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Preface

The First Central European Conference in Linguistics for Postgraduate Students (CECIL'S 1) was held at the Faculty of Humanities of Pázmány Péter Catholic University, Piliscsaba, Hungary, on 29–30 August 2011. The conference encompassed the core fields of modern linguistics and sociolinguistics, with special focus on languages spoken in Central European countries, and their comparison with other languages. Conference participants presented a total of 36 papers (21 talks and 15 posters) over the course of the two beautifully sunny days, with keynote presentations by Prof. Caroline Féry and Prof. Katalin É. Kiss. The current volume contains 19 selected papers delivered at the conference.

CECIL'S 1 was organized by Pázmány Péter Catholic University (PPCU) and our partner institutions: The John Paul II Catholic University of Lublin, Palacky University in Olomuc, and Comenius University in Bartislava. We are indebted to Prof. Anna Bondaruk of The John Paul II Catholic University, Prof. Ludmila Veselovska of Palacky University and Prof. Katalin É. Kiss of PPCU for contributing their kind help at various stages of this project. Our special thanks go to the postgraduate students of the Faculty of Humanities of PPCU who gave their hands both before and after, and particularly during, the days of the conference. Lilla Pintér deserves special mention for making arrangements on site at the campus, as well as for taking such efficient care of accommodation matters at the dormitory.

We are also grateful to all of the anonymous reviewers who sorted through the abstracts we had received, narrowing the program down to the papers that were invited for presentation. We cannot adequately express our appreciation to the anonymous reviewers of the submitted manuscripts, who generously provided their constructive criticism and expert advice. A number of the papers in the volume owe a great deal to their helpful comments.

We would like to thank our main sponsor, the International Visegrad Fund, whose Small Grant awarded to this project made it possible to organize the conference and produce the present proceedings volume. Many thanks to Ms. Barbora Hromeková and Ms. Kristína Ácsová of the Fund's Secretariat, who provided their guidance and dependable support throughout the process.

My last word of thanks go to Dia Varga, co-editor of the present volume, whose unfailing assistance from the very beginning to the end of this project made CECIL'S 1 the success that it turned out to be. Without her devoted efforts the conference simply would not have occurred.

Balázs Surányi
(co-editor of the present volume)

Hungarian conjugations and differential object marking*

András Bárány

In this paper, I try to combine two areas of research: the distinct verb paradigms in Hungarian and differential object marking (DOM). The motivation for this combination is that, on the surface, both phenomena share striking similarities. I argue, however, that typical criteria of DOM (cf. Aissen 2003) cannot explain the distribution of the Hungarian conjugations. In this language, the "marked" conjugation is argued to have a structural and not a semantic trigger, which could be due to diachronic developments that made the Hungarian conjugations redundant to some extent.

Keywords: *differential object marking, Hungarian, object agreement*

1 Introduction

This paper is about the relation between Hungarian conjugations and the phenomenon known as differential object marking. Hungarian has two verb paradigms that appear depending on a certain property of the object, which is traditionally identified as definiteness, see (1).

(1) a. *Péter* *lát-Ø* *egy* *kutyá-t.*
P. see-3SG a dog-ACC
'Peter sees a dog.'

b. *Péter* *lát-ja-Ø* *a* *kutyá-t.*
P. see-OBJ-3SG the dog-ACC
'Peter sees the dog.'

The two paradigms have been called *határozatlan ragozás* and *határozott ragozás* for 'indefinite conjugation' and 'definite conjugation', respectively, or *alanyi* and *tárgyas ragozás*, 'subjective' and 'objective conjugation'. I will use these latter terms. (1a) is an example of the 'subjective' conjugation, i.e., there is no morphological element that refers to the object. In (1b), on the other hand, the morpheme *-ja-* can be analyzed as an instance of object agreement. It does not, however, agree with the object in number or person. I will not pursue the question whether this is really object agreement in definiteness. The point of this paper is rather to try and sketch the similarities between the phenomenon in (1) and differential object marking (henceforth DOM). Languages with DOM do not mark all direct objects the same way. In such languages, objects that have certain properties (e.g., they are definite) tend to be marked differently then those

* I want to thank Peter Hallman, Thomas Borer and two anonymous reviewers for valuable feedback regarding several aspects of this paper. I use the following abbreviations in the glosses. 3SG: person/number, ACC: accusative, COND: conditional, DAT: dative, DU: dual, ILL: illative, INSTR: instrumental, OBJ: objective, PL: plural, PRF: (verbal) prefix, PX: possessive suffix, SG: singular, SBJV: subjunctive, SUBJ: subjective, T: tense.

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objects that lack these. I discuss whether approaches proposed to analyze DOM can explain the distribution of the Hungarian phenomenon in (1).

The structure of this paper is as follows. In the next section, I introduce the triggers of the Hungarian objective conjugation and review recent analyses that have sought to explain this phenomenon. In section 3, I give an overview of the properties of DOM and mention languages that show this phenomenon. In section 4, I will point out how DOM might serve as an explanation for Hungarian verb paradigms and what problems this analysis runs into.

2 Hungarian verb paradigms

Hungarian has three verb paradigms, two of which are relevant for the present discussion. These are the subjective conjugation and the objective conjugation.

Table 1 shows the subjective and objective forms of the verb *lát* 'see' in the present tense. Most forms have been segmented into two morphemes, but the third singular objective form and the objective plural forms are shown to consist of three elements, the stem *lát-*, the respective subject agreement suffix and an element *-j(a)-*. This morpheme is analyzed as a definiteness marker of the object in Bartos (1999), Rebrus (2000), É. Kiss (2002). For Kiefer (2003), this element is part of the suffix. Whether a two-part or a three-part structure is more adequate is still a matter of discussion: the marker *-j(a)-* is clearly visible in the present tense, other tenses and moods form their objective forms with several allomorphs. Because of this, Rebrus (2000) argues that the position definiteness marker *-j(a)-* in the indicative present tense is filled by tense/mood markers in other tenses and moods (for details see Rebrus 2000, 935f.). Still, objective forms include an extra morpheme that can be analyzed as an allomorph of of *-j(a)-* (see the discussion in section 4 below).

lát 'see'	subjective	objective
Singular	*lát-ok*	*lát-om*
	lát-sz	*lát-od*
	lát-Ø	*lát-ja-Ø*
Plural	*lát-unk*	*lát-j-uk*
	lát-tok	*lát-já-tok*
	lát-nak	*lát-já-k*

Table 1: Subjective and objective paradigms

2.1 Triggers

Each paradigm co-occurs with certain types of direct objects that have a certain property. The exact nature of this property is debated in the literature. I will briefly mention two recent proposals, first, the so called DP hypothesis, put forth by Bartos (1997, 1999, 2001) and taken up by É. Kiss (2002, 2003a) and second, a morphological analysis proposed by Coppock and Wechsler (2010).

The main claim of Bartos approach is that the objective conjugation is triggered by a structural property of the direct object noun phrase, to wit, its phrasal category of DP. He argues that all DP direct objects and only these co-occur with the objective paradigm. Coppock and Wechsler (2010) claim, on the other hand, that it is rather a morphological feature [DEF] on certain morphemes that triggers the objective paradigm and that the objective suffixes require that this feature be present on their direct object noun phrases. I will discuss these approaches in more detail below, after listing the types of noun phrases co-occurring with each paradigm.

2.1.1 The subjective conjugation

I will not discuss in detail the question whether the subjective conjugation is triggered by the properties of the direct object, or whether it is simply a default form. An argument for the latter view is that intransitive verbs always have the subjective form, i.e., there is no object that could trigger anything.

Intransitive verbs Intransitive verbs have subjective suffixes, as in (2a), as do transitive verbs when used intransitively (but not for transitives with dropped objects), see (2b).

(2) a. *El-megy-ek.*
away-go-1SG.SUBJ
'I'm going away.'
b. *Lát-ok.*
see-1SG.SUBJ
'I see.' (i.e., *I can see*, *I am not blind*, etc.)

Bare noun phrases, indefinite articles, numerals These elements, all indefinite, occur with the subjective conjugation.

(3) a. *Virág-ot* *vesz-Ø.*
Flower-ACC buy-3SG
'S/he is buying flowers.'
b. *Egy / három / öt* *könyv-et* *keres-ek.*
one / three / five book-ACC search-1SG.SUBJ
'I am searching a/three/five book(s).'

Quantifiers Certain quantifiers, mostly those referred to as 'weak' require the subjective conjugation. These include *néhány* 'some', *kevés* 'a few', *valamennyi*[1] 'some' and, interestingly, the universal quantifier *minden* 'every', which is arguably a strong quantifier.

(4) a. *Valamennyi* *Ady-vers-et* *tud-ok* *kívülről.*
some Ady-poem-ACC know-1SG.SUBJ by heart
'I know some poems by Ady by heart.'
(É. Kiss 2003a, 91)

[1] *Valamennyi* also has a different reading, meaning 'each', which triggers the objective conjugation.

b. *Néhány / kevés / minden film-et lát-ott.*
some / few / every movie-ACC see-3SG.SUBJ.PAST
'I saw some/a few/every movie(s).'

Indefinite pronouns ending -ki, -mi Indefinite pronouns like *valaki* 'someone' *valami* 'something' require the subjective conjugation as well.

First and second person pronouns Finally, first and second person pronouns occur with the subjective conjugation, though there is one exception. If the subject is in the first person and the object is in the second person, a special morpheme *-lak* appears.

(5) *Péter keres-ett téged.*
P. search-3SG.SUBJ.PAST you.ACC
'Peter was searching for you.'

2.1.2 The objective conjugation

The objective conjugation is mostly triggered by elements that are usually said to be definite. This is not the case for all triggers, however.

Proper names, third person pronouns

(6) *Lát-om Péter-t /ő-t.*
see-1SG.OBJ P.-ACC / her/him-ACC
'I see Peter/her/him.'

Definite article, demonstratives, strong quantifiers These typically definite elements always trigger the objective conjugation.

(7) a. *Szeret-em ez-t az étterm-et.*
love-1SG.OBJ this-ACC the restaurant-ACC
'I love this restaurant.'
b. *Nem talál-t-a-Ø a mozi-t.*
not find-PAST-OBJ-3SG the cinema-ACC
'S/he didn't find the cinema.'

Complement clauses with *hogy* Embedded clauses introduced by *hogy* 'that' trigger the objective conjugation when they are arguments of the verb. Such clauses are associated with an optionally silent pronoun.

(8) *(Azt) javasol-t-a, hogy men-j-ünk Amerikába.*
that suggest-PAST-3SG.OBJ that go-SBJV-1PL.SUBJ America-ILL
'S/he suggested that we should go to America.'

Null objects Dropped objects, opposed to no object at all, co-occur with the objective conjugation.

(9) *Lát-ja-Ø.*
see-OBJ-3SG
'S/he sees it.'

Possessive constructions Direct objects that are possessive noun phrases trigger the objective conjugation, regardless of their exact content.

Table 2 summarizes the triggers of each conjugation. Comparing the two columns shows that a simple generalization based on definiteness cannot be easily made. While most elements co-occurring with the subjective conjugation are indefinites, first and second person pronouns and the universal quantifier *minden* 'every' are not clearly indefinite. Also, while most elements triggering the objective conjugation are definites, possessive noun phrases can be indefinite.

An account that tries to explain what property of the direct object triggers the objective conjugation has to account for this distribution of noun phrase types. The following section introduces two recent analyses of these facts.

Subjective paradigm	Objective paradigm
bare nouns	proper names
indefinite article (*egy*)	definite article (*a(z)*)
numerals (*három*, *öt*, ...)	definite determiners (*ezt*, *azt*, ...)
certain quantifiers (*minden*, *néhány*, ...)	possessive noun phrases
first and second person singular pronouns	third person pronouns
ki 'who', *mi* 'what'	reflexive and reciprocal pronouns
	hogy-complement clauses
	null (elided) objects

Table 2: Types of noun phrases and their associated paradigms

2.2 The DP hypothesis

This analysis was proposed by Bartos (1997) and expanded in Bartos (1999). The crucial claim is that only DPs trigger the objective conjugation. This means that the main difference between noun phrases that do and those that do not trigger the objective paradigm is structural. Bartos uses a version of the so called Minimalist Program (cf. Chomsky 1995), a generative syntactic framework and builds on earlier assumptions on noun phrase structure (cf. Bartos 1999 for references).

An important aspect of his proposal is that there is extensive functional structure in the noun phrase, above the lexical category NP. Bartos provides evidence that different types of noun phrases (e.g., bare nouns, noun phrases with numerals etc., possessive noun phrases) project different functional projections. This follows from Bartos' (1999) framework which claims that grammatical morphemes following a stem are also represented syntactically as functional projections. Morphological structure is built up by morphological and syntactic processes. Thus the form (10a) has the structure in (10b) (the possessor is not shown in the structure).

(10) a. *szép* *nap-ja-Ø*
beautiful day-PX-3SG
'her/his beautiful day'
b. [$_{PossP}$ [$_{POSS}$ {JA}] [$_{NP}$ szép nap]

(cf. Bartos 1999, 29)

{JA} in (10b) represents the possessive suffix *-ja-*. The form *szép napja* is formed by a process called morphological merger (cf. Bartos 1999, 14, Halle and Marantz 1993, 116). The more grammatical elements a word form has, the more functional structure is projected above NP. Note that this view of the noun phrase is not quite compatible with Szabolcsi's (1994) analysis of the Hungarian noun phrase who assumes that the noun phrase always projects a DP.

É. Kiss (2002) sides with Bartos, stating that "NPs denote properties, NumPs denote individuals identified by a property, whereas DPs denote individuals identified (more or less) uniquely." (É. Kiss 2002, 155). This establishes a reasonable relation between structure and interpretation. The gist of Bartos's proposal should be clear: objects that trigger the objective conjugation project a DP.

2.2.1 Complement clauses

I will briefly review two cases that are interesting with respect to the DP hypothesis. The first of these involves embedded clauses with the complementizer *hogy* 'that'. In Kenesei (1994), these are analyzed as CHAINS that consist of a CP and an associated expletive pronoun (DP) that can be spelled out in the matrix clause optionally, cf. (8) above.

In such cases, the verb in the matrix clause has objective morphology. Movement out of the embedded clause complicates things, however. Kenesei (1994, 318) notes that his theory has "no natural suggestion to offer for the properties of conjugation in case oblique arguments or adjuncts are moved". In these cases, the complement clause triggers the objective conjugation, even though the moved constituent might not be the trigger, see (11).

(11) a. *[$_F$ Két ember-rel]* *szeret-n-ém* *[hogy* *Péter* *találkoz-z-on.*
two men-INSTR like-COND-1SG.OBJ that P. meet-3SG.SUBJ
'It's two men that I'd like Peter to meet (with).'
b. **[$_F$ Két ember-rel]* *szeret-n-ék* *[hogy* *Péter* *találkoz-z-on.*
two men-INSTR like-COND-1SG.SUBJ that P. meet-3SG.SUBJ
'It's two men that I'd like Peter to meet (with).'

(Kenesei 1994, 318)

(11b) shows that the subjective conjugation (*szeretnék*) is ungrammatical in this case. This is interesting, since the raised object *két emberrel* is neither accusative (as direct objects triggering the objective conjugations are), nor a type of noun phrase that would require the objective paradigm. Sometimes, however, the matrix verb *does* show subjective morphology. Bartos (1999) cites the following synonymous cases.

(12) a. *Ki-t$_x$ szeret-n-él [hogy meg-ver-j-ek t$_x$]?*
who-ACC like-would-2SG.SUBJ that PRF-beat up-SBJV-1SG.SUBJ
'Whom would you like me to beat up?'

b. *Ki-t szeret-n-él [hogy meg-ver-j-em]?*
like-COND-2SG.SUBJ PRF-beat up-SBJV-1SG.OBJ

c. *Ki-t szeret-n-éd [hogy meg-ver-j-ek]?*
like-COND-2SG.OBJ PRF-beat up-SBJV-1SG.SUBJ

d. **Ki-t szeret-n-éd [hogy meg-ver-j-em]?*
like-COND-2SG.OBJ PRF-beat up-SBJV-1SG.OBJ

(Bartos 1999, 110)

(12a-d) show several combinations of subjective and objective morphology in the matrix clause and the embedded clause. Bartos suggests the following treatment of these cases. In (12a), *kit* moves from its base generation position in the embedded clause (marked *t*) to SpecCP in the matrix clause. Both matrix and embedded predicates have subjective forms. In (12b), he argues, *kit* does not move from the embedded clause and *megverjem* agrees with *pro*, i.e., a dropped object. *kit* is then generated in the matrix clause. In (12c), the matrix verb *szeretnéd* has an objective suffix because it agrees with a silent expletive DP, while *kit* moves from the embedded clause as in (12a), which makes the embedded verb have subjective morphology. Finally, Bartos (1999, 110) argues that (12d) is ungrammatical because "*kit*'s potential base-generation positions are filled both in the matrix clause and in the embedded clause (with the expletive *azt* and *pro*, respectively)."

This argument is based on the idea that different elements constitute the head of the CHAIN that associates an element in the matrix clause with the embedded clause. Bartos (1999, 110) states that in (12a), *kit* is the head of the CHAIN and therefore the verb does not have objective morphology. Similarly, in (12b), *kit* heads the CHAIN, but it has not moved from the embedded clause (see the paragraph below); in (12c), the CHAIN is headed by the silent expletive, which, being a DP, triggers the objective conjugation.

Generating *kit* in the matrix clause might be problematic for the following reason. That the embedded verb in (12b) has to agree with *pro* is a reasonable assumption, since its objective suffix has to have a trigger. The assumption that *kit* is generated in the position of the expletive in the matrix clause is not necessarily unreasonable either, since there are cases where an expletive interrogative appears in the matrix clause, cf. (13), but this expletive has a different form, viz. *mi-t* 'what-ACC'.

(13) *Mi-t gondol-sz [(hogy) ki-t látogas-s-unk meg]*
what-ACC think-2SG.SUBJ that who-ACC visit-SBJV-1PL.SUBJ PRF
'Who do you think we should visit?'

Using *mit* 'what-ACC' is an alternative to spelling out *kit* 'whom' in the matrix clause. Kenesei (1999, 316) suggests that *mit* is the "interrogative version of the expletive *az* 'it'." This assumption predicts that *mit* triggers the subjective conjugation in the matrix clause as the head of the CHAIN associated with CP.

If I understand it correctly, Bartos's proposal regarding (12b) amounts to the same thing. A potential problem for this proposal is that the interrogative expletive is always *mit* and using *mit* is not possible in (12b) with the same interpretation. This suggests that the nature of the interrogative in the matrix clause is different from that of *mit* in (13) and that the interpretation of *kit* in (12b) is linked more tightly to the embedded verb

than in (13). I conclude the discussion of the DP hypothesis and *hogy*-clauses by stating these possible problems without being able to offer a better explanation.

2.2.2 Possessive noun phrases

Possessive noun phrases pose an interesting puzzle for the DP hypothesis. There is evidence that several functional projections are necessary to house all elements in a possessive noun phrase, see the following examples.

(14) a. *Mari két barát-ja-Ø*
M. two friend-PX-3SG
'Mary's two friends'

b. *Mari-nak a két barát-ja-Ø*
M.-DAT the two friend-PX-3SG
'Mary's two friends'

The difference between (14a,b) lies in the case of the possessor, nominative in (14a), dative in (14b). The latter option allows the presence of the definite article *a(z)*, which is presumably in D^0. In (14a), *Mari* is said to either move to D^0 (Bartos 1999) or to SpecDP (É. Kiss 2002; for datives, she assumes another DP layer). Possessive noun phrases thus project DPs and, as mentioned above, they trigger the objective paradigm.

Some varieties of Hungarian, however, show an interesting contrast with possessive noun phrases that is not available in the standard language.

(15) a. *Olvas-t-uk néhány vers-ed-et.*
read-PAST-1PL.OBJ some poem-2SG.PX-ACC
'We read some of your poems.' or '... some particular poems of yours.'

b. *%Olvas-t-unk néhány vers-ed-et.*
read-PAST-1PL.SUBJ some poem-2SG.PX-ACC
'We read some of your poems.'

(Bartos 1999, 99)

Varieties that allow (15b) are exceptional in that they have possessive noun phrase direct objects that co-occur with the subjective conjugation. Also, these objects are interpreted as non-specific. Bartos (1999) provides a good explanation. These possessive structures do not project a DP.

While this might seem *ad hoc*, there is evidence that non-specific noun phrases have a different category than specific ones. The possessors of non-specific noun phrases do not form a constituent with the possessum, i.e., they have to be extracted (cf. Szabolcsi 1994, 225f. for detailed discussion). For Bartos (1999, 109), this means that the possessor left the structure before a DP was projected.

This leads to an interesting situation in standard Hungarian, where structures like (15b) are not available as readily. If the DP hypothesis holds, then possessive constructions should not allow a non-specific interpretation in standard Hungarian, since, as suggested above, we expect syntactic structure to correlate with interpretation. If there are non-specifically interpreted direct object possessives, there is a mismatch between structure and interpretation. Szabolcsi (1994, 226, (123)) argues that there are non-specific possessives in the majority dialect, writing: "In [(16)] the possessor is

extracted and the non-specific interpretation is available." (Szabolcsi 1994, 226).[2]

(16) *Chomsky-nak nem olvas-t-ad vers-é-t.*
Ch.-DAT not read-PAST-2SG.OBJ poem-3SG.PX-ACC
'You haven't read any poem of Chomsky's.'
(Szabolcsi 1994, 226)

I conclude that not all cases of complement clauses are straightforwardly explained by the DP hypothesis and that the behavior of possessive noun phrases is actually more 'regular' in some dialects than others. I will compare these results to those reached by Coppock and Wechsler (2010) in the next section.

2.2.3 The morphological analysis

This recent proposal by Coppock and Wechsler (2010) claims that the trigger of the objective conjugation is not syntactic or semantic, but that certain elements have a morphological feature [DEF] that is required by the objective suffixes. In their words: "Whether or not an element bears the [DEF] feature depends entirely on its morphological form, rather than its semantic content or even its syntactic category" (Coppock and Wechsler 2010, 31).

Consequently, all elements that trigger the objective conjugation are said to have this feature while those that co-occur only with the subjective conjugation lack it. It is not clear what "depends entirely on its morphological form" means, other than that there is a list of forms that are specified for the feature [DEF]. Coppock and Wechsler's (2010) approach to the complementizer *hogy* and possessive constructions is that they attribute the feature to these morphemes, i.e., *hogy* is one of the elements specified for it, as are the possessive suffixes that are affixed to nouns. Some of the examples with *hogy* mentioned above might be problematic for this approach. Assuming [DEF] for *hogy* can explain the cases where the matrix verb shows objective morphology, but sentences like (12b) pose problems, since it is not clear what happens to the feature [DEF] when the matrix verb bears subjective morphology.

Regarding possessive suffixes, the morphological approach works insofar as possessed noun phrases trigger the objective conjugation in the majority dialect, as mentioned above. But possessive noun phrases on their own are not necessarily definite. Evidence comes from definiteness effect-contexts. Since possessives structures with extracted possessors can appear in such contexts, they do not have to be definite. See the following examples (cf. also the discussion above).

(17) a. *Van egy /néhány/sok /*a /*minden könyv.*
is one /some /many/*a/*every book
'There's a/some/many/*the/*every book(s).'

[2] A reviewer suggests that my interpretation of Szabolcsi's argument is wrong. A non-specific interpretation of a noun with a possessive suffix is only possible if the possessor has been extracted. This can be seen by applying definiteness effect tests; noun phrases with possessive suffixes only pass such tests if their possessor has been extracted. The reviewer argues that "[t]his proves that it cannot be the case that there are non-specific possessives in the majority dialect." However, the noun whose possessor has been extracted is still marked for possession and the extracted noun phrase is interpreted as its possessor.

b. *Van egy barát-om.*
is one friend-1SG.PX
'I have a friend.'

c. **Van a barát-om.*
is the friend-1SG.PX
*'I have the friend.'

(17a) illustrates a definiteness effect in Hungarian that is quite similar to the English existential *there*-construction. 'Strong' determiners are excluded, the remaining determiners and quantifiers are usually said to be non-specific (cf. Szabolcsi 1994, 227). (17b) is how Hungarian expresses possession. In these structures, as in their English counterparts, definites are excluded.

This shows that the presence of the possessive marker alone does not necessarily influence the definiteness of the entire phrase. Now, it is possible that definiteness effect-verbs in Hungarian do not see the feature [DEF], i.e., it might be present in (17b), but it is not the cause of the unacceptability of (17c). What is this feature then? Another objection against this view is based on the dialectal data reviewed above. If only morphological form influences the presence or absence of [DEF], how can the difference in (15) be explained? What remains constant in the variation in the dialectal data is the presence of the possessive morpheme, but both verb morphology and interpretation change. If one is forced to say that the possessive structure lacks [DEF] in the non-specific cases, the explanation that morphological form alone predicts the presence of the feature is lost. Otherwise, one could argue that certain contexts can block the triggering of the objective conjugation by [DEF]. But then, again, structural or semantic properties must trigger the objective paradigm.

Coppock and Wechsler (2010) provide arguments against the treatment of the universal quantifier *minden* 'every' in the DP hypothesis. It poses an interesting case, since with definiteness effect-verbs, *minden* patterns with definite determiners and not with possessives (cf. (17a)), but it always triggers the subjective conjugation, while possessives always trigger the objective conjugation.

minden also behaves quite like quantifiers that trigger the objective paradigm with respect to co-occurrence restrictions with the definite article. Crucially, the definite article and quantifiers like *minden* and *valamennyi* 'each' cannot appear next to each other, but there must be some intervening material (cf. Szabolcsi 1994, 209ff. for details).

(18) a. **a minden állítás-om*
the every claim-1SG.PX
intendend: 'every claim of mine'
(Szabolcsi 1994, 200)

b. *az én minden állítás-om*
the I every claim-1SG.PX
'my every claim'
(Szabolcsi 1994, 201)

c. *a három állítás-om*
the three claim-1SG.PX
'my three claims'

Not all determiners are prohibited to appear with the definite article, as shown by (18c). However, in (18c), the presence or absence of the definite article causes a change

in interpretation, while *minden állításom* 'my every claim' is interpreted exactly like (18b). Coppock and Wechsler (2010, 21) argue that "*minden* selects *a(z)*"; similarly, Szabolcsi (1994, 210f.) derives *minden fiú* from *a minden fiú* by deleting the definite article. This is obviously a problem for the DP hypothesis, since other quantifiers that exhibit the same behavior trigger the objective paradigm; *minden* is exceptional in this regard. Coppock and Wechsler (2010, 21) simply propose that *minden* lacks [DEF] to solve this problem. Another approach to solve this problem might be based on differences in definiteness between the quantifiers *valamennyi* 'each' and *minden* 'every', as argued for by Beghelli & Stowell (1997).

2.3 Conclusions

I have reviewed two recent approaches that try to explain what triggers the objective conjugation in Hungarian. The DP hypothesis is based on the claim that the relevant property of the object is of a structural nature: the presence of a DP layer in syntax is said to be crucial. The morphological analysis, on the other hand, states that a morphological feature [DEF] is present on exactly those types of objects that trigger the objective conjugation and is required by the objective verb suffixes.

I have argued that both approaches fail to account for the whole range of facts. The DP hypothesis has an advantage over the morphological analysis in the analysis of possessive structures, since interpretation and structure can be shown to influence the triggering of the objective conjugation in some dialects. This is hard to explain if we assume that possessive suffixes bear [DEF] in any case. However, Coppock and Wechsler's (2010) objections regarding the quantifier *minden* 'every' might be valid. Its lack of a DP layer is mysterious, given its similarities to other quantifiers in the noun phrase (cf. also Szabolcsi 1994, 222f.). However, the lack of a [DEF] feature on *minden* seems equally stipulative, given the behavior of the quantifier.

To conclude, the exact property of direct objects that triggers the objective conjugation has so far not been identified beyond doubt.

3 Differential object marking (DOM)

3.1 Properties of DOM

Differential object marking is a term for a phenomenon that has been observed in many different unrelated languages. The origin of the name lies in the fact that some languages do not mark all direct objects in the exact same way, i.e., in a given language, some, but not all direct objects, might have a case suffix when they are direct objects.

Which objects are marked and which are not is not random: there are well established criteria that describe the parameters of how DOM works across languages. Aissen (2003), in an extensive study of this phenomenon, provides the following informal generalization of DOM:

(19) The higher in prominence a direct object, the more likely it is to be overtly case-marked.

(Aissen 2003, 436)

Prominence is a crucial aspect of this generalization. DOM can be analyzed relative to different kinds of prominence: Aissen (2003, 436) mentions definiteness, animacy, and topicality. Different levels of prominence can be represented on scales, or hierarchies, like the following:

(20) a. Animacy scale: Human > Animate > Inanimate
b. Definiteness scale: Personal pronoun > Proper name > Definite NP > Indefinite specific NP > non-specific NP

(Aissen 2003, 437)

These scales influence DOM insofar as there are no languages that mark random points on a scale. If a language case-marks definite NP direct objects (cf. (20b)), it will also mark those types of direct objects that are above it on the definiteness scale, while it will not necessarily have to mark those below it (cf. Aissen 2003, 437). Haspelmath (2008) states the following universal relating to these scales (using a three-part definiteness scale: definite, specific indefinite and non-specific indefinite) and DOM:

(21) If a language has overt case marking for an object on a position on one of these scales, it also has overt object case marking on all higher positions.

(Haspelmath 2008, 18)

Even though this is a very strong prediction, it seems to be borne out in all languages that Aissen (2003) discusses. These include Catalan, Persian, Hebrew (but cf. Danon 2006), Turkish and several lesser known languages (cf. Aissen 2003, 450, Figure 2). One explanation for why DOM exists is related to typical properties of subjects and objects. Subjects are typically topical, animate and definite, while objects often convey new information, and denote inanimates and indefinites. The function of DOM is then to distinguish exactly those objects that have subject-like properties from subjects. This can be achieved through morphological marking (cf. Aissen 2003, 437f. for discussion and references and Haspelmath 2008, 20).

As for the nature of the marking, Aissen (2003, 446) claims that "[o]verwhelmingly, DOM is implemented by overtly marking the marked class of objects, and leaving the unmarked ones with no morphological mark." This means that in languages with DOM, there is a contrast of zero vs. non-zero morphological expression between the unmarked and the marked elements. Finally, the exact shape of DOM in a language varies in at least two ways: (a) What is the property that DOM is sensitive to? (b) How is DOM expressed morphologically?

In some languages, a single property triggers DOM, e.g., in Hebrew. The relevant property seems to be the definiteness of the object, which is marked by "the prepositional element *et*" (Danon 2006, 979). Only definite objects are marked like this. In Turkish, DOM is also triggered by definiteness, but the marking does also include some (specific) indefinites, as shown by Enç (1991). Here, the presence or absence of accusative case on indefinite direct objects leads to a change in interpretation and only case marked indefinite objects are understood as specific. A combination of properties is also possible. In Hindi, for example, DOM is sensitive to both definiteness and animacy (cf. Aissen 2003, 465, de Swart 2007).

As for question (b), the languages analyzed by Aissen (2003) all mark the direct object noun phrase differentially. However, it seems that this is not the only possibility of

expressing DOM. Aissen (2003, 474) writes that there are languages that exhibit differential object agreement, i.e., DOM expressed in verb morphology. Givón (1976, 159) cites the Bantu languages Swahili and Rwanda as having developed object agreement in definiteness:

(22) a. *Ni-li-soma kitabu.* (Swahili)
1SG-PAST-read book
'I read a book.'

b. *Ni-li-ki-soma kitabu.*
1SG-PAST-OBJ-read book
'I read the book.'

(cf. Givón 1976, 159, example cited in Lyons 1999, 210)

In (22a, b) the form of the object is the same, the change in interpretation is due to the element *-ki-* on the verb.

3.2 Formal implementation

Aissen's (2003) account of DOM is based on Optimality Theory (OT) constraints that restrict objects from being high on certain prominence scales (e.g., definite objects, e.g. *OJ/DEF) on the one hand, and also restrict them from not having (abstract) Case (her *$Ø_C$, cf. Aissen 2003, 447). The object constraints (e.g., *OJ/DEF, *OJ/SPEC, etc.) are combined with *$Ø_C$ by a process called *local conjunction* (cf. Aissen 2003, 448). The combination of these constraints, Aissen (ibid.) notes, would provide all objects with case morphology, so she introduces a further (economy) constraint that "penalizes the specification of morphological CASE." (her *$STRUC_C$, ibid.). Different DOM systems in different languages are then explained by different ordering of constraints, relative to positions on prominence scales. The lower *$STRUC_C$ is ordered relative to constraints restricting objects from appearing without Case, the more objects appear with overt case marking. For example, if *$STRUC_C$ is ordered below the constraint *OJ/SPEC & *$Ø_C$ (which restricts specifics from appearing without Case), objects above this point on the scale are allowed to have overt case morphology, while objects below (i.e. non-specific indefinites) are not, since *$STRUC_C$ is violated. This ranking of constraints is seen in Turkish, for example (see Aissen 2003, 455 for details). The following tableau[3] illustrates this. There are two competing structures, both are specific indefinite objects, but one (the first) is specified for Case, while the other is not. Since *$STRUC_C$ is ordered below OJ/SPEC & $Ø_C$, the form not specified for case violates a higher ranked constraint and is discarded.

[3] The abbreviations in the tableau are to be read as follows: GF stands for grammatical function, in this case object (OJ). The parameter after DEF determines how definite the element in question is. In this case, specific indefinite (i.e., this is the object's position on the definiteness scale).

ROLE: PATIENT DEF: SPECIFIC, INDEFINITE	OJ/DEF & *$Ø_C$	OJ/SPEC & *$Ø_C$	*$STRUC_C$	OJ/NSPEC & *$Ø_C$
→ GF: OJ DEF: SPECIFIC, INDEFINITE CASE: ACC			*	
GF: OJ DEF: SPECIFIC, INDEFINITE CASE:		*!		

Table 3: Ranking of OT constraints for Turkish (Aissen 2003, 455)

It has been argued that Aissen's (2003) restriction of differential marking as zero/non-zero alternations is too strong. Keine and Müller (2008) extend her framework to also account for non-zero/non-zero alternations in DOM. They argue that impoverishment rules (as known from Distributed Morphology) can be integrated into the constraints so that certain features can be targeted without eliminating morphological realization of a segment altogether. This makes alternations of non-zero/non-zero elements possible. Their system retains reference to iconicity, as does Aissen's (2003), so that the more marked an element on a certain scale, the more marked its morphological expression.

In the next section, I review work by Nikolaeva (1999, 2001) on Northern Ostyak. I claim that its object agreement system can also be analyzed using the principles attributed to DOM.

3.3 DOM in Ostyak

Ostyak is a Uralic language, from the Ob-Ugric family. Northern Ostyak, one of its dialects, has object agreement with some, but not all, direct objects. Nikolaeva (1999, 2001) suggests that the verb agrees with objects that are secondary topics. She defines secondary topics as follows:

(22) *Secondary topic*: An entity such that the utterance is construed to be ABOUT the relationship between it and the primary topic.

(Nikolaeva 2001, 26)

In Nikolaeva (1999), the author argues that direct objects can be split into two groups, O1 and O2, of which only the second triggers object agreement on the verb. O1 and O2 have several distinct properties. Some of these are syntactic, e.g., that O2 licenses certain processes like control of coreference in some cases, quantifier float and possessor topicalization (cf. Nikolaeva 1999, 16f.). Other differences include the information structure status of O1 and O2. Nikolaeva (1999, 35) claims that O1 expresses focus, while O2 does not. The morphology of object agreement in Ostyak is analyzed as follows (cf. Nikolaeva 1999, 4f.). The object marker OM expresses the number of the object, i.e., there are different OMs for singular, dual and plural objects. In objective forms, the OM follows the stem and is followed by a subject marker. The object marker is *-Ø-* for singular objects, *-ŋil-* for dual objects and *-l-* for plural objects (not shown below; *-l-* is also a tense marker). Agreement with singular objects is not unmarked, however, since the subject agreement morpheme changes its shape; Nikolaeva (1999, 5)

suggests that these forms are portmanteaus (she also argues Hungarian has "one unsegmentable affix which both agrees with the subject and encodes the definite status of the object", Nikolaeva 1999, 3). The following examples illustrate some verb forms:

(24) a. *ma* *jelən* *oməs-l-əmə*
I at.home sit-T-1SG
'I am sitting at home.'

b. *ma* *tăm* *kălaŋ* *wel-s-əm*
I this reindeer kill-T-1SG
'I killed this reindeer.'

c. *ma* *tăm* *kălaŋ* *wel-s-Ø-em*
I this reindeer kill-T-SG-1SG
'I killed this reindeer.'

d. *ma* *tăm* *kălaŋ* *wel-sə-ŋil-am*
I this reindeer kill-T-DU-1SG
'I killed this reindeer.'

(Nikolaeva 1999, 4)

(24b, c) show that object agreement is not due the definiteness of the object, since this aspect does not change in the examples. With respect to the characteristics of DOM outlined above, it is possible to analyze Northern Ostyak as follows. Nikolaeva (1999, 8) points out that object agreement is triggered by those objects that are relatively subject-like, since O2 and subjects share various properties. The secondary topicality of O2 correlates with syntactic position, which in turn influences certain syntactic behavior (as mentioned above S and O2 can control coreference in some cases and trigger possessor topicalization etc., whereas O1 does neither of these things).

We can, thus, identify a property that triggers object agreement for some objects, but not for others, and it seems clear that the verb agrees with those objects that share some typical properties of subjects. This is compatible with differential object marking, or rather differential object agreement (DOA, for this term, cf. Danon 2006, 982). The scale or hierarchy that underlies this system is based on information structure and might look like this:

(25) Primary topic > Secondary topic > focus

Not every position on this hierarchy is available for objects, however. As Nikolaeva (2001, 24) notes, "topicalization of an element other than the agent requires passivization." She suggests (ibid.) that the grammatical role of subject and primary topicality are closely related in Northern Ostyak. An object can only be a secondary topic or a focus. A DOM-like generalization for Northern Ostyak might be that direct objects that are on the second level of this scale trigger object agreement, while those below do not. But that objects are excluded from the highest position on the scale is not necessarily surprising. There are languages that exclude objects from similarly prominent positions: Keenan (2008, 241) states that across languages, definite subjects are always allowed and sometimes the grammatical role of subject is even restricted to definites. A similar restriction, based on topicality, might be at work in Ostyak, making "secondary topic" and "focus" the only points on the scale (a reviewer suggests that "discourse-given object" and "discourse-new object", respectively, as analogous terms).

Regarding the morphological expression of DOM/DOA in Northern Ostyak, differential marking is expressed in verb morphology. Nikolaeva (1999, 5) states that nominal objects are encoded "by the unmarked accusative homonymous with the nominative", only pronominal objects carry accusative. (Note that this in itself might constitute a type of DOM; according to Aissen 2003, 450, Catalan is another language in which only personal pronouns are case marked; English might be another.) As seen above, Nikolaeva (1999, 4f.) argues that Ostyak subjective verb forms are segmentable into separate subject and object markers. Evidence for this is the morphological form of the OM for dual and plural objects, *-ŋil-* and *-l-*, respectively, that is constant for all persons (of the subject). This means that between subjective and objective forms, the absence and the presence of the object marker makes for a contrast of zero vs. non-zero morphological expression. This is, again, analogous to what we see in languages with DOM that mark the noun phrase differentially. To summarize, based on Aissen (2003), languages with DOM show the following properties:

- Not all direct objects in a language are marked in the same way. Some languages use prepositional elements (Hebrew, Spanish), some use case marking (Turkish, Hindi, Spanish).
- Givón (1976) cites examples showing differential object agreement in some Bantu languages in definiteness. I take this to mean that DOM can be expressed in verb morphology (this conclusion is hinted at in Aissen 2003, 474).
- The property of the object that triggers differential object marking varies across languages. It can be a single property, or a combination of several. Definiteness and animacy are usually cited as relevant scales.
- I claim that Northern Ostyak, as analyzed by Nikolaeva (1999, 2001), is a language that has DOM based on the secondary topicality of the object and expresses the differential morphological marking not on the noun phrase, but in verb morphology.

4 Differental object marking and Hungarian

4.1 Does Hungarian have DOM?

Given the discussion of both Hungarian verb morphology and DOM/DOA above, I want to review whether Hungarian can be analyzed as a language that exhibits differential object marking or differential object agreement.

Bossong (1998) argues that every language in the Uralic family has DOM, albeit in different forms. His analysis includes the Ugric family, of which Hungarian forms one branch, and Ostyak and Vogul the other (Ob-Ugric). I have also argued that Northern Ostyak as illustrated above has DOM. What about Hungarian?

Bossong remarks that "in written and standardized forms of the Ugric languages, the marking is only differential in the verb conjugations." (Bossong 1998, 242). He goes on to say that even though there are some exceptions, the presence of the accusative suffix *-t* on nearly all direct objects in Hungarian can not be said to be differential (ibid.). Also, Bossong (1998, 241f.) suggests that while Ostyak and Vogul mark the number of the object when agreeing with it, Hungarian agrees with the object in person, since only third person objects trigger the 'standard' objective conjugation and second person

objects (with first person subjects) trigger *-lak*. Thus, as I have shown in section 1, it is true that Hungarian marks its objects differentially and it should also be clear that the morphological expression happens in verb morphology and not on the noun phrase (but note that Hungarian has articles, in contrast to Ostyak and Vogul).

4.1.1 Problems

There are a few problems with this suggestion, however. First, as argued above, it is not quite clear what property of the object triggers the objective conjugation. Definiteness as a semantic concept has been shown not to correlate exactly with those objects that trigger the objective conjugation; other points on the definiteness scale do not work either (e.g., specificity). Given the assumptions of the DP hypothesis, a prominence scale based on structural properties would explain the Hungarian data. The animacy scale might be involved in the explanation of the fact that only third person pronouns trigger the objective conjugation, at least indirectly (see É. Kiss 2003b, 2011, to appear for such a proposal). The information structure status of the direct object cannot be said to be the property at hand, since focused constituents trigger the objective conjugation whenever they have the properties listed in Section 1.

As mentioned above, Aissen (2003) and Keine and Müller (2008) suggest that the morphological alternations involved in DOM are such that one member of the pair is more marked or iconic, i.e., more complex. The morphological structure of Hungarian subjective and objective forms does not completely conform to this generalization. There are some very clear cases, such as the present tense third singular and all plural forms. In these, the definiteness marker *-j(A)-* (or its allomorphs) is clearly present:

(26)	a.	*vár-Ø*	*vár-ja-Ø*
		wait-3SG	wait-OBJ-3SG
	b.	*vár-unk*	*vár-j-uk*
		wait-1PL	wait-OBJ-1PL
	c.	*vár-tok*	*vár-já-tok*
		wait-2PL	wait-OBJ-2PL

First and second person suffixes, however, lack this marker across tenses, as shown in (27).

(27)	a.	*keres-ek*	*keres-em*
		search-1SG.SUBJ	search-1SG.OBJ
	b.	*keres-el*	*keres-ed*
		search-1SG.SUBJ	search-2SG.OBJ
	c.	*keres-t-em*	
		search-PAST-1SG.SUBJ/OBJ	
	d.	*keres-t-él*	*keres-t-ed*
		search-PAST-2SG.SUBJ	search-PAST-2SG.OBJ

Also, first person plural forms in the past tense and subjunctive mood are not more complex in the objective paradigm:

(28)	a.	*keres-t-ünk*	*keres-t-ük*
		search-PAST-1PL.SUBJ	search-PAST-1PL.OBJ
	b.	*keres-s-ünk*	*keres-s-ük*
		search-SBJV-1PL.SUBJ	search-SBJV-1PL.OBJ

A reviewer points out that it is only ten forms that lack any sign of the marker in question. Among the remaining 14 (out of 24 objective forms: 4 tenses/moods * 6 persons/number), three forms are syncretic, viz. the plural forms of the subjunctive. Roughly half of the paradigm, then, has suffixes that could be analyzed as expressing person, number and reference to the object as portmanteaus.

Other forms show some allomorph of the definiteness marker:

(29)	a.	*keres-t-etek*	*keres-t-é-tek (or: keres-t-e-etek)*
		search-PAST-2PL.SUBJ	search-PAST-OBJ-2PL
	b.	*keres-ne-Ø*	*keres-né-Ø (or: keres-ne-e-Ø)*
		search-COND-3SG	search-COND-OBJ-3SG
	c.	*keres-ett-Ø*	*keres-t-e-Ø*
		search-PAST-3SG	search-PAST-OBJ-3SG

With respect to morphological theory, this analysis makes sense. With respect to iconicity, however, the paradigms do not show a clear-cut less iconic vs. more iconic alternation of the type seen in Aissen's (2003) or Keine and Müller's (2008) cases. The additional complexity of the objective forms lies in their underlying morphological representation and maybe their semantic specification, but not always in their overt form.

Another peculiarity in the possible DOM system in Hungarian is that, as mentioned by Bossong (1998), Hungarian actually marks the direct object with a case suffix, *-t* for accusative. This case marking is not differential, i.e., direct objects are case marked regardless of their definiteness, animacy, or topicality (though there seems to be one optional exception to this generalization). This is interesting since it considerably weakens the functionalist explanation of DOM mentioned in Aissen (2003) with respect to Hungarian. This approach to DOM states that it is necessary to mark certain objects in order to distinguish them from subjects.

In Hungarian, then, marking a certain property on the verb to distinguish some 'subject-like' objects from others is heavily redundant, since direct objects are case marked anyway and can thus not be mistaken for subjects. This situation contrasts with other languages mentioned above that have been said to exhibit DOM. In these languages, we either have seen differential object agreement (especially Northern Ostyak, though the Bantu languages mentioned above might also belong to this category) or differential object marking (Turkish, Hindi, Persian, Spanish, Catalan), but no system in which there is differential object agreement and non-differential case marking everywhere.

Regarding the question of whether Hungarian exhibits DOM or not, one can conclude that there is, in a trivial sense, differential object marking in Hungarian, given that there are two verbal paradigms. But these paradigms, in a strict sense, do not conform to all aspects of DOM as analyzed by Aissen (2003). Differential marking in Hungarian is redundant in that it cannot serve the purpose of distinguishing objects

from subjects, since accusative case marking is widespread. A reviewer points out that the system is not completely redundant, since with dropped objects, it is the verb form alone which makes it possible to interpret whether the object is third person (objective morphology) or first or second person (subjective morphology, roughly). This is a different kind of redundancy, however, for the following reason: from the functionalist perspective, the marking of certain objects serves the purpose to disambiguate subject from object. The Hungarian conjugations do not do this, they merely disambiguate between objects. A final difference to other languages with DOM is that the property to which DOM is sensitive in Hungarian cannot simply be definiteness, as suggested by Bossong (1998), i.e., we are not dealing with a semantic or pragmatic restriction alone.

To conclude, while stating that Hungarian exhibits a certain kind of DOM is correct, it seems that it is a peculiar kind that does not adhere to principles seen in other languages. In the next section, I review evidence that historically, this has not always been the case and Hungarian had a more regular system of DOM.

4.2 DOM in earlier Hungarian

In Old Hungarian, accusative case marking was not as widespread as today. Marcantonio (1985, 280f.) calls Old Hungarian a "definite-accusative" language, but argues that the accusative suffix *–t* appeared on topical, rather than only definite direct objects. É. Kiss (2011, 4) cites an example from the Munich codex, where a direct object appears without case marking (around 1466):

(30) *[ọ′ kenček meǵńituan] aianlac neki*
their treasures-Ø unlocking offer-3PL.SUBJ him
aiandokocat
presents-ACC
'unlocking their treasures they offer him presents'

(Müncheni K. 2, 11[4])

In her account of the development of the present system of case marking and verb morphology in Hungarian, Marcantonio (1985, 281f.) assumes three main stages:

- First, the accusative marker *-t* spread to all direct objects, not just topicalized ones.
- The continuing marking of topicalized direct objects was taken up by the objective conjugation. This topic-agreement arose by the cliticization and agglutination of a marker referring to the topic (cf. Givón 1976, Bresnan and Mchombo 1987 for such processes in other languages).
- In present Hungarian, the positions of topic and focus are fixed in the clause, the topic position preceding the focus position, which in turn directly precedes VP. Marcantonio (1985, 282) argues that the grammaticalization of these positions "made the continued morphological marking of the Topicalized DO redundant."

She concludes that what remains today is "a pure and (I would say) now irrelevant morphosyntactic signalling of the definite DO" (Marcantonio 1985, 282). This marking, i.e., the objective conjugation, has been redundant since the development of the definite article in Hungarian, as É. Kiss (to appear, 8) suggests.

[4] http://kt.lib.pte.hu/cgi-bin/kt.cgi?konyvtar/kt06010401/1_0_2_pg_196.html

4.3 Summary

If we take DOM not only to mean that objects are marked differentially, be it on the verb or on the object itself, but that DOM follows certain given principles, the Hungarian subjective and objective paradigms seem a bit odd. As the discussion above suggests, the marking of a certain property of the object in verb morphology is quite redundant. If we accept the idea that the first use of the objective conjugation was to mark the topicality of the object, this was made redundant by the grammaticalization of a syntactic topic position. A further reanalysis of the objective conjugation as a marker of the definiteness of the object was made redundant by the development of definite articles.

