over events (being a verb modifier), this last phenomenon is what we intend to demonstrate for the cases of *le*-predicates.

Thus, regarding *le* formal status we would say that *le* is a base generated clitic head (cf. Jaeggli, 1982, 1986; Borer, 1984; Suñer, 1988; Dobrovie-Sorin, 1990). Given that *le* is a 3rd Person pronoun its formal features are given by default (cf. Delfitto and Fiorin 2007), so the absence of a referential antecedent doesn't produce a crash in the formal features checking, and the clitic can remain free (without a doubled) as an internal syntactic argument of the predicate or as an extra argument for the cases with intransitive verbal bases. The strongest evidence for the no co-referentiality of *le* in *le*-predicates is the fact that the clitic cannot hold anaphoric relationships with other argument clitics (cf. (16)), however, the clitic remains visible as a syntactic argument showing clitic climbing (cf. (17)a-b).

- (16) – ¿Le_i abriste? – Sí, *ya la_i abrí / ^{OK}ya (le) abrí.
 – ¿LE (you)opened? – Yes, *already CL_{ACC} opened/ Already (LE) opened.
 – “Did you le open? – Yes, *I already opened it/ ^{OK}I already (le) opened.”

- (17) a. Quiero que **le** vayas trapeando desde ahorita.
 (I)-want that LE goes sweeping since right-now.
 “I want you to be sweepingle from right now”.
- b. Quiero que vayas trapeándole desde ahorita.
 (I)-want that goes sweepingLE since right-now.
 “I want you to be sweepingle from right now”.

Finally, we say that *le* semantic status is that of free variable (cf. Delfitto 2002), and depending on the verbal context, it can behave as a modifier or as a pronoun. In the cases of the *le*-predicates *le* operates over the event as a modifier and states a new *locus* thematic condition. This is possible because *le* includes some thematic/semantic information as a result of a grammaticalization process concomitant to the loss of its co-referential status.

3. THE *le*-PREDICATES

We define *le*-predicates as those complex predicates formed by a transitive or intransitive verbal base and a *le* clitic that is non-(co)referential but occupies the syntactic internal argument of a transitive verbal base. We affirm that *le* is a given syntactic argument and that the predicate is fully interpreted even if *le* cliticization blocks the other arguments realization, e.g. (18). And for the intransitive verbal bases the clitic is applied to an agentive head, which also blocks the possible cognate realization, e.g. (19).

- (18) No puedo abrirle (*la boca /*a Luisa).
 NEG (I)-can openLE *the mouth_{ACC} / *to Luisa_{DAT}.
 “I cannot open-*le* (*the mouth / *to Luisa).”
- (19) Tenemos que bailarle (*la salsa) despacito primero, luego, rápido.
 (We)have to danceLE (*the *salsa*_{COGNATE}) slowly first, then, fast.
 “First we have to dance-*le* (*the salsa) slowly, and then faster.”

We propose that *le* is not a dative pronoun but a verb modifier. This modification introduces some oblique properties to the predication related with the semantic properties of the oblique-dative thematic role. In this section we will clarify what these properties are and how the change of meaning is produced in order to give a new predicate interpretation.

Prima facie there are two types of *le*-predicates depending on the possibility of an oblique PP to co-occur. Both cases are intransitive complex predicates, and the oblique PP is an adjunct and not a real argument. We base our affirmation on the fact that the erstwhile accusative PP in *le*-predicates is optional and the predicate is fully interpreted without the PP (cf. (4)-(5) here (20)-(21)). Further, there are *le*-predicates with transitive verbal bases that cannot co-occur with this PP, e.g. (22), also the erstwhile accusative is atypically preceded by the *a* preposition, as well as it is restricted to the post-verbal position and there may also be extra material between the predicate and the oblique as we can see in (23)a-c. Hence, we say that the PP is in the periphery of the VP as an adjunct.

- (20) Le moví (al teclado) para ver si jalaba la computadora.
 LE (I)-moved (to-the keyboard) to see if pulled the computer.
 “I moved-the-locus-of-the-moving at the keyboard to see if the computer was going on.”
- (21) a. –A ver, levántale poquito para ver qué hay debajo.
 To see, (you)-liftLE a-little to see what there-is below.
 “Let’s see, lift-the-locus-of-the-lifting so we can see what is below.”
 b. – ¿A la tapa?

- To the lid?
 “At the lid.”
 c. –A la tapa, nomás.
 To the lid, no-more.
 “Just at the lid.”

(22) Estuve buscándole por todas partes *a las llaves.
 (I)-was looking-forLE for all places *to the keys.
 “I was looking for-at-the-locus-of-the-looking every were *to the keys.”

- (23) a. *A la cortina le jalé mucho.
 *To the curtain LE pulled too-much.
 *“At the curtain I pulled-the-locus-of-the-pulling too much”
 b. Le jalé mucho y demasiado fuerte (a la cortina).
 LE pulled too-much and too strong (to the curtain).
 “I pulled-the-locus-of-the-pulling too much and too strong at the curtain”

We observe that the interpretation of the oblique PP is not that of a participant in the predication but it is the specification of some previous information related with the predicate, and therefore it always denotes specific familiar information (cf. (24)a). It cannot introduce predicate’s participants, so that this PP can hardly be co-referential with other argument pronoun (cf. (24)b). This oblique PP can usually be replaced by the demonstrative *ahí* “there”, e.g. ((24)c) (cf. Torres Cacoullos 2002), which indicates the place where the event takes place and the scale within the locus can be identified (cf. (24)c). So it is not strange that the oblique PP is restricted to inanimate surfaces, paths or scales, this is, they have Ns prototypically denoting an *incremental theme* (cf. Dowty 1991) or *differential value* (cf. Hay, Kennedy and Levin 1999)⁵. Animate Ns are typically interpreted as arguments; therefore they cannot appear as oblique adjuncts (cf. (25)).

- (24) a. Voy a estar menéandole a la sopa / *una sopa.
 (I’m)-going to be mixingLE to the soup / *a soup
 “I’m going to be mixingle at the soup / *a soup”
 b. Voy a estar menéandole a la sopa_i. #O la_i quito, porque si no se_i pega.
 (I’m)-going to be mixing to the soup. Or CL_{ACC} (I)-remove because if not, CL_{DAT} stikcs.
 “I’m going to be mixingle at the soup. #Or I remove it, otherwise it sticks”

⁵ Hay, Kennedy and Levin define the incremental value of an argument regarding its boundedness: “... all three types of telicity can be determined as a function of the boundedness of the difference value defined over a projected scale associated with one of the verb’s arguments, where the nature of the scale depends on the lexical meaning of the verb. Against this background, the semantic object that best corresponds to Dowty’s incremental theme is in fact the difference value (i.e., the measure of change along a path of motion, in spatial extent, or in some other scalar property). From this point of view, the “incremental theme” is properly construed as a measure of some property of an argument of a verb, *not* an argument, although it may be expressed by an argument-like expression.” (Hay, Kennedy and Levin 1999: 142)

- c. Menéale ahí, por favor.
 MixLE there, for please.
 “*Mixle there, please*”

- (25) Le apachurró a la bolsa / *a Astrid.
 LE (she)-squeeze to the bag / *to Astrid
 “She *le* squeeze at the bag / *at Astrid”

We consider that the study of the oblique PP shows us what the nature of the modification produced by *le* is, this is, which properties in the predicate can explain this behavior. We know that the predicate imposes restriction over the nature of the oblique, then is expected that the complex predicate holds more specific information than the variant without *le*, and this information has to be necessarily related with the differential value denoted by the erstwhile accusative, then we say that the verbal bases of the *le*-predicates denote necessarily the role of differential value ⁶.

Other evidence of the previous affirmation is illustrated by the *le*-predicates with intransitive verbal bases. In the case of intransitive verbal bases with *le*, there is also a change of meaning respect to the no cliticized variant; the predicate denotes a more specific activity. The semantic modification makes the predicate denote an activity that involves a path or scale, that in these cases is interpreted either as an event scale, i.e., a set of sub-events denoted by the verbal base, as an intensity scale, -that is the degree of intensity denoted by the activity-, or as a conceptual path; and this constitutes the differential value of the predicate. This analysis predicts that predicates lacking differential value are ungrammatical with *le* cliticization; which is the case of the predicate “to dance” in its habitual sense (cf. (26)) because the habitual meaning doesn’t imply a scale of intensity of the dancing nor a set of sub-events of dancing. In the case of “dancing*le*” the differential value within the locus is evaluated is a scale of intensity that can be modified by an adverb such as *como locos* (“like nuts”) (cf. (27)). Another example is (28), here *le* modifies the set of running sub-events as the differential value of the predicate, and indicates that there is a *locus*, that is, some sub-events of the sub-events set of running, then “to run*le* from some place to other” doesn’t mean “to go from a place to other by running” but “to go from a place to another doing repeated running events”; and for “to pass*le*”, that involves a process of passing through a path, the differential value is the path of the event, and the *locus* may indicate a set of points of the scale. This explain the fact that “to pass from the lake” (cf. (29)) is not available for *le* modification since it denotes an achievement that is a telic/bounded process without differential value; on the contrary, if the predicate is interpreted as atelic as in (30), the differential value is unbounded and can be modified by the *locus*, that is the set of points that are some part of a path.

⁶ An interesting point that we cannot explore in this paper, is the fact that the PP is always specific, so it denotes something that is already presupposed in the discourse, this presuppositions are triggered by the presence of *le* and the introduction of the new semantic *locus* property as part of the predication, i.e. the meaning that *le* adds to the predicate is related with the same thematic properties denoted by the oblique PP, but they are not co-referential. The oblique PP is some kind of right dislocated argument that has been displaced in order to let the predicate be the focus of the sentence, and it appears only when the speaker needs to specify some circumstances about the predication, specifically those related with the *locus*. This fact is also related with the use in Spanish of the preposition *a* as a topic marker (cf. Leonetti 2004) that is specially spread in the Mexican variant (cf. Navarro-Ibarra in progress).

- (26) *Me dedico a bailarle.
 PRO_{NOM} (I)dedicate to danceLE.
 *“*I dancele as profession.*”
- (27) Estuvimos bailándole como locos toda la noche.
 (We)-were dancingLE like crazy all the night.
 “*We were dancingle like nuts the whole night.*”
- (28) Le corrí de un lado a otro todo el santo día.
 LE (I)-run from one place to other whole the saint day.
 “*I runle from one place to other the whole saint day*”
- (29) ?No pude pasarle del lago.
 NEG (I)-could passLE from-the lake.
 ?“*I couldn’t passle from the lake*”
- (30) No pude pasarle por el lago.
 NEG (I)-could passLE by the lake.
 “*I couldn’t passle by the lake.*”

Assuming the Company Company (2004) grammaticalization hypotheses, we say that *le* denotes what we call *locus*, which is the result of the grammaticalization of the oblique thematic role. Then the *locus* is the thematic information that *le* has grammaticalized and further introduced to the predicate (cf. (31))⁷.

- (31) Locus property of *le*-predicates: *it is a thematic property contributed by the clitic le, which is defined as a set or configuration of all the points or cases satisfying the particular condition of denoting some part or point evaluated within the differential value of the verbal base.*

So far we have seen that both transitive and intransitive verbal bases are object of event modification by *le* affixation. This modification has to do with the predicates assimilation of the *locus* property as we have defined it; the result is a more specific event denotation than the non cliticized variant. The new predicate denotes an activity with a *locus*. In the §4 we propose that this assimilation is due to the semantic pseudo incorporation of *le* to the verbal base.

⁷ At this point we have to clarify another important contrast: the difference between a complex predicate having *locus* and a simple predicate having implicit arguments. *Le*-predicates denote an abstract *locus* for the event meanwhile intransitive variants of transitive verbs denotes implicit arguments.

3.1. *The verbal bases of le-predicates.*

An appropriate analysis of the argument structure of the *le*-predicates is a matter of a larger discussion than the one we can offer here, however we will consider some basic aspects that will help us to understand better our goal in this paper, namely the semantic nature of the *le*-predicates. Regarding the argument structure of the verbal base we say that there are two types of *le*-predicates: a) *le*-predicates derived from change of state predicates, e.g. (32) (see also (1), (4), (5), (9)b, (12)b, (15)c, (16), (18), (23)b, (24)a-c, (25)); and b) *le*-predicates derived from transitive activities e.g. (33) (see also (2), (7)c, (9)a, (10)b, (17)a-b, (22)) and intransitive activities, e.g. (34) (see also (19), (27), (28), (30)) that have a simple argument structure (cf. Levin and Rappaport 1995, Rapaport and Levin 1998, Levin 1999).

- (32) ¿Le regresaste a la película ?
 (Did you)LEgo-back to the movieOBL?
 “*Did you go back-le into the movie?*”
- (33) Quiero que le vayas trapeando desde ahorita.
 (I)-want that LE goes sweeping since right-now.
 “*I want you to be sweeping-le from right now.*”
- (34) En coche hay que rodearle mucho, mejor ve a pie.
 In car has that roundLE much, better go by foot.
 “*By car you have to round-le a long way, it is better if you go by foot.*”

The impossible verbal bases are the ditransitive ones, in which *le* necessarily is interpreted as a dative (*le* is not introducing an extra argument) (cf. (35)); also *le*-predicates are ungrammatical if the subject is a cause, the subject has to be an agent directly involved in doing the action, this is an external cause in the sense of Levin and Rappaport (1995) and Rappaport and Levin (1998) (cf. (36)); *le*-predicates cannot denote predicates with bounded internal arguments, then, if the predicate requires the telic interpretation, *le*-predicate formation is impossible (cf. (37)); finally *le*-predicates are also impossible with stative verbal bases (cf. (38)). Hence, we observe that *le*-predicates are only possible with agentive activity verbal bases that denote a differential value as a property of its internal argument or as part of its idiosyncratic meaning, this is, an unbounded activity (cf. Hay, Kennedy and Levin 1999, Levin 1999).

- (35) *¿Qué quieres regalarle este año? (OK if *le* is co-referential with a Patient)
 What (you)-want givLE this year?
 *“*What do you want to give le this year?*”
- (36) *El viento le cerró a las ventanas.
 The wind LE closed to the windows.
 *“*The wind le close at the windows.*”
- (37) *Le vas a encoger si lavas.

- LE are-going to shrink if wash.
 *“*You le are going to shrink if you wash*”
- (38) *Le estoy muy cansada.
 I LE am too tired.
 *“*I le am too tired.*”

The change of state predicates are identified with a complex argument structure, they express a change in a sub-event subordinated to a cause sub-event; each one of the sub-events in the argument structure is identified with a participant or semantic argument, that are the subject and the theme respectively, these arguments have to be formally identified, this is required by the *Argument Realization Condition* (ARC), Levin and Rappaport 1998 (cf. (39)).

- (39) Argument Realization Condition ARC
- a. *There must be an argument XP in the syntax for each structure participant in the event structure.*
 - b. *Each argument XP in the syntax must be associated with an identified sub-event in the event structure.*

(Levin & Rappaport 1998, cf. Theta criterion stated in Chomsky 1981)

Le-predicates are used in order to denote just “the doing of the action” (cf. Torres Cacoullos 2002) and the affected object is not relevant, so the only information available is that which concerns to the activity itself. This is reflected formally by the semantic suppression of the participant of the change of state sub-event. *Le*-predicates formation seems to contradict this ARC given that *le* is not associated with a formal participant, neither syntactically expressed nor implied (cf. (40)). Hence, in order to explain the *le*-predicate formation without violating ARC we have to account for the absence of one of the participants by maintaining that *le* is a syntactic argument that causes verb modification. This modification acts over the whole argument structure: it affects the cause sub-event and the change of state sub-event, and the predicate becomes an activity that needs an agentive subject. We maintain that *le* is a syntactic argument, since we observe that *le* causes accusative and dative blocking, it remains clitic climbing and it is impossible with unaccusative predicates that have an internal cause, this is, the internal argument is necessarily and idiosyncratically interpreted as a participant.

- (40) Vamos a estar limpiándole todo el día.
 We-are-going-to be cleaning LE all the day.
 *“*We are going to be cleaning something the whole day*”
 “*We are going to be cleaning-up the whole day*”

In the cases of activity predicates, the *le*-predicate formation is even clearer. Given that we have a simple agentive argument structure, *le*-predicate formation only modifies the activity component by stating the *locus* condition. In most of the cases the *locus* is interpreted either respect to the event itself as a set of sub-events, or respect to a scale of the intensity of the event, or within an abstract path (cf. (27), (28), (30) respectively).

We observe that the lexical-syntactic formation of *le*-predicates is motivated by the lexical properties of the verbal bases since its formation depends on some lexical requirements as an activity sub-event and the possible interpretation of a differential value. This differential value is a thematic property of the internal argument of a predicate that implies that the argument's property is that of a gradable scale or path (cf. Hay, Kennedy and Levin 1999). And for intransitive predicates, the scale or path (differential value) is part of the idiosyncratic meaning of the verb. Intransitives as to "to be born", "to die" don't imply a differential value as part of its idiosyncratic meaning, and then they are not available for *le*-predicate formation. Moreover, there are some thematic constraints that interact with the sentential syntactic structure of the predication, this is, the triggering of the subject agentive interpretation, which we consider to be related with the syntactic behavior of the *le* clitic as an applicative head. So far we don't have a complete analysis for this fact, but we suspect that the *le* involves an empty *v* projection in the extended syntax that allows the external argument to be interpreted higher as an agent (cf. Navarro-Ibarra in progress).

According to the Levin and Rappaport 1995, Rappaport and Levin 1998, Levin 1999 and Demonte 2002 classification we say that, *le* can modify, a) simple verbal bases or activities that are unergative predicates and transitive predicates with oblique internal argument (cf. Levin 1999), and b) complex verbal bases with differential value, that are change of state predicates externally caused, and intransitives with path and direction conflated. And *le* cannot modify states, change of state predicates, internally caused predicates, ditransitives and intransitives without path and direction conflated, this is, predicates lacking differential value.

Finally, argument structure modification has also repercussion regarding the oblique PPs realization. We saw that PPs are not objects, themes or datives, but they denote the specific differential value of the *le*-predicate, so they cannot express the object of a change of state, but just the scale or path of a differential value. Then, only scalar erstwhile accusatives can be dislocated as oblique PPs in *le*-predicates, because they express the property of the internal argument, but not the argument itself. After modification, this "scalar" property or differential value of the argument become simply the property of the predicate, a predicate without a theme.

This shows us how the argument realization interacts with the argument structure interpretation, i.e. some verbs depend on the internal argument formal nature in order to determine its argument structure. Thus, verbal bases as "to write" as well as "to move" can be either activity (unbounded) or change of state predicates (bounded), but only the activity interpretation is available for *le*-predicate formation, the one with no affected objects, as we see in (41)a-b and (42)a-b.

- (41) a. Mejor le escribo con negro. (Activity contexts)
 Better LE (I)write with black.
 "I rather le write with black."
- b. *Le escribiré a la carta. (Construction/consumption contexts)
 LE (I will)write to the letter.
 *"I will le write at the letter."
- (42) a. ¿Le mueves tantito a la antena? (Activity contexts)
 (Do you) LE move a-little to the antena?
 "Do you le move a little bit at the antenna?"

- b. **Muévele a esos muebles.* (Transference contexts)
 MoveLE to that furniture.
 “*Movele at that furniture.*”

4. *Le* VERB MODIFIER

So far, we have seen that *le*-predicate formation has to be explained by means of event modification (§0), as syntactic evidence we have observed that *le* is visible in the syntax since *le*-predicates remains clitic climbing, and they are implicated in a productive process of complex predicate formation. We have argued that *le* produces syntactic verbal base saturation, based on the fact that in the *le* co-occurrence both accusative and dative arguments are blocked, also cognates cannot appear. Furthermore we observe that in some cases an erstwhile accusative object is dislocated to a PP head in the periphery of the VP, this erstwhile accusative is reinterpreted as an oblique adjunct and it cannot introduce any participants; PP denotes the specific scale or path within the meaning of the *le*-predicate can be identified.

As semantic evidence we know that *le* is neither co-referential nor anaphoric, so it shows inability to support discursive anaphora. Also there is a change of meaning when *le* occurs: the predicate is an activity that, in the case of transitive verbal bases, loses its theme argument; this is replaced by *le* that indicates an operation of modification that involves the introduction of the *locus* as a function denoting the set of cases satisfying the condition of being a part or a point in a scale or path.

Last, we saw that *le*-predicates are only possible with agentive constructions, and they denote activity predicates that include a process sub-event in their lexical structure or a gradable property that is normally identified with an internal argument or an abstract path as part of their idiosyncratic meaning. All, the process sub-event as a set of sub-events and the gradable meaning as an abstract scale or path, are interpreted as the differential value of the verbal base that is the set where the *locus* can be interpreted.

In the view of these facts we assume some lexical-syntactic and lexical-semantic approach that explains syntactic saturation and thematic re-interpretation, at the time that allows us to assume complex predicate formation as a syntactically productive phenomenon. We propose that *le* is a case of event modification by Semantic Pseudo Incorporation (SPI) (cf. Dayal 2003, for Ns incorporated in Hindi; Espinal (to appear) for Catalan clitics incorporated and Espinal and McNally 2007, for Bare Nominals incorporated in Catalan and Spanish). We assume this semantic pseudo-incorporation approach ever since it describes complex predicate formation without assuming syntactic incorporation and explains event modification of a ϕ P (XP) visible as a syntactic argument.

Other semantic incorporation approaches propose non-referential thematic objects X^0 as syntactically base-generated inside the verbal complex [_VV+N]. The N constrains the internal argument of the incorporating verb, and this is existentially closed. (van Geenhoven 1998, for Ns incorporated in Inuit). Meanwhile, pseudo-incorporation proposes that a non-referential XP denotes a property that modifies the incorporating verb [_{VP} V NP]; also it accounts for theme suppression as a consequence of the non-referential syntactic argument saturation, i.e. XP syntactic saturation does

not involve an existentially bound theme, but rather a suppression of the theme argument (Dayal 2003). SPI goes further than argument restriction meaning (cf. van Geenhoven 1998, Chung and Ladusaw 2005) because it involves modification of the whole verbal base, and not only for the internal argument interpretation (cf. (43)).

(43) Semantic Pseudo-Incorporation (Dayal 2003):

$\lambda x \lambda y \lambda e [V(e) \ \& \ Ag(e)=y \ \& \ Th(e) = x]$

(*transitive verb*)

$\lambda P\langle e,t \rangle \lambda y \lambda e [P-V(e) \ \& \ Ag(e) = y \ \& \ Appropriately-Classificatory(e)]$ (*incorporating verb*)

Nevertheless, we have to adapt SPI in order to explain intransitive cases, previous analysis only treat transitive verbal bases, and we have both transitive and intransitive incorporating verbs. As well we have to account for the fact that *le* denotes a thematic condition, i.e. thematic properties and not individual properties. Finally, we want to clarify what is “P-V” in the Dayal’s analysis avoiding the Appropriately classificatory condition (cf. Dowty 1979), instead we have to articulate the *locus* condition.

4.1 *Le Semantic Pseudo Incorporation*

In the line of what we discussed in §0 we say that *le*-predicates are intransitive-alike complex activities. We based our dissertation on the fact that this argument structure ensures the argument requirements of the *le*-predicates: an activity denotation that is associated to the interpretation of a process sub-event to be the host for the *locus* property import, an external agentive argument subject, and an argument protection for the *le* syntactic argument or the possibility of the cognate realization. We also know that *le* is a syntactic argument that is not a semantic participant but an event modifier, and since *le* denotes only thematic properties it cannot go under existential closure operation because there is not individual property denotation. *Le* introduces a thematic condition to the predicate that triggers a modifying operation; we call this condition *locus* as defined in (31), likewise we affirm that this property states three sub-conditions (44):

(44) *Locus conditions*: i. the *le*-predicate focuses a part or a point on a path or scale, ii. this path or scale constitutes the differential value of a verbal base, and iii. an agent has to be the actor of the event.

We show a contrast between a non-incorporated predicate with oblique dative and a *le*-predicate in (45)a-b in order to illustrate the mechanism of the complex predicate formation. We notice that “to return*le*” is comparable to the transitive case respect to the interpretation on “the movie”. In the non-incorporated case *le* is being used to add an oblique argument to the predicate that holds a differential value for the identification of the internal argument, i.e. “the movie” is the scale of “the piece”, this is an anterior phase in the grammaticalization process described by Company Company (2004). This same relationship holds for the *le*-predicates, but in this case it is only the condition of denoting “*some part of a scale*” what remains, it doesn’t depend on the argument interpretation, because *le* has incorporated this condition as part of a complex predicate. The *locus* is not a participant but an operation to be applied over the verbal base, and “to go back*le*”

means something as “to go back to some part of some path or scale”, and “at the movie” is just the specification of the differential value of the predicate.

- (45) a. Le_i regresó un pedazo a la película_i. (non incorporated *le*)
 CL_{OBL} returned a piece_{ACC} to the movie_{OBL}.
 “He rewinded a piece of the movie.”
- b. Le regresó a la película. (incorporated *le*)
 LE returned to the movie.
 “He went back-to-the-locus-of-the-action at the movie.”

We propose that an event denoted by a verbal base δ incorporating the *locus* property is modified into a *le*-predicate if and only if: i. δ is a transitive or an intransitive verb with an internal argument available for syntax saturation or argument augmentation and denoting a differential value property; ii. *le* is a syntactic argument ϕP that doesn’t introduce a λx , but a *locus operation* λP as we define in (31) and (44); and the *le* clitic is interpreted as an event modifier, which produces theme suppression and blocks the other possible argument realization. This process is what we call *le* modification by Semantic Pseudo-Incorporation (cf. (46)).

(46) *Le* modification by Semantic Pseudo-Incorporation:

Possible verbal bases:

$\lambda e \lambda y \lambda x [V(e) \ \& \ \Theta_1(e)=x \ \& \ \Theta_2(e)=y]$

$\lambda e \lambda x [V(e) \ \& \ \Theta_1(e)=x]$

le-predicates:

$\lambda P \lambda e \lambda x [V(e) \ \& \ Ag(e)=x \ \& \ P(e)=le. \ \lambda P (Locus(e) \leq Differential \ Value(e))]$

Then, we have shown that both transitive and intransitive non-stative and non-internally caused verbal bases are possible for *le*-predicate formation (cf. 0); these verbal bases introduce *le* as one of its arguments, which activates an operation that affects the whole syntactic argument structure. This operation modifies the subject argument and the possible internal arguments, stating that the subject has to be an agent and that the event must have *locus* (instead a theme). This mode of composition shows a syntactically productive process, and explains how the *locus* can derive presuppositions of a concrete differential value, given that *le* is syntactically activated and it is the carrier of the *locus* property. This presupposition can be materialized by means of the oblique PP, but just as the specification of the differential value, i.e. as adjunct constituent.

5. CONCLUSION

We have described the general usage of *le* clitic in Mexican Spanish. *Le* can be used both, as a co-referential clitic, and as a no co-referential event modifier clitic. The last case derive what we have called *le*-predicates. We have stated that the *le* semantic status is that of free variable, something between an affix and an argument, and depending on the verbal context it can behave as a predicate or as an argument. In the cases of the *le*-predicates, *le* predicates over the event as a modifier and states some new properties for the predicate. This is possible because *le* includes some

thematic/semantic information as result of a grammaticalization process concomitant to the lost of its co-referential status, which allow the clitic to be recycled as a syntactically productive event modifier.

Both transitive and intransitive verbal bases are susceptible to undergo event modification as a result of *le* affixation. This modification has to do with the assimilation of the *locus* property as we have defined, the result is a more specific event denotation than the no cliticized variant, which meaning includes a thematic condition that states that the event must have *locus*.

We also proposed some lexical requirements on the verbal bases in order to get *le*-predicates formation: the presence of a process sub-event involved in the event structure, an internal argument available for syntactic saturation (an Accusative, a Cognate or PP locative), and the possibility on the verbal base of denoting a differential value. Ditransitive verbal bases cannot derive *le*-predicates because its formation would violate of the ARC, and only agentive subjects are permitted, because they are actors of process events and *locus* realization. Transference, construction, consumption and final state achievements, don't involve differential value, hence these events are nor available for *le*-predicate formation.

Finally, we proposed Semantic Pseudo-Incorporation as the mode of composition for *le*-predicate. SPI involve the *le* syntactic interpretation as the argument of the verbal base, this activates a predicate operation of modification. This operation modifies the subject argument and the possible internal arguments, stating that the subject has to be an agent and that the event must have *locus*. This mode of composition shows a syntactically productive process, and explains the presence of the oblique PP as the specification differential value presupposed by the *le*-predicate.

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On past participle agreement in transitive clauses in French

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Abstract

*This paper provides a Minimalist analysis of past participle agreement in French in transitive clauses. Our account posits that the head v of vP in such structures carries an (accusative-assigning) structural case feature which may apply (with or without concomitant agreement) to case-mark a clause-mate object, the subject of a defective complement clause, or an intermediate copy of a preposed subject in $spec-CP$. In structures where a goal is extracted from vP (e.g. via wh -movement) v also carries an edge feature, and may also carry a specificity feature and a set of (number and gender) agreement features. We show how these assumptions account for agreement of a participle with a preposed specific clausemate object or defective-clause subject, and for the absence of agreement with an embedded object, with the complement of an impersonal verb, and with the subject of an embedded (finite or non-finite) CP complement. We also argue that the absence of agreement marking (in expected contexts) on the participles *fait_{made}* and *laissé_{let}* in infinitive structures is essentially viral in nature. Finally, we claim that obligatory participle agreement with reflexive and reciprocal objects arises because the derivation of reflexives involves A -movement and concomitant agreement.*

1. DATA TO BE ACCOUNTED FOR

In French transitive clauses containing the tense auxiliary *avoir*_{have} and a complement headed by a past participle, the participle (in **bold**) optionally agrees in number and gender with an (underlined) preceding direct object in structures like that in (1) below, so that the participle can either be spelled out with the same number/gender properties as the object, or be spelled out in the default (masculine singular) form:

- (1) Quelles chaises il a **repeint/repeintes**?
Which_{F,Pl} chairs_{F,Pl} he has repainted_{Def}/repainted_{F,Pl}
'Which chairs has he repainted?'

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We are grateful to Anna Maria Di Sciullo, Ur Schlonsky and other members of the audience at the IGG conference for helpful comments on an earlier draft of this paper. Abbreviations used here are as follows: Acc = accusative; Agr = agreement; C = case; Dat = dative; Def = default; EF = edge feature; F = feminine; FV = finite verb marker; G = gender; OM = object marker; M = Masculine; Pl = Plural; R = reflexive/reciprocal; S = subject; Sg = singular; Sp = specificity; T = tense; u = unvalued; 1 = 1st person; 5 = belonging to gender class 5.