5 Discussion and conclusions

I tried to show in this paper that the Hungarian subjective and objective conjugations constitute an interesting case when one tries to analyze them using well established criteria of DOM. What makes the Hungarian verbal paradigms similar to DOM is that the range of objects co-occurring with the subjective and objective conjugations very roughly coincide with the semantic properties of indefiniteness and definiteness, respectively. I have argued that this is not an exact correlation, however, and that finding the exact property has proved to be difficult.

In addition, DOM has been claimed to serve the purpose of distinguishing the grammatical relations of subject and object if objects have properties that are typical of subjects. This suggestion is based on cross-linguistic generalizations that subjects tend to be more animate, definite and topical than objects (cf. Givón 1976 for example). This functional explanation of DOM does not hold for Hungarian, since subjects and objects are distinguished morphologically anyway.

Given the historical development of the verbal paradigms sketched above, its second stage poses an interesting case for this functional explanation. The assumption was that the objective conjugation arose in order to mark topicalized direct objects. Evidence for this is provided by Marcantonio (1985, 288f.), citing examples of the objective conjugation appearing with indefinite objects that are present in the discourse. From the functionalist point of view, this differential marking cannot serve the purpose of distinguishing subject and object, since case marking on objects was already present.

To summarize, the present system of Hungarian verb morphology does not seem to be an instance of strict DOM that we would expect to arise in a language from scratch. This is not because DOM is expressed on the verb rather than the object, since Northern Ostyak has differential object agreement in its verbal paradigm and does conform to strict DOM principles. Rather, the present Hungarian system is the result of two reanalyses of an original system of DOM based on topicality, expressed by an alternation of zero/non-zero case morphology. The historical development can explain why Hungarian deviates from other DOM languages in several ways. (a) The objective conjugation is redundant and lacks the function of distinguishing certain grammatical relations from others. (b) It is difficult to find out what triggers the objective conjugation (given the odd behavior of *minden*, for example). (c) The objective conjugation is more marked, because it has a smaller range of use and more specific triggers than the

subjective conjugation. However, the more specific nature of the objective conjugation does not clearly correlate with iconicity across all forms in the paradigm (though it does in the present tense).

A similar type of DOM might be found in Hebrew. Danon (2006) argues that DOM is triggered by structural definiteness (DPs), not semantic definiteness and suggests that such "structural DOM" (cf. Danon 2006, 1005) might arise from earlier DOM systems based on semantic and pragmatic triggers. The analysis presented here might provide evidence for this view of DOM.

Appendix

Note that the conclusion reached above does not mean that the formal OT model of DOM cannot explain the Hungarian system. Of course, defining the trigger of the objective conjugation is crucial. If we assume the DP hypothesis to be correct, the following sketch of a constraint system could derive the distribution of verb morphology in Hungarian (and, of course, with the necessary adaptations in Northern Ostyak, etc.).

For languages that have DOA, constraints in the spirit of Aissen (2003) and Keine and Müller (2008) should refer to verb morphology, sanctioning the overt expression of object agreement suffixes in some cases. (There can of course be languages that have object agreement with all direct objects, just like there are languages that mark all direct objects.) Let us assume, again, that the relevant cases are those where the object is a DP. One constraint, then, should penalize the lack of objective verb morphology when a DP is present, let us call it *$Ø_{OBJ}$. Another constraint, an economy constraint, should penalize the presence of OBJ morphology, since it might be more marked: *$STRUC_{OBJ}$. The input for an optimization similar to Tableau 3 above (p. 12) would be structures like [verb-φ.SUBJ/OBJ DP], for example. This structure stands for a verb (with φ standing in for person and number and SUBJ or OBJ for subjective or objective suffixes, respectively, as in the glosses throughout this paper) and its direct object, a DP or an NP.

If *$Ø_{OBJ}$ is ranked above *$STRUC_{OBJ}$, the former constraint is violated and the structure loses out to a competing structure like [verb-φ.OBJ DP], which violates a lower ranked constraint. A structure with an NP object like [verb-φ.OBJ NP] would violate the economy constraint *$STRUC_{OBJ}$, while [verb-φ.SUBJ NP] would not. For Ostyak, it is not necessarily the ranking of the constraints that has to be adapted, but rather the formulation of the object's property, i.e., NP/DP in the constraints above would have to be replaced (cf. also Morimoto 2002 for an OT approach to DOM in verb morphology in Bantu languages).

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Detelicization Processes in Idiomatic Constructions: A Cognitive Grammar Approach*

Andrea Bellavia

In this paper, we deal with aspectual shifts in idiomatic constructions from a Cognitive Grammar perspective (Langacker 1987, 2008). Idioms have been claimed to preserve the aspectual interpretation when showing the same structure as their literal counterparts (McGinnis 2002). Recent studies have provided relevant counterexamples in which the aspectual class in idiomatic contexts undergoes a shift from the literal reading (Espinal & Mateu 2010) and have pointed out how the durative activities can be explained in terms of metaphorical modes of thought activated in idiom processing. In the present investigation, we propose a dynamic approach to aspect in idiomatic contexts as an interaction of high-level cognitive operations (Fauconnier 2009) that are claimed to be involved in the figurative meaning construction and in the conceptual interpretation of aspect. We deal with two main patterns of intensive meaning construction: English *V one's* BODY PART *out/off* idioms and Italian Denominal Verbs of Removal (DVRs) idioms.

Keywords: *aspectual shifts, blending, cognitive grammar, idiomatic constructions, metaphor*

1 Introduction

Lexical aspectual interpretation of idiomatic constructions has been the focus of interest of differently oriented studies. Recent claims, within the generative framework, have argued that the aspectual classes of idioms can be compositionally determined and that the mismatches, possibly occurring between literal and non-literal readings of verbal constructions, have to be attributed to pragmatic or accidental reasons (McGinnis 2002, 2005). A number of examples pointed out in these studies show that the aspectual class of an idiomatic expression can be determined following the properties of the syntactic components, demonstrating indeed the compatibility between identical structures that involve different interpretation.

In this paper, we provide an analysis of (lexical) aspectual shifts occurring in idiomatic contexts from a Cognitive Grammar (CG) perspective (Langacker 1987, 1991, 2008, 2009, Broccias 2003). In particular, we deal with relevant counterexamples, across English and Italian, which can be claimed to refute the hypothesis of aspectual composition.

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LITERAL

(1) *John laughed me out of the office.* (English)

(2) *Gianni lo ha sganasciato (con un pugno)* (Italian)
Gianni CL.ACC has dis-jaw-PASTPART.MSG with a punch
'Gianni broke his jaws by punching him.'

IDIOMATIC

(3) *John laughed his head off.* (English)

(4) *Gianni si è sganasciato (dalle risate).* (Italian)
Gianni CL.REFL is dis-jaw-PAST.PART.MSG from-FPL laughters
'Gianni laughed his head off.'

In order to account for the detelicization processes implying a shift from the accomplishments in (1) and (2) to the activities in (3) and (4) (in terms of Vendler 1967, see Section 4), we propose a network of high-level cognitive operations (Fauconnier 2009) that intervene in idiomatic interpretation and are integrated at the semantic poles of non-literal constructions. Furthermore, these high-order cognitive processes are argued to give rise to varying degrees of relevance according to whether the sentence is interpreted figuratively or literally (providing access to two or more conceptual domains). These claims will allow us to address the two main questions of the paper: (i) can we determine the aspectual properties of idiomatic constructions according to the same principles we would use for non-idiomatic ones? (ii) To what extent can the gradable activation of high-level cognitive operations be claimed to represent a kind of consistency for the explanation of grammatical phenomena in cross-linguistic perspective?

The paper is structured as follows. In the next section we provide an overview of previous accounts of the phenomenon in order to point out their limits and highlight some parts that can be used as a point of departure in the present study. In section 3 we introduce the theoretical framework of CG, whose main tenets are followed in the present analysis. In section 4 we introduce the notion of (lexical) aspect followed in the investigation and in section 5 we provide an analysis of the data by describing the main patterns in the languages of interest and the grammatical phenomenon of aspectual shifts in idiomatic constructions. In section 6 we describe the proposal by taking into account the main high-level cognitive operations involved in the conceptual interpretation of aspect and the related detelicization processes, before providing a conclusion and further points to be developed in future research in section 7.

2 Previous Accounts

Three previous and differently oriented accounts of aspectuality in idiomatic contexts are fundamental for the purposes of the present paper: McGinnis (2002, 2005), Glasbey (2003, 2007) and Espinal & Mateu (2010).

McGinnis (2002, 2005) argues that the aspectual interpretation of idioms is completely systematic and that the aspectual properties of an idiom are fully compositional since they combine the properties of its syntactic constituents. The claim that aspect is defined in the same way in non-idiomatic and idiomatic readings of

equivalent structures is theoretically influenced by the main tenets of Distributed Morphology (Halle & Marantz 1993) according to which structural components of meaning are assembled and manipulated by the syntax and idiosyncratic components are added post-syntactically as part of the encyclopedia. As can be seen in (5) and (6), syntactic derivation has consequences for idiomatic aspectuality, in the sense that an idiom like *kick the bucket*, would have the same aspectual properties as a VP plus a definite complement. In more detail, Marantz (1997), from which (5) and (6) are adapted, argues that *kick the bucket* "carries the semantic implications of a transitive verb phrase with a definite direct object" and that under an idiomatic reading "is aspectually similar to *pass away* whereas *die* is more like *jump* or, perhaps, *fall*". From both the analyses of McGinnis (2002) and Marantz (1997), however, the aspectual properties that they attribute to *kick the bucket* are not entirely clear and the use of the progressive to highlight the differences between the two verbs is misleading.[1]

(5) *Hermione was dying for weeks.*

(6) **Hermione was kicking the bucket for three weeks.*

(McGinnis 2002, 212)

The VP in this analysis is characterized by a compositional structural meaning and a non-compositional idiosyncratic meaning. The former will have the same aspectual properties as any VP with the same syntactic properties.

The hypotheses provided by McGinnis may be true as far as certain classes of idioms are concerned, but relevant counterexamples can also be found. Glasbey (2003, 2007) calls into question theories of aspectual composition like Verkuyl (1989) and methods to determine the aspectual class of an idiomatic expression given the properties of verb, subject NP, object NP, PP, AP and so on.

(7) *Mary and her friends painted the town red in six hours/*for six hours.*

(8) *Mary and her friends painted the town red for six hours/*in six hours.*[2]

(9) *Mary took her pigs to market in two hours/*for two hours.*

(10) *Mary took her pigs to market for two hours/*in two hours.*[3]

(Glasbey 2003)

The discrepancies in aspectual interpretation between the literal readings in (7) and (9) and the idiomatic readings in (8) and (10) are due in Glasbey's approach to the different thematic relations involved. In particular, in the idiomatic readings (associated to activities) a lack of gradual patient relation between the event and the object NP is claimed since there is no point at which the event is partially or completely accomplished.

[1] As pointed out by the reviewer in (5) and (6) there is an overlap of verbal aspect and lexical aspect. If only event structure is considered, neither *Hermione died for weeks nor *Hermione kicked the bucket for weeks would be acceptable.

[2] Under an idiomatic reading *paint the town red* = 'to have an extravagantly good time in town.'

[3] *Take pigs to the market* = 'to snore.'

Espinal & Mateu (2010) show that metaphorical modes of thought can be provided as an explanation for the changes in aspectual interpretation by analyzing examples that can be associated with the class of fake resultatives (Jackendoff 1997).

(11) *John laughed his butt off all day long/*in ten minutes.*

(12) *John worked his guts out all day long/*in ten minutes.*

In (11) e (12), the idiomatic sentences are associated to atelic readings and involve durative activities which are motivated by the activation of the conceptual metaphor INTENSITY IS A CHANGE OF LOCATION in idiom comprehension, contrary to what occurs in true resultatives, having literal meaning and involving a telic reading.

(13) *The audience laughed the actor off the stage in/*for ten seconds.*

(14) *She worked the splinter out of her finger in/*for ten seconds.*

(Mateu & Espinal in press)

According to Goldberg (1995), resultative constructions are metaphorical extensions (via the activation of the metaphor A CHANGE OF STATE IS A CHANGE OF LOCATION) of the caused-motion construction. Mateu & Espinal (in press) argue that, in these cases, the *telos* (the final goal) is mapped from the source domain of caused-motion constructions to the target domain of resultative constructions, fulfilling the conditions of the Invariance Principle (Lakoff 1993).The same is not true in (11) and (12), where the Invariance Principle appears to be violated (Mateu & Espinal in press).

We acknowledge the role of the conceptual metaphor in the definition of aspect in idiomatic contexts but at the same time we claim that it is insufficient to account for the cognitive modes of thought involved in meaning construction. In the following sections, we will further analyze the SOURCE-TO-TARGET mappings by means of blending operations.

3 Theoretical Framework

The present analysis draws on the main assumptions of Cognitive Grammar (CG) as developed in Langacker (1987, 1991, 2008) and further extended in Broccias (2003, 2004, 2006). Other theoretical assumptions within the Cognitive Linguistics/Semantics framework, such as Conceptual Metaphor Theory (Lakoff & Johnson 1980, Lakoff 1987, 1992), Image Schemas (Johnson 1987, Cienki 1997, 1998) and Blending Theory (Fauconnier & Turner 1996, 2002) are also applied to the analysis and are fundamental for the cognitive account of lexical aspect in idiomatic contexts proposed in the investigation. We introduce the main tenets of CG in this section while the other notions will be described in more depth as the proposal will be developed. CG is a model which proposes a view of grammar as a structured inventory of conventional linguistic units (Langacker 1987, 57). Any linguistic unit is defined as an association between a semantic

pole and a phonological pole. In each linguistic unit, the two structures are interconnected by symbolic links and they are accessed in a unitary fashion.[4]

All familiar expressions conventionally used in a language are part of the lexicon[5] and are organized among them by very basic cognitive phenomena such as association, automatization, schematization and categorization. Since language is dependent on these phenomena, it is considered as an integral part of human cognition. CG also argues that grammar embodies imagery. Imagery is involved in any linguistic expression since, for the purposes of the expression itself, the scene is structured in a particular way according to which certain aspects are made more salient with respect to others. The same event can be construed differently depending on the part emphasized. The construction of meaning is therefore dependent on conceptualization that in turn involves imaginative abilities like metaphors, metonymies and blending.

One of the most relevant tenets of CG – fundamental for the purposes of the schemas advanced in the following sections – is the notion of trajector/landmark alignment. In a relational predication, the trajector (tr) is the primary focus of attention while the landmark (lm) is the secondary focus. Although the asymmetry between the two entities motivates the universal subject/object distinction, its application is far more general given the fact the trajector/landmark alignment broadly concerns the internal structure of relational predications at any level of organization (Langacker 1987, 231-232). Trajector and landmark are not defined in terms of semantic or conceptual content and they can refer to any cognitive domain.

(15) *The lamp is above the table.*

(16) *The other guests all left before we arrived.*

(Langacker 2008, 71-72)

In (15), *above* instantiates a relation of spatial location between *the lamp* (the trajector) and *the table* (the landmark). In (16), the event of leaving (*the other guest all left*) is the processual trajector with respect to the processual landmark of the event of arriving (*we arrived*). Strictly connected to the trajector/alignment issue is the distinction between nominal and relational predications. Any linguistic expression profiles a thing or a relationship. In the former case, a nominal predication is involved. In the latter, we have a relational predication. Furthermore, relationships can be either processual or non-processual. A processual relationship (or more simply a process) involves a positive

[4] A linguistic item like *moon* is seen in CG as made up of the semantic pole [MOON] which stands for the complex conceptualization of the unit (Langacker 2008, 15) and the phonological pole [mu:n]. The correspondence between the two poles is represented by a slash which separates the two poles, rendered orthographically uppercase and lowercase, respectively. A fundamental claim in CG is that complex structures are formed out of simpler ones. Lower-level and higher-level structures constitute a symbolic assembly that depending on its complexity will be more or less analyzable. The single units are divided by a hyphen.

[MOON]/[moon]
[[[MOON]/[moon]]-[[LESS]/[less]]]
[[[[MOON]/[moon]]-[[LESS]/[less]]]-[[NIGHT]/[night]]]

(Langacker 2008, 16)

[5] The notion of lexicon in CG is far different from the definition given in Generative Grammar according to which lexical entries constitute the full set of the irregularities of the language (Chomsky 1965) and are separated from rule-based grammar.

temporal profile and this is the case for verbs (indicated by the heavy line, cf. Figure 1). Non-processual relationships involve a single configuration through time and correspond to adjectives or prepositions. Processes and non-processual relationships are also different in terms of the type of mental scanning involved. Scanning is another general cognitive ability claimed in CG and refers to the conceptualization of the scene involved in the profiled relationship. When a complex scene is scanned, various parts of the event are accessed either by summing or superimposing them. These two ways of conceptualization correspond to the two modes of event scanning advanced in CG: sequential and summary scanning (Langacker 1987, 248-249; 2008, 82-83).

Processes are characterized by sequential scanning when apprehended as a continuous series of transformations constituting the evolution of a complex scene (e.g. *to enter)*. Non-processual relationships involve summary scanning which is an additive way of scanning an event, since in a single configuration all the facets of the relation are available at the same time (e.g. *into*).

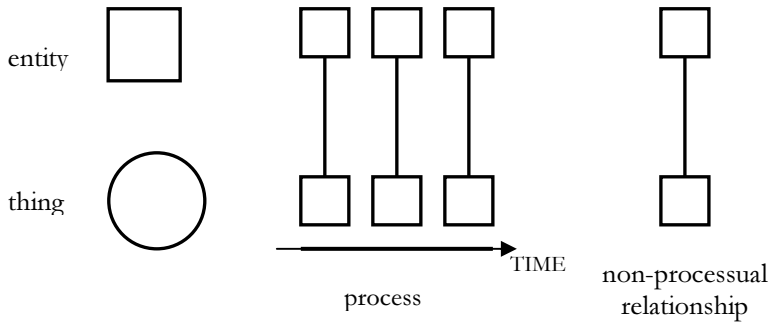

Figure 1. Schematic representations in CG.

The diagrams in Figure 1 depict how the semantic poles of the grammatical classes – described above - and the relationships between them look like. These are recurrent notational devices in CG and are employed to represent lower and higher-level constructions. The notion of construction within CG has received increasing attention in the latest developments of the theory (Langacker 2008, 183). Constructions are, in particular, defined as composite structures resulting from the integration of lower-level component structures both at the semantic and at the phonological pole (see above in footnote 1 the compositional path of the composite structure for *moonless night*). The structural composition of assemblies can be either specific or schematic: specific assemblies constitute linguistic expressions whereas more schematic assemblies correspond to constructional schemas, namely conventionally established patterns which provide a sort of guides to combine symbolic assemblies. The compositional path followed by component structures to form composite expressions is determined by correspondences (or overlaps) between entities at different levels of the structures. In the diagrams correspondences are represented by dotted lines which connect entities at different levels of representation.

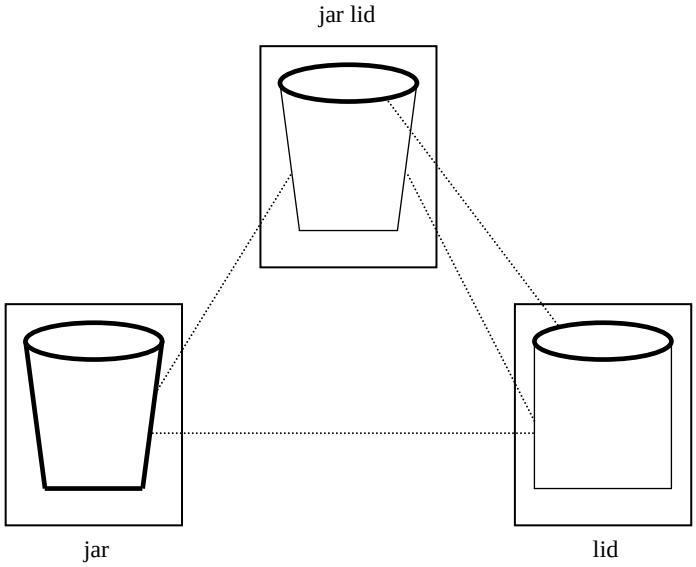

Figure 2. Composition of *jar lid* (adapted from Langacker 2008, 164)

The interaction of cognitive processes at the semantic pole of idiomatic constructions, whose intervention is claimed to be one possible explanation for the detelicization processes, will be represented by the combination of the above theoretical assumptions and notational devices.

4 On Aspect

In the field of Cognitive Linguistics, particular attention has been devoted to grammatical aspect and mental representations (Bergen & Wheeler 2010, Madden & Zwaan 2003). Additionally, accounts focusing on the conceptualization of the internal structure of events have been recently provided (Becker et al. 2011). However, a dynamic approach to aspect in idiomatic contexts as an interaction of high-level cognitive operations (Fauconnier 2009) has been insufficiently addressed, especially in a contrastive manner. The analysis presented here is essentially focused on the lexical aspect of different classes of predicates. Even though the strategies of regulating such complex aspectual combinations and predict their semantic implications have resulted in a huge variety of theories and reformulations of the conceptual properties to be attributed to the single classes (cf. Comrie 1976, Dowty 1979, Dahl 1985, Michaelis 2004, Rappaport Hovav & Levin 1998, Croft in press), we assume as a starting point Vendler's well-known classification (Vendler 1967) into four different categories of lexical aspect.

a. States: *be sick* [stative, durative, atelic]
b. Activities: *sing, run* [non-stative, durative, atelic]
c. Achievements: *reach* [non-stative, punctual, telic]
d. Accomplishments: *build* [non-stative, durative, telic]

Generally speaking, these classes are defined according to three binary distinctions: stative/non-stative, punctual/durative, telic/atelic. The present analysis is concerned with detelicization processes, namely aspectual shifts from a telic to an atelic interpretation of

a predicate when an idiomatic expression has the same syntactic structure, or at least the same verb phrase, as a non-idiomatic counterpart. In particular, states describe situations that are conceptualized as both stative and durative since they do not change and last over time. Activities describe both dynamic events and processes and involve a change over time. Additionally they do not have an inherent endpoint. Processes are also instantiated by the Achievement class which also provide a culmination of the event in a exact point in time (punctual events).

Accomplishments involve a process resulting in a change of state that lasts in time. The typical diagnostic procedure to define the aspectual class of a verb is the temporal modification with *in*-phrases and *for*-phrases (Vendler 1967), more recently labeled in Croft (in press) as the container and durative adverbials (Croft in press). They are commonly used to distinguish between telic and atelic events, indicate respectively the length and the span of time over which the event occurred. These diagnostics will provide the analysis with a preliminary assessment of the aspectual properties concerning the data whose patterns are described in the next section.

	Telic/Atelic	*in* PPs	*For* PPs
States	ATELIC	No	Yes
Activities	ATELIC	No	Yes
Accomplishments	TELIC	Yes	No
Achievements	TELIC	Yes	No

Table 1. Telicity vs. Atelicity in lexical aspectual classes

5 Aspectual Shifts In Idiomatic Constructions

We provide an analysis of English and Italian idiomatic constructions denoting excessive actions by means of a figurative displacement or breaking of a body part, in order to show how some classes of idioms may involve an aspectual shift with respect to a literal reading of a VP.

LITERAL

(17) *John laughed me out of the office in ten seconds/*for then seconds.* (English)

(18) *Gianni lo ha sganasciato (con un pugno)* (Italian)
Gianni CL.ACC has dis-jaw-PAST.PART.MSG with a punch
*in due minuti / *per due minuti.*
in two minutes/ *for two minutes
'Gianni broke his jaws by punching him *in two minutes.*'

IDIOMATIC

(19) *John laughed his head off for ten minutes/*in ten minutes.* (English)

(20) *Gianni si è sganasciato (dalle risate)* (Italian)
Gianni CL.REFL is dis-jaw-PAST.PART.MSG from.FPL laughters
*tutto il giorno / *in due minuti.*
all the day / *in two minutes
'Gianni laughed his head off *all day long*.'

In (17) and (18), as demonstrated by the compatibility with the container adverbial, the literal events have the aspectual properties of an accomplishment. The same modification is not appropriate in (19) and (20) where the idiomatic events can be characterized as durative (intensive) activities and are fine with the durative adverbial. The problem is twofold and can be summarized by the following questions: (i) how can we explain the change in aspectual interpretation from the literal reading to the idiomatic reading? (ii) how can we motivate the systematic correlation (in the two languages of interest) between the intensive action denoted by the idiomatic interpretation and the change of location undergone by a body part expressed in the linguistic structure?

We will propose that the discrepancies related to the aspectual properties can be accounted for by considering the cognitive operations involved in the conceptual interpretation of aspect and that the idiomatic reading entails the excessiveness of the action because of the activation of two domains of experience. The result will be a two-level integration model: at the first level, the integration will affect the two sentence components giving rise to the single conceptual unit *John laughed his head off* (as in the literal construction *John laughed me out of the office*); at the second level, the integration will affect the two domains of experience implicated via metaphorical activation. For the time being, we want to focus on the idiomatic data and the systematic patterns they follow in the construction of the intensive meaning.

In the English pattern *V one's* BODY PART *out/off* (for other accounts of this class of idioms see Jackendoff 1997, Mateu & Espinal 2007, in press, Espinal & Mateu 2010), four elements are part of the idiomatic structure: an intransitive verb construed in a forcible fashion, a possessive determiner coreferential with the subject, the body part which undergoes the figurative displacement and the directional particle. Crucially, the verb is conflated with the supporting event and expresses the action that at the final level of idiomatic interpretation can be characterized as excessive. The Italian pattern contains systematically a denominal verb of removal (DVR) whose verb stem is formed by a deprivative prefix and the name of the body part figuratively displaced. Interestingly enough, contrary to what happens in English, the supporting event, namely the action that is interpreted as excessive, is not part of the idiomatic structure but it is expressed as an optional adjunct. This is consistent with the predictions claimed in the distinction between satellite-framed and verb-framed languages (Talmy 2000) according to which languages of the former type (Germanic, generally Indo-European except Romance) lexicalize motion events by expressing the directional path as an adjunct (satellite) and the supporting event as conflated within the verb root; the latter (among the others Romance, Polynesian, Semitic) express the path[6] as lexicalized within the verb root and the supporting event as an adjunct.

[6] In terms of Talmy's typology (1985, 2000) the prefix of a denominal verb would be considered as a satellite. In fact, verbal prefixes in Romance have been proposed as a counterexample to Talmy's generalization. Other studies have shown that some types of prefixed verbs correspond to a weak satellite-framed pattern (Acedo-Matellàn and Mateu 2010). However The crucial thing of

While DVRs have received much attention from formal semantic (Kiparsky 1997) and morphological (von Heusinger & Schwarze 2006) perspectives, less has been said on their idiomatic use. In order to account for the behaviour of DVRs in idiomatic contexts, I resort to the analysis of von Heusinger & Schwarze (2006). They propose a distinction of DVRs depending on the nature of the nominal base and, in particular, drawing on the notion of FIGURE and GROUND (in terms of Talmy 1985) they establish the following subtypes: FIGURE verbs (*sbucciare* 'to peel' > *buccia* 'peel') and GROUND -verbs (*sbarcare* 'to disembark'> *barca* 'boat'). In the former, the verb stem encodes the FIGURE, namely an entity that is moved or located with respect to the GROUND, expressed as the direct object. In the latter, the verb stem lexicalizes the GROUND, that is the fixed entity from which the FIGURE – in turn expressed as the direct object – is moved. I argue that idiomatic DVRs are mainly associated with FIGURE -verbs, and this is consistent with the claim that, generally speaking, denominal verbs are of this type (Kiparsky 1997). In the present analysis, I point out a nontrivial difference between literal and idiomatic DVRs: although the root is derived from the same nominal base, literal DVRs are causative transitive verbs whereas idiomatic DVRs are almost exclusively causative reflexive verbs. This implies that (as concerns FIGURE -verbs) they will assume the following dissimilar configurations:

(21) LITERAL DVRs (e.g. *sviscerare* 'to gut'): $[s\text{-}[\text{FIGURE}]_N]_V$

(22) IDIOMATIC DVRs (e.g. *sviscerarsi (in lodi)* 'to bestow praise'):
$[s\text{-}[\text{FIGURE}]_N\ [\text{GROUND}]_{CL}]_V$

The structure in (22) consists of the prefix *s-* which has a negative/deprivative meaning, the verb root derived from the nominal base and the clitic *–si*. The clitic has a reflexive interpretation and is coreferential with the subject (as the possessive determiner in English pattern). In fact, in reflexive constructions (direct reflexive) have be claimed to involve two participants which denotatively coincide (Masini, in press). Since the nominal base has the role of FIGURE, the *–si* element corresponds to the GROUND. Hence, I claim that the subject of idiomatic DVRs has a complex twofold role: it is the experiencer and, given the systematic coincidence with the clitic, it is also the fixed entity from which the removal occurs.

(23) *Gianni si è scervellato per capire cosa non andava.*
Gianni CL.REFL is dis-brain-PAST.PART.MSG to understand what not go-PAST
'Gianni racked his brain to understand what was wrong.'

The patterns in the two languages represent a productive procedure of constructing excessive meaning. In fact, many occurrences demonstrate the different ways of structuring the displacement/removal of a body part (in (33) the removal involves a part that blocks the body) according to the previous considerations taken into account.

DVRs in the examples provided is that the supporting event is expressed as an adjunct outside the idiomatic structure.

(24) *to laugh one's head off* (English)
'to laugh intensively.'

(25) *to cry one's eyes out*
'to cry intensively.'

(26) *to cough one's lungs out*
'to cough intensively.'

(27) *to work one's butt off*
'to work intensively.'

(28) *to sing one's heart out*
'to sing intensively.'

(29) *sganasciarsi* (Italian)
to dis-jaw-REFL
'to laugh one's head off.'

(30) *sbellicarsi*
to dis-bowel-REFL
'to laugh one's head off.'

(31) *scervellarsi*
to dis-brain-REFL
'to think/concentrate intensively.'

(32) *sviscerarsi*
to dis-gut-REFL
'to bestow intensive praise.'

(33) *scatenarsi*
to dis-chain-REFL
'to do something in an intensive fashion.'

6 Analysis

With the aim of proving that aspectual discrepancies can be motivated by considering high-level cognitive operations that intervene and are integrated at the semantic pole of idiomatic constructions, we resort to the following theoretical tools:

i. conceptual metaphor:[7] INTENSITY IS A CHANGE OF LOCATION (Espinal & Mateu 2010) (see section 2)

[7] It is crucial to remind that, in Cognitive Linguistics, conceptual metaphor refers to the understanding of one conceptual domain in terms of another. The conceptual domain from which we draw metaphorical expressions to understand another conceptual domain is known as the source domain. The conceptual domain that is understood in this way is the target domain. Thus the source

ii. Force Change Schema (FCS) (Broccias 2003)
iii. image schema SCALE (Johnson 1987)
iv. trajector/landmark alignment in complex structures (Langacker 1987, 2008)

The data provided in (17) and (18) – associated with literal readings – can be claimed to be true resultatives. We have already seen that examples such as (19) and (20) have been defined as fake resultatives since they are conceptually associated with atelic readings and there is no semantic relation between the V and the NP. More precisely, there is no semantic constraint of patienthood over the NP (Goldberg 1995, 99-100).

The FCS has been claimed to represent the semantic pole of transitive resultative constructions (Broccias 2003, 52) as in the following examples:

(34) *John hammered the metal flat.*

(35) *Sally danced herself to fame.*[8]

The FCS is a composite structure which results from the integration (in terms of Fauconnier & Turner 1996) of a force component (FC) and a change component (CC). In a sentence like the one reported in (17) *John laughed me out of the office*, *John laughed me* would be the part related to the force component whereas *(me) out of the office* would be the change component. The V is an intransitive verb that is construed here in a forcible fashion and can be considered as the skewing element of the construction (Langacker 2009). Skewing is nothing other than a discrepancy between a verb's meaning and the composite meaning of an expression it appears in (Langacker 2009, 256). There are special cases in which the skewing element is the construction itself.

In all the schemas proposed below, a bottom-up reading is implied as analytical order. However, we claim that the semantic interpretation of the structures occurs as a whole and in a very automatic fashion. The schema in Figure 3 represents how the FCS looks like and captures the semantics of the true resultative construction of the English literal reading provided in sentence (17). The FCS is a variant of the billiard-ball model (Langacker 2008, 103) whose grammatical realization is the typical transitive clause. At the FC, the trajector *John* exerts the force instantiated by the verb *to laugh* (an intransitive verb used transitively in the construction) over the landmark *me*. The two entities[9] are represented with the notational device for a thing (see section 3). At the CC, the force causes the displacement of the element that corresponds to the landmark from an origin to a goal. The path *out* is instantiated by an arrow. The entities that are not in bold are not specified in the linguistic structure. In this sense, even if *out of the office* could be considered as the resultant state, no specific entity representing the goal is expressed in the sentence. The dotted lines indicate the correspondences between the entities of the

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domain of the journey is commonly used to explain the target domain of life (Lakoff & Johnson 1980). The structure of a conceptual metaphor corresponds to the following formula: TARGET DOMAIN IS SOURCE DOMAIN (e.g. LOVE IS A JOURNEY, ARGUMENT IS WAR, QUANTITY IS DIRECTIONALITY).

[8] Interestingly enough, Broccias (2003, 178) points out a distinction between (34) and (35). The former conveys a visible condition, the latter a not visible condition. When a not visible condition is involved the event is said to be carried out in an above-the-norm fashion.

[9] We have seen above that an entitity could be either a thing or a process. The notational device to represent a thing is a circle whereas a process is represented via entities (squares) interconnected one to each other.

two components that are integrated in the single conceptual unit (the blended space). Blended spaces are the result of projecting the source onto the target domains. Furthermore, they are hybrid (Langacker 2008, 51) in the sense that they combine and foreground selected features of each input space. In the same way, at the end of idiom comprehension, the speaker will select the intensive activity because the final level of integration will be in the foreground with respect to the process of integration.

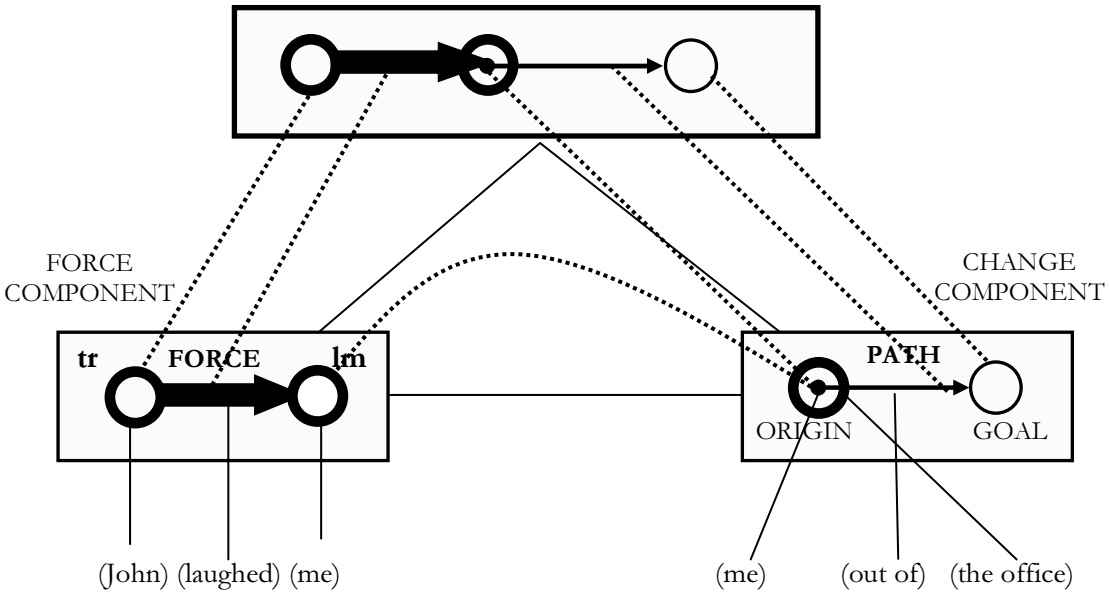

Figure 3. *John laughed me out of the office.*

But, what happens with fake resultatives? Can we use the FCS to represent the semantic pole of the idiomatic construction in (19) *John laughed his head off*? The point we make in the present paper is that true resultatives (literal expressions) do not imply the activation of two domains of knowledge which interact at the conceptual level. Fake resultatives (idiomatic expressions), where a more concrete SOURCE DOMAIN is used to express an abstract TARGET DOMAIN, do. The interaction between these two domains is well-expressed by the conceptual metaphor postulated in Espinal and Mateu (2010) INTENSITY IS A CHANGE OF LOCATION. Our proposal is based on an extended version of the FCS consisting of two levels of integration, as represented in (42). At the first level, as in (41), the integration between the FC and the CC results in a single conceptual unit. Thus, we have a force exertion (*to laugh*) from a trajector (*John*) over a landmark (*head*) at the FC, and a displacement (*head off*) from an origin (which must correspond to the trajector) toward a goal (not specified in the linguistic structure and for this reason not in bold) at the CC. We claim that the first-level integration occurs within the source domain, that is the CHANGE OF LOCATION. This domain, in turn, interacts with the target domain INTENSITY conceptualized via the image-schematic structure for SCALE, giving rise to the final level of integration where the event itself (*to laugh*) is argued to assume the role of trajector moving along the open-ended scale of intensity and providing, thus, no

inherent endpoint in the event[10]. In fact, as defined in Johnson (1987, 123) the image schema SCALE may either continue indefinitely in one direction or may terminate at a definite point. The concept of intensity has been argue o involve an open-ended scale (Espinal & Mateu 2010, 1407), hence we stipulate the indefinite value of the abstract concept (∞). Again, the dotted lines indicate the correspondences between the entities of the two components that are integrated into a single conceptual unit.

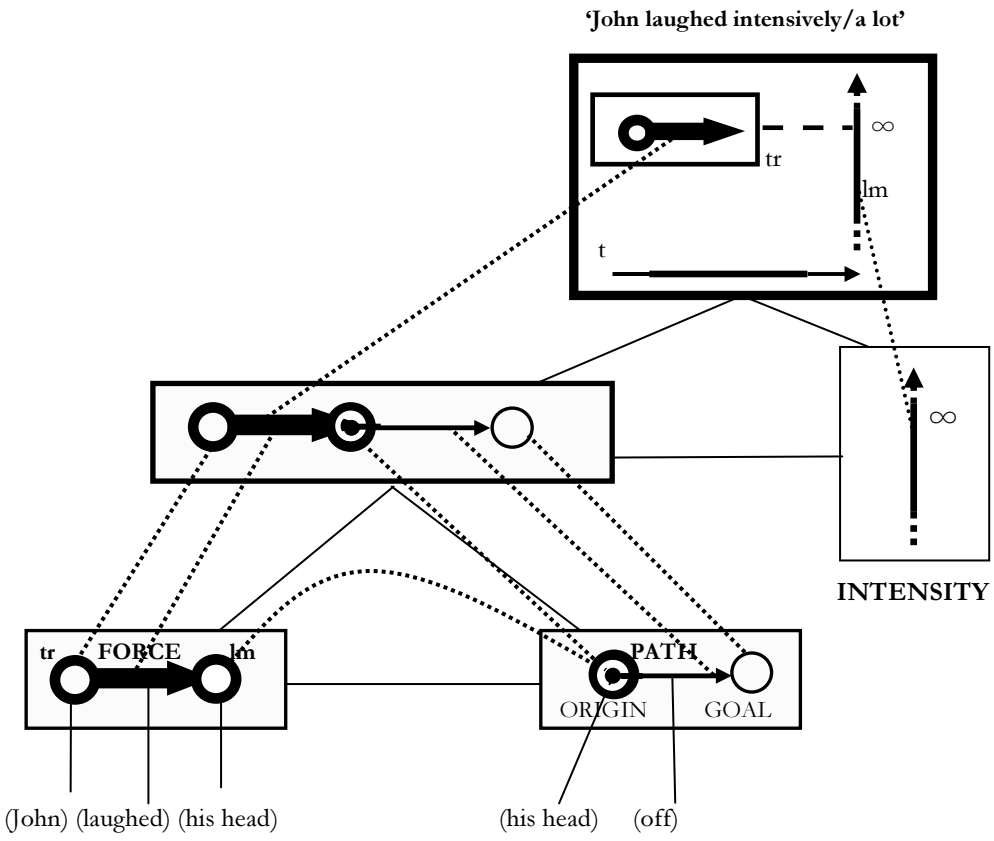

Figure 4. *John laughed his head off.*

At the final level of idiom interpretation what is salient is the single conceptual unit of the second-level integration. This point is consistent with the claim that the relation between component and composite structures is an instance of background vs. foreground (Langacker 2008, 60). We take this observation as valid also as far as conceptual levels are concerned and provide a representation in Figure 5 where the interaction of conceptual domains is assumed to generate blended spaces. In this sense, the role of blending is central in grammar since "far from being an independently set of forms, grammar is an aspect of conceptual structure and its evolution." (Fauconnier & Turner 2002, 383-384).

[10] As suggested by the reviewer the conceptual metaphor activated could also be: INTENSITY IS A CHANGE OF LOCATION ON A SCALE.

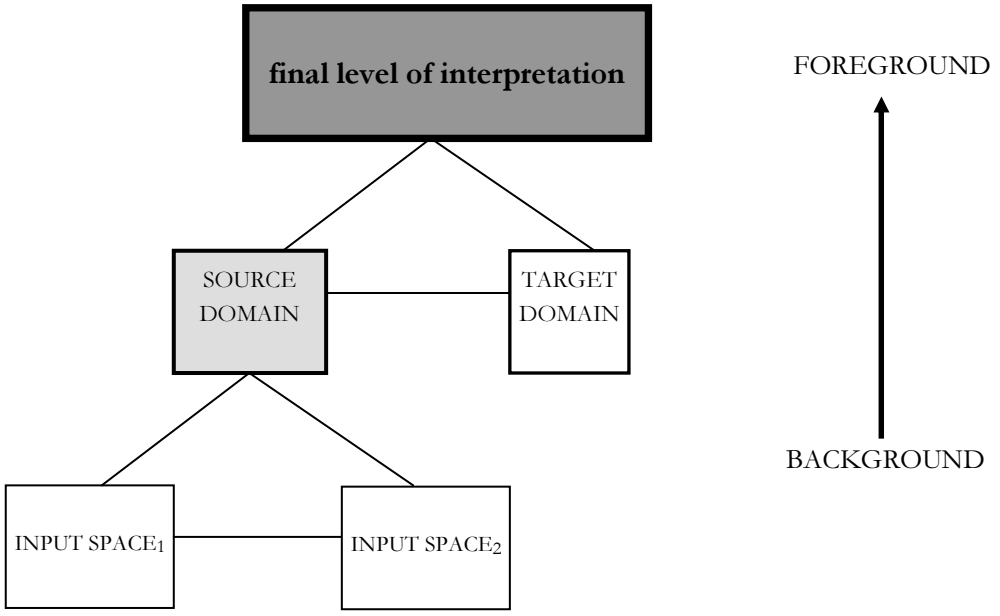

Figure 5. Blended spaces as foregrounded units

The semantic poles in Figure 3 and Figure 4 are analogously representative of the Italian examples analyzed in section 5 and repeated again here below.

(36) *Gianni lo ha sganasciato (con un pugno).*
Gianni CL.ACC has dis-jaw-PAST.PART.MSG with a punch
'Gianni broke his jaws (by punching him).'

(37) *Gianni si è sganasciato (dalle risate).*
Gianni CL.REFL is dis-jaw-PAST.PART.MSG from.FPL laughters
'Gianni laughed his head off.'

We have claimed that, contrary to what happens in English, the supporting events *con un pugno* and *dalle risate* are not part of the expressions in (36) and (37) which are fine even omitting the two PPs. As far as the idiomatic reading is concerned, the supporting event denotes the action that is interpreted as excessive at the end of idiom processing. It is not part of the idiomatic structure and is expressed as an optional adjunct. Technically, the supporting events are, in these cases, the events which cause the displacement/breaking of the body part (literally or figuratively), in the sense that it is by punching him that Gianni broke his jaws and it is by laughing that Gianni's head has undergone a displacement.

In Figure 6, as it has been said in the description of the schemas related to the English minimal pair, at the FC we notice a force exerted from a trajector over a landmark, *Gianni* and *ganasce* (the nominal base of the DVR which expresses the figure), respectively. At the CC, the landmark undergoes a displacement from an origin to a goal, again not specified in the linguistic structure. The two components are integrated into a single conceptual unit. As the presence of the causing element is not strictly part of the linguistic structure the force is represented in grey.

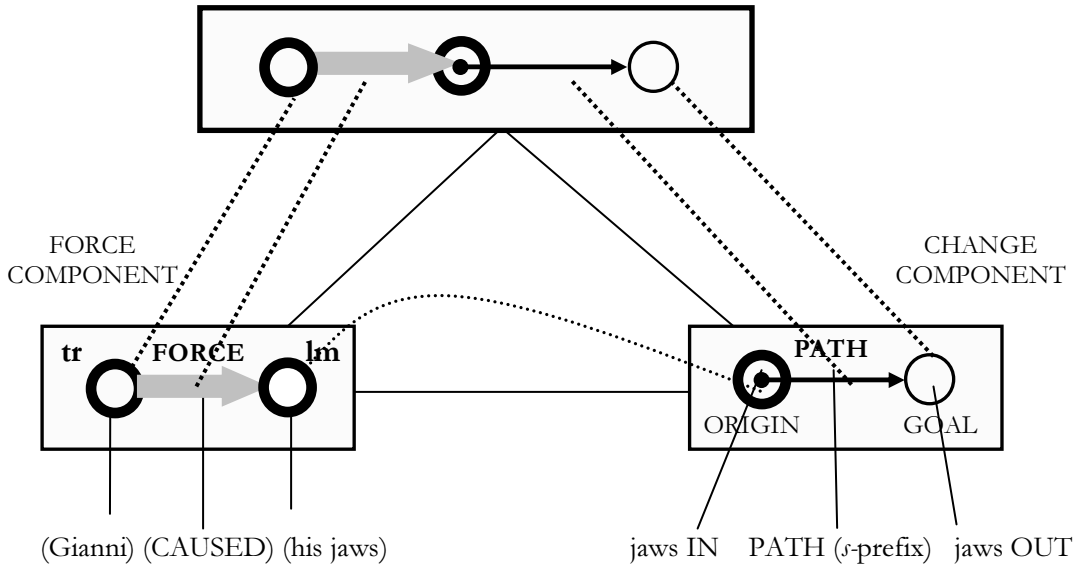

Figure 7. *Gianni lo ha sganasciato (con un pugno).*

In Figure 7, the activation of the same conceptual metaphor claimed in Figure 4 entails the interaction between the target domain INTENSITY and the source domain CHANGE OF LOCATION, domain from which the more concrete conceptual structure is imported. The first-level integration occurs within the source domain where the single conceptual unit results from the two input spaces, the FC and CC. The two components are structured exactly in the same way as the literal reading, except for the landmark being included within the trajector. This is due to the reflexive construction of the idiomatic DVR and it is represented by the arrow within the trajector which denotes the subject being the source and the recipient of the energy exerted in the causing event. The lack of specification of the causing event is related to the behaviour of the DVR which provides no specification for the manner element. In other words, *sganasciarsi* could be associated with more causing events and its high generic interpretation is represented again by using the grey arrow device. The second-level integration results from the interaction between the single conceptual unit at the source domain and the open-ended scale of INTENSITY. At the final level of interpretation, no endpoint will be profiled since the event will assume the role of trajector moving along the image schema for (the open-ended) SCALE used as a characterization for the abstract concept of INTENSITY.

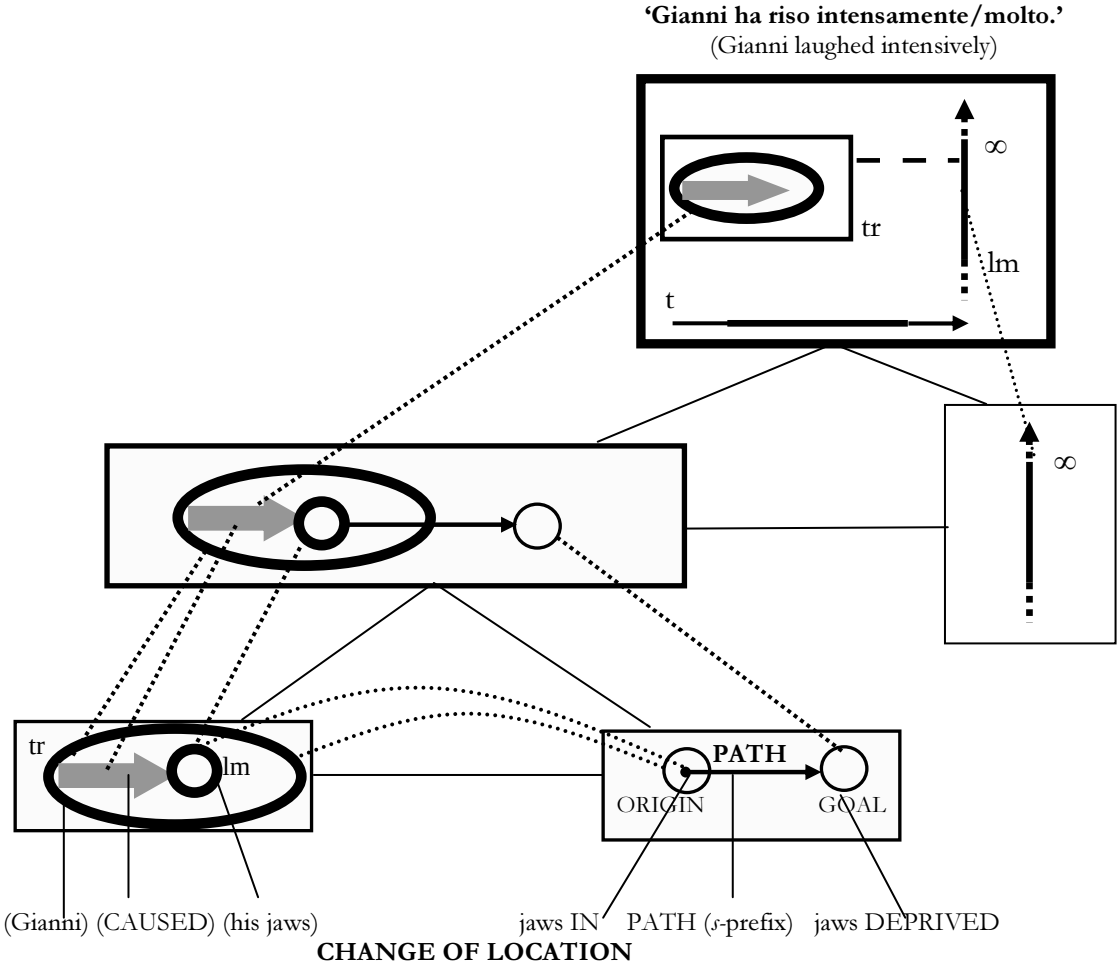

Figure 7. *Gianni si è sganasciato (dalle risate).*

At this point, an analytical question may emerge from the description of the schema in Figure 7: how does the generic causing event denote the specific event of *ridere intensamente/molto* ('to laugh intensively/a lot')? The answer is straightforward and is related to theoretical assumptions. The purpose of a semantic pole is to represent a semantic schema covering very generic structures. In the precise case of the idiomatic DVR *sganasciarsi*, even if the causing event denoting the excessive action is optional in the linguistic structure, the only accessible meaning, through a process of lexical association, is the intensive/excessive laughing.

7 Conclusions

Idiomatic expressions denoting intensive actions have been claimed, in this paper, to involve a shift toward an atelic reading when the same verbal construction is found in literal and idiomatic contexts. We have dealt with two main patterns of intensive meaning construction in English and Italian, respectively: *V one's* BODY PART *out/off* idioms, topic of interest of previous analyses, and DVRs idioms, to our knowledge never accounted for in idiomatic domain. In particular, previous studies (Espinal & Mateu 2010), focused on English fake resultatives such as *John laughed his head off*, have resorted to conceptual

metaphor theory to argue that constructions that are instantiations of accomplishments when interpreted literally do not necessarily preserve aspectuality under an idiomatic interpretation. We have argued that a network of high-level cognitive operations is needed to deal with aspectual shifts in idiomatic expressions and that metaphorical modes of thought are insufficient to account for all the cognitive activities involved in figurative meaning construction. Furthermore, we claim that these dimensions can be established as elements of conceptual consistency in idiom processing.

We leave for further research analyses of classes of idioms involving aspectual shifts toward telic readings and other possible conceptual domains to be associated with the use of motion verbs in idioms in order to provide a more solid ground to confirm that figurative meanings are not merely due to interpretive incongruities but are motivated by existing conceptual mappings (Gibbs 1994, Gibbs et al. 1997).

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Language mask as a tool for linguistic analyses

Aleksandra Biela-Wołończiej

The paper proposes the concept of a language mask as a tool for analysing texts and discourse. The key element of masking is simultaneous concealing and revealing of the content, by selecting aspects to be shown and those to be hidden, which enables manipulating the expressed message. Language masks, that is, linguistic tools serving to pretend (e.g. metaphor, hyperbole), are treated as meta-tools in communication, mediators that modify the cognitive structure (and thus, often the axiological charge and emotional connotations) of the content by profiling it so that, for example, the message appears more attractive. The concept of a language mask may be used as an independent tool of analysis, but may also be related and combined with various existing approaches and methodologies of linguistic analysis, such as politeness theory, mitigation, image management, also in political linguistics, translation studies and other semantic-pragmatic, especially cognitive, sociolinguistic and text/discourse-analytic tools.

Keywords: *language masks, pragmatics, cognitive semantics, discourse analysis, image management*

1 Introduction: Language masks for difficult topics

It is obvious that the ways we view – or are able to view – reality differ from person to person. "The same thing" may always be presented in various ways, depending on the viewpoint and the feature one focuses on. Values, emotions and needs are the key aspects of power and manipulation in language.

The paper proposes the concept of a language mask for analysing texts and discourse. Based on the cognitive view that our language reveals our mental, cultural and behavioural phenomena, a language mask is seen here as a strategy, a powerful semantic-pragmatic tool that pretends, entertains and protects – thanks to its dual nature: on the one hand it conceals a given reality, but on the other hand it reveals it, profiling the content. Masks also have the potential to influence the valuing and emotional connotations of the masked. Language masks are linguistic tools used for pretending. They especially appear when dealing with controversial, difficult and taboo concepts, like any political or historical controversies[1], religion, possession, censorship (Biela-Wołończiej 2011a), social taboos, such as death (Biela-Wołończiej 2009c, 2011b, 2011c, 2011d) and physiological functions like sex, excretion, etc. In the public sphere, an opinion poll may have totally different results depending on the way the key concept is presented (and potentially masked) and on the emotional-axiological aspects of the selected expressions.

2 What are masks?

In linguistics, the term *mask* is used sporadically and does not seem to function as a set concept, apart from the proposal presented here. However, in other disciplines related to

[1] A summary of the present paper, focusing on political discourse analysis, was accepted for the T2PP ("From Text to Political Positions") Workshop, 9-10 April 2010, Vrije Universiteit Amsterdam.

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the study of language, *mask* is an established element of their set of concepts. Of special relevance are: ethnology and cultural anthropology, psychology and sociology. These approaches focus on different aspects, but remain complementary.

2.1 *Mask* in disciplines related to linguistics

In cultural anthropology, *mask* refers not only to covering the face, but a general transformation of one's appearance – the clothes, makeup, hairstyle, props and one's whole behaviour. Masks rather show than hide. The key notion here is creating a relation, meeting the Other (the dead, gods, oneself). The mask is a symbolic mediator between the material world of humans and the immaterial world of spirits. The latter ones visit the mask wearer, and the mask becomes an embodiment of an unearthly being, and functions as its/his/her metaphor, a physical expression of the immaterial – expresses what is beyond words. Various masks are used for calling spirits, protecting from unwanted ones and scaring away evil ones (Kerényi 2005). There are also death masks that copy the face or body in order to magically or symbolically provide it immortality (Maertens 2005). The concept of a mask is strictly connected with ritual, the sacrum sphere, taboo and trance that the wearers enter. In the theatre, masks express archetypes. In carnival, they enable to express emotions and attitudes (e.g. Noh festival). At funerals, they help the dead find their way to the world beyond (Egypt, China, Africa) (Janion and Rosiek 1986). Many masks, inherited from generation to generation, are connected with local myths, worshipped as objects of cult (Lévi-Strauss 1985) and belong to key artefacts of many cultures. However, in the modern society, especially western, art has separated itself from ritual, masks as objects became "desemanticised", and entered the domain of folklore, thus losing its sacral and magic aspect. Maertens (2005) notes that they have become a secondary sign: the mask, itself a sign, becomes a sign of the sign it originally was.

The contemporary European mask stems from the Greek cult of Dionysus, connected with sacred sites in the nature, where masks were hung, and is also related to the spirits of the dead and the state of insanity, especially if referring to the processions of masked dancers. Another origin of the contemporary mask is the horrifying mask of Gorgon (Kerényi 2005). The theatre mask, whose prototype probably appeared with the Dionysus dancers, enables such a transformation that the wearer is simultaneously him/herself and someone else.[2] Masks of this type have been preserved and still exist in street theatre (clowns), pantomime (as makeup) and carnival-type of entertainment (street parades, fancy dress balls) (Nyczek 2002). Dressing up as someone else, for example at carnival (such as using carnival masks of the dell'arte comedy type) has two communicative functions: detaching from oneself and symbolically gaining a new, different identity, which provides anonymity and the ability to ignore norms and social conventions (Boholm 2005). The mask in culture may also be considered as an aspect of the semiotics of identity, where in an iconic or indexical way the mask may be seen to reveal or conceals one's identity (Pollock 1995). Altogether, in cultural anthropology, the mask not as much connotes hiding or deceiving, but it is often a "hush from a different world" (Nyczek 2002) used to express the inexpressible, protect, transform a person and/or identity, reveal and encounter. Similar aspects may be seen as present in the concept of a language mask, for example when talking about abstract or difficult things.

[2] *The Oxford Encyclopedia of Theatre and Performance*. ed. Dennis Kennedy. Vol.2. OUP, 2003: 813-814.

In sociology, the Machiavellian concepts of *mask* and *masking* are mostly associated with symbolic interactionism and the microsociological approach of Goffman, based on the metaphor of a theatre performance – an idea inspired by the notion of playing roles by G.H. Mead. To Goffman (1959), everyone, when in a social situation (in the company of others), behaves like an actor on stage. The mask is a synonym of *role* (or: *front*), of which everyone has many types and constantly chooses the one most appropriate to the given situation, using various strategies of selection to make the best possible impression on observers in the interaction (*strategic interaction*). Masking means selecting those aspects of oneself which one temporarily wishes to expose (such as concealing egoism, being polite). The person chooses the manner of moving, speaking, appearance, props and "stage design", and hides secrets (Goffman distinguishes various types of secrets: dark, strategic, and intra-group ones) whose revealing might harm the image one wishes to make on the environment. The situation of playing a role and all actions in the presence of others are called a *performance*, defined as: *all the activity of an individual which occurs during a period marked by his continuous presence before a particular set of observers and which has some influence on the observers* (Goffman 1959: 22). In every social situation one wishes to create a desired image of oneself (*impression management*) – using *defensive techniques* (controlling one's emotions) and *protective techniques* (trusting the audience that they will tactfully ignore any failures of the "actor"). The person playing a given role on the one hand must be immersed in it, in order to be convincing, and on the other hand must be alert and react to any disturbances. To Goffman, we often identify persons with their roles and take the mask for the actual person – which is a result, but not the reason for performing roles. His approach is often associated with the concept of the modern game theory. The mask, seen as "the social self," is also interpreted as the place where one's personality is revealed (St.Clair 2003). Altogether, in sociology *the mask* means the role of a person played in front of others. This approach is related to the politeness theory in linguistics, and obviously to the concept of language mask as a tool of image management and profiling.

The term *mask* in psychology is quite established, and was originally introduced by C.G. Jung. To him and his successors in psychoanalysis, the mask, i.e. *persona,* belongs to the basic elements of the human psyche, alongside with *self, shadow, anima/animus, imago dei*, etc. The mask is the psychophysical attitude, one's whole public personality, "the social self": *Die Persona ist ein kompliezziertes Beziehungssystem zwischen dem individuellen Bewusstsein und der Sozietät, passenderweise eine art Maske, welche einerseits darauf berechnet ist, einen bestimmten Eindruck auf die anderen zu machen, andererseits die wahre Natur des Individuums zu verdecken.*[3] (Jung 1971: 260). It might be called an "interface", as it is a mediator between the human inner world and the external world. The mask entails both the appearance and one's behaviour. Psychology also points to the opposition between the one's persona and the true face (*das wahre Gesicht*) (Jung 1971), for the mask may cause a tension. It may also mislead others about the wearer's personality. However, the mask also possesses a function of protecting the most vulnerable, and may thus be beneficial (Płużek 1991). The mask is expressed in roles and social customs, and it is an inevitable element of an individual's functioning in a society (Pervin 1993). Like the skin on the body – it has a regulating role, but to work properly, it must be flexible. If the mask is not flexible enough, it disturbs one's functioning. If it is too strong, it poses a threat to one's

[3] The persona is a complicated system of relations between the individual consciousness and the society, like a type of a mask, which one the one hand aims to make a certain impression of others, and on the other hand to conceal the individual's true nature. [own transl.]

personality, as it may falsify or dominate it (Jacobi 1993). The mask may also be used to "make up" for one's inabilities, often on the contrary (so that e.g. a shy person appears very self-confident) (Płużek 1991). As the mask is not merely about pretending, but also about shaping and transforming personality, it may be used purposefully to modify behaviours or practise desired attitudes – consciously or not, e.g. by therapeutic metaphor-stories, psychodrama, NLP and other techniques (O'Connor and Seymour 1996). In social psychology, the mask is a strategic tool of creating one's an image in social interactions. This image – although is not quite reality – is also not possible to be separated from reality (Scheibe 1979). Hence, the main function of the mask in psychology is a necessary mediator serving to express, transform and create an image for oneself and for others – which is corresponding to the roles of a language mask.

2.2 *Mask* in linguistics

The term *mask* appears sporadically in linguistic studies and is used in a narrow sense, mainly referring to various forms of manipulation using euphemisms, as in Dąbrowska (1999), who treats it as a protective mask "in bad intention" (of type 2 in the typology below, similarly to the approach in the sociopolitical analyses by Karwat 2006). Caffi (2007) does not use the term, but in her discourse-analytic approach she discusses certain aspects of masking as *mitigation* ("doing and undoing"). In literature studies, name-masks, used by Szargot (1993) refer to the various names a Romanticism author uses to sign his works and letters. Jakubów analyses the mask of satire (2005) discussed in relation to political censorship in the GDR – which the present comprehensive approach to masks in language would classify as a protective and social mask. The proposed approach is broader and entails the above ones.

The central feature of masking is the selection of aspects one decides to show, as opposed to those to be hidden – which enables manipulating the expressed message. The cognitive approach to language views it as a tool of the mind that is also used to understand reality, for example to categorise. One of the basic aspects of categorisation is the axiological one. Because masks are meta-tools in communication, mediators, and present selected aspects of a given concept, they may also modify the axiological charge of the content, i.e. profile it so that a concept with a basic negative valuing is presented as a more positive one. Their essence is intentional profiling of the message by pretending, that is, revealing and concealing. The content is expressed indirectly, as if it was wrapped in a protective or modifying layer.

A mask in language may be seen as a type of a sign (such as a word or expression) where the signified is intentionally profiled – in the sense of profiling by Bartmiński (2007) and Langacker (1995) – depending on the perspective and will of the user. Certain aspects (elements) of meaning are concealed, while other ones are selected to be revealed or stressed in the signifier. This relation may also be treated with reference to categories as trajector-landmark, profile-base and figure-ground distinction, construal, viewpoint, vantage and other approaches.

As a profiling tool, the mask also has the power to suggest certain valuing of the expressed concept. The sender has the intention to hide certain aspects, and to show other ones – consciously or not. Obviously, not every use of potentially masking language tools, e.g. metaphor or periphrasis, is masking – only when the sender has an intention to conceal a part of what is expressed, and expose another part. Language masks – as any masks – have a dual function: they reveal and conceal, but one of these functions may be dominant.

From a sociolinguistic perspective, the concept of mask is also related to the taboo sphere and involves prohibitions in the domains of sacrum, profanum and threat. A language taboo is a language form or expression avoided in a given group, and "forbidden words", i.e. the names of taboo concepts and their homophones, are avoided and masked with substitutions (e.g. *toilet - powder room, restroom, lavatory, WC, ladies'/men's room, bathroom*).[4] In the language of politics and the media, politeness and political correctness are strong factors which cause the masking of taboo concepts. According to the rule of iconicity in language, if a mask appears as a mediator in communication, the distance between the signified and the signifier grows, and the link between them is loosened. Words may then act as barriers that separate the interlocutors from the content of the conversation. This may lead to language change, where the *signifiant* shifts so far away from its primary *signifié* that as a result it only refers to its metaphoric extension, e.g. that the word 'death' (and thus, the concept of death) mostly refers to an end of something in an abstract sense (e.g. 'dead batteries'), and when referring to "real" death of a human being other expressions are used, e.g. 'passing'. In other words, often when one means an end in an abstract sense, one says 'death', but when one means human death, one rather says 'passing away'. (Biela 2001)

A mask (in language and in the physical world) creates a double-sided barrier, as it may conceal both the content (e.g. a sacrum) from the external world, and the external world from the content (e.g. protect from the threat is poses). Masks have the potential to both conceal and reveal, disable and enable, disturb and facilitate, zoom out and zoom in, cause distance and create intimacy – often simultaneously. (Biela-Wołońciej 2008, 2009a, 2009c, 2012). They are used in different contexts, and for various reasons: emotional (to cope with feelings and protect the vulnerable), social (politeness), manipulative (to persuade, transform reality, impose opinions and values), cognitive (to express more effectively the complicated or abstract), relevance (to expose the most relevant elements).

3 Types of masks in language and culture

Masks in language and culture may be divided into types according to their function. For illustration, each type may be assigned a prototype from the physical world. The functional typology of masks in language and culture, proposed in Polish by Biela-Wołońciej (2011a, 2011b) and in English by Biela-Wołońciej (2011b, 2011c, 2011d, 2012) and Biela-Wołońciej and Fornalczyk (2012), is shown in Table 1.

[4] An example of a strong social taboo, present in both private and public life, is the avoidance of homophones of 'death' in Mandarin Chinese ('si'), including the numeral 'four' and its multiples (also in sums of money, floors in buildings, car license plates, public discourse and business figures). (Biela-Wołońciej 2012)

Table 1. Functional typology of masks in language and culture and their prototypes in the physical world

Mask type	**Function**		***Physical world proto-type***	***Examples in language***
1. protective masks in "good intention"	protect, work for the benefit of the:	a) wearer (sender): protect them from external threats	*gas mask*	*I wasn't satisfied* (litotes)/ *one is excited* (impersonal form) – euphemistic, not to reveal one's emotions
		b) the other party (receiver): protect them from the threat of the wearer/message	*surgeon's mask*	*passed away* (metaphor) *these things will soon end* (index-phrase)/ *your English is not the best* (under-statement) – all euphemistic, for politeness
2. protective masks in "bad intention"	protect the wearer, enable to act against the other party, being unidentified and not taking responsibility for one's actions or intentions:	a) conceal the wearer	*thief mask*	*It has been stolen* (impersonal form not to reveal the agent) / *you know what I mean* ("riddle") to gain trust and confuse
		b) mislead the other party	*wolf in a sheep's skin*	*ecological leather* (circumlocu-tion), suggesting natural material / *and I won't mention his love affairs* (apophasis) - revealing, yet suggesting discretion
3. social masks	concealing enables to disobey norms and social rules, provides entertainment or freedom of expression without taking responsibility for it		*carnival mask*	*you fool!.. just kidding!* (hyper-bole irony) – humor to avoid responsibility

4. mediating masks	enable an invisible spirit or abstract concept become physically accessible, express the inexpressible	*ritual mask*	*the bumpy road of our relationship* (metaphor) for an abstract reality
5. depicting masks	copy reality (a person's face when alive or dead), create a lookalike, and potentially make it immortal	*death/life mask*	*beautiful, pretty* (close synonyms)
6. exaggera-ting masks	express the characteristic features of the face which are relevant in a given context, symbolically strengthen the message, simplify perception	*theatre mask*	*he became worm buffet* (metonymy, hyper-bole) – to stress the tragic aspects

The division in Table 1 shows the potential functions of masks, however, a single instance of masking often performs several functions at once. For example, many masks are a combination of a protective function alongside with an exaggerating, mediating or social one.

The most commonly used masks are: *protective* (as a politeness strategy or to mislead and overcome potential resistance), *exaggerating* a ("mental shortcut") and *social* (humour, play) – often combined, e.g. when the speaker wishes to avoid responsibility for the message expressed. Undoubtedly, difficult issues and concepts, and thus, words that express them, often masking ones, require much more mental effort than "ordinary" ones, which is also revealed in typical patterns of verbal-nonverbal behaviour before, during and after uttering them. Analyses of general prosodic patterns and styles are to be found in Biela-Wołońciej (2009c), nonverbal aspects in Biela-Wołonciej (2009b), and self-correction patterns of masking and unmasking in Biela-Wołonciej (2009a).

4 How are language masks used - and how are they to be found?

Masking may employ various language tools, from different approaches to linguistic analysis.[5] Common ones, alongside with sample phrases from the public media, include:[6]

- metaphor (*the jaws of the crisis are opening*),
- metonymy (*the decision of Brussels*),
- euphemism (*cases of mistreatment*),
- passive and impersonal strategies (*it was decided, one prefers*),
- periphrasis/circumlocution (*the person in charge of the city hall*),
- apophasis (*not to mention his fraud scandals*),
- understatement, litotes (*insufficient resources, lack of success*),
- hyperbole (*a doomsday for small companies*)[7],

[5] First developed in Biela 2001, revised in Biela-Wołońciej 2007, 2009c, 2011a, 2011b, 2012.

[6] Certain categories overlap with other ones, e.g. euphemism, hyperbole, paraphrase, periphrasis, humour – with each other and with metaphor, metonymy, understatement, etc.

- index phrases ("pointing to" a reality without "touching" it: *these things*, *all this, such issues*),
- paraphrase (*an undesired situation*)
- implicatures (*the president gave a speech and stayed sober until the end*),
- riddles (to be guessed from the context: of a *you-know-what* type, e.g. *we all know what it leads to*, and *there-is-what-there-is* type: *and then happened what happened*),
- magic cap (eye contact, gesture or vague vocalisation instead of verbum propium, e.g. *he must have...* [gesture indicating the masked concept: bribing, going to the toilet, etc.]).

A separate broad category of masking language tools is humour, including irony. Its most common masking function (whether "friendly" or "nasty") is a social mask, which entertains and creates a sense of solidarity or common ground, and a distance to reality, often combined with a protective mask of all subtypes, where the message is moderated and made more emotionally accessible, especially when the content is very difficult, taboo or serious (Biela-Wołońciej 2008). Humour, especially irony, may also doubt in the "face value" of the given expression. A language tool especially prone to that is hyperbole, where the prosodic aspect or nonverbal context may suggest an ironic interpretation of its content, and hence make fun of the hyperbole or turn its "strength" into a euphemism. The speaker may thus hide from responsibility for the words behind the humour so that the receiver is confused and not sure if the speaker really means it.

The mechanism of masking may also be present at the level of text, e.g. the title or headline of an article may suggest the main idea of the text or impose a certain interpretation. Masking need not use concrete rhetorical figures, but may involve a deliberate manipulative a paraphrase to suggest a different interpretation of the content and mislead the addressee (mild examples include *ecological leather, soybean hamburgers* – used as protective masks) or "mistaking" names which sound similar ("deliberate error", a seeming slip of a tongue). Manipulations of names that appear similar belong to the "deliberate error" masking tools and are often present in international political contexts and translation within these contexts, causing various controversies – examples might include such "slips of a tongue" or "mental shortcuts", as *Polish Concentration Camp* in place of *Nazi Concentration Camp in Poland* [8], *Hatyn* (a place of Nazi war crimes on Belorussians) in place of *Katyń* (a place of Soviet war crimes on Poles)[9], *Warsaw Uprising* in place of *Warsaw Ghetto Uprising* (two different historical events, of a different scope, time and context, although both in Warsaw against the German occupation), etc. (examples from Biela-Wołońciej 2011a). Obviously, as the crucial feature of masking is the intention to "pretend" and present the expressed content in a modified way, not all indirect expressions, errors or modifications are masks – only the intended ones.

The reasons and ways of using the particular types of language masks vary, however, tendencies may be observed, as certain language tools are more typically used in

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[7] Hyperbole, by exaggerating to an absurd extent, may also give a humorous effect, potentially ironic, questioning the content, and potentially work as an understatement (Biela-Wołońciej 2012, Biela-Wołońciej and Fornalczyk 2012).

[8] As a result of such "misunderstandings", the official English name of the Auschwitz (Oświęcim) concentration camp has been changed to *German Nazi Concentration Camp in Poland.*

[9] As the Russian Federation still does not welcome information on the Katyń genocide (the massacre of ab. 20.000 Polish officers by the Soviets during World War II, in Katyń and surrounding villages), visitors to Belarus are offered leaflets with the Hatyn (also spelled Chatyń, Khatyn) memorial (of a German Nazi murder on the Belorussians) so that it is confused with Katyń.

the function of certain types of masks than other ones. The most commonly used masks are protective – of both subtypes. The "good intention" protective masks (type 1) belong to a politeness strategy or dealing with a social taboo to protect one's own face and emotions (like a gas mask) or not harm the other party (like a surgeon's mask). However, protective masks "in bad intention" (type 2) use language to protect only the wearer/sender, and conceal the fact that his or her intentions might be contrary to those of the other party/addressee, and are used to overcome any resistance and enable to work for their harm, in a covert way, as is done by a thief (thief's mask) or manipulator, who pretends to have different intentions (like a wolf in a sheep's skin). The role of both types of protective masks is fulfilled by the greatest variety of language tools (metaphors, metonymies, euphemisms, periphrases, apophasis, litotes, understatements, passive and impersonal constructions, conversational implicatures, riddles, index-phrases, "magic caps", etc.), and the function of protective masks "in bad intention" (type 2) may additionally be fulfilled by "deliberate errors".

The second most common type of a language mask is an exaggerating mask (type 6), where the user only highlights the aspects of the concept which are relevant in the given context, using a "mental shortcut" – e.g. using metonymy or exaggerating with a hyperbole – like a theatre mask, which briefly expresses the basic archetypes. The next type, mediating masks (type 4) express what is complicated or emotionally difficult (like a ritual mask), often simultaneously play a protective role, and may be fulfilled by metaphors, index phrases or riddles.

Social masks (type 3), i.e. language tools aimed to entertain, abreact and violate social norms (like with a carnival mask) appear in various types of humour, often also with a double function of a protective mask, as a pleasant atmosphere helps expressing a given message in a less overt way – both in good and in bad will. Depicting masks (type 5) seem not to occur as a typical language mask in the sense of concealing, as from their nature they do not aim at hiding, but their essence is to most faithfully copy the original (like a life or death mask). In the linguistic sense, depicting masks are close synonyms, used to most faithfully express a given concept. These masks may be compared not to a painting, where the author may transform and interpret what he or she sees, but rather to a photograph, which "seizes the image", trying not to disturb it. (Biela-Wołońciej 2009c, 2011b)

In the context of translation, language masks may function as translation masks. They are especially visible (and analysable) in the translation of politically or culturally relevant texts. Translation masks are discussed in Biela-Wołońciej (2011a). The fact of dealing with two or more texts (the original and the translation/s) of potentially "the same" content makes it easier to detect masks. They appear especially in the contexts of censorship (primarily protective masks – to smuggle the forbidden content), political correctness (to gain political acceptance), and the receivers' cultural sensitivity (e.g. considering their historical experiences or system of values). Non-political motivations for using translation masks concern cultural differences that hinder communication (mediating and exaggerating masks), pedagogical reasons (e.g. to protect children's feelings or not to model harmful behaviours[10]), and when the text in the target language should serve a different purpose (e.g. more or less persuasive) than the original (protective masks, exaggerating masks). Thick dissertations could be written on analysing language masks in the translation of controversial texts, especially those which were

[10] Such was the motive for Thomas Bowlder's *family Shekespeare,* a version of Shakespeare's works without drastic scenes and expressions, which could be read in the presence of ladies.

subject to political censorship. In Poland and other Warsaw-Pact countries, translators of western literature exercised extraordinary creativity in the times of communism to cope with political censorship. The language masks served to improve the image of anything connected with the ruling system and the Soviet Union, and impair the image of "the West", as well as to conceal (often through an allusion – metonymy) or omit the contents regarded as improper. Obviously, the constraints of censorship and political correctness also apply to literature, even children's (Biela-Wołończiej 2011a).[11]

A mask, whether in translation or not, often may suggest totally different valuing and connotations, by presenting a different cognitive structure and perspective on the same fact (assuming that there exist such things as "the same facts"), as e.g. in the case of forced migrations after World War II, which the German side may call *expatriation* of their citizens from the territories inhabited by Germans before 1945 (*leaving* their homeland), while the Polish side calls the migrations of its citizens from the eastern territories (which after the war joined to the Soviet Union) *repatriation* (*returning* to their homeland) – although in both cases the destination place was not the one of the people's birth or "origin". Another example, also of a historical-political significance, is translating the expression *concentration camps in Poland* (camps on the Polish territory) as *Polish concentration camps* (whose ambiguity may suggest belonging to the Poles/Polish state). (Biela-Wołończiej 2011a). The above examples, although may be labelled with different categories of linguistic and social terms, have one thing in common – the content, their "message", is profiled and modified to appear "a little different". It is done for various reasons and with various intentions, but it is intentional (although not necessarily conscious).

Language masks may also be a tool of conscious manipulation within one language. As a result of the "paraphrase" of *prawo własności* [in Polish: 'property right' of real estate] of owning property into *prawo własnościowe* ['proprietal/"propertish" right'], "a state similar to owning property", many Poles lost their property in the post-war time under communist legacy (Biela-Wołończiej 2012), while substituting *stwierdzenie nieważności* ['stating an (initial) invalidity'] of a Catholic church marriage by *unieważnienie* ['invalidation', i.e. making invalid'] suggests the possibility of a church divorce.

Although it may be used difficult to definitely guess the author's intention concerning single expressions, as not all instances of indirectness or using a synonymous phrase involve masking, but only those with the intention to profile the message – still, given a whole text and context it is usually possible to see if there was an intentional masking strategy concerning a given concept.

5 How may language masks be useful for the methodology of linguistic analyses?

The concept of a language mask may used independently, but it may also be related and combined with various existing approaches to text and discourse analysis, such as facework, mitigation, image management, and other semantic, cognitive, sociolinguistic

[11] For the sake of political correctness in *The adventures of Nils* by Selma Lagerlöf, in the Swedish original the character's parents are going to the church, while in the Russian translation they are going to the market; and Pippi Langstrumpf's father, an African/Black king in the original, in first English translations is called *cannibal,* and more recently *King of Natives* (as discussed in Biela-Wołończiej 2011a).

and discourse-analytic concepts, also in translation studies and political linguistics, as it seems methodologically compatible with them.

A methodological implication of the present approach to studying text and discourse would be to analyse various aspects of language masks in various text types in all media, written and spoken: [but leave the final colon]: the lexical expressions used as masks, their frequency, position, the types of masks they represent, the types of language tools with a masking function (e.g. rhetorical figures, as in Biela-Wołończiej 2007, 2009c, 2011a, 2012), their semantic content and cognitive structure, such as the conceptualisations, construal or preconceptual/image schemata, also with a cross-cultural perspective (as in Biela-Wołończiej 2011b, 2011c, 2011d, 2012), their cultural grounding and imagery present in them, their psycho- and sociolinguistic functions, the axiological load (valuing) suggested by the masks (as in Biela-Wołończiej and Fornalczyk 2011, 2012), the emotional connotations evoked by the particular masking expression, masking as a strategy at various levels of the text, the reasons why they might be used, etc. An example of a particular narrow aspect analysed is the speaker's emotional-cognitive decision making process as to whether to use a more direct or indirect expression, manifested in using a double expression as a result of changing one's mind and self-correcting, as if "self-translating", where masking and unmasking of the same content occurs within one utterance (Biela-Wołończiej 2009a) or the relation of the verbal and nonverbal aspects of communication when using language masks while talking about a difficult subject (2009b). Biela-Wołończiej and Fornalczyk (2011, 2012) analyse semantically clear children's literary characters' names as instances of masks that convey an axiological load to immediately describe the character and simplify perception. In translation studies, language mask is a tool to analyse the relation between the source and target texts (Biela-Wołończiej 2011a).

The power of language masks lies in the fact that they express a point of view, an evaluation, which – if direct – might be subject to a conscious reflection and potential negation, but if indirect, one is often not aware of its impact. Whether language masks are helpful and beneficial or disturbing and harmful depends on the use and perspective they are judged from. However, they are present and worth revealing, identifying and being aware of. Masks may also be a useful tool to analyse text, discourse and translation – as tools on their own or within various methodologies.

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Why Does IT Always Rain on Me? On Weather Verbs

Adina Camelia Bleotu

The aim of this article is to discuss a possible argument structure representation for weather verbs (*to rain, to snow, to thunder* a.o.) in the framework proposed by Hale and Keyser (2002). Starting from the idea that weather verbs sometimes take Agents as subjects, and sometimes Themes, we would like to propose that they can be decomposed either as V+N (*rain* = 'FALL RAIN"), or as CAUSE followed by V+N ('CAUSE [FALL RAIN]'). The article brings cross-linguistic evidence in favor of this proposal, showing that weather verbs in languages across the world display an ambiguous behavior, sometimes behaving like unaccusatives, and sometimes like unergatives.

Keywords: *ambiguity, decomposition, incorporation, unaccusativity, weather verbs*

1 Aim

Believers or non-believers, we cannot help but remain a bit dazed and confused when we start to think about what lies behind the *it* in sentences like *It rains.* or *It snows*, an *it* which is missing in *pro*-drop languages. Is it the snow that falls or is there something or someone that causes the snow to fall?

The aim of this paper is to present a possible argument structure representation for weather verbs, and to discuss the semantic and syntactic status of their subject. Starting from the intuition that a verb like *rain* has the meaning 'fall rain', an intuition which is validated by the existence of numerous such explicit paraphrases across languages, the paper assumes the framework proposed by Hale & Keyser (2002), suggesting that weather verbs should be decomposed as: V+N (*rain*= 'FALL RAIN').

An important remark is in order, namely, that, while, in some languages (English, German, French, Spanish, Italian a.o.), such paraphrases are auxiliary means of referring to the weather, in addition to weather verbs, in other languages, like Chinese, where there are no weather verbs, they represent the only means of referring to the weather. We thus aim to test the viability of our proposal cross-linguistically, by looking both at languages which have weather verbs, and at languages which lack them.

In doing so, however, we take into account the fact that, even in languages which do have weather verbs, there are various other ways of talking about the weather, apart from weather paraphrases such as *Tombe la pluie* ('Falls the.FEM.SG rain.FEM.SG'), namely: (i) impersonal constructions (*Piove* (Italian, 'Rains'), *It rains*), (ii) extraposed 'subject' constructions (*Il a plu toute la journée une petite pluie fine* (French, 'EXPL has rained all.FEM.SG the day a.FEM.SG little.FEM.SG rain smooth.FEM.SG'*, It rained a heavy rain*), and (iii) agent constructions (*The Lord thundered from heaven, He rained his tears on me*). So as to further refine the argument structure representation proposed for weather verbs, the paper goes on to test if weather verbs are unaccusative or unergative, i.e., if their subject is to be

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understood as a Patient or as an Agent. In other words, what is of interest is whether, in a sentence like *It rains,* it is the rain that rains or, rather, a higher force (the sky/God), a question that has been present ever since Antiquity, as these lines from Aristophanes show (Clouds, 367-368):

> "***Socrates:*** *What Jupiter? Do not trifle. There is no Jupiter.*
> ***Strepsiades:*** *What do you say? Who rains then?"* (Ruwet 1991)

We look at how weather verbs behave with respect to unaccusativity tests across languages, showing that sometimes weather verbs behave like unaccusatives and sometimes like unergatives, which leads to their decomposition either as [FALL N] or [CAUSE [FALL N]], and not just as [FALL N].

2 The Data

We will start our cross-linguistic analysis by examining the data, looking at weather verbs in Germanic and Romance languages.

2.1 Weather Verbs in Germanic languages

2.1.1 Weather Verbs in English

In English, which is a non-*pro*-drop language, we encounter (a) weather verbs which take as subject the expletive pronoun *it*, such as *to rain* (*It rains)*, *to snow (It snows*), *to hail* (*It's hailing*), *to drizzle* (*It's drizzling),* (b) weather verbs which take a nominal as subject, such as *to blow* (*The wind is blowing)*, *to shine* (*The sun is shining)*, and (c) weather verbs which take as subject either the expletive *it* or a nominal (*the rain*), such as *to pour* (*It's pouring/ The rain is pouring).*

In the cases (b) and (c), the nominal occupying the subject position is not an Agent, but it can very well be an Agent in case the verb is used transitively: *God will rain a heavy rain on you if you don't start smiling* (transitive structures), *whenever God shines His Light on me* (Van Morrison).

2.1.2 Weather Verbs in German

In German, there are (a) weather verbs which take an expletive pronoun, such as *regnen*, 'to rain' (*Es regnet heute* 'It rains today', meaning 'It is raining today'), *schneien*, 'to snow' (*Es wird morgen schneien* 'It will snow tomorrow'), *blitzen* 'to flash' (*Es blitzt und donnert* 'It flashes and fulminates'), 'to hail' (*Es hagelt* 'It hails'), 'to drizzle' (*Es nieselt* 'It drizzles'), and (b) weather verbs which take a nominal as subject, such as *wehen,* 'to blow' *(Ein heftiger Wind weht* 'A heavy wind blows'), *scheinen,* 'to shine' (*Die Sonne scheint* 'The sun shines').

In colloquial German, an interesting phenomenon occurs, namely, (1) alternates with (2):

(1) *Es regent schon wieder*
it rains already again
'It is already raining again.

(2) *Das regnet schon wieder!*
this rains already again
'It is already raining again.'

(1) is the neutral way of talking about the weather; the subject *es* 'is' the standard German expletive pronoun that also shows up in constructions such as *Es gibt Probleme* (it gives problems, 'There are problems') or *Es wird getanzt* (it is danced, 'One dances'). In (2), *es* 'is' replaced by the demonstrative pronoun *das*. (2) expresses strong negative feelings about the weather (and those living in Central Europe know why), and cannot be used as a neutral statement. The construction is restricted to atmospheric predicates. It may also express surprise:

(3) *Das regnet ja nicht mehr!*
this rains particle no longer (yesterday's standard utterance)[1]
'It no longer rains.'

2.1.3 Weather Verbs in Dutch
Dutch has a system similar to German in that *het* and *dat* can alternate (both being translations for English 'it' as in 'it rains', but the latter being emphatic). However, this alternation is found in Dutch dialects, not in standard Dutch. The use of *dat* is absolutely impossible in the standard language (ABN = Algemeen Beschaafd Nederlands).[2]

2.1.4 Weather Verbs in Icelandic
Hoeskuldur Thrainsson points out that in Icelandic, one can either have the regular dummy *thadh* 'it, there' or *hann* 'he'. There are differences between the regular expletive and this weather-*he*[3]: a stylistic difference between the two, the latter being somewhat more colloquial, a clear syntactic difference, and semantic difference - somewhat similar to the difference between the use of *es* and *das* in impersonal constructions in German. A sentence like (4) would be more neutral than (5), the latter expressing negative feelings about the weather.

(4) *Thadh er faridh adh rigna*
it is started to rain
'It's raining.'

(5) *Hann er farinn adh rigna*
he is started to rain
'Oh, sh*t, it's raining again!'

A possible explanation for this could be that, when rain (snow, etc) bothers people, they need someone to get angry with; by using the personal pronoun *hann* 'he' instead of *thadh*, they make up an enemy (God?).

[1] Jan Olsen, http://linguistlist.org/issues/2/2-340.html
[2] http://linguistlist.org/issues/2/2-340.html
[3] http://linguistlist.org/issues/2/2-338.html

The difference in meaning is not clear; (4) can also have a negative meaning, and (5) can be a neutral statement, but, insofar as there is any difference, *hann* is more negative than *thadh* in weather constructions.[4]

2.2 Weather Verbs in Romance languages

2.2.1 Weather Verbs in Italian

Italian is a *pro*-drop language, so we find (a) weather verbs which take *pro* as subject, such as *piovere* 'rain' (*Piove* 'Rains'*), nevicare* 'snow' (*Nevica* 'Snows'*), grandinare* 'hail' (*Grandina* 'Hails'), *pioviggginare* 'drizzle' (*Pioviggina* 'Drizzles'), and (b) weather verbs which take a nominal as subject, such as *soffiare* 'blow' (*Il vento soffia,* 'The wind blows.'), *brillare* 'shine' (*Il sole brilla,* 'The sun shines').

In Italian, we can use two possible constructions with weather verbs: 'fare + weather expressions (N, A)' (6), 'essere + weather expression' *(c'è)* (7):

(6) a. *Che tempo fa?*
what weather makes
'How is the weather?'

b. *Fa bel tempo.*
makes beautiful weather
'The weather is nice.'

c. *Fa cattivo tempo.*
makes bad weather
'The weather is bad.'

d. *Ha fatto caldo.*
has made warm
'It has been warm.'

e. *Qui fa sempre freddo.*
here makes always cold
'It's always cold here.'

f. *In primavera fa sempre fresco.*
in spring makes always cool
'In spring it's always cool.'

(7) a. *Oggi c'è il sole.*
today there.is the sun
'It is sunny today.'

b. *Fa caldo.*
makes warm
'It is warm.'

c. *BRRR… Mamma mia, ma c'è' un freddo bestiale là fuori !!!*
Brrr… Mother my, but there.is a cold terrible there outside
'Brrr… mamma mia, there's a terrible cold outside!!!'

[4] http://linguistlist.org/issues/2/2-340.html

2.2.2 Weather Verbs in Spanish

In Spanish, another *pro*-drop language, we find (a) weather verbs which take *pro* as subject, such as *lluvia* 'rain', *nieve* 'snow', *tronar* 'thunder' (*Truena* 'It is thundering/It thunders'), *lloviznar* 'drizzle' (*Llovizna* 'It is drizzling/It drizzles'), and (b) weather verbs which take a nominal as subject, as in *Il vento sopla* 'The wind blows' (meaning 'The wind is blowing'), *El sol brilla*. 'The sun shines' (meaning 'The sun is shining').

Spanish disposes of three possible weather constructions: using the verb *hacer* 'make' (8), the verb *hay* 'be' (existential) (9), the verb *estar* 'be' (10):

(8) a. *Hace frio.*
makes cold
'It's cold.'
b. *Hace calor.*
makes warmth
'It's hot.'
c. *Hace sol.*
makes sun
'It's sunny.'
d. *Hace fresco.*
makes cool
'It's brisky.'

(9) a. *Hay niebla.*
is fog
'It's foggy.'
b. *Hay sol.*
is sun
'The sun is shining.'
c. *Hay nubes.*
is clouds
'It's cloudy.'
d. *Hay granizo.*
is hail
'It's hailing.'

(10) weather expressions that use the verb 'estar' along with an adjective:
a. *Está oscuro.*
is dark
'It's dark.'
b. *Está nublado.*
is cloudy
'It's cloudy.'

These three verbs behave differently in syntax, and they are used for different purposes. While the first two verbs are followed by nominals, *estar* takes adjectives as complements. The difference between *Hace sol.* and *Hay sol.* would be that the first has a causative component in its meaning (although no explicit cause is present), while the second does not. As for the difference between the 'be' verbs, while *hay* in *Hay nubes* 'It'

cloudy' is existential, *está* in *Está nublado* 'It's cloudy' is predicative (it even takes an adjective as a complement instead of a noun).

2.2.3 Weather verbs in French

Weather verbs in French take an expletive as subject: *pleuvoir (Il pleut*, 'It rains'), *neiger* (*Il neige,* 'It snows'). French also makes use of weather expressions with *faire* (11a) or impersonal expressions with *il y a*, as in (11b):

(11) a. *Quel temps fait-il ?*
what times make-it
'What's the weather like?'

Il fait (It makes) chaud 'hot', froid 'cold', frais 'cool', beau 'beautiful' ('nice outside'), mauvais 'ugly' ('bad weather'), humide 'humid', du vent (ART. wind', 'windy'), du soleil (ART. sun, 'sunny'), nuageux 'cloudy', orageux 'stormy'

b. *Il y a du soleil aujourd'hui.*
EXPL locative particle have art. sun today.
'It is sunny today.'

2.2.4 Weather Verbs in Romanian

In Romanian, we find (a) weather verbs which take *pro* as subject, such as (a) *ploua* '(to) rain' (*Plouă,* 'Rains'), (a) *ninge* '(to) snow' (*Ninge,* 'Snows'), and (b) weather verbs which take a nominal as subject, such as (a) *bate/sufla* '(to) beat/blow' (*Suflă puternic vântul astăzi.* 'Blows heavily wind.the today'), and (a) *străluci* '(to) shine' (*Soarele străluceşte azi.* 'Sun.the shines today').

There are weather expressions using the verb *a fi* 'to be' (12), the verb *a se face* 'to make' (13), the verb *a da* 'to give' (14):

(12) a. *Este soare.*
is sun
'It is sunny.'
b. *Este frig.*
is cold
'It is cold.'

(13) *Se face frig.*
refl.CL makes cold
'It is getting cold.'

(14) *Dă cu ninsoare azi.*
gives with snow today
'It's snowing today.'

2.2.5 Weather Verbs in Latin

In Latin, weather verbs are impersonal: *pluit* 'it has rained', *tonuit* 'it has thundered', *ninxit* 'it has snowed'.

The question is why the clause would feature a 3rd person form of the verb if there were no subject (Meillet 1937, 130-133). According to Meillet (1937), the construction with subject was the original (*Iove tonante, Iupiter pluvius*), in concord with the animistic concept ascribed to the early Indo-Europeans, who were assumed to explain natural phenomena by referring to gods and goddesses. Then a development from personal to impersonal took place, followed by a comeback to personal (which can receive a religious explanation: in Christian times, *dominus, caelum* came to be used with weather verbs in Latin).

However, there are *counterarguments* (Ruwet & Goldsmith, 1991) to this: the majority of weather verbs do not have a god-Agent or any other subject, the occurrence of subjects is not systematic, neither cross-linguistically, nor within a given language (Greek, Sanskrit, Latin), verbs without an explicit subject are not uncommon in Latin.

2.3 Weather Verbs in Chinese

There are no weather verbs in Mandarin Chinese, but weather expressions made up of the equivalent of the verb *fall* and a noun related to the weather:

(15) *Jintian xia yu.*
today fall rain
'It is raining today.'

(16) *Dongtian xia xue.*
winter fall snow.
'It snows in the winter.'

In this case, as argued by Hayle (2011), the subject of the verb is not the noun following the verb, but PRO. Given the fact that weather verbs can occur with some control verbs (17), causative verbs (18), and perception verbs (19), Hayle (2011) discards an NP-trace analysis of the subject of weather sentences in Chinese, opting instead for a PRO-analysis[5]:

(17) *Wo xiangxin zai xia yu.*
I believe PROG.marker fall rain.
'I believe it is raining.'

[5] He also brings counterarguments against the NP-trace analysis of the subjects of weather expressions in Chinese, showing that, if one adopts such an analysis, the possibility of binding becomes problematic, given the fact that the trace is not preceded or c-commanded by its antecedent: *Jintian* $[_{NP}\ e_i]$ *xia yiu.* Hayle speaks about Suner (1982) solving a similar problem in Spanish by arguing that Spanish is a language in which the empty element may be bound in subject position through the AGR position of INFL. However, this solution does not seem to hold for Chinese, since Chinese lacks the agreement feature.

(18) *Kexuejia shi tiankong xia xue le.*
scientist make sky fall snow prt.completed action
(the marker *le* indicates completed action or a new state)
'The scientists made it (the sky) snow.'

(19) *Haizimen zai kan xia yu.*
children PROG.marker watch fall rain
'The children are watching it rain.'

Since the verbs *kan, xiangxin*, and *shi* characteristically select S' (*kan* and *xiangxin* also select NPs), the verbs embedded under them must have subjects; in the case of other verbs, the subjects will be lexical, in the case of weather verbs, the subjects will be phonetically empty (PRO).[6]

3 Sheding Light on the Data

The purpose of this paper is to provide representations for weather constructions. In the previous section, we have simply listed examples from various languages across the world, but we have to make sense of the data presented. In doing so, we will rely on some very relevant ideas put forth by Eriksen, Kittilä & Kolehmainen (2010). The first is the three-fold typology that they propose for meteorological constructions (predicate type, argument type, argument-predicate type). The second is the distinction they make between precipitation events and temperature events.

Eriksen, Kittilä & Kolehmainen (2010) argue that meteorological events can be divided into three categories: (a) the predicate type, (b) the argument type, and (c) the argument-predicate type.

In the predicate type, a predicate expresses the meteorological event, while an argument has other functions. The predicate type can be subdivided into several subtypes: the atransitive type (*È freddo.*, 'Be.3SG.PRES. cold.M.'), the expletive type ('It is cold'), the intransitive predicate type, in which case the subject is semantically richer than the purely grammatical non-referential expletive subject, as it refers to background entities serving as the stage or source of the event: it may denote the location ('world', 'place', 'nature', 'surroundings' a.o.), the time ('day', 'time' a.o.), or the atmospherical background ('sky', 'weather', 'air' a.o.) ('The sky rains heavily today'), and the transitive predicate type, which is very rare cross-linguistically, but can, nevertheless, be found (as cited in FTC: *Helsingin Sanomat* 1995):

(20) *kun harmaa taivas alkoi vihmoa vettä* (Finnish)
when gray.NOM sky.NOM PST.3SG drizzle water.PART
'when it started to rain from the gray sky.'(lit.: 'when the gray sky started to drizzle water.')