However, there are a number of conditions which govern participial agreement in structures with *avoir*_{have}. Firstly, a participle can only agree with a *preceding* direct object (as in (1) above), and not with a following (e.g. in situ) object like that underlined below:

- (2) Il a **repeint**/***repeintes** ces chaises-là
*He has repainted*_{Def}/*repainted*_{F.PI} *those*_{PI} *chairs*_{F.PI}-*there*
 ‘He has repainted those chairs’

Secondly, a participle can only agree with a preceding *specific* expression as in (1) above, not with a non-specific one as in (3)¹:

- (3) Des mesures pareilles, il en a souvent **pris**/***prises**
*Some*_{PI} *measures*_{F.PI} *similar*_{F.PI}, *he some has taken often*
 ‘Similar measures, he has taken (some) often’

However, (as noted by Grevisse 1964: 718, and Becherelle 1997 §136) a participle cannot agree with a preceding object in impersonal sentences such as the following:

- (4) Quelles chaises il leur a **fallu**/***fallues** ?
*Which*_{F.PI} *chairs*_{F.PI} *it to.them has needed*_{Def}/*needed*_{F.PI}
 ‘Which chairs did they need?’ (more literally ‘was it required for them’)

Furthermore, agreement of a participle with a moved object is a local operation in the sense that a participle in a higher clause cannot agree with a direct object extracted out of a lower clause – whether out of a finite clause as in (5a) below, or out of a non-finite clause as in (5b)²:

- (5) a. Quelles chaises il a **dit**/***dites** qu’il a repeint/repeintes?
*Which*_{F.PI} *chairs*_{F.PI} *he has said*_{Def}/*said*_{F.PI} *that he has repainted*_{Def}/*repainted*_{F.PI}
 ‘Which chairs did he say that he has repainted?’
- b. Quelles chaises il a **dit**/***dites** avoir repeint/repeintes?
*Which*_{F.PI} *chairs*_{F.PI} *he has said*_{Def}/*said*_{F.PI} *have*_{Inf} *repainted*_{Def}/*repainted*_{F.PI}
 ‘Which chairs did he claim to have repainted?’

Likewise, agreement is not permitted with the extracted subject of a finite clause as in (6a) below, nor with the extracted subject of the infinitival complement of an epistemic or declarative verb like *dire*_{say} as in (6b):

- (6) a. Quelles sont les chaises qu’il a **dit**/***dites** qui ont abîmé le tapis?
*Which are the*_{PI} *chairs*_{F.PI} *that he has said*_{Def}/*said*_{F.PI} *that have ruined the carpet?*
 ‘Which are the chairs that he said have ruined the carpet?’

¹ See Obenauer (1994), Richards (1997), and Déprez (1998) for relevant discussion.

² Reintges, Le Sourd and Chung (2006) claim that A-bar agreement typically involves either the highest probe agreeing with a moved wh-phrase or all intervening probes doing so. However, participle agreement in French appears to involve only agreement of the *lowest* probe.

- b. Quelles chaises il a **dit**/***dites** être plus confortables?

Which_{F,Pl} chairs_{F,Pl} he has said_{Def}/said_{F,Pl} be more comfortable
 ‘Which chairs did he claim to be more comfortable?’

By contrast, agreement is optional with an extracted ECM (exceptionally case-marked) subject – e.g. with the subject of the infinitival complement of a verb of perception (like *voir_{see}*) as in (7a), and with the subject of a small clause complement of a verb of judgment as in (7b):

- (7) a. Quelles chaises il a **vu**/**vues** tomber dans la piscine?³

Which_{F,Pl} chairs_{F,Pl} he has seen_{Def}/seen_{F,Pl} fall in the pool?
 ‘Which chairs did he see fall into the swimming pool?’

- b. Quelles chaises il a **trouvé**/**trouvées** plus confortables?

Which chairs he has found_{Def}/found_{F,Pl} more comfortable
 ‘Which chairs did he find more comfortable?’

And yet agreement is not possible with the embedded subject or object of an infinitival complement of the causative verb *faire_{make}* as in the example below:

- (8) Quelles chaises il a **fait**/***faites** tomber/réparer?

Which_{F,Pl} chairs_{F,Pl} he has made_{Def}/made_{F,Pl} fall/repair?
 ‘Which chairs did he drop/have repaired?’

In transitive participial structures containing a reflexive/reciprocal pronoun (= R), the auxiliary used is *être_{be}* and agreement data are essentially similar, save that agreement is obligatory where the preverbal accusative is an R-pronoun, as in the example below:

- (9) Elles se sont **couvertes**/***couvert**

They R_{F,Pl} are covered_{F,Pl}/covered_{Def}
 ‘They have covered themselves/each other’

A wide range of accounts have been proposed of participle agreement within earlier frameworks (see e.g. Sportiche 1988; Kayne 1989; Ura 1993, 2001; Chomsky 1995; Bošković 1997; Richards 1997; Déprez 1998). This paper sets out to provide an account of the morphosyntax of transitive participles in French within the recent version of the Minimalist Program outlined in Chomsky (2005b, 2006) and Miyagawa (2005, 2006). Key theoretical assumptions underlying our analysis are outlined in the next section.

2. THEORETICAL ASSUMPTIONS

Chomsky (1998, 1999, 2001, 2003, 2004, 2005a) has developed a phase-based model of syntax in which syntactic structures are built up one phase at a time (phases including full clauses/CP and transitive verb phrases/vP). In recent work Chomsky (2005b, 2006) and Miyagawa (2005, 2006) have argued that the head of a phase is the locus not only of P-features (i.e. peripheral features relating to properties such as topic, focus and scope) but also

³ Although feminine gender agreement marked by ‘mute *e*’ on feminine participles like *vue(s)* ‘seen’ is inaudible in standard varieties of spoken French, Ur Schlonsky points out to us that there are dialects of French in the eastern part of France where it is audible.

of A-features (i.e. agreement features). Evidence for C being the locus of agreement features comes from the phenomenon of complementiser agreement (See Rizzi 1990, Haegeman 2002, Boeckx 2003, Carstens 2003, Kornfilt 2004, Miyagawa 2005). For example, Haegeman (1992: 47) notes that in West Flemish ‘the complementiser of the finite clause agrees in person and number with the grammatical subject of the sentence it introduces’, as in:

- (10) Kpeinzen *dank* ik morgen goan
*Think that*_{1.sg} *I tomorrow go*
‘I think that I’ll go tomorrow’

Miyagawa (2005) argues (on the basis of data from Baker 2003) that in Kinande, a complementiser may agree with a fronted object (like that underlined below) which moves to spec-C, e.g. in a sentence such as the following:

- (11) Eritunda, n-a-ri-gul-a
*fruit*₅, *1Sg.S-T-OM*₅-*buy-FV*
‘The fruit, I bought it’

He notes that C-agreement is only possible where the attracted object is specific/definite. He concludes (ibid) that ‘Agreement occurs on C (universally)’. However, he maintains (p.4) that (in Indo-European languages) ‘agreement on C may percolate down from C to T’, thereby accounting for the fact that in finite clauses such as the CP bracketed below:

- (12) I know [_{CP} [_C that] [_{TP} she [_T is] lying]

it is the present tense T-auxiliary *is* which overtly inflects for agreement with the subject *she* rather than the complementiser *that*.

In the same way as a phase head like C is the locus for agreement, C is arguably also the locus of case (see Radford 2004: 134-140). For example, whereas the infinitive subject in an English clause like that bracketed in (13a) below is assigned accusative case, the infinitive subject in the bracketed Spanish clause in (13b) is assigned nominative case:

- (13) a. [For *me* to stand as a candidate in the elections] would require a lot of money
 b. [Para *yo* presentarme a las elecciones] sería necesario mucho dinero
For I present.myself at the elections would.be necessary much money
‘For me (literally: ‘I’) to stand as a candidate in the elections would require a lot of money (Mensching 2000: 7)

The difference in the case of the italicised subjects in the two bracketed infinitive clauses would appear to correlate with the (accusative or nominative) case-assigning properties of the underlined complementisers heading the relevant CP phases. If case features (like agreement features) can percolate down from C onto T in Indo-European languages, T can inherit the relevant case feature from C, and case can then work in tandem with the EPP feature on T to trigger movement of the subject to spec-TP (e.g. *for* has an accusative-assigning case feature which it hands over to *to*, and the case feature on *to* works in conjunction with its EPP feature to trigger movement to spec-TP of closest nominal that *to* case-marks)⁴.

⁴ The idea that structural case assigners carry a case feature of some kind (e.g. a finite T carries a nominative case feature) is found in Chomsky (1981), and is adopted within the Minimalist framework in Adger (2003).

The overall conclusion to be drawn from this section is that there is evidence that phase heads like C are the locus not only of P-features, but also of A-features. However, in a language like French, a phase head hands over its A-features to a subordinate A-head.

3. PROPOSED ANALYSIS OF FRENCH TRANSITIVE PARTICIPLE AGREEMENT

This paper proposes an analysis of French participle agreement based on the following set of assumptions:

- (14) In a transitive ν P headed by a past participle serving as the complement of *avoir*_{have}
- (i) The lexical verb originates in V and subsequently raises to adjoin to a participial light verb ν , so ensuring that the verb is spelled out in a participial form.
 - (ii) ν can carry an edge feature/EF, and if so may also carry an uninterpretable specificity feature. If ν has both an edge feature and a specificity feature, it attracts a specific (i.e. definite/D-linked/topicalised) goal to move to the edge of ν P; if ν has an edge feature but no specificity feature, it attracts a non-specific goal to move to the edge of ν P⁵
 - (iii) If ν has a thematic external argument, ν can carry a structural (accusative) case feature which enables it to value an unvalued case feature on a goal as accusative.
 - (iv) If ν has specificity and accusative case features, it can also carry a set of (number and gender) agreement features.
 - (v) Agreement features on ν obligatorily percolate down onto V and pied-pipe the (accusative) case feature on V with them. If ν only carries case and not agreement, the case feature on ν optionally percolates down onto V
 - (vi) Two or more uninterpretable features on the same head target the same goal
 - (vii) Any goal in a non-thematic position on the edge of a phase is inaccessible to a non-phasal head, and any goal in a non-thematic position on the edge of a non-phasal projection is inaccessible to a phase head (*Inaccessibility Condition*)

Before proceeding to the analysis French participle agreement, we comment briefly on some of the assumptions made above.

In relation to (14ii), it should be noted that there is quite a lot of research arguing that D-linked expressions behave differently from other constituents under A-bar movement (see e.g. Pesetsky 1987 and Cinque 1990), perhaps even having a different ultimate landing site (e.g. with D-linked *wh*-expressions moving to the edge of a Topic Phrase projection as in Grohmann 2006, and focused *wh*-expressions moving to the edge of a Focus Phrase projection as in Rizzi 1997).

In relation to (14iii), it can be argued on conceptual grounds that (in transitive verb phrases) the light verb ν is the locus of accusative case assignment: the reason is that a complement of V can only be assigned structural accusative case if ν has a thematic external argument and not if (as in unaccusative or passive verb phrases) ν has no external argument. Since both C constituents (like English *for*) and T constituents (e.g. like the English auxiliary *will*) can assign case, we assume that (in much the same way) either ν or V can in principle be a probe for case assignment.

⁵ An alternative assumption would be that when ν attracts a non-specific expression, it carries another feature which works in tandem with the edge feature on ν to attract a non-specific expression. Since this matter will not be central to the content of this paper, we set aside this possibility here.

In relation to (14iv), it should be noted that the association between accusative case and specificity is independently motivated by the fact that in languages like Romanian and Spanish, we find a special case-marking particle (*pe* in Romanian, *a* in Spanish) used to introduce a specific animate accusative noun or pronoun expression. Furthermore, the suggestion of a link between specificity and agreement is independently motivated by the Kinande data in (11).

Note that an idea which is implicit in our assumption in (14iii-iv) that *v* can carry an accusative case feature without carrying agreement features is that case-marking can operate independently of agreement. The possibility of dissociating case from agreement has been argued for in relation to Modern Greek (Iatridou 1993), Ancient Hebrew (Mensching 2000), Bantu (Carstens 2001; Henderson 2006)⁶, and Lithuanian (Franks and Lavine 2006).

The assumption in (14v) that agreement features obligatorily percolate down from *v* onto V is in line with recent assumptions made in Chomsky (2005, 2006) and Miyagawa (2005, 2006), and reflects the widespread assumption that they are A-features which are associated with an A-head. The assumption that percolating agreement features obligatorily pied-pipe a case feature along with them reflects the close relation assumed to hold (e.g. in Chomsky 2001) between case and agreement. It may be that percolation comes about because case and agreement are both A-features, and different A-features on different probes cannot target the same goal.

Assumption (14vi) can be regarded as an extension of the *One Fell Swoop Condition* proposed in Chomsky (1998, p.40) to the effect that multiple ϕ -features on a probe cannot target different goals: the condition here is extended to all uninterpretable features on a probe.

The *Inaccessibility Condition* (14vii) is essentially a reformulation and generalisation of the *No Mixed Chains* constraint of Chomsky (2005b). Empirical support for such a condition comes from the ungrammaticality of English sentences such as **What was wanted to happen?* In such a sentence, a copy of the unaccusative subject *what* will undergo wh-movement to the edge of the CP phase in the infinitival complement clause, and a series of subsequent merger operations will generate the following structure on the matrix CP phase (the agreement features of C percolating down to T, and *outline* font marking constituents which underwent Transfer on the embedded CP phase):

(15) [_{CP} [_C \emptyset] [_T be] wanted [_{CP} what [_C \emptyset] to happen]]]

Given the ungrammaticality of *What was wanted to happen?* it is clear that some condition must prevent the agreement features on the non-phasal functional head T from probing and locating the wh-word *what* on the edge of the CP phase as a possible goal. But what condition? The answer suggested in (14vii) is that a goal in a non-thematic position on the edge of a phase (like *what* in 16) is inaccessible to a non-phasal head (like T-*be* in 16), thereby correctly predicting that the resulting sentence is ungrammatical.

In §§4-10 below, we show how the assumptions in (14) enable us to account for the properties of agreement in structures of the form *avoir*_{have}+*past participle*.

4. AGREEMENT OF A PARTICIPLE WITH ITS OWN OBJECT

As illustrated in (1a) *Quelles*_{which} *chaises*_{chairs} *il*_{he} *a*_{has} *repeint*_{repainted.Def} /*repeintes*_{repainted.F.Pl?} ‘Which chairs has he repainted?’ a transitive participle optionally agrees with its own object

⁶ As we see below, the converse dissociation does not hold, in that a probe agrees with an expression which it structurally case-marks, and having an unvalued case-feature is what typically makes a nominal active for agreement.

when the object has a specific interpretation (i.e. when definite/topical/D-linked). In the light of the assumptions made in (14) above, consider what will happen when a series of merger operations have derived the ν P shown below:

(16) $[_{\nu P} i_{he} [_{\nu} \emptyset] [_{VP} [_{\nu} \text{repeindre}_{\text{repaint}}] \text{quelles}_{\text{which}} \text{chaises}_{\text{chairs}}]]]$

Let us suppose that the light verb ν carries an edge feature and a specificity feature via (14ii), a structural accusative-case-assigning feature via (14iii) by virtue of having a thematic external argument i_{he} , and a set of number+gender agreement features by (14iv), and that a series of merger operations on the ν P phase have generated the following structure:

(17) $[_{\nu P} i_{he} [_{\nu} \emptyset] [_{VP} [_{\nu} \text{repeindre}_{\text{repaint}}] [_{QP} \text{quelles}_{\text{which}} \text{chaises}_{\text{chairs}}]]]$

[u-Sp]	[specific]
[EF]	[P1-N]
[u-N]	[F-G]
[u-G]	[u-C]
[Acc-C]	

In accordance with (14v), the case and agreement features on ν percolate down onto V, so deriving:

(18) $[_{\nu P} i_{he} [_{\nu} \emptyset] [_{VP} [_{\nu} \text{repeindre}_{\text{repaint}}] [_{QP} \text{quelles}_{\text{which}} \text{chaises}_{\text{chairs}}]]]$

[u-Sp]	[specific]	
[EF]	[u-N]	[P1-N]
	[u-G]	[F-G]
	[Acc-C]	[u-C]

The number and gender agreement features on V are valued (as feminine plural) via agreement with the wh-QP goal *quelles_{which} chaises_{chairs}*, and conversely the wh-QP is assigned accusative case by V. The edge and specificity features on ν work in tandem to attract the specific wh-QP to move to the edge of ν P⁷. The agreement-marked V raises to ν , with the result that the participle is ultimately spelled out in the feminine plural form *repeintes*. The derivation continues in a conventional fashion (e.g. with the subject raising to spec-T, and the wh-phrase raising to spec-C), ultimately deriving (1a) *Quelles_{which} chaises_{chairs} i_{he} a_{has} repeintes_{repainted.F.Pl?}* – a sentence containing an agreeing past participle. The corresponding sentence without participle agreement (containing the default participle form *repeint_{Def}*) has an essentially parallel derivation, save that the agreement features specified to be optional in (14iv) are absent⁸.

Where the goal is a specific accusative clitic, such as the third person feminine singular clitic *l(a)* in:

(19) **Il l’*a* déjà **repeinte/repeint****
He it_{F.Sg} has already repainted_{F.Sg}/repainted_{Def}
‘He’s already repainted it’

⁷ Given that the Antilocality Constraint of Boeckx (2007: 110) specifies that ‘Movement internal to a projection counts as too local, and is banned’, V cannot attract wh-QP to move to spec-VP.

⁸ An empirical question which arises in relation to the agreementless structure is whether the accusative case feature remains on ν or lowers onto V. We assume that when ν carries no agreement features, there is no need for its case feature to percolate onto V.

the derivation will proceed in an essentially similar fashion, save that the clitic *la_{it}* will adjoin to the head *v* of *vP* (rather than moving to *spec-vP*), and will subsequently excorporate out of *v* and adjoin to the T-auxiliary *a_{has}* (with the clitic being spelled out in the contracted form *l'*). It would seem that for many speakers, participle agreement (while not being obligatory) is more likely to be marked with a preposed accusative clitic than with a preposed accusative nominal. This may be related to Chomsky's (1999: 2) requirement that morphosyntactic features should be 'easily detectable'. Third person singular accusative clitics like *le_{M.Sg}* and *la_{F.Sg}* lose the final vowel that overtly marks their gender in structures like (19), and hence the only way for gender to be detectable is to mark it on the participle. Likewise, first and second person accusative clitics are not overtly inflected for gender, so participle agreement provides a way of ensuring that their gender properties are detectable.

An interesting question raised by the analysis sketched above is why a preposed expression which moves to the edge of *vP* should not simply stay there, rather than having to move on subsequently. Luigi Rizzi in recent work (see e.g. Rizzi and Schlonsky 2005, Rizzi 2006) has argued that moved constituents keep on moving until they reach a *riterial* position (at which point they are frozen in place). By this, he in effect means that a constituent is frozen in place in a position where it satisfies some criterion imposed by the semantics interface (e.g. an interrogative *wh*-expression must move into a position where it is the specifier of an interrogative *C*). A plausible extension of this *freezing* condition would be to suppose that any moved constituent which comes to occupy a position where it satisfies some criterion imposed by the PF interface (e.g. the requirement for an affix or clitic to be attached to an appropriate host) is likewise frozen in place. Accordingly, we can say that a constituent is frozen in place when it occupies a *riterial* position (i.e. one satisfying some criterial property of the semantics or PF interface). If we suppose that the edge of *vP* is not a criterial position in French and that only constituents occupying a criterial position can remain in place, then it follows that no constituent which moves to the edge of *vP* can remain there, but rather any such constituent must move on until it reaches a criterial position.

5. ABSENCE OF AGREEMENT IN IMPERSONAL STRUCTURES

As noted earlier, there is no participle agreement in impersonal structures such as (4) *Quelles_{which} chaises_{chairs} il_{it} leur_{to.them} a_{has} fallu_{needed.Def}/*fallues_{needed.F.Pl} ?* The reason why the participle *fallu* 'needed' cannot carry agreement features in such structures is that it is used impersonally, and so has no thematic external argument. By virtue of not having a thematic external argument, the participle cannot carry a structural accusative case feature by (14iii), and this in turn means by (14iv) that it cannot carry agreement features either. However, *v* can carry an edge feature and an optional specificity feature in accordance with (15ii), and this allows the edge feature on *v* to trigger movement of a specific *wh*-expression to the edge of *vP* (as in 4), or of a non-specific *wh*-expression (as in *Quelle_{what.F.Sg} chaleur_{heat.F.Sg} il_{it} a_{has} fait_{made.Def} 'How hot it has been!'*).

6. NO AGREEMENT BETWEEN A HIGHER VERB AND AN EMBEDDED OBJECT

In long-distance questions, a participle in a higher clause cannot agree with the object of an embedded verb, as we see from sentences such as (4a) *Quelles chaises il a dit/*dites qu'il a repeint/repeintes?* 'Which chairs did he say that he has repainted?' where the participle *dit_{said}* cannot agree with the embedded object *quelles_{which} chaises_{chairs}*. Why should this be? Part of the answer to this question lies in the assumption that *CP* and transitive *vP* are phases, and hence *wh*-movement in such structures moves the *wh*-object first into the embedded *spec-vP*

position, then into the embedded spec-CP position, next into the matrix spec- ν P position, and finally into the matrix spec-CP position. This means that a series of merger operations on the matrix ν P phase will build up a structure like the following (with the material in outline font having undergone transfer on the earlier CP phase and hence being invisible to a higher probe at this point):

- (20) [_{VP} il_{he} [_v \emptyset] [_{VP} [_V dire_{say}] [_{CP} *quelles*_{which} *chaises*_{chairs} [_C *que*_{that}] [_{TP} il a re~~peint~~(es)]]]]

If ν carries only an edge feature and a specificity feature, these will work in tandem to trigger movement of the specific wh-phrase *quelles*_{which} *chaises*_{chairs} to spec- ν P. Thereafter, the wh-phrase moves on to the matrix spec-C position and the subject *il* to the matrix spec-T position, so deriving the structure (5a) *Quelles chaises il a dit qu'il a re~~peint~~(es)?*⁹.

But what if (in accordance with 14iii-iv) ν also carries case and agreement features in addition to edge and specificity features, and these case/agreement features percolate down onto V in accordance with (14v)? The answer is that the resulting derivation will crash, for two reasons. One is that the case feature of the wh-QP was already valued as accusative on the embedded ν P phase, so making wh-QP inactive for further case/agreement operations¹⁰. Another is that the Inaccessibility Condition (14vii) renders wh-QP inaccessible to V, because wh-QP occupies a non-thematic position on the edge of the CP phase, and a constituent in such a position is inaccessible to a non-phasal head.

As should be apparent, the account offered here of why there is no agreement between a participle and an embedded object generalises from objects of finite clauses like that in (5a) to objects of non-finite clauses like that in (5b). Moreover, it will also account for the absence of object agreement in structures such as the following:

- (21) J'ai nettoyé toutes les chaises que j'ai **pu/*pues**
I've cleaned all_{F.PI} the_{PI} chairs_{F.PI} that I've could_{Def}/could_{F.PI}

if we follow Grevisse (1964: 718) in positing that a sentence like (21) is an elliptical structure containing a null copy of the verb *nettoyer*_{clean} in the embedded clause which undergoes gapping – as shown informally in (22) below:

- (22) J'ai nettoyé toutes les chaises que j'ai **pu/*pues nettoyer**
*I've cleaned all_{F.PI} the_{PI} chairs_{F.PI} that I've could_{Def}/could_{F.PI} ~~clean~~
 'I cleaned all the chairs that I could'*

7. NO AGREEMENT WITH THE SUBJECT OF AN EMBEDDED CLAUSE

A further constraint on participle agreement – illustrated in (6a) above – is that it is not possible with a subject which has been extracted out of a finite clause. Relevant data are shown more fully below:

⁹ Note that the discussion here is based on the premise that the matrix ν P is a phase. However, if only a transitive ν P is a phase (as assumed e.g. in Chomsky 1999), and if ν P is only transitive if it is involved in accusative case assignment, it could be argued that the ν P containing *dire*_{say} in (21) is non-phasal because it does not assign accusative case either to the wh-phrase *quelles chaises* (because its case feature has already been valued) or to its CP complement (if this is caseless). In such an eventuality, the wh-phrase will move directly from the embedded spec-C position to the matrix spec-C position – as assumed by Grohmann (2004: 287-8).

¹⁰ However, if assignment of structural case to a (pro)nominal with an unvalued case feature is optional (as claimed by Franks and Lavine, 2006: 248, 274-5) it is possible that the wh-phrase may not yet have been case-marked by the time it reaches the embedded spec-CP position; if so, it could indeed be case-marked at this point.

- (23) a. Il a **dit**/***dites** que ces chaises-là ont abîmé le tapis
He has said_{Def/said_{F.PI}} that *those_{PI} chairs_{F.PI}-there* have ruined the carpet
 ‘He said that those chairs have ruined the carpet’
 b. Quelles sont les chaises qu’il a **dit**/***dites** qui ont abîmé le tapis?¹¹
Which are the_{PI} chairs_{F.PI} that’he has said_{Def/said_{F.PI}} that have ruined the carpet
 ‘Which chairs did he say have ruined the carpet?’

(23a) illustrates that – as expected – a participle cannot agree with an in-situ embedded subject. But why should the participle be unable to agree with the wh-moved embedded subject in (23b)? In order to try and answer this question, let’s take a closer look at the derivation of (23b). Let us suppose that we have reached a stage of derivation at which a series of merger and movement operations have formed the following structure on the matrix vP phase (with REL denoting a null relative pronoun which is feminine plural by virtue of having the feminine plural antecedent *quelles_{which} chaises_{chairs}*, and material in outline font having undergone spellout on the embedded CP phase):

- (24) [_{vP} i_{he} [_v ∅] [_{VP} [_v dire_{say}] [_{CP} REL [_C qui_{that}] [_{TP} REL ont abîmé le tapis]]]]

Let us also suppose that relative pronouns are *specific* expressions¹². If *v* carries uninterpretable edge and specificity features in accordance with (14ii), it will attract the null relative pronoun to move to the edge of vP, and since this is not a criterial position, the relative pronoun will subsequently move on until it reaches a criterial position as the specifier of a relative-clause complementiser. If *v* additionally carries accusative case and agreement features and these percolate down onto V in accordance with (14iii-v), the derivation will crash, because the relative pronoun has already had its case feature valued and so is inactive for further case-agreement operations, and because the Inaccessibility Condition (14vii) renders a constituent in a non-thematic (spec-C) position on the edge of a phase inaccessible to a non-phasal head like V. Accordingly, participle agreement is not possible with the subject of an embedded CP.

8. NO AGREEMENT WITH THE SUBJECT OF AN INFINITIVE COMPLEMENT OF A VERB LIKE *DIRE* ‘SAY’

Sentences like (6b) *Quelles chaises il a dit/*dites être plus confortables?* show us that a participle cannot agree with an embedded infinitive subject. The ungrammaticality of in-situ questions such as:

- (25) *Il a dit quelles chaises être plus confortables?
 *He has said which chairs to be more comfortable ?

suggests that the infinitive complement of *dire_{say}* cannot be a defective (CP-less) clause whose subject is assigned exceptional case. It therefore seems more likely that the infinitive

¹¹ Extraction of a local subject results in the complementiser *que* being spelled out as *qui*: see Rizzi and Schlonsky (2005, §6) for discussion of the conditions governing the spellout of the complementiser.

¹² Evidence for relative pronouns being specific comes from the fact that they allow a paraphrase with a specific resumptive pronoun (even when they have a non-specific antecedent) in non-standard varieties of English which allow structures such ‘He won’t eat anything [*which* he isn’t sure if he’s going to like it or not]’. Note too that specific (animate) accusative relative pronouns also take the specificity marker *pe/a* in Romanian/Spanish.

complement of *dire*_{say} in the relevant class of structures is a CP headed by a null complementiser which lacks the ability to assign case (such an analysis being the CP counterpart of the S-bar analysis of the relevant infinitive structures proposed in Kayne 1984, §5.3). If so, the structure formed by merger on the matrix vP cycle will be the following:

(26) [_{vP} il_{he} [_v \emptyset] [_{VP} [_V dit_{said}] [_{CP} *quelles*_{which} *chaises*_{chairs} [_C \emptyset] [_{TP} *être*_{be} *plus*_{more} *confortables*]]]]

If *v* in (26) carries only edge and specificity features via (14ii), the derivation will crash because the case feature on the wh-QP cannot be valued or deleted. If *v* carries an accusative case feature by (14iii) in addition to its EF and specificity features, *v* will be able to assign accusative case to wh-QP, and attract it to move to the edge of vP: by hypothesis, there is no necessity for a solo case feature on *v* (i.e. a case feature on a *v* which does not also carry agreement features) to percolate down onto V, allowing the phase head *v* to case-mark a wh-QP on the edge of a CP phase, without any violation of the Inaccessibility Condition (14vii). Such an analysis involves what Kayne (1984: 2) calls *case assignment into COMP* – and indeed Rizzi (1982: 90-97) and Kayne (1984: §5.3) propose a similar analysis of the relevant class of infinitive structures in French (and a related analysis is proposed for Hungarian in Bejar and Massam 1999: 66.)¹³ The derivation will continue in a conventional fashion, ultimately deriving the agreementless structure (6b) *Quelles chaises il a dit être plus confortables?*

But now consider what happens if *v* also carries agreement features in (26). In accordance with (14iv), these will percolate down onto V, pied-piping the case feature with them. But the Inaccessibility Condition (14vii) renders wh-QP inaccessible to V, because wh-QP is on the edge of a CP phase, and V is a non-phasal head. Accordingly, the derivation crashes, so correctly specifying that participle agreement leads to ungrammaticality in sentences such as (6b) **Quelles chaises il a dites être plus confortables?*

9. AGREEMENT WITH AN ECM SUBJECT

As illustrated in (7), a participle optionally agrees with the subject of a defective (CP-less) clause which is assigned structural accusative case via Exceptional Case Marking/ECM. Defective clauses include infinitive complements of verbs of perception as in (7a) *Quelles chaises il a vu/vues tomber dans la piscine?* ‘Which chairs did he see fall into the swimming pool?’ and small clause complements of judgment verbs as in (7b) *Quelles chaises il a trouvé/trouvées plus confortables?* ‘Which chairs did he find more comfortable?’ For present purposes, we will focus on infinitival complements of perception verbs like that in (7a) – though the conclusions drawn here carry over to small clause complements of judgment verbs like that in (7b).

Perception verbs differ from epistemic/declarative verbs in that they allow the (underlined) infinitive subject to follow the (italicised) matrix verb in structures like:

¹³ The relevant phenomenon resembles Exceptional Case Marking/ECM in certain respects – though as we shall see in the next section, ECM involves concomitant raising of the case-marked expression to spec-VP. However the wh-phase can’t move from spec-C (an A-bar position) to spec-V (an A-position), since this is a form of ‘improper movement’ leading to the formation of the kind of mixed chain barred in Chomsky (2005b) – and any such movement would violate the Inaccessibility Condition (14vii).

- (27) J'ai **vu**/***vues** les chaises tomber dans la piscine
I've seen_{Def}/seen_{F.PI} the_{F.PI} chairs_{F.PI} fall into the pool
'I saw the chairs fall into the swimming pool'

Chomsky (2005b) maintains that Exceptional Case Marking involves raising of the subject of a defective clause to become the specifier of the matrix V (driven by an EPP feature on V), with the matrix verb in turn moving to *v* and hence occupying a position immediately above the raised subject. However, since EPP typically works in tandem with other features, the question which this analysis poses is: 'What kind of feature could work in tandem with the EPP feature on the matrix V to trigger raising of the embedded subject to the matrix spec-VP position?' Since raising of subjects to spec-TP in languages like French is widely taken to involve EPP working in tandem with agreement (with T being said to attract the closest nominal it agrees with), it might seem as if EPP could work in tandem with agreement (V attracting the closest nominal it agrees with – i.e. the infinitive subject). However, the fact that the verb *vu_{seen}* does not obligatorily inflect for agreement in (27) calls any such assumption into question. But if the EPP feature on V does not work in tandem with agreement, what other feature could it be associated with? The answer we shall suggest here is that V works in tandem with the (accusative-assigning) structural case feature which V can inherit from *v*, so that V attracts a nominal which it case-marks to move to spec-V. Let's take a closer look at the assumptions underlying such an analysis.