[6] The verb *shi* behaves differently in that it appears to require a lexical subject for its embedded sentences, even in the case of *xia yu/ xue.*

In the argument type, an argument is responsible for expressing weather, while the predicate is semantically vacuous. The argument type subsumes several types: the intransitive argument type (21), the existential type (22), the transitive argument type (23):

(21) *Cad* *ninsori* *mari* *peste* *noi.* (Romanian)
fall.3PL snowfalls big over us

(22) existential type
Exi *katejida.* (Greek)
have.3SG storm.ACC.SG.F
'There is a storm.'
(Stavros Skopeteas, p.c.)

(23) transitive argument type
Miλi-de *goʁwel-āri* *duna.* (Northern Akhvakh)
sun-ERG illuminate-PERF world
'The sun is shining.' (lit. 'The sun has illuminated the world.')
(Denis Creissels, p.c.)

In the argument-predicate type, both a predicate and an argument are involved. The argument-predicate type covers the cognate type, where the elements taking part in the meteorological event encode the same facet of the event (24), and the split type, where each element taking part in the meteorological event encodes a different facet of the event (25):

(24) *Thato* *e* *thato.* (Toqabaqita)
sun 3SG.NFUT (sun)shine
'The sun is shining.'
(Frank Lichtenberk, p.c.)

(25) split type
The wind is blowing.

Apart from this very useful typology, the authors also distinguish between precipitation events and temperature events, arguing that precipitation events mainly use the argument type, whereas temperature events mainly use the predicate type. Given the fact that there are precipitation verbs in a lot of languages across the world, the predicate type remains, nevertheless, an important means of describing precipitation events.

Interestingly, in all languages presented in the previous section, we seem to have no subject for 'to shine' or 'to blow'. They require an argument-predicate type expression, unlike verbs like 'to rain' or 'to snow' that are predicate-type:

(26) a. *The sun shines.*
b. **It shines.*
c. *The wind is blowing.*
d. **It is blowing.*

A possible explanation for this could be the fact that elements such as the sun or the wind have a higher degree of agency than the rain or the snow, as suggested by Piaget (1972). This would explain why we do not say *The rain rains*, but we say *The sun shines*. The reason why we say *The sun shines*, but we do not say *The sky rains*, on the other hand, could be the fact that, while the sun is easily detectable as the source of light, it is not that clear who rains: is it the sky, the clouds, is it God? The examples just presented are, however, an exception to the general pattern of weather expressions.

If we analyze the data presented in the previous section, we see that weather verbs basically lack real subjects, that is, they either take *pro* as subject, or they take an expletive subject like *it*. Apart from these elements, they may take *God* as subject, or other nouns denoting the stage or the source of the meteorological event, and they may take demonstrative or personal pronouns as subjects (as seen in colloquial German, in Dutch dialects, or in Icelandic).

The fact that weather verbs, nevertheless, take subjects (that is, in the words of the article just discussed, they do not only allow for the predicate type, but also for the argument type, and for the argument-predicate type) suggests that the 'fake' subjects of weather constructions (by which we basically understand *pro* and expletives*)* may not be that fake after all, but, actually, they bear semantic content.

Moreover, we see that languages have weather paraphrases that make use not only of the verb *fall,* but also of the verb *be* or the verb *make,* therefore, both of a verb that has a Patient as a subject, and of a verb that has an Agent as a subject.

Taking the above into consideration, we would like to answer the question if weather verbs are unaccusative or unergative, since establishing this might aid us in the decomposition of verbs.

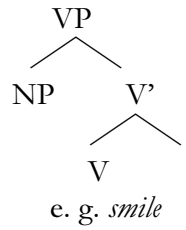
4 Are Weather Verbs Unaccusative or Unergative?

4. 1 Weather Verbs and Unaccusativity Tests

According to the traditional distinction between unergatives and unaccusatives, there are different semantic and syntactic properties that distinguish between the two (Perlmutter 1978, Burzio 1986, Chomsky 1981):

a. Unergatives: denote volitional acts, their argument is the Agent of the event, and it has control over the event, they denote mainly atelic events, at D-structure, they have an external argument but no internal argument, they can assign Accusative case in special configurations:

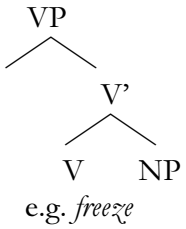
(27)



e. g. *smile*

b. Unaccusatives: denote mainly non-volitional acts, their argument is never the Agent, and it does not have control over the event, they denote mainly telic events, at D-structure, they have an internal argument but no external argument, they are unable to assign Accusative case (as follows from Burzio's Generalization):

(28)



e.g. *freeze*

The difference between these verbs seems to lie in the status of the subject: whether it is an external argument or an internal argument.

In order to see the nature of weather verbs, we will see how they behave with respect to *unaccusativity tests*: *there*-sentences, locative inversion, resultatives, past participle used as a modifier inside NPs, auxiliary selection (Levin & Rappaport Hovav 1995, Avram 2003). The first four are English-specific tests:

(i) There-sentences

Only prototypical unaccusatives (verbs of existence, verbs of appearance) can occur in *there*-sentences (29a):

(29) a. *There arrived a beautiful girl at our house yesterday.*
b. **There rained a lot yesterday.*
c. *It rained a lot yesterday.*

Apparently, weather verbs cannot occur in *there*-sentences (although one might speculate upon the similarity between *there* and *it)*, from which we can infer that they are either non-prototypical unaccusatives, or that they are unergatives. This test does not, therefore, pin down their status with respect to unaccusativity.

(ii) Locative inversion

As for locative inversion, unergatives cannot occur in locative inversion constructions (30a), only unaccusatives can (30b):

(30) a. **In the park jumped the squirrels.*
b. *Outside our house lived three little creatures.*
c. *Outside poured a terrifying rain.*
d. **/??In our country snowed a lot this year.*

As we can see from (30c), weather verbs cannot occur in locative inversion constructions, only some can (such as *pour*). However, it is debatable whether *pour* should be considered a weather verb, given the fact that it is more or less like *fall,* i.e. a verb of motion that accompanies a weather noun. Moreover, in (30d), there is no subject predicate inversion, because no subject is present, hence, the structure fails to obey the locative inversion characteristics. Therefore, this test is, again, not relevant enough to make clear the unaccusative or unergative nature of weather verbs.

(iii) Resultatives

Only unaccusatives enter real resultative constructions (31a), unlike unergatives, which enter fake reflexive/object resultative constructions (31b):

(31) a. *He fell into a coma.*
b. *They cried themselves to sleep. / They cried their eyes out.*
c. **They cried to sleep.*
d. **It rained into oblivion.*
e. **/???It rained itself into oblivion.*

On the one hand, weather verbs behave like unergatives, as they do not enter 'real' resultative constructions (31d). On the other hand, they behave like unaccusatives, as they do not enter fake reflexive resultative constructions (31e). This, however, may be due to the pseudo-referentiality of the expletive: the expletive may not have enough referential force to bind the fake reflexive.

(iv) Past Participle used as a modifier inside NPs (modifiers of 'subject')

The past participle of unergatives cannot be used as a modifier inside NPs, as in (32a):

(32) a. **the smiled girl*
b. **/???the rained rain*
c. **/?? the snowed snow*

As we can see, weather verbs seem to behave like unergatives. Weather verbs can occur as participles (*snowed inn*, *snowed car*), but not as modifiers of subjects (32b,c). However, it might be the case that (32b) and (32c) are odd/ungrammatical because they are redundant expressions, not because the weather verbs used are unergative rather than unaccusative.

It thus seems very hard to establish the unaccusative/unergative nature of weather verbs from the four tests above. But this in itself is significant, indicating the fact that weather verbs are a special class: they sometimes behave like unaccusatives, and sometimes like unergatives.

(v) Auxiliary selection

Auxiliary selection proves more relevant in this respect. In Romance languages, unergatives select the verb *have* and unaccusatives select the verb *be*. Interestingly, we see that, in Italian, weather verbs can select both the verbs *avere* and *essere*:

(33) a. *Ha piovuto ieri.*
has rained yesterday
'It rained yesterday.'
b. *È piovuto ieri.*
is rained yesterday
'It rained yesterday.'

However, as argued in Benincà & Cinque (1992), not all weather verbs in Italian display this kind of alternation: *tuonare,* 'thunder', *gelare,* 'freeze', for example, do not take

the verb *essere* as an auxiliary. Benincà & Cinque (1992) argue that the verb *essere* can only occur with verbs of change of state, but this explanation does not seem to hold, given the fact that a verb like *tuonare (*which is not a change-of-state verb) can also occur with *essere*. Moreover, weather verbs in French, for example, do not display this kind of alternation.

The Italian data is, nevertheless, relevant. From the data, we can derive that weather verbs sometimes behave like unaccusatives and sometimes like unergatives (in different languages, as well as in the same language), but mostly like unaccusatives. Moreover, from a semantic point of view, weather verbs are unaccusatives (**It intentionally rained on us.)*.

We have to take into account the fact that subjects of unergatives occupy a different position in the structure from 'subjects' of unaccusatives (SpecV versus complement of V). Apart from intransitive uses, weather verbs can also enter other types of constructions (transitive, or with a prepositional complement (as in *It rained heavily on us yesterday* a.o.), which might be thought to pose problems to our analysis of weather verbs as 'FALL SOMETHING'.

4.2 Proposal

We will adhere to the conflation theory of verb formation put forth by Hale & Keyser (2002), arguing that 'rain' can be decomposed as 'fall rain'. Several arguments can be brought in favor of this.

First, in a language like Chinese, there are no weather verbs but, instead, a construction using the verb *fall* and a weather noun (*rain, snow)*. Second, weather sentences in various languages can be paraphrased using this construction: *rain* = 'FALL rain', *snow* = 'FALL snow'.

Further evidence in favor of the incorporation theory comes from Finnish, where the precipitation verb, *sataa* 'rain', originally meant 'to fall' (Hakulinen 1999: 195) (in Eriksen, Kittilä and Kolehmainen 2010), but, now, the original meaning has been lost, and *sataa* can only mean 'to rain', or 'to precipitate'. If it is to express events of snowing or hailing, arguments must be added:

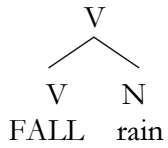
(34)	a.	*Sataa*	*(vet-tä).*
		rain.3SG.PRES	(water-PART)
		'It is raining.'	
	b.	*Sataa*	*lun-ta.*
		rain.3SG.PRES.	snow-PART
		'It is snowing.'	
	c.	*Sataa*	*rake-i-ta.*
		rain.3SG.PRES	hail-PL-PART
		'It is hailing.'	

'Generalized p-encoding' (generalized precipitation encoding), as labeled by Eriksen, Kittilä & Kolehmainen (2010), thus supports the conflation theory.[7]

[7] This phenomenon does not occur only in Finnish, it occurs in other languages as well: one such example is Hungarian, where the impersonal verb for raining (*esik*) is the same as the verb for falling.

The structure we will assume for 'rain' is an l-structure in the Hayle & Keyser (2002) sense, i.e. a structure that is formed in the lexicon, pertaining to l-syntax:

(35)



In this structure, the verb is followed by a bare noun, not an NP or a DP, and the bare noun gets incorporated into the verb by means of conflation. Whether or not there also is an external argument is irrelevant, because, given the fact that we are in l-syntax, Burzio's generalization does not have to be observed: the bare noun does not need any case.

Although Burzio's generalization poses no problem, from a semantic point of view, this structure only seems to account for the unaccusative use of weather verbs, not for the unergative use. We therefore need to enlarge this structure so as to include the causative component as well.

Hale & Keyser (2002) give a special attention to the causative-inchoative transitivity alternation which occurs in the case of unaccusatives, but does not occur in the case of unergatives. This could be explained by the fact that unergatives already contain the causative component (the cause resides inside the subject of the verb). We have:

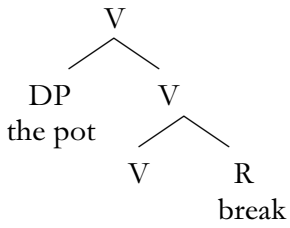
(36) a. *The pot broke.* (inchoative)
b. *I broke the pot.* (causative)

But, at the same time:

(37) a. *The engine coughed.*
b. **I coughed the engine.*

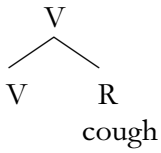
This is captured by saying that, in (38):

(38)



The root requires a specifier (for them the Specifier is actually the 'complement')[8], whereas in (39), the root does not require a specifier:

(39)



The causative-inchoative alternation is different from the unaccusative-unergative 'alternation' (e. g. a verb like *monter* can take either *avoir* or *être* in the *passé compose).* However, in one respect at least, they are similar, namely, when a verb is unergative/or it is used unergatively, it contains a causative component in its structure.

We would like to examine the situation in the case of weather verbs. Are they a case of inchoative-causative alternation? Do they rather exemplify an unaccusative/ unergative 'alternation'? Or both? By looking at (40):

(40) a. *It rained.*
b. **God rained it.*
c. **The rain rained.*
d. *God rained a heavy rain.*

We see that the inchoative/transitive alternation is **imperfect.** This can be explained by saying that *it* is not a full-fledged DP, and it cannot occur in object position, and/ or by saying that *it* is pseudo-referential, and if we assume its reference is *God*, then a sentence like *God rained God* would not make much sense.

On our account, *it* can refer to two different things, either God or the rain:

(41) *It rained.*
= God/ the sky rained.
OR
= The rain rained.

[8] One can remark that DPs are allowed at l-syntax (they occur in Spec, V). Hale & Keyser (2002) do not make it so clear where wordhood ends and the real syntax begins. When incorporation into a lexical item occurs, a new item is formed, and is then spelled out as a word. Heads incorporate complements, and, through movement, they can also incorporate other heads (e.g. in *shelve the books*, the prepositional head 'onto', which has already incorporated 'the shelves', gets incorporated into the verbal head 'put', giving rise to 'shelve'). Specifiers, however, cannot be incorporated. We might make the assumption that the reason for this is precisely the fact that they are phrases. However, if we think about an example such as *put the apples into boxes*, which gives rise to *box the apples*, we notice that even the complement of 'into' is not a bare noun, but a noun bearing number morphology, i.e. at least a NumP. This implies that l-syntax makes use of units higher than words to form words. Moreover, the words that are used are also the result of some process (lexical, morphological). Given that, basically, all the syntactic operations (lexical or syntactic proper) are, from a representational point of view, shown on the same tree, it becomes very difficult to say what the borderline between l-syntax and real syntax is, from a derivational point of view. Real syntax picks up where l-syntax left off. So, we will assume that, after a phrase like *box the apples* is created, it will enter 'real' syntax, getting a subject, a tense. However, such terminology is quite superfluous; in fact, it seems to be the case that we have syntax all over, and it is not at all clear where wordhood ends (or begins, for that matter).

This is in consonance with the German, Dutch, and Icelandic facts mentioned when presenting the data (i.e., instead of an expletive, we can have either a demonstrative pronoun or a personal pronoun *he*[9]). Moreover, it is also in consonance with the facts from the history of language (e.g. Latin). According to von Seefranz-Montag (1984: 526), Dal (1966: 166-167) and Lenerz (1992) (as cited in Eriksen, Kittilä, and Kolehmainen 2010), the insertion of an expletive subject indeed occurred first with meteorological verbs that lack a topicalizable constituent, and it was only later that the use spread to other constructions.

Our proposal is that the verb enters two possible structures: (a) unergative, and (b) unaccusative. As unergatives, they have the structure CAUSE [FALL RAIN][10]. This structure is in accordance with Hale & Keyser's (2002) view that unergatives are transitives underlyingly, a view that is supported by the presence across languages of unergative paraphrases made of light verbs and direct objects such as *do a dance* in a sentence of the type *My mother did a beautiful dance yesterday*, and, also, the presence of cognate objects with unergatives (e.g. *She smiled a wonderful smile.)*. As arguments in favour of the unergativity of weather verbs (in some cases), we bring the fact that the verbs selects a *have* auxiliary in the languages where we have a *to be/to have* alternation, and, also, that the subject is not an expletive, but a pronoun in some languages. As unaccusatives, weather verbs have the structure FALL RAIN. In this case, we can have a transitive/ unaccusative alternation: *God rained this rain on us to punish us.*

4.3 A Previous proposal. The 'Always Cause' Subject.

In her doctoral thesis, Manente (2008) proposes a representation for weather verbs, following the ideas of Hale & Keyser (2002), and also the suggestion put forth by Fernandez-Soriano (1999: 103) that verbs like *pleuvoir* 'rain', *neiger* 'snow' and *grêler* 'hail' always select an internal object that merges with the verb and denotes an atmospheric substance. In the structure proposed by Manente (2008), the internal object occupies the position [Spec, SV]:

(42) a. Sv[*pro* v'[v° ha piovuto$_i$/nevicato$_i$/grandinato$_i$ SV[(pioggia/neve/grandine) [V'[V° t$_i$ SP$_{locatif}$[Ø/(a Roma)]]]]]]

Sv[*pro* v'[v° has rained$_i$/snowed$_i$/hailed$_i$ SV[(rain/snow/hail) [V'[V° t$_i$ SP$_{locative}$[Ø/(in Rome)]]]]]]

b. Sv[Il v'[v° a plu$_i$/neigé$_i$ SV[(pluie/neige [V'[V° t$_i$ SP$_{locatif}$[Ø/(à Rome)]]]]]]

Sv[It v'[v° has rained$_i$/snowed$_i$ SV[(rain/ snow [V'[V° t$_i$ SP$_{locative}$[Ø/(in Rome)]]]]]]

On this view, the object of the weather verb is a Theme, and it occupies [Spec, SV], while the subject of the weather verb (*pro* or *Il*) is a Cause, and it occupies [Spec, Sv].

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[9] Interestingly, even in French, we have '*il pleut*', not '*elle pleut*'.

[10] In "Building Verb Meaning" (1998), Rappaport Hovav & Levin argue that UG provides five possible lexical semantic representations: [x ACT$_{<MANNER>}$] (activity), [x <*STATE*>] (state), [BECOME [x <*STATE*>]] (achievement), [[x ACT$_{<MANNER>}$] CAUSE [BECOME [y <*STATE*>]]] (accomplishment), [x CAUSE [BECOME [y <*STATE*>].

As for the case where the weather verb selects *être*, Manente (2008) explains this by saying that the verb here only selects an argument that is the internal object of the verb:

(43) *Sono piovute pietre.*
are rained stones
'It has rained stones.'

(44) **Hanno piovuto pietre.*
Have rained stones
'It has rained stones.'

(45) a. *Il a plu une petite pluie fine.*
It has rained a little rain smooth.
'It rained smoothly.'
(Ruwet 1989: 327 (47a))

b. *Il a neigé de gros flocons.*
it has snowed art. big snowflakes.
'It snowed heavily.'
(Ruwet 1989: 329 (54a))

Manente's analysis is different from the analysis that we propose in this paper: whereas, in her representation, *il* and *pro* are Causes, in our analysis, the expletive pronoun *it* acts as a Cause in the unergative cases and as a non-Cause in the unaccusative cases. We argue for the polysemy of the expletive: the expletive has different semantic values/ theta roles depending upon the position it occupies in the l-structure (as a subject/ Specifier of 'FALL rain', or as a subject/Specifier of 'CAUSE [FALL rain]').

4.4 Weather Verbs and Theta-Roles

Arguing that weather verbs can be either unaccusative or unergative implies that, in some cases, their subject is a Theme, while in others, it is a Cause/an Agent. However, this is a very debatable assertion.

'In Eriksen, Kittilä, and Kolehmainen (2010), for example, argue that meteorological constructions simply lack participants[11]. The lack of real participants is most obvious with temperature constructions, like *It is cold/hot*, where the predicates do not seem to refer to any specific entities. Although other meteorological events may at first sight seem to offer potential candidates for grammatical participants (snow(flakes), rain(drops), hail(stones), and lightning (bolts)), they nevertheless do not count as typical participants. The authors bring several arguments in favor of their claim. First, the selection range of participants for each of these events is extremely narrow, consisting of only the given participant from the list above. While a verb like *dance* can, for example, select hundreds of various participants (e.g. men, women a.o.), it is only snow that can snow and hail that can hail (disregarding metaphorical uses). Second, even though snow might be said to participate in snowing, it is non-specific in doing so. While other events may pick up particular referents from a set of semantic participants, events of precipitation do not: while we can say *this policeman,* it is strange to say *this snow.* An

[11] Chomsky (1981) speaks about an atmospheric theta-role, a proposal which supports the idea that weather verbs lack typical participants.

important consequence of the lack of distinct participants is that weather phenomena can be described in full just by a predicate, and no arguments are needed. This is the reason why Van Volin & LaPolla (1997: 150) have labelled them *atransitive* (Eriksen, Kittilä & Kolehmainen 2010)[12].

The point of view adopted in this paper is, however, different from the one just presented. Contrary to the idea that the nouns combining with weather verbs do not function as real participants, we will argue that they actually do, and that the arguments brought by the authors in favor of their fake participant status are in fact not so strong. First, although the selection range of weather verbs is narrow, weather verbs are not alone in this: *neighing,* for example, is specific to horses, while *quacking* is specific to ducks, a.o. Second, although the participants in meteorological events are non-specific, it is indeed odd, but not impossible, for them to be specific. One can produce sentences such as:

(46) *This rain has been raining for a week now! When will it ever stop?*

(47) *These snowflakes keep falling from the sky.*

Taking these into consideration, we will claim that weather verbs take real participants, the only particular thing about them being that they happen to have the same phonetic form as the verb they combine with (they are 'cognate').

Interestingly, Eriksen, Kittilä & Kolehmainen (2010) distinguish between entities such as *snow, rain, hail* a.o., and entities such as *gods*. While the first are part of the weather event, the last are not: deities are represented as an external participant responsible for the denoted event. This is also indicated by the fact that the object has the same phonetic form as the verb, whereas the noun denoting a deity does not. The paper argues that, although the object can be incorporated, it is still a real participant bearing a theta-role (Theme).

4.5 On the Nature of the Cognate Object. Weather Verbs and the Cognate Subject.

Ruwet & Goldsmith (1991) argue that the extraposed 'subject' in an example such as:

(48)

Il	*a*	*plu*	*toute*	*la*	*journee*	*une*	*petite*	*pluie*	*fine.*
EXPL	has	rained	all	the	day	a	little	drizzling	smooth

'It drizzled all day.'

is actually a cognate object, i.e. an object that has a phonetic form that is very similar to that of the verb, either for morphological reasons (as in *to laugh a laugh),* or for semantic reasons (as in *to fight a battle*). If we assume it is a cognate object, then we expect them to have the properties of cognate objects, such as the fact that they mainly occur with unergatives, that they cannot be passivized, or that they cannot undergo *it*-pronominalization (in situ) (Iwasaki 2007). However, if we look a bit more carefully at the data (as argued by Iwasaki 2007), we realize that it is not that clear what the properties of cognate objects are.

[12] They are complete without any other element present than the verb, in this respect being different from instances of *pro*-drop, which can be complemented by a lexical element.

As for their mainly occurring with unergatives, we see that they can also occur with unaccusatives:

(49) *John died a peaceful death.*

Moreover, even in the case of unergatives, problems arise, in the sense that some verbs allow bare COs (cognate objects), while others take COs that need modification:

(50) *Mary sang a song.*

(51) **John smiled a smile.*

Although COs are claimed not to passivize, we see that, in fact, there are COs that can passivize:

(52) *Life here had been lived on a scale and in a style she knew nothing about.*

It is said that COs cannot undergo *it*-pronominalization. However, if we look more carefully, we see that cognate nouns such as *dance, life, dream* can, in fact, undergo *it*-pronominalization (Ciutescu 2010):

(53) *The Princess dreams strange dreams, and I dream them too. Does that make me a Princess?*

Taking these into account, we see that one cannot pin down a number of properties that are specific to cognate objects, therefore, the only reliable test for a noun to be labeled as cognate object remains the phonetic, morphologic and semantic similarity to the verb that it combines with. Nevertheless, a very important thing to remark is that the cognate object is not an adjunct, as shown in Ciutescu (2010), but an argument. There is no need to postulate an adjunct status for the CO to explain the alleged properties of the COs mentioned above, given the fact that they are not actually properties of COs. Instead, one can assume that cognate objects are in fact arguments (Swart 2007, Avram 2003, Kuno &Takami 2004, Massami 1990, MacFarland 1995, as cited in Ciutescu 2010), bearing theta-roles, an assumption which explains why they behave so much like direct objects (they have to be adjacent to the verb, just like direct objects), and which goes hand in hand with Hale &Keyser's (2002) view upon unergatives as underlying transitives.

As for the weather noun combining with the verb, we will assume that is a cognate object on the basis of its similarity to the verb that it combines with. In adopting this view, we take into account the existence of agent constructions such as:

(54) *God rains this rain to make us feel brand new.*

Whereas in transitive constructions, the object the verb combines with is an NP, with modifiers/a DP, in intransitive constructions, it can be either an NP with modifiers/a DP (*The snow is falling down slowly*), or a bare noun that gets incorporated into the verb (*It is snowing heavily*). On this basis, we will therefore assume it is a cognate object (actually, a lexicalized version of the object that is already present underlyingly).

There is, however, an important difference between the cognate object of weather verbs and the cognate object of transitive verbs such as *smile* or *laugh*. While in the latter case, the object remains an object at S-structure (*She smiled an enchanting smile*), in the first case, the object (*rain* in *fall rain*, for example) becomes an S-structure subject. This leads us to propose the notion of *cognate subject*[13] for those weather nouns that function as internal arguments of weather verbs, but appear as subject.'

4.6 Control Issues. The Subject.

Leaving aside the cases where the subject is a weather noun that starts out as the internal argument of the verb, and the cases where the subject is a Cause/an Agent nominal, an important matter is the status of the 'subject' of weather verbs (an expletive, a *pro* or even a PRO).

In order to account for the fact that there is control between *it*/*pro* and the PRO following it in *It sometimes rains after PRO snowing* (Chomsky 1981: 324), we adopt the view that *it* is (pseudo-)referential. Sometimes IT is a CAUSE (GOD, 'the sky', 'nature'), sometimes IT is the entity denoted by a weather noun. In the second case, we argue for the coindexation of the two. However, since *it* precedes the weather noun, we run into control problems. To avoid this, we will assume that the coindexation is done later on through the agreement features of Inflection, as also suggested by Suner (1982) (in Hayle 2011) for Spanish: *[it]$_i$ falls rain$_i$*.

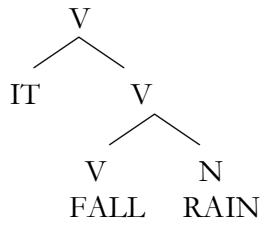
Throughout the paper, we have spoken about weather IT as an expletive; weather *it* is, however, different from expletive IT. According to Yoon (2003), expletive IT in a sentence like *It is obvious that the world is round* is analyzed as generated in [Spec, CP], and then moving into [Spec, TP] due to the EPP feature of T. As for weather *it*, we will assume that, due to its being pseudo-referential, it is generated in [Spec, VP], and it raises to [Spec, TP] to check the EPP feature of T.

5 Representing Weather Expressions. Conclusions

In conclusion, weather verbs basically enter two possible structures:

(a) unaccusative: FALL RAIN, in which case we may have a transitive/unaccusative alternation: *God rained this rain on us to punish us.*

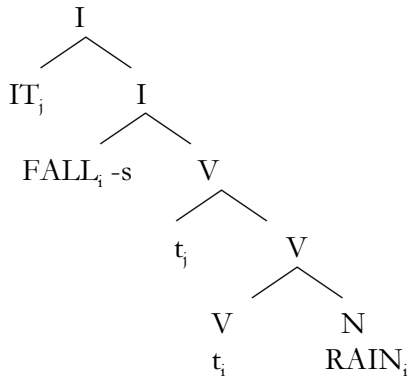
(55)



[13] The notion 'cognate subject' was suggested by Larisa Avram.

And IT is coindexed with RAIN (*It is raining now*), as shown in (56):

(56)

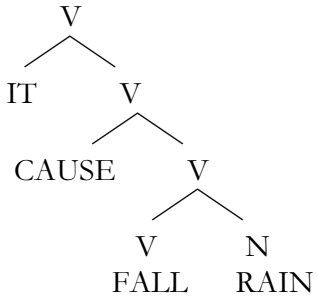


IT is coindexed with FALL (through the agreement features of inflection), and FALL is coindexed with RAIN (head-complement relation) (i=j).

and:

(b) unergative: CAUSE [FALL RAIN]

(57)



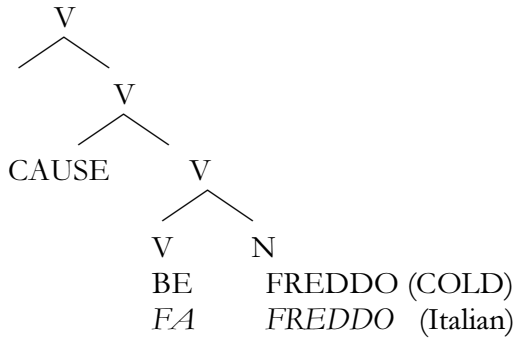
in which case there is no alternation, and IT may refer to GOD (*It rains with vengeance on us*) or THE SKY.

In other words, we could say that sometimes we have silent RAIN and sometimes we have a silent GOD, and when they do speak, they are IT. It is not clear what IT refers to in current English. The alternation is present both in diachrony and in synchrony in many languages, where the subject is either an expletive or *pro*. In Italian, for example, *pro* behaves just like IT. While in English, we do not really know the exact reference of IT (it could even be argued that it is always a Cause, as argued by Manente (2008) for French *il*[14]), in Italian, function of the auxiliary verb selected by weather verbs (*essere* or *avere)*, we can argue for a CAUSE *pro* in the *essere* case, and a NON-CAUSE *pro* in the *avere* case.

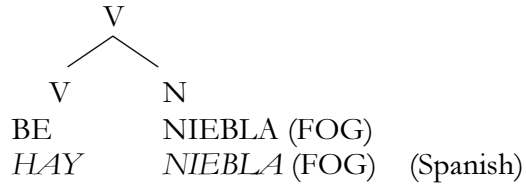
[14] Weather verbs in French select only *avoir,* which may be taken to indicate their unergative nature.

We have shown how the representations work for weather verbs, but not for weather expressions. We take a causative example, and a non-causative example:

(58)



(59)



In these cases, we will argue that no incorporation takes place (*HAY* acts as a near –synonym of BE, just like *FA (FARE)* acts as a near-synonym of CAUSE). Our assumption is theoretically-driven, given the fact that, in the system proposed by Hale & Keyser (2002), incorporation starts bottom-up, so, if we assume the noun is a complement of the verb, it would have to get incorporated first (into V), and then the resulting V would have to get incorporated into CAUSE. However, the noun gets spelled out, so this is not the case. Instead, we will assume that the light verb CAUSE in the example above gets spelled out (the verb BE does not get spelled out in the first example, neither does incorporation into BE take place), and that the light verb BE in the other example also gets spelled out. It thus seems to be the case that conflation theory is only needed in the case of weather verbs, weather expressions being a spell-out of the underlying structure of weather verbs.

The paper has shown that weather verbs can best be analysed by making use of incorporation, in the framework proposed by Hale & Keyser (2002), as suggested by the presence of numerous paraphrases across languages, by the existence of a phenomenon such as generalized p-encoding a.o. Moreover, it has shown that the subject of weather verbs is not that 'expletive', but actually bears a theta-role, sometimes acting as a Cause, and sometimes as a non-Cause. We take this as supportive of the idea that language reflects just how we humans are: believers and non-believers alike.

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On Case and clauses: Subordination and the Spell-Out of non-terminals*

Ludovico Franco

The main idea suggested in this paper is that subordinate clauses need to be Case licensed (namely embedded under KPs) and that various patterns of "fusion" within a layered functional skeleton obliterate that process. I will provide two types of empirical support for this proposal. First, I will show that this proposal correctly allows for nominal elements to stand in for a whole embedded clause (using the mechanism of Phrasal Spell-Out, Starke 2009; Neeleman & Szendroi 2007). Second, I will show that a wide range of typologically unrelated languages overtly exhibit Case marking on complementizers. Also, direct evidence against the identity of relative pronouns and complementizers /subordinators, possibly suggested -prima facie- by the layered model proposed here, will be provided here with the aid of diachronic data from Akkadian and Germanic languages and synchronic data from West Iranian languages.

Keywords: *Case, complementizer, Spell-Out, subordination, syntax-morphology interface*

1 Clausal "resumption" as Phrasal Spell-Out

In this paper I will try to show that subordinate clauses need to be Case licensed (namely embedded under KPs) and that various patterns of "fusion" within a layered functional skeleton obliterate that process. I will use the mechanism of Phrasal Spell-Out to account for the fact that nominal elements, in principle, can *resume* entire clauses. Phrasal Spell-Out is a key-point of Nanosyntax[1] (but see also e.g. Neeleman & Szendroi 2007 for an alternative non-nanosyntactic use of it). Phrasal Spell-Out states that Spell-Out applies to syntactic phrases and that more than mere terminals are stored in the lexicon. This leads to the consequence that there can't be any pre-syntactic lexicon. Specifically, Phrasal Spell-Out admits lexical insertion to target non-terminal nodes, namely, phrasal nodes. If lexical morphemes/items are able to target phrasal nodes, this implies that lexical items potentially correspond to syntactic structures, not (exclusively) single heads. Hence, in principle, if a single morpheme can span several syntactic terminals, and therefore corresponds to entire syntactic phrases, in principle, nothing prevents a CP and everything below it to be spelled-out by a single morpheme.[2]

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[1] Nanosyntax is a research paradigm on the architecture of grammar under development in CASTL, Tromsø (and elsewhere) over the last few years. Nanosyntax is partially interrelated with the cartographic paradigm (see Cinque & Rizzi 2010 for introductory purposes). It originated with the works of Michal Starke on allomorphy patterns in English irregular verbs from competition in spelling out syntactic trees (Starke 2009). For a detailed illustration of the architecture of Nanosyntax you may refer to Caha (2009)'s doctoral dissertation and to Abels & Muriungi (2008).

[2] The lexicalization of syntactic structure, in Nanosyntax, is a post-syntactic operation and a single morpheme can lexicalize several terminals in the syntactic tree. It is governed by the *Superset*

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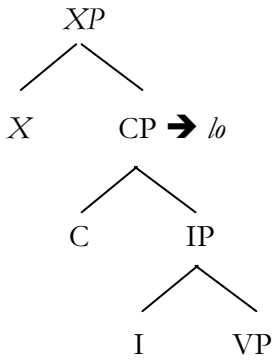
An instance of this kind may be found, in my opinion, in Romance clitics[3]. Take the Italian examples in (1a,b) and see the representation in (1c) that roughly shows the idea of Phrasal Spell-Out.

(1) a. *[Spero* *[che* *quella* *squadra* *retroceda*
hope-PRES.1SG that that-F.SG team downgrade-SUBJ.PRES.1SG
in serie B]]
in series B
'I hope that team downgrades to the second division.'

b. *[[lo] spero]*
CL hope-PRES.1SG
'I hope so.'

c.



The *resumptive* clitic *lo*,[4] commonly used in standard contemporary Italian for answering strategy, in (1b) is ideally able to Spell-Out a subordinate clause. There are two possible approaches to lo. On the one hand, it is possible that it stands in for a noun. On the other hand, it is also a possibility that it stands in for a whole clause. The goal of this paper is to argue for the latter approach. Properly, this kind of clitic's clausal resumption may be seen as an informationally-driven device to economically Spell-Out non-terminals. The clitic in (1b) bears a set of features [at least: $\{^{+\text{ACCUSATIVE}}; ^{+\text{SINGULAR}}; ^{+\text{DEFINITE}}; ^{+\text{MALE}}\}$]. If the morpheme *lo* is assumed to be a spanning non-terminal, Nanosyntax

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Principle, which has been originally proposed by Michal Starke. Following Caha (2009), it can be defined as follows:

(i) A phonological exponent is inserted into a node if its lexical entry has a (sub-) constituent who matches that node.

[3] A rough definition of the term clitic (from the Old Greek klínein 'to lean') can be given as follows: clitics are intermediate linguistic units (i.e. morphemes), grammatically behaving like in that they integrate with / plug into other morphemes, words or phrases to build phrases, but are phonologically bound to adjacents items, traditionally referred to as "hosts" (Zwicky 1977, 1985; Matthews 1991; Belletti 1999; Russi 2005, among many others). Note that on typological grounds, the term clitic outlines a substantially composite linguistic category, which includes pronouns, auxiliaries, determiners, negative and interrogative particles, etc.A global portrait of this category can be found in Zwicky's (1977) ground-breaking work on the field, where clitics are dichotomized into *simple* clitics and *special* clitics. Simple clitics are prosodically weak (*unstressed*) and phonologically reduced forms, which are overtly derived from corresponding strong (*stressed*) full forms (see also Cardinaletti & Starke 1999).

[4] I am aware that the term "resumptive" can be a misleading tag, but I think it gets the point.

prompts us to consider an *embedded* CP roughly as in (2) (see also Bittner & Hale 1996; Williams 2003; Borer 2005 for relevant discussion).

(2) $[_{K[ase]}\ldots\ [_{Def}\ldots\ [_{Num}\ldots\ [_{CP}\ldots]]]]$

The model represented in (2) crucially relies on the idea that Case is instantiated by a (series of) functional head(s) (see Caha 2009). Natural evidence is given by those languages in which Case is realized as an independent adposition (or "Case particle"), as in the Malagasy and Khasi (an Austro-Asiatic language spoken in India) examples[5] below in (3a,b), where the inflectional-type items within the extended projection of the noun notably are instantiated by free morphemes rather than nominal affixes (see Bittner and Hale 1996; Travis 2005).

(3) a. *an' ny boky* (Malagasy)
ACC DET book
'the book-ACC'
(Travis 2005)

b. *ka la yo"ii ya 'u khlaa* (Khasi)
she PST see [ACC the tiger]
'She saw the tiger.'
(Rabel 1961)

Bittner and Hale (1996) consider Case as the nominal counterpart of the complementizer. The parallel is represented below in (4a,b), in which we see a rough model of nominal and verbal extended projections.

(4) a. KP
DP
NP
…

b. CP
IP
VP
…

As argued by Travis (2005, 327):

> "There is a sense that there is a parallel projection in the verbal and nominal domains – the N/V projections are the θ-domain of the semantic heads, the D/I domains in some sense "place" the event/referent in time or space, and the C/K domains link the structure into the larger structure".

The main idea suggested in this paper is precisely that subordinate clauses need to be Case licensed (namely embedded under KPs) and that various patterns of *fusions* within a layered functional skeleton obliterate that process. The paper is organized as follows. Cross-linguistic evidence for a feature-based decomposition of the field above the complementizer will be given in the next section. Section 3 further addresses some questions concerning the relationship between Case morphemes and clauses. Section 4 provide a substantial refinement of the model argued for in (2) and, additionally, provide

[5] In this work, examples from the literature retain original glosses.

evidence against the identity of relative pronouns and complementizers / subordinators (*contra* Kayne 2010). Section 5 tentatively sketches the (nanosyntactic) idea that if some lexical items can spell out CP, then it is reasonable to find some lexical items can spell out IP, providing a possible example with Italian *prophrases*. The conclusions (and a foreward) follow.

2 Evidence for feature-based decompositions of Complementizers

If my assumptions are correct, we expect to find case marked and number marked clauses. In this section I offer cross-linguistic evidence for the existence of the layered structure sketched in (2).

Chomsky (2008, 159) states that: "*sometimes the phi-features of C are morphologically expressed, as in the famous West Flemish examples*". C^0 inflects for the ϕ-features of the local subject in a number of West Germanic languages (see Hoekstra & Smits 1999). The West Flemish examples below are taken from Haegeman (1992).

(5) a. *Kpeinzen dan-k (ik) morgen goan.*
I-think that-I (I) tomorrow go
'I think that I'll go tomorrow.'

b. *Kpeinzen da-j (gie) morgen goat.*
I-think that-you (you) tomorrow go
'I think that you'll go tomorrow.'

c. *Kvinden dan die boeken te diere zyn.*
I-find that-PL the books too expensive are
'I find those books too expensive'.

(Haegeman 1992)

However, the ϕ-features in (5) appear to be *below* the complementizer. Empirical evidence for a Case layer above the complementizer is provided for Ik, a Kuliak language of Mid-East Africa, by König (2002; 2008). König shows that Ik has several Case-inflected clause subordinators.[6] See the examples in (6). I refer the reader to König (2002) for a full set of examples.

(6) a. *bɛɗ-ɪ'a* *mes-^{a}*.
want-PRES.1SG beer-NOM
'I want beer.'

b. *bɛɗ-a* *mes-ík^a*.
want-PRES.3SG beer-ACC
'He wants beer.'

c. *bɛɗ-ɪ'a* *ats'* *ésa* *ŋkákᾱ-é.*
want-PRES.1SG eat SUB-NOM food-GEN
'I want to eat food (or meat).'

[6] Notice that, as shown by the examples in (6), Ik has another interesting peculiarity in its Case system: a direct object NP has accusative Case if the subject NP is 3rd person, but nominative Case if the subject is 1st or 2nd person.

d. *bɛɗ-a* *ats'* *és-íka* *ŋǩáǩá-é.*
want-PRES.3SG eat SUB-NOM food/meat-GEN
'He wants to eat meat.'

(König 2002)

Other languages that have overtly Case-marked complementizers are, for instance, the Quechua languages spoken in the Andes, as shown in (7) below.

(7) *mariacha muna-n* *xosecha* *platanu-ta* (Cuzco Dìalect-Quechua)
Maria want-PRES.3SG Jose banana-ACC
rantì-nqa *chay-ta*
buy-FUT.3SG COMP-ACC
'Maria wants Jose to buy banana'.

(Lefebvre & Muysken 1982)

We may argue that Romance clitics, like those in (1b), are allowed to climb up[7] in preverbal position in order to check TOPIC features available in root-clauses only (Emonds 2004). I think that, if (2) is conceivable, it would be possible to find languages in which the K, Def, Num layers above C are spelled out with a morpheme of their own, rather than undergoing *co*-Spell-Out with the whole CP or C. Namely, to check the correctness of the structure in (2), one has to look for overtly case/definiteness/number marked complementizers *or* clauses. Turkish and Korean, for instance, provide examples of whole clauses marked with a Case in (8) and (9), respectively.

(8) *(ben)* [*Ahmed-in* *öl-düg-ün*]*-ü* *duy-du-m.* (Turkish)
I Ahmet-GEN die-NOM.3SG-ACC hear-PAST.1SG
'I heard that Ahmet died.'

(Kornflit 1997)

(9) [*ku-ka* *phyenhi* *calcinay-koiss-ki*]*-lul* *pala-n-ta.* (Korean)
3SG-NOM comfortably get-along-PROG-NMZ-ACC hope-PRES-DECL
'(I) hope that he is living comfortably.'

(Rhee 2011)

Cristofaro (2003) has made an extensive cross-linguistic survey of nominalization patterns for dependent verbs (Case-marked clauses), which typologically turn out to be a not uncommon strategy and Aikhenvald (2008) showed an (actually, extensive) inventory of languages with Case-marked clauses / verbs[8]. For independent psycholinguistic

[7] Clitic *climbing* in Romance languages refers to the possibility for the clitic to attach to a V_1 in a V_1 + infinitive V_2 series (e.g., Italian *lo* vorrei vedere ~ vorrei veder*lo* '*I want to see him*'. Notably this option is unavailable for French: Elle le fera manger à lui vs. *Elle fera le manger à lui '*She will make him eat it*'). See Rizzi (1978); Cardinaletti and Shlonsky, (2004); Cinque (2006), among many others. The item *lo* in 'lo vorrei vedere' above reasonably spells out a DP. This means that it can be argued for Italian that there are two *lo*, with the same phonological form, which spell out the same features, yet one corresponds to an entire CP and another to a DP. This is possible if we argue for a strict parallelism between D and C. This parallelism has been motivated with strong empirical observations by Szabolcsi (1994) and Pesetsky & Torrego (2001), among others.

[8] Aikhenvald's sample of languages with cases on verbs include many Australian languages; a few languages from Central Siberia; a few languages and language families of the Americas, a few

evidence that Case-marking can *trigger* the beginning of a tensed clause, the reader may refer to the experiments designed by Miyamoto (2002) for Japanese, which is crucially another language that resorts to overt Case morphology for subordination strategies.

In addition, Heat (2005; 2010) has shown that such a marking strategy is allowed also in the nominal domain, pointing out the case of Tondi-Songway-Kiini, an *SAuxOVX* Songhay language of Mali, where $\{^{+/-\ \text{DEFINITE}};\ ^{+/-\ \text{PLURAL}}\}$ markers are added to the "right edge" of (fully inflected) relative clauses. See the example in (10).

(10) *h`ɛw-`ɛy* *ká* *ǎy* *Ø* *kǎ:* *n-´ɛy.*
tree-DEF.PL REL 1SG Ø remove DEF.PL
'the trees that I removed.'

(Heath 2005)

Furthermore, as clearly expected, nominalized verbs/Case-marked clauses is a possible strategy for relatives;[9] Korean provides such an example in (11), taken from Han & Kim (2004).

(11) [$_{NP}$ [$_{IP}$ *e* *ppang-ul* *mek-nun*] *ai*]
e bread-ACC eat-ADN kid
'The kid who is eating bread'.

(Han & Kim 2004)

Let us summarize the results of this section. If clausal resumption is analysed in terms of Phrasal Spell-Out, the model in (2) predicts challenging consequences, which in turn seems to be fed by typological evidence. Another crucial thing that clearly emerges is the following: CPs are nothing more than a cover term for a number of functional projections (as originally showed by Rizzi 1997). The *fusion* of a set of grammatical functions /structures, such as relativization, *clausal* nominalization, genitivization/ noun subordination, and actually, as shown above, complementation / clausal subordination / clause-linkage is a reflex of Case encoding /embedding.

3 Issues on Case and Clauses

However, there are at least two questions, challenging both from a typological and a theoretical viewpoint, that arise at this point.

(a) Are Case-marked subordinate clauses invariantly *nominalized*? This fact would be possibly considered as evidence against their *real* clausal nature. The answer is no. Anderson (2002), for example, has shown that in many languages (e.g. Burushaski, Ket, Uralic languages, Mongolic languages, Turkic languages, Munda languages, etc.) Case may

Oceanic languages and languages from the New Guinea area; numerous Tibeto-Burman languages and the recently discovered isolate Kusunda, spoken in Nepal. See appendix 1 of Aikhenvald (2008) for her full set of sources.

[9] There is strong typological evidence that nominalization of subordinate clauses is not restricted to complement clauses, but also involves relative and adverbial clauses, as shown by Givón (2009). See also Watters (2002) for a detailed discussion of Kham, a Tibeto-Burman language, which provides a very clear example of this sort.

attach directly either to the tense/person inflected verb (12), to a verb stem (13) or even to a full finite verb form (14).

(12) *sɪra‘* *niɲ* *kodia-had-oɲ* *ŋo:-ɲ* *desuma‘* (Enets)
snow-GEN on sleep-ABL.PX.1SG leg-1SG get.sick-AOR.3SG
‘since I was sleeping on the snow, my leg got sick.’
(Künnap 1999)

(13) *ɣəme-ɣtə* *nelɣe-n* *ɣəm-nan* *tə-tt’ə-ɣ’ə-n* (Chukchi)
hang-up-ALL pelt-ABS I-ERG 1SUBJ-knock-over-PERF.3OBJ
əweyo ˇcɣən
vessel-ABS
‘when I hung up the pelt, I knocked over the vessel.’
(Kämpfe & Volodin 1995)

(14) *bu* *ətnas* *du-ɣ-a-raq-diŋal* *doŋ* *sìkŋ* *u-ɣoɲ* (Ket)
he we-INS/COM I-MTS-PRES-live-ABL three year-PL PAST.3SG-go
‘three years have passed since he’s been living with us’.
(Werner 1997)

(b) Are Case-marked complementizers examples of (merely) “retained morphology” in a (possibly ongoing) grammaticalization[10] process? The answer again is no, given the contemporary presence of untied complementizers and Case markers in the subordinate clauses of some languages. Burushaski provides such an example in (15). In (15) the dative morpheme *ar* is crucially independently realized on the adverbial temporal clause, with the concomitant presence of the morphologically overt complementizer *ke*.

(15) *jĕ* *gir-á-m-ar* *ke* *in* *ɪ-m-i*
I arrive-1SG.AP.DAT COMP he go-AP-I
‘after I arrived (in the village) he went.’
(Berger 1998)

A less direct, but crucial evidence against an account based on Case morphology as “inert waste” over grammaticalized complementizers would be given by a language with morphosyntactic strategies allowing both direct *nominalizers* on subordinate verbs and case-inflected complementizers, licensing complement clauses. Languages that behave in this way exist. An instance of this kind is the Khoekhoe language, or Khoekhoegowab (also known by the ethnic term Nàmá), which belongs to the Khoe languages, and is spoken in Namibia, Botswana, and South Africa. Hengeveld & MacKenzie (2008, 366) argue that the selection of complement clause types in Khoekhoe is triggered by the nature of the interpersonal or representational layers underlying them, namely for functional-pragmatic reasons. The relevant fact here is that we have two *active* morpho-syntactic strategies available to encode clausal embedding, namely Case-marked

[10] Heine (2008), for instance, interpreted Case driven subordination as a diachronic *scenario*, describing the growth of complement clauses out of nominal complements via clause expansion or, less specifically, a grammaticalization process leading from nominal to clausal morpho-syntax.

complementizers as shown in (16a,b) and direct Case-based nominalization as shown in (16c).