Suppose that we have reached a stage of derivation where a series of merger operations on the *v*P phase have formed the structure shown in skeletal form below:

- (28) [_{VP} il_{he} [_v \emptyset] [_{VP} [_V *vu_{seen}*] quelles_{which} chaises_{chairs} tomber_{fall} dans_{into} la_{the} piscine_{pool}]]]

Given the assumptions in (14ii-iv), the matrix *v* can carry edge, specificity, case and agreement features, and in accordance with (14v) the agreement and case features of *v* percolate onto V. If V carries an EPP feature, if an EPP feature on a head H allows a copy of a constituent not already merged with H to merge with H¹⁴, and if an EPP feature on an A-head in Indo-European languages works in tandem with case or agreement features, it follows that the EPP feature on V in (28) can work in tandem with the structural case and agreement features which V inherits from *v*, with the result that V attracts the infinitive subject to move to spec-V and values the unvalued case feature of the attracted subject as accusative and its unvalued number and gender features as feminine and plural¹⁵. The edge feature on *v* will work in tandem with the specificity feature on *v* to trigger A-bar movement of an (underlined) copy of the specific wh-phrase quelles_{which} chaises_{chairs} to spec-*v*, so deriving the structure shown below (assuming V-to-*v* movement also):

- (29) [_{VP} quelles chaises il [_v *vu*] [_{VP} quelles chaises [_V *vu*] quelles chaises tomber dans la piscine]]]

¹⁴ The 'not already merged with H' condition follows from the *No Remerger* constraint of Pesetsky and Torrego (2001), which bars a constituent from being re-merged with a head with which it is already merged. As noted earlier, Boeckx (2007: 110) proposes a related *Antilocality Constraint* to the effect that 'Movement internal to a projection counts as too local, and is banned'.

¹⁵ As will be apparent, there is some similarity here with the idea in earlier work on *Government and Binding Theory* that subjects raise in order to check their case feature (cf. the claim in Haegeman 1994: 185 that a passivised nominal 'moves to a position where it can be assigned case').

Subsequent movement of the wh-phrase to spec-C and of the subject to spec-T will derive *Quelles chaises il a vues tomber dans la piscine?* with the participle being spelled out in the agreeing form *vues*¹⁶. The corresponding agreementless sentence *Quelles chaises il a vu tomber dans la piscine?* will be derived in a similar fashion, save that *v* will not carry agreement features. The EPP feature on V will then work in conjunction with the case feature on V (which percolates down from V) to trigger movement of a copy of the wh-phrase to spec-V, and the edge and specificity features on *v* will trigger movement of wh-QP to the edge of *v*P.

10. NO AGREEMENT IN CAUSATIVE STRUCTURES

A phenomenon not accounted for by anything we have said so far is the absence of participle agreement with the subject or object of an infinitival complement of the causative verb *faire*_{make} as illustrated in (8) *Quelles chaises il a fait/*faites tomber/réparer?* ‘Which chairs has he dropped/had repaired’ (literally ‘made fall/made repair’). Why should agreement be barred in such structures?

It is widely assumed that causative verbs like *faire* select an infinitival clause which is defective in lacking one or more of the functional projections found in complete clauses, and that some form of restructuring takes place in such clauses, whereby the embedded verb raises into some position within the main clause. One specific implementation of this idea is to suppose that the embedded verb adjoins to the matrix causative verb *faire*_{make}, so forming a complex predicate. Thus, Grevisse (1964: 727) cites Littré in his dictionary published in 1872 claiming that causative *faire*_{make} and the embedded verb form ‘a single word’; and generative counterparts of this analysis are found in Kayne (1977), Aissen (1974), Belletti (1990: 136, fn 56) and Guasti (1996). However, a question posed by the assumption that the embedded verb adjoins to *faire*_{make} is why it is spelled out to the right (rather than to the left) of the latter (since a leftward moving constituent typically adjoins to the left of its host). Moreover, sentences such as those below suggest that a variety of constituents (in **bold**) can be positioned between *faire*_{make} and the embedded verb:

- (30) a. Elle a fait **tout** disparaître
She has made everything disappear
 b. Elle ne fera **certainement pas** entrer sa mère dans sa chambre
She not will.make certainly at.all enter her mother into her room
‘She certainly won’t let her mother into her room’
 c. Il a fait **sur le champ** appeler la police
He has made on the spot call the police
‘He had the police called on the spot’
 d. Fera-**t-il** entrer ses parents dans sa chambre?
Will.make-he enter his parents into his room?
‘Will he let his parents into his room?’

¹⁶ The assumption that there is one copy of the wh-phrase in spec-*v*P and another in spec-VP mirrors the assumption made in Chomsky (2005b) that in a wh-subject question like *Who died?* there is one copy of *who* in spec-CP and another in spec-TP.

What this suggests is that the embedded verb raises to a position below the head v position of the matrix vP : perhaps it adjoins to the head V of the matrix VP ¹⁷, or to the head of an abstract functional projection positioned between the matrix VP and the embedded vP .

It would seem that the embedded vP in causatives is defective in respect of v lacking the ability to assign structural accusative case, since otherwise we would expect sentences such as the following to be grammatical:

- (31) *Je ferai recouvrir *un tapissier les chaises*
I will.make re-cover an upholsterer the chairs
'I will get an upholsterer to recover the chairs'

with the embedded object *les_{the} chaises_{chairs}* receiving structural accusative case from the embedded verb, and the embedded subject *un_{an} tapissier_{upholsterer}* receiving structural accusative case from the matrix verb. It may be that this results in some form of *feature conflict* if the embedded V carries one set of case/agreement features inherited from the embedded v , and the matrix V has another set of case/agreement features inherited from the matrix v , and the two are both contained within a single vP (i.e. within a single case/agreement domain): if so, this means that no verb with case/agreement properties can move into the domain of another verb with case/agreement properties. Whatever the precise reason, let us suppose that the embedded v in causatives cannot carry case/agreement features of its own, and that consequently the embedded vP is not a phase.

However, such an analysis raises the question of why the past participle *fait_{made}* cannot – as would be expected from what we have said so far – optionally agree with a preposed specific infinitive subject or complement in sentences such as (8) *Quelles chaises il a fait/*faites tomber/réparer?* ‘What chairs did he drop/have repaired?’ The answer which we shall suggest here is that the absence of agreement in causatives is the result of a *virus* in the sense of Lasnik and Sobin (2000) – e.g. it is the result of children being taught at secondary schools that the past participle *fait_{made}* must remain invariable in causative uses¹⁸. The participle agreement rules inculcated in secondary schools are largely based on prescriptive rules dating back to work by Marot in the 16th century, and Vaugelas in the 17th century, and imposed by an edict from the Ministry of Education in 1901 – rules which Grevisse (1964: 712) and Bescherelle (1997 §131) both describe as ‘artificial’. A traditional reason given by prescriptive grammarians for not marking agreement between a causative participle and an embedded subject or object amounts (if we translate it into present-day terms) to saying that a participle does not agree with a constituent which it does not theta-mark. However, this assumption is seemingly falsified by participle agreement with ECM subjects in sentences like (7), and seems to confuse inherent case-marking (which is thematically-based and does not involve agreement) with structural case-marking (which is based on local c-command and may involve agreement).

¹⁷ This would make for an interesting analogy between subject-to-object raising and verb raising, if the former involves movement of the embedded subject to the matrix spec- VP position, and the latter involves movement of the embedded verb to the matrix V position. However, if the causative verb originates in the matrix V position (rather than in v), questions of implementation arise about how the causative can raise from V to v while attracting an embedded verb to raise to V (but not to move with the causative to v). We leave such questions open here.

¹⁸ One way of capturing this generalisation would be to suppose that in causative uses, *fait_{made}* can never carry agreement features; another (which seems more plausible to us) would be to suppose that *fait_{made}* can carry agreement features, but has the idiosyncratic lexical property that it is irregular in being invariable (so that whatever agreement features it carries always have a null spellout).

Independent support for the *virus* analysis comes from the observation by Grevisse (1964: 1037) that causative *faire*_{make} can be used by some speakers as an ECM verb, e.g. in structures such as the following (from Gide)¹⁹:

- (32) ces quelques mots qu'il fait Nisus adresser à son Euryale
'these few words that he makes Nisus address to his Euryale'

However, even though causative participles can agree with ECM subjects as we saw in §9, in its ECM use the past participle *fait*_{made} remains invariable, as we see from:

- (33) a. Le juge l'**fait**/***faite** s'excuser devant les victimes
*The judge her has made*_{Def/made}*F.Sg self excuse before the victims*
'The judge made her apologise in front of the victims'
 b. les lettres qu'il a **fait**/***faites** Nisus envoyer à Euryale
*the*_{Pl} *letters*_{F.Pl} *that he has made*_{Def/made}*F.Pl Nisus send to Euryale*

This reinforces our view that the invariability of causative *fait*_{made} is viral in origin and lexical in nature (in the sense that it reflects an idiosyncratic property of a specific form of a specific lexical item).

Further evidence in support of this conclusion comes from the fact that in the Italian counterpart of the causative construction (which seems to be broadly parallel to that found in French²⁰), the participle agrees with a preposed infinitive subject or object, as we see from examples such as the following²¹:

- (34) Li ho **fatti** entrare/riparare
*Them*_{M.Pl} *I.have made*_{M.Pl} *enter/repair*
'I had them enter/repared'

Additional support for the *virus* analysis comes from the behaviour of the permissive predicate *laisser*_{let}. This can either take the kind of infinitival complement found with ECM predicates like verbs of perception, or the kind of infinitival complement found with *faire*. Participle agreement in such structures is found in earlier texts – as the example below illustrates (from Grevisse 1993: 1341)

- (35) Les traces d'anciens sentiers que [...] j'ai **laissés** recouvrir par mille branches
*The traces of old paths*_{M.Pl} *that I have*_{let}*M.Pl cover by a thousand branches*

However, in 1990, the *Conseil Supérieur de la Langue Française* decreed that the participle *laissé*_{let} should remain invariable whenever it has an infinitive complement (according to

¹⁹ In the ECM structure, there are two transitive vPs hence two case/agreement domains, and it is therefore possible for the embedded verb to case-mark the embedded complement, and the matrix causative verb to case-mark the embedded subject.

²⁰ There are some minor differences. For example, as noted in Radford (1977: 225), Italian allows causatives to be passivised, with the participle agreeing with the passivised nominal – as in:

(i) La macchina sarà fatta riparare domani
*The*_{F.Sg} *car*_{F.Sg} *will.be made*_{F.Sg} *repair tomorrow* 'They etc. will have the car repaired tomorrow'

However, French does not allow this type of structure (nor indeed does English: cf. **This car will be had repaired*).

²¹ It should be noted that participle agreement is obligatory rather than optional in Italian.

Becherelle, 1997 §139) – lending support to our contention that the absence of agreement in such structures in more recent times is inherently viral in nature.

11. PARTICIPLE AGREEMENT WITH THE AUXILIARY *ÊTRE* ‘BE’²²

Clauses containing an (accusative or oblique) reflexive/reciprocal clitic pronoun (R-pronoun) require use of the auxiliary *être*_{be} in past participle structures. Agreement in such structures is similar in most respects to that found in structures with the auxiliary *avoir*_{have}. However, an important difference between the two types of structure is that agreement is obligatory with an accusative R-pronoun, as illustrated by sentences like (9) *Elles se sont couvertes* ‘They have covered themselves/each other’. A question raised by such examples is why participle agreement should be obligatory with an R-pronoun, but optional with other types of preverbal object. In this connection, it is interesting to note the suggestion made by a number of linguists (e.g. Hornstein 2001; Grohmann 2003; Boeckx, Hornstein and Nunes 2004) that reflexive structures are formed by A-movement. For example, Boeckx et al (2004: 7) argue that a sentence like (36a) contains the *v*P in (36b):

- (36) (a) John likes himself
 (b) [_vP John [_vP likes John]]

They claim (ibid.) that ‘*John* first merges with *likes*, thereby obtaining the internal “likee” role, and then moves to [Spec, *v*P], thereby gaining the external “liker” role.’ More generally, they maintain that ‘Reflexive structures involve movement to θ -positions’ and that the movement involved is ‘a species of A-movement’ (ibid.). If we follow Chomsky (2001) in supposing that A-movement canonically involves concomitant agreement, an interesting analysis to explore in order to account for a sentence like (9) is as follows.

The pronoun *elles*_{they} is merged as the object of the lexical verb *couvrir*_{cover} (and assigned the theta role of THEME argument of V), so forming the VP *couvrir*_{cover} *elles*_{them}. This VP is then merged with a participial light-verb which carries a set of (number and gender) agreement features, and which has an external (AGENT) theta-role to assign, but has (let us suppose) no independent external argument. The light verb can ‘fill’ its empty external argument position by attracting a copy of the goal it agrees with in number and gender (namely *elles*_{them}) to move to spec-*v*P, and the light verb will be marked as feminine plural by agreement with *elles*_{them}. The lexical verb *couvrir*_{cover} will move from V to *v* and thereby acquire the feminine plural features carried by *v*, with the result that the participle is ultimately spelled out in the feminine plural form *couvertes*_{covered.F.PI} in (45). The lower copy of *elles*_{they} is ultimately spelled out as the reflexive pronoun *s(e)*_{self}. If we suppose that *v* can only trigger A-movement of a nominal which it agrees with, it follows that the participle must carry agreement features in reflexive structures or else the derivation will crash (because a copy of the object cannot move into subject position without agreement, and if no movement takes place the light verb will have no external argument to assign its theta role to). Note that the analysis of R-structures sketched here requires us to modify the analysis in (14) somewhat, including by supposing that the agreement features on *v* do not lower onto V in R-structures, because they need to remain on *v* in order to work in tandem with EPP to attract a copy of an expression in the domain of V to move to spec-*v*P. Consequently, lowering of agreement features from *v* onto V only takes place when *v* already has a specifier of its own (acquired via merger).

²² We would like to point out that the analysis of reflexive structures which will be proposed in this section is merely tentative and that a number of details of implementation remain to be worked out.

An important implication of the above analysis is that agreement in R-structures is a consequence of A-movement²³, and hence independent of specificity. This would account for the fact that participle agreement is found in R-structures even where the moved expression is non-specific, as in:

- (37) Des jeunes filles se sont **couvertes**/***couvert** de peinture
Some_{PI} young_{PI} girls_{F.PI} R_{F.PI} are covered_{F.PI}/covered_{Def} of paint
'Some young girls covered themselves in paint'

An interesting question which arises from the discussion in the preceding paragraph is whether the analysis of bi-thematic R-structures like (9) *Elle se sont couvertes* (in which *Elles* has two distinct thematic roles) can be extended to monothematic reflexive structures such as:

- (38) Les maisons_{F.PI} se_{F.PI} sont **effondrées**/***effondré**
The houses self are collapsed_{F.PI}/collapsed_{Def}
'The houses have collapsed'

Here, the nominal *les_{the} maisons_{houses}* appears to have a single thematic role, namely that of THEME argument of the verb *effondrer_{collapse}*. Why, then, should it surface with a nominal subject and a reflexive clitic direct object? One possibility is that structures like (38) have essentially the same movement derivation as those in (9), and so involve A-movement of a copy of the object into spec-*v* (with A-movement again being associated with agreement) – but with the difference that spec-*v* in structures like (38) is a *nonthematic* subject position (in the sense that the moved nominal does not thereby acquire an additional theta role). However, we shall not speculate further on such structures here.

12. CONCLUSIONS

This paper has set out to provide a principled account of transitive past participle agreement in French within a Minimalist framework. Our account posits that the head *v* of *vP* in such structures carries an (accusative-assigning) structural case feature which may apply (with or without concomitant agreement) to case-mark a clause-mate object, the subject of a defective complement clause, or an intermediate copy of a preposed subject in spec-C. In structures where a goal is extracted from *vP* (e.g. via wh-movement) *v* also carries an edge feature, and may also carry a specificity feature and a set of (number and gender) agreement features. These assumptions help us account for agreement of a participle with a preposed specific clausemate object or defective-clause subject, and for the absence of agreement with an embedded object, with the complement of an impersonal verb, and with the subject of an embedded (finite or non-finite) CP complement. We argued that the absence of agreement marking (in expected contexts) in structures where the causative participle *fait_{made}* and the permissive participle *laisse_{let}* have an infinitive complement is essentially viral in nature.

²³ In interrogative sentences like *Quelles filles se sont couvertes de peinture?* ‘Which girls covered themselves in paint?’, the participle has two sets of features probing in parallel: an EPP feature working in tandem with agreement features attracting a copy of the wh-QP to a (thematic) A-specifier position, and a A-bar-related edge feature/EF attracting a copy of the wh-QP to a (non-thematic) A-bar specifier position. On the CP-phase, the thematic position is visible to both C and T, but in accordance with the Inaccessibility Condition, only phasal C can see the A-bar moved copy in a non-thematic position on the edge of a phase. The derivation therefore only converges if T attracts the only copy accessible to it viz. the A-copy of the QP, and C attracts the other (A-bar moved) copy of the QP to spec-CP.

Finally, we suggested that agreement with reflexive (and reciprocal) objects is obligatory because these involve A-movement operating in conjunction with agreement.

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Monadic vs. Polydefinite Modification: the Case of Greek

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Abstract

This paper deals with the syntax of monadic and polydefinite DPs in Modern Greek. It is proposed that the former construction represents the unmarked pattern for adjectival modification, in which two types of modifiers (i.e., functional and lexical adjectives) are to be distinguished. On the other hand, polydefinites are analyzed as marked structures (the articulated adjective being interpreted as contrastive): assuming the parallelism between DPs and CPs, the existence of a DP-internal SC is suggested, in line with Frascarelli's (2005, 2007) analysis of Focus constructions at the sentential level. Finally, it is shown that this proposal provides an explanation for some properties of indefinite DPs in Modern Greek.

1. INTRODUCTION

This paper aims at providing an analysis of two patterns of adjectival modification in Modern Greek (henceforth, simply Greek), namely the monadic and the polydefinite constructions, which are illustrated in (1) and (2), respectively:

- (1) Monadic constructions:
- a. to kalo vivlio
 the good book
 ‘The good book’
 - b. *to vivlio kalo
 the book good

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- (2) Polydefinite constructions:
- a. to kalo to vivlio
the good the book
 - b. to vivlio to kalo
the book the good
- Both: “The good book”

As these examples show, adjectival modification in Greek can either involve the realization of an adjective between the definite determiner and the head noun, as in (1), or a different construction, in which more than one determiner is spelt out within a single DP, as in (2).

The two structures at issue differ in many of their syntactic properties (cf., a.m.o., Tredinnick, 1992, Androutsopoulou, 1994, 1996, 2001, Alexiadou and Wilder, 1998, Alexiadou, 2001, 2003, 2005, Campos and Stavrou, 2004, Kolliakou, 1994, 1998, 1999, 2003, 2004). First of all, as (1) and (2) show, adjectives have to precede the noun in a monadic DP (cf. (1)), while they are allowed to occur either in prenominal or in postnominal position in the polydefinites in (2). Moreover, when the noun is modified by more than one adjective, these modifiers have to be strictly ordered in monadics whereas their order is free in polydefinites. This is illustrated in (3) and (4):

- (3) Monadic constructions:
- a. to megalo kokkino vivlio
the big red book
 “The big red book”
 - b. * to megalo vivlio kokkino
 - c. * to kokkino vivlio megalo
 - d. * to vivlio kokkino megalo
 - e. * to vivlio megalo kokkino
 - f. * to kokkino megalo vivlio
- (4) Polydefinite constructions:
- a. to megalo to kokkino to vivlio
the big the red the book
 “The big red book”
 - b. to megalo to vivlio to kokkino
 - c. to kokkino to vivlio to megalo
 - d. to vivlio to kokkino to megalo
 - e. to vivlio to megalo to kokkino
 - f. (*) to kokkino to megalo to vivlio¹

It is worth noting that the rigid order of adjectives in monadic DPs is the same as what we find in English and, more generally, in languages with prenominal adjectives; cf., a.m.o., Sproat and Shih (1988, 1990), who observe that adjectival modifiers obey the following hierarchy:

- (5) Quality > Size > Shape/Colour > Provenance
 Cf.: The beautiful big red Chinese vase
 The nice little round Greek cake

¹ For some speakers, this phrase is grammatical only if *kokkino* ‘red’ is contrastively stressed (cf. Alexiadou and Wilder, 1998, Androutsopoulou, 2001); however, judgements are not consistent, and some speakers consider (4f) to be grammatical even if *kokkino* is not focused/contrasted (Sabine Iatridou, pc).

Among the differences between monadic and polydefinite constructions, it is important to observe that, while any adjective can occur in monadics, polydefinites are restricted to adjectives that can function as predicates. Consider the following examples, which show that non-predicative adjectives like the intensional ‘former’, ‘mere’ and ‘alleged’ (cf. (6-8)) and the thematic ‘Italian’ (cf. (9)) cannot appear in polydefinite constructions; as is indicated, this restriction is related to the impossibility for these adjectives to occur as predicates in copular sentences:

- (6) o proin (*o) proedhros
the former the president
 “The former president” (cf. *o proedhros ine proin, *The president is former)
- (7) i apli (*i) simptosi
the mere the coincidence
 “The mere coincidence” (cf. *i simptosi ine apli, *The coincidence is mere)
- (8) o ipothimenos (*o) dolofonos
the alleged the murderer
 “The alleged murderer” (cf. *o dolofonos ine ipothimenos, *The murderer is alleged)
- (9) i italiki (*i) isvoli
the Italian the invasion
 “The Italian invasion” (cf. *i isvoli ine italiki, *The invasion is Italian)

Similarly, adjectives contained in proper names do not allow a predicative interpretation. For instance, the White House (under the proper name reading) cannot be rephrased as “the House which is White”. As the examples in (10-11) show, these cases of non-predicative adjectives cannot occur in polydefinites:

- (10) o Lefkos (*o) Ikos
the White the House
 “The White House” (cf. *o Ikos ine Lefkos, *The House is White: ungrammatical under the relevant interpretation)
- (11) o Vorios (*o) Polos
the Northern the Pole
 “The North Pole” (cf. *i Polos ine Vorios, *The Pole is North)

Furthermore, there are some adjectives which are ambiguous between an intersective and a non-intersective reading in monadics (cf. (12a)); however, when they occur in polydefinites, they are disambiguated and only the intersective interpretation is maintained (cf. (12b-c)), which is the reading available when the adjective is used as a predicate in a copular sentence (cf. (12d)):

- (12) a. o ftohos anthropos (monadic DP)
the poor man
 “The poor man” (ambiguous: ‘impoverished’/‘pitiable’)
- b. o ftohos o anthropos (polydefinite DP)
the poor the man
 “The poor man” (unambiguous: ‘impoverished’/*‘pitiable’)

- c. o anthropos o ftohos (polydefinite DP)
the man the poor
 “The poor man” (unambiguous: ‘impoverished’/*‘pitiable’)
- d. o anthropos ine ftohos (copular sentence)
the man is poor
 “The man is poor” (unambiguous: ‘impoverished’/*‘pitiable’)

Another asymmetry between the two constructions concerns the distinction between restrictive and non-restrictive reading. Consider the following contrast:

- (13) a. o diefthindis dilose oti [i kali erevnites] tha apolithun
the director declared that the efficient researchers will be fired
 “The director declared that the efficient researchers will be fired”
 (ambiguous: restrictive/non-restrictive reading)
- b. o diefthindis dilose oti [i kali i erevnites] tha apolithun
the director declared that the efficient the researchers will be fired
 (unambiguous: only restrictive reading)

Both sentences in (13) mean ‘The director declared that the efficient researchers will be fired’. As is indicated, in the monadic DP in (13a), *i kali erevnites* ‘the efficient researchers’ is ambiguous between a restrictive and a non-restrictive interpretation; under the former reading, the director’s claim is that, among the researchers, only the efficient ones will be fired (the “insane reading” in Kolliakou, 2004: 270); on the other hand, the non-restrictive reading means that all the researchers will be fired, despite their all being efficient. However, the corresponding polydefinite construction (i.e., *i kali i erevnites* in (13b)) only retains the restrictive interpretation. In other words, once again it can be observed that polydefinites have more limited interpretive possibilities than monadics.

Besides these asymmetries involving the predicative interpretation of polydefinites, another important difference between the two constructions is related to their use in actual discourse: indeed, they are appropriate in different situations. In particular, polydefinites can only be used in contexts in which the noun encodes given or presupposed information and the adjective represents a contrastive Focus. Consider for example the context provided in (14), where speaker A asks what B bought to Yannis:

- (14) A. Ti pires tu Yanni gja ta christugena?
what you-bought the Yannis for the Christmas
 “What did you buy to Yannis for Christmas?”
- B1. (Tu pira) tin asimenja pena (monadic DP)
to-him I-bought the silver pen
 “(I bought him) the silver pen”
- B2. #(Tu pira) tin asimenja tin pena (polydefinite DP)
to-him I-bought the silver the pen
- B3. #(Tu pira) tin pena tin asimenja (polydefinite DP)
to-him I-bought the pen the silver

Assuming that a unique silver pen is contextually available, speaker B can answer with a monadic DP as in (14B1); but for B to use a polydefinite would be inappropriate in this context, as is indicated in (14B2-B3).

However, in a different situation, in which the pen is given in the discourse, using a polydefinite is fine, as you can see in (15):

- (15) A. Pja pena pires tu Yanni, ti khrisi i tin asimenja?
which pen you-bought the Yannis the golden or the silver
 “Which pen did you buy to Yannis, the golden or the silver one?”
- B1. #(Tu pira) tin asimenja pena (monadic DP; but see (15B4))
to-him I-bought the silver pen
- B2. (Tu pira) tin asimenja tin pena (polydefinite DP)
to-him I-bought the silver the pen
- B3. (Tu pira) tin pena tin asimenja (polydefinite DP)
to-him I-bought the pen the silver
- B4. (Tu pira) tin ASIMENJA pena (monadic DP with contrastive AP)
to-him I-bought the silver pen
- B5. (Tu pira) tin asimenja (elliptical DP)
to-him I-bought the silver

In this context, speaker A’s question is ‘which pen did you buy?’, so that *pen* is presupposed in the discourse. As is indicated, in this situation the polydefinites in (15B2-B3) are appropriate; on the other hand, it is the monadic construction that would be inappropriate (cf. (15B1)), unless the adjective is contrastively stressed as in (15B4); finally, a context like (15) also allows an elliptical DP like (15B5), corresponding to the English ‘the silver one’.

2. THE PROPOSAL: MONADIC CONSTRUCTIONS

Let us now focus on the derivation of the two nominal constructions presented in section 1. Firstly I will propose my analysis of monadic DPs, then I will turn to present the derivation assumed for polydefinites (cf. section 3).

The present proposal will be in line with the suggestion, put forth by many scholars, that two kinds of attributive adjectives exist,² one of which includes adjectives that can function as predicates, while the other is the set of non-predicative adjectives; in particular, following Bernstein’s (1993) terminology, these two sets of modifiers will be referred to as *lexical* and *functional* adjectives, respectively.

Moreover, I consider both kinds of adjectives to be merged as full APs. As Cinque (2005) convincingly argues, their phrasal nature can be observed in examples such as (16):

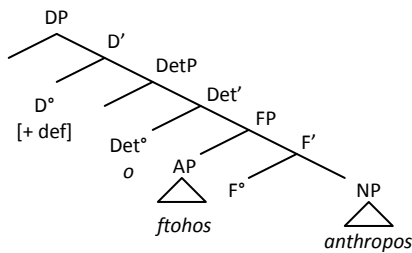
- (16) o [kírios kata protereótita] lógos
the main by priority reason
 “The main reason in terms of priority” (cf. *o lógos ine kírios kata protereótita, ‘*The reason is main in terms of priority’)

This example shows that an analysis of prenominal adjectives as heads is not tenable: in Greek, as well as in many other languages, prenominal adjectives can take complements or adjuncts (as in (16)), and this suggests that a structure more complex than a simple head is required in these cases. It is worth noting that in (16) the modifier cannot be analyzed as derived from a reduced relative clause: *kírios* ‘main’ is a functional (i.e., non-predicative) adjective, so that it cannot be merged as a predicate within a relative clause such as ‘*the reason which is main (in terms of priority)’.

² Consider, for example, the asymmetry between reference- and referent-modification in Bolinger (1967), between direct and indirect modification in Sproat and Shih (1988, 1990), between associative and ascriptive adjectives in Ferris (1993), between functional and lexical adjectives in Bernstein (1993), Cinque (2005) and Ramaglia (in prep.).

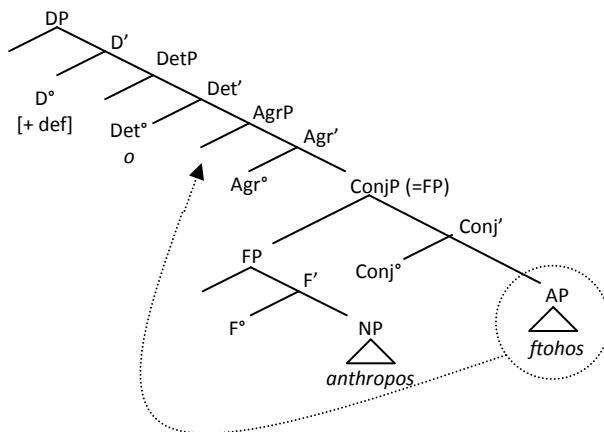
As already mentioned, in the spirit of Cinque (2005), I take attributive adjectives to have two possible sources, depending on whether they are lexical (i.e., predicative) or functional (i.e., non-predicative). A functional adjective is merged in the Specifier of a functional head within the extended projection of NP, as is illustrated in the structure in (17) (in which FP indicates the relevant functional projection):³

- (17) Functional APs (non-predicative reading; intensional semantics)
 o ftohos anthropos (= 12a)
 the poor man
 “The poor man” (*ftohos* ‘poor’ = ‘pitiable’)



On the other hand, a lexical adjective, which receives a predicative interpretation, is merged as a DP-internal predicate (cf. Kayne, 1994, den Dikken, 2006). In particular, following Rebuschi (2002, 2005), I assume the existence of a ConjP projection encoding an intersective relation between a subject (merged in Spec,ConjP) and a predicate (in Compl,ConjP). The structure of a DP containing a lexical adjective is provided in (18):

- (18) Lexical APs (predicative reading; extensional semantics)
 o ftohos anthropos (= 12a)
 the poor man
 “The poor man” (*ftohos* ‘poor’ = ‘impoverished’)



³ It can be observed that in (17), as well as in the following diagrams, the Det° head (and not D°) is indicated as the syntactic *locus* where the definite determiner is generated. This is in line with many analyses in which the definite determiner is merged lower than D, where the definiteness feature is encoded (cf. Karanassios, 1990, 1992, Androutsopoulou, 1996, 2000, 2001, Stavrou, 1996, 1999, Pesetsky and Torrego, 2001, Ioannidou and den Dikken, 2006, Androutsopoulou and Español-Echevarría, 2007). The reason for this assumption will be clearer in the next section, which is dedicated to the analysis of polydefinite constructions.