(16) a. *//'ĩp ke 'am'a-se kèrè =/om [/'aé//amsà xuú-kxm*
he DECL true-ADV REM.PST believe Windhoek from-1.DU
/xií hàa !xáis-à]
come PFV COMP-ACC
'He really believed that we had come from Windhoek.'
(Hagman 1973)

b. *Ts˜ı˜ı //'˜ı˜ıp-à-kxm` ke kè m˜ı˜ıpa [!´˜u˜u-kxm*
and 3.SG.M-ACC-1.DU.M DECL REM.PST tell go-1.DU
ta !xáis-à].
IMPF COMP-ACC
'And we told him that we were going'.
(Hagman 1973)

c. *llÎb ge [xoas-à] a ǂan*
he DECL write-ACC/NMLZ PRS can
'He can write.'
(Olpp 1977)

The typological evidence brought to bear on the questions above seems to show that Universal Grammar allows Case and complementizers to be instantiated at the same time in (full finite) subordinate clauses, motivating the structure proposed in (2), coherently with a fine-grained syntactic structure decomposed into many layers, as proposed in the nanosyntactic and cartographic paradigms.

4 Complementizers are not relative pronouns

Relying on Roberts and Roussou (2003), who argue that the item *that* in English can be parsed as either a complementizer or a demonstrative (depending on whether it ranges over individuals or propositions), Kayne (2010) argues that the complementizer *that* is nothing else but the relative pronoun *that*[11] (see also Arsenijević 2009 for a similar approach; and Sportiche 2011, for relevant discussion). The identity of relative pronouns and complementizers/subordinators, is also suggested *-prima facie-* by the layered model proposed here: I have assumed a plethora of nominal features above the complementizer and this kind of features are likely to be morpho-syntactic exponents of relative pronouns. Why is it possible to share this kind of features? Manzini and Savoia (2003) have given an explanation, claiming that (at least) Romance complementizers are essentially *nominal* elements, taking embedded clauses as their complement. The main trigger for this idea is the empirical fact that the Italian word *che* can be employed both as a wh-item and as a complementizer, as shown in (17a,b).

[11] Notice that Kayne's (1975) classical argument is, on the contrary, that French relative pronoun *que* is really the *que* complementizer.

(17) a. *Che giocattolo vuoi per Natale?*
what toy want-PRES.2SG for Christmas
'What toy do you want for Christmas?'
b. So *che* vuoi dormire.
know-PRES.1SG *that* want-PRES.2SG sleep
'I know you want to sleep'.

Roussou (2010, 587) describes the ideas introduced above very well:

> "Suppose then that there is no categorial distinction between the complementizer and the demonstrative/relative pronoun *that* or *che*. In both cases, we are dealing with a single lexical item which has the option of taking different types of variables as its complement, with no consequences for its categorial status. If this is correct, nominal complementizers of the above kind can project independently in the clause structure, without being the realization of a C position. According to Manzini and Savoia […] the C head(s) is part of the extended projection of the verb, and as such can only be reserved for verbal elements; the nominal complementizer on the other hand is merged outside the embedded clause".

Hence, the model we have suggested in (2) can be revised, following the proposal of Manzini & Savoia (2003), which has strong empirical grounds, based on a huge set of micro-comparative data from Italian dialects and Arbëreshë, collected in Manzini & Savoia (2005).

The idea that complementizers are nominal-like elements basically enhances the following considerations: (a) What we are used to label 'complementizer' is actually something else and stands out (above) the embedded C. Let's call this once-was-complementizer λ element for expository purposes; (b) these λ elements are (light) nouns and this fact motivates a set of features above them, like the one that we have postulated in (2); (c) λ elements are instantiated by demonstratives, case particles etc. due to grammaticalization pressure: generic λ elements serving as nominal complements are grammaticalized to markers of complement clauses[12] and, eventually, use relevant features in their extended projections as clause boundary markers; (d) real subordinators/ complementizers (those within the extended projection of the verb) are invariantly selected by a λ element. Given the discussion above we can rewrite our tentative sketch in (2) as in (18) below.

(18) [K[ASE]… [DEM… [NUM… [λ … [C …]]]]]

[12] I give below two examples of the widespread grammaticatization process [THING > COMP] both taken from Heine and Kuteva (2002, 295), respectively from Japanese and the above cited Kuliak language, Ik.

(i) *Ano hito ga/no hon-o kai- ta koto ga yoku sirarete iru.*
that person NOM/GEN book-ACC write-PART COMP NOM well known is
'That that person has written a book is well known.' (Kuno 1973); koto ≈ thing.

(ii) *ntá ye- í- í kɔ r ɔɗ á-a itiyá- id-a.*
NEG know- 1SG NEG what-NOM do- 2SG- *a*
'I don't know what you do.' (König 2002); kɔrɔɗá ≈ thing; matter.

That being so, I think that the Italian clitic *lo* introduced in (1) is likely to phrasally spell-out the KP node, containing the clausal complement as well as the light noun and the nominal features in the λ field on top of it. Our model, even if revised in light of Manzini & Savoia's (2003) claims, is clearly incompatible with proposals that suggest the identity of complementizers and (silent) λ items (or elements in λs' extended projection). To empirically motivate the structure sketched in (18), we have to find a language in which subordinators/complementizers and clearly identifiable nominal-like elements (i.e. demonstratives) selecting an embedded clause are instantiated at the same time, independently.

Akkadian, an extinct SOV Semitic language described in Deutscher (2000; 2001; 2009a, 2009b), which was spoken in ancient Mesopotamia, provides such an example. Considering its diachronic stages in details, Akkadian relative clauses clearly show that relative pronouns and (real) subordinators within the extended projection of the dependent verb are independent components and that relative pronouns are actually generated outside of the embedded clause. Akkadian is attested from written sources over ca. two millennia, starting around 2500 BC. The period ranging from 2500 BC to 2000 BC is typically labelled as 'Old Akkadian'. The principal genre of relative clauses in Old Akkadian was marked by an item that was originally employed as a demonstrative pronoun. Old Akkadian's demonstrative pronouns declined for case, gender and number, as shown in (19) below (adapted from Deutscher 2001, 406):

(19)

	NOM.	ACC.	GEN.
MASC.SG.	šu	ša	ši
MASC.PL.	šūt	šūt	šūti
FEM.	šāt	šāt	šāti

The demonstrative pronoun *šu* agreed in Case with its antecedent, namely, with the head NP of the root clause.[13] It follows that *šu* did not encode/indicate the role of the relativized NP. See the examples in (20a,b). The first one is from Deutscher (2001) and the second one is from Deutscher (2009a):

(20) a. *Šarru-kīn šar māt-im [šu Enlil māḫir-a lā*
Sargon king-OF land-GEM [REL(NOM.M.SG) Enlil rival-ACC not
iddin-u-šum]
he.gave-COMPL-to him]
'Sargon, king of the land, that Enlil has not given him a rival, [did so and so]...'
(i.e. Sargon, king of the land, to whom (the god) Enlil has given no rival, [did so and so])

[13] This behaviour resembles the phenomenon labelled "(inverse) Case attraction" in Ancient Greek, Latin (see Bianchi 1999) and, also, Old Iranian and Avestan (Seiler 1960, cited in Haig 2011), where the relative pronoun happens to take, in given particular contexts, the case of the head-noun. This phenomenon is still attested in contemporary Persian (Aghaei 2006) and generally in (Eastern and Western) Iranian Languages (see the descriptions collected in Windfuhr 2009).

b. *eql-am* *[ša …* *nītiq-u]* *lišqi'ū*
field-ACC [REL(ACC.M.SG) we.passed-COMPL] they.should.water
'They should water the field that we passed'.

Notice that, crucially, the verbs in the dependent clauses in (20a,b) are suffixed by a subordinator marker, which usually takes the form *-u,* but in Old Akkadian can also take the form *-n(i)*, and signals whether a given clause is a root clause or a dependent clause (see Deutscher 2009b, 57-61). This fact is essential from our viewpoint because it demonstrates that we can have unequivocal (verbal) complementizers, detached from an autonomous λ item (specifically in Akkadian, the demonstrative pronoun). Consider now the example in (21).

(21) *[kīma* *še'-am* *lā* *imūr-u]* *[atta* *tīde]*
COMP barley-ACC NEG-DEP 3SG.received-COMP 2MSG-NOM 2MSG-know
'You know that he didn't receive the barley'.
(Deutscher 2009b)

As fully expected (for a SOV language), the verbal complementizer *-u* is in clause final position. However, there is another complementizer-like element in (21), the word *kīma*, which following Deutscher (2000) is composed of a preposition with a very wide (fuzzy) semantic range, *kī-,* and an emphatic particle, *-ma.* It is realistic to consider the item *kīma* and the suffix *–u* as the two poles of a decomposed complementizer field, namely *finiteness* and *force*, along the lines of Rizzi's (1997) original proposal.[14] As pointed

[14] Notice that it is not difficult to derive, in antisymmetric terms, the sandwiched structure {FORCE-CLAUSE-FIN} of (21). Notice also that the existence of language with two subordinators/complementizers, instantiated at the same time in a dependent clause, is another empirical fact that weaken Kayne's (2010) proposal (but see Kayne 2010, 223-224 for a solution that resort to possible hidden *cleft* structures). Paoli (2007), for instance, has shown that two north Italian dialects –Turinese and Ligurian– realize "double *che*" constructions. See the examples in (i) and (ii).

(i) *Gioanin* *a* *spera* *che* *Ghitin* *ch' as* *në* *vada* *tòst*
John SCL hope.PRES.3SG that Margaret that SCL+RFL PART go.SUBJ.3SG soon
'John hopes that Margaret leaves soon' (Turinese)
(Paoli 2007)

(ii) *A* *Teeja* *a* *credda* *che* *a* *Maria* *ch' a* *parta*
the Teresa SCL believe.PRES.3SG that the Mary that SCL leave.SUBJ.3SG
'Teresa believes that Mary is leaving' (Ligurian)
(Paoli 2007)

It is possible to assume, in a cartographic perspective, that the first *che* is hosted in *Force*, while the second *che* occupies *Finiteness*. Notice that the second *che* is overt only if the verb in the dependent clause is in subjunctive mood. The explanation given by Paoli (2007) is basically that the lower *che* moves from MoodP, in a stretched IP field (see Pollock 1989; Belletti 1990; Cinque 1999), to FinP to check [+MOOD] features.

The phenomenon of a double complementation is not uncommon cross-linguistically. It is also attested in a set of East Iranian languages. See the example below in (iii) from Shughni, which is a language spoken in West Pamir (see Edelman & Dodykhudoeva 2009).

(iii) *yid-ik-u* *corik* *idi* *vegii-y-um* *di* *ar* *bozor* *ca* *wint*
this-very-he man COMP yesterday-I him at bazaar COMP saw
'This is a man whom I saw at the bazaar yesterday'
(Edelman & Dodykhudoeva 2009)

In Shughni, restrictive clauses have the antecedent marked by pronominal forms with the particle *(y) ik-*, followed by the complementizer *idi* (or *ide*), with an (optional) lower

out by an anonymous reviewer, the example (21) shows that it is not possible to analyze *ša* as a complementizer. That is, if the complementizer field has two complementizer positions, and these are filled by *kīma* and *-u*.

Turning again to the diachronic development of Akkadian relative cluases, we find that, in later stages of Akkadian (ca. after 2000 BC), the agreement features on the demonstrative pronouns that introduce the relative clause were thrashed, and the item *ša* in (19) the original singular masculine accusative- emerged as an invariant relativizer (see Deutscher 2001; 2009a for further details), as shown in (22) below:

(22) *awīl-um* *[ša* *ana* *bull-îm* *illik-u]*
man-NOM REL to extinguish-INF-GEN he.went-SUB
'the man that went to extinguish it...'

(Deutscher 2009a)

At this point it is quite clear that we still have two distinct elements involved in the marking of a dependent clause: (a) the (grammaticalized) λ element *ša* and (b) the complementizer/subordinator *–u*, realized as a suffix on the dependent verb. Given the fact that the Akkadian relativizer unambiguously originates from a demonstrative pronoun, Akkadian may seem *prima facie* to merely instantiate a *parataxis* to *hypotaxis* process, which is assumed to be a standard line of diachronic development in natural languages in the literature (see Heine & Kuteva 2002; 2007; Roberts & Roussou 2003; Kayne 2010; Kiparsky 2008). However, Deutscher (2001) showed that the development of Akkadian relative clauses is clearly unrelated to a parataxis to hypotaxis shift, and his way of reasoning can be summarized as follows. Akkadian had both head and dependent marking in the genitival construct -adopting the terminology of Nichols (1986) - where the dependent item is encoded with a genitive Case-marker, and the head-noun is marked by what Deutscher (2001) calls the *construct state*. The construct state is signalled by the lack of an overt case suffix on a noun as shown in (23).

(23) *dīn* *šarr-im*
judgment-OF (CONSTRUCT STATE) king-GEN
'the judgment of the king'

(Deutscher, 2001)

In the example above, the noun *dīn,* which usually surfaces with a case marker (e.g. $_{NOM}$: *dīn-um,* $_{ACC}$: *dīn-am,* $_{GEN}$: *dīn-im*), simply appears as *dīn* in the construct state. At this point, the crucial fact is that apart from the main productive type of relative clauses introduced by a relative/demonstrative pronoun, as shown above in (20a,b) and (22), Akkadian had another kind of (older) relative constructions, namely relatives in which there are no demonstratives as relative markers and the onset of the dependent clause is only signalled with the aid of the construct state (subtractively) added to the head noun.[15]

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complementizer/subordinator item, *ca*. Notice that in Shughni the item *ca* is clause-internal, and this is a feature extremely rare cross-linguistically, but widespread within East Iranian languages (from Ossetic, spoken in the Central Caucasus to Wakhi, spoken along the Wakhan River in Tajikistan/Afghanistan; See Erschler & Volk 2010).

[15] Notice that, considering these Akkadian data, there seems to be a strong relationship between the grammar of *genitival* constructions and the grammar of relatives clauses. This fact is

See example (24) below:

(24) *tuppi* *addin-u-šum*
tablet-OF (CONSTRUCT STATE) I.gave-COMP-to him
'the tablet that I gave to him'

(Deutscher, 2001)

As traced by Deutscher (2001, 410-411), newer Akkadian relative clauses developed in this way: demonstrative pronouns simply acted as the head (in the construct state) of the relative clause. See the Old Akkadian example in (25).

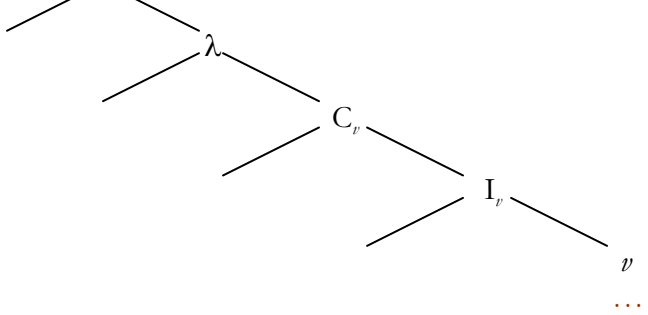
(25) *šūt* *[in TU.RA uḫḫirū-n]* *liḫuz*
those-ACC-CONSTRUCT STATE [in illness were.delayed-COMP] he.should.take
'he should take those who were delayed because of illness'

(Deutscher, 2001)

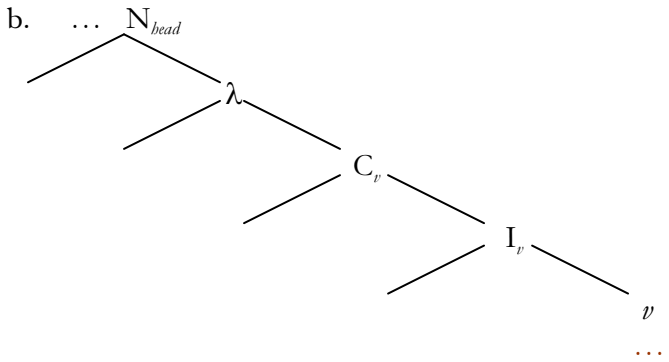
The beginning of the relative clause in (25) is signalled by the construct state on the pronoun *šūt*, just as it was signalled by the construct state on the nominal head *tuppi* in (24) above. The example in (25) also demonstrates that it is impossible, given the diachronic data, to consider it as a headless relative (see Deutcher 2001 for further examples and relevant discussion).

What is crucial for the present discussion is that the Akkadian demonstrative pronoun was a manifestation of a λ element originally heading an (already) subordinate clause, independently marked by a suffix on the dependent verb. Now, we may sketch a rough tree-structure as the one in (26a) for a plain complement clause and, in parallel, (26b) for a plain relative clause.

(26) a. … V_{root}



confirmed on typological grounds, as shown for instance by Gil (2011) in chapter 60 of the World Atlas of Language Structures.



It is arguable that grammaticalization processes (integration, condensation, exaptation and so on; see Lass 1997) tend to obliterate the structures shown in (26a,b). For instance, Akkadian demonstrative pronouns were, at the very beginning, independent case inflected heads of a relative clause and then, became mere marker of the onset of the dependent clause. Possibly, cross-linguistically there is a strong tendency to spell-out stretches of adjacent nodes with a single word/morpheme: patterns of *fusion* emerge and λ elements can be (con)fused with verbal complementizers. Anyway, there are clear hints that functional architectures as those depicted in (26a,b) (possibly far more layered) hold as a Universal Grammar constraint, which in turn forces a universal structure of Merge.

Data from Germanic languages, retrieved again from Deutscher (2001), are crucial for rejecting the proposal of an identity of complementizers and λ elements. Old Icelandic, for instance, had an invariable particle, *es*, which "*could introduce relative clauses on its own*" (Deutscher 2001, 415). See the example in (27) below.

(27) *vóro þar þeir menn [es Norðmenn kalla Papa]*
there were there those men-HEAD.COMP Northmen call Papa
'there were there those men that Northmen call Papas'.
(Stong-Jensen 1977)

In Old Icelandic, however, there was a type of relative clause headed by a case-inflected demonstrative pronoun as shown in (28a,b).

(28) a. *ok blótaðe hrafna þriá þá [es*
and worshipped ravens three-ACC.M.PL those-ACC.M.PL [REL
hánom skylldo leið visa]
him should way show]
'and he worshipped three ravens, those that should show him the way'.
(Stong-Jensen 1977)

b. *ok fiórer tiger nauta með henne þeirra*
and forty cattle-GEN.N.PL with her those-GEN.N.PL
[es aoll vóro frá henne komen].
[REL all were from her come
'and forty cattle with her, those that were all come from her'
(Stong-Jensen 1977)

Notice that in (28a,b) the pronoun agrees in Case with the antecedent in the main clause (as in Old Akkadian). Notice also that constructions like those shown for Old Icelandic in (27) and (28a,b) are attested in Old English, with the invariable particle *þe/ðe* roughly corresponding to Icelandic *es* and that such a pattern can also be also argued for Gothic, with the invariable particle *ei*. In our view, those items were the prototypical complementizers / subordination markers, and subordinate clauses were originally headed by light nouns/pronouns (what we have called λs) acting as "bridges of features" between matrix and dependent clauses.

Further evidence can be found in West Iranian languages. In these languages there is a sort of *multipurpose* particle/morpheme in the noun phrase (basically acting as a linker to modifiers), called Ezafe, which gives rise to the Ezafe construction (see e.g. Ghomeshi 1997; and Samvelian 2007 for detailed descriptions and analyses) quite reminiscent of the Akkadian (Semitic) *construct state* construction described above.[16]

It has been demonstrated that the Ezafe morpheme originates from the Old Iranian demonstrative pronoun *hya* (*tya-*) (see Meillet 1931; Haider & Zwanziger 1984; Bubenik 2009) and it can crucially be used to introduce a relative clause.[17] See the examples below in (29) from the Bahdînî dialect of Kurdish, taken from Haig (2011).

(29) a. *tišt'-ē* *[min* *day-av* *hinga]*$_{RC}$
thing-EZ.PL 1SG.OBL give-PST.POSTV 2PL-OBL
'The things [I gave to you (PL).]'

(Haig 2011)

b. *aw* *Ḱas-ē* *[awwilī b-ē-t]*$_{RC}$
DEM person-EZ.M first SUBJ-come-PRES-3SG
'that person [who shall come first.]' (MacKenzie 1961)

c. *cîrok-a* *[ku* *wî* *ji* *min* *re* *got]*$_{RC}$
story-EZ.F COMP 3S.OBL ADP 1SG.OBL ADP say-PST.3S
'The story [that he told me.]'

(Haig 2011)

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[16] See the examples below in (i) from Persian and Tajik for a set of (linking) functions accomplished by the Ezafe morpheme (which appears here as the unstressed vowel *e-*; *-i*), taken from Windfuhr & Perry (2009, 473):

(i)
PREDICATE > asman-e abi / losmon-i- obi *'blue sky'*; *Persian/Tajik*
EVENT > ruz-e enqelabl / ruz-i inqilob *'the day of revolution' - 'revolution day';*
POSSESSOR > ketab-e Hasanl / kitob-i Hasan *'the book of Hasan' - Hasan's book'*;
AGENT > kar-e mardom / kor-i mardum *'the work of people'*;
PATIENT > qatl-e Hoseyn / qatl-i Husayn *'the murder of Hoseyn'*;
PURPOSE > daru-ye gerip / daru-yi gripp *'flu medicine':*
GOAL > rah-e Tehran / roh-i Dusanbe *'the road of / to Tehran, Dushanbe';*
LOCATION TIME > mardom-e inja, emruz / mardum-i injo, imruz *'people of today'*;
ORIGIN > ahl-e Tehran / ahl-i Dusanbe *'inhabitant of Tehran, Dushanbe';*
SOURCE, CAUSE > ab-e cesme / ob-i casma *'water of well' - well-water'*,
SUBSTANCE > gombad-e tala / gunbad-i-talo *'dome of gold'*;
ELEMENT > anbuh-e sa 'el-an / anbuh-i so 'ii-on *'crowd of pilgrims'*
PART > do najar-e an-ha / du nafar-i on-ho *'two (persons) of them'*.

[17] In Standard Contemporary Persian, (restrictive) relative clauses are introduced by the morpheme *–i*, which can be considered an allomorph of the Ezafe morpheme *-e* (see Kahnemuyipour 2000; Windfuhr and Perry 2009).

The examples in (29a) and (29b) show a relative construction with the head noun linked to the dependent clause only by the mean of the Ezafe morpheme. Nevertheless, in most dialects of Kurdish, and especially in the written language (Haig 2011, 366), the head noun is marked with the Ezafe which crucially inflects for gender and number, as shown in the examples above, and, additionally, the relative clause is introduced by the complementizer *ku,* as can be seen in (29c).

Hence, we can interpret the contemporary presence of the Ezafe (historically derived from a demonstrative pronoun) and complementizers as evidence for the layered structure that we have sketched above and as clear evidence against the idea that complementizers are pronouns.

5 Prophrases and resumption

We have argued in this paper that: (a) those items which pertain to the complementizer/ λ field and everything below it, can be resumed/spelled-out by a single word/morpheme; (b) the feature analysis of these words/morphemes can be useful to clarify the internal structure of a zoomed complementizer zone and the process of subordinate clauses selection.

A relevant question now is: are there elements able to lexicalize other (lower) nodes (and everything below them), but make a derivation crash if spanning over Cs or λs? Following Starke (2009), we may argue that idioms (e.g. *kick the bucket*) lexicalize full VPs. For us, it will be interesting to find out if there are elements capable to spell-out the IP node, and resuming everything below it. In Italian (and other Romance languages) it is quite natural to consider *prophrases* (in Italian *profrasi*, in the literature sometimes *paraphrases*) as instances of such items. Note that in this section I will only sketch the proposal without addressing competing alternative accounts based on ellipsis (see e.g Baltin 2010) or structural deficiency (see e.g. Haddican 2007, in the spirit of Cardinaletti & Starke 1999).

Canonical Italian prophrases are *sì* (yes) and *no* (see Bernini, 1995; see also, for instance, Holmberg, 2001 for Finnish). Consider the examples in (30) below, partially repeating those in (1).

(30) a. *[Spero [che quella squadra*
hope-PRES.1SG that that-FEM.SG team
retroceda in serie B]]
downgrade-SUBJ.PRES1SG in series B
'I hope that team downgrades to the second division.'

b. *[[lo] spero]*
CL hope-PRES.1SG
'I hope so.'

c. *[spero [di [sì / no]]]*
hope-PRES.1SG that.FIN yes/no
'I hope so.' Lit. 'I hope of yes/no.'

d. **spero sì/no di*
hope-PRES.1SG yes/no that

e. **spero sì/no*
hope-PRES.1SG yes

f. **spero* *che* *sì/no*
hope-PRES.1SG that.FORCE yes/no

It is easy to see that in (30c) the items *sì* and *no* resume everything below the Inflection node. This fact is confirmed by the obligatory presence of the complementizers *di* (see the ungrammatical (30e)).

Notice also that prophrases in Italian can be embedded under the interrogative complementizer *se* (if), as shown in (31) below, but not under the 'Force' complementizer *che*, as shown by the ungrammaticality of (30f), strengthening Rizzi's (2001) proposal of a dedicated projection hosting Italian interrogative complementizers, roughly along the lines of (32).

(31) *Fammi* *sapere* *se* *hai* *dei* *soldi*
make-IMP.2SG-CL.1SG.DAT know if have-PRES.2SG PART money.PL
e *se* *sì* *quanti.*
and if yes how-many
'Let me know if you have money and if so, how many.'

(32) FORCE (TOP*) INT (TOP*) FOC (TOP*) FIN IP

(adapted from Rizzi 2001)

Notice finally that Italian prophrases, in given contexts, can be instantiated by higher epistemic adverbs, like *forse* (maybe) or *certamente* (surely), showing again that adjacent nodes tend to be sent to Spell-Out in chunks/bounded arrays.

6 Conclusion and a foreword

In this paper I have argued that subordinate clauses need to be Case licensed (namely embedded under KPs) and that various patterns of "fusion" within a layered functional skeleton obliterate that process.

Contrary to most approaches to grammar (e.g. the Distributed Morphology paradigm, started by the work of Halle and Marantz 1993), I have tried to support the idea that morphemes can realize entire syntagms/phrases, with a set of examples from non-interrelated languages. This idea of a phrasal Spell-Out is not exclusive to the Nanosyntactic paradigm, and probably originated in the late sixties of the previous century - within the (now extremely outdated) framework of Generative Semantics - with the work of McCawley (1968). Contemporary non-nanosyntactic works that use Phrasal Spell-Out are Weerman & Evers-Vermeul (2002) and Neeleman & Szendöi (2007), among others. At any rate, the facts highlighted in this work perfectly fit into Nanosyntax. The typological evidence provided here shows that terminal nodes in the syntactic structure are smaller than morphemes, and actually hosted by features, as it has been convincingly argued, for example, for the syntax of verbs (the *first phase syntax*) in Ramchand (2008). Clitics, from this viewpoint, provide a paradigmatic example.

Moreover, this work could be of interest because, to my knowledge there are no previous studies that try to establish, given theoretical premises, a link between nominalization and complementation. Even the typological literature only recently has

paid attention to the phenomena related to the genesis/behaviour of subordination[18] strategies. It has been argued by Heine & Kuteva (2007) that clause subordination arises (a) via the *integration* of two independent clauses within one clause (somewhat similar to a reanalysis of coordination) (b) via *expansion*, that is, the reinterpretation of a *thing*-like (nominal) item as a propositional (clausal) item.

Given our feature decomposition of complementizers, we may argue that the CP field, originally mapped out by Rizzi (1997), is actually a *nebulosa* of features, and some of them are still unexplored. A puzzling thing of great interest is that some of those C features, as we have shown in this work, traditionally pertain to the nominal morpho-syntax (i.e. Case morphology).

Given this picture, pursuing a nanosyntactic/cartographic approach to syntax, a further natural step would be to search hints for an ordered (principled) hierarchy of clauses. In order to enhance the parallelism among DP, VP (IP) and CP, it is possible to hypothesize a hierarchy roughly along the lines of Cinque (1999; 2005) (see also Caha, 2009). Thus, it could be possible to derive deviations from an inherent universal order, in terms of movement of the *root* clause. The deviations would be the result of the (partial/total) application of two different types of movement options to one and the same structure of Merge available to Universal Grammar.

The idea is that the initial *engine* of movement is the *root* clause (like VP or NP), and it is taken over by each higher functional head endowed with the same features. Following the work of Cinque (2005), movement would be only to the left and we could move only constituents containing the root-clause. If the raising takes place via pied-piping of the *whose-picture* type, we have the root-initial order; if it takes place via pied-piping of the *picture-of-whom* type, we have the root-final order. A picture of this kind, representing the hypothetical basic Merge order of the matrix clause, the complement clauses and the adverbial ones, may be possibly sketched in (34), where WP… ZP represent functional landing sites for the *root*.

(33) $[_{KP}\ \sqrt{}\ \dots\ [_{WP}\ Adv_{\beta}\ [_{WP}\ W\ \ [_{XP}\ Adv_{\alpha}\ [_{XP}\ X\ [_{YP}\ Compl_{\beta}\ \ [_{YP}\ Y\ [_{ZP}\ Compl_{\alpha}\ \ [_{ZP}\ Z\ [_{CP}\ \sqrt{}$]]]]]]]]]

A work of this sort, however, should have to rely on a consistent set of typological data, which is presently unavailable[19]. Nevertheless, recent works (e.g. Bickel 2010; Dryer 2011) moving in this direction, leave open the possibility that a database of clause linkage will soon be available, and the data needed for the research sketched above could be retrieved from it.

[18] Bern Heine (2008) has described nominalization as *the unsung hero* in the history of grammaticalization studies.

[19] Very preliminary support for the plausibility of the model in (34) may be given by the fact that Diessel (2001), using a sample of forty languages, showed that the ordering of main and subordinate clauses seems to correlates with the position of the complementizer/subordinator in the subordinate clause. In those languages in which subordinate clauses have a final subordinator, subordinate clauses precede the main clause, whereas in those languages in which subordinate clauses are signalled by initial subordinators, subordinate clauses usually occur in both sentence-initial and sentence-final position.

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Unergative and/or Unaccusative: On the Argument Structure, Semantics and Syntax of Semelfactives in Hungarian

Tamás Halm

The focus of this paper is the relationship between the syntactic behaviour and semantic characterization of semelfactive verbs in Hungarian. It will be argued that semelfactives are located in the middle of the unergative-unaccusative continuum based on their syntactic behaviour, and that this mixed behaviour can be derived straightforwardly from the semantic characterisation of the verbs in question. A syntactic model is proposed where the arguments of semelfactive verbs have multiple potential (optional) merge locations. The paper corroborates the hypothesis of an unergative-unaccusative continuum that has been mainly examined for certain Indo-European languages and by means of a singe diagnostic (auxiliary selection), by examining a non-Indo-European language and making use of several diagnostics. As far as syntax and semantics of semelfactives in Hungarian is concerned, this model has better empirical coverage than earlier proposals and has more desirable qualities from a theoretical point of view.

Keywords: *argument structure, Hungarian, semelfactives, syntax-semantics interface, unaccusativity*

1 Introduction

This paper is concerned with the relationship between the syntactic behaviour and semantic characterization of semelfactive verbs in Hungarian. It will be argued that semelfactives are located in the middle of the unergative-unaccusative continuum based on their syntactic behaviour, and that this mixed behaviour can be derived straightforwardly from the semantic characterisation of the verbs in question. A syntactic model is proposed where the arguments of semelfactive verbs have multiple potential (optional) merge locations.

This paper is organized as follows. After an overview of the unaccusativity hypothesis (Section 2) and the various theoretical accounts for it (Section 3 and 4), semelfactives in Hungarian (Section 5) are examined both in terms of their syntax (Section 6) and semantics (Section 7). We present our proposal for an account of the mixed unaccusative-unergative behaviour of Hungarian semelfactives in Section 7. As a conclusion, Section 8 summarizes the main findings of this paper, pointing out some open issues warranting further research.

2 The unaccusativity hypothesis

In linguistic theory, two main groups of predicates have traditionally been distinguished based on the number of arguments they take: single argument (or intransitive) verbs such as *run* or *arrive* and two-argument (or transitive) verbs such as *read*. In many accounts, a third group containing three-argument (or ditransitive) verbs such as *give* is also stipulated.

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In essence, the Unaccusativity Hypothesis (Perlmutter 1978) proposes a refinement of this traditional categorization as it claims that the class of single-argument verbs is not homogeneous; rather, it can be neatly subdivided into two disjoint subgroups based on syntactic behaviour. So-called unergative verbs behave like the subject of two-argument verbs, whereas so-called unaccusatives display syntactic behaviour similar to that of the objects of two-argument verbs.

The unaccusativity literature (see the introductory study Alexiadou 2004 for a recent overview) has identified several tests for separating unergatives and unaccusatives. Some of the most widely used are the following (Alexiadou 2004, Bene 2005):

Auxiliary selection as a diagnostic is mostly used for Indo-European languages. It classifies verbs based on whether they take BE or HAVE as auxiliaries:

(1) a. *Marie est arrivée en retard.*
Marie BE arrived in late ⇒ unaccusative
'Marie arrived late.'
b. *Marie a rougi de honte.*
Marie HAVE blushed of shame ⇒ unergative
'Marie turned red with shame.'

Adjectival passive participles can be constructed from unaccusative and transitive verbs but not from unergative verbs (examples from Alexiadou 2004):

(2) a. *der geküßte Student*
the kissed student
'the student that was kissed'
b. **der gearbeitete Student*
the worked student
'the student that has worked'
c. *der eingeschlafene Student*
the fallen-asleep student
'the student that has fallen asleep'

As far as resultatives are concerned, only theme arguments (i.e., the objects of transitives or the arguments of unaccusatives) may appear in a resultative structure (Simpson 1983, Levin-Rapaport-Hovav 1995: Direct Object Restriction, Csirmaz 2006):

(3) a. *John painted the door red*
b. **John shouted hoarse.*
'John shouted himself hoarse.'
c. *The bottle broke open.*

In Hungarian, only transitive or unaccusative verbs may be associated with a verbal particle (É. Kiss 2005):[1]

[1] An anonymous reviewer suggests that this claim may be too strong as verbal particles do appear with semelfactives and statives. I shall discuss the co-occurence of verbal particles with semelfactives later in this paper. The co-occurence of verbal particles with statives is an issue beyond the scope of this paper which I will not address here.

(4) a. *Feri meg-sütötte a kenyer-et.*
Feri PRT-baked the bread-ACC
'Feri baked the bread.'
b. *Feri meg-érkezett.*
Feri PRT-arrived.
'Feri arrived.'
c. **Feri el-énekelt.*
Feri PRT-sang.
'Feri sang.'

The pseudo-object *egyet* ('one, once') can only be associated with unergatives (Kiefer 1992, Pinon 2001):

(5) a. *Feri futott egy-et.*
Feri ran one-ACC.
'Feri had a run.'
b. **Feri érkezett egy-et.*
Feri arrived one- ACC.
'Feri arrived.'

As is already evident, not every test of unaccusativity is applicable in every language: e.g. the auxiliary test is obviously irrelevant for languages with no auxiliaries (such as Hungarian) or languages with only one auxiliary (such as English). What is common to all the tests, however, is that they lend strong support to the basic observation that the argument of unaccusatives behaves like the object argument of two-argument verbs, whereas the argument of unergatives behaves like the subject argument of two-argument verbs. Based on this, standard syntactic accounts suppose that the argument of unaccusatives is merged in the object position (a), whereas the argument of unergatives is merged in the subject position (b):

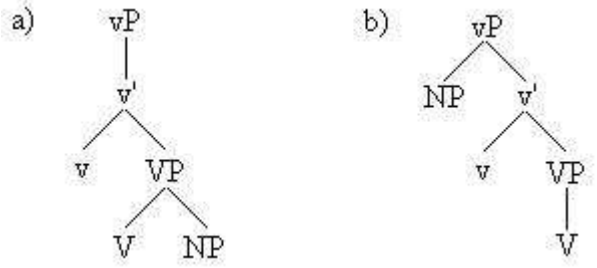

Figure 1

3 Unaccusativity as a syntax-semantics interface phenomenon

One of the main concerns of linguistic research spurred by the unaccusativity hypothesis has been to establish whether the syntactically defined unergative-unaccusative distinction can be correlated to the semantic characterisation of the predicates and arguments in question. While some attempts (such as Dowty 1990 and Levin-Rappaport Hovav 1995) follow a lexical semantic path (hypothesising that the unergativity/unaccusativity of a predicate is coded in the lexicon via its semantic

features); others have treated unaccusativity as a sentence-level property in a compositional framework (such as Borer 1994 and van Hout 2004), typically hypothesising a strong relationship between aspect and unaccusativity.

In lexical semantically oriented models, the syntactic configurations of unergativity/unaccusativity are derived from the lexical-semantic representations via so-called linking rules. The classical representative of this approach is Dowty (1990), where two semantic proto-roles are identified (that of proto-agent and proto-patient), and the position of each argument on the so-called agent-patient spectrum is defined by the amount of semantic properties it shares with either the proto-agent or the proto-patient cluster of properties. This in turn defines the unergativity/unaccusativity of the verb concerned. The proto-agent cluster includes the following semantic properties: volitionality, sentience/perception, the causing of an event or a change of state in another participant, movement (relative to the position of another participant), and existence independently of the event named by the verb. Proto-patient properties include: undergoing a change of state, incremental theme, causally affected by another participant, stationary relative to movement of another participant, no existence independently of the event named by the verb. Verbs with a single argument that has solely or predominantly proto-agent properties are unergative, verbs with a single argument that has solely or predominantly proto-patient properties are unaccusative, verbs with a single argument with mixed properties are unstable and show mixed behaviour in terms of unaccusativity.

It is important to note that Dowty's (1990) model is stochastic (non-deterministic) in the sense that it can readily accomodate (and even predicts) the existence of verbs that are neither purely unergative or purely unaccusative, but are to be found in the middle of what is termed an unergativity-unaccusativity spectrum.

Levin-Rapaport-Hovav (1995) propose a more deterministic model. The relationship between syntactic behaviour and semantic characterisation is modeled by way of so-called linking rules. Variations across languages with regard to the unaccusativity of certain verb classes are accomodated by stipulating an optional ordering of these linking rules:

(i)	Immediate cause	⇒ external argument
(ii)	Directed change	⇒ internal argument
(iii)	Existence	⇒ internal argument
(iv)	Other (default)	⇒ internal argument

4 Unergativity and unaccusativity: a blurred distinction

In its original and strongest form, the Unaccusativity Hypothesis stipulates that all single-argument verbs can be distinctly classified as either unergative or unaccusative. More recent research (Sorace 2000, Alexiadou 2004), however, suggests that this is not the case: while there are indeed many verbs that display a uniformly unergative or unaccusative syntactic behaviour, several others show a mixed behaviour both intra- and cross-linguistically (the examples below are taken from the introductory study in Alexiadou 2004):

Some verbs/verb classes (such as verbs of existence) are unergatives in some languages and unaccusatives in others:

(6) a. *I vampiri non sono mai esistiti.* (Italian)
the vampires not BE never existed. ⇒ unaccusative
'Vampires never existed.'

b. *There exist three versions of the manuscript.* ⇒ unaccusative

c. *Die Dinosaurier haben/*sind wirklich existiert.* (German)
the dinosaurs HAVE/*BE really existed. ⇒ unergative
'Dinosaurs did exist.'

d. *Il a/*est été a l'université.* (French)
he HAVE /*BE been at the university. ⇒ unergative
'He was at the university.'

In a given language, certain verbs/verb classes may display mixed behaviour:

(7) a. *La villa ha appartenuto alla mia famiglia.*
the villa HAVE belonged to-the my family. ⇒ unergative
'The villa belonged to my family.'

b. *La villa è appartenuta alla mia famiglia.*
the villa BE belonged-FEM to-the my family. ⇒ unaccusative
'The villa belonged to my family.'

This suggests that instead of a strictly and neatly dichotomic distinction, we should in fact stipulate an unergative-unaccusative continuum (spectrum), with strongly unergative and strongly unaccusative verbs at either end, and verbs with varying degrees of mixed behaviour at the corresponding relative position inside the spectrum. If this were indeed the case, the immediate question is how to relate this syntactic phenomenon to the semantic characterisation of the verbs concerned. Sorace (2000) proposes the following model:

Semantic characterisation of verb/predicate	**Syntactic behaviour (auxiliary selection)**
(i) *directed change of location*	BE (least variation)
(ii) *change of state*	↑
(iii) *continuation of a pre-existing state*	↕
(iv) *existence of state*	↕
(v) *uncontrolled process*	↕
(vi) *controlled process, motional*	↕
(vii) *controlled process, nonmotional*	HAVE (least variation)

Both intra- and cross-linguistically, verbs expressing a directed change of location are consistently unaccusative and verbs denoting nonmotional controlled processes are unergatives. Verbs denoting an existence of state or an uncontrolled process display mixed syntactic behaviour intra- and cross-linguistically. It is important to note that Sorace uses semantic features the relevance of which has already been identified in the unaccusativity literature; the novelty of her approach lies in the hiearchy proposed.

The relevant semantic features are the following:

(i) *dynamicity/stativity*
(ii) *affectedness*
(iii) *change of location or change of state*
(iv) *internal/external causation*
(v) *control*
(vi) *agentivity*
(vii) *telicity*

While this proposal has considerable descriptive adequacy, the exact role of the above features in determining unaccusativity is unclear, especially as far as the interaction of the above features is concerned. E.g., activity verbs are at opposite ends of the spectrum (depending on affectedness). A further potential weakness of this analysis is that it examines unaccusativity through a sole diagnostic (auxiliary selection) and across a sample limited to a single language family (Indo-European languages). It is important to note, however, that this proposal entails empirically falsifiable predictions: e.g.: if in a given language, verbs denoting the existence of a state are unaccusative, then all verb classes situated above in the hierarchy (such as change of state verbs) are unaccusative too.

5 Semelfactives

Semelfactives are usually defined as verbs denoting punctual events that have no preparatory stage or result state. In her seminal work, Smith (1991) (extending upon Vendler 1957) proposes three features for the classification of verbs/predicates:

(i) *stative/dynamic*,
(ii) *durative/instantaneous*
(iii) *telic/atelic*

Based on these features, five verb classes are defined, adding semelfactives to the classic Vendlerian four-way categorization:

(i) *States*: stative, durative, atelic
(ii) *Activities*: dynamic, durative, atelic
(iii) *Accomplishments*: dynamic, durative, telic
(iv) *Semelfactives*: dynamic, instantaneous, atelic
(v) *Achievements*: dynamic, instanteneous, telic

In Hungarian, semelfactives can be identified by examining the compatibility of a verb with various time adverbials (Kiefer 2006): semelfactives are unique in that they are only compatible with the time adverbials bearing the *-kor* ('at') suffix:

(8) a. *A fény hat óra-kor fel-villant.*
the light six hour-at PRT-flashed.
'The light flashed at six o'clock.'

b. *A fény hat óra alatt fel-villant.
the light six hour under PRT-flashed.
'The light flashed in six hours.'
c. *A fény hat órá-ig fel-villant.
the light six hour-till PRT-flashed.
'The light flashed until six o'clock.'
d. *A fény hat órá-n keresztül fel-villant.
the light six hour-on through PRT-flashed.
'The light flashed for six hours.'

Semelfactives in Hungarian are morphologically marked by the suffixes *-An*[2], *-dul* or *-int*. *–An* suffixation is still a productive way of verb formation (a non-word such *brotty* can be turned into a semelfactive with onomatopoeic flavour, *brottyan*). It is important to note that most single-argument semelfactives have a transitive pair with a *-t* suffix (*robban-robbant,* 'explode (intr)'-'explode (tr)'). This phenomenon is quite general for unaccusatives in Hungarian (*esik-ejt* 'fall (intr-tr)', *sül-süt* 'bake (intr-tr)', *romol-ront* 'deteriorate (intr-tr)'). In the case of many semelfactives, there exists a parallel class of verbs with the *–o(n)g* suffix, which produces verbs with an iterative reading such as *villan-villog* ('flash' (semelfactive-iterative)). It is important to note, though, that this phenomenon is not entirely productive.

6 Are semelfactives unaccusatives in Hungarian?

6.1 Tests of unaccusativity in Hungarian

The following tests of unaccusativity have been identified as relevant for Hungarian:

Association with the verbal particle (É. Kiss 2006): ⇒ Unaccusativity

(9) a. Feri meg-sütötte a kenyer-et.
Feri PRT-baked the bread-ACC.
'Feri baked the bread (ready).'
b. Feri meg-érkezett.
Feri PRT-arrived.
'Feri arrived.'
c. *Feri ki-dolgozott.[3]
Feri PRT-worked.
'Feri had a good bit of work.'

Association with the pseudo-object *egyet* (one-ACC, 'one, once') (Kiefer 1992, Piñon 2001): ⇒ Unergativity

[2] *-An* signifies that the suffix is realised as either *-an* or *-en* in accordance with the vowel harmony rules of Hungarian.

[3] It is important to note that the addition of a pseudo-object renders the above sentence perfectly grammatical: *Feri kidolgozta magát* (Feri PRT-worked himself-ACC). Cf. Levin-Rappaport-Hovav (1995), Csirmaz (2006).

(10) a. *Feri futott egyet.*
Feri ran one-ACC.
'Feri had a run.'
b. **Feri érkezett egyet.*
Feri arrived one-ACC.
'Feri arrived/had an arrival.'

Association with semantically incorporated subject (Marácz 1989, É. Kiss 2002): ⇒ Unaccusativity

(11) a. *Vendég érkezett.*
guest arrived.
'A guest arrived./Guests arrived.'
b. **Munkás dolgozott.*
labourer worked.
'A labourer worked./Labourers worked.'

Resultative structure (Csirmaz 2006): ⇒ Unaccusativity

(12) a. *Juli darabok-ra törte a vázá-t.* (transitive)
Juli pieces-unto broke the vase-ACC
'Juli broke the vase into pieces.'
b. *A váza darabok-ra van törve.* (stative passive)
the vase pieces-unto is broken.
'The vase is broken into pieces.'
c. *A váza darabok-ra tört.* (unaccusative)
the vase pieces-into broke.
'The vase broke into pieces.'
d. **Juli beteg-re nevetett.*
Juli ill-unto laughed.
'Juli laughed (herself) ill.'

6.2 The syntax of Hungarian semelfactives in light of unaccusativity diagnostics

Based on their syntactic behaviour, semelfactives in Hungarian are situated in the middle of the unergative-unaccusative spectrum. Based on some diagnostics, they pattern with unergatives (association with the pseudo-object *egyet* (13a)); other tests identify them as unaccusatives (association with verbal particles (13b); association with semantically incorporated unspecific subjects (13c)). A further argument for unaccusativity may be the fact that semelfactives (with some systematic exceptions that will be treated in Section 7.1) belong to the *-ik* verbal paradigm in some dialects of Hungarian (14a-b)). [4] As far as the resultative construction (a strong cross-linguistic unaccusativity diagnostic) is concerned, the grammaticality judgments of native speakers diverge (15a-b); which can be interpreted as a direct reflection of the intermediate position of semelfactives on the unergative-unaccusative spectrum.

[4] Historically, the *-ik* verbal paradigm was confined to unaccusatives.

(13) a. *A fény villant egy-et.* ⇒ unergative
the light flashed one-ACC.
'The light flashed.'

b. *A fény fel-villant.* ⇒ unaccusative
the light PRT-flashed.
'The light flashed.'

c. *Fény villant.* ⇒ unaccusative
light flashed.
'A light flashed./Lights flashed./There was a flash of light.'

(14) a. *Pattanik.* *Robbanik.* *Mozdulik.* ⇒ unaccusative
bounce-PRES.3SG explode-PRES.3SG move-PRES.3SG
'It bounces.' 'It explodes.' 'It makes a move.'

b. **bólintik* **köhintik*[5] ⇒ unergative
nod-PRES.3SG cough-PRES.3SG
'He nods.' 'He makes a cough.'

(15) a. *ʔAz űrsikló apró darabok-ra robbant.* ⇒ ?
the space shuttle tiny pieces-unto exploded.
'The space shuttle exploded into pieces.'

b. *ʔA deszka szilánkok-ra reccsent.* ⇒ ?
the plank splinters-unto cracked.
'The plank cracked into splinters.'

The observations above raise two closely interrelated questions:

(i) What is the relationship (if any) between the mixed syntactic behaviour of semelfactives and their semantic characterisation?
(ii) How is this mixed behaviour to be modelled syntactically?

The above issues have been briefly touched upon by Csirmaz (2006). In her proposal, semelfactives are analyzed as unaccusatives. The pseudo-object *egyet* is taken to be merged in an adjunct position (i.e., not in the position of the internal argument). Since unaccusatives can typically be associated with the verbal particle (see (9) above), this would predict the possible cooccurence of the pseudo-object *egyet* and the verbal particle. This, however, is completely unattested:

(16) **A fény meg-villant egy-et.*
the light PRT-flashed one-ACC.
'The light flashed.'