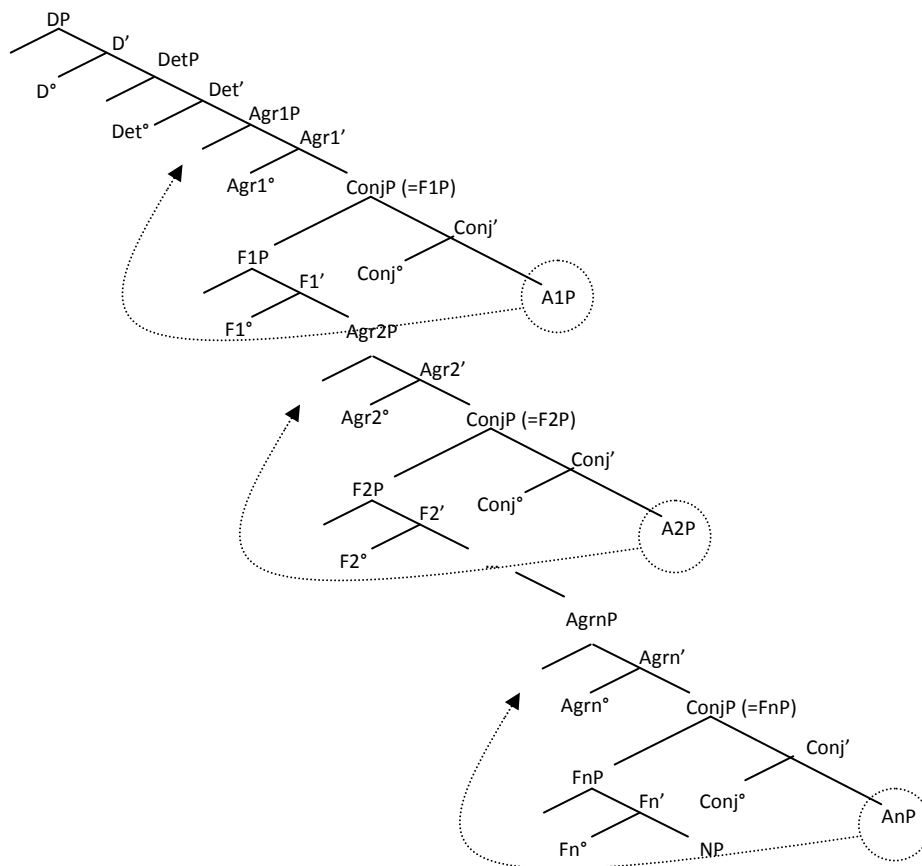
As Rebuschi (2002, 2005) claims, the ConjP projection assumes its label, as well as its features, from the subject of the predication (i.e., from the constituent located in Spec,ConjP, namely FP in (18)): the latter establishes a Spec-Head agreement configuration with Conj°, which inherits its features and transmits them to the whole ConjP.⁴

As is illustrated in (18), my proposal is that in Greek a lexical adjective is forced to raise to the Specifier of an agreement projection (AgrP): in this position, it can establish a Spec-Head configuration with Agr°, which licenses its agreement with the head noun (phi-features and case).

On the contrary, a functional adjective like the one in (17) is not forced to raise for agreement requirements: since it is generated as the Specifier of one of the functional heads of the extended projection of NP, its agreement can be checked *in situ* under a Spec-Head configuration within FP.

It is now important to note that this analysis can derive the rigid order of adjectives in monadic DPs (cf. (3)). As is suggested by Cinque (1994), adjectives like the one in (17), which are merged as Specifiers, are rigidly ordered due to the fixed position of the corresponding functional heads. As for lexical adjectives (cf. (18)), I propose that every functional projection FP is dominated by an agreement phrase AgrP, and that a lexical adjective is attracted to the Specifier of the AgrP immediately dominating ConjP; as a consequence, the order of lexical adjectives is dependent on the order of AgrPs, as sketched below:

(19)



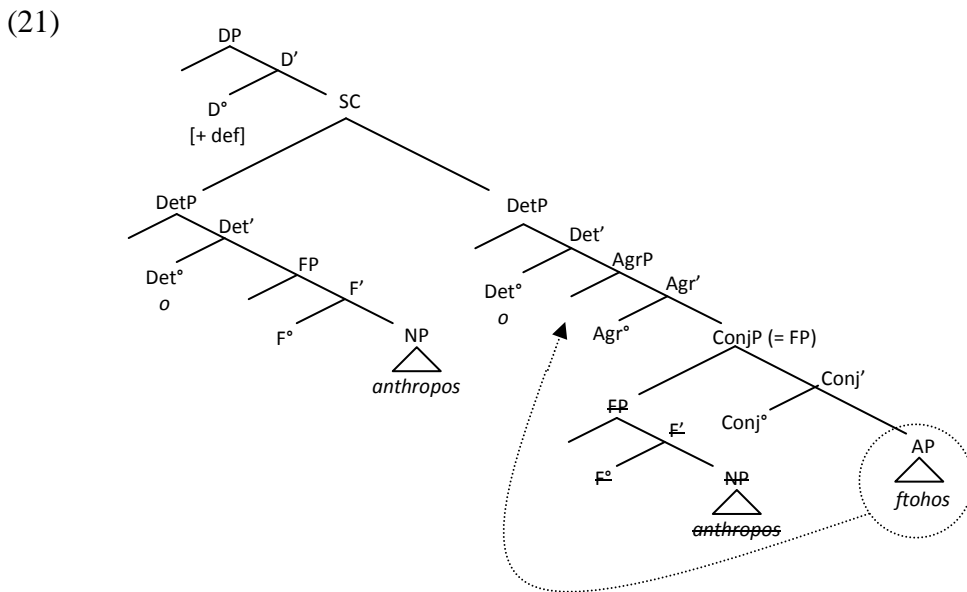
⁴ Many thanks to Roberto Zamparelli (pc), who pointed me out the inadequacy of a SC as the underlying predicative structure for lexical adjectives. Starting from Stowell's (1981) proposal, SCs are indeed considered to assume their properties from their predicate (namely from the AP in the constructions at issue), not from the subject, as it is proposed for the ConjP projection.

3. THE PROPOSAL: POLYDEFINITE CONSTRUCTIONS

3.1 Polydefiniteness and predicativity

In section 1 some data have been presented showing that polydefinites only allow lexical (i.e., predicative) adjectives (cf. (6-12)). This suggests that polydefinites involve a DP-internal predication. However, given the syntactic and semantic asymmetries between a polydefinite and a monadic construction containing a lexical adjective (cf. (18)), it is necessary to assume that these two predicative structures are different in some respects. In particular, I propose that they differ both in their underlying structure and in the size of the constituents representing the subject and the predicate. As for the former point, it will be assumed that polydefinites involve an underlying SC; the need for this assumption will be apparent in the course of the discussion below, where an analysis is presented to account for the marked interpretation of polydefinites. On the other hand, as far as the latter point is concerned, my proposal is that, since both the noun and the adjective are preceded by a definite determiner in polydefinites, the two constituents establishing a predicative relation are DetPs. This is illustrated in (21), which represents the merge structure of the polydefinite DPs in (20):

- (20) a. o ftohos o anthropos (= 12b)
 b. o anthropos o ftohos (= 12c)



As (21) clearly shows, differently from the monadic construction in (18), in this structure the adjectival predicate is not forced to raise to an agreement projection higher than the (phonologically realized) noun, its agreement being locally licensed in the AgrP internal to the predicative DetP. Moreover, the relevant diagram shows that the predicative DetP is an elliptical structure, in which the subject of the ConjP (i.e., FP) is deleted. In other words, under this analysis polydefinites involve nominal subdeletion (cf. Kester, 1996a,b, Sleeman, 1996, Giannakidou and Stavrou, 1999, Ntelitheos, 2003, 2004, Corver and van Koppen, 2006a,b).

Finally, the present proposal entails that, starting from the merge structure in (21), the different linear orders admitted in polydefinites (cf. (20)) are derived through the movement of the two DetPs to specific DP left-peripheral projections, depending on their discourse properties. Recall from section 1 that polydefinites are only appropriate when the noun is given or presupposed and the

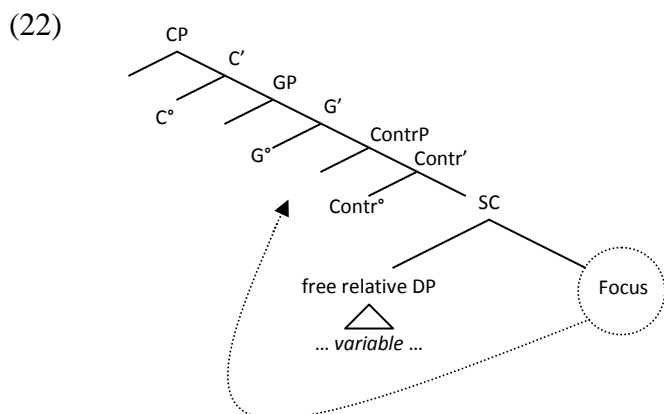
adjective is contrastively focused. These discourse properties will be argued to constitute the trigger for the relevant movements.

Before illustrating these movements, it is worth presenting some notions concerning information structure. In this work, it will be assumed that the DP structure parallels that of a CP (cf., a.m.o., Szabolcsi, 1989, 1994, Bernstein, 2001b). In particular, in line with what has been proposed for the left periphery of the sentence (cf. Rizzi, 1997 and subsequent works), I take the left periphery of the DP to be conceived as an array of functional projections encoding features related to discourse properties (cf., a.m.o., Giusti, 1996, 2006, Bernstein, 2001a, Aboh, 2004, Ramaglia, 2004).

Given this parallelism between DPs and CPs, marked structures within the DP will be claimed to have the same derivation as the corresponding marked structures at the sentential level. The analysis to be developed in this paper is based on a recent proposal regarding Focus constructions, put forth by Frascarelli (2005, 2007). The next section is dedicated to a brief outline of this proposal; then it will be shown how it can be extended to the DP-internal structure in order to account for polydefinites.

3.2 The syntax of Focus constructions: the framework

According to Frascarelli (2005, 2007), Narrow Focus constructions involve an underlying SC structure; the Focus constituent is merged as the predicate, while the non-focused part of the sentence is generated as a free relative DP, which is merged in subject position. This derivation is proposed both for Informational and Contrastive Foci; this work, however, only deals with the derivation of contrastive Focus constructions, which is partially illustrated in (22):



This structure shows the movement of the Focus constituent to a left-peripheral projection, ContrP (Contrast Phrase), where a contrastive feature is encoded. From this position, it assumes scope over the whole SC and can identify (i.e., provide a value to) the variable within the relative DP.

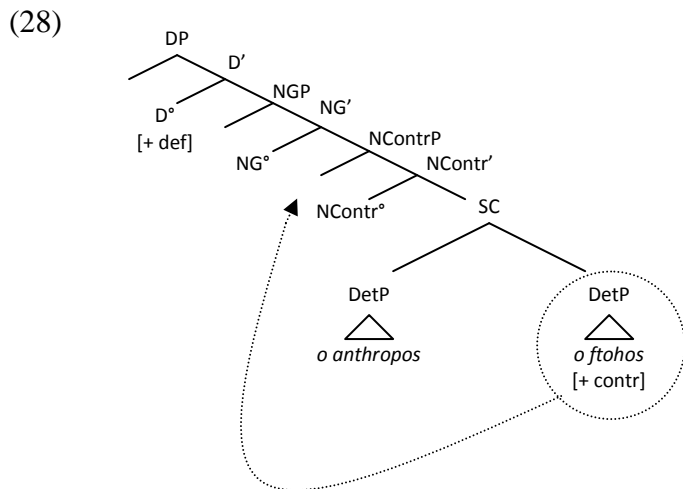
In other words, according to this analysis, a Narrow Focus construction like *I saw JOHN* is constituted by two parts: the former is the free relative DP, which presupposes the existence of “(some) person who I saw”; the latter is the identificational predicate (i.e., the Focus), which specifies a value for that *person*, asserting that it is the individual *John*.

In Italian a contrastive Focus can occur either in a fronted or in a postverbal position, as is illustrated in (23a-b):

- (23) a. MARIA ha incontrato (non Elena)
Maria s/he-has met not Elena
 b. Ha incontrato MARIA (non Elena)
s/he-has met Maria not Elena
 “S/he met MARIA (not Elena)”

- (27) a. o FTOHOS o anthropos (= 12b/20a)
 b. o anthropos o FTOHOS (= 12c/20b)

The diagram in (28) below represents the merge structure proposed in (21) for polydefinites:⁵



It is now important to observe that this diagram is identical to the one in (22), which corresponds to the structure that Frascarelli (2005, 2007) assumes for contrastive Foci at the sentential level. What I would like to suggest in this paper is that the whole derivation of a polydefinite DP is the same as that of a contrastive Focus. Indeed, I propose that the polydefinites in (27) are derived as in (29), which is parallel to the structures illustrated in (24) and (26):

- (29) a. [DP D° [NContrP [DetP o FTOHOS] [SC [DetP o anthropos] t_{DetP}]]] (= 27a)
 (Agree)
- b. [DP D° [NGP [DetP o anthropos] [NContrP [DetP o FTOHOS] [SC t_{DetP} t_{DetP}]]]] (= 27b)
 (Agree)
- c. [DP D° [NGP ~~o anthropos~~] [NContrP [DetP o FTOHOS] [SC t_{DetP} t_{DetP}]]] (elliptical DP; cf. 15B5)
 (Agree)

The step of the derivation illustrated in (29a), corresponding to the diagram in (28), shows the movement of the predicative DetP to Spec,NContrP, which is triggered by the contrastive feature encoded in NContr°. As is indicated, this is the derivation of the phrase in (27a). However, if the subject of the SC (i.e., the DetP *o anthropos* ‘the man’) is marked with a presupposition feature, it is attracted to Spec,NGP, as in (29b), thus deriving (27b).

Finally, in the structures in (24c) and (26c) we observed that presupposed material raised to Spec,GP can be deleted. The same operation is available within the DP, where the constituent raised to Spec,NGP can be elided as in (29c): this operation derives an elliptical DP corresponding to the one illustrated in (15B5) above. In the context in (15) it was shown that a question like ‘which pen did you buy, the golden or the silver one?’, which creates an opposition between the two adjectives, can be answered either by a polydefinite or by an elliptical DP lacking the head noun. As (29c)

⁵ Both (21) and (28) show the merge structure of the polydefinites in (27). However, the two diagrams differ because in (28) a more articulated left-periphery is shown whereas the internal structure of the two DetPs is not illustrated in detail here as it is in (21).

shows, this construction is derived in the same way as a polydefinite DP, with the additional deletion of the (presupposed) subject DetP.

It should be observed that in the three structures in (29) an Agree relation is indicated between D° and the leftmost determiner. As already mentioned (cf. fn. 3), the definite determiner is merged in a position lower than D° , namely in the Det° head. However, the syntactic *locus* where the definiteness feature is encoded is D° ; as a consequence, when the D° head is merged in the structure, it probes its c-commanding domain searching for a goal to check this feature. This goal corresponds to the predicate [*o FTOHOS*] in (29a) and to the subject [*o anthropos*] in (29b-c) because, after their movements, they are the most local constituents with respect to the D° head. In this way, it is possible to account for the fact that the definiteness feature is checked just once in the DP, even if the definite article is realized more than once.

4. A NOTE ON INDEFINITE DPS

In the previous sections only definite DPs have been discussed. It is now worth noting that the derivation proposed for polydefinites can also account for some properties of indefinite DPs in Greek.

First of all, consider the ordering possibilities allowed in indefinites. As the phrases in (30) show, they are slightly different from what we observed for definite DPs (at least for monadics); indeed, adjectives can occur either in prenominal or in postnominal position in indefinites, and the order between two different adjectives is free:

- (30) Ordering possibilities:
- a. ena megalo kokkino vivlio
 one big red book
 ‘A big red book’
 - b. ena megalo vivlio kokkino
 - c. ena kokkino vivlio megalo
 - d. ena vivlio kokkino megalo
 - e. ena vivlio megalo kokkino
 - f. (*) ena kokkino megalo vivlio (cf. fn. 1)

In comparing these examples with the definite DPs in (3) and (4) above, it is possible to see that the pattern in (30) is more similar to polydefinites than to monadics. However, (31) shows that indefinite DPs are not grammatical if more than one determiner is realized:

- (31) a. * ena vivlio ena/to kalo
 one book one/the good
 b. * ena kalo ena/to vivlio
 one good one/the book

Given the possibility for an adjective to occur either prenominally or postnominally in indefinite DPs, it is important to investigate if there are any interpretive differences in the two cases. According to Stavrou (1996), postnominal adjectives in indefinite DPs receive a ‘predicative’ (i.e., lexical) interpretation. Note that this observation is supported by examples like (32), which show that a functional (or non-predicative) adjective like *ipotithemeni* ‘alleged’ cannot appear postnominally in an indefinite DP:

- (32) a. [ipotithemeni tromokrates] silamvanonte kathe toso
alleged terrorists are arrested every so
 “Alleged terrorists are arrested every once in a while”
 b. * [tromokrates ipotithemeni] silamvanonte kathe toso
terrorists alleged are arrested every so

This predicative reading, together with the ordering possibilities illustrated in (30), suggests that indefinite DPs with postnominal adjectives are actually poly-indefinite constructions. This is also confirmed by the discourse properties of such postnominal adjectives: as observed in Stavrou (1996), they are interpreted as contrastive, in the same way as we saw above for polydefinite adjectives.

The question is now, why the indefinite article (*ena* in the examples above) cannot appear more than once in a single DP, given that a definite article can. It is simply the case that *ena* is not an indefinite article; rather, it is the realization of the numeral ‘one’, which can also appear in definite constructions, as in (33):

- (33) to ena to kokkino to vivlio
the one the red the book
 “The one red book”

On the other hand, the indefinite determiner is null in Greek; this can be confirmed by the optionality of *ena* in examples like (34), which is interpreted as an indefinite DP even if *ena* is not spelt out:

- (34) (ena) vivlio kokkino
one book red
 “A red book”

As a consequence, it is possible to analyze the phrases in (30) as instances of poly-indefinite constructions. Only (30a) is ambiguous and can also be interpreted as a monadic structure, because the adjectives are both prenominal and occur in the order requested by this kind of construction (cf. the hierarchy in (5)). On the other hand, (30b-f) are unambiguously poly-indefinite structures, with null indefinite articles.

5. CONCLUSIONS

In this paper it has been observed that two types of adjectival modification are available within the DP: one of them corresponds to functional (i.e., non-predicative) adjectives, which are merged in the Specifiers of dedicated functional heads within the extended projection of NP (cf. (17)); the other type concerns lexical (i.e., predicative) adjectives, which are merged as predicates of ConjP structures internal to the DP (cf. (18)).

As far as Greek is concerned, we saw that there are two patterns of adjectival modification, namely the monadic and the polydefinite constructions. In the former, both functional and lexical adjectives are realized prenominally; in this respect, it has been argued that lexical adjectives, which are merged postnominally, have to raise to a prenominal position in order for their agreement with the head noun to be licensed.

Polydefinites, on the other hand, always involve a predicative relation between two DetPs, each containing its own determiner; these two constituents subsequently raise to specific left-peripheral projections, depending on their discourse properties. This analysis can account both for the predicative reading of polydefinite adjectives and for their contrastive interpretation.

Finally, it is interesting to observe that the present analysis of these marked nominal constructions shows a similarity with what has been proposed for contrastive Foci at the sentential level (cf. Frascarelli, 2005, 2007), and this can constitute further evidence for the parallelism between CPs and DPs.

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Subject Islands: Cyclicity of derivation and “weak” phases

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Abstract

*This paper presents the outline of a novel account of subject islands that is able to account for the variability in the opacity of subjects both across languages and across constructions, including Chomsky’s (to appear) recent observation of the extractability of wh-PPs from internal argument subjects as well as from raised subjects. The restrictive model presented here adopts a strict No Tampering Condition (unlike Chomsky, *ibid.*), and is based on the view that intermediate movements to phase edges are non-feature-checking driven last resort operations. It is argued that Transfer takes place after each application of Merge, provided that the label of the syntactic object SO to which Transfer applies has no uninterpretable feature (the Interpretability Condition on Transfer). The account correctly predicts that subjects that have undergone movement do not necessarily display a Freezing Effect: their displacement does not render them opaque to subextraction before all their uninterpretable features have been checked.*

1. INTRODUCTION

The study of conditions on movement transformations has been a core area of research in transformational grammar, and in no small measure it was the results of this inquiry that led to its principle based paradigm, of which the recent Minimalist Program (MP) is part. In the two decades or so preceding the emergence of the MP, two notions have been central to locality conditions restricting movement dependencies: minimality/closeness and local domains (see, for instance, Chomsky’s (1973, 1977) Strict Cycle condition and Subjacency condition, Rizzi’s (1978) parametrization of Subjacency, Cinque’s (1978) Cyclic Domains, Huang’s (1982) Condition on Extraction Domains, Chomsky’s (1986) Barriers, and Rizzi’s (1990) Relativized Minimality). Both notions of locality have found their way into the current mainstream minimalist approach, which bases its explanation of the locality properties of movement on the presumed ‘economy’ of syntactic derivations in natural language, specifically, the property of seeking to keep computational complexity at a minimum. In Chomsky’s (2000, 2001, et seq.) model, the operation Agree (a suboperation of Move), triggered by a Probe category, involves a search for the *closest* matching Goal, and the

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operations of syntactic derivation are confined to bounded syntactic domains, viz. *phases*, which become opaque once completed, getting transferred to the interpretive interface systems of sound and meaning in a cyclic fashion (by a Transfer operation). Both the “closest” property of Agree and the cyclic Transfer of phases restrict computational complexity in syntax.¹ Neither of these two economy properties of syntactic computation, nor their interaction, can in itself account for the opacity of subjects, however. Subjects have been long known to be syntactic domains disallowing subextraction from them (see Ross, 1967), and their opacity was captured in mainstream Government and Binding work in terms of a lack of proper government, a precondition on subextraction (see Huang, 1982). With government out of the analytical toolbox in the MP, the non-transparency of subjects and other strong islands remained to be accounted for.

Many recent minimalist analyses of strong islands, including Takahashi (1994), Toyoshima (1997), Uriagereka (1999), Nunes and Uriagereka (2000), Johnson (2002), Sabel (2002), Stepanov (2000, 2001), and others, share the essential insight that extraction is licensed from a position that lies on the main recursive branch of the tree (on the complement branch), whereas illegitimate gaps lie on “secondary” branches (specifier, adjunct). This insight is summed up by Truswell (2006) in the following descriptive generalization:

- (1) A strong island is the non-projecting phrasal sister of a phrasal constituent.

The general idea behind (1) is along the lines of (2):

- (2) If two phrase markers are built independently of each other (in parallel), they are opaque domains with respect to extraction from one into another.

Ideally (and this is the line taken by most of the authors cited above), (2) is achieved not by imposing filters to that effect on the output of syntactic derivations, instead, (2) should be deducible from the way the syntactic computational system constructing representations is defined (the “constructivist” approach of minimalism, cf. Epstein and Seely, 2006). Although the actual implementation of (2) is more intricate than it would initially seem, it should definitely subsume the islandhood of canonical subjects. The islandhood of adjuncts has also been claimed to follow from parallel-plane or late-insertion (see, e.g., Stepanov, 2001; Boeckx, 2003; and Chomsky, 2004). However, as Stepanov (2001) has shown, subject islands and adjunct islands are crucially different. While adjuncts are opaque across languages and constructions,² subjects show a degree of variation both across languages and across constructions within one language: Japanese, Korean, Turkish, German, Hindi, Russian, Palauan, Hungarian, Basque and other languages allow for subextraction from subjects (at least in some syntactic contexts; see Stepanov, *ibid.*). It should follow, then, that the account of subject islands and adjunct islands must be different. In other words, (2) is inadequate as it stands.

One relevant difference between subjects and adjuncts is that in numerous languages subjects need to undergo movement to some *vP*-external canonical subject position.

¹ These two aspects of the model go back to Chomsky’s (1986) notions of minimality (revised and developed by Rizzi, 1990) and bounding node/barrier, respectively, and even further.

² With a few exceptions, though; see, e.g., (i). Borgonovo and Neeleman (2000: 200) demonstrate that, if certain conditions on the matrix and adjoined predicates are satisfied, extraction of an accusative-marked complement from within a depictive secondary predicate is possible, see (ii). A possible account of these examples would be to base-generate the relevant phrasal modifiers in some syntactic *complement* position.

(i) What time did John go to work [at t]?

(ii) a. What did John arrive [whistling t]? (Borgonovo and Neeleman 2000: 200)

b. What did John come back [addicted to t]?

Furthermore, languages with ν P-internal (in-situ) external arguments apparently lack a subject island effect: their in-situ subjects admit subextraction (e.g., Lasnik and Saito, 1992; Stepanov, *ibid.*, and references therein). A potential approach then is to account for the subject/adjunct asymmetry at issue in terms of the generalization expressed by the Freezing Principle in (3). On such an analysis, the ex-situ subject in (4b) permits no subextraction because it has undergone movement in the same way as the *wh*-phrase in (4a). An in-situ subject would be unaffected by the Freezing Principle, and would therefore be predicted to be transparent to subextraction.

- (3) *Freezing Principle* (based on Ross, 1967; Wexler and Culicover, 1980)
 Movement cannot take place from a moved XP.
- (4) a. *Which politician₁ don't you know [_{CP} [_{DP} which picture of t₁]₂ t₂ caused a scandal]?
 b. *[Which film₁ do you think [_{CP} t₁ [_{TP} [_{DP} viewers of t₁]₂ will [t₂ quit smoking]]]]?]

Some recent accounts express an analogous restriction on derived positions. One instance of this is the Chain Uniformity Condition (CUC), as conceptualized by Takahashi (1994) and developed by Stepanov (2001), which (roughly) prohibits chains with non-identical links (for Stepanov, 2001, the condition operates at PF); compare Chomsky and Lasnik (1993), to whom the CUC is due (Chomsky (1995: 253) makes use of a Chain Uniformity condition to enforce non-distinctness of the “projection level” status of links in a movement chain). On this particular approach, ν P-external subjects become opaque because any subextraction from them following their movement to their ν P-external A-position would alter only the ν P-external copy of the subject chain, thereby giving rise to non-identical chain links.

Effective as it may seem, the CUC raises conceptual difficulties of its own in a restrictive minimalist framework. An immediate problem is posed by the fact that the CUC is a representational output filter, making reference to the notion of chain, a representational construct. Representational constraints are not available to current restrictive derivational approaches. More generally, output filters are undesirable in a minimalist setting (cf. the ‘constructivist’ approach of minimalism, see Frampton and Guttman, 1999; Epstein and Seely, 2006). Chains should be epiphenomenal, with no output condition referring to them (otherwise they would be duplicating movement operations; see Brody, 1995, 2002).³ If movement is Internal Merge, as proposed by Chomsky (2004, 2005), then this poses a further difficulty for a condition like the CUC: movement creates multiple occurrences of a single syntactic object, instead of distinct ‘copies’ that could be affected separately by subextraction.

The conception of freezing has been implemented more recently in Chomsky's (2000, 2001) derivational approach in terms of an Activity Condition (Boeckx, 2003). According to Boeckx's Activity Condition, an element that has undergone A-movement, getting its Case feature valued, is rendered inactive in its derived position, and hence cannot participate in any further Agree (and Move).⁴ In much the same vein, Rizzi (2004) proposes a principle of Criterial Freezing, which holds that elements satisfying some Criterion (e.g., the Wh-

³ Carnie (1995) and Toyoshima (2000, 2001) also argue against a principle like the Uniformity Condition on theoretical grounds (see also Gärtner (2002, 88–90) for a discussion of how Chomsky's Uniformity Condition is both too strong and too weak).

⁴ Chomsky's (2000, 2001) Activation Condition on Agree/Move holds that only such elements are possible Goals (and can therefore undergo movement) that bear a yet unvalued (i.e., unchecked) uninterpretable feature (corresponding to the notion ‘active’).

Criterion) are frozen; subjects are assumed to satisfy a Criterion (call it Subject Criterion) in their canonical subject position.

The Activity Condition and Criterial Freezing accounts cannot hold in their most general form, since they would predict that A-movement cannot feed A-bar movement (because the DP turns inactive/frozen after A-movement has applied). That consequence is apparently false: for instance, raising and A-scrambling are known to obviate Weak Crossover and Superiority effects, and feed parasitic gap licensing in A-bar dependencies, etc. Therefore, these accounts must be augmented by further assumptions about syntactic computations to allow A-movement to feed A-bar movement.⁵ In addition, an account of how the Activity Condition and the Criterial Freezing principle, respectively, can be derived from deeper principles is called for. It also needs to be ensured that covert A-movement (pure Agree) should not be sufficient to trigger freezing: if covert A-movement satisfied the Subject Criterion / valued the Case of the subject similarly to overt A-movement, then that would wrongly predict that in-situ subjects are just as opaque to subextraction as subjects raised to a ν P-external position.⁶ Finally, the accounts at issue seem to undergenerate in view of facts discussed recently by Chomsky (to appear). Recall that they are devised to make the prediction that DPs that are moved to the canonical subject position of the (finite) clause are opaque.⁷ This prediction, however, is apparently too strong: Chomsky (ibid.) shows that internal argument surface subjects, as well as raised subjects (somewhat marginally) allow for subextraction in English (see section 2 below).

Chomsky (ibid.) explains these observations in terms of a revision of his phase-based model according to which the strict cyclicity of syntactic derivation is to be weakened: it is stipulated that all movement operations within a phase take place at the phase level (i.e., when the phase head has been Merged in). This latter proposal is crucially supported by Chomsky's analysis of the observations he makes with regard to variation in the availability of subextraction from surface subjects. There are considerations, however, that cast doubt on that analysis as well as the proposed revision. This will be discussed in the next section.

Subject islands apparently remain a challenge for the accounts reviewed above. In the remainder of this paper, I lay out an analysis that accounts for the general islandhood of subjects in the ν P-external canonical subject position, the two types of exceptions observed by Chomsky (ibid.), as well as the transparency of in-situ subjects without running into the complications noted above. The proposal takes care of Chomsky's (ibid.) data without stipulating that movement operations are confined to the phase level, and continues to uphold the restrictive view that syntactic derivations are strictly cyclic. On the present proposal, it is precisely the strict cyclicity of derivations, in tandem with cyclic Transfer of phases, that plays a key role in the explanation of the islandhood of subjects as well as the variability thereof. Section 2 reviews Chomsky's (ibid.) observations and argues against the account he puts forward. Section 3 introduces the central assumptions the present proposal draws on, and provides an alternative analysis of the (non)opacity of ex-situ subjects, including Chomsky's data, as well as the transparency of in-situ subjects. Section 4 concludes.

⁵ Boeckx (2003: 13) proposes a Principle of Unambiguous Chains, according to which a chain may contain no more than one "strong" occurrence. Chains with two "strong" occurrences (such as the ones created by A-movement feeding A-bar movement) need to be disambiguated, the relevant instantiation of which involves relating the "strong" occurrences by Agree.

⁶ Boeckx (2003) assumes that [person] is checked only in SpecTP (and can be checked by the expletive *there* as well). It is doubtful whether this stipulation can be extended to subject-in-situ languages.

⁷ Chain Uniformity accounts make the same prediction: extracting part of the DP that has been moved to the canonical subject position would invariably give rise to a non-uniform chain.

2. SUBEXTRACTION FROM SUBJECTS AND COMPLEX PHASES

2.1 Subextraction from subjects and movements at the phase level

Chomsky (to appear) observes that there is a perceived contrast between examples like (5a) and (5b), and classifies (5a) as ungrammatical and (5b) grammatical. To the extent subextraction from the subject in (5b) is acceptable, it sides with subextraction from objects, see (5c). The same pattern emerges in (6a–c).

- (5) a. *Of which car did the driver cause a scandal?
 b. Of which car was the driver awarded a prize?
 c. Of which car did they find the driver?
- (6) a. *It was the CAR (not the TRUCK) of which the driver caused a scandal.
 b. It was the CAR (not the TRUCK) of which the driver was found.
 c. It was the CAR (not the TRUCK) of which they found the driver.

Chomsky's analysis of the pattern in (5/6) is based on the following key assumptions.

- (7) Uninterpretable features ([uF]s) can only be a property of phase heads (i.e., C and v^* in the clausal hierarchy).
 (8) Non-phase heads receive [uF]s through feature inheritance from the next higher phase head.
 (9) An A-chain becomes invisible to further computation when its uninterpretable features are valued.

As a consequence of (7) and (8), the syntactic derivation yields what we may call “complex” phases: the C-T phase and the v^* -V phase (in the clausal domain). Movements to non-phase heads are delayed until the next higher phase head is Merged in. For instance, the subject is not raised to SpecTP before (nor does it enter Agree with T) before the C head is projected, and T inherits the phi-features generated on C. Chomsky assumes that movement operations triggered by [uF]s of a phase head must be simultaneous or freely ordered.⁸

This means that when C is Merged to TP in the derivation of (6b)/(7b), the movements of the *wh*-phrase to TP and to CP will take place “in parallel.” That, in turn, entails that *wh*-subextraction to CP can proceed from the v P-internal occurrence of the surface subject in the (indirect) object position. It is predicted now that subextraction from surface subjects that are underlying objects should side with subextraction from ordinary objects, i.e., the opacity of subjects is determined in their underlying position. Apparently, a subject DP born in Spec v^* P is opaque to subextraction to CP, while one that is generated inside VP is not. As for the former generalization, Chomsky speculates that it could reduce to the fact that there the *wh*-expression is embedded in the lower phase, which has already been passed in the derivation.⁹ Whereas the external argument itself can be accessed in the next higher phase as a category that is in a phase edge position (cf. subject *wh*-questions), “there is a cost to extracting something embedded in it” (Chomsky, *ibid.*). Granting that, there is still a derivation for (5a)/(6a) that needs to be excluded. In one possible order of operations, the movement of the

⁸ “[A]ll options are open: the edge- and Agree-features of the probe [[wh] and [phi] in the case of finite C, BS] can apply in either order, or simultaneously, with only certain choices converging” (*ibid.*).

⁹ In the second case, by contrast, the *wh*-PP is not embedded in a lower phase, given that non-accusative (unaccusative and passive) verbs are dominated by a non-accusative v P, a non-phasal category on Chomsky's (2000, 2001 et seq.) assumptions.

external argument DP to SpecTP precedes the application of the *wh*-movement to CP. This would permit the *wh*-PP to subextract from the SpecTP position of DP, as the latter is not part of a lower phase (unlike Spec v^* P). This derivation is ruled out by (9), which incorporates the effects of Chomsky's earlier (in)activity condition on Agree/movement. Chomsky reasons that since the uninterpretable (Case) features of the external argument DP are valued in its (finite) SpecTP position, this DP becomes frozen once it has been moved to (finite) SpecTP. This latter issue does not arise in a derivation where movements to TP and to CP are simultaneous: in such a derivation there is no movement dependency between SpecCP and (any element within) SpecTP.

Chomsky makes the further observation that raised subjects also permit subextraction, even when they are generated in Spec v^* P (see (10)), and writes that “one permitted order of operations is this: the Agree-feature of C-T raises [the external argument] step-by-step to its final position, and along the way, the Edge-feature of C extracts the PP [*wh*-]complement and raises it to SPEC-C, with no deep search required because no phase boundaries are crossed” (ibid.)¹⁰

- (10) a. Of which car is the driver likely to cause a scandal?
 b. It is the CAR (not the TRUCK) of which the driver is likely to cause a scandal.

2.2 A critique of Chomsky's account

Chomsky's observations are intriguing, and they serve as the central empirical argument supporting the crucial proposals in (7–9). It is not so clear, however, that the revisions of the phase-based model in (7–9) are conceptually desirable (although Chomsky points to some potential conceptual advantages¹¹).

First, the status of (9) is dubious. The particular property of the computational system that elements whose uninterpretable features have all been checked become opaque to further syntactic computation can be turned into a theorem once it is assumed that such elements undergo Transfer to the interface systems as soon as they become fully interpretable (cf. e.g., Kitahara 1997, Svenonius 2004).¹² (9), however, limits this property to A-chains, a restriction that remains unexplained. The notion of “A-chain” itself is questionable (see Note 11). As an alternative, (9) could be formulated in terms of features instead of A-chains: (9') an element becomes inaccessible once its uninterpretable Case features have been valued (a constraint

¹⁰ It is not spelled out how the phi-features of C-T can cause the DP to move “step-by-step” to matrix SpecTP. It appears as though all Ts below C inherit the relevant [uF] from C. What is sufficiently clear, nevertheless, is that the assumption of successive cyclic A-movement through (nonfinite) SpecTP positions is necessary in order to account for (10): otherwise the PP could not subextract from the DP “along the way,” i.e., in an intermediate SpecTP position.

¹¹ For instance, one consequence of (7–9) is that there never obtains a movement relation between a derived A-position (such as SpecTP) and an A-bar position (such as SpecCP) ((9) precludes moving the specifier of TP any further). According to Chomsky (ibid.), this is to be seen as a welcome result, as this precludes “non-uniform” chains involving derived A-positions as well as A-bar positions. As the A-/A-bar distinction is not exploited as a theoretical primitive in the current model (though the notion of A-type positions can be added on: Chomsky (ibid.) defines them negatively as non-A-bar positions, where A-bar positions are those that are occupied by elements attracted by an edge-feature on a phase head), and chains should be epiphenomenal in a derivational theory (e.g., Epstein and Seely, 2006), with no restrictions (e.g., of uniformity, accessibility) referring to them, it remains unclear if this result should have any real significance.

¹² Such a deduction from the timing of Transfer is unavailable if feature valuation takes place at the phase level, as part of Transfer itself (Chomsky 2004). If that is the timing of valuation, then the Case feature of even an external argument DP in SpecTP will not be valued prior to Transfer of the whole CP phase, which takes place only *after* all movements in the CP phase have taken place. That crucially includes the *wh*-subextraction to CP, which can therefore proceed from the occurrence in SpecTP.

analogous to Boeckx’s Activity Condition). Once again, it remains a stipulation that (9’) is limited to (structural) Case features. If it were not thus restricted, then it would be wrongly predicted that subjects in SpecTP remain transparent to subextraction if they bear some uninterpretable operator feature (e.g., in the case of *wh*-subjects). On the other hand, if uninterpretable operator features do not exist, the position of Chomsky (ibid.), then we can eliminate the restriction to Case features from (9’). However, in this case we lose any hope of deducing (9’) from the way syntactic computational system connects (via Transfer) with the interface systems, viz. in terms of the assumption that elements get Transferred as soon as they are relieved of all their uninterpretable features. This is because if a (non-argument) phrase is to undergo A-bar movement, then it must not be Transferred (as that would bleed its A-bar movement) even though it has no uninterpretable features. If Transfer has to wait until A-bar movements have applied and the phase is completed, then this predicts, contrary to intention, that DPs in SpecTP remain transparent to A-bar-subextraction to CP. The stipulation of (9’) would be gratuitous for the purposes of deriving the facts in (5–6) if movements proceeding “in parallel” to TP and to CP cannot be freely ordered, but *must* be derivationally simultaneous, in which case no movement can ever proceed from SpecTP to SpecCP. It is far from clear, however, how the option of free order of operations could be barred on principled grounds.

Derivational simultaneity of Agree/Move operations involving T and C is a cause for concern in itself.¹³ It brings phase-based theory one (big) step closer to becoming a mixed representational–derivational approach (cf. Brody, 2002): representational at the phase level, while proceeding derivationally from one phase to the next (see also Epstein and Seely, 2002). >From another angle, derivational simultaneity of all movements within a phase leads to a radically increased local operational complexity at the stage of the phase. This goes flatly against the substantive minimalist thesis that syntactic computation locally requires extremely limited computational resources (Chomsky, 2000, 2001).¹⁴

Even if we put these conceptual concerns aside, it must be noted that plain simultaneity of the two movements (to SpecTP and to SpecCP) does not suffice: this does not in itself take care of the valuation of the uninterpretable Case feature on the occurrence of a *wh*-subject in SpecCP. This is precisely because the very same (base) occurrence of the *wh*-DP serves as an input to both the A-movement and the A-bar movement operations. Given that this input DP bears uninterpretable Case, the new occurrence in SpecCP created by the A-bar movement will also bear that feature (while the base occurrence will have that feature valued/eliminated as part of Agree with T). Therefore, what is required instead of simple simultaneity is that movements to TP and to CP should form a single complex operation triggered by featurally distinct multiple probes (here: C and T, where only the latter bears phi-features), whose input is a DP bearing uninterpretable Case, and whose output will be two new occurrences, both with valued Case. Such a complex double-movement operation seems highly non-natural in

¹³ For Chomsky, it is not enough to limit derivational simultaneity to Move (internal Merge) operations, allowing Agree to apply before Move to TP and to CP. This is because after Agree(T,DP) DP becomes inaccessible, see (9).

¹⁴ These conceptual shortcomings are shared by Hiraiwa’s (2005) theory of multiple Agree, taken over by Chomsky (to appear). Hiraiwa argues that simultaneity in multiple Agree is the result of (an incarnation of) Earliness: offending uninterpretable features must be checked as soon as possible (Chomsky 1995). In particular, assuming this notion of Earliness, if at a given stage (phase) of the derivation two Agree operations can be established, then the only way for both of them to respect Earliness is if they take place simultaneously. Simultaneity, in turn, is taken to avoid the Closeness violation that should disrupt any Agree between Probe and non-closest Goals. Significantly, multiple Agree is *not* merely simultaneous multiple applications of Agree, but a single complex operation; otherwise a closer active Goal would still count as an intervener for a more distant Goal, rendering Agree with the latter impossible. See Frampton and Gutmann’s (2000) feature sharing approach of “feature checking” for an alternative account of many-to-one/one-to-many “feature checking” configurations.

the given theoretical setting, too high a price to pay for simultaneity of probing by C and by T at the phase level.¹⁵

There is also a price to pay if appropriate silencing of occurrences is to be guaranteed. Chomsky remains inexplicit regarding the spell out of occurrences (he only states that “By the usual demand of minimal computation, the A-chains contain no pronounced copy.”) If movements to TP and to CP are simultaneous, silencing (the subextracted part of) the SpecTP occurrence requires a more powerful grammar than otherwise seems necessary. Either we incorporate the appropriate silencing rule into a complex double-movement operation of the sort just discussed, complicating it further (silencing exactly that part of the new A-bar occurrence that is being targeted by the A-movement), or else we need to fall back on a PF algorithm, necessarily global in nature, having access to all occurrences at the same time, as well as their c-command relations. This means that non-pronunciation of some element cannot result from the movement operation itself, without reference to such global/representational information (cf. Nunes, 2004).¹⁶

Yet another consideration suggesting that movement to TP and to CP cannot be simultaneous stems from the account of the overt/covert phrasal movement distinction sketched in Chomsky (2004, 2005), following Nissenbaum (2000): covert movement is identical to overt movement, except that the former occurs after Transfer to the sound interface, while the latter takes place before it. On that account, a contradiction arises if the same element is raised to TP and to CP, but only one of the two probe heads bears an edge-feature in the language (say, C). In that scenario, movement to C must take place before Transfer, whereas movement to T must take place after Transfer. But such an arrangement is impossible if the two movement operations are simultaneous.

I conclude that, on closer inspection, phase-level simultaneity of movement operations involving T and C (and V and *v*) leads to a number of complications within a derivational setting. Unfortunately, the problems for Chomsky’s (to appear) account do not end here.

One striking aspect of Chomsky’s proposal is that movement to T is countercyclic.¹⁷ Assume for the sake of the argument that simultaneity of movements to TP and to CP is not available in a derivational model, as argued immediately above. Then in order to capture the observations in (5–6), movement to SpecCP must *precede* movement to SpecTP. If it followed raising to SpecTP, the required distinction in terms of *v*P-internal position between external and internal arguments would be lost. That only the countercyclic order can apply is ensured by (9): as already noted, if raising to TP takes place first, then the DP argument becomes inactive/invisible by the time A-bar movement would apply.¹⁸ But let us grant the

¹⁵ Hiraiwa (2005) describes multiple probes/single goal constructions in terms of simultaneous Agree, but in the constructions he discusses the goal only moves once, as the probes are not featurally distinct. Hiraiwa admits simultaneous multiple internal Merge into multiple specifiers of the same functional head, a single complex operation termed Multiple Move. Note that this complex operation targets and extends the root node. By contrast, in the derivation envisaged by Chomsky, multiple internal Merge operations target distinct nodes, TP and CP, where the former is contained in the latter. Hiraiwa (*ibid.*) notes that in contrast to simultaneous multiple Move, simultaneous multiple external Merge is unavailable (casting some doubt on the availability of the former, if Move is also simply Merge), as it leads to crashing (nonlinearizable) derivations (reliance on crash, however, is undesirable to rule out otherwise possible derivations, see Frampton and Gutmann, 1999).

¹⁶ Limiting PF interpretation to the occurrence Merged last in the derivation seems to deliver the desired result. However, such a constraint would beg the question why it has to be the last-Merged occurrence and not the first-Merged one that spells out etc.; more importantly, it would require some additional device to mark last-Merged occurrences as such: in the current model occurrences are not so distinguished.

¹⁷ For recent overviews of various different notions of cyclicity, see Freidin (1999) and Lasnik (2006).

¹⁸ Inactivation applies to all occurrences in an A-chain (see (9)); “trace” occurrences are also invisible, cf. Chomsky (*ibid.*), Chomsky (2000: 131, 2001: 24), since feature checking affects all occurrences. One may speculate that in order to capture (5–6) in a strongly cyclic model that allows movement to TP only to precede movement to CP, inactivation should be stipulated to apply only to the head of the A-chain in SpecTP, but not

option of the simultaneity of movements (in terms of a single complex operation, see above). To be sure, whether subsequent to or simultaneous with fronting to CP, the operation of movement to TP does not violate a restriction assumed by Chomsky (1995: 234; 2001) dubbed *featural cyclicity* by Richards (1999), viz. uninterpretable features must be checked as soon as possible after being introduced in the derivation.¹⁹ The “featural cyclicity” restriction is made redundant in Chomsky’s (to appear) proposed system, as uninterpretable features are introduced at the phase level only, hence delaying their valuation/checking until after a new probe is Merged is not an available option. In fact, Chomsky (2005, to appear) embraces an altogether different source of cyclicity (akin to that in Watanabe, 1995 and in Frank and Vijay-Shanker, 2001; cf. also Chomsky’s (2000) least tampering principle), which he calls the No Tampering Condition (NTC): “operations forming complex expressions should consist of no more than a rearrangement of the objects to which they apply, not modifying them internally by deletion or insertion of new elements” (Chomsky, 2005: 11). The NTC is a “third factor” “natural property of efficient computation, with a claim to extralinguistic generality” (op. cit.), offering a principled explanation of cyclicity of narrow syntax.²⁰ Movement to a non-phase head violates this general NTC, even in a derivation where it is simultaneous with movement to the dominating phase head.²¹

the tail occurrence inside ν P. In this case the occurrence inside ν P would be the closest active occurrence for the C probe, allowing for A-bar movement to target the base occurrence. However, such a notion of inactivation would remain entirely stipulative, as it would divorce (the checking of) uninterpretable (Case) features (which are eliminated on the base occurrence too in A-movement) from the concept of (in)activation. It would also remain unclear why the occurrence of DP in SpecTP would not act as a defective (matching but inactive) intervener for attraction by C.

¹⁹ Only simultaneous movements to TP and CP avoid violating the related stricter restriction of the Extension Condition (Chomsky, 1995): they do extend the root provided that they are construed as one complex operation.

²⁰ This general NTC is taken to also derive the copy theory of movement, and various other properties of narrow syntax (see Chomsky, 2005). Feature inheritance (FI), viz. the process through which a non-phase head (H^0) inherits its uninterpretable features (both Agree-features and edge-features) from the immediately higher phase head (pH^0) (T from C, V from ν), also appears to be countercyclic in the sense of a general NTC, given that FI involves the introduction of a feature of the label of the current root category (pH^0) on a lower head (H^0) inside the current root. Unfortunately, Chomsky does not provide the details of the syntactic mechanism at work, so FI is difficult to evaluate. Nonetheless, it should be noted that the countercyclicity of FI is in fact analogous to that of Agree, which also involves modification of the feature composition of (goal) heads that are well inside the root phrase marker. Moreover, FI, similarly to Agree (cf. multiple Agree scenarios described by Hiraiwa, 2005), can involve a one-to-many relation, similarly to FI in raising constructions of the form [C [T ... [T ... [T ... DP]]]] (cf. (10)). However, implementing FI in terms of Agree (between pH^0 and H^0) may turn out to be less straightforward than it would initially seem.

First, multiple overt movements of (embedded) nonfinite TPs to C are never attested, even though multiple Agree is parametrically associated with multiple fronting (multiple nominatives, multiple *wh*-fronting, etc). Further, it is hard to see how the original uninterpretable feature of pH^0 gets eliminated on pH^0 itself, and how Agree of pH^0 and H^0 can give rise to an uninterpretable/unvalued feature (be it a phi- or an edge-feature) on H^0 that is not there before Agree between pH^0 and H^0 takes place. Even granting that such features on H^0 can be created by pH^0 , it is not clear why FI should be selective for category: in raising constructions, C transfers the relevant features only to T heads, but not to ν or to V. (Interestingly, if FI were not selective in this way, that could lead to an account of “long” movements wherein A-moved elements touch down successive cyclically at the edge of each phrase, as in Takahashi, 1994; Bošković, 2002; Boeckx, 2003; etc. Assuming no operator features or the like, A-bar movement would proceed through the edges of phases only.)

²¹ This is so if simultaneous movements within a phase are taken to affect the phase itself, i.e., the root at the current stage of the derivation. If movement to TP (re-merging it with a DP that it contains) were taken to “affect” only TP, the NTC would become effectively vacuous, not barring any acyclic Merge operation.

One could make the case that acyclic Merge of DP to TP affects only TP because it only adds {DP, TP}, without turning this new occurrence of DP into an element dominated/c-commanded by syntactic object higher up, i.e., without “affecting” C or any higher elements. In other words, DP can be acyclically Merged to TP by creating a separate root node dominating the two. Such a multi-root structure may pose problems for linearization and/or for semantic interpretation. Interestingly, however, it could be used to derive (without recourse to (9)) Chomsky’s assumption that no movement can proceed from SpecTP, even in a model where

An essential ingredient of Chomsky's account is his assumption that subextraction from a DP residing in Spec ν *P (or in SpecCP) is illicit. Crucial as this assumption is, the reasoning that would motivate it is not sufficiently explicit to establish whether it is derivable from more basic properties of the model. The edge of a phase is accessible in the next higher phase *per definitionem*, see (11). To achieve the required asymmetry, viz. that syntactic objects (SO) in the edge of a phase head Ph that are immediately dominated by PhP are available for further operations, while any elements (including edge elements) contained in them are not, PIC needs to be enriched by incorporating some notion akin to Chomsky's (1993) *minimal residue*, see (12).²²

(11) *Phase Impenetrability Condition* (PIC; based on Chomsky, 2000)

In a phase PhP, only the head Ph, and specifiers and adjuncts of PhP are accessible to operations outside PhP, other parts of PhP are not.

(12) In a phase PhP, only the head Ph and syntactic objects making up the minimal residue of Ph are accessible to operations outside PhP, other parts of PhP are not.

The PIC itself should be deducible from the way the mapping from syntax to the interface systems is defined: if on the completion of a phase (or upon Merge with the next higher head) Transfer sends the complement of the phase head to the interfaces (or at least to the PF interface if cross-phasal pure Agree is to be permitted), then the PIC is effectively derived as a theorem (compare Chomsky, 2004; 2005: 16–17). On this (fairly common) view, there is no reason why an element within an SO residing in the edge of a phase should not be available for movement. There is no obvious way of deriving from the cyclic mapping of syntax to the interfaces (Transfer) the version of the PIC in (12), which in turn is necessary to render specifiers of phases opaque. (12), in contrast to (11), is essentially a stipulation.

Not only is it cumbersome to explain why subject DPs in Spec ν P are opaque, even though they remain accessible to movement themselves, it also remains obscure why object DPs of transitive verbs (and subject DPs marked as accusative by ECM verbs) in (outer) Spec ν P, moved to this intermediate position on their way to SpecCP, fail to exhibit opacity (if subextraction from a *wh*-object is taken to be grammatical). Such DPs are wrongly predicted to behave on a par with external argument DPs in Spec ν P (which DPs are also opaque in the higher edge position of SpecCP²³).

Two other empirical issues with the account must be pointed out briefly before proceeding. The first has to do with the prediction of the proposal that A-movements cannot

(after CP is projected) it is movement to TP that takes place first. Given that the DP merged to TP is not c-commanded by C, the ν P-internal occurrence will remain the closest *c-commanded* occurrence to be attracted to C.

Chomsky (ibid.) acknowledges that movement to non-phase heads is a narrow violation of the NTC, and speculates that it may still be legitimate if the distinction that is thus established (viz. the distinction between A-bar and A-positions) is required by the C-I interface. The issue, however, remains elusive, and it further complicates matters that the traditional A-/A-bar distinction is not semantically clear-cut (cf. e.g., the status of topicalization, which shares some properties both with focussing and with A-movement to subject position; e.g., Cinque, 1991), and it is less than obvious what the C-I interface would "require" (NTC-violating) A-movements for. Even if the distinction was both sufficiently sharp and clearly motivated by C-I interface needs, a model that achieves it without disobeying the NTC would clearly be preferable.

²² For sake of simplicity, I keep here to the more restrictive formulation in Chomsky (2000, 2004) (see also Chomsky, 2005), and I also ignore head-adjunction. A syntactic object belongs to the *minimal residue* of a head Ph if it occupies a specifier of Ph, or it is adjoined to PhP (or to Ph) (cf. Chomsky, 1993).

²³ Chomsky (to appear) cites (i) as having the same status as (5a)/(6a).

(i) *Of which car did you wonder [[which driver ___] caused a scandal]?

feed or bleed A-bar movements. As noted in Section 1, such a prediction goes against some relatively well-established generalizations about the interaction of the two types of movement, e.g., that raising and A-scrambling obviate Weak Crossover (WCO) and Superiority effects, therefore they bleed A-bar movement from the base position; and they feed A-bar movements that license parasitic gaps; etc. If in (13a) A-bar movement is launched directly from the base position (t_3), then it will cross over the coreferential pronoun *his*, a classic WCO violation. If in English overt *wh*-movement to matrix C attracts the closest *wh*-phrase *in their base position*, then in (13b) it should target the experiencer PP of *seem*. If A-bar movement targeted the base occurrence, then it should create the dependency between that occurrence and the one in the SpecCP A-bar position that is needed to license the parasitic gap in (13c). In garden variety cases, reconstruction (of the complement in the moved phrase) is an option in A-movement, while it is obligatory in A-bar movement. If the *wh*-movement dependency linked *which picture of John* with t_3 , then coreference with the matrix clause pronoun in (13d) should not be possible. If A-movement did not feed A-bar movement, then it should not be able to get an element out of an inner island before A-bar movement is applied to the same element. Thus, *wh*-movement in (13e) and in (13f) should be equally unacceptable (examples from Rezac, 2004). Plainly, none of these predictions is verified. Standard accounts of the phenomena involved would need to be considerably complicated (in ways that remain to be explored) in order for the effect of a “parallel” A-movement to be taken into account.

- (13) a. *Who* t_1 seems to his mother [t_2 to t_3 be intelligent]?
 b. *To whom does *who* seem $t_{to\ whom}$ [t_1 to t_2 be intelligent]?
 c. **Which paper* t_1 was read t_2 [without filing *pg*]?
 (vs. Which paper did you read without filing?)
 d. *Which picture of John_i* t_1 seems to him_i [t_2 to t_3 be on sale]?
 (vs. *Which picture of John_i did he_i find ugly?)
 e. *Tell me *how many eagles* Dirk did [not successfully evade t_1]
 f. Tell me *how many eagles* t_1 were [not successfully evaded t_2 by Dirk]

Another striking consequence of Chomsky’s proposal is that the movement of the external argument from SpecvP to SpecTP does not have an effect on the availability of *wh*-subextraction from it, which proceeds from the base position, which is where subextraction gets blocked. This predicts subject-*in-situ* languages to be no different from subject-*ex-situ* languages as far as the islandhood of the external argument subject is concerned. However, as noted in Section 1, these languages systematically fail to display Subject Condition effects. This should mean that, contrary to the expectation based on Chomsky’s account, movement to SpecTP does have an effect on subextraction options. The paradox derives from the observations in (5–6), serving as the basis of Chomsky’s diametrically opposing conjecture.

The preceding paragraphs have reviewed some conceptual and empirical problems for Chomsky’s account of his observations that internal argument surface subjects and subjects that have undergone raising can be affected by subextraction. In the remainder of the paper I show that the opacity of external argument subjects in SpecTP, Chomsky’s perplexing observations, as well as the general transparency of *in situ* (external argument) subjects can all be explained within a derivational model of syntax (i) without restricting uninterpretable morphosyntactic and edge features to phase heads, (ii) without claiming A-movement to be special (either by imposing a specific condition like (9), or in the guise of limiting uninterpretable morphosyntactic features to the A-system), and (iii) without abandoning the NTC, a natural principle of computational efficiency that warrants strict cyclicity of derivations, in turn allowing A-movement to feed A-bar movement.

3. NO TAMPERING, LAST RESORT AND CYCLIC TRANSFER

3.1 *The model*

Essentially, four properties of syntax will be of crucial relevance to the analysis presented below: No Tampering, Last Resort, Earliness, and the mechanism of Transfer. It should be noted at the outset that each of these properties is motivated elsewhere in the literature, on grounds largely independent of the empirical facts covered here. It is also of significance that all these aspects of the syntactic computational system can be reduced to “third factor” considerations (hence, they conform to the Strong Minimalist Thesis; see Chomsky, 2001, 2005).

The first relevant aspect is the No Tampering character of narrow syntax (referred to as the No Tampering Condition, NTC). I will assume a strict NTC without further discussion as a manifestation of computational efficiency, following Chomsky (2005).²⁴

The second property at play is the Last Resort character of syntax, also reducible to considerations of efficient computation (the search for minimized operational complexity). Of particular relevance to the derivations investigated in this paper is the view that intermediate movements to (phase) edges (henceforth abbreviated as IME) are operations not driven by feature checking, not even checking of an EPP feature. A non-feature-checking conception of successive cyclic IME has been advocated by Surányi (2002, 2004a, b, 2007a), Bošković (2002, to appear), Boeckx (2003), and Fox and Pesetsky (2005), among others.²⁵ Below I lay out a novel argument in favour of such an account, and then briefly summarize only two of the arguments from the earlier literature cited above, to which the reader is referred for further motivation.

One problem for Chomsky’s (2001) phase-based account of successive cyclic long movements that was immediately pointed out at the time relates to long “covert” movement dependencies. If “covert” movement is pure Agree, as Chomsky (2000, 2001) argued, or Agree plus an internal Merge operation that follows Spell Out within Transfer, a view advocated in Chomsky (2004, 2005), then long covert movements are predicted to be non-successive cyclic, since the optional EPP (edge) features of phase heads, which are the trigger for successive cyclic overt IMEs, are absent in covert movement configurations; in fact, it is their absence that determines a movement to remain “covert.” Given the attested range of long covert movement dependencies in languages (e.g., Polinsky and Potsdam, 2001; Legate, 2005, Bošković, to appear), this situation implies that covert movements are immune to the PIC: a covertly moved goal is accessible in its in situ position to the probe across phase boundaries.²⁶ However, if PIC only constrains overt movement, then the conceptual

²⁴ Feature checking by definition counts as a violation of a strict NTC, if it is conceived of as deletion or valuation of features, since both the probe and the goal are contained in the root syntactic object at the stage when feature checking takes place. This may be avoided, for instance, in a feature sharing account of feature checking (e.g., Frampton and Gutmann, 2000), where feature checking does not involve any modification of checked features. Another option is to assume that the NTC prohibits manipulations of syntactic objects (SO) already constructed, but the value of features of lexical items (LI) within an SO is not a defining property of SOs: an SO is defined by the LIs it contains, including features the LIs bear but excluding the values of those features, and the basic structural relations (such as immediately contain) holding between its LIs.

²⁵ Heck and Müller’s (2003) account of successive cyclic movement, which builds on the notion of Numeration, may be considered as a hybrid of the feature-based and the non-feature-based approaches to IME. Chomsky and Lasnik (1993) and Takahashi (1994) also adopt a non-feature-checking view of IMEs, but in their account, based on chains (and Form Chain), following the lead of GB theory, long movement was triggered by the attracting functional head licensing the final landing site, and successive cyclic steps to intermediate positions inside the tree were motivated by a principle minimizing the distance between chain links.

²⁶ Constructions frequently discussed in this context include apparent Agree into finite clauses, into unaccusative/passive ν Ps (on the assumption that these are (strong) phases, see Legate, 2003), into first

motivation for the PIC itself is substantially diminished, if not lost completely: the syntactic structure that has been built cannot be “shipped off” to the interfaces (at least not to the semantic interface), eliminating it from narrow syntax and thereby reducing the latter’s operative complexity/memory requirements. In fact, there is mounting evidence that covert movement, too, is successive cyclic at the phase level (see e.g., Bruening, 2001; Polinsky and Potsdam, 2001; Svenonius, 2004; Legate, 2005; Bhatt, 2005). This means that the PIC constrains both overt and covert movements. Given the assumption that overt movements differ from covert movements in being triggered by an EPP/edge feature, IME to phase edges in successive cyclic movement cannot generally be driven by EPP on phase heads, since EPP is tied to overt movements only.

Another argument against a feature-checking account of IMEs comes from the fact that it involves massive lookahead (from another perspective: it systematically overgenerates; see Bošković, to appear). For, the computation should only ever displace a goal to the edge of intermediate phases if somewhere higher up there will be an EPP-bearing probe that will finally attract the goal to its specifier. Otherwise the model generates structures with the goal moved to the highest intermediate phase edge, where it is accessible to a non-EPP bearing probe (or one whose EPP feature is checked by another element) that it can be checked against. Such constructions, however, are not attested (see Bošković, to appear, from where (14) has been adapted).

(14) *[Who C_[+wh] C [T [v_P what thinks that John bought ___]]?