In Csirmaz (2006)'s account, this cooccurence is ruled out via Tenny's (1994) Single Delimiting Constraint.

[5] The existence (or non-existence) of these verb forms has been confirmed by several informants hailing from the Northern Transdanubia region of Hungary. See also p. 18. of Popovics (2009) on semelfactives and the *-ik* paradigm.

In the sections below, we propose an alternative and, in our view, more appropriate account for the mixed unergative-unaccusative behaviour of semelfactives in Hungarian.

7 A syntactic model for semelfactives with recourse to their semantic characterisation

7.1 The semantics of semelfactives in Hungarian

The semantic characteristics of semelfactives and their correlations with unergativity-unaccusativity as identified in the unaccusativity literature (e.g. Sorace 2000, Alexiadou 2004) are listed below:

(i)	low agentivity (more experiencer than agent):	⇒ unaccusative
(ii)	low volitionality:	⇒ unaccusative
(iii)	low control:	⇒ unaccusative
(iv)	internal causation:	⇒ unergative
(v)	high affectedness	⇒ unaccusative
(vi)	dynamicity	⇒ unergative
(vii)	atelicity:	⇒ unergative

Since some of these features are associated firmly with unaccusativity and others with unergativity in the literature, the conclusion can be drawn that we can provide a natural explanation for the mixed syntactic behaviour of semelfactives by looking at their semantic characteristics. The mixed semantic makeup in terms of features associated with unergativity and unaccusativity is directly reflected in the mixed syntactic behaviour. Moreover, it can be shown that those semelfactives that are in some semantic respects different from semelfactives in general (such as the more agentive and less affected *köhint* 'cough' and *bólint* 'nod') and are thus situated at the unergative edge of the unergative-unaccusative continuum show a correspondingly clear unergative behaviour:

Köhint displays unergative syntactic behaviour in terms of the association (or lack of) with the pseudo-object *egyet* and the verbal particle *meg-* and the co-occurence with semantically incorporated subjects:

(17) a. *A fiú köhintett egy-et.*
the boy coughed one-ACC
'The boy coughed./The boy made a cough.'

b. **A fiú meg-köhintett.*
the boy PRT-coughed.
'The boy coughed./The boy made a cough.'

c. **Fiú köhintett.*
boy coughed.
'A boy coughed./Boys coughed.'

Also, *köhint* does not follow the *-ik* paradigm in any dialect, and it is ungrammatical with resultatives:

(18) **Köhint-ik.*
cough-PRES.3SG
'He coughs./He makes a cough.'

(19) **A fiú rekedt-re köhintett.*
the boy hoarse-unto coughed.
'The boy coughed himself hoarse.'

In terms of their semantic makeup, *köhint* and *bólint* are very different from typical semelfactives:

(i)	high agentivity	⇒ unergative
(ii)	high volitionality	⇒ unergative
(iii)	high control	⇒ unergative
(iv)	low affectedness	⇒ unergative

If we look at the above picture in terms of clusters of properties, it is noteworthy that as far as the cluster we might call 'agent-theme' is concerned, semelfactives have a set of properties (low agentivity, low volitionality and low control) that are typical of unaccusatives. However, measured along the conceptually related diagnostic of internal causation, semelfactives are predicted to be unergative. In terms of event structure, dynamicity and atelicity (in the sense of Smith 1991 and also of Tenny 1994 as measuring out is arguably not interpretable for the purely punctual events denoted by semelfactives) are associated with unergativity.

In terms of semantic classes, most semelfactives in Hungarian can be characterized as either verbs of emission or as verbs of undirected motion.[6] In Levin-Rappaport-Hovav (1995), verbs of emission are analyzed as verbs of motion which are unergatives on a manner of motion reading and unaccusative on a directed motion reading. It might be tempting to adopt this analysis for semelfactives in Hungarian, as many verbal particles do have a direction reading:

(20) *A labda fel-pattant.*
the ball up-bounced
'The ball bounced up.'

Nevertheless, almost all semelfactives are grammatical with the verbal particle *meg*[7], which clearly lacks a direction reading.[8] More generally, it is important to note that not all

[6] In criticizing a more strongly worded version of the sentence above, an anonymous reviewer pointed out that a number of semelfactives in Hungarian are neither verbs of undirected motion nor of emission. While judgments here are often not clear-cut (e.g. *billen* 'tilt', a purported counterexample to my claim appears to be a verb of undirected movement to me), I concede that some semelfactives may not fall into either of the two verb classes above (such as *(meg)retten* ('get afraid')).

[7] An anonymous reviewer claims that this is not true of some of the semelfactives discussed by me: **meg-pattan* (PRT-bounce), **meg-robban* (PRT-explode). In response, I would argue that *megpattan* is completely grammatical (as in *A labda megpattant, mielőtt a hálóba vágódott.* 'The ball bounced before it hit the net.'), while *megrobban* is somewhat archaic but still acceptable to at least some speakers.

[8] It could be argued that *meg* refers to a return to the original state, i.e., the state that obtained prior to the event denoted by the semelfactives; and as such, has a direction reading. However, since

verbs of emission are semelfactives, thus, any explanation of the mixed syntactic behaviour of semelfactives that is solely based on their being verbs of emission would apply to non-semelfactive verbs of emission as well, which would be highly unfortunate as it is only semelfactives (and not other verbs of emission) that display the mixed behaviour discussed here.

In sum, as far as event structure is concerned, semelfactives are predicted to be unergative. In terms of argument structure, semelfactives display features that are conducive to unaccusativity (low agentivity, low volitionality and low control) and also ones that are conducive to unergativity (internal causation). This mixed semantic characterisation in terms of unergativity/unaccusativity results in a mixed unergative/unaccusative syntactic behaviour.

7.2 A syntactic model for semelfactives

The question remains how the relationships described above are to be modelled in a more exact syntactic framework. We adopt the standard approach whereby the internal argument (the object or the subject of an unaccusative verb) is merged inside VP, whereas the external argument (the subject of transitives and unergatives) is merged outside VP (e.g. in Spec vP). Unaccusativity as a semantics-syntax interface phenomenon can then be most straightforwardly modelled by assuming that it is the predicate (or the event denoted by the predicate) that places restrictions on the types of arguments, in terms of semantic features, that it can accept.

With most verb classes, the composition of desired semantic features ensures that the argument has a semantic characterisation more or less clearly associated with either the Agent or Theme (proto)role, which in turn means that the argument is to be merged either as an external or an internal argument. In the case of semelfactives, however, the semantic restrictions imposed by the verb (predicate) on the argument define a set of semantic features that is strongly mixed in terms of proto-agent and proto-theme features. This means that no unequivocal selection is to take place and both the external and the internal argument position are legitimate loci for merging the argument.

If the above explanation is correct, one would expect that depending on the actual locus of merging the argument, either the agent or the theme reading would be more accessible. The following pair of sentences seems to bear out this prediction:

(21) a. *Magá-tól* *meg-mozdult.*
itself-from PRT-moved
'It moved by itself.'

b. *#Magá-tól* *mozdult* *egy-et.*
itself-from moved one-ACC
'It moved by itself.'

In these sentences, *magától* asserts that the event took place without the interference of an external causer/instigator. Since in (21b), the subject clearly has an Agent reading (because the presence of *egyet* signifies that it was merged in the external argument

such a reading of *meg* is not independently motivated, such an explanation is close to being circular and we do not adopt it here.

position), the reading asserted by *magától* (the lack of an external causer/instigator) is already present.This redundancy causes (21b) to be infelicitous (even if grammatical).[9]

As we mentioned in section 5.2, the above questions have been briefly touched upon in Csirmaz (2006). In her proposal, semelfactives are analyzed as unaccusatives. The pseudo-object *egyet* is taken to be merged in an adjunct position (i.e., not in the position of the internal argument), and the cooccurrence of *egyet* and the verbal particle (such as *meg-*) is ruled out by the Single Delimiter Constraint (Tenny 1994).

On closer scrutiny, the above proposal is open to criticism on both empirical and theoretical grounds. On the assumption that semelfactives are unaccusatives, the results of the *magától*-test (21) are difficult to accommodate. Moreover, the analysis of semelfactives cooccuring with the pseudo-object is problematic from a theoretical perspective: the assumption is that while the pseudo-object *egyet* is generally merged in the position of the internal argument, in the case of semelfactives, it is merged as an adjunct. In the absence of any independent motivation of *egyet*-as-adjunct, this explanation is circular and arbitrary. In comparison, the proposal put forward in this paper actually predicts the outcome of the *magától*-test and has no need for stipulating a pseudo-object-as-adjunct.

Finally, it is important to note a peculiar characteristic of semelfactives:

(22) **A fény villant.*
the light flashed.
'The light flashed.'

If we assume that in the above sentence, *a fény* is merged as an internal argument, we may resort to the well-known analysis of the incompatibility of verbs of coming-into-being with specific subjects, which readily explains the ungrammaticality of (22).

However, in our analysis, *villan* is ready to accept *a fény* as an external argument too. In this case, we would firmly expect (22) to be grammatical. This is not the case: on an unergative reading, only a sentence with the pseudo-object *egyet* is acceptable:

(23) *A fény villant egy-et.*
the light flashed one-ACC
'The light flashed.'

In the literature, *egyet* (similarly to verbal particles) is analysed as a situation delimiter (Csirmaz 2006, Tenny 1994): it is taken to telicize or delimit the event, with adding an end state or end point to it. In a descriptive vein, it can be established that in Hungarian, semelfactives obligatorily carry an overt marker of telicity (delimitedness), with the exception of the cooccurence with incorporated non-specific subjects. This can be explained as a case of grammaticalization: an originally optional, emphatic element (*egyet*) gaining the grammatical function of obligatorily encoding delimitedness in the case of semelfactives. This dovetails nicely with the recent observation put forward in Kardos (2011) that telicity needs to be overtly marked in Hungarian.

[9] The use of *magától* can be felicitous with unergatives: *Feri magától fogat mosott* ('Feri brushed his teeth without anyone telling him to do so'). However, in these sentences, *magától* has a special meaning ('at his own initiative, without there being external demand or request'). If we interpret *magától* with its general meaning, the resulting sentence is clearly infelicitous: #*Feri magától fogat mosott* ('Feri brushed his teeth by himself') vs. *A könyv magától leesett* ('The book fell by itself').

8 Conclusion

In this paper, we explained the mixed unergative-unaccusative behaviour of semelfactives in Hungarian by recourse to semantic features. So far the hypothesis of an unergative-unaccusative continuum has been mainly examined for certain Indo-European languages (such as Italian, German, French and Dutch) and by means of a singe diagnostic (auxiliary selection) (Sorace 2000, Alexiadou 2004). This paper is a useful contribution inasmuch as it presents evidence corroborating the existence and semantic basis of an unergative-unaccusative continuum. The mixed syntactic behaviour of semelfactives is modeled by assuming that their single argument has two optional merge positions: this model has better empirical coverage than earlier proposals and has more desirable qualities from a theoretical point of view.

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The Licensing of Adnominal PPs: The Case of Basque *-ko*[*]

Georg Höhn

Adnominal postpositional phrases in Basque need to be licensed by the attributive linker *-ko* on the right edge of the PP, which is absent if the PP is not contained inside a DP. Rejecting an analysis in terms of Predicate Inversion, I suggest that the linker represents a functional category at the high end of the extended projection of P, which establishes the proper relation between modifier and modifiee *in situ*. Semantically, it adjusts the semantic type of its complement, so as to license semantic composition by means of Functional Application. Dispensing with the non-saturating operation of Predicate Modification allows a principled explanation of the linker's obligatory presence with adnominal PPs.

Keywords: *attributive linkers, Basque, PP, nominal modification*

1 Introduction

In a variety of languages attributive phrases can or have to be accompanied by a morpheme which is absent when they are used in other contexts. The term "attributive linker" has been introduced by den Dikken & Singhapreecha (2004) for such attribute-marking morphemes. Although I will not subscribe to their particular analysis, I will use the term as a descriptive label for morphemes that are indicative of attributes. Nevertheless, there might be differences within the class denoted by that cover term, for instance in terms of whether their presence is obligatory, and most certainly regarding the categories they appear with.

As noted by von Prince (2008:ch.9), the morpheme *-ko* in Basque seems to be an instance of such a linker morpheme. The contrast in (1) illustrates the phenomenon: only in the presence of *-ko* can the PP modify the following noun.[1] As evidenced by the grammaticality of (2), what is at issue here is not linear order, but the structure where the PP and the head noun are constituents of the same DP, hence an adnominal configuration.[2]

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[1] Note that Basque is right-headed and, consequently, has postpositions.

[2] I use the following glosses: 1,2,3 – person; ABL – ablative; ABS – absolutive; AL – attributive linker; ALL – allative; AUX – auxiliary; BEN – benefactive; CGN – case-gender-number marker; CLF – classifier; COM – comitative; COMP – complementizer; DAT – dative; DET – determiner; DIR – directional; ERG – ergative; GEN – genitive; INDEF – indefinite; INSTR – instrumental; LOC – locative; PART – partitive; PL – plural; REFL – reflexive; SG - singular; TERM – terminative.

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(1) a. *[neska-ren-tza-ko lore-a]$_{DP}$*
girl-GEN-BEN-KO flower-DET
'the flower for the girl'
b. **[neska-ren-tzat lore-a]$_{DP}$*
girl-GEN-BEN flower-DET

(2) *Neska-ren-tzat lore-a erosi dut.*
girl-GEN-BEN flower-DET(.ABS) buy AUX
'I have bought a flower for the girl.'

While *-ko* appears with a number of other categories, this paper focuses on PPs. I argue against an analysis of attribution in terms of Predicate Inversion, where the attribute is the inverted predicate of a Small Clause. Instead, I suggest that *-ko* realizes a functional head that establishes the necessary structural and semantic relationship between a head noun and its modifier without movement.

In the next section, some basic assumptions will be introduced and followed by an overview of the uses of *-ko* as a linker for adnominal PPs. In section 3, I will review three theories of attributive structure and provide a short overview of recent approaches to the internal structure of PP. I will develop my syntactic and semantic analysis in section 4, and close with a short outlook in the final section.

2 Obligatory linkers — the database

2.1 Preliminary remarks

There are basically two groups of morphemes in Basque that I will treat as postpositions here: one a class of (mostly) unbound morphemes, which I will call *free postpositions*, and one of bound morphemes. To this latter group I will refer by the term *bound postpositions* and the more traditional notion *attributive cases* interchangably. The two classes differ most notably in their syntactic freedom: while free postpositions can generally be freely coordinated (3), bound postpositions depend on the repetition of their complement noun or a co-referring pronoun, cf. (4) cited after de Rijk (1993:157). For further treatment of these two classes the reader is referred to Hualde (2002) and de Rijk (2008:34f.).[3]

(3) *zu-re kontra ala alde*
2SG-GEN against or for
'for or against you' (Hualde 2002:333)

[3] It should also be noted that there is variation with the analysis of some of the postpositions. The bound postposition *-gatik* 'because of' is treated as an attributive case marker by de Rijk (1993, 2008), but on par with the free postpositions by Hualde & Ortiz de Urbina (2003).

(4) a. *Sorgin-a-ren-tzat eta *(sorgin-a-ren)-gatik egin zen hau.*
witch-DET-GEN-BEN and witch-DET-GEN-because.of do AUX this
'This was done for the witch and because of the witch.'

b. *Sorgin-a-ren-tzat eta *(ha-ren)-gatik egin zen hau.*
witch-DET-GEN-BEN and 3SG.DEM-GEN-because.of do AUX this
'This was done for the witch and because of her.'

Regarding the availability of the linker, however, both classes behave the same. I therefore assume in line with Eguzkitza (1993) that DPs marked by an adverbial case can be treated on par with PPs (cf. Asbury 2008:ch. 2 for discussion and an argumentation for the P status of Hungarian adverbial case endings).[4] For ease of exposition and contrary to Eguzkitza (1993), I will assume that they themselves head the PP instead of being a morphological reflection of a phonologically empty P head. Apart from notational considerations this does not seem to affect the argument to be advanced here, though.

An initial reason to distinguish the grammatical cases (the upper part of Figure 1) from the bound postpositions is the way they tend to be expressed cross-linguistically: the adverbial cases by and large correspond to adpositional expressions in other languages.

Figure 1: Inflectional paradigm of *leku* 'place' – excluding the proximal plural, the partitive and the prolative, as well as the "relational" case, which is the subject of this paper (modified from Hualde & Ortiz de Urbina 2003:173, Table 59)

	INDEFINITE	DEFINITE		Translation
		SG	PL	
ABSOLUTIVE	leku	lekua	lekuak	-
ERGATIVE	lekuk	lekuak	lekuek	-
DATIVE	lekuri	lekuari	lekuei	-
GENITIVE	lekuren	lekuaren	lekuen	of a place
BENEFACTIVE	lekurentzat	lekuarentzat	lekuentzat	for a place
COMITATIVE	lekurekin	lekuarekin	lekuekin	with a place
INSTRUMENTAL	lekuz	lekuaz	lekuez	with a place
LOCATIVE	lekutan	lekuan	lekuetan	at a place
ABLATIVE	lekutatik	lekutik	lekuetatik	(away) from a place
ALLATIVE	lekutara	lekura	lekuetara	to a place
DIRECTIONAL	lekutarantz	lekurantz	lekuetarantz	towards a place
TERMINATIVE	lekutaraino	lekuraino	lekuetaraino	up to a place

Moreover, the grammatical cases depend on the case assigning verb for their "referential content" in Eguzkitza's terms.[5] To my understanding, this is to say that grammatical case marking has significance only in the context of the verb assigning it (along with a θ-role like AGENT or PATIENT). As for the genitive, Eguzkitza (1993:167f.)

[4] I will not deal with the partitive and prolative cases, although they seem to fit in with the grammatical cases. Cf. Hualde & Ortiz de Urbina (2003:184f.) for some remarks on their use.

[5] Note that this differs somewhat from the notion of referentiality I will make use of later on.

suggests that its referential content (POSSESSOR, THEME etc.) is similarly dependent on the head noun. The adverbial cases, on the other hand, "have their own referential content" (Eguzkitza 1993:166), i.e. they can be assigned some meaning independent of a larger context (which might mean that they themselves assign a θ-role).

Further, DPs bearing the grammatical cases Absolutive, Ergative and Dative are marked on the auxiliary. This is exemplified by the minimal pair in (5), where the auxiliary shows person-number agreement with the absolutive argument. Basque is a *pro*-drop language, therefore in the unmarked pattern first and second person referents need not be expressed by overt pronouns as indicated by brackets around the pronominal objects.[6]

(5) a. *Jon-ek (zu) ikusi z-aitu.*
Jon-ERG you.ABS see 2SG.ABS-AUX
'John has seen you$_{SG}$.'
b. *Jon-ek (gu) ikusi g-aitu.*
Jon-ERG us.ABS see 1PL.ABS-AUX
'John has seen us.'

Similarly, the person and number of ergative and dative arguments are reflected in the form of the auxiliary in specific ways (cf. e.g. Arregi & Nevins 2012). In contrast, nouns bearing one of the adverbial cases do not trigger any marking on the auxiliary. As the genitive is restricted to the nominal domain, this argument does not bear on its classification.

Finally, nouns marked with the grammatical cases cannot appear as complements of the morpheme *-ko*, which is under consideration here. On the other hand, this is no problem for adverbial cases or postpositional phrases, cf. (6)/(7) vs. (8)/(9). Note that the definite determiner *-a* in (6)-(8) is not part of the *-ko* phrase, but belongs to an elided noun, which is modified by the *-ko* phrase, cf. *the one* in the translation. This is unspectacular, since NP ellipsis in Basque regularly strands the cluster of determiner, case endings and bound postpositions on the final overt constituent of the DP.

(6) **etxe-ri-ko-a*
house-DAT-KO-DET

(7) **etxe-ren-ko-a*
house-GEN-KO-DET

(8) *harri-z-ko-a*
stone-INSTR-KO-DET
'the one out of stone'

[6] The examples are adapted from the lecture notes of Luis Vicente's 2009 seminar on Basque syntax at the University of Potsdam.

(9) *lotsa-gabe-ko* *emakume-a*
shame-without-KO woman-DET
'the shameless woman'[7] cf. Hualde & Ortiz de Urbina (2003:146)

So the overall structure that I will assume for adverbial "cases" is illustrated in (10). Note that while I stipulate an empty D head for non-definite *harri*, an analysis as a bare NP is also feasible.

(10) *harriz* 'with/out of stone'
[[harri]$_{DP}$ -z]$_{PP}$

2.2 The data

With the above remarks in mind, we can now turn to the data that are relevant to my argument in more detail. In this section, I will illustrate the dependence of adnominal PPs in Basque on the presence of the *-ko* morpheme, covering the bound and free postpositions addressed above. I will also give a short overview of the further distribution of *-ko* as a linker. Unless indicated otherwise, the data were elicited by myself from two consultants, both native speakers of Basque from the area of Gipuzkoa. The reader is reminded that the judgements are not concerned with the mere producibility of a given string of words, e.g. a PP followed by a DP, but rather with a structural configuration sketched in (11), where a PP and the following NP are part of the same DP.

(11) [[PP NP]$_{NP}$ D]$_{DP}$

2.2.1 Bound postpositions

We have already seen in (1) above that a benefactive PP can be used adnominally in the presence of *-ko*. While my consultants' comments indicate that in the case of the comitative matters may be somewhat more complicated, examples like (12-a) show that an adnominal use is also possible for comitative PPs in the presence of the linker morpheme *-ko*.

(12) a. *emakume-eki-ko* *diskriminazio-a*
woman-COM-KO discrimination-DET
'discrimination against women'
b. **[emakumeekin diskriminazioa]*$_{DP}$

Instrumental PPs can be used as nominal modifiers without complication as shown in the following expression:

[7] One of my consultants strongly preferred an analysis of *lotsagabe* as adjective, yielding *emakume lotsagabea* without any *-ko*. In spite of the spelling, Hualde & Ortiz de Urbina (2003) classify *gabe* as free postposition, cf. (22) for a more intuitive spelling variant.

(13) a. *euskara-z-ko hitzaldi-a*
Basque-INSTR-KO lecture-DET
'a lecture (given) in Basque' Hualde & Ortiz de Urbina (2003:146)
b. **[euskaraz hitzaldia]*$_{DP}$

As evidenced by (14-a), a locative phrase accompanied by the linker can appear as nominal modifier as well. Moreover, the example in (15) shows that the same holds for complex locational postpositions, based on locational nouns marked by the locative P (similar to English *in front of*). Note that the locative singular gives rise to complications, as the morpheme *-an* is missing in the context of the linker (15). This happens with locational nouns like *azpi* as well as with regular nouns (**mendi-an-ko/mendi-ko aitzuloak* 'the caves on the mountain'). I assume that in these cases the locative morpheme is still present, but unpronounced.[8] Further treatment of this subject cannot be provided here, but cf. Höhn (in preparation).

(14) a. *mendi-eta-ko haitzulo-a-k*
mountain-LOC.PL-KO cave-DET-PL
'the caves in the mountains' Hualde & Ortiz de Urbina (2003:145)
b. **[mendietan haitzuloak]*$_{DP}$

(15) a. *mahai azpi-Ø-ko katu-a*
table under-LOC.SG-KO cat-DET
'the cat under the table'
b. **[mahai azpi-an katu-a]*$_{DP}$
table under-LOC.SG cat-DET

The situation seems to be somewhat more complicated for the ablative. My consultants were most reluctant to produce the combination ABL+KO in standard examples as (16-a). Instead, they suggest the use of a relative clause or a version without ab overt case marker/postposition (*Donostia-ko trena*). For reasons of space, I cannot elaborate on this topic here.[9]

(16) a. ?**Donostia-ti-ko trena*
Donostia-ABL-KO train.DET
b. **[Donostia-tik trena]*$_{DP}$
Donostia-ABL train.DET

In spite of this complication, instances of ablative PPs in adnominal contexts can be found and were judged acceptable, e.g. (17-a). Note that in the absence of *-ko* these phrases are deviant in either case, cf. (16-b) and (17-b).

[8] Thence probably the "locative genitive" nature of *-ko* in traditional descriptions of Basque.

[9] An anonymous reviewer suggests that a general problem with ablative/source-related PPs as modifiers might be to blame, e.g. some sort of semantic restriction on the complement of the linker. This hypothesis is well worth exploring. In the light of the availability of an ablative interpretation for *Donostia-ko trena*, however, it seems more promising to me to consider a morphotactic explanation, possibly related to the behaviour of the locative singular noted above.

(17) a. *A-8 autobide-a-rekin Bilbo-ra-ko eta* ***Bilbo-ti-ko***
A-8 highway-DET-COM Bilbo-ALL-KO and Bilbo-ABL-KO
norabide-etan konekta-tze-ko bide-a
direction-LOC.PL to.connect-NOMINALIZER-KO road-DET
'the road to connect with highway A-8 in directions from and to Bilbao'[10]

b. **[Bilbo-tik norabide-a]*$_{DP}$
Bilbo-ABL-KO direction-DET

The case of the allative, directional and terminative is more straightforward again, as they uncontroversially appear in adnominal position. Again, *-ko* mediates between the PP and the modified head noun.

(18) a. *Thessaloniki-ra-ko hegaldi-a*
Thessaloniki-ALL-KO flight-DET
'the flight to Thessaloniki'

b. **[Thessalonikira hegaldia]*$_{DP}$

(19) a. *Donostia-ranz-ko bidai-a*
Donostia-DIR-KO journey-DET
'the trip towards Donostia'

b. **[Donostiarantz bidaia]*$_{DP}$

(20) a. *Bilbo-raino-ko bidai-a*
Bilbo-TERM-KO journeyDET
'the trip until Bilbo'

b. **[Bilboraino bidaia]*$_{DP}$

2.2.2 Free postpositions

With free postpositions we can observe the same behaviour, that is, they can head a phrase modifying a head noun if the linker is present. Note that several of the free postpositions in Basque are actually nouns marked for one of the adverbial cases in turn, like the complex locational expressions earlier in this section. The word *buruz* 'towards, about', for instance, consists of *buru* 'head' plus the instrumental postposition (Hualde & Ortiz de Urbina 2003:189). Hence, in a significant subset of the free postpositions we might actually be dealing with composite postpositions, headed by one of the bound postpositions already reviewed above.

(21) a. *fonetika-ri buruz-ko liburu*
phonetics-DAT about-KO book
'a book about phonetics' Hualde & Ortiz de Urbina (2003:189)

b. **[fonetikari buruz liburu]*$_{DP}$

[10] Retrieved from `http://web.bizkaia.net/home2/Bizkaimedia/`
⇒ `Contenido_Noticia.asp?TNo_Codigo=0&Not_Codigo=3415&Tem_Codigo=6` on May 31 2011.

(22) a. *Muga-rik Gabe-ko Sendagile-a-k*
border-PART without-KO doctor-DET-PL
'Doctors Without Borders'
b. **[Mugarik Gabe Sendagileak]*$_{DP}$

The crucial observation in all the cases, as evident from the deviance of the (b) examples, is that the presence of the linker *-ko* is obligatory, i.e. without its presence no attributive relationship can be established between a PP and the potential head noun. This is also the case in the expressions where I reported the adnominal use to be more controversial, namely the comitative and the ablative, cf. (12-b) and (16-b).

2.2.3 Further uses of the linker

It should be noted that the distribution of *-ko* as a linker in Basque is more pervasive than presented so far. While my main concern here is with the PP complements discussed before, an overview over the actual range of contexts the linker appears in is helpful to appreciate its significance in the grammatical system. A list of the relevant applications of the morpheme is given in (23).[11]

(23)

general type	*classification in Hualde & Ortiz de Urbina (2003)*
PP	"classical" PPs
	NPs marked for comitative case
	NPs marked for instrumental case
	NPs marked for any local case
	"bare NPs"
adverbs	lexical adverbs
	adverbs made by suffix *-la(n)*
	morphologically complex adverbs
	adverbs constructed from NPs by *-ka*
non-finite clause	adverbial participles with *-ta/-(r)ik*
finite clause	finite adverbial clauses
	finite complement clauses

A concise overview and further examples are provided by Hualde & Ortiz de Urbina (2003:144-148). The examples in (24) and (25) are adapted from there to illustrate the adnominal use of adverbs and adverbial finite clauses respectively. The glosses are my own.

(24) *atzo-ko egunkari-a*
yesterday-KO newspaper-DET
'yesterday's newspaper'

[11] While there is not sufficient space to address the issue here, I assume that the apparent bare NP complements of the linker can actually be analyzed as PPs.

(25) a. *izarr-a agertu zitzaiene-an*
star-DET appear AUX.(COMP$_{en}$)-LOC
'when the star appeared to them'
b. *izarr-a agertu zitzaiene-ko garai-an*
star-DET appear AUX.(COMP$_{en}$)-KO time-LOC
'at the time when the star appeared to them'

Most of the questions raised by the last three classes of complements in (23) have to remain unaddressed here. Nonetheless, a unified analysis of all these cases seems desirable, and I think the general spirit of the proposal made here for PPs should eventually be extensible to the remaining instances of the linker.

3 Theories of attribution and PP structure

In this section I will give a short overview over three approaches to the syntactic structure of attributive modification, in particular as involving attributive linkers, and outline a recent take on PP structure.

The analysis of attributive linkers by den Dikken & Singhapreecha (2004) is based on a series of movement operations, first of all Predicate Inversion, for which the linkers are supposed to be (semantically void) markers. The other two approaches resemble each other in that they both assume a functional projection as a direct mediator of the attributive relation. But while Rubin (2002) proposes to introduce a new functional head Mod, Struckmeier (2007) and von Prince (2008) extend the notion of the independently established head C.

3.1 Small Clause origins: The PI-approach

Dealing primarily with French *de* and Thai *t^{h}îi*, den Dikken & Singhapreecha (2004) propose an analysis of linker constructions in terms of Predicate Inversion (PI), i.e. movement of a predicate around its subject.[12]

In their view, the obligatory presence of a linker morpheme between a modifier and a modifiee in quantificational contexts is an indication for the application of PI. In particular, the linker is found in conjunction with wh-phrases and indefinite pronouns, and it is at least preferred in constructions involving focus as well, as exemplified in (26).

(26) den Dikken & Singhapreecha (2004:4, (5)) (French)
a. *Qui *(de) sérieux as-tu recontré?*
who DE serious have-you met
b. *Rien *(d') extraordinaire n'est arrivé ce matin.*
nothing DE extraordinary not-is happened this morning
c. *Je n'ai mangé que* DEUX *pizzas ?(de) chaudes.*
I not-have eaten but two pizzas DE hot

[12] The same kind of analysis is also advocated by den Dikken (2006).

The authors cite the accounts of Moro (1997) and den Dikken (1995) of the distribution of the copula in Small Clause constructions like (27). In the canonical order in (27-a) the copula is optional, while it is obligatory in (27-b). According to the proposed analysis, Predicate Inversion has taken place in (27-b) and the copula is required "to signal the fact that there has been syntactic movement of the predicate of the SC [...] across its subject" (den Dikken & Singhapreecha 2004:10). Regarding the attributes in (26), den Dikken & Singhapreecha argue that they also are predicates that have been inverted around their subject.

(27) a. *I consider John (to be) my best friend.*
b. *I consider my best friend *(to be) John.*

This movement is triggered by a functional head, realized by the attributive linker (*de* in French and *t^{h}îi* in Thai), that hosts the inverted predicate in its specifier. This would yield a word order with the attribute preceding the head noun. In their view, this effect can be reverted again in the subsequent derivation[13] by movement to a classifier phrase (ClP), in which case the attributive linker remains as the only segmental indication of the PI process.

Moreover, den Dikken & Singhapreecha suggest that another indication of PI is the inversion of information structure in the sense depicted in den Dikken & Singhapreecha (2004:8, (10)), reproduced here in (28): the inverted predicate *my best friend* in (28-b) has to be interpreted as old information.[14]

(28) a. *John is my best friend.*
OLD NEW
b. *My best friend is John.*
OLD NEW

Analogously, in the given analysis the attributive expression in linker constructions is assumed to have topic status, giving rise to a contrastive (topic) reading (den Dikken & Singhapreecha 2004:26), e.g. on *chaudes* in (26-c).

3.2 A new functional category: The Mod-approach

Rubin (2002, 2003) proposes a new functional category Mod to account for nominal and sentential modification. Among others, his discussion is based on data from Taga-

[13] "In fact, the surface word order is much closer to what we would have had if we had not moved *chaude* around its subject. [...] Apparently, the word-order effect of Predicate Inversion is undone later in the derivation." (den Dikken & Singhapreecha 2004:16)

[14] Note that contrary to the glossing, the sentence in (28-a) can answer not only question (i), but also (ii) with appropriate intonation. The important point is that (28-b) is a proper reply only to (ii).

(i) Who is John?

(ii) Who is your best friend?

log, Romanian and Mandarin Chinese – languages also considered by den Dikken & Singhapreecha (2004). In his model, ModP closes off the extended projection of any category that acts as a modifier, cf. the sketch in (29).

(29) $[_{\text{ModP}}$ Mod $[_{\text{XP}} \ldots]]$ Rubin (2002:ch.1, p.2, ex. (1))

Rubin motivates this view by the appearance of linkers in a variety of languages, claiming also that they are not exclusively *attributive* linkers, but that they are used for modification in the nominal and the sentential domain. Additionally, he argues that adopting a functional category Mod can help to solve the theory-internal problem of generating adjuncts.

In a Bare Phrase Structure model of grammar (cf. Chomsky 2001), the basic operation for constructing syntactic objects is Merge, which has two variants: set-Merge and pair-Merge. The former one – which "comes 'free,' in that it is required in some form for any recursive system" (Chomsky 2001:6) – applied to two syntactic objects α and β produces an unordered set (30). Pair-Merge, on the other hand, yields an ordered pair (31), α adjoined to β, exempt from relations like contain and c-command (Chomsky 2001:18).

(30) set-Merge(α, β) = $\{\alpha, \beta\}$[15]

(31) pair-Merge(α, β) = $\langle\alpha, \beta\rangle$

As in this conceptualization it is not an *a priori* property of a constituent to be an adjunct, but rather an artifact of the derivation, the question arises how the computational system decides when to apply pair-Merge instead of set-Merge. Rubin suggests that it is a formal property of Mod that secures that pair-Merge is used whenever ModP is combined with another constituent (Rubin 2002:ch.5, Rubin 2003).

Semantically, he proposes that Mod is "essentially relational in nature, linking the extended projection of which it is part to some other extended projection" (Rubin 2002:ch.5, p.10). Insofar, Mod compares to Rizzi's (1997) Force head in the C-field and to the (root) functional projection in the nominal domain (either D or K), which perform their relational duty by turning their complements into arguments. Mod only differs from them in that it makes a modifier instead of an argument out of its complement.

He proposes a denotation along the lines of (32) for the Mod head, which opens up ways to simplify the semantic machinery involved in modification. One of those will be taken up in my analysis in section 4.2.

(32) $\lambda P \lambda Q \lambda x.P(x) \wedge Q(x)$

[15] This formalization fits the characterization of (set-)Merge as symmetrical (Chomsky 2001:18). Note that Chomsky (1995:246), on the other hand, explicitly characterizes Merge(α, β) as asymmetric and uses a formalism in which the head α is directly indicated: $\{\alpha, \{ \alpha, \beta\}\}$.

3.3 The C-approach and a typology of referential types

In the class of theories presented by Struckmeier (2007, 2009, 2010), Kremers & Struckmeier (2007) and von Prince (2008), the relation between head and modifier is also brought about by a functional head, but the linkers are analyzed as a subclass of the established category C.

Struckmeier (2007, 2009, 2010) takes attribution in German as a starting point for a unified analysis of prenominal attributive structures in this language. That theory is extended to Standard Arabic by Kremers & Struckmeier (2007). Prenominal attributes in German have a morpheme on their right edge, commonly viewed as Case-Gender-Number agreement (CGN) with the head noun, cf. (33).

(33) *die sich$_i$ treu-**e** Frau$_i$*
the REFL.DAT true-CGN woman
'the woman who is true to herself'

Struckmeier, however, suggests that the apparent CGN-agreement represents a functional head which defines a phase and probes for an argument from inside its complement. That argument, a silent operator *op*, is raised to the specifier of the CGN-head and can be identified with the head noun from that position in the edge of the phase. Like Rubin, Struckmeier assumes adjunction of the modifier to the modified constituent. By assimilating relative clauses to his analysis for participles and adjectives, his theory can account for the different kinds of prenominal modifiers in German.

Struckmeier introduces the notion of referential heads to capture the relationship between CGN, D and C as in (34). In his conception, these categories can be arranged along two dimensions in a 2×2 scheme. On the one hand, they differ in the domain they operate on. Matrix and subordinate C relate to the sentential domain and hence operate on sets of indices,[16] whereas D and CGN are associated with the nominal domain and operate on sets of individuals. On the other hand, the referential heads can be distinguished with respect to the way they operate on these sets. One class, comprising matrix C and D, independently establishes reference. Subordinate C and CGN, by contrast, only serve to restrict the reference of a given set.

(34) Struckmeier's (2009) R heads

	Reference to sets of indices	Reference to sets of individuals
Matrix	CP (head = V_{fin} in German)	DP (head = D in German)
Subordinate	CP (head = complementizer)	Attribute (head = attributizing morphology in German)

Each of the heads represented above is, in turn, expected to be available with four possible feature combinations: with or without an EPP feature depending on whether

[16] Or whatever it is that sentences refer to.

a constituent is moved into the specifier of the phase head; and another, possibly binary, feature that determines whether the complement is finite.

Von Prince (2008) investigates attributive linkers (AL) in Mandarin Chinese, Hindi and Swahili,[17] which can link a variety of different categories to a head noun: finite and non-finite TP, adverbs and NPs, as well as numerals in Swahili and PPs in Mandarin Chinese. The latter case provides a particularly neat parallel to the Basque data addressed here, cf. (35) cited from von Prince (2008:7, (14)).

(35) *nǎi lǐ de dànbáizhǐ*
milk in AL protein
'the protein (contained) in milk' (Mandarin Chinese)

She advances a typology of C heads that basically corresponds to the lower cells of (34), relating ALs to subordinate C. Although her analysis differs in technical details, it is basically compatible with Struckmeier's approach to German, indicating a unification of CGN and ALs under the "Attribute" cell of the table.

An initial reason for adopting an analysis for ALs and CGN as C is, rather trivially, the inappropriateness of two other well established functional categories, D and T, for the job and a tendency to avoid the introduction of new functional categories. More importantly, though, their "subordinating" character relates them to subordinate C in general as displayed in (34), and even more so to relative clauses, which are rather commonly assumed to be headed by C. Note, furthermore, that in Struckmeier's typology the heads of (restrictive) RCs do not pattern with the C that introduces subordinate clauses because of the different domain they operate on (sentential vs. nominal reference). On a similar note, the inclusion of participles – themselves arguably TPs – in Struckmeier's analysis necessitates a projection on top of TP to allow semantic abstraction and coindexation of a TP-internal argument with the head noun. In parallel to relative clauses, CP is the projection of choice (Struckmeier 2007:50ff.). Nonetheless, this move necessitates an extension of the understanding of the category C, as in contradistinction to classical C, AL and CGN do not head argument clauses and they potentially take complements other than TP.

I will reject the PI-approach for my analysis in section 4 and adopt the general line of thought that the linker heads a functional projection that "glues" together the modifier and the modifiee in Rubin's terms. While it will not be possible to distinguish between the Mod- and C-approaches empirically here, a general comparison of their theoretical implications will be provided in section 4.1.

3.4 The higher end of PPs

Regarding the internal structure of PPs, several recent proposals have advanced the idea that they show a similarly fine-grained skeleton of functional projections as sentential and nominal projections (Svenonius 2008; Koopmann 2010; den Dikken 2010 among others). Some authors, notably den Dikken (2010), have suggested parallels between these domains.

[17] In her conclusion, she also mentions Basque *-ko* as a possible AL.

For current purposes I will not go into the details of the different proposals. What is relevant for my argument is that at least two of them, namely Koopmann (2010) and den Dikken (2010), assume the availability of a C projection at the high end of the extended projection of P, motivated mainly by the possibility of certain types of pronouns to move out of the PP in Dutch. While Koopmann restricts C to Place, den Dikken's model is more permissive in the sense that he allows C at the top of both the Path and Place projections, cf. the structure in (36).

(36) $[_{\textbf{CP(Path)}}\ \textbf{C(Path)}\ [_{\text{DegP(Path)}}\ \text{Deg(Path)}\ [_{\text{PathP}}\ \text{Path}\ [_{\textbf{CP(Place)}}\ \textbf{C(Place)}$
$\Rightarrow [_{\text{DegP(Place)}}\ \text{Deg(Place)}\ [_{\text{PlaceP}}\ \text{Place}\ [_{\text{AgrP}}\ \text{Agr}\ [_{\text{PP}}\ P_{\text{LOC}}\ \text{DP}\ ]]]]]]]]$

I take these proposals about the structure of PPs as an independent indication that more functional structure is present in PPs than meets the eye. Incidentally, these accounts choose to label the highest available functional projection as CP, thereby opening up a parallel to the C-approach to attribution introduced before.

4 Licensing attributive PPs

In this section I will outline an analysis for Basque *-ko* as a realization of a functional category at the high end of the extended projection of PPs. My analysis, obviously, relates to the two theories of attribution introduced in the previous section which assume a functional head, either Mod or C, to be responsible for creating an attribute. I will first discuss the syntactic part of the analysis and then consider its semantic aspects. The section concludes with some further observations regarding my proposal.

4.1 Syntactic considerations

Remember what the data presented in section 2 has shown us: the *-ko* morpheme appears obligatorily on the right edge of a number of categories in adnominal contexts, in particular its presence is mandatory for licensing PPs in adnominal position. Now what is it that brings about the obligatoriness of *-ko*, and how does it figure in the grammatical system of Basque?

My answer to the first question hinges on the crucial role *-ko* plays at the syntax-semantics interface, so part of the answer needs to be postponed until the next subsection, where I will deal with the linker's semantic contribution explicitly. On the other hand this question is also closely related to the syntactic analysis of *-ko*, and the issue of its role in the grammatical system at large. Therefore I will start by addressing these questions first.

4.1.1 Classical analyses

As mentioned in fn. 8, traditional descriptions of Basque often classify *-ko* as part of the case system, in particular as a "locative genitive". Even if one takes into consideration the possibility of compound postpositions, this seems obviously flawed in the light of the distribution of *-ko* as presented in section 2: it attaches to a lot of PPs that

are not spatial, and even in the bulk of the spatial PPs it would be rather unexpected to find a locative P following a directional one, cf. for instance (18-a) repeated as (37).

(37) *Thessaloniki-ra-ko hegaldi-a*
Thessaloniki-ALL-KO flight-DET
'the flight to Thessaloniki'

Directional PPs are unanimously assumed to be structured the other way around, with a locative projection dominating the directional one, cf. (36). Assuming a right-headed structure for Basque, a locative morpheme should therefore linearly precede a directional morpheme. This can, for instance, be observed in the indefinite ablative *leku-ta-tik* (Figure 1), where *-ta* could feasibly be analyzed as allomorph of the locative *-tan* (Höhn in preparation). Even invoking postsyntactic processes of morpheme reordering would not solve the problem of the non-spatial complements. The various non-PP complements to *-ko* are even harder to reconcile with an account in terms of a locational case marker (or postposition) in any contentful understanding of the notion, so the "locative genitive" classification does not offer a particularly helpful description, let alone an explanation of the distribution of *-ko*.[18]

A relational property seems to come closer to the actual contribution of *-ko*. Its description as a relational suffix in Hualde & Ortiz de Urbina (2003) is therefore much more enlightening. Nonetheless, they include it in their list of case endings.[19] I will not adopt this analysis because it would force us to adopt a very broad notion of what (even morphological as opposed to abstract) "case" means. In my opinion, this move would render the term "case" too blurry to be of much use.

4.1.2 Functional head

In order to proceed, I want to first establish that *-ko* is a functional head. Consider the following characteristic properties of functional elements cited from Abney (1987:43f.):

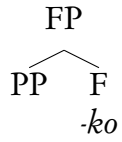
1. Functional elements constitute closed lexical classes.
2. Functional elements are generally phonologically and morphologically dependent. They are generally stressless, often clitics or affixes, and sometimes even phonologically null.
3. Functional elements permit only one complement, which is in general not an argument. The arguments are CP, PP, and (I claim) DP. Functional elements select IP, VP, NP.
4. Functional elements are usually inseperable from their complement.
5. Functional elements lack what I will call "descriptive content". Their semantic contribution is second-order, regulating or contributing to the interpretation of their complement. They mark grammatical or relational features, rather than picking out a class of objects.

Almost all of these apply to *-ko*. Even pending further insights into what – if any – other elements might belong to the same category as *-ko* (possible candidates

[18] Cf. fn. 8 for a hint to a possible source of this classification.
[19] Without necessarily subscribing to particular theoretical claims, though.

being the relative marker *-n* and the genitive marker *-(r)en*), it seems clear that the number of items is fairly restricted. Quite obviously, the linker is phonologically dependent and inseparable from its complement. Also, its semantic contribution can be characterized in the manner proposed by Abney as "regulating the interpretation of [its] complement", cf. the notion of *relational* suffix. The only property with a problematic result is the third one: while I am only dealing with PP complements in this thesis, according to the overview in section 2.2.3 it seems that *-ko* can take various other complements, such as Adverbs, TPs and CPs.

As Abney (1987:43) notes, however, "none of the [...] properties are *criterial* for classification as a functional element". So under the plausible assumption that *tertium non datur*, i.e., something is a functional category or not, I submit that the evidence supporting an analysis as a functional element outweighs the possible complications. Abstracting away from possible additional functional structure, this yields the minimal configuration in (38), with a functional element taking PP as its complement in my dataset. In principle, this works analogously for complements of other categories.

(38)


4.1.3 A categorical question of categorization

Now what kind of functional category may *-ko* realize? An alternative to the analysis as a case marker mentioned before would be to sever *-ko* from the grammatical cases and to treat it as a postposition. This is proposed by Eguzkitza (1993), in analogy to the analysis of the adverbial cases as postpositions put forward in section 2.1. If one adopts the view that adpositions are a functional category, this seems a valid option indeed. The fact that the linker takes a variety of complements other than NP/DP might be seen as an admissible extension of our understanding of P in the light of the provisions that had to be made above for the violation of Abney's third criterion (only complements of one type).

Nonetheless, this kind of extension would mean that we have an instance of P that cannot take DP complements at all (39).

(39) **etxe-a-ko*
house-DET-KO

This is contrary to the behaviour typically expected for P cross-linguistically. While cases of Ps with non-DP complements can arguably be observed, e.g. *before he came*, giving rise to analyses collapsing the categories P and C (Emonds 1985), it is part of their traditional core properties that adpositions can take DP complements. Therefore I think the costs for a P analysis of *-ko* are overly high, considering that presumably less costly – and I think eventually more insightful – alternatives are available.

The PI-approach for attributive linkers of den Dikken & Singhapreecha (2004) and den Dikken (2006) does not seem to be applicable either. None of the criteria for

PI apply to the Basque data presented above. Neither is the presence of *-ko* sensitive to quantification in any way, nor does *-ko* give rise to any shift in terms of information structure for a DP containing a *-ko* phrase. Under this approach one should expect to find *-ko*-less variants of the adnominal phrases usually found with the linker. Yet there are no minimal pairs alternating in the presence/absence of the linker. Also, according to speaker's intuitions, *-ko* constructions do not give rise to a marked information structure.

Moreover, the PI approach takes the linker to be the trigger for movement of a predicate around its subject, implying a structure like (40) for the phrase in (37). It seems plausible that *-ko* heads its own phrase: the common element in the variety of possible expressions involving the linker and behaving as adnominal modifiers is in fact *-ko*. That makes it natural to assume that *-ko* is in fact the head of the modifying phrase. The predicted structure in (40), however, makes *-ko* or the head of the whole phrase. Under the assumption that D is responsible for argumenthood, it is not at all clear to me how (40) would account for the fact that the argumenthood of the whole phrase seems to be contingent on the deeply embedded D head of *hegaldia*.

(40) $[_{FP}$ [Thessalonikira]$_1$ F/*-ko* $[_{SC}$ $[_{DP}$ hegaldia] t_1]]

Eventually, it seems more plausible to me to assume that *-ko* is not semantically empty as suggested by the PI theory, but that it represents a functional category with some interpretive contribution (even if no "descriptive semantic content"), namely the establishment of a relation between its complement and its head noun. I will elaborate on this in the next subsection. I conclude that - irrespective of the possible benefits of a PI approach for the explanation of other phenomena - it does offer a conclusive explanation for the Basque data at hand.

As for functional categories such as T or D, they do not seem to be plausible candidates either, as they are rather associated with temporal properties and argumenthood, respectively. This leaves us with the two options taken by the two remaining theories for attributive linkers reviewed above: either the C-approach presented in section 3.3 or the Mod-approach from section 3.2.[20]

4.1.4 Two equivalent alternatives

Superficially, it seems that both approaches agree in holding a functional element in the extended projection of modifiers[21] responsible for bringing about attribution, but they differ in which label they assign to the head. Yet, as the theoretical status of labels is not quite clear, I deem it worthwhile to leave notational issues aside and to attempt to uncover their basic point of divergence.

Their crucial difference seems to be rooted in Rubin's strong claim about the role of Mod in structure building, namely that it triggers pair-Merge and thereby "creates" adjuncts. Consequently, his Mod covers adnominal as well as adverbial modifiers (including both manner and sentential adverbs if my understanding is correct). The

[20] Marcel den Dikken (p.c.) raises the further possibility of analyzing *-ko* as a RELATOR in terms of den Dikken (2006). A comparison with the C/Mod-approach pursued below has to be left to future research.

[21] Note that only Rubin is explicitly using this notion, for the C-approaches it is my interpretation.

C-approaches, on the other hand, do not show this close relationship between the features or the category involved in attribution and the type of syntactic merger.

Both analyses make use of a larger system of assumptions about the relation between certain functional categories. In accordance with his claim about the workings of adjunction, Rubin's approach relies on the function of functional projections as the "glue" of structure building. He distinguishes C and D from Mod. The former two are responsible for the argument status of their complements (this also extends to main clause C, cf. Rubin 2002:ch.5, fn.4), while Mod identifies its complement as a modifier. In contrast, the C-approaches concentrate on the impact of the functional heads at the conceptual-interpretive interface, i.e. how they induce reference (independently vs. restrictively) to what (indices, or however one characterizes the reference of sentences, vs. individuals). Figure 2 visualizes these relations.

Figure 2: Referential systems

	indices	individuals
independent	C_{main}/R1	D/R3
restrictive	C_{subord}/R2	CGN,AL/R4

(a) C-approach

	sentential	nominal
argument	C	D
modifier	Mod	

(b) Mod-approach

The representation of the Mod-approach is my interpretation of Rubin's exposition. The illustration of the C-approach is adapted from Struckmeier (2007:169), in particular the alternative R labels for "referential head". The fact that Struckmeier introduces these labels indicates that the labelling difference between the two approaches is indeed just that. As a matter of fact, even the C-approaches introduce a "new" functional head, and at least Struckmeier implies yet another distinction between main and subordinate C.

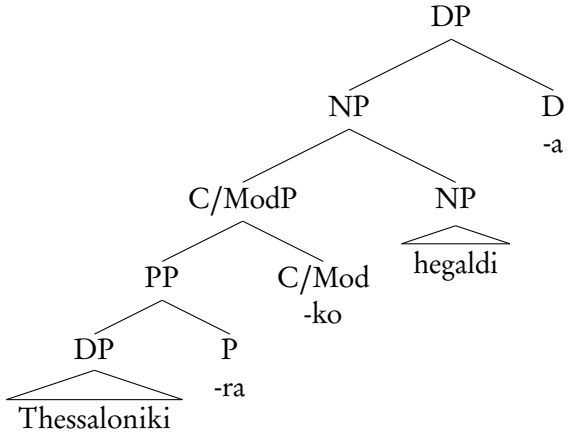
Thus, the choice of C as a label for CGN and AL seems to be mainly a pointer to the parallel between Struckmeier's R2 and R4 in terms of their role as restrictors (cf. especially von Prince 2008:42f. for an argument along this line), and might additionally owe to an implicit convention that it is often C or an equivalent (D) that closes an extended projection. This, in turn, seems to parallel den Dikken's (2010) C(Place) and C(Path) heads, which are the highest heads in the extended projection of PP in his conception and seem to be identified as C mainly for that reason. In any case, at no rate is labelling the defining difference between the C- and Mod-approaches.

In fact, regarding nominal modification, the lower right cell in both of the above representations, it seems that the two theories are indiscernible in practice. Apart from plain adverbs, which do not seem to figure at all in the C-approach system, another domain for which I would assume them to make different predictions are complementizers: in my understanding, the complementizers that introduce complement clauses (*that, if*) should fall in the R2 category of the C-approach and pattern with adverbial complementizers (*when, while*), while under the Mod-approach the former should assimilate to (plain) C and the latter to Mod.

On the basis of the current dataset, however, a decision between the two models

is not possible, as it neatly falls into the R4 or "lower right" category, for which both approaches seem to make the same predictions. Nevertheless, this serves to corroborate an analysis of *-ko* as a functional category at the top of the extended projection of various categories, in the present case that of P.[22] This yields a structure like (41) for the DP in (37).

(41) *Thessalonikirako hegaldia* 'the flight to Thessaloniki'



Now we can begin an answer to the initial question about the obligatoriness of *-ko*. The C-approach tells us that *-ko* is crucial in restricting reference to individuals, that is, for the establishment of an attributive relation between an NP and another constituent. If *-ko* is missing, this relationship cannot be established.

If we follow the Mod-approach, we get an even stronger prediction because the presence of *-ko* is an essential marker for the computational system in order to introduce its complement PP into the syntactic derivation by means of pair-Merge. In the absence of the linker, the PP could only be set-Merged, or alternatively the derivation might crash altogether.

4.2 Semantic considerations

I will now go on to examine the semantic contribution of the linker in more detail. The general framework for semantic composition I assume here is type-driven interpretation as developed by Heim & Kratzer (1998). They introduce two basic compositional operations: Functional Application for argument saturation, and Predicate Modification for non-saturating composition.

[22] A reviewer raises the question why that FP should be part of an extended projection. Considering that it might not (strictly) select for the category of its complement (section 2.2.3), it could be a category-neutral functional head. This is an important concern. Note, however, that a denotation like (32) does not trivially extend to cases with an adverbial complement or other non-PP complements. Insofar, while all these instances of *-ko* are clearly related, they could still be homophones, differing in their selectional properties and semantic specification. In that case they should share their complement's categorial features and therefore form an extended projection with their selected complement.

On a different note, Grimshaw (2005:9) suggests that functional heads might "take only complements that they form extended projections with." If this is true, even a category-neutral C/Mod head has to form an extended projection with its complement.

(42) Functional Application (Heim & Kratzer 1998:44)
If α is a branching node, $\{\alpha, \beta\}$ is the set of α's daughters, and $[\![\beta]\!]$ is a function whose domain contains $[\![\gamma]\!]$, then $[\![\alpha]\!] = [\![\beta]\!]([\![\gamma]\!])$.

(43) Predicate Modification (Heim & Kratzer 1998:65)
If α is a branching node, $\{\alpha, \beta\}$ is the set of α's daughters, and $[\![\beta]\!]$ and $[\![\gamma]\!]$ are both in $D_{\langle e,t\rangle}$, then $[\![\alpha]\!] = \lambda x \in D_e.[\![\beta]\!](x) = 1 \wedge [\![\gamma]\!](x) = 1$.

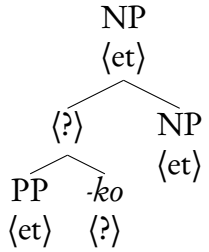
In this section, I will argue that a non-saturating semantic operation like Heim & Kratzer's (1998) Predicate Modification (PM) is not necessary for the semantic analysis of the data at hand and that, in fact, the assumption that no such operation is available for attribution in Basque can explain the obligatoriness of the linker with attributive PPs. My approach parallels a proposal by Nicolae & Scontras (2011). On the basis of Tagalog data, they argue that linker morphology provides an argument for simplification of the semantic component by abandoning PM. This train of thought, although with a different focus, is also manifest in Rubin (2002).

4.2.1 Compositionality

As noted in the preceding section, by virtue of heading a modifying phrase the linker is responsible for restricting the reference of the NP it adjoins to. Assuming with Heim & Kratzer (1998:65f.) that PPs denote properties, i.e. they are functions from individuals to truth values, let us consider how the linker brings about the relation between the predicates denoted by the PP and the NP.

In terms of semantic types, *-ko* connects two constituents of the type ⟨e,t⟩. Adopting the structure (44) as proposed in the previous section, *-ko* may be either of two types depending on the semantic operations one allows.

(44)



Under the assumption that a non-saturating operation like PM as defined in (43) is available, one could assume the linker to be effectively semantically void, so that the composition of PP and *-ko*yields a semantic object of type ⟨e,t⟩. At the two crucial nodes the interpretation of (37) would work as shown in (45).

(45) Type(*-ko*) = ⟨⟨e,t⟩, ⟨e,t⟩⟩

a. FA($[_{\text{PP},\langle et\rangle}$ Thessaloniki-ra], $[_{\text{C},\langle et,et\rangle}$ -ko])
⇒ $[_{\text{CP},\langle et\rangle}$ Thessaloniki-ra-ko]

b. **PM**($[_{\text{CP},\langle et\rangle}$ Thessaloniki-ra-ko], $[_{\text{NP},\langle et\rangle}$ hegaldi])
⇒ $[_{\text{NP},\langle et\rangle}$ Thessaloniki-ra-ko hegaldi]

Under this view, *-ko* might function as an indicator or flag for the semantic component that Predicate Modification should be applied (Chung & Ladusaw 2004; Nicolae & Scontras 2011). Essentially, then, composing the [PP *-ko*] complex with its sister NP in Basque is tantamount to directly composing an attributive PP with an NP in an English-type language without a linker.

Alternatively, the contribution of the linker might be to map the type of its complement, ⟨e,t⟩, onto the higher type ⟨⟨e,t⟩, ⟨e,t⟩⟩. In that view, the linker itself is of type ⟨⟨e,t⟩, ⟨⟨e,t⟩, ⟨e,t⟩⟩⟩. Consequently, the NP containing the head noun is contained in the domain of the resulting semantic object. Every step in the composition is saturating then and only Functional Application is needed for semantic interpretation (46). Both approaches yield the same interpretation for the NP including the adjoined *-ko* phrase: a crude approximation to its denotation is represented in (47).

(46) Type(*-ko*) = ⟨⟨e,t⟩, ⟨⟨e,t⟩, ⟨e,t⟩⟩⟩

a. FA($[_{PP,\langle et\rangle}$ Thessaloniki-ra], $[_{C,\langle et,\langle et,et\rangle\rangle}$ -ko])
⇒ $[_{CP,\langle et,et\rangle}$ Thessaloniki-ra-ko]

b. **FA**($[_{CP,\langle et,et\rangle}$ Thessaloniki-ra-ko], $[_{NP,\langle et\rangle}$ hegaldi])
⇒ $[_{NP,\langle et\rangle}$ Thessaloniki-ra-ko hegaldi]

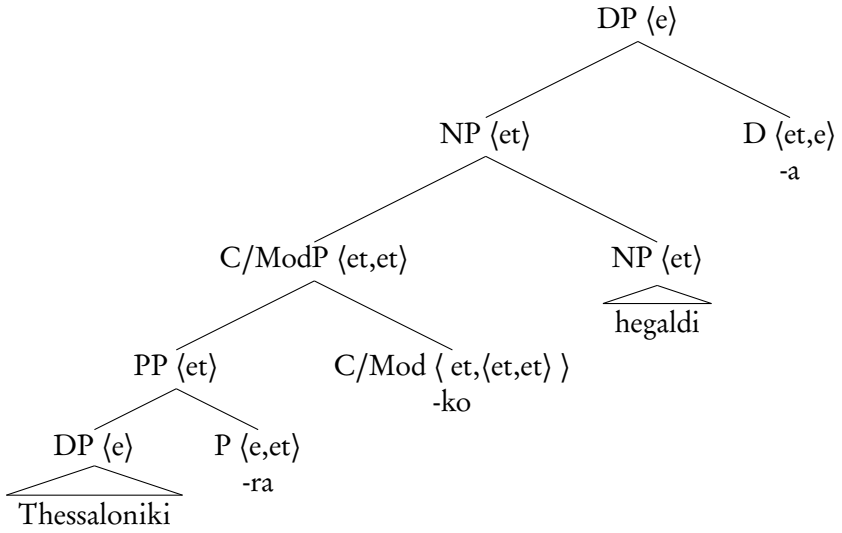
(47) ⟦ Thessalonikirako hegaldi⟧ = λx.flight(x)∧to(x, thessaloniki')

While both possibilities yield the same interpretive result (47), abandoning PM potentially results in a simplification of the semantic component, in line with Nicolae & Scontras's (2011) argument. Moreover, the PM approach raises the question why some languages need to encode the compositional mechanism overtly (and structurally, assuming the syntactic discussion above), while languages like English get by without that. Pending an answer to this question and considering the economic advantage, I opt for the second view, which makes use of only one compositional mechanism. This version is also implied by Rubin's discussion of Mod, with the denotation in (32), repeated here for convenience as (48).

(48) λPλQλx.P(x)∧Q(x)

Thus, the linker is an operator that takes two properties (type ⟨e,t⟩), conjoins them and has them apply to the same individual as introduced by the lambda-bound variable x. For a representation of the semantic types of the constituents of the phrase (37) under this view, compare the illustration in (49). This shows that semantic composition can be restricted to the same saturating operation, FA, for these attributive structures.

(49)



4.2.2 Obligatoriness at last!

Eventually, dispensing with PM also offers the missing part of my explanation for the obligatoriness of the linker with attributive PPs: if only FA is available in the semantic component, then there is no way to directly combine two elements of the same semantic type such as a PP and an NP (50).

(50) a. *[[Thessaloniki-ra]$_{PP}$ hegaldi]$_{DP}$
b. FA([$_{PP,\langle et\rangle}$ Thessaloniki-ra], [$_{NP,\langle et\rangle}$ hegaldi])
⇒ **???**

In the absence of *-ko* the input to the semantic interpretation fails to fulfill the precondition for FA that one sister be contained in the domain of the other. If indeed no non-saturating operation is available, then no interpretation can be assigned to the mother node of the PP and the NP because both are of the same semantic type. In consequence, the term linker finds itself justified in a rather technical sense, as it is indeed needed to semantically link the modifier and the modifiee.

4.2.3 The role of PM

I want to conclude with a few architectural considerations that my analysis gives rise to. The hypothesis of the unavailability of non-saturating compositional mechanisms, which lies at the heart of my argument, comes in three variants. The weakest claim is that PM or the likes of it are banned in the domain of modification in Basque, but may be available in other parts of the grammar. A stronger hypothesis asserts the complete absence of non-saturating operations (at least of the type envisaged here) in Basque. The strongest claim would completely eliminate non-saturating operations from the semantic component.

The first option, while compatible with the data, does not seem very attractive. In fact, not even my initial motivation for investing the linker with a semantic function would hold: by allowing PM elsewhere in the grammar we would not simplify the semantic component in the first place. Moreover, it seem neither *a priori* plausible nor conceptually desirable that semantic operations should be excluded from apply-

ing in certain domains. So in the absence of strong evidence in favour of such domain sensitivity, I propose to reject this option.

Let us therefore dismiss the first variant, and instead refer to the second variant as the weak claim. The gist of that view is that languages differ parametrically in whether or not they offer a non-saturating compositional operation.[23] In this case, the presence of linking morphology in languages like Basque would indicate the absence of PM, while languages without overt linkers, e.g. English, would feature PM to deal with apparent type clashes, for instance when dealing with attribution. In consequence, overt linkers could function as a bootstrap for language acquisition.

The strong alternative holds that all semantic composition is homogenuously saturating. In order to maintain the tenets of compositionality and type-driven interpretation, this implies that attributes cross-linguistically need to be of type ⟨⟨e,t⟩,⟨e,t⟩⟩ at the point of composition with the modified head, also in languages like English. This, in turn, seems to call for lexical ambiguity between predicative and attributive modifiers: ⟨e,t⟩ for predicative (one-place) adjectives, ⟨⟨e,t⟩,⟨e,t⟩⟩ for attributive ones; ⟨e,⟨e,⟨e,t⟩⟩⟩ for predicative two-place adpositions and ⟨e,⟨⟨e,t⟩,⟨e,t⟩⟩⟩ for their attributive version.[24]

There is, however, a conceivable alternative that avoids lexical ambiguity and still retains strict compositionality. It could be that functional heads of the kind described here are universally present, and languages just differ in whether or not these heads are expressed overtly by attributive linkers or comparable morphological means. English, for instance, would basically generate the same structure as proposed here for Basque, with the surface difference that the functional morpheme connecting the modifier and the modifiee is not realized phonologically in the former. In my understanding, this is the view implied by Rubin (2002).

Which approach is the correct one is not clear to me at this moment. Obviously, the answer hinges crucially on the question if and to what extent PM can be effectively dispensed with as a mechanism of semantic composition – within Basque and, more importantly, across languages.

5 Conclusion

In this paper I have investigated adnominal PPs in Basque. They mandatorily contain the morpheme *-ko* that is absent outside the domain of nominal modification and represents an instance of the class of attributive linkers that have been observed in a host of different languages.

I have rejected a syntactic analysis of the linker as an otherwise meaningless reflection of Predicate Inversion. Instead, I have taken up a line of argument developed by Rubin (2002, 2003), Struckmeier (2007, 2009, 2010), Kremers & Struckmeier (2007) and von Prince (2008) that (adnominal) modifiers can be headed by functional morphemes that establish the necessary relationship between modifier and modifiee. In the view advocated here, *-ko* realizes such a functional head closing off the extended

[23] I am grateful to Luis Vicente for pointing out this possibility.

[24] Cf. Heim & Kratzer (1998:65-73) for discussion.

projection of P and is essential for the establishment of an attributive relation between the PP and the head noun. Without it, PPs in Basque are unable to appear in a DP. In a manner of speaking, thus, the linker *-ko* licenses adnominal PPs in Basque.

The linking properties of *-ko* are hard-wired into my proposal for the semantics of this morpheme: I have submitted that it introduces the link between the meaning of a modifier and its modifiee in a very concrete sense. In a way, it "syntacticizes" what has been modelled as non-saturating semantic composition elsewhere, that is, it serves as a catalyst to connect two predicates by means of the basic semantic operation of Functional Application. Insofar as this analysis can be extended, it allows us to envisage a simplified semantic component without recourse to non-saturating operations like Predicate Modification. Under this hypothesis, the workload of inducing modification is shifted from semantics to syntax, in particular to the functional structure of modifiers. That view augments the explanation of the obligatoriness of the linker in so far as without PM two predicates cannot be composed semantically for reasons of type incompatibility. The functional head realized by linking morphology is then necessary to facilitate semantic composition by producing a properly typed predicate, so as to accord with the conditions on Functional Application.

An extension of the present proposal to include the other applications of *-ko* mentioned in section 2, namely with adverbs, finite and non-finite sentences, is certainly desirable and will probably call for adaptions in the analysis. Another matter deserving further attention is the observation that the linker seems to be insensitive to the distinction between clearly attributive PPs as in (15) and PPs that might be viewed arguments, like the one in (37).[25] This might mean that the latter ones are not really arguments. Or, as a reviewer points out, if they can be shown to be arguments, they might provide an argument against the Mod-account of *-ko*, since Mod crucially introduces adjuncts.

It becomes ever clearer that modification is associated with specific morphological marking in a variety of languages: apart from the ones already mentioned this also holds for the Persian *ezafe* marker, Amharic *yä-* and Turkish *-ki*.[26] So, as befits a universalist approach to the faculty of language, the phenomenon merits further crosslinguistic scrutiny for a better understanding of its impact on theories of modification in general. Previous work has prepared a fertile foundation – and it is my hope that this paper may represent a small contribution to that project.

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[25] My thanks to Elena Anagnostopoulou for pointing out this issue.

[26] Katalin É. Kiss (p.c.) and a reviewer point out the Hungarian morpheme *-i* as a linker that appears with prenominal PPs and other categories. It is not a trivial question if the present system would extend to this kind of linker, since the alternation between (i) and (ii) sets it apart from the Basque cases considered here, where the linker is always obligatory with adnominal PPs.

(i) *a szék alatt-*(i) doboz*
the chair under-i box
'the box under the chair'

(ii) *a doboz a szék alatt-(*i)*
the box the chair under

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Russian Gerundive Gaps as Topic Drop*

Lena Ibnbari

The paper proposes a novel analysis of adjunct gaps in Russian that have previously been analyzed as true parasitic gaps. I propose that adjunct gaps result from ellipsis triggered solely by the topichood of the object. Focusing on gaps in gerundive adjuncts, I show that the properties they display are identical to those of non-adverbial topic drop. Ellipsis of arguments under certain discourse conditions is independently attested in the language and is used as a topic marking strategy. I argue against the PG analysis of Russian adjunct gaps and for the superiority of the topic drop analysis.

Keywords: *topic drop, parasitic gaps, gerunds, Russian*

1 Introduction

English sentences in (1) are canonical examples of the Parasitic Gap (PG) construction.

(1) a. *Which articles did John file without reading?*
b. *This is the kind of food you must cook before eating.*

Russian has constructions seemingly parallel to the English examples in (1):

(2) a. *Kakije pis'ma Olja sožgla [ne pročitav]?*
which letters Olya burned neg. read-PERF.PRTC
'Which letters did Olya burn without reading?'
b. *Kakoje bljudo on [ne poprobovav] vybrosil?*
which dish he neg. taste-PERF.PRTC threw-away
'Which dish did he throw away without tasting?'

The bracketed phrase in (2) which corresponds to the English *without*-adverbial is referred to here as a 'gerund'.[1] It minimally includes a negated verb in the form of perfective or imperfective participle and a gap. Gerundive phrases function as adverbial modifiers of the matrix verbal phrase; structurally they are VP-adjuncts.

Despite the apparent similarity between (1) and (2), there are important differences. One of the core properties of true PGs is that they are licensed by an antecedent in an A'-position.[2] The examples in (3), in which the antecedent remains in situ, are ungrammatical without the overt pronoun in the adjunct.

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[1] Babby and Franks (1998) refer to these phrases as 'adverbial participles' pointing out that that the terms 'gerund' and 'verbal adverb' are also applicable to them.

[2] To be precise, in Chomsky (1982) it was assumed that the PG becomes a variable at S-structure locally bound by the operator of the real gap. On Chomsky's (1986) account which I consider in section 6.1, PG constructions involve two independent chains: the antecedent chain and the PG chain.

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(3) a. *John filed a bunch of articles without reading *(them).*
b. *John filed which articles without reading *(them)?*
c. *Who filed which articles without reading *(them)?*

The core distinction between PGs in English and their Russian counterparts, noted in Ivlieva (2006), is that the latter are not dependent on overt wh-movement of the antecedent. (4) show that Russian gerundive gaps can refer back to an in situ antecedent.

(4) a. *Petja sžeg (èti) pis'ma, ne pročitav.*
Peter burned these letters neg. read-PERF. PRTC
*'Peter burned these letters without reading.'
b. *Petja sžeg kakije pis'ma, ne pročitav?*
Peter burned which letters neg. read-PERF.PRTC
*'Peter burned which letters without reading?'
c. *Kto sžeg kakie pis'ma, ne pročitav?*
who burned which letters neg. read-PERF.PRTC
*'Who burned which letters without reading?'

(4a) is perfect; sentences of this kind are widely used both in colloquial and written register. Sentences in (4b) and (4c) are good provided special context and intonation.

An in situ wh-phrase ('letter' in (5a), 'article' in (5b)) can also license a gap in finite adjuncts:

(5) a. *Olja sožgla pis'mo, posle togo kak pročitala.*
Olya burned the-letter after that how read-3SG.F.PAST
'Olya burned the letter after she had read it.'
b. *Oleg vnimatel'no pročital stat'ju pered tem kak otoslal v redakciju.*
Oleg attentively read article before that how send-3SG.M.PAST in publishers
'Oleg had attentively read the article before he sent it to the publishers.'

(5) should be compared with the English (6) from Engdahl (1983). In the latter wh-movement of the antecedent is required.[3]

(6) *This is the kind of food you must cook t before you eat pg.*

Ivlieva (2006), argues that the adjunct gaps in (2), (4) and (5) are truly parasitic and result from null operator movement. On this analysis, the only difference between the Russian adjunct gaps and the gaps in English is that the former can be licensed by covert movement of the antecedent to the topic projection in the left periphery of the matrix clause. I will present arguments against this analysis in section 6.

[3] Emonds (2001), fn 6, however, points out that PG constructions parallel to (6) are ungrammatical if the subject in the adjunct is a full DP and the verb is unambiguously transitive:
(i) a. **These are the tools that I broke before Mary sold cheap.*
b. **Which articles did she file if the boss put to the side?*
c. **Here's the editor who we sent your manuscript to just after Mary contacted.*

In this contribution I propose an alternative analysis of adjunct gaps in Russian. The claim defended in this paper is that Russian adjunct gaps are not parasitic and are better accounted for as instances of topic drop. Although the empirical domain of the analysis is primarily gerundive adjuncts, other kinds of adjuncts are considered as well. The structure of the paper is as follows: section 2 outlines the main properties of Russian topic drop in non-adverbial contexts. In section 3 I show that gerundive gaps have properties of topic drop found elsewhere. In sections 4 and 5 I consider the behavior of topic drop in both adverbial and non adverbial contexts and offer an explanation in terms of the topic drop analysis. Section 6 shows the superiority of the topic drop analysis of adjunct gaps over the PG analysis. The conclusion ends the paper.

2 Topic drop in non adverbial contexts

This section is devoted to a discussion of topic drop in Russian in non-adverbial contexts and its core properties. I show later on that the same properties hold of adjunct gaps as well.

2.1 The notion of topic drop

By topic drop I mean deletion at PF (ellipsis) of an argument triggered solely by topichood. Following Reinhart (1981), I define a topic as an element with respect to which the truth value of the sentence is determined. Russian has been traditionally referred to as a discourse oriented language where processes like movement and ellipsis can be triggered by discourse factors (Franks 1995, King 1995, McShane 2002). Franks (1995) uses the notion of 'discourse ellipsis' as a descriptive term that broadly covers deletion of a variety of contextually recoverable elements (arguments, verbs, COMP elements), without committing himself either to formal mechanisms involved in this process or to specific discourse factors that allow it. The present proposal combines Frank's analysis of discourse ellipsis in Russian and the ideas in Erteschik-Shir (2007) regarding the topic status of the dropped elements. Importantly, the proposal highlights the discourse dependency of dropped objects. This property has been consistently mentioned but has remained theoretically unexplained within the syntactic analyses of dropped objects cross-linguistically (Huang 1984, Raposo 1986, Xu 1986, Farrell 1990).

For the purposes of this paper the discussion of topic drop is limited to object topics, and the term 'topic drop' refers to null objects of obligatorily transitive verbs. Some of the verbs in the Russian examples in this paper (for ex., *read*) can be used intransitively (7).

(7) a. *Olja čitaet knigu.*
Olya read-IMPRF.PRES book
'Olya is reading a book.'
b. *Olja bystro čitaet.*
Olya quickly read-IMPRF.PRES
'Olya can read quickly.'

To control for this situation, I use these verbs in perfective form, in which case they become resistant to transitivity loss (8).

(8) a. *Olja pročitala knigu.*
Olya read-PERF.PAST book
'Olya read a book.'
b. **Olja bystro pročitala.*
Olya quickly read-PERF.PAST
intended: 'Olya could read quickly.'

Topic drop is registered in Russian independently and is widely used in the language as means of marking topic elements. In Russian, topics can also be marked by movement (topicalization, scrambling), pronominalization and intonation (deaccenting). A combination of different strategies is also possible as shown in the following section.

2.2 Discourse recoverability

Topic drop applies to an element whose precise identity is recoverable from the discourse and is part of the common knowledge of the speaker and the hearer. The important property of a dropped topic (likewise a pronominalized topic) is its anaphoric relation to a discourse salient antecedent. Such an antecedent can be either overtly represented in the preceding discourse or situational. In (9) the most embedded object has an overt antecedent, namely the matrix object 'course paper', therefore the object can optionally drop.

(9) *Ja ne sdala kursovuju, potomu čto vremeni*
I neg. hand-in-PAST course-paper because that time
ne bylo (jejë) dopisat'.
neg. was it-3SG.F to-write-PERF
'I haven't handed in the course paper, because I haven't had time to finish writing it.'

The object in the 'because' clause in (9) can also be realized as an overt deaccented pronoun. Russian is an SVO language. However, there is a preference for using pronominal topic objects preverbally. (9) therefore illustrates all possible topic marking strategies in Russian: topic drop (in case the object drops) and a combination of pronominalization, deaccenting and dislocation (in case the object is realized as a pronoun).

The object can be a topic not only when it has been previously mentioned in the discourse. Extralinguistic means, like seeing the object or hearing it, provide the speakers with sufficient information about the object and allow it to become the topic of the discourse. (10) show that a topic whose antecedent is situational can pronominalize or drop altogether.

(10) a. [a woman enters home and shows a purchase to her family]
Vot, kupila (èto) po-deševke.
here bought-1SG.F.PAST it prep.cheap
'Here, I bought it cheaply.'
b. [listening to music]
Vam (èto) nravitsja?
you it like
'Do you like it?'

2.3 Restrictions on topic drop

Topic drop in Russian is not absolutely free; it is subject to a number of restrictions some of which are still poorly understood. One of these restrictions is that in certain contexts topic drop is disallowed in the presence of an overt non-contrastive subject.[4] In the answer to the question in (11), for instance, an overt pronoun is required.

(11) Q: *Petja ljubit jejë?*
Peter loves her
A: *Da, Petja/on ljubit *(jejë).*
yes Peter/he loves her

Acceptability of topic drop improves dramatically if the clausemate subject is null. This is shown in (12a) which is a possible answer to the question in (11). Contrasting the subject as in (12b) (capital letters are used to show accentuation, indicating contrast) also has an ameliorating effect on topic drop. The presence of other contrastive elements in the sentence as in (12c) where the verbs are contrasted together with the subjects, further improves topic drop.

(12) a. *Da, ljubit.*
yes loves-3SG.M.PRES
'Yes, he loves her.'

b. *Net, no OLEG (jejë) ljubit.*
no but Oleg her loves

c. *PETJA/ON (jejë) LJUBIT, a JA (jejë) NENAVIŽU*
Peter/he her loves but I her hate

Obligatory anaphoric linking of a topic to a discourse antecedent predicts that the topic, pronominal or dropped, cannot precede its antecedent. Thus the sentence in (13) with topic drop or an overt pronoun in the first conjunct is infelicitous when pronounced out of the blue or as an answer to the question 1. It is fine in the context of question 2 which contains the antecedent.

(13) Q1: *Čto slučilos'?*
'What happened?'
Q2: *Otkuda èta kniga?*
from-where this book
'Where is this book from?'

Petja vzjal (jejë) v biblioteke, i prines jejë/ètu knigu domoj.
Peter took it in library and brought it/this book home
'Peter took it in the library, and brought it/this book home.'

[4] Rögnvaldsson (1990) observes that a similar restriction is operative in Modern Icelandic. According to Rögnvaldsson, topic objects in Icelandic are obligatorily topicalized before they are deleted. The restriction therefore is due to the impossibility of an object to move to a topic position occupied by the overt topic subject. It remains unclear however why only overt subjects, but not null (pro) subjects, necessarily occupy the topic position blocking topicalization of the object.

One can ask why topic drop in (13) is possible in the presence of the overt clausemate subject. The answer is that the subject in this sentence is (part of) the focus. Focused elements must remain overt, just like contrastive elements. Therefore topic drop in (13) is acceptable for a reason similar to that we observed in (12b).

Summing up, in this section it has been shown that topic drop is productive in Russian. Among its important properties are its anaphoric linking to the discourse salient antecedent, its inability to precede its antecedent and its dependency upon the presence of an overt subject.

3 Properties of gerundive gaps

The purpose of this section is to show that Russian gerundive gaps display properties that are identical to those of non-adverbial topic drop.

The null object in the gerund must have a discourse salient antecedent. The latter generally appears in the matrix clause containing the gerund:

(14) *Direktor vernul mojë zajavlenije, ne podpisav.*
director returned my application neg. sign-PERF.PRTC
'The director returned my application without signing it.'

The antecedent can also be separated from the gap by a number of clauses:

(15) *–Ja slučajno vybrosila tvojë pis'mo. Ty ne serdišsja?*
I unintentionally threw-away your letter you neg. angry
'By accident, I threw away your letter. Are you angry?'

-Èto pravda? Vybrosila, daže ne pročitav?
this truth threw-away-2SG.PAST even neg. read-PERF.PRTC
'Is it true? Did you throw it away without even reading it?'

The gerundive gap, just like the non-adverbial dropped object, is also good with an extralinguistic antecedent.

(16) [somebody is trying on a new shirt, which is too tight on him]
Čto, kupil ne primeriv?
what bought-2SG.PAST neg. try-on-PERF.PRTC
'Did you buy it without trying it on?'

Similarly to topic drop, the gerundive gap cannot precede its antecedent. In (17) the gerundive adjunct is positioned before the matrix VP. The answer in (17), with either the gap or the pronoun, is infelicitous when uttered out of the blue (in response to question 1). However, it is acceptable as an answer to question 2, which provides an antecedent for the object topic.

(17) Q1: *Čto slučilos'?*
'What happened?'
Q2: *Gde kniga, kotoruju my podarili Olegu (na denj roždenija)?*
'Where is book that we presented Oleg (on his birthday)?'

Oleg, [ne pročitav (jejë) (ni razu)],
Oleg neg. read-PERF.PRTC it part. once
otnjes (ètu) knigu k bukinistu.
took-away this book to bookseller
'Oleg took this book to the bookseller without reading it (even once).'

The last property I consider is the dependency on the overt clausemate subject. In section 2.3 I showed that non adverbial topic drop is restricted in the presence of the overt subject ((11A) vs (12a)). The same restriction holds of the topic embedded in an adjunct. Simple gerundive phrases are subjectless; therefore, the problem of the overt subject does not arise. The blocking effect of the overt subject is visible only when the gap appears in a finite adjunct. Observe the contrast in the minimal pairs in (18) and (19).

(18) a. *Olja sožgla pis'mo, posle togo kak pročitala.*
Olya burned letter after that how read-3SG.F.PAST
'Olya burned the letter after she had read it.'

b. *Olja sožgla pis'mo, posle togo kak ona pročitala *(jego).*
Olya burned letter after that how she read-3SG.F.PAST it
'Olya burned the letter after she had read it.'

(19) a. *Oleg vnimatel'no pročital stat'ju pered tem kak*
Oleg attentively read article before that how
otoslal v redakciju.
send-3.SG.M.PAST in publishers
'Oleg had attentively read the article before he sent it to the publishers.'

b. *Oleg vnimatel'no pročital stat'ju pered tem kak on*
Oleg attentively read article before that how he
*otoslal *(jejë) v redakciju.*
send-3SG.M.PAST it in publishers
'Oleg had attentively read the article before he sent it to the publishers.'

An overt subject is present only in the even sentences in (18) and (19). As a result, the object in these examples must also be overt. In the odd sentences both the object and the subject in the adjunct are null.

The overt subject restriction is also operative in a finite clause embedded within the gerundive adjunct. Russian speakers report the contrast between the sentences in (20). The most embedded object can only drop in a subjectless finite clause as in (20b). When the subject is overt, the object is necessarily realized as an overt pronoun (20a).

(20) a. *Oleg iskal ključ vsjë utro, [tak i ne*
Oleg looked-for key all morning so and neg.
*vspomniv [čto on zabyl *(jego) doma]].*
recall-PERF.PRTC that he forgot it at-home
'Oleg was looking for the key all morning without having recalled that he forgot it at home.'

b. *Oleg iskal ključ vsjë utro, [tak i ne*
Oleg looked-for key all morning so and neg.
vspomniv [čto zabyl (jego) doma]].
recall-PERF.PRTC that forgot-3SG.PAST it at-home
'Oleg was looking for the key all morning without having recalled that he forgot it at home.'

The data in (18) through (20) indicate that adjunct gaps behave similarly to dropped topics with respect to the overt subject restriction.

To sum up, in this section I have shown that gerundive gaps have properties of non-adverbial topic drop: they must refer back to a discourse antecedent, they cannot precede their antecedent and they are restricted in the presence of an overt clausemate subject. In the next two sections I will discuss other properties of topic drop. I show that these properties further support the topic drop analysis of adjunct gaps in Russian.

4 Case parallelism condition

This section is devoted to a discussion of a case parallelism condition. This condition requires that the gap and the antecedent bear the same case. It has been established that case parallelism is essential for licensing of PGs in Hungarian (Horvath 1992, É. Kiss 2001). It has also been argued that the condition holds of true PGs in Polish (Bondaruk 2000). The reader is referred to the mentioned works for examples and extensive discussion. The question we must consider here is whether case parallelism is relevant to Russian topic drop.

4.1 Case *in*compatibility (finite adjuncts)

Regarding Russian, Franks (1993) claims that sentences that look like PGs are subject to a 'morphological compatibility' requirement. This means that the adjunct gap and its antecedent can differ in case marking as long as the morpho-phonological form of the gap, if it were overt, corresponds to that of the antecedent. The pair in (21), Franks' (33) and (34a), is supposed to demonstrate the impact of the requirement. The gap appears in the finite temporal adjunct.

(21) a. mal'čik, **kotoromu/*kotorogo* Maša davala den'gi *e*
boy who(DAT)/(GEN) Masha(NOM) gave money
do togo, kak (ona) stala izbegat' *e*, …
until (she) started to-avoid
'the boy who Masha gave money to until she started to avoid him'

b. devuška, *kotoroj* Ivan daval den'gi *e* do togo, kak
girl who(DAT-GEN) Ivan(NOM) gave money until
(on) stal izbegat' *e*, …
(he) started to-avoid
'the girl who Ivan gave money to until he started to avoid her'

Franks' explanation proceeds as follows: In (21) the antecedent 'boy' which bears DAT case is relativized from the object position of *davat'* 'give'. The verb *izbegat'* 'avoid' governs GEN. (21a) is ungrammatical because there is no idiosyncratic form of the masculine relative pronoun that corresponds to both DAT and GEN. In contrast to (21a), (21b) is good because the phonological form of the feminine relative pronoun bearing DAT case is identical to that in GEN case.

Two comments regarding the data in (21) are due here. To begin with, the verb *izbegat'* 'avoid' assigns GEN only to inanimate objects (22a), whereas animate objects selected by *izbegat'* 'avoid' receive ACC case (22b).[5]

(22) a. on *izbegal* voprosa-SG.M.GEN/problemy-SG.F.GEN
he avoided question problem
b. on *izbegal* mal'čika-SG.M.ACC/devušku-SG.F.ACC
he avoided boy girl

The ACC form of singular masculine and singular feminine relative pronouns differs from the DAT form. Compare:

(23) a. kotoromu-SG.M.DAT vs kotorogo-SG.M.ACC
b. kotoroj-SG.F.DAT vs kotoruju-SG.F.ACC

This means that on Franks' analysis both sentences in (21) must be ungrammatical.

Secondly, Russian speakers, including myself, judge both sentences in (21) good, provided the embedded bracketed subject is omitted and the relative pronoun is DAT.

Observe further that the version of (21) without relativization of the matrix object is fine:

(24) *Ivan daval jemu/ jej den'gi, do togo kak stal*
Ivan gave him-DAT her-DAT money until started
(jego)/ (jejë) izbegat'
him-ACC/her- ACC to-avoid
'Ivan gave him/her money until he started to avoid him/her.'

Finally, the object of 'avoid' can also drop in non-adverbial context:

(25) *Snačala Ivan daval jemu/jej den'gi, a potom stal*
at-first Ivan gave him/ her money but then started
izbegat' (jego)/(jejë).
to-avoid him/ her
'At first, Ivan gave him/her money, but then started to avoid him/her.'

The conclusions so far are as follows: morphological compatibility/case parallelism does not restrict adjunct gaps. Moreover, topic drop in the adjunct is allowed independently of whether the antecedent is dislocated or remains in situ. Importantly, a dropped topic that differs in case from its antecedent is allowed in parallel non-adverbial contexts as well. I will continue using the comparison between adverbial and non-adverbial topic drop in the rest of this section and in the next section to fortify the argument against the parasitic nature of adjunct gaps.

4.2 Case *in*compatibility (gerundive adjuncts)

In the previous section it has been shown that case parallelism/morphological compatibility is irrelevant to topic drop in finite clauses. A similar situation is observed in gerundive adjuncts. Morphological identity does not restrict the gerundive gaps in (26)

[5] Franks apparently missed this peculiarity of the verb 'avoid' which was the cause of an error in his analysis.

and (27) where the gerund governs ACC case and the matrix verb governs DAT. The (b) examples show topic drop in parallel non-adverbial contexts.

(26) a. *On ne daval ej poblažek, vospityvaja*
he neg. gave her-DAT indulgence bring-up-IMPRF.PRTC
(jejë) strogo.
her- ACC strictly
'He didn't indulge her, bringing her up strictly.'

b. *On ne daval jej poblažek, i vospital*
he neg. gave her-DAT indulgence and bring-up-3SG.PAST
(jejë) v strogix pravilax.
her-ACC in strict rules
'He didn't indulge her, and brought her up by using strict rules.'

(27) a. *On otkazyval jej vo vsëm, lišaja*
he refused her-DAT in everything deprive-IMPRF.PRTC
(jejë) kakix-libo udovol'stvij.
her-ACC any pleasures
'He refused everything to her, depriving her of any pleasures.'

b. *On otkazyval jej vo vsëm, i lišal*
he refused her-DAT in everything and deprived
(jejë) vsex udovol'stvij.
her-ACC all pleasures
'He refused everything to her, and deprived her of all pleasures.'

(28) shows that topic drop in the gerund is grammatical despite the fact that the matrix object is INSTR, and the dropped object is ACC. The sentence is good if uttered in a situation which forces a topic reading.

(28) *On rešyl vospol'zovalsja priborom, predvaritel'no ne*
he decided to-use device-INSTR previously neg.
počiniv (jego).
repar-PERF.PRTC it-ACC
'He decided to use the device without having repaired it.'

Again, observe the parallelism with topic drop in a non-adverbial context:

(29) *–Ja uže mogu vospol'zovalsja priborom?*
I already can to-use device-INSTR
'Can I already use the device?'
-Net, ja ešče ne počinil (jego).
no I yet neg. repair-1SG.PAST it-ACC
'No, I haven't repaired it yet.'

The conclusion of the discussion in this section is that morphological parallelism, and, more generally, case compatibility, do not restrict adjunct gaps in Russian. An in situ antecedent allows for topic drop regardless of case marking in both adverbial and non-adverbial contexts.

5 Adjunct gaps in passives

This section discusses the properties of adjunct gaps in passive sentences. It will be shown that the topic drop analysis of adjunct gaps in Russian meets the challenge of accounting for their behavior while the PG analysis falls short when explaining it.

5.1 An apparent problem

It is well known that in English NP-movement in passive and raising constructions cannot license PG. This is illustrated with the relevant examples in (30) from Engdahl (1983).

(30) a. *John was killed by a tree falling on *pg/ him.*
b. *Mary seemed to disapprove of John's talking to *pg/ her.*

English raising constructions of the kind (30b) are missing in Russian, therefore the discussion here is limited to passive sentences. (31) are ungrammatical either with the gap or the pronoun after the gerund.

(31) a. **Resul'taty byli opublikovany ne proveriv (ix).*
results were published neg. check-PERF.PRTC them
*"The results were published without checking them.'
b. **Statja byla pročitana (studentami) ne ponjav (jejë).*
article was read students-INSTR neg. understand-PERF.PRTC it
*"The article was read by the students without understanding it.'
c. **Pis'mo bylo otoslano ne zapečatav (jego).*
letter was sent neg. seal-PERF.PRTC it
*"The letter was sent without sealing it.'

On the PG analysis, (31) are ruled out by the lack of wh-movement in the matrix clause (Engdahl 1983). The question is why they are ungrammatical under the topic drop analysis. Nothing has been said so far about topic drop that can rule out these sentences. It has been argued here that topic drop in the gerund does not depend on movement of the antecedent. Topic drop therefore must also be blind to the kind of movement (wh – movement or NP-movement) of the antecedent. The ungrammaticality of (31), I argue, is unrelated to topic drop, and its reason lies in the failure of control into the gerund.

5.2 Obligatory subject control

Babby and Franks (1998) observe that in Russian the understood gerundive subject is canonically controlled by the matrix subject.[6] In (32), their (2), the subject of 'return' must be *you*, and cannot be *wife*.

(32) *Čto ty$_1$ skažeš' žene$_2$ [vernuvšys'$_{1/*2}$ domoj tak pozno]$_{PG}$?*
'What do you say to your wife when you return (*she returns) home so late?'

[6] Extensive discussion of grammatical relations in constructions with gerundive adverbials can be found in Ickovič (1982), ch. 7. As is explained there, sentences in which the gerund is controlled by an element other than the nominative subject are 'not normative' and are generally deviant. The exception is parenthetical ("independent") gerundive phrases which include: *učityvaja* 'considering', *isxodja* 'assuming (that)', *ne sčitaja* 'not considering', *imeja v vidu* 'taking into account' and some others. Parenthetical gerunds are not discussed in this paper.

Horvath (1992) also notes that the independent problem of control is the reason for the contrast between (33a) and (33b), her (22). In the grammatical (b), but not in (a), there is a controller for the adjunct PRO subject.[7]

(33) a. **The papers were lost before [PRO reading them]*
[PRO talking to the secretary]
b. *We thought that the papers were lost before [PRO reading them]*
[PRO talking to the secretary]

Considering this, the problem in (31) is the impossibility of either the passivized inanimate argument or the demoted logical subject to function as the controller.[8]

The next question to ask is whether topic drop is allowed in passive sentences where the control problem is neutralized. Crucially, there is a clear contrast between (31) and (34). The passivized subject 'he' in (34) not only can, but in fact must be the controller of the gerund.

(34) *On byl lišen premii, ne dokazav*
he was deprived-of premium-GEN neg. prove-PERF.PRTC
*čto byl dostoin *(jejë) polucit'.*
that was worthy it-ACC to-receive
'He was deprived of the premium without having proved that he was worthy of receiving it.'

Although in (34) the control problem is eliminated and the sentence is grammatical, the object embedded in the gerundive phrase in this sentence can only be realized as an overt pronoun. Topicalization of the antecedent does not improve grammaticality; Russian speakers I consulted judge topic drop in (35) as bad as in (34).

(35) *Premii on byl lišen, ne dokazav čto*
premium-GEN he was deprived-of neg. prove-PERF.PRTC that
*byl dostoin *(jejë) polučit'.*
was worthy it-ACC to-receive
'He was deprived of the premium without having proved that he was worthy of receiving it.'

Recall that case compatibility is irrelevant to topic drop. The badness of (34) and (35) therefore cannot be blamed upon this factor. The legitimate question (34) raises is why the object cannot drop altogether.

Recall that in the previous section we observed that grammaticality of topic drop in adverbial context parallels grammaticality of topic drop in the corresponding non adverbial context. In this light, consider the question-answer pairs in (36) and (37) which

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[7] On Horvath's (1992) analysis gerundive phrases in English are clauses that have a PRO subject. Babby & Franks (1998) argue that Russian gerunds are bare VPs that are directly predicated of the matrix subject. I abstract away from these differences here and use the term 'control' loosely.

[8] It is not inanimacy *per se* that makes the passivized objects bad controllers in (31). Inanimate NPs can control into the gerund:

(i) *Pojezd pribyl na stanciju ne opozdav (ni na minutu).*
train arrived on station neg. be-late-PERF.PRTC part. on minute
'The train arrived to the station without being late (even for a minute).'
The problem is rather the semantic incompatibility between the controller and the gerund.

correspond to the situation described in (34). The examples differ in that in (37) the case of the pronoun in the answer is identical to that of the antecedent in the question. In (36) the pronoun and the antecedent bear different case. In both examples the pronominal object in the answer cannot drop.

(36) Q: *Počemu vy lišili Ivanova premii?*
why you deprived-of Ivanov premium-GEN
'Why did you deprive Ivanov of the premium?'
A: *On ne dokazal čto byl dostoin *(jejë) polučit'.*
he neg. proved that was worthy it-ACC to-receive
'He did not prove that he was worthy of receiving it.'

(37) Q: *Vy dali Ivanovu premiju?*
you gave Ivanov-DAT premium-ACC
'Did you give Ivanov the premium?'
A: *Net, on ne dokazal čto byl dostoin *(jejë) polučit'.*
no he neg. proved that was worthy it-ACC to-receive
'No, he did not prove that he was worthy of receiving it.'

Now consider the example (38). It demonstrates that the demoted IMSTR subject in passives cannot serve as an antecedent of topic drop.

(38) *Olja byla nakazana (roditeljami) ne*
Olya was punished parents-INSTR neg.
*ubediv *(ix) v svojej pravote*
convince-PERF.PRTC them-ACC in self rightness
'Olya was punished by her parents without having convinced them that she was right.'

In (38), the object of *ubedit'* 'convince' refers back to the demoted subject 'parents'. Despite the availability of the overt antecedent, the gerundive object must be realized as an overt pronoun.

The object of 'convince' cannot drop also in the parallel non-adverbial context:

(39) Q1: *Počemu Olja byla nakazana roditeljami tak strogo?*
why Olya was punished parents-INSTR so strictly
'Why was Olya punished by her parents so strictly?'
Q2: *Počemu Olja tak rasserdila roditelej?*
why Olya so make-angry parents-ACC
'Why did Olya make her parents so angry?'
A: *Ona ne ubedila *(ix) v svojej pravote.*
she neg. convinced them-ACC in self rightness
'She did not convince them she was right.'

The sentence in (39) can be the answer either to Q1, or Q2. The direct object in the answer must be overt irrespective of the case marking of the antecedent.

(40) shows parallel sentences where the situation is reverse. In (40a) the ACC object of 'convince' refers back to the DAT argument of 'hand' and is embedded in the gerund. In (40b) the object is part of the second conjunct. In both sentences topic drop is allowed.