The last shortcoming to be pointed out here of a feature checking/EPP-driven notion of IME is conceptual. The problem lies in the fact that employing an uninterpretable morphosyntactic feature or an EPP/edge feature to trigger IME of some element E bearing an uninterpretable property (= E_[uF]) is redundant: IME of E_[uF] satisfies Last Resort even without positing such a feature on intermediate phase heads. This is so, because if IME did not apply, then E_[uF] would cause crash at the immediately next step, when the Spell Out Domain (SD) of the phase containing E_[uF] is subjected to Transfer (see Surányi, 2002, 2004a,b for this point, as well as references therein). Note that the EPP/edge-feature does not do the job of the elimination of the offending [uF] on the pre-movement occurrence of the goal E_[uF] inside the SD of the phase, therefore in any implementation elimination of the offending [uF] on the pre-movement occurrence must be licensed *independently* of EPP/Edge-feature checking. This may simply be the result of the way movement is defined, or the way deletion of features (PF-features, uninterpretable features) off copies in movement works (cf. Nunes, 2004), but other mechanisms are readily conceivable, the choice being irrelevant for present purposes.²⁷ What is crucial is that the movement of E_[uF] to the phase edge satisfies Last Resort, irrespective of any feature checking on the phase head, precisely because this movement licenses the deletion of the [uF] on the SD-internal occurrence of E_[uF] (under ‘recoverability of deletion’). Therefore positing a feature to be checked on phase heads to extract E_[uF] out of SD is redundant.²⁸

conjuncts (so-called first conjunct agreement in coordination), or the simple case of *wh*-in-situ of the Japanese type.

²⁷ On the Move=Internal Merge theory the relevant mechanism cannot be implemented as deletion. Rather, on that account it must be a defining property of how the result of Internal Merge is interpreted at the interfaces that [uF]s of the re-Merged element are not interpreted on its previous occurrence.

²⁸ Chomsky’s remark is instructive in this regard: “local determination is straightforward: [...] an uninterpretable feature in the domain at the phase level determines that the derivation will crash” [unless it is moved to the phase edge, BS] (Chomsky, 2000: 22). In other words, it can be locally determined what the two available alternatives result in. Either no movement of the offending XP applies, in which case the derivation crashes upon Spell Out at the next step, or the uninterpretable XP is raised, allowing the offending [uF] to be

In view of the problematic nature of a feature-checking account of IME, a non-feature-checking treatment is called for; indeed, various alternatives have been proposed (see the works cited above, as well as references therein). Following up on the considerations reviewed in the preceding paragraph, I will adopt the basic view proposed in Surányi (2002, 2004a,b, 2007a) and Bošković (to appear) that IME is essentially a true last resort “rescue” operation which takes place to avoid uninterpretability upon Transfer in the next step. Feature-checking/-valuation/-sharing movements are a mechanism whereby the computational system uses matching interpretable features and the (re)Merge operation to eliminate the interface defectiveness of uninterpretable morphosyntactic features within the SD of the current phase, while IME is a different means to the same end: it also exploits (re)Merge to remove uninterpretability from SD, however, it does not lead to a permanent elimination of the uninterpretability itself from the derivation. Note that IME is not a special operation. Operations, such as (internal) Merge are fundamentally optional (a basic tenet of GB theory carried over to the MP), and they are constrained by Last Resort, i.e., they are licensed only if they lead from uninterpretability to interpretability, i.e., to a syntactic object that satisfies Full Interpretation.²⁹ IME renders an uninterpretable SD interpretable, while a feature-checking movement achieves the same, and in addition it turns some uninterpretable aspect of the checked element into an interpretable property. >From this perspective, it is feature-checking movements that are special: adopting Chomsky’s view that only a subset of phrases are phases, and assuming a strict NTC (hence strict cyclicity of both external and internal Merge, contra Chomsky, to appear), feature-checking movements to non-phase heads take place early in a certain sense. Specifically, even if they did not take place at the non-phasal level, this would not result in crashing interpretation at the interfaces immediately, but only at the phase level. Therefore, although feature-checking movements do satisfy Last Resort, they do so due to the property of the syntactic computational system that it seeks to value unvalued features to avoid crash upon Transfer. This defining property of the computational system has been formulated under various rubrics, converging towards the notion of Earliness (see Chomsky, 1995; Uriagereka 1998: 207; Pesetsky and Torrego, 2001: 400; and references therein). For present purposes, the simple formulation of Earliness in (15) below, applying throughout the derivation, will suffice.³⁰ (15) is a particular way of ensuring that a condition of usability is satisfied, viz. that the computations should generate objects that are fully legible at the interfaces (cf. Chomsky, 1995).

removed in the phase-internal position, in which case the derivation avoids crash and can continue. I follow Chomsky’s (2000, 2001, 2004) assumption that the goal must bear some uninterpretable feature [uF] if it is to be moved (this extends to covert category movement too).

Note that the account of IME adopted here involves a one-step lookahead. I assume that this minimal lookahead must be part of any derivational theory with essentially free operations that are constrained by Last Resort: to evaluate whether a given operation *O* satisfies Last Resort, the computational system must be able to check whether the derivation terminates upon the next derivational step if *O* is not applied. If IME is not applied to an $E_{[uF]}$ inside a phase, then in the next step, when the derivation continues with Merge of a new head to the phase itself and the phase undergoes Transfer, the derivation crashes.

²⁹ Chomsky (following others) has loosened this requirement by allowing operations to be licensed even when they lead from an interpretable state to an interpretable state, provided that the interpretation newly made available (Chomsky’s INT) is distinct from the original one. Note that the conception of Last Resort embraced above involves a one-step lookahead: operations are free/optional, but in order to evaluate whether applying a given operation (e.g., movement) obeys Last Resort, the system needs to verify that the resulting syntactic object (in the case of IME, the resulting SD) is fully interpretable.

³⁰ (15) subsumes some of the effects of Chomsky’s (2000) Maximize Matching principle. It is a principle of the computation that simultaneously subserves two “design” properties of syntax that conform to the Strong Minimalist Thesis (Chomsky, 2000 et seq): the NTC (without Earliness, feature checking movements would not be triggered by Last Resort up until the point where Transfer applies), and the cyclicity of Transfer (namely, that Transfer applies at every stage of the derivation when it can; see below).

(15) *Earliness*

If an uninterpretable feature can be checked, it is checked.

The treatment of IME just reviewed coupled with Earliness has two welcome consequences that are of relevance to this paper. First, IME can only occur immediately before applying Transfer, since up until that point it will not be licensed by Last Resort. IME will be preceded by any feature-checking movements within a phase. (Note that this does not follow on an EPP/edge-feature based account of IMEs.) A second prediction of the account is that an $E_{[uF]}$ cannot undergo IME to the edge of a phase PhP from a position within a category that is inside the same edge, as this would not serve avoiding crash when PhP undergoes Transfer.³¹ The banned scenario is given schematically in (16) (H a phase head). The reason is simple: such a movement would not satisfy Last Resort.

(16) $[_{PhP} E_{[uF]} [\dots \underline{E}_{[uF]} \dots] [_{PhP} Ph \dots]]$

A last component of the theory that will play a role in the analysis is the nature of Transfer. Chomsky's (2000, 2001) position is that Transfer only applies at the strong phase level. For Chomsky, strong phases include CP and v^*P (vP with an external argument), and possibly DP. The proper interface-based, and syntactically motivated, definition of the phase has been the subject of much controversy, both empirical and conceptual, ever since Chomsky (2000) put forward his own (e.g., Bošković, 2002; Epstein and Seely, 2002; Legate, 2003; Matushansky, 2005; Boeckx and Grohmann, 2007). Nevertheless, it has been convincingly demonstrated that if v^*Ps are phasal, then unaccusative / passive / raising vPs are phases too (see Legate, 2003; Sauerland, 2003; M. Richards, 2004).³²

As for DP, it has been assumed that a DP gets frozen (being inaccessible to further movement) as soon as its Case has been checked (cf. Chomsky's Activity Condition, or (9) above; see also Kitahara, 2000: 155; Boeckx, 2003). It has been argued that when this is reducible to a broader generalization that DP undergoes Transfer when all its uninterpretable features are checked/valued (Holmberg and Hróarsdóttir, 2003; Matushansky, 2005, a.o.), a generalization that may be applicable to a wider set of categories (see Kitahara, 1997: 37; Svenonius 2000). It follows from this generalization that DPs without operator features are frozen at the stage of the derivation when their Case gets valued, and that a Case-valued DP is not Transferred at the same stage if it also has operator features to check.³³

There are various possible ways to rationalize such a generalization. Here I suggest that it is best viewed as a corollary of the way syntax interfaces with the external interpretive systems of sound and meaning. In a derivational minimalist approach the null hypothesis is

³¹ As it will become clear from the discussion in the next section, edge-internal movement is in principle possible out of a category XP in the edge of a phase if XP itself undergoes Transfer upon (external) Merge to PhP.

³² See also Sigurdsson (2000), who argues on the basis of Icelandic that the case of an in situ object can be determined already at the $v^*(*)P$ level. I use the label ' vP ' to refer to both types of vP .

³³ There is disagreement in the literature as to what uninterpretable operator features exist, opinions ranging from the position that all movements to (final) A-bar positions (in terms of GB theory) are driven by operator features (including Quantifier Raising, triggered by a [Q] or a [Dist] feature) all the way to the view, embraced in Chomsky (to appear), that there are no operator features at all. Here I adopt the assumption (going back to Rizzi's work on *Criteria*) that at least *wh*-elements do carry an uninterpretable operator feature (*wh*-feature) that becomes interpretable only if associated with an appropriate C head. Topicalization, by contrast, can be plausibly claimed to involve no uninterpretable [top] feature, a view supported by the widely held generalization that this movement type is confined to overt syntax (though see Polinsky and Potsdam, 2001).

that interpretation by the external systems (Transfer) may take place freely, i.e., at any stage of the derivation. I follow Chomsky in assuming that if Transfer is applied at any given derivational stage *S*, it applies not to *S* itself, but some category contained in *S*, otherwise the derivation would inevitably terminate with *S* stripped away from narrow syntax. I keep here to minimal assumptions: the consideration of avoiding termination of the derivation upon Transfer of *S* warrants only a minimal “delay.” Specifically, if Transfer is applied at stage *S*, it applies to an immediate constituent of *S* that has just undergone Merge to yield *S*. *S* is invariably made up of a maximal (non-projecting) and a non-maximal (projecting) immediate constituent, so I assume that it is the maximal immediate constituent that undergoes Transfer. This ensures that the derivation can continue with what is left behind in narrow syntax.

In principle, the search for minimized computational complexity and operational memory for the computational system of narrow syntax dictates that Transfer to the interfaces should take place at every possible stage. If “every possible stage” were interpreted as “every stage” (i.e., after every derivational operation; the view of Epstein and Seely, 2002), then in Chomsky’s probe/goal-based model this would only result in derivations that crash before the uninterpretable features of goals could be checked. Given Earliness (=15), however, the earliest possible stage at which Transfer can apply after the introduction of a probe head is when the probe has launched all operations that can lead to the valuation of its uninterpretable features (i.e., cycles of Transfer are the phrases³⁴). From this perspective, Chomsky’s phase-based model departs from this simple picture by adding the restriction that Transfer is possible to apply only to a subset of phrases (CP and *v*P) (adding that at that level the application of Transfer is in fact obligatory). In the present context the question is not why CP and *v*P undergo Transfer, but why TP and VP cannot do so. The answer may well be very different for VP and for TP. For VP, we may assume that its defectiveness derives from the nature of its head as a category-neutral root, the morphological interpretation of which is only determined by the (light) head immediately above it (Marantz, 1997; Chomsky, 2004). The defectiveness of TP for Transfer may be tentatively explained in terms of the not uncommon view (also embraced in Chomsky, to appear) that T and C agree (in phi-features or/and tense-features). If one of these features is not interpretable on T, unless it undergoes Agree with a matching feature on C, then subjecting TP to Transfer would inevitably result in crash.³⁵ On such a general approach, a phrase does not undergo Transfer if its head (label) has some uninterpretable property. C and *v* differ from T or V (root) in that the uninterpretable features they come with ([wh], [phi]) normally get checked within the phrase they head, allowing them to undergo Transfer (this syntactic “self-sufficiency” being the rationale behind their relative independence at the interfaces). As an outcome, CP and *v*P are “strong phases” (they get Transferred, as a rule), while TP and VP (rootP) are not “phases.” Now DPs are somewhere in between these two: due to the Case feature on D (and possibly other features, such as [wh]), they are not born ready for Transfer, but as soon as they get rid in the course of the derivation of all their uninterpretable properties, they are ready to be sent to the interfaces (see the references cited in the preceding paragraph). Adapting Chomsky’s terminology, I will refer to such categories as “weak phases.”³⁶ Based on this conception of

³⁴ The view that phrases are cyclic domains has been advocated in various forms in a minimalist setting by Takahashi (1994), Agbayani (1998), Bošković (2002), Boeckx (2003), Müller (2004), Surányi (2002, 2004a, b, 2007a, b).

³⁵ No commitment to a specific analysis is implied here; in fact, the predictions made for the grammaticality of the example types discussed in the paper remain unaffected if TP and VP are also “phases.” On Pesetsky and Torrego’s (2007) approach, T may have interpretable but unvalued [tense], to be valued by [tense] on C, where it is uninterpretable but valued. (C may be assumed to also bear unvalued uninterpretable [phi]-features, checking against valued uninterpretable [phi]-features of T.)

³⁶ This picture implies that CP and *v*P, which are normally “strong phases,” can function as “weak phases” if they bear some uninterpretable operator feature to be checked by movement (provided that they can come to

how syntax interfaces with the external components, I formulate the following condition on Transfer:

(17) *Interpretability Condition on Transfer (ICT)*

Transfer can apply to an SO only if its label has no uninterpretable property.

In sum: seeking to minimize operational memory for narrow syntax, *Transfer applies after each application of Merge, provided that the ICT is met* (to the maximal immediate constituent of the syntactic unit Merge has produced). As long as the ICT is complied with, one cycle consists of one Merge operation, immediately followed by Transfer (as in Epstein and Seely, 2002). According to the ICT, the sensitivity of Transfer to uninterpretable is strictly local: the ICT looks only at the label of the SO to be Transferred, and it is blind to any elements operated on at previous stages of the derivation. When the ICT is not satisfied, Transfer is not applied and another Merge operation can take place (contrary to Epstein and Seely, *ibid.*). If A and B Merge, yielding B', and Transfer cannot apply because A does not satisfy the ICT, then this means that A will only be able to get Transferred later as part of a larger containing category.

In Chomsky's (2001, 2004) work, when Transfer applies to a phase, it applies to the complement of the head of the phase (Spell Out Domain), allowing the edge of the phase to escape Transfer. This mismatch between phase and Spell Out Domain in Chomsky's model has been criticized by Abels (2003), Boeckx and Grohmann (2007), among others. It has been argued (see, e.g., Fuß, to appear) that complementizer agreement of the Germanic type involves PF-operations wherein adjacency plays a key role, which suggests that C and TP are part of the same Spell Out / Transfer Domain.³⁷ I assume, following a proposal made in Surányi (2004b, 2007a), that the head of the SO that undergoes Transfer is included in the domain of Transfer, limiting the edge to the specifiers of SO.³⁸ This choice has no direct bearing on the analysis proposed in this paper, nevertheless it provides conceptual support for (17), according to which Transfer is conditioned by the properties of the head (label) of the current SO.

(17) disallows Transfer at “non-phase” levels (TP, VP), and permits Transfer at “strong phase” levels (CP, *v*P), after feature-checking operations targeting C and *v* have taken place. Note that IMEs are triggered only when feature-checking of the “strong phase” head has been completed, rendering the “strong phase” ready for Transfer in accordance with (17). Transfer of “weak phases” is licensed only at a derivational stage when their head has been fully checked.³⁹

bear such a feature to begin with; see note 33 above). PPs (and DPs bearing inherent Cases, sometimes also analysed as PPs) are expected to be of the “strong phase” type, as they are self-contained in the same way as CP and *v*P.

³⁷ Fuß (*ibid.*) does not come to this conclusion, but stipulates instead that PF operations may access a single Spell-Out domain and the right edge of the next higher Spell-Out domain, where this “right edge” includes the head of the next higher phase.

³⁸ In Surányi (2007a: 305), I define the edge as the set of elements bearing some [uF] that are Merged to the SO undergoing Transfer. See also Fox and Pesetsky (2005), who assume that the whole current phase is subjected to Spell Out.

³⁹ The terms “strong phase,” “weak phase” and “non-phase” serve mnemonic purposes only, and have no status in the theory. Note also that the ICT in (17) above subsumes (and therefore replaces) Chomsky's (stipulative) assumption that Transfer applies only to phases, which now follows from the ICT. The two are not equivalent, but rather, the ICT is more general: as we have just seen, the point of Transfer for DPs is also derived from the ICT.

3.2 Derivations

In the remainder of the paper I first turn to how it can capture Chomsky's (to appear) observations of contrasts illustrated in (5) (and (6)). In (5a) with an underlying external argument subject (**Of which car did the driver cause a scandal?*), at the point of the derivation where the external argument DP *the driver of which car* is Merged to vP , coming to occupy $SpecvP$, the subject DP bears uninterpretable Case. For this reason, as dictated by the Interpretability Condition on Transfer (ITC=(17)), Transfer cannot apply to DP. Given that Transfer does not apply to DP upon Merge in $SpecvP$, IME of the contained *wh-PP of which car* to the edge of DP prior to the Merge operation applying to DP and vP is not licensed by Last Resort. (Recall that IME is a last resort operation that can take place only if the derivation would terminate/crash at the next derivational step if it did not apply.) After T is Merged to vP , vP undergoes Transfer. This still leaves behind the edge of vP , which is another reason why IME of the *wh-PP* to $EdgevP$ (a case of edge-internal movement) is disallowed by Last Resort. T Agrees with DP, and DP is re-Merged into $SpecTP$, eliminating the EPP/edge-feature of T.⁴⁰ Upon Merge of DP and TP, DP can be Transferred, since at this stage Case on D has been valued by T. If, as in (5a), DP contains a *wh-PP*, this *wh-PP* is trapped. If it gets Transferred as part of DP, the derivation crashes. The only way the *wh-PP* could escape getting Transferred as part of DP in $SpecTP$ would be for it to either raise out to $EdgeDP$ prior to Merge of DP with TP leading to Transfer of DP in $SpecTP$, or to raise out to $EdgeTP$ after DP is Merged with TP. The first of these two options is unavailable (by the NTC), as it would involve countercyclic movement of *wh-PP* to $EdgeDP$ in the base occurrence of DP at a stage when TP is already projected. The second option is excluded, since at the stage when DP is Merged to TP, Transfer can apply (since D is free of any uninterpretable), and hence it will apply at that point (i.e., Transfer takes place before any other Merge operation could). Thus, (5a) is underivable, as desired.

Consider next the case of an internal argument surface subject, (5b) (*Of which car was the driver awarded a prize?*). Again, at the point of the derivation where DP *the driver of which car* is Merged, it bears uninterpretable Case, whence it does not undergo Transfer in that position, by the ICT. When vP has been projected, IME of all elements E bearing an uninterpretable case must take place to [$Edge, vP$] (in order to avoid crash in the next step, when vP is subjected to Transfer). As both the *wh-PP* and the containing argument DP bear an uninterpretable feature ([*wh*] and Case, respectively), both can undergo IME to [$Edge, vP$]. The order of IMEs cannot be restricted by Closeness, as no feature-checking is involved.⁴¹

⁴⁰ I keep here to Chomsky's account of movement in terms of Agree (subject to intervention-based locality, viz. Closeness), and specifically, overt movement in terms of a generalized EPP/edge-feature. Earliness of feature checking (=15) forces the phonologically overt re-Merge of the goal to apply immediately after Agree, checking off the EPP/edge-feature of the probe. I adopt a pure Agree analysis of covert (A-)movement, as in (Chomsky 2000, 2001). If covert (A-)movement involves category movement (a view that Chomsky (2004) embraces tentatively for covert movement in general, implementing it as post-Spell Out movement of the full category), this may be construed as re-Merge of the "moved" category without its phonological (or PF) features. This does not affect the analyses in this section, on the assumption that Spell-Out (hence, Transfer) cannot apply to a category without any PF-features (such as the occurrence created by covert movement; N.B. the covert occurrence can still undergo Transfer as part of the Transfer of a containing category). This assumption about covert category movement can be integrated into the ICT, by requiring not only that Transfer should be blocked if the label of the SO that it would apply to is uninterpretable (at either interface) (=17), but also that Transfer should also be blocked if the label of the SO that it would apply to has no interpretation associated with it (at either interface) (to be distinguished from zero forms associated e.g. with null arguments in PF, or from identity functions in semantics).

⁴¹ Richards (1997) shows that in Bulgarian multiple *wh*-fronting, even though the *wh*-subject must precede all other fronted *wh*-XPs, the order of the second and third fronted *wh*-XPs is free (which he attributes to his Principle of Minimal Compliance). This pattern follows on the present assumptions, as internal argument *wh*-

Thus, there will be a derivation in which the contained *wh*-PP is moved to [Edge, ν P] first, i.e., it is allowed to subextract from DP to [Edge, ν P]. This stage is given schematically in (18) below.⁴²

(18) [ν P [DP the driver –] [ν P [PP of which car] [ν P ν [ν P [DP ~~the driver~~ [PP of which car]] ...]]]]

T is Merged next, allowing ν P minus its edge to Transfer. Then DP is raised to SpecTP, and finally PP is moved to SpecCP, deriving (5b).

The crucial difference between (5a) and (5b) was that in (5a) the argument DP in Spec ν P and the contained *wh*-PP cannot separate at the ν P level, while they can do so in (5b), where the argument DP is generated inside VP. As we have seen, when the subject DP has raised to SpecTP, no subextraction is possible from it in (5a) (an effect referred to as “freezing”). How come the same external argument subject DP is not “frozen” in the same way in Chomsky’s raising examples in (10) ((10a): *Of which car is the driver likely to cause a scandal?*)? I suggest that their key difference from (5a) lies in the fact that although the subject DP has been moved in (10) too (viz. to nonfinite SpecTP), it is to move on from there, as it still has its Case unchecked in that position. Given that the subject DP still bears Case in nonfinite SpecTP, it does not undergo Transfer in that position. It is for this reason that at the stage when the derivation reaches matrix ν P, *wh*-PP is free to subextract from DP to Edge ν P by IME, followed by IME of the containing DP itself. In other words, the separation of the contained *wh*-expression and the remnant DP, which took place in (5b) at the level of the ν P in which the argument DP is base-generated (see (18)), happens in (10a) at the level of the superordinate ν P; see (19).⁴³

(19) [ν P [DP the driver –] [ν P [PP of which car] [ν P...[TP [DP ~~the driver of which car~~] T [ν P...]]]]]

Let us turn now to the issue of in situ external argument subjects, which, as pointed out in section 1 above, are cross-linguistically transparent to subextraction (a fact left unaccounted for by Chomsky, to appear). (20a), contrasted with (20b), is an illustration of this from English (from Lasnik and Park, 2003):

(20) a. Which candidate were there [ν P [posters of ~~which candidate~~] all over the room]?
b.. ?*Which candidate were [TP [posters of ~~which candidate~~] all over the room]?

In the derivation of (20a), after T and ν P are Merged and ν P is sent to the interface components. The next cycle of operations begins by Agree of T with the in situ DP subject. Although Agree values Case on D, DP cannot (acyclically) be Transferred, as only elements that have just undergone Merge can undergo Transfer. As a result, the in situ DP will still be accessible to the probe C when it is Merged in, subextracting PP out of DP. The in situ subject will undergo Transfer as part of the Transfer of the CP.

Recall that Chomsky (to appear) claims that there can be no subextraction from a category in an edge, a claim that runs counter to the immediately preceding case of

XPs first undergo IME to Edge ν P (in overt syntax), and since IME involves no feature-checking on the present theory, the order of these *wh*-phrases will be freed up already at the level of Edge ν P.

⁴² Irrelevantly, the order within with [Edge, ν P] reflects a strict NTC, rather than Richards’ (ibid.) “tucking in.” In the schematic representations used in this section, “trace” occurrences are marked by strike-through, and the phonological material within the relevant DP is typed in boldface in the position where it is spelled out.

⁴³ The (controversial) assumption that DP passes through nonfinite SpecTP(s) is not crucial for the present account: the separation of *wh*-PP and remnant DP by IME can take place (at the matrix Edge ν P) also directly from the embedded Spec ν P.

subextraction from in situ SpecvP subjects. Chomsky extends his claim about edges to subextraction from SpecCP, citing (21) (see Note 23).

(21) *Of which car did you wonder [[which driver –] caused a scandal]?

The derivation of (21) proceeds parallel to that of (5a) with an external non-*wh*-DP subject up to the stage where DP is raised and Merged with TP. The subject *wh*-DP cannot undergo Transfer here, because it still has an uninterpretable feature, viz. [wh]. In the next step, C is Merged with TP. C seeks to enter feature-checking (Agree) with a *wh*-phrase, and the closest *wh*-phrase is the *wh*-subject *which driver of which car* itself. The contained *wh*-PP cannot be the (first) *wh*-expression to be attracted to SpecCP (essentially, a case of “featural” A-over-A, see Kitahara, 1997). The *wh*-PP contained in SpecTP cannot escape the *wh*-subject by IME to EdgeCP either, given that at any stage of the derivation feature-checking movements (by Earliness) must precede (non-feature-checking) IME, which is applied as a last resort only when the only alternative step is Merge of a new head, resulting in immediate Transfer of CP. Upon Merge with CP, the *wh*-DP is subjected to Transfer, since its head is now free of any uninterpretable features. At this point the contained *wh*-PP is trapped in the *wh*-subject in exactly the same way as it is trapped in the non-*wh*-subject in (5a) once the subject has been Merged in SpecTP.

Thus far I have left unaddressed the case of subextraction from a surface direct object (henceforth: object), which is well-formed, as illustrated in (5c) above. Objects differ from internal argument subjects in the locus of their Case assignment: the Case of objects is checked by *v*. Consider the derivational stage when *v* is Merged in and undergoes Agree with the object. Parallel to the case of in situ external argument subjects, even though Agree values Case on D, DP cannot (acyclically) be Transferred, as only elements that have just undergone Merge can be subjected to Transfer. This means that the *wh*-PP is free to subextract from the object DP to EdgevP by IME, from where it eventually raises to SpecCP. In other words, the parallelism between in situ external argument subjects and direct objects as in (5c), both checking their Case covertly, is what underlies their similar degree of transparency to subextraction.

This, in turn, implies that similarly to external argument subjects that are overtly raised to their SpecTP Case position, objects should also exhibit opacity when moved to their Case position in overt syntax. A prominent line of research suggests that such overt movement to a Case position is available to objects in English (Johnson, 1991; Koizumi, 1995; Runner, 1998; Lasnik, 1999; etc). Lasnik (1999) argues that this accusative Case-checking movement is optionally overt in English; hence, in simple cases like (5a) both construals are possible. In some cases, however, there is evidence that accusative Case-checking must have occurred overtly. Such cases include sentences where the accusative DP (either a direct object, or an ECM subject) binds into an adjunct, where pseudogapping has applied, or where the DP has come to raise above the particle of the particle verb. Indeed, as expected on the present account, subextraction is degraded if the accusative DP is raised overtly, as the contrast below demonstrates.

(22) a. Which show did he make out [regular viewers of –] to be unsophisticated?
 b. ?*Which show did he make [regular viewers of –] out to be unsophisticated?

On this analysis of subextraction from objects, an intriguing prediction arises: we expect *wh*-subextraction to be significantly less degraded from object *wh*-phrases than from external argument subject *wh*-phrases. The pattern of acceptability judgments of examples

involving *wh*-subextraction from *wh*-phrases is not clear-cut in the literature.⁴⁴ Most of my informants report a perceived difference in minimal pairs like (23), while others find both (a) and (b) unacceptable (N.B. on the present analysis, where the two *wh*-phrases separate relatively low, both examples involve a *wh*-island violation):⁴⁵

- (23) a. ?Which club can't you remember how many supporters of you beat last night?
 b. *Which club can't you remember how many supporters of beat you last night?

4. CONCLUDING SUMMARY

To the extent the account of the variability in the opacity of subjects presented in these pages turns out to be a fruitful line of research into domains of locality, it supports the restrictive model on which it is based. This model adopts a strict No Tampering Condition, subscribes to the view that intermediate movements to phase edges are non-feature-checking driven last resort operations. It has been argued that Transfer takes place after each application of Merge, provided that the label of the syntactic object SO to which Transfer applies has no uninterpretable feature (the Interpretability Condition on Transfer, ICT). The ICT offers an elegant dynamic approach to phase-based derivation, with no need for an absolute (stipulated) distinction between “phase” heads and “non-phase” heads.⁴⁶

⁴⁴ McCloskey (2000: 62) cites the example in (i) as grammatical. His analysis of the stranding of floating quantifier all in embedded SpecCP, as in (ii), involves *wh*-subextraction of the *wh*-phrase (for him, in SpecCP). Lasnik and Saito (1992: 111) observe that (iii) is only mildly unacceptable. See also Chomsky (1986: 25–27), Chomsky and Lasnik (1993: 544), Postal (1997), Starke (2001), Richards (2004), Rizzi (2004) for examples in which subextraction from *wh*-phrases surfacing in SpecCP is apparently allowed.

- (i) the guy Op that we couldn't decide how many pictures of we should buy
 (ii) What did he tell him all (that) he wanted?
 (iii) ?Which athletes do you wonder [CP [which pictures of *t*] Mary bought]?

⁴⁵ In (i) below an internal argument subject is used. It is not clear from informant judgments whether the acceptability of (i) is closer to that of (23a) or (23b). Italian data from Rizzi (2004) seems to suggest that it should be on a par with the former, see (ii) and (iii). Judgments are murky in many other cases. I leave the issue for further exploration.

- (i) ?Which club can't you remember how many supporters of were beaten last night?
 (ii) ?[[Di quale autore]_z *t*_i domandi [[quanti libri *t*_z]_i siano stati censurati *t*_i]]
 Of which author CL wonder-2SG how-many books be-3PL been censored
 “Which author do you wonder how many books by have been censored?”
 (iii) Gianni, [[del quale]_z mi domando [[quanti libri *t*_z]_i siano stati censurati *t*_i]]
 Gianni, of-the which CL wonder-1SG how-many books be-3PL been censored
 “Gianni, whom I wonder how many books by have been censored”

⁴⁶ A multitude of empirical issues of course remain, including those of cross-linguistic variation, the effects of focussing, differences between *wh*-movement and other A-bar movements like topicalization, P-stranding vs. non-P-stranding by subextraction, opaque objects, and many others. For further discussion, see Surányi (2007b), where the opacity of passivized objects of creation verbs and *seek*-type intensional verbs (e.g., *Who was a picture of taken by Bill? *What is a solution of sought?) is addressed in terms of an adapted version of Ishii's (2006) proposal that non-specific objects cannot pass through EdgevP. In Surányi (ibid.) I also present an alternative analysis of the Icelandic data cited by Chomsky (to appear) from Holmberg and Hróarsdóttir's (2003) as further motivation of his proposals summarized in (7–9) above.

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The Alison's cat sleep in the kitchen: on the acquisition of English 's genitive constructions by native speakers of Italian

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Abstract

This work deals with the acquisition of L2 English 's Genitive Constructions with Bare Proper Name possessors by native speakers of Italian. We investigated original L2 English data collected through a written elicitation test from a group of 94 Italian teen-agers learning L2 English in a formal environment.

Results indicate that both Universal Grammar and transfer from the L1 are implied in the acquisition of these structures.

In Section 1 we compare Italian and English Possessive Constructions in the light of a model of possessive DPs; in Section 2 we present the experimental design and the results, which will be discussed in Section 3.

1. 'S GENITIVE CONSTRUCTIONS AND THEIR ACQUISITION

1.1 Possessive Constructions in English and Italian

This section is devoted to the analysis of 's Genitive Constructions and to their comparison with other possessive constructions attested in English and Italian.

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First of all let us compare English and Italian Possessive Constructions:

- (1) a. Peter's friend
 b. My friend
 c. * A/the Peter's friend
 d. * A/ the my friend

English 's Genitive Constructions are illustrated in (1.a). The possessor (in this case the Bare Proper Name *Peter*) precedes the head noun, i.e. the possessee (*friend*) and is marked with 's. In case of a pronominal possessor, as shown in (1.b), we have a similar situation as far as the relative position of the head noun and the possessor is concerned: the possessor precedes the head noun; in this case, however, the possessor is not marked with 's. Another similarity between nominal and pronominal possessors in English is that they are both incompatible with the head noun determiner, be it definite or indefinite, as shown in (1.c) and (1.d).

The interpretation of the structures in (1.a) and (1.b) is only definite. If an indefinite meaning is to be conveyed, the available structures in English are the so called Elliptical Constructions shown in (2.a) and (2.b):

- (2) a. A friend of Peter 's
 b. A friend of mine

In Italian, Bare Proper Name Possessors do not precede the possessee, as shown in (3.a). They only occur post-nominally introduced by the preposition *di* (*of*), in the so called Analytic Construction. Possessive pronouns, on the contrary, can occur pre- or post-nominally, as shown in (3.b) and (3.c):

- (3) a. Un/l' amico di Peter
 a/the friend of Peter
 b. Un/il mio amico
 a/the my friend
 c. Un/l' amico mio
 a/the friend my

Both pronominal and nominal possessors in Italian are compatible with the possessee's determiner, which can be either definite or indefinite, as shown in (3) above.

Analytic Constructions are attested in English in the cases illustrated in (4), i.e. with an inanimate possessor (4.a) or when an animate possessor is to be modified, e.g. by a relative clause (4.b):

- (4) a. The leg of the table
 b. The servant of the actress who was on the balcony¹

¹ (4.b) is taken from Fodor (2007). In this work the author investigates cross-linguistic attachment preferences of relative clauses in complex NPs such as Possessive Constructions. From our point of view it is interesting to note that, as far as Analytic Constructions are concerned, while in Italian attachment of the relative clause to the

1.2 Possessive Constructions and the internal structure of Determiner Phrases

We now analyze possessive constructions in English and Italian in the light of recent work on the internal structure of Determiner Phrases. Drawing on work by Abney (1987), Szabolcsi (1987) and (1992), Delsing (1998) and Haegeman (2004), we adopt for Determiner Phrases a structure like (5):

$$\begin{array}{ccc}
 \textit{DP Layer} & \textit{Inflectional Layer} & \textit{Lexical Layer} \\
 (5) \text{ [SpecDP [D}^\circ \text{ [SpecAgrP [Agr}^\circ \text{ [SpecFP [F}^\circ \text{ [SpecNP [N}^\circ \text{ \dots]]]]]]]]]] \\
 \text{Poss3} & \text{Poss2} & \text{Poss1}
 \end{array}$$

As shown in (5), possessors may occur in three distinct positions: Poss1 in the Lexical Layer, Poss2 in the Inflectional Layer and Poss3 in the DP Layer. Following a number of proposals, we assume that possessors are always generated in Poss1 as arguments of the head noun. Poss1 is also the position where possessors surface in the so called Analytic Constructions²:

$$(6) \text{ [SpecDP [D Un/I}^\circ \text{ [SpecAgr [Agr [SpecFP [F amico}_i \text{ [NP t}_i \text{ [PP di Peter]]]]]]]]] \\
 \text{Poss3} \qquad \qquad \qquad \text{Poss2} \qquad \qquad \qquad \text{Poss1}$$

$$(7) \text{ [SpecDP [D the [SpecAgr [Agr [SpecFP [F leg}_i \text{ [NP t}_i \text{ [PP of the table]]]]]]]]] \\
 \text{Poss3} \qquad \qquad \qquad \text{Poss2} \qquad \qquad \qquad \text{Poss1}$$

Poss2 is the position where pronominal possessors may surface in Italian³:

$$(8) \text{ [SpecDP [D Un/il [SpecAgr mio}_j \text{ [Agr [SpecFP [F amico}_i \text{ [NP t}_i \text{ t}_j \text{]]]]]]]] \\
 \text{Poss3} \qquad \qquad \qquad \text{Poss2} \qquad \qquad \qquad \text{Poss1}$$

Poss2 is also the position where pronominal and non- pronominal possessors may surface in Hungarian:

$$(9) \text{ a [SpecDP [D a [SpecAgr Mari}_i \text{ [Agr kalap-ja}_j \text{ [NP t}_j \text{ t}_i \text{]]]]]] \qquad \text{(Hungarian; Szabolcsi 1994)} \\
 \text{the MariNOM hat-POSS.3sg} \\
 \text{“Mari’s hat”}$$

possessee is favoured, in English attachment of the relative clause to the possessor is favoured. This is probably due, according to Fodor, to the fact that in 's Genitive Construction only attachment to the possessee is possible:

(i) The actress' servant who was on the balcony

In a construction like (i), the relative clause can only modify *the servant* and not *the actress*. We conclude therefore that when the possessor is to be modified, by e.g. a relative clause, the Analytic Construction is the only possible structure in English.

² According to Cinque (1995) possessors are subjects, hence generated in Spec, NP. The order NPoss observed in Analytic Constructions is derived through movement of the possessee to the left of Poss, to a layer of positions which we have called FP (see (6) and (7)). Although not relevant here, we have to assume that the possessee moves higher in Italian than in English, given its position with respect to adjectives (Cfr. *Una penna rossa* vs. *A red pen*).

³ We assume that post-nominal pronominal possessors in Italian ,as in (3.c), occupy Poss1.

- b [SpecDP [D az [SpecAgr én_i [Agr vendég-e-m_j [NP t_j t_i]]]]] (Hungarian; Szabolcsi 1994)
 the I guest-POSS-1sg
 “my guest”

We assume, following Delsing (1998), that the 's Genitive marker is generated in the head position of Poss2 and then moved to (the head position of) Poss3 for definiteness checking requirements.⁴

Finally, Poss3 is the position where possessors surface in English 's Genitive Constructions (10) as well as in other languages such as for instance Hungarian (11):

- (10) [SpecDP Peter_i [D 's_j [SpecAgr t_i [Agr t_j [SpecFP [F [NP friend t_i]]]]]]]]]
 Poss3 Poss2 Poss1

- (11) [SpecDP Mari-nak_i [D a [SpecAgr [Agr kalap-ja_j [NP t_j t_i]]]]] (Hungarian; Szabolcsi 1994)
 Mari-DAT the hat-POSS.3sg
 “Mari's hat”

English pronominal possessors also surface in Poss3:

- (12) [SpecDP My_j [D [SpecAgr t_j [Agr [SpecFP [F friend_i [NP t_j t_i]]]]]]]]]
 Poss3 Poss2 Poss1

1.3 Some considerations on the acquisition of English 's Genitive Constructions by native speakers of Italian

The different Possessive Constructions attested in English and Italian illustrated in 1.1 and 1.2 can be now discussed in the light of theories of L2 acquisition. The most crucial points of debate concern the role of Universal Grammar (UG) and the presence of transfer from the L1 (see White, 2003). According to the Full Access/ Full Transfer Hypothesis (Schwartz and Sprouse 1996; White 1996) an L2 learner starts with the parametric values of her/his L1 which are changed to the L2 values using her /his UG on the basis of the L2 data which the learner is exposed to.

Assuming this model, in order to acquire English 's genitive constructions with BPN possessors, a native speaker of Italian will start with the possibilities instantiated in her/his L1, namely Analytic Constructions (see 3.a). As we have seen, in these constructions the possessor does not move and both a definite and an indefinite interpretation are possible. In the acquisition of the parametric values of English this learner should:

- a) discover that BPN possessors move
- b) discover where they move

⁴ One striking reason to treat 's as a head and not as a suffix is that it follows the so called Group Genitives as shown below:

(i) Peter and John's book

c) discover that 's is the morphological realization of both genitive Case and definiteness, generated in the head position of Poss2 and then moved to the head position of Poss3

If the Full Access/ Full Transfer Hypothesis is correct, we predict that the most problematic areas will be related to the points in a), b) and c) above.

2. THE L2 ACQUISITION OF 'S GENITIVE CONSTRUCTIONS BY NATIVE SPEAKERS OF ITALIAN: SOME EXPERIMENTAL DATA

2.1 The experiment: subjects materials and procedure

We designed an experiment to examine the acquisition of English 's Genitive Constructions with BPN possessors by a group of 94 Italian speakers aged 11-14 learning English only in a formal environment, Scuola Media.

Subjects belonged to three levels: 1st Graders (30), 2nd Graders(25) and 3rd Graders (39) according to their grade of school attendance.

Subjects had to accomplish two written tasks: an Error Detection Task and a Translation Task. In the Error Detection Task (henceforth EDT), subjects were asked to detect items containing error of various kinds and eventually provide their correct counterpart.⁵ In the Translation Task (henceforth TT) subjects had to translate in English sentences given in Italian.⁶ The EDT was preceded by a pre-test consisting of three sentences: two wrong (one corrected for exemplification) and one right.

The EDT was accomplished by 1st, 2nd and 3rd Graders, while the TT by 2nd and 3rd Graders only. EDT consisted of 16 sentences: 8 experimental sentences and 8 fillers.

The experimental sentences consisted of two correct 's genitive constructions and six 's Genitive Constructions containing errors of various types: lack of possessor movement with or without 's genitive marker (*House Peter is near the railway station; Car Mary's is red*), presence of a definite determiner preceding the possessee in various environments (*I like Laura's the bag; The book Steven's has a blue cover*).

The fillers consisted of 4 right sentences (e.g. *I like those lovely blue jeans*) and 4 wrong sentences containing various kinds or errors: number agreement, *a* vs. *an*, double past (*did* and *-ed*).

The TT included 8 experimental sentences containing possessive constructions. All sentences except one (containing a family name preceded by a possessive pronoun) contained BPN possessors and were of course Analytic Constructions. The eight fillers were sentences of various types.

2.2 Results

2.2.1 Error Detection Task

⁵ A complete list of experimental materials is included in the Appendix.

⁶ We chose to administer two different tasks in order to verify whether results were task- dependent. In particular, in the Translation Task we expected more transfer effects given that the source was our subjects' L1.

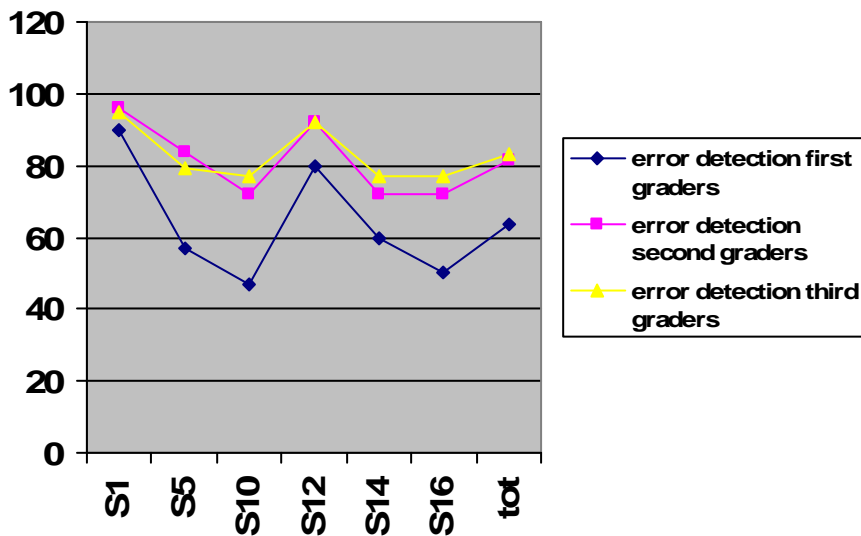
2nd and 3rd Graders were significantly more successful in the detection of errors than 1st Graders, as illustrated in Table 1 (81% 2nd Graders and 83% 3rd Graders vs. 64% 1st Graders; 1st Graders vs. 2nd Graders. $\chi^2=11,4548$; $p=0.0007$, and 1st Graders vs. 3rd Graders $\chi^2=18,4454$ $p=0.0000$):

Table 1. Detection vs. Non Detection

	Occurrences of error detection	Occurrences of non detection
1 st Graders (30)	115/180 (64%)	65/180 (36%)
2 nd Graders (25)	122/150 (81%)	28/150 (19%)
3 rd Graders (39)	194/234 (83%)	40/234 (17%)

We performed an analysis per sentence, the results of which are summarized in Figure 1:

Figure 1. Error Detection per sentence in the three groups⁷



Interestingly, we find an analogous pattern in the three groups. Sentence 1 is recognized as wrong at the highest rate (90% 1st Graders; 95% 2nd and 3rd Graders) and the difference in the detection of wrongness between S1 and the other items is statistically significant, except for S12 (which is recognized as wrong at a high rate as well. 80% 1st Graders; 92% 2nd and 3rd Graders).

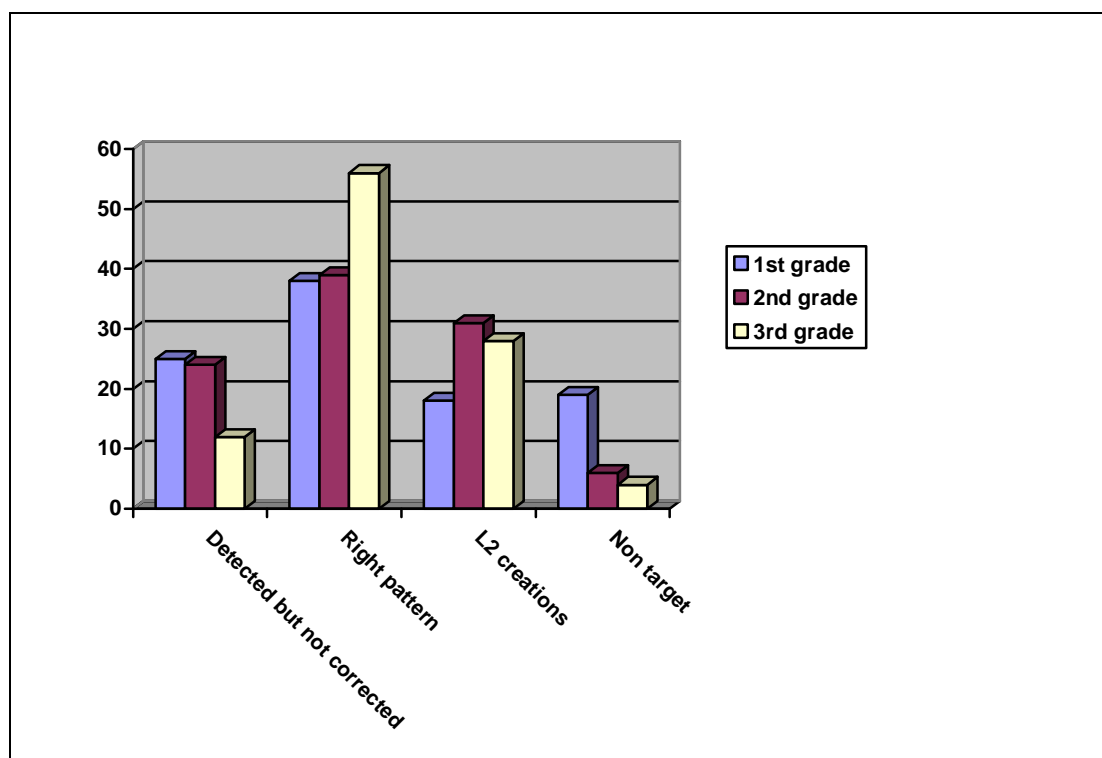
Among detected items, the patterns emerged are summarized in Table 2 and Figure 2:

⁷ S1= I like Laura's the bag ; S5= I love cat's John; S10= House Peter is near the railway station; S12= Car Mary's is red; S14= The dog Robert barks a lot; S16= The book Steven's has a blue cover

Table 2. Patterns in detected items⁸

Experimental subjects	Error detection without corrections	Right pattern	L2 creations	Non target
1 st Graders	29/115 (25%)	44/115 (38%)	20/115 (18%)	22/115 (19%)
2 nd Graders	29/122 (24%)	48/122 (39%)	38/122 (31%)	7/122 (6%)
3 rd Graders	23/194 (12%)	108/194 (56%)	55/194 (28%)	8/194 (4%)

Figure 2. Patterns in detected items in the three groups



3rd Graders made significantly more corrections than 1st and 2nd Graders: sentences detected but not corrected were 25% for 1st Graders and 24% for 2nd Graders vs. 12% for 3rd Graders; the grouping this time is thus 1st and 2nd Graders vs. 3rd Graders, and the difference is statistically significant, $\chi^2=10.3157$ $p=0.0013$;

3rd Graders produced a significantly higher number of right patterns than 1st and 2nd Graders (56% 3rd Graders vs. 38% 1st Graders and 39% 2nd Graders). Taking again 1st and 2nd Graders vs. 3rd Graders, the difference is statistically significant : $\chi^2=11.5123$; $p=0.0007$.

⁸ We included in ‘Non Target’ productions all patterns which were not possessive constructions, as in (i):
 (i) I like Laura in the bag

2nd and 3rd Graders dared in producing L2 creations significantly more than 1st Graders (31% 2nd Graders and 28% 3rd Graders vs. 18% 1st Graders). This time thus the grouping is 2nd and 3rd Graders vs. 1st Graders, and the difference is statistically significant: $\chi^2=5.7104$; $p=0.0169$.

Non target answers decreased robustly in 2nd and 3rd Graders (6% 2nd Graders and 4% 3rd Graders vs. 19% 1st Graders. As for the previous point, the grouping is 2nd and 3rd Graders vs. 1st Graders and the difference is statistically significant: $\chi^2=20.4329$; $p=0.0000$.

Among L2 Creations we found the following patterns:

Table 3. L2 Creations in EDT

	1 st Graders	2 nd Graders	3 rd Graders
1. D-Poss 's-N (<i>the Steven's book</i>)	8/20(40%)	27/38(71%)	34/55(62%)
2. D-Poss-N (<i>the Steven book</i>)	3/20(15%)	2/38(5%)	3/55(5%)
3. Poss-N (<i>Steven book</i>)	4/20(20%)	6/38(16%)	6/55(11%)
4. N-Poss (<i>book Steven</i>)	2/20(10%)	3/38(8%)	2/55(4%)
5. of constructions (<i>the book of Steven</i>)	2/20(10%)	0/38(0%)	6/55(11%)
6. Attempts of of constructions (<i>the book de Steven</i>)	1/20(5%)	0/38(0%)	4/55(7%)

The cases in which possessors occur pre-nominally are numerous in all groups ((75% in 1st Graders, 92% in 2nd Graders and 78% in 3rd Graders).

Table 4. Pre- nominal Possessors among L2 creations in EDT

	Pre-nominal Possessors	Post-nominal Possessors
1 st Graders	15/20(75%)	5/20(25%)
2 nd Graders	35/38(92%)	3/38(8%)
3 rd Graders	43/55(78%)	12/55(22%)

Within the cases of pre-nominal possessors we found an interesting interaction with the presence of the 's marker (which, on the contrary, is totally absent in the case of post-nominal possessor).

The correlation between the pre-nominal position of the possessor and 's insertion, is near the chance level for 1st Graders (53%). Interestingly 2nd and 3rd Graders' performance, on the contrary, shows an association between pre-nominal possessor and 's on the possessor: the difference between pre-nominal possessors with or without 's is statistically significant ($\chi^2=17.0000$; $p=0.0000$ in 2nd Graders and $\chi^2=26.7907$; $p=0.0000$ in 3rd Graders).

Table 5. Patterns with Pre-nominal Possessors in EDT

	1 st Graders	2 nd Graders	3 rd Graders
D-Poss 's-N	8/15 (53%)	27/35 (77%)	34/43 (79%)
D-Poss-N	3/15 (20%)	2/35 (6%)	3/43 (7%)
Poss-N	4/15 (27%)	6/35 (17%)	6/43 (14%)

Another statistically significant fact noted is the presence of a determiner with a pre-nominal possessor: (73%, $\chi^2=4.8000$ p=0.0285 in 1st Graders; 83%, $\chi^2= 26.6571$ p=0.0000 in 2nd Graders and 86%, $\chi^2=41.8605$ p=0.0000 in 3rd Graders).

Table 6. Determiner insertion with pre-nominal possessor patterns in EDT

	1 st Graders	2 nd Graders	3 rd Graders
Determiner insertion	11/15 (73%)	29/35 (83%)	37/43 (86%)
No determiner insertion	4/15 (27%)	6/35 (17%)	6/43 (14%)

As we said, part of the experimental material consisted of right sentences. In all Graders right sentences were mostly recognized as right, with no statistically significant difference per sentence.

2.2.2 Translation Task (TT)

As we said, TT was administered only to 2nd and 3rd Graders.

Results show that subjects were mostly able to accomplish the test: the percentage of non accomplished items is very low both in 2nd and 3rd Graders with no significant difference between the two groups:

Table 7. Accomplished vs. non accomplished

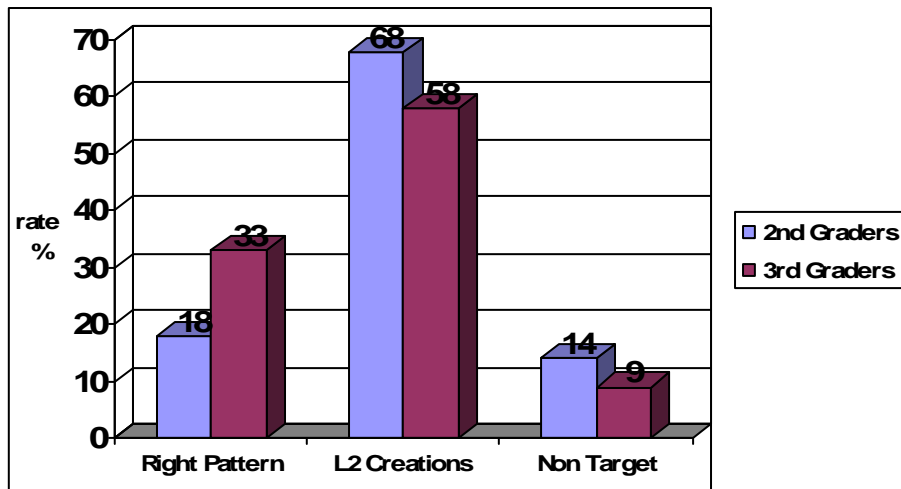
	Accomplished	Non accomplished
2 nd Graders (25)	188/200 (94 %)	12/200 (6%)
3 rd Graders (39)	301/312(96%)	11/312 (4%)

Among accomplished items, the patterns found are summarized in Table 8 and Figure 3:

Table 8. Patterns in accomplished items in TT

	Right pattern Poss 's-N	L2 creations	Non target
2 nd graders	34/188 (18%)	128/188 (68%)	26/188 (14%)
3 rd graders	99/301 (33%)	175/301 (58%)	27/301 (9%)

Figure 3. Patterns in accomplished items in the two groups



3rd Graders produced a higher percentage of Right patterns than 2nd Graders. The difference between the two groups is statistically significant (33% vs. 18%; $\chi^2=12.3306$; $p=0.0004$). 2nd Graders resorted to L2 creations significantly more than 3rd Graders (68% vs. 58%; $\chi^2=4.0229$; $p=0.0449$). The number of Non Target productions is quite low (14% vs. 9%) and the difference between the two groups is not statistically significant.

Among L2 Creations subjects produced a variety of interlanguage patterns analogous (although not numerically) to the one found in EDT as shown in Table 9:

Table 9. L2 Creations in TT

	2 nd Graders	3 rd Graders
1. D-Poss 's-N (<i>the Alison's cat</i>)	44/128 (34%)	47/175 (27%)
2. D-Poss-N (<i>the Alison cat</i>)	10/128 (8%)	13/175 (7%)
3. Poss-N (<i>Alison cat</i>)	8/128 (6%)	4/175 (2%)
4. N-Poss (<i>cat Alison</i>)	16/128 (13%)	17/175 (10%)
5. <i>of</i> constructions (<i>the cat of Alison</i>)	32/128 (25%)	54/175 (31%)
6. Attempts of <i>of</i> constructions (<i>the cat de Alison</i>)	18/128 (14%)	40/175 (23%)

Pre-nominal possessors are again widespread (48% in 2nd Graders and 36% in 3rd Graders).

Table 10. Pre- nominal Possessors among L2 creations in TT

	Pre-nominal Possessors	Post- nominal Possessors
2 nd Graders	62/128 (48%)	66/128(52%)
3 rd Graders	64/175 (36%)	111/175(64%)

Among the cases of pre- nominal possessors, we found an interaction with the presence of the 's marker and of the determiner *the* as in EDT:

Table 11. Patterns with pre- nominal possessors in TT

	2 nd Graders	3 rd Graders
D-Poss 's-N	44/62 (70%)	47/64 (73%)
D-Poss-N	10/62 (17%)	13/64 (21%)
Poss-N	8/62 (13%)	4/64 (6%)

Both in 2nd and 3rd Graders the correlation between pre- nominal possessors and 's marker is statistically significant (70%, $\chi^2=18.8852$; p=0.0000 in 2nd Graders; 73%, $\chi^2=26.2813$; p=0.0000 in 3rd Graders..

Table 12. Determiner insertion with pre- nominal possessors in TT

	2 nd Graders	3 rd Graders
Determiner insertion	54/62 (87%)	60/64 (94%)
No determiner insertion	8/62 (13%)	4/64 (6%)

Both in 2nd and 3rd Graders the correlation between pre-nominal possessors and presence of the determiner is robust (87% in 2nd Graders and 94% in 3rd Graders)

As a final remark, we observed that the 's genitive marker is present in a high percentage of cases where the 3rd Person Singular Present –s marker is absent, as shown in Table 13:

Table 13. 's Genitive and –s Simple Present

	's genitive; no –s simple present marker	's genitive; + –s simple present marker
2 nd graders	13/17 (76%)	4/17 (24%)
3 rd graders	27/28 (96%)	1/28 (4%)

There were two experimental sentences able to show the correlation 3rd Person Singular simple present/ 's Genitive Constructions, as shown in the Appendix.⁹ When the 's Genitive marker is present the –s simple present marker is often omitted (76% for 2nd Graders; 96% for 3rd Graders, the difference between 2nd and 3rd Graders not statistically significant). When the 's Genitive marker is omitted, the –s simple present marker is always omitted.

⁹ Sentence 4 = Il gatto di Alison dorme in cucina ; Sentence 12 = La cugina di Mary scrive poesie

2.2.3 L2 creations in EDT and TT

As already observed, the general pattern in the variety of L2 Creations is analogous in the two tasks. However, in TT, as opposed to EDT, a widespread production of 'of Constructions' emerged. Considering 2nd and 3rd Graders only (since 1st Graders did not perform TT), in both groups the difference between the occurrences of 'of Constructions' in EDT and TT is statistically significant; $\chi^2=10.2169$; $p=0.0014$ 2nd Graders, and $\chi^2=7.6328$; $p=0.0057$ 3rd Graders):

Table 14. L2 Creations in EDT and TT

	2 nd Graders		3 rd Graders	
	EDT	TT	EDT	TT
D-Poss 's-N	27/38 (71%)	44/128 (34%)	34/55 (62%)	47/175 (27%)
D-Poss-N	2/38 (5%)	10/128 (8%)	3/55 (5%)	13/175 (7%)
Poss-N	6/38 (16%)	8/128 (6%)	6/55 (11%)	4/175 (2%)
N-Poss	3/38 (8%)	16/128 (13%)	2/55 (4%)	17/175 (10%)
of constructions	0/38 (0%)	32/128 (25%)	6/55 (11%)	54/175 (31%)
Attempts of of constructions	0/38 (0%)	18/128 (14%)	4/55 (7%)	40/175 (23%)

As a consequence, the percentage of occurrences of pre- nominal possessors is inferior in TT (48% in 2nd Graders; 36% in 3rd Graders) than in EDT (92% in 2nd Graders; 78% in 3rd Graders).

Table 15. Pre- nominal Possessors in EDT and TT

	EDT	TT
2 nd graders	92%	48%
3 rd graders	78%	36%

Finally, in both groups, no statistically significant difference per task is found with respect to presence of the 's marker and presence of the determiner with pre-nominal possessors:

Table 16. Presence vs. absence of 's in pre- nominal possessors in EDT and TT

	With 's		Without 's	
	EDT	TT	EDT	TT
2 nd graders	26/34 (76%)	43/61 (70%)	8/34(24%)	18/61(30%)
3 rd graders	34/43 (79%)	47/64 (73%)	9/43 (21%)	17/64 (27%)

Table 17. Determiner insertion in pre- nominal possessor patterns in EDT and TT

	EDT	TT
2 nd graders	28/34 (82%)	53/61 (87%)
3 rd graders	37/43 (86%)	60/64 (94%)

3. DISCUSSION AND CONCLUSIONS

Among theories of L2 acquisition, two main issues are currently under debate: the involvement of Universal Grammar (UG) and the existence of transfer from the L1. Our data are consistent with the idea that both UG and transfer from the L1 are involved in the acquisition of English 's Genitive Constructions by native speakers of Italian.

First of all, subjects move gradually towards the acquisition of 's Genitive Constructions (see Table 1 and Figure 1 for EDT, Table 8 for TT), even though they are intensively trained on 's Genitive Constructions only in the first year of Scuola Media. It is therefore reasonable to assume that the gradual achievement of the native-like structure is due to a personal elaboration/process in our subjects' mind and not the direct reflex of intensive training or of mechanical learning.

This suggests in principle an involvement of UG which is confirmed more directly by our subjects' L2 creations: subjects do not produce *any* kind of construction, but their attempts can be brought back to a limited range of variation, namely 6 patterns, which are the same in both tasks (see Tables 3, 9 and 14). Interestingly, we never find a post-nominal possessor with 's, nor a possessor with 's preceding it, while we find, although not substantially, the pattern N Poss. This suggests that 's is correctly analyzed as an independent head and not as a suffix by our subjects. This analysis is confirmed by the fact that the most 'Detected as wrong' sentence is Sentence 1 (*I like Laura's the bag*, see Figure 1) which would be possible with 's analyzed as a suffix, as the Hungarian example (11). Furthermore, the second most 'Detected as wrong' sentence is Sentence 12 (*Car Mary's is red*), an example of post-nominal possessor with 's, which again would be possible with 's analysed as a suffix.

In both tasks there is a substantial amount of pre-nominal possessors.¹⁰ This fact is surely remarkable given that in Italian non pronominal possessors only occur post- nominally. In L2 Creations, we also found a statistically significant correlation between pre-nominal possessors and presence of 's, but only for 2nd and 3rd Graders.¹¹

Taken together these facts suggest that pre-nominal possessors are to be analysed as moved possessors, in a position to the left of the one where 's is generated, which we assume to be Poss2 along the lines of Delsing (1998). It is possible that 1st Graders have not yet acquired

¹⁰ In order to evaluate the total amount of pre-nominal possessors we should not only consider those found in L2 creations, but also those consisting in the Right pattern. The total amount of pre-nominal possessors is thus the following: in EDT, 59 in 1st Graders, 83 in 2nd Graders, 151 in 3rd Graders; in TT, 96 in 2nd Graders and 163 in 3rd Graders.

¹¹ Van de Craats et al. (2000) report that native speakers of Moroccan and Turkish in the acquisition of Dutch Genitive Constructions show a significant correlation between pre- nominal possessors and presence of 's.

the relevant morphology to express the agreement relation between the moved possessor and the agreement head: this is why in 1st Graders the correlation between pre-nominal possessors and presence of 's is not statistically significant. But in order to see where exactly possessors are moved, we have to take into account another finding, namely that when the possessor is pre-nominal, we often see the presence of the head noun determiner. In L2 Creations, the correlation pre-nominal possessors/determiner insertion is statistically significant in all graders (see Tables 3, 9 and 14).¹²

The presence of an overt definite determiner of the possessee shows on one side that the intrinsic definiteness of English 's Genitive Constructions is not acquired by our subjects.¹³ Furthermore, it suggests that possessors are not moved to Poss3, but to Poss 2:

(13) [_{SpecDP} [_D the [_{SpecAgr} Alison_i [_{Agr} 's [_{NP} cat t_i]]]]]

Poss2 is a position where some possessors move in Italian, namely pronominal possessors. Subjects use as a landing site for moved possessors the position which is active in their language, namely Poss2. In this case, so, we see the effect of transfer from the L1. A study concerning the acquisition of German possessive constructions by adult native speakers of Italian (Matteini 2007) reports similar results: learners systematically resort to determiner insertion with a pre-posed non pronominal possessor:

(14) Mario ruft die Giselas Lehrerin an (L2 German, Matteini, 2007.)

Movement to Poss2 seems thus a process activated by native speakers of Italian. Movement to Poss2 also shows that there is not a single stage in the acquisition of English 's Genitive Constructions but rather there is a dissociation in the checking of two different features, case and definiteness.

Interestingly, the effect of transfer does not lead to a wild output, since in Uralic languages, Poss2 is used as a landing site for both pronominal and non-pronominal possessors, as we saw in (9.a-b) for Hungarian.

Even though transfer is active, our subjects' choices are UG constrained.

Finally, we have observed that the 's genitive marker is present in a high percentage of cases where the 3rd Person Singular Present –s marker is absent. This is a restatement of a fact noted in early studies on the order of acquisition of grammatical morphemes (Brown 1973

¹² As for the case of 's with pre-nominal possessors, in this case as well it is interesting to evaluate the phenomenon in all cases of pre-nominal possessors. Items with the determiner of the possessee amount to 19% in 1st Graders (EDT only), to 35% and 56% in 2nd Graders (EDT and TT respectively) and to 25% and 37% in 3rd Graders (EDT and TT respectively). As far the difference between the two tasks is concerned we interpret it as a task complexity effect. The fact that determiners are inserted in 19% of the cases of pre-nominal possessors in 1st Graders can be interpreted as follows. 1st Graders produce a very low number of L2 Creations, so with respect to the baseline the Right Pattern occurrences are more consistent than for the other groups.

¹³ As they produce *The Alison's cat* they are expected to be able to produce *An Alison's cat*. Unfortunately our test did not contain items able to induce such productions. We leave the matter to future research. Similarly, we expect our subjects to be able to produce *The/A my cat*.

for L1 English; Dulay-Burt 1974 for L2 English), namely that the acquisition of the 's genitive marker precedes the acquisition of the 3rd Person Singular Present –s marker.

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APPENDIX

1. Error Detection Task: Materials

Pre-test

- a) My cousin lives at New York
- b) Jackie goes to school by bus
- c) Paul don't like sweets

Test

- 1) I like Laura's the bag
- 2) A gentleman never runs
- 3) I like those lovely blue jeans
- 4) Please bring us a orange juice and an tea
- 5) I love cat's John
- 6) The pupils didn't listened to the teacher
- 7) Liz play the cello and Fred play the guitar
- 8) Speak slowly, please!
- 9) Mum baked a delicious apple pie
- 10) House Peter is near the railway station
- 11) Jack's trousers are black and white
- 12) Car Mary's is red
- 13) The doctor examined the X-rays carefully
- 14) The dog Robert barks a lot
- 15) Paul's newspaper is on the table
- 16) The book Steven's has a blue cover

2. Translation task: Materials

- 1) I biscotti di mia nonna sono squisiti
- 2) Mi piacciono le scarpe di Susy
- 3) I negozi sono aperti dalle 9 alle 17
- 4) Il gatto di Alison dorme in cucina
- 5) La macchina di John è nuova
- 6) L'orologio di Sophie è molto piccolo
- 7) Potresti chiudere la finestra per favore?
- 8) Spero di rivederti presto
- 9) Ho trascorso il week-end con la mia famiglia
- 10) Ho comprato dei fiori al mercato
- 11) Il treno parte fra un'ora
- 12) La cugina di Mary scrive poesie
- 13) Il cane di John è marrone

- 14) Questo ristorante è molto caro
- 15) Paul non è ancora arrivato
- 16) Jack è il cugino di Louis

Asymmetries of scope assignment

ANDREA GUALMINI*

Abstract

This paper presents the results of an experiment investigating children's interpretation of the indefinite 'some' and negation in the two arguments of the universal quantifier 'every.' The findings show that English-speaking children's interpretation of sentences containing negation is not limited to surface scope interpretations. The results documented in the paper, together with the findings available in the literature, are used to draw an up-to-date sketch of children's interpretation of sentences containing negation. Finally, the findings are used to adjudicate between alternative theories of children's interpretation of universally quantified sentences.

1. INTRODUCTION

This paper is concerned with children's semantic knowledge. In particular, we focus on two topics that have received much recent attention: children's interpretation of universally quantified statements and their interpretation of sentences containing negation.

1.1 The debate on the interaction between quantification and negation in child language

In this section, I will review the recent debate on the interaction between negation and quantificational elements in child language. Much current research on this topic starts from the findings documented in Musolino (1998). To highlight children's linguistic difficulty, we will consider all of the experiments from his study which yielded a significant difference in children's and adults' behavior. Consider the sentences below:

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- (1) Every horse didn't jump over the fence
- (2) The detective didn't find some guys
- (3) The detective didn't find two guys

Each of the sentences above contains two operators: negation and a quantified noun phrase. This yields two logically possible scope assignments for each sentence. To illustrate, (1) is ambiguous between the two interpretations listed below.

- (4) Every horse is such that it did not jump over the fence
 $\forall x [\text{horse}(x) \rightarrow \neg \text{jump over the fence}(x)]$
 'for every x, if x is a horse then x did not jump over the fence'
- (5) Not every horse jumped over the fence
 $\neg \forall x [\text{horse}(x) \rightarrow \text{jump over the fence}(x)]$
 'it is not the case that for every x, if x is a horse then x jumped over the fence'

The two interpretations of (1) listed in (4) and (5) result from the relative scope assignment to negation and *every*, as suggested by the order of the operators \neg and \forall in the logical formulae. In the semantic literature, the interpretation in (4) is referred to as the 'surface scope' or 'isomorphic' interpretation of (1), while (5) is referred to as the 'inverse scope' or 'non-isomorphic' interpretation.

The research question that Musolino (1998) and others have addressed is whether young children are capable of accessing both the surface scope and the inverse scope interpretation of sentences containing negation and another scope-bearing element. To address this question, Musolino (1998) conducted a series of experiments that tested children's interpretation of sentences like (1)-(3), among others.

The experimental evidence collected by Musolino (1998) suggests that inverse and surface scope interpretations of sentences containing negation are not equally accessible to young children (4- and 5-year-olds). In fact, the evidence suggests that, for all the constructions in (1)-(3), children consistently resort to their surface scope interpretations, which are paraphrased below.

- (6) Every horse is such that it did not jump over the fence
 $\forall x [\text{horse}(x) \rightarrow \neg \text{jump over the fence}(x)]$
- (7) It is not the case that the detective found some guys
 $\neg \exists x [\text{guys}(x) \ \& \ \text{detective found}(x)]$
- (8) It is not the case that the detective found two guys
 $\neg \exists x [\text{two guys}(x) \ \& \ \text{detective found}(x)]$

It is critical to note that, across all of the experiments conducted by Musolino, children's behavior runs counter to a strategy that is accepted by most psycholinguistic researchers: namely, the bias to access the interpretation that makes the sentence true. We will adopt the term Principle of Charity for such a bias (see Grice (1975)). Given that the Principle of Charity does not explain the data, we have to look for another explanation.

The proposal offered by Musolino (1998) draws upon the hypothesis that there is a common denominator to how children differ from adults: children access the surface scope

interpretation for all of the sentences that adults interpret on their inverse scope interpretation. To describe these facts, Musolino (1998) proposed the Observation of Isomorphism which claims that overt syntactic and semantic scope coincide for children.

The first challenge to Musolino's Observation of Isomorphism emerged from research with Dutch-speaking children. Consider the Dutch example in (9), taken from Krämer (2000).

- (9) De jongen heeft een vis niet gevangen
 'The boy has a fish not caught'
 There is a fish the boy hasn't caught

Children's interpretation of sentences like (9) was investigated by Krämer (2000). The experimental results show that 38 Dutch-speaking children from 4;0 to 7;7 rejected (9) as a description of a story in which a boy had caught two fish out of the three fish available in the context, whereas adults always accepted (9) (see also Unsworth (2005)). Children, unlike adults, apparently interpreted the indefinite *een vis* ('one fish') in the scope of negation, which would correspond to the inverse scope interpretation of (9).

Let us now focus on English. One piece of evidence against Musolino's original view of Isomorphism is constituted by studies showing children's ability to access inverse scope interpretations of sentences different from the ones investigated by Musolino (1998) (see Miller and Schmitt (2004), Musolino and Gualmini (2004)). In particular, these studies showed that English-speaking children can access the inverse scope interpretation of sentences containing the indefinite *a* such as (10) and of sentences containing partitives such as (11) and (12) (see Miller and Schmitt (2004) and Musolino and Gualmini (2004) respectively).

- (10) Mary didn't paint an egg
 (11) The detective didn't find some of the guys
 (12) The detective didn't find two of the guys

Of course there is at least one way to account for the facts described above, while preserving the spirit of the Observation of Isomorphism. Intuitively, one could simply argue that children acquire the inverse scope interpretation of the constructions tested by Krämer (2002), Miller and Schmitt (2004) and Musolino and Gualmini (2004) earlier than for the constructions investigated by Musolino (1998).

A more direct assessment of the original view of Isomorphism could come from data showing that children's hypothesis space does not conform to the scenario envisioned by Musolino for sentences such as (1), (2) or (3). One way to achieve this result is to demonstrate that (a) children are capable of accessing both surface scope and inverse scope interpretations for those constructions and (b) that their behavior can be predicted.

The first piece of evidence against the view of Isomorphism proposed by Musolino (1998) and Musolino et al. (2000) comes from Gualmini (2004). This study drew upon the observation that sentences containing negation ordinarily are used to point out a discrepancy between an expected outcome and the actual outcome (see Glenberg, Robertson, Jansen and Johnson-Glenberg (1999), Horn (1989), Wason (1965), (1972)). In order to evaluate whether expectations can mitigate children's difficulty with sentences like (2), Gualmini presented children with stories in which a character had a task to carry out. In one of the trials, children were told a story about a troll, who is supposed to deliver four pizzas to Grover. Unfortunately, on the way to Grover's house two pizzas fall off the delivery truck, and the

troll only manages to deliver two pizzas. Children were then asked to evaluate either (13) or (14).

(13) The troll didn't deliver some pizzas

(14) The troll didn't lose some pizzas

Notice that both (13) - (14) are true in the context under consideration on the inverse scope interpretation. (13) is true because there are some pizzas that the troll didn't deliver, namely the ones he lost on the way; (14) is true because there are some pizzas that the troll didn't lose, namely the ones he managed to deliver. The two sentences seem to differ in appropriateness, however. Whereas (13) points out that the troll failed in carrying out his task, upon hearing (14) the hearer has the impression that the speaker is not addressing what's at stake. Gualmini (2004) suggested that this difference has an effect on children's responses. Thirty 4- and 5-year-olds participated in the experiment. Children accepted sentences like (13) in 54 out of 60 trials (90%) but they accepted sentences like (14) only in 30 out of 60 trials (50%). More recently, Gualmini, Hacquard, Hulsey and Fox (2005) have shown that the same contextual maneuver discovered by Gualmini (2004) leads children to access the inverse scope interpretation of sentences equivalent to (1) (e.g., *Every pizza wasn't delivered*) and (3) (e.g., *The troll didn't deliver two pizzas*) to a higher extent than documented in previous literature.

Despite the availability of experimental evidence showing children's ability to access inverse scope interpretations, there is still disagreement as to whether inverse scope interpretations are available to children to the same extent as surface scope interpretations. In particular, it is often claimed that inverse scope interpretations are indeed available to young children, but they represent a somewhat marked option (see Musolino and Lidz, 2006). This hypothesis has been considered in different studies both from theoretical and experimental perspectives (see Hulsey, Hacquard, Fox and Gualmini, 2004; Gualmini 2007; in press). In this paper, we contribute to the debate by considering whether children's ability to access inverse scope interpretations is affected by factors that arguably increase the complexity of the target sentence, such as the presence of a third scope bearing element. To this end, we test children's interpretation of sentences containing the indefinite *some* and negation in the two arguments of the universal quantifier *every*. We now turn to previous research on children's interpretation of universally quantified sentences.

1.2 *The debate on the universal quantifier in child language*

The study of children's responses to sentences with the universal quantifier *every* dates back to Inhelder and Piaget (1964), who reported that children (but not adults) sometimes demand a one-to-one correspondence between the members of two sets when interpreting universally quantified statements. More recently, Philip (1995) showed that children often reject sentences like (15) in a context in which three boys are each riding an elephant, and where there is a fourth elephant that nobody is riding.

(15) Every boy is riding an elephant

When asked to justify their negative responses, children often point to the elephant that is not being ridden by any boy. Children's rejections of sentences like (15) in the context above have come to be known as *symmetrical responses* (see Philip, 1995).

Several psycholinguists have argued that children's symmetrical responses are due to non-adult linguistic analyses, which make (15) false in the context under consideration (see Philip, 1995; Drozd and van Loosbroek, 1998; 1999; and Geurts, 2003). However, the need for a grammatical explanation of children's non-adult responses to sentences containing the universal quantifier was questioned by Crain, Thornton, Boster, Conway, Lillo-Martin and Woodams (1996). These researchers found that even preschool children consistently exhibited adult-like performance if, for example, the experimental condition included an additional animal, a donkey say, which the boys considered riding. Children's consistent adult-like performance in this situation was attributed by Crain et al. (1996) to what they called the Condition of Plausible Dissent (see Russell, 1948).

In recent years, an extensive literature has focused on the felicity condition proposed by Crain et al. (e.g., Gordon, 1996; Geurts, 2000, 2003; Sugisaki and Isobe, 2001; Gouro, Norita, Nakajima and Ariji, 2002; Philip, 1996; Philip and Lynch, 2000). A different tack was taken by Gualmini, Meroni and Crain (2003), which scrutinized one assumption common to all the grammatical accounts of children's symmetrical responses, namely the assumption that children are not tied to the syntactic structure of the sentence in choosing the two arguments of the universal quantifier. We will return to this issue momentarily. For the time being, we would like to investigate whether anything comparable to the mistakes we just described also emerges such as (16). This will also allow us address the debate discussed in the previous section,

(16) Every farmer didn't clean some animal

To introduce our research question, we take the Event Quantification account proposed by Philip (1995), which we believe is the most explicit proposal of children's non-adult analyses. According to this account, children's non-adult responses to (15) follow from the availability of an interpretation that can be paraphrased as:

(17) For every event e such that a boy or an elephant participates in e , that event e is an event of a boy riding an elephant

In essence, the Event Quantification account maintains that children's behavior results from an interpretation in which the universal quantifier *every* binds a variable whose restriction is defined by linguistic material contained in the verb phrase. As far as we can tell, if one were to apply the same intuition to the sentences we are concerned with (i.e., *Every farmer didn't clean some animal*), then children should be able to access an interpretation that can be paraphrased as follows:¹

(18) For every event e such that a farmer or an animal participates in e , that event e is not an event of a farmer cleaning an animal

The question is whether children would consistently access the interpretation paraphrased in (18).

¹ We do not consider the possibility that negation could receive wide scope, as we take one of the main intuitions behind the Event Quantification account to be that the universal quantifier always has the widest scope. We also refer the reader to Experiment II, which is not affected by the possibility of negation taking scope over *every* (either by neg-raising or by reconstruction).

Similarly, experimental findings could shed light on whether children adopt the non-adult analysis envisioned by Drozd and van Loosbroek (1998; 1999).² On that account, which we call Weak Quantification account, children incorrectly assign to universally quantified sentences the representation to which adults sometimes resort for sentences containing the weak quantifier *many*. In a critique of the Weak Quantification account, Meroni, Gualmini and Crain (2000) attempted to formalize this intuition and argued that, on the Weak Quantification account, (19) should be a possible interpretation of (15), i.e., *Every boy is riding an elephant*, a prediction that has not been confirmed experimentally.

(19) For every elephant, a boy is riding that elephant

By analogy, on the Weak Quantification account we would expect children to be able to interpret (16) (i.e., *Every farmer didn't clean some animal*) as in (20).

(20) For every animal, that animal is not cleaned by a farmer

Again, the question is whether children would access (our rendering of) the interpretation envisioned by the Weak Quantification account when it comes to the sentences that we are concerned with.

2. EXPERIMENTAL DATA ON CHILDREN'S INTERPRETATION OF NEGATION AND *SOME* IN THE TWO ARGUMENTS OF THE UNIVERSAL QUANTIFIER *EVERY*

In this section we illustrate the design and the results of an experiment conducted to investigate children's interpretation of *some* with respect to negation in the second argument of *every*. The experiment employs the Truth Value Judgment task (Crain and Thornton, 1998). In a Truth Value Judgment task, an experimenter acts out short stories in front of the child using small toys and props. The second experimenter plays the role of a puppet who watches the stories alongside the child. At the end of the story, the puppet offers a description about the story, and the child's task is to determine whether the puppet is 'right' or 'wrong.' In the experiments we conducted, each child was presented with four target trials preceded by one warm-up trial and interspersed with filler trials to balance the number of 'yes' and 'no' responses.

2.1 Experiment I

Experiment I focused on the second argument of the universal quantifier *every*. In particular, we wanted to determine whether children consistently access the inverse scope interpretation of negation and *some*, when those elements occur in the second argument of the universal quantifier. First, this will allow us to determine if the pattern uncovered by Gualmini (2004) is affected by the presence of a third scope-bearing element. Second, the results will provide us with new evidence on children's interpretation of universally quantified sentences.

Fifteen children participated in Experiment I (ages: 4;01 to 5;05 - mean age: 4;09). In a typical trial, children were presented with a story about three farmers. Each farmer had to

² For our purposes, the account proposed by Geurts (2003) makes the same predictions as the one proposed by Drozd and van Loosbroek (1998; 1999).

clean three animals: a horse, a chick and a pig. In the end, however, the farmers refused to clean the pigs. Children were asked to evaluate the target sentence in (21).

(21) Every farmer didn't clean some animal

It is important to observe that if children can only access the surface scope interpretation of the surface string [*not ... some N*], they should interpret (21) as in (22) and reject it, on the grounds that every farmer *did* indeed clean some animals.

(22) Every farmer didn't clean any animal

Here are the results. Children accepted the target sentence 47 times out of 60 trials (78%). A group of seventeen undergraduates participated in a video-taped version of the experiment and accepted the target sentences 57 times out of 68 trials (82.4%). Thus, when the surface string [*not ... some N*] occurs in the second argument of *every* and the sentence is used to point out a discrepancy between the expected outcome and the actual outcome, children and adults tend to access its inverse scope interpretation.

As the reader may have noticed, the experimental hypothesis was associated with the affirmative answer. This was not a matter of choice, however. As discussed by Musolino (1998), in our contexts the interpretation in which *some* receives narrow scope entails the interpretation in which *some* receives wide scope. Thus, one can only seek to determine if the latter interpretation is available. In addition to being the only option, the experimental design can be defended on further grounds. The main reason why the response associated with the experimental hypothesis should be a negative answer is that children usually respond affirmatively if they are confused about the experiment (see Grimshaw and Rosen, 1990; but see also Fritsley and Lee, 2004). In the particular case at hand, however, the findings of previous research on the structures under consideration have not conformed to this assumption. As we saw, children have been reported to unexpectedly *reject* some sentences containing the universal quantifier. The same holds for the original study on children's interpretation of sentences containing negation and the indefinite *some* by Musolino (1998). Furthermore, we can report the results of a control condition designed to ensure that children can reject sentences like (21) (in a different context). In that condition, the stories were slightly different, so that the target sentences did not correctly describe the final outcome of the story (on any interpretation). To illustrate, the story about three farmers would be modified so that one of the farmers would eventually clean all the animals. Ten children (age 4:0-5;6- mean age 4:10) participated in the control condition, which included two target trials. These children rejected the target sentences 17 times out of 20 trials (85%).

The findings of Experiment I replicate the results documented by Gualmini (2004). Children consistently access the inverse scope interpretation of sentences like (21), as long as the relevant felicity conditions are satisfied. The relevance of the findings extends beyond the issue of whether children are capable of accessing inverse scope interpretations. Because of the particular linguistic environment that we chose, the findings also bear relevance for studies on children's interpretation of universally quantified sentences.

In our view, the experimental findings of Experiment I cast doubts on many accounts that attribute children's mistakes with universally quantified sentences to deviant linguistic analyses. Crucially, both interpretations paraphrased in (18) and (20), which we believe should be possible if the Event Quantification account or the Weak Quantification account

were on the right track, should lead children to reject the target sentence, contrary to what we found.³

In order to defend the relevance of the findings, a clarification is appropriate. It is often argued that children's ability to give adult-like judgments is consistent with most grammatical accounts of children's mistakes, because no account claims that children (who are capable of a non-adult interpretation of (15)) cannot access the adult interpretation of universally quantified sentences. In our opinion, however, that is the claim of some accounts. Furthermore, under current assumptions, that *should* be the claim of all grammatical accounts unless we are ready to face a learnability problem. On the first point, after discussing the subset relations that obtain between the relevant interpretations, Philip (1995: 48) writes that "the typical acquisition order would be predicted to be: exhaustive interpretation > symmetrical interpretation > adult interpretation."⁴ In our view, Philip (1995) is attempting to use the logic of the subset principle to explain how children can move from one stage to the next one. Regardless of whether our reading of Philip (1995) is correct, we would like to reiterate a point made by Meroni, Gualmini and Crain (2000), to which no response has been offered: if one allows the non-adult interpretations (proposed in the literature) and the adult interpretation to co-exist, a learnability problem arises, for which no solution has been proposed.

Suppose that, children assign (at least) two meanings to sentences with the universal quantifier, whereas adults assign only one. In the course of language development, children must expunge a non-adult semantic representation from their grammars. It is difficult to see how this could be done, because the environmental input would always be consistent with one of children's interpretations, namely the adult interpretation. Thus, children would always be able to interpret the primary linguistic data. Moreover, in this particular case, the interpretations that have been attributed to children are true in a subset of the circumstances in which the adult interpretation is true. Thus, one cannot find any situation in which the non-adult interpretation available to children is true and the one specific to adults is false. As a consequence, one cannot find any case in which communication would break down because the child produces a sentence for which her grammar can generate a true interpretation, whereas the adult grammar can't (see Meroni, Gualmini and Crain, 2000). Unless we can solve this learnability problem, the grammatical explanation for children's behavior is committed to the existence of a stage at which the non-adult interpretation is the only interpretation. As we saw above, however, this hypothesis is falsified by experimental data.

2.2 *Interim Conclusions*

To recap, the results of Experiment I support the conclusion reached by Gualmini (2004), by confirming that children's interpretation of sentences containing negation is not limited to surface scope interpretations. This result was confirmed by looking at sentences containing three scope-bearing elements. Moreover, the findings suggest that when children interpret sentences like *Every farmer didn't clean some animal*, they do not commit any of the mistakes that one would expect, given the analyses that have been proposed to explain their mistakes with sentences such as *Every boy is riding an elephant*.

³ For instance, the interpretation paraphrased in (18) (i.e., *For every event such that a farmer or an animal participates in that event, that event is not an event of a farmer cleaning an animal*) makes the sentence false because each animal cleaned by a farmer participates in an event which *is* an event of a farmer cleaning an animal. According to the paraphrase in (18), no event of this kind should exist.

⁴ See Philip (1995) for the explanation of these terms. For our purposes, it suffices to say that the symmetrical interpretation is the interpretation that leads children to reject a universally quantified statement like *Every boy is riding an elephant* unless they can establish a one-to-one correspondence between the boys and the elephant riders.

In the remainder of the paper, we will not focus on any specific account of children's mistakes. Rather, we will follow Gualmini, Meroni and Crain (2003), which scrutinized one assumption common to many grammatical accounts of children's symmetrical responses. These researchers observed that, on many accounts, children are not tied to the syntactic structure of the sentence in determining the two arguments of the universal quantifier to the same extent as adults. Here are some representative quotes.

“The WQH [Weak Quantification Hypothesis] claims that children assign a weak-quantifier interpretation to universal quantifiers. This predicts that a child's interpretations of universal quantifiers can be affected by the meaning of other constituents in the sentence, or what the children know about the denotations of those constituents.” (Drozd, 2000: 358)

“My proposal is based on an old idea, viz. that children's errors are caused by a non-canonical mapping from syntactic form to semantic representation.” (Geurts, 2003: 197)

Similar views seem to be endorsed by researchers who do not propose a linguistic account of children's ‘mistakes’:

“This paper will argue that there is a type of sentence interpretation, occurring under certain circumstances and in certain age groups, in which a subject-predicate distinction between the content words is not properly registered. The sentence is encoded as a simple string or unordered set of substantive words without hierarchical structure.” (Bucci, 1978: p. 58)

“In the absence of a decisive structuring of language, it is then the structuring of the physical array [visual input] that determines the outcome.” (Donaldson and Lloyd, 1974: 82, taken from Philip, 1995: 40)

As these quotes highlight, the same hypothesis, namely that the interface between syntax and semantics assumes different guises in child and adult language, seems to be endorsed by many researchers. Gualmini et al. (2003) examined this hypothesis by investigating children's interpretation of the disjunction operator *or* in the two arguments of the universal quantifier *every*, and found that children license different inferences in the two arguments.

The reader may now see another point of relevance of the findings reported thus far. Now that we have shown that children can consistently access the inverse scope interpretation of *some* with respect to negation in the second argument of *every*, we can determine whether they would consistently access the surface scope interpretation in the first argument of *every*. If this were the case, then one could conclude that children do not differ from adults in the meaning assigned to the universal quantifier *every* and they do not differ from adults in how the arguments of *every* are mapped onto the overt syntax. Whereas the first conclusion might be uncontroversial, the second conclusion is unexpected on many accounts of children's mistakes. To reiterate, the issue that we are interested in is not simply whether young children, like adults, interpret the quantifier *every* as expressing the inclusion relationship. Rather, the issue we are interested in is whether children interpret sentences of the form *Every NP VP* as expressing a universal statement that is verified if the denotation of the NP and the denotation of the VP are in the relation specified by the universal quantifier if the denotation of the subject NP is taken as its first argument and the denotation of the VP is taken as its second argument.

2.3 *Experiment II*

The properties of the first argument of the universal quantifier *every* were investigated in Experiment II. In the present case, the research question was whether all children resort to the surface scope interpretation of negation and the indefinite *some* when those elements occur in the first argument of the universal quantifier *every*.⁵ In addition, just like in Experiment I, we wanted to determine whether children would require a one-to-one correspondence between the relevant entities in order to accept those sentences. To find out, we conducted an experiment with fifteen children (ages from 3;10 to 5;08 - mean: 4;08).

In a typical trial, children were told a story about five farmers. Each farmer had to clean three animals: a horse, a pig and a chick. One farmer cleaned all the animals he was supposed to clean, a second farmer only cleaned the horse and the chick and the remaining three farmers did not clean any animal. Then, those three farmers received a broom from their boss, so they could sweep the floor. At the end of the story, children were asked to evaluate (23).

(23) Every farmer who didn't clean some animal has a broom

Our interest was whether children could consistently access the surface scope interpretation paraphrased in (24), which makes sentence (23) true in the context.

(24) Every farmer who didn't clean any animal has a broom

In particular, we wanted to distinguish the interpretation paraphrased in (24) from another logically possible interpretation in which *some* is interpreted outside the scope of negation, such as (25), and which makes (23) false in the context. In particular, the interpretation in (25) makes (23) false because the farmers for whom there is some animal that they did not clean include the farmer who only cleaned the horse and the chick. In the story, however, that farmer did not receive a broom.

(25) Every farmer for whom there is some animal that he did not clean has a broom

Let us turn to the results. Children accepted the target sentence 53 times out of 60 trials (88%). A group of twenty-four undergraduates participated in a video-taped version of the experiment and accepted the target sentences 87 times out of 94 trials (92.5%).

Due to the logical relations among the relevant interpretations, the same considerations that we offered for Experiment I apply to the present case. In particular, one can only determine whether the surface scope interpretation is available by means of an affirmative response. In this case, to ensure that children can reject sentences like (23), the stories were changed to make the target sentences false in the story. To illustrate, the story about five farmers would be modified so that only two of the farmers who had not cleaned any animal would receive a broom, while the third farmer who had not cleaned any animal would receive a shovel. Twelve children (age 3:4-5:9- mean age 4:3) participated in the

⁵ For our purposes, it is irrelevant whether, for adults, *some* can be interpreted in the scope of negation in the first argument of *every* because in this case *some* does not occur in a downward entailing environment, as the standard view would hold (see Ladusaw, 1979), or because the complex item constituted by *some* and negation occurs in a downward entailing environment (see Szabolcsi, 2004). Furthermore, when it comes to children, there might not be any restrictions on the polarity interpretations of *some* (see Hulsev et al., 2004).

control condition, which included two target trials. These children rejected the target sentences 21 times out 24 trials (87.5%).

Let us sum up. When the string [*not ... some N*] occurs in the first argument of the universal quantifier *every*, children (like adults) consistently access its surface scope interpretation. Furthermore, it is worth noticing that just like in Experiment I, children should have rejected the target sentences if they had entertained any analysis modeled on the grammatical accounts proposed for children's mistakes with sentences like *Every boy is riding an elephant*. In fact, any grammatical analysis that would lead children to reject such sentences in contexts which do not show a one-to-one correspondence between boys and elephants also predicts that children should reject sentences like *Every farmer who didn't clean some animal has a broom* in contexts which do not show a one-to-one correspondence between farmers and brooms, contrary to fact.

3. CONCLUSION

We have presented the results of two experiments investigating children's and adults' interpretation of the indefinite *some* and negation in the two arguments of the universal quantifier. These are the conclusions that can be drawn. First, we have confirmed that English-speaking children's interpretation of sentences containing negation is not limited to surface scope interpretations, and we have shown that the presence of a third scope-bearing element does not inhibit the inverse scope interpretation. Second, we have shown that when it comes to sentences like *Every farmer didn't clean some animal* or *Every farmer who didn't clean some animal has a broom*, children do not make mistakes comparable to the ones that have been documented for sentences like *Every boy is riding an elephant*.

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