(40) a. *On vručil im priglašenije, ne ubediv*
he handed they-DAT invitation-ACC neg. convince-PERF.PRTC
(ix) odnako prjti na večerinku.
them-ACC however to-come on party
'He handed them the invitation failing to convince them to come to the party.'

b. *On vručil im priglašenije, no ne*
he handed they-DAT invitation-ACC but neg.
ubedil (ix) prjti na večerinku.
convince-PERF.PRTC them-ACC to-come on party
'He handed them the invitation, but he didn't convince them to come to the party.'

The examples in (38) through (40) show that there is consistency in the behavior of topic drop: if it is allowed in non-adverbial context, it is allowed in the adjunct. This can hardly be explained under a PG analysis of the gaps. A full explanation of the conditions on topic drop awaits a more detailed analysis of topic drop outside of the PG context. I leave it for future research.

Before concluding this section, I wish to refer to the question raised by an anonymous reviewer who asks if the reason for the ungrammaticality of topic drop with the INSTR antecedent in (38), (39) can be structural. The underlying assumption is that the antecedent NP in (38), (39) which corresponds to the English 'by-phrase' receives instrumental case from a null P head, i.e. the antecedent NP is embedded in the PP. The answer to this question is negative because the NP complement of overt preposition can antecede topic drop. This is illustrated in (41) and (42) from the National Corpus of Russian Language (NCRL).[9]

(41) *Xozjajka vyšla k gostju …, i ne priglasiv*
hostess went-out towards guest and neg. invite-PERF.PRTC
sest', prjamo načala s voprosa …'
to-sit right-away began with question
'The hostess went out towards the guest, and without inviting him to sit down, she started right away with the question …'
(F. Dostoyevsky 'The Brothers Karamazov', 1880)

(42) *Stalin …vspomnil o njëm liš v načale 1938 goda,*
Stalin remembered about him only in beginning 1938 year
priglasiv v Kreml' …'
invite-PERF.PRTC in Kremlin
'Stalin … remembered about him only in the beginning of 1938 inviting him into the Kremlin …'
(R. Medvedjev, 'Yosif Stalin and Yosif Apanasenko', 2003)

In both sentences the dropped direct object of 'invite' refers back to the NP which is a complement of the preposition. I conclude therefore that the reason for the ungrammaticality of topic drop in (38), (39) cannot be structural.[10]

[9] In (41) the adjunct is dislocated to the left peripheral position in the second conjunct. This does not affect the analysis defended here.

[10] For a more extensive discussion of dropped objects with oblique antecedents see McShane (2005).

6 Alternative analysis of adjunct gaps

In this section I discuss in more detail Ivlieva's (2006) analysis of adjunct gaps that was mentioned in the introduction. I show that this proposal suffers from both theoretical and empirical shortcomings and cannot ultimately account for the nature of Russian adjunct gaps. A Topic drop analysis can do better.

6.1 The essence of Ivlieva (2006) proposal

On Ivlieva's (2006) proposal, the adjunct gaps in (43) and (44) are truly parasitic. She adopts Chomsky's (1986) analysis according to which PG constructions include two chains: the licensing chain in the matrix clause formed by wh-movement of the antecedent and the null operator chain in the adjunct. Under this analysis the two chains are combined in LF by the rule of Chain Composition for the purposes of interpretation. I will refer to it as the Chain Composition analysis. Thus the sentences in (43a) and (44a) have the schematic LF representation in (43b) and (44b) respectively.

(43) a. *Kakije pis'ma Olja sožgla [ne pročitav]?*
which letters Olya burned neg. read-PERF.PRTC
'Which letters did Olya burn without reading?'

b. $[_{CP}$ antecedent$_1$…… $[_{VP}$ …….. $t_1]$ $[_{Adjunct}$ OP_1 ……$pg_1]]$

(44) a. *Petja sžeg (èti) pis'ma, ne pročitav*
Peter burned these letters neg. read-PERF.PRTC
*'Peter burned these letters without reading.'

b. $[_{CP}$ OP_1…… $[_{VP}$ ….. antecedent$_1]$ $[_{Adjunct}$ OP_1 ……$pg_1]]$

The important distinction between (43) and (44) is that in the former the dislocated antecedent binds its trace in the matrix object position. In (44) the in situ matrix object is bound by the null topic operator in SpecCP forming a covert A'-chain. This distinction, combined with the fact that in both sentences the adjunct gap is grammatical, led Ivlieva to the conclusion that in Russian PGs can be licensed by covert movement of the antecedent. The analysis crucially relies on the availability of the licensing A'-chain in the matrix clause.

On the analysis proposed here the adjunct gap in (44), and by extension in (43), is not parasitic, it is an instance of topic drop. The argument for topic drop analysis and against the Chain Composition analysis proceeds in two steps: first, I show that the adjunct gap cannot be a result of a null operator movement; second, I show the inconsistency of covert movement licensing.

6.2 Topic drop is not a variable

The null operator movement analysis of gerundive gaps predicts that the gap is ungrammatical if it is embedded in a gerund-internal island. In English the PG cannot appear in an island within the adjunct that contains it. This is shown in (45) from Emonds (2001) (e=PG).

(45) a. **Which guest did John criticize t while recalling $[_{DP}$ the fact that Sue supported e]?*

b. **Which one did Bill encourage t without saying [$_{CP}$ where he would publicly support e]?*

The topic drop analysis does not make such a prediction. In fact, this analysis predicts that ellipsis of the topic object embedded in an island is possible provided all conditions on topic drop are satisfied. This prediction is born out.

In (46) the gerundive phrase includes a finite interrogative clause. The sentence is grammatical despite the fact that topic drop occurs within the adjunct-internal wh-island.

(46) *On razobral pribor na časti, ne podumav predvaritel'no*
he took-to-pieces device on parts neg. think-PERF.PRTC in-advance
kak soberët (jego) obratno.
how assemble-3SG.FUT it back
'He broke the device to pieces, without having thought first about how he would put it together.'

In (47), topic drop occurs in an adjunct-internal complex NP.

(47) *On razobral pribor na časti, ne učityvaja*
he took-to-pieces device on parts neg. take-into-account-IMPRF.PRTC
tot fakt čto ne smožet potom sobrat' (jego).
that fact that neg. will-be-able then to-assemble it
'He took the device to pieces, without taking into account the fact that he will not be able to put it together.'

Note that grammaticality of the gap in (46) and (47) automatically excludes the derivation suggested by the anonymous reviewer where the object is deleted after it is topicalized to the edge of the gerundive phrase. Topicalization in Russian respects locality constraints. Observe:

(48) **Ètot pribor, on učel tot fakt čto ne smožet*
this device he took-into-account that fact that neg. will-be-able
sobrat'.
to-assemble
'This device, he took into account the fact that he would not be able to put it together.'

There is an additional reason to reject the null operator movement analysis of gerundive gaps. Russian gerundive adjuncts differ structurally from their English counterparts. In English the adjuncts are analyzed as clausal complements of the preposition 'without'. Franks (1995) presents a number of arguments for that Russian gerundive adverbials are maximally VPs and lack a CP and a TP projection.[11] Assuming this is correct, there is no projection within the gerundive phrase that can host the null operator.

[11] An anonymous reviewer points out that the presence of negation in the gerund is evidence for a clausal structure of the gerundive phrase. To get around this problem, I will tentatively assume that the particle *ne* is constituent negation and is part of the verbal phrase.

6.3 The problem of covert movement licensing

The second question I address is whether covert movement can license PGs. In this connection it will be instructive to see what the situation is regarding covert movement licensing in a broader cross-linguistic perspective.

As (49) show, the in situ phrase in English is unable to license the PG. The sentences are ungrammatical without an overt pronoun in the adjunct.

(49) a. *John filed which articles without reading *(them)?*
b. *Who filed which articles without reading *(them)?*

The only proposal known to me on which covert wh-movement can license PGs in English is Nissenbaum (2000). Nissenbaum discusses sentences of the kind in (50), his (2a), where the adjunct gap associated with the in situ wh-phrase is acceptable.[12]

(50) *?Which senator$_1$ did you persuade $\__1$ to borrow which car$_2$ after getting an opponent of $\__{pg1}$ to put a bomb in $\__{pg2}$?*

Nissenbaum's theory predicts that the in situ wh-phrase can be a licit PG licensor only in restricted cases where overt movement of the wh-phrase in question is banned by the presence of a structurally higher wh-phrase. English is not a multiple wh-fronting language, therefore in (50), for instance, overt wh-movement must target the structurally higher *which senator* in accordance with the Minimal Link Condition (Chomsky 1995), and *which car* must remain in situ.[13] Without going into further details of Nissenbaum's theory, note that it is designed to account for a situation which is different from that we have in Russian. To begin with, Russian is a multiple wh-fronting language, allowing overt movement of more than one wh-phrase. Secondly, and more importantly, in Russian, unlike in English, a single in situ wh-phrase can license the gap in the adjunct as is shown in example (4b), rewritten as (51). Note the contrast between the acceptable Russian sentence and its ungrammatical English translation.

(51) *Petja sžeg kakije pis'ma, ne pročitav?*
Peter burned which letters neg. read-PERF.PRTC
*'Peter burned which letters without reading?'

I should mention here another precedent from the relevant literature. Wahba (1995) claims that covert wh-movement can license PGs in Jeddah Arabic. The data in (52) are presented in the abovementioned paper to support this claim.

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[12] Fox and Pesetsky (2009) gives a version of (50) in (i) which is marked totally grammatical.
(i) *Which senator did John let t drive which car after asking opponents of t to put a bomb in t?*
An anonymous reviewer remarks that her informant finds both (50) and (i) marginal and 'barely interpretable'. Perhaps this can be attributed in part to the relevant complexity of the examples.

[13] Pesetsky (1987) however shows that superiority effects are ameliorated in D-linked contexts, (i) is his (28b):
(i) *Which book$_j$ did you persuade which man to read e$_j$?*
Interestingly, Soowon (2001) reports that in certain D-linked contexts PG can be licensed by the overtly dislocated lower which-phrase. (ii), his (47), are fairly grammatical compared to (3b,c) in the text:
(ii) a. *(?)Which book did which man file t without reading pg?*
b. *(?)Which salads did which guests order t without eating pg?*

(52) a. *Mona yaarat min miin$_i$ ʕašaan [ʕomar$_j$ yebya [PRO$_j$*
Mona was jealous of whom because Omar wants
yetjawwaz pg$_i$]]
to-marry
'Of whom$_i$ was Mona jealous e$_i$ because Omar wants to marry *pg$_i$*?'

b. *ʕali darab miin$_i$ ʕašaan biyekra pg$_i$?*
Ali hit whom because he-hates
'Who$_i$ did Ali hit e$_i$ because he hated pg$_i$?'

In (52a) and in (52b) the gap in the adjunct is related to the in situ wh-phrase *miin* 'whom'. Arabic productively employs the in situ strategy in interrogatives. At first blush, (52) indeed support the claim in Wahba that PGs in Arabic are not dependent on overt movement of the antecedent. However, two things of importance should be noted here. First, the example in (52b), as well as similar sentences, was definitely rejected by all native speakers of Palestinian Arabic I randomly asked. Second, although judgments regarding (52a) diverged, the sentence has an additional problem not considered in Wahba. The problem is that the verb 'marry' can be used intransitively in Arabic. The sentence therefore cannot be a valid proof that PGs are licensed by covert movement.

Languages like Chinese and Japanese provide us with clear evidence that covert wh-movement cannot license PGs. In these languages true interrogative sentences are formed by covert movement of the wh-phrase which obligatorily remains in situ. As (53) from Lin (2005) shows, covert wh-movement fails to license the PG in Chinese.

(53) **Laowang [zai huijian pg$_i$ zhiqian] jiu kaichu-le shei$_i$?*
Laowang at meet before already fire-PERF who
'Who did Laowang fire before meeting?'

In contrast with (53), the PG in (54) where the wh-phrase is topicalized is grammatical.

(54) *Shei$_i$ Laowang [zai huijian pg$_i$ zhiqian] jiu kaichu-le e$_i$?*
who Laowang at meet before already fire-PERF
'Which person is it who Laowang fired before meeting?'

Similarly to Chinese, Japanese also disallows covert movement licensing of PGs. The pair of examples in (55) from Takahashi (2006) shows that the gap in the subject phrase is ungrammatical in the true interrogative sentence (55a). The gap is acceptable when the matrix object is dislocated by focus movement (55b).

(55) a. *?*[Hazimete e au hito]-ga dare-o kenasimasu ka?*
for-the-first-time see person-Nom who-Acc criticize Q
'Who do people who see for the first time criticize?'

b. *[Hazimete e au hito]-ga t kenasu no-wa dare-o desu ka?*
for-the-first-time see person-Nom criticize that-Top who-Acc is Q
'Who is it that people who see e for the first time criticize t?'

In sum, the data from different languages presented in this section support the conclusion that true PGs can be licensed only in the presence of overt A'-movement of the antecedent. Ivlieva's proposal that defends covert movement licensing can therefore not be maintained because, on the one hand, it postulates unjustified covert movement

of the PG licensor and on the other hand, it cannot explain why in languages that have covert wh-movement, such movement cannot license PGs.

6.3 The lack of the licensing chain

I started this section with the conjecture that the Chain Composition analysis is untenable for Russian constructions with adjunct gaps. Gerundive adjuncts are especially illuminating in understanding why this is so. The PG analysis requires that an A'-licensing chain be present in the matrix clause. Without such chain the PG is predicted to be ungrammatical. In light of this requirement, consider the sentence in (56) from the NCRL.

(56) *Tak čto, ne podpisav, požaluj vovse ne vyjdeš.*
so that neg. sign-PERF.PRTC probably at-all neg. leave-2SG.FUT
'You will probably not leave at all without signing it.'

The sentence appears in a context where a police official fails to convince a prisoner to sign a document. The obligatorily transitive verb *podpisat'* 'sign' is followed by a gap. Note that the missing gerundive object in (56) does not have any antecedent in the matrix clause. The identity of the object however is easily recovered from the discourse. (57) is yet another example from NCRL, that shows the same point:

(57) *Raskol'nikov načal ponimat', čto on, možet byt', ploxo sdelal,*
Raskolnikov began to-understand that he may be badly acted
ugovoriv perenesti sjuda razdavlennogo.
convince-PERF.PRTC to-carry here crashed
'Raskolnikov started to realize that he perhaps acted badly convincing them to carry the crashed man here.'
(F. Dostoyevsky, 'The Brothers Karamazov', 1880)

In (57) the antecedent of the dropped direct object of *ugovorit'* 'convince' is missing, but it is discourse available. Recall that discourse linking is one of the properties of topic drop. A topic drop analysis therefore can account for the gerundive gap in (56) and (57) while the PG analysis fails to do so.

Summing up, in this section I showed that the PG analysis of Russian gerundive gaps (as well as the version proposed in Ivlieva 2006) is untenable. This analysis crucially relies on movement of the linguistic antecedent that must be present in the sentence containing the gap. Since adjunct gap in Russian is constrained neither by movement of the antecedent nor by its presence in the sentence, the PG analysis encounters a severe problem in explaining its grammaticality.

7 Conclusion

In this paper I argue that the gap in adjunct phrases in Russian results from ellipsis of an object triggered by topichood and cannot be analyzed as parasitic. I concentrate primarily on gerundive gaps and show that their properties are identical to that of topic drop found elsewhere. In fact, the properties that hold of true parasitic gaps in other languages do not hold of Russian adjunct gaps. Certain cases appear to be restricted by well-known parasitic gap constraints, but even these are explained in a better way as cases of topic drop.

In Russian, adjunct gaps are independent of movement of the antecedent, and, in fact, do not require the antecedent to be present in the sentence at all. This property underlies the argument against the PG analysis of Russian gaps.

I leave for future research the question of the implications of the present account for other languages where topic drop is allowed.

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Towards an account of Hungarian Object-drop*

Júlia Keresztes

In this paper I examine constructions in Hungarian where the object pronoun may be silent. I propose that (i) there is partial object-drop in Hungarian, and (ii) this object-drop is due to DP/NP ellipsis and (iii) the privative nature of person/number features. The phenomenon of object-drop in Hungarian, however, exhibits some peculiarities. In this paper I explore possible approaches and make the first step towards an analysis.

Keywords: *NP-ellipsis, object-drop, Hungarian*

1 Introduction

In Hungarian referential object pronouns can be dropped both in subject and object position. Pronouns in subject position can be dropped in all persons and numbers. However, omission of object pronouns exhibits some peculiarities. It has been observed that singular pronoun objects can be dropped in every person (Farkas 1987, Puskás 2000). As to null subjects, Hungarian shows similarities to classical *pro*-drop languages, e.g. Italian (as in (1)), in that the verbs carry number and person features that identify the missing subject (e.g. in (2) and (3)).

(1) *ec*[1] *Compra un libro.*
buy-3SG a book
'(He) buys a book.'

(2) *ec Vesz egy könyvet.*
buy-3SG a book.
'(He/she) buys a book.'

(3) *ec Veszek egy könyvet.*
buy-1SG a book
'(I) buy a book.'

In Hungarian the direct object of a transitive verb can be covert as well (Farkas, 1987). This has been suggested for singular object pronouns in Hungarian as in (4)-(6) (Puskás, 2000). However, the omission is optional in all cases.

(4) a. *(Én) látlak (téged).*
I see-1SG you
'(I) see (you).'

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[1] ec = empty category

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b. *(Én) látom (őt).*
I see-1SG him/her
'(I) see (him/her).'

(5) a. *(Te) látsz (engem).*
you see-2SG me
'(You)see (me).'
b. *(Te) látod (őt).*
you see-2SG him/her
'(You) see (him/her).'

(6) *(Ő) lát (engem/téged).*
he/she see-3SG me/you
'(He/she) sees (me/you).'

There are two main questions to be answered:

1. What makes object-drop possible?
2. How does object-drop work in the syntactic representation?

In order to answer these questions, I propose that (i) there is partial object-drop in Hungarian, and (ii) this object-drop is due to DP/NP ellipsis and (iii) the privative nature of person/number features. In this paper I present my own survey on Hungarian object pronouns. The questionnaire contained sentences with missing object pronouns. The informants had to judge the acceptability of the sentences.

In the following I will shed some light on object-drop in Hungarian. In section 2, I provide some relevant background and summarize Farkas (1987). In section 3 I revisit the empirical data that serve as the basis of the papers reviewed in section 2. In section 4 two possible analyses will be considered and rejected. In section 5 I present my suggestion for analyzing the data. In section 6 I give a conclusion of the paper.

2 Background

2.1 Object definiteness agreement - The verbal paradigms of Hungarian

There are two verbal paradigms in Hungarian. The "subjective" conjugation (as in (7)) appears on a verb if it has an indefinite (NP) object or no object at all (as in (8)).

(7) subjective[2] conjugation

	singular	plural
1st	*lát-ok*	*lát-unk*
	see-1SG$_{subj}$	see-1PL$_{subj}$
2nd	*lát-sz*	*lát-tok*
	see-2SG$_{subj}$	see-2PL$_{subj}$
3rd	*lát-Ø*	*lát-nak*
	see-3SG$_{subj}$	see-3PL$_{subj}$

[2] There is a special form of inflection in 1st person singular: '*lak/lek*'.
This suffix expresses that the subject is 1SG and the object is 2nd person, either singular or plural.

(8) *Látok/ *látom egy fiút.*
see-1SG$_{subj}$ see-1SG a boy
'I see a boy.'

This conjugation is also called indefinite conjugation, or general conjugation. The "objective" conjugation (as in (9)) is used with a verb that has a definite (DP) object (as in (10)).

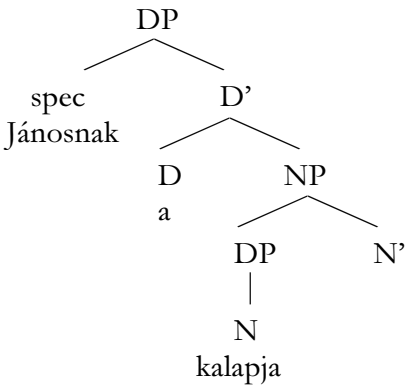
(9) objective conjugation

	singular	plural
1st	*lát-om*	*lát-juk*
	see-1SG$_{obj}$	see-1PL$_{obj}$
2nd	*lát-od*	*lát-játok*
	see-2SG$_{obj}$	see-2PL$_{obj}$
3rd	*lát- ja*	*lát-ják*
	see-3SG$_{obj}$	see-3PL$_{obj}$

(10) **Látok/látom a fiút.*
see-1SG see-1SG$_{obj}$ the boy
'I see the boy.'

Adopting Bartos' (1997) analysis, I will assume that objects of verbs that are conjugated with the objective conjugation always display a DP layer. That is if the verb has a definite object it will bare objective morphology. Verbs that have an indefinite object will be conjugated with subjective conjugation. Indefinite objects are NPs. Bartos adopts the structural representation of NP's of Szabolcsi (1994).

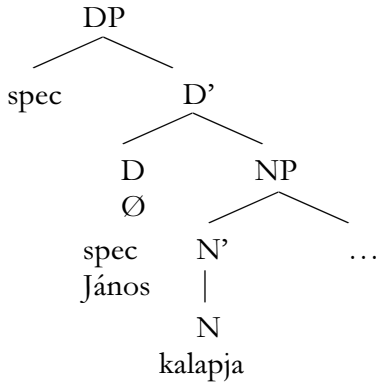
(11) definite DP with "high"posessor



(Based on Szabolcsi, 1992, 1994 and Bartos, 1997)

(i) *Lát-l-a-k.*
see-1SG$_{subj}$-2SG$_{subj}$
'I see you'
This form appears in the survey as well, however, no difference lies in the different forms when the second person plural object is dropped. Speakers reject sentences with null second person object pronouns with the '*lak/lek*' form as well as with other verb forms above. Those speakers do not accept (second person) plural pronouns to be dropped in general.

(12) definite DP with a "low" possessor



In this structure definite objects are full DP's and they are marked for accusative case through the higher D^0 (as in (13)).

(13) *(Én) látom [DP a [NP fiúkat]]*.
I see-1SG$_{obj}$ the boys
'I see the boys.'

(14) indefinite plural NP's

Indefinite objects are, however, only NP's (as in (14)) that do not yield objective conjugation (as in (15)). These can be objects that have an indefinite determiner or a numeral in front of the noun.

(15) *(Én) látok hibákat.*
I see-1SG$_{subj}$ mistakes
'I see mistakes.'

2.2 Direct Object *pro* in Hungarian: Farkas (1987)

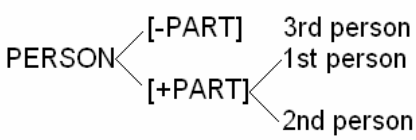
Farkas (1987) considers null direct objects in Hungarian. She claims that in Hungarian direct objects can be null if their content is recoverable. Farkas in her analysis considers Taraldsen's generalization, namely that *pro* must exhibit strong agreement[3] with the verb (Taraldsen, 1978). However, she finds that there is no agreement between a transitive verb and its direct object in Hungarian, at least not in the sense of Taraldsen's

[3] Taraldsen's generalization states that there is strong agreement in a language if the language marks differently every person in each number.

generalization. The Hungarian verb agrees with the subject with respect to verbal morphology. The verb agrees with its object only in definiteness (as shown above in 2.1).

Farkas claims that the direct object of a transitive verb can be null in singular but not in plural. Hungarian direct objects display feature sharing with the verb. Farkas proposes that the structure of the feature PERSON (in Hungarian) is as in (16):

(16)



The feature [PART] (participant) is always recoverable from the verb. That is, the hearer knows whether the speaker is a participant or not from the morphology on the verb. As for the object, it can be recovered whether it bears the [PART] feature. This feature has a binary value. First and second person are [+PART] and third person is [–PART].

3 The data: Results from a questionnaire study

In the following I present sentences where the object pronoun is null in the embedded sentence. The sentences where singular pronouns are covert are acceptable for all speakers of Hungarian (as in (17)-(19)).

(17) *(Én) elbújtam előled (te) mégis megtaláltál (engem).*
I hide-PAST-1SG from.you you still find-PAST-2SG$_{subj}$ me
'I hid from you, still you found me.'

(18) *(Te) elbújtál előlem, (én) mégis megtaláltalak*[4] *(téged).*
you hid-PAST-2SG from.me I still find-PAST-1SG you
'You hid from me, still I found you.'

(19) *(Ő) elbújt előlem, (én) mégis megtaláltam (őt).*
she/he hide-PAST-3SG from.me I still find-PAST-1SG$_{obj}$ her/him
'(She/he) hid from me, still (I) found (her/him).'

It has been stated in the literature (e.g. Farkas 1987) that object pronouns can be null only in the singular. However, in plural first and second person object pronouns can be zero as in (20) and (21), for some speakers of Hungarian, at least.

(20) *(Mi) elbújtunk előletek, (ti) mégis megtaláltatok %(minket).*
we hide-PAST-1PL from.you you still find-PAST-2PL$_{subj}$ us
'(We) hid from you, still (you) found (us).'

[4] This is an occurrence of the *'lak/lek'* form referring to the first person singular subject and the second person object either singular or plural. Here it is a second person plural object pronoun.

(21) *(Ti) elbújtatok előlünk, (mi) mégis megtaláltunk %(titeket).*
you hide-PAST-2PL from.us we still find-PAST-1PL$_{subj}$ you
'You hid from us still we found you.'

(22) *(Ők) elbújtak előlünk, (mi) mégis megtaláltuk *(őket).*
they hide-PAST-3PL from.us we still find-PAST-2PL$_{obj}$ them
'They hid from us, still we found them.'

Third person plural object pronouns can never be null. In the following sections I will consider two possible analyses; however, neither of them will prove to be adequate for Hungarian.

4 Two possible analyses

4.1 Null objects as a result of topic-drop

Hungarian null objects might be similar to that of Japanese-type null arguments. Topic drop is the phenomenon that is observed in languages like Chinese, Japanese and Korean, when a nominal element in a sentence can be null if it has been mentioned previously in the discourse. This means that any argument of a verb can be omitted that has been introduced into the discourse can be left out from the following sentences.

(23) *John-wa keisatsu-ga Ø mihatteiru koto-o sitteiru.*
John-TOP police-NOM are watching fact-ACC know
'John$_i$ knows that the police are watching him$_i$.'

(Huang, 2000, 85)

(24) *Kuruma-wa Taroo-ga Ø kat-ta*
car-TOP Taro-NOM buy-PAST
'The car, Taro bought.'

(Huang 2000, 266)

As it can be seen in (23) and (24), in Japanese nominal arguments can be phonologically zero after being present in the discourse. Along these lines one could suggest that the Hungarian data be analyzed as topic drop. However, that would not explain the ungrammaticality of sentences like (22). In (22) the third person plural pronoun is present in the first clause but when it is in object position it cannot be covert. If it is non-overt, the sentence becomes ungrammatical. Therefore the data cannot be analyzed as topic-drop, as it is not only dependent on discourse.

4.2 VP-ellipsis

Another possible explanation for the missing object in Hungarian could be VP-ellipsis. This means that object pronouns are allowed to be non-overt if they are situated in the VP, and – after the verb has moved out of the VP – the VP is deleted (together with the object pronoun). Therefore the deletion of the VP may include other elements that are in the VP (as in (25)).

(25) A: *Láttad tegnap a fiúkat a parkban focizni?*
see-PAST.2SG yesterday the boys the park.in play.football
'Did you see the boys playing football in the park yesterday?'
B: *Láttam (őket tegnap a parkban focizni).*
see-PAST.1SG them yesterday the park.in play.football
'I did (see them playing football in the park yesterday). '

In the conversation in (25) B answers A's question with the verb only, that is the rest of the sentence is deleted with the deletion of the VP. The verb in the short answer is moved out of the VP (Bánréti, 1992). As it can be seen in (25) in VP-ellipsis constructions third person plural pronouns *can* be null. Given our generalization that the omission of *őket* renders the sentence ill-formed shows that VP-ellipsis cannot explain the ungrammaticality of (22) where the object pronoun is not pronounced.

The variation among speakers indicated in (20) and (21) set another obstacle if one would like to analyze Hungarian non-overt object pronouns as VP-ellipsis. All speakers of Hungarian accept VP-ellipsis structures with missing plural pronoun objects, such as the one in (25B). However, only some speakers of Hungarian accept the sentences in (20) and (21) without an overt object pronoun. If the apparent object-drop was due to VP-ellipsis, then we would have no explanation for the unacceptability of (20) and (21) for speakers who do not allow for 1st and 2nd person plural pronouns to be dropped.

5 Towards an analysis

I propose that the empty object pronouns in Hungarian are to be analyzed as instances of DP/NP ellipsis. There are three main assumptions that the analysis is built on. (i) The features of the personal pronouns of Hungarian are as in (26). In particular, plural, i.e., [PL], is a privative feature, singular corresponding to the absence of [PL] (den Dikken, 2006[5]).

(26)

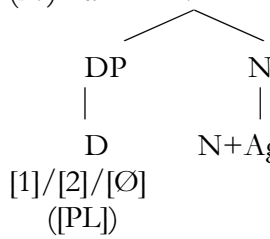
engem	[1st]	minket	[1st,PL]
I-ACC		we-ACC	
téged	[2nd]	titeket	[2nd,PL]
you-ACC		you-ACC	
őt	[Ø]	őket	[PL]
he/she-ACC		they-ACC	

(ii) The first and second person pronouns are structurally smaller (NP=indefinite) than the third person pronouns (DP=definite), which explains why there is objective verb conjugation with third person object pronouns, but not with first and second person object pronouns: namely, there is no definiteness agreement with NP arguments, only with DPs (Bartos, 1997). Contrast (17)-(18) and (19) with (20)-(21) vs. (22).

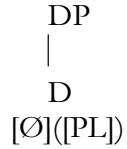
(iii) The first and second person pronouns have a possessive internal structure, as in (27a) (compare 27b). This analysis draws on the fact that these pronouns consist of a morphologically bound possessor pronoun and a morphologically bound possessed element, which bears possessive inflection agreeing in person and number with the possessor (den Dikken, 2006).

[5] I adopt the claim of den Dikken (2006) that third person is in fact the lack of any phi-features.

(27) a.



b.



1st and 2nd person personal pronouns	3rd person personal pronouns
engem,téged 'me,you'	*őt* 'him/her'
minket, titeket 'us, you'	*őket* 'them'

The inner structure of pronouns is as in (27). First and second person pronouns are NPs with a DP in their specifier position. This DP is the pronoun itself that bears the plural feature on it – if the pronoun is plural. Thus the [PL] plural feature is embedded in the NP. Third person pronouns, on the other hand, are DPs themselves. As suggested by den Dikken (2006) third person singular being the lack of all phi-features the [PL] feature is the only feature to be recovered. Notice that the analyses in (27) subscribe to Postal's (1966) treatment of personal pronouns as determiners.

I suggest that the deletion of the 3rd person plural pronoun is not allowed because the only feature on it(s D head) is the plural [PL], which would not be recoverable from the verb if the pronoun were deleted. 3rd person singular pronouns can be dropped because there is no person or number feature to be recovered (cf. (26)). The deletion of pronouns is apparently prohibited if it is the head of the pronoun that bears the interpretable person and number features. 1st and 2nd person pronouns can be deleted because they are NPs whose N head itself bears no interpretable person or number features (N only bears uninterpretable agreement morphology) (Chomsky 1993, 1995). The D element that bears person and number features is contained within the deleted NP as a possessor of N in the manner of sluicing or VP-ellipsis where anything can be deleted from inside the VP. Categories outside the deleted VP do not agree with elements from the deleted VP would license the deletion. The variation among speakers leaves a question for further research.

6 Conclusion

In this short paper I looked at object drop in Hungarian. As opposed to subject drop, object drop does not rely on verbal agreement. Further, object pronouns can be null only partially. In singular all object pronouns can be non-overt, while in plural only first and second person pronouns can be null, the third person plural pronoun *őket* 'them' can never be covert. This paper suggests that this is due to the structure of the object pronouns themselves, and the privative nature of the plural feature. First and second person pronouns, which are NPs, contain the person and number features within a

modifier position inside them. By contrast, the third person plural pronoun, which is a DP, bears the number feature on its syntactic head.

The loss of that feature through the direct deletion of the DP itself renders the sentences with third person plural object drop ungrammatical. Other possible analyses, in particular topic-drop, and VP-ellipsis, do not suffice, as they are unable to account for the ungrammaticality of omitting the third person plural object pronoun. The analysis of this paper is based on the results of a questionnaire study. This paper presents an approach towards the solution of Hungarian null object pronouns.

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Acquisition of Demonstratives by a Russian-Speaking Child

Sofia Krasnoshchekova

The paper's aim is to show how the Russian-speaking children acquire the system of demonstratives. The main functions (that are demonstrative and anaphoric) and their correlation are discussed as well as the acquisition of the deictic proximity opposition and the means the children use to replace a noun are regarded.

Keywords: *demonstratives, language acquisition, pronouns, Russian language*

1 Introduction

Demonstrative pronouns and other demonstratives have long been studied by linguistics. The main functions and meanings of demonstratives have been described both typologically, without references to any specific language, and in the Russian language. Nevertheless, the process of acquisition of pronouns is not described completely, especially in Russian language. It is known now, how the children acquire personal pronouns, including the 3d person pronoun *on* 'he'[1] (which is close to demonstratives by its functions) and its anaphoric and deictic properties. Other classes of pronouns attract the attention of the children's speech researchers less frequently. As for other demonstratives, now the way of acquisition of locative deixis is well-known: at first the child does not separate "far" and "close" objects, then she starts indicating "farness" in some contexts, then, practically at the same time, the idea of "closeness" appears, and at last the opposition is acquired entirely. Moreover, the notions of "far" and "close" areas in children's mind (or language) at first don't coincide with those of adults and are developed step by step. But for Russian language such conclusions are made only on the material of locative adverbs, and it would be interesting to find out, if the acquisition of this opposition goes differently for demonstrative pronouns themselves.

The purpose of our study is to describe the behaviour of demonstratives in the speech of Russian-speaking children: to show the process of building the system of demonstratives, to show how Russian-speaking children build their own system up to the "adult-like" state. Our sub-purposes are to create a hierarchy of functions of the demonstratives used by children, to collect more clear evidence about the acquisition of the proximity opposition, to find out if there are any significant differences in the usage of demonstratives by Russian children and adults and to clarify how the characteristics of the demonstratives system depends on the age of children.

The data from children's speech are also able to enlighten some disputable moments in the theory of demonstratives – those as the status of the form *eto* 'this' (either a form of pronoun *etot* 'this, adjective', or a separate lexeme). These data can be taken into account in the description of demonstratives in the "adults'" system of language.

[1] In Russian personal pronouns *ona* 'she', *ono* 'it' and *oni* 'they' are correspondingly the feminine, neutral and plural forms of *on* 'he'.

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2 Study background: Demonstratives in adult's speech

2.1 The class of demonstratives

In Russian language the class of demonstrative pronouns include such words as *etot* 'this', *tot* 'that', *takoj* 'such', *etakij* 'such-close', *takov* 'such-short form', *sledujushchij* 'next' and demonstrative numeral *stol'ko* 'so much' (Beloshapkova 1989). Demonstrative adverbs *tam* 'there', *tut* 'here', *zdes'* 'here', *tuda* 'to there', *s'uda* 'to here', *ottuda* 'from there', *ots'uda* 'from here', *togda* 'then', *tak* 'so', *potomy* 'therefore', *poetomu* 'therefore' are close to demonstrative pronouns. Demonstrative pronouns and adverbs are united into the class of demonstratives, which in their turn are part of a larger class of deictis words.

Some researchers also tend to reckon the pronoun *on* 'he' among demonstratives, though it is usually seen as one of personal pronouns. We agree with the opinion of the majority and don't consider it here. In this article we describe pronouns *etot* and *tot* and their versions, *takoj*, adverbs *tak, tam, zdes', tut* and their respective direction adverbs. These demonstratives are the most frequent in the speech of both adults and children.

2.2 Functions of demonstratives

Deixis can be divided into two large types: proper deixis (or demonstration itself) and anaphora. By proper deixis a word refers to a part of non-language reality, by anaphora – to a part of preceding (anaphora) or subsequent (cataphora) text. K.Buhler suggests the third type of deixis – "deixis to imaginary", by which a word refers to the speaker's imagination. It is possible to include here so-called "anaphora without antecedent".

The first and the main function of demonstratives is "proper deictic" or demonstrative, though the anaphoric one is also very frequent. The demonstrative function is the first to appear among demonstratives diachronically: the anaphoric one develops on its basis later, by the "metaphorical transfer", when the properties of space are transferred to language.

Russian spoken language has wider range of functions. Special functions include the "supporting" function (it appears in phrases with the topic nominative like "wolf, it came" and provides the pronominal duplication), which has two positional variants: with the demonstrative in postposition ("wolf, it came": classic supporting function) and with the demonstrative in preposition ("it came, wolf": specifying function). Other functions are expressive and searching. In expressive function the pronoun or shows the speaker's attitude to the phrase or to the situation on the whole. The searching function is used to fill in the pauses, when the speaker hesitates about what to say next.

The pronoun *takoj* has even larger amount of specific functions. It can take the emphatic function (not the same as expressive – the emphatic function is used instead of "very" and is also called "the function of high degree of the characteristic"), the classifying function and the actualizing function. The latter is used, when the speaker seeks to make an object or the whole situation more clear in the eyes of the listener.

2.3 The proximity opposition

The proximity opposition is considered the main for the locative adverbs and corresponding pronouns. This suggestion is completely right speaking of the locative adverbs ("here" means "close to", and "there" means "far from"). The meanings of the pronouns given in the dictionary show that, prototypically, *etot* 'this' relates to *tot* 'that' in

the same manner, as "here" relates to "there": "this" refers to "close" objects, and "that" – to "far" ones. In idiomatic phrases like "here and there" the proximity opposition nullifies. Nevertheless, the data show that the demonstrative pronouns may be in different, not so straightforward relations.

3 Study background: Acquisition of demonstratives

Following chapter discusses the previous works in the area of our topic and findings significant for our study.

3.1 Acquisition of deixis and the proximity opposition

According to E.Clark, English-speaking children acquire the proximity opposition completely in several years. First demonstratives appear in the child's speech at the stage of two-word utterances (Clark 2003). The contrast between "here" and "there" on the one hand and between "this" and "that" on the other hand develops in three stages: on the first stage children don't see the contrast, and the pronouns do not differ in the sense of "far" or "close". "Here", for example, is used in deictic meaning, and "there" in non-deictic. On the second stage there is the partial contrast in some contexts, and on the last stage the full contrast is set, and the "adults'" opposition is acquired. Children tend to use different strategies according to the reference point they had chosen (they can refer, for example, either to the place of the speaker or of the listener) and their preferences in expressing spatial relations (for example, one can mark "closeness" and leave "farness" without marking, and another can do vice versa).

The acquisition of spatial deixis in Russian language is usually regarded as a part of the acquisition of locativity in general. When speaking about deictic relations, one of the most important is the concept of the speaker's personal field. It is defined by two oppositions: is the object far from or close to the speaker and if the speaker can see it or not. For the children younger than 3 years the only meaningful factor is proximity. The "close" border (i.e. the border of the personal field) in this case lies in the length of the child's hand, and for children an object is "close" only if they can reach and touch it (Elivanova 2007).

It is worth reminding, however, that in Russian the pronouns *etot* 'this' and *tot* 'that' do not completely correspond to the locative status of *zdes'/tut* 'here' and *tam* 'there', so, it is impossible to reduce their acquisition to the acquisition of proximity opposition, as in other languages like Chinese (Zhao 2007).

The period between the appearance of the first demonstratives and the age of 2,5[2]-3 in Russian-speaking children is considered proper deictic; during this time the child uses practically only deictic means to mark the location of objects ("proper spatial deixis") and rarely uses other locative adverbs like "ahead" and prepositional phrases like "on the table" (both groups of deictic means form the so-called "relative spatial deixis"), though those rarely used means can appear in the speech of some children. Children indicate the location of objects only from the point of view from their own body (i.e. the reference point is the speaking child), and this corresponds with one of the stages of cognitive development of locative concepts (Elivanova 2006). Nevertheless, some children use non-deictic means more willingly than deictic even on the early stages of

[2] Speaking of the age of the children, in 2,5 "2" means "2 years" and "5" "5 months".

language acquisition (Elivanova 2004, 11). It can be argued that such children are "referential/nominalist", and, therefore, their strategy in acquisition of locative markers parallels the strategy of language acquisition on the whole.

3.2 Acquisition of anaphora

There are two main tendencies in studies of anaphora in the children's speech, one of them being the study of children's narratives and the other deals with producing and perception of anaphoric constructions containing utterances. In the first type not only experimental texts are studied (retellings of experimental films, read stories, narratives by pictures), but also spontaneous children's speech. The main attention here is drawn to the verbal means used by children to provide the coherence of the text (personal and demonstrative pronouns, nouns, zero markers), the principles by which children choose nouns to be the antecedents or to be connected with the pronouns (subjects, objects, the main character, the first mentioned character) and the age, at which children become aware of the text coherence as an important element of the text (McGann, Schwartz 1988), (Bamberg 1986). It is known that English-speaking children younger than 6 years more willingly use pronouns in deictic function, indicting gestures and other non-verbal means, than pronouns in anaphoric function. Only 6 years aged children understand that the text must be coherent and start using anaphoric means for connecting parts of narratives. Within the framework of this tendency demonstratives are described, if they appear in children's speech and form anaphoric constructions, but there is still no clear description of their behaviour in the narratives.

In the second type producing and perception of anaphora are studied experimentally. When studying perception, the attention is paid to the factors that affect the children's choice of one or another antecedent, which is bound to the given pronoun. In the classic kind of experiments the stimulus utterance contains two competing nouns, that can be regarded as possible antecedents (for example, in an utterance like "the lion is near the house and the tiger is in the forest. It is happy" both "lion" and "tiger" can be antecedents for "it"). There are several important for children's choice factors: order of nouns (children can bind the pronoun to the first or to the second mentioned character), thematic status of the antecedent (if the character was introduced earlier), animate or inanimate antecedent, distance between the antecedent and the pronoun. Each anaphoric element (personal pronoun, demonstrative pronoun or zero) has its own features that affect the children's choice. When studying production of anaphora, it is regarded, how the aforementioned factors affect the choice of pronouns and manner of its binding to the antecedent. Within the framework of this tendency the features of the demonstratives are described in comparison with those of the personal pronouns and other anaphoric words (Chipman, Gérard 1981), (Baylin 1992).

4 Demonstratives in children's speech: study

4.1 Data

In our research we used data from longitudinal observations over children's speech. Parental diaries, audio and video recordings were used. We have analysed speech of fourteen children aged from 1 year 3 months to 4 years (seven boys and seven girls). The children's speech was recorded by their parents one time a month during all the period.

All children are monolingual, Russian-speaking, from middle class. For comparison with the adults' speech data from the National Corpus of Russian language were taken.

The analysed material contains 3117 demonstratives. Demonstrative pronouns *etot* 'this', *tot* 'that', *takoj* 'such', *stol'ko* 'so much', locative demonstrative adverbs *tam* 'there', *zdes',* 'here', *tut* 'here' and their derivatives *tuda* 'to there', *s'uda* 'to here', *ottuda* 'from there', *ots'uda* 'from here', and pronominal adverbs *tak* 'so' and *togda* 'then' were analysed. All demonstratives were divided into four groups: a) *eto*-demonstratives: *etot* and *tot*; b) *takoj*-demonstratives: *takoj* and *tak*; c) locative adverbs and d) rarely used demonstratives *stol'ko* and *togda*.

From all the examined pronouns 213 (7%) were produced at the age of 1,3-2 years, 1104 (36%) – at the age of 2-2,5 years, 911 (29%) – at the age of 2,6-3 years, 889 (29%) – at the age of 3-4 years.

This preliminary periodization is in some sense formal and relative, because each child acquires language at her own speed, and the same language feature can appear in one child's speech, for example, at the age of 2, and in another child's speech at the age of 2,5. Nevertheless, the division into long periods (half a year or more each) can partly alleviate these differences. One of our purposes is to create a more precise periodization according to the behaviour of demonstratives.

4.2 Results: Appearance of the first demonstratives

The first demonstratives usually appear in children's speech at the age of 1,5-1,6, sometimes earlier. The very first demonstratives in our data were produced at 1,3-1,4 (locative adverbs *tam* and *zdes'*). See the examples below:

(1) *Danja!* Tam *Danja!*
Dania there Dania
'Danja! There is Danja!' (S., 1,3,23)[3]

(2) Mother: *A papa* *gde?* Child: *Zdes'* (points at the father)
and father where here
'And where is father? – Here.' (R., 1,3,23)

So, the first to appear are the locative adverbs, they are followed by the pronoun *etot* (1,7-1,9), then *takoj* and *tak* start being used (about 2,0). The pronoun *tot*, which is paired to *etot*, appears only around 2,5-2,6; words *togda* and *stol'ko* come after 3 years. The first pronominal adverbs can appear on the stage of one-word utterances, but usually it happens on the stage of two-word utterances. Other demonstratives appear in the end of the two-word utterance stage or even on the multiple-word utterances stage.

As for the cognitive development in its relation to the first demonstratives, the child should have formed a kind of notion of "I" as a deictic centre and of possibility to indicate different objects according to the reference system; at the same time the child should understand the ideas of "far" and "close". The language development at this age assumes presence of such categories as noun case, gender and number. The child is familiar with the noun case paradigm and is learning to conjugate adjectives, though the adjective paradigm is not formed entirely. Children acquire adjective paradigm inflexions (that are also the inflections of demonstrative pronouns) gradually and makes the same

[3] In this article the age of children is written as following: years, months, days.

mistakes in formation of pronouns as in that of adjectives (Voejkova 2010), (Sizova 2008): the most usual are assimilation and dissimilation of noun and adjective inflexions. Examples (3) and (4) illustrate this:

(3) Mother: *Poznakomilis'?* Child: *Da, s muzhim* *takom
get-acquainted.2-PL.PAST yes with husband such
'Have you got acquainted? – Yes, with such husband.' (L., 2,6,14)

The right form here is *takim*, and the child makes the noun and the pronoun inflections look different.

(4) *Narisuem* *etuju, *sobachku sobrali, malen'kuju*
let's-draw this-F.ACC dog collect-PL.PAST small-F.ACC
'Let's draw this, we've collected the small dog.' (V., 2,6,17)

The right form here is *etu*, and the child makes the pronoun and the adjective inflexions look identical.

The adverbs *tam* and *zdes'* can be considered the first deictic words. As for the other demonstratives, when *etot* appears, children usually are already able to produce one of personal pronouns – it is often the first person pronoun *ja* 'I', if the child refers to herself in first person, or rare for children forms *nash* 'our' or *ty* 'you', if the child chooses other strategy of calling herself. The third person pronoun *on* 'he', which is close to *etot* in functions, is usually acquired several months later than the first demonstratives (after 2 years, about 2,1-2,2), not far from the pronoun *takoj*.

4.3 Results: Main functions of demonstratives

Anaphoric and demonstrative functions are usually considered the main functions of demonstratives. If a child points or looks at something (which is clear in video recordings and is stated by parents in parental diaries and deciphered audio recordings) and at the same time pronounces a demonstrative, we ascribe to this demonstrative a demonstrative function. If a child utters a noun and then refers to the same object using a demonstrative, we ascribe to this demonstrative an anaphoric function. In children's speech the absolute majority of demonstratives are used in the demonstrative function (82% of all the recorded demonstratives). The anaphoric function appears with the demonstratives at about 2 years, starts being used regularly at the age of 2,5-2,6, but even after this age it is used less frequently than the demonstrative one (4% of all the recorded demonstratives). Nevertheless, the anaphoric function is acquired and used regularly with the third person pronoun *on* from its appearance at 2 years.

It can be supposed, that relations between *etot* 'this' and *on* 'he' develop during three stages. The age limits of these stages are different for each child, so here only the order of stages, not their duration is given. On the first stage the only primary function for all classes of pronouns is demonstrative, but the anaphoric one is supplementary for *on* and is not used for *etot* at all. The importance of the demonstrative function on the early stages of language acquisition can be explained by the child's communicative needs: children aren't ably to extract the necessary full-meaning word from their mental lexicon quickly and in time, so they call the object with the first remembered word, it being a personal or a demonstrative pronoun. On the second stage *on* is interpreted by children as a default anaphoric pronoun, and *etot* as a default demonstrative pronoun. The

functions are assigned to their respective pronouns, and each context demands its own pronoun, so there is no competition between them. On the third stage children start apply the anaphoric function to *etot*. The development of anaphora is connected to the development of the narrative deixis and children's narrative ability in general, and to the ability to refer to the objects not only from the deictic centre ("I – here – now"), but also from the shifted reference point.

On the third stage the pronouns *on* and *etot* are distinguished by other parameters. In other words, at first the only way to mark the difference between these two pronouns is to assign them different functions, but then children understand that both functions can be used with both pronouns, and begin to look for more precise distinctions and build into their system of language nuances of meaning of these pronouns.

The cataphoric function, in which the demonstrative refers to a subsequent segment of the text, first appears with the *takoj*-demonstratives and then is used also with the locative adverbs. It is usually used in complex subordinate constructions (like "*takoj, kak"* 'such as') and demands a certain level of cognitive and syntactic development.

The supporting function is characteristic only for the locative adverbs. Adults, unlike children, apply it to other groups of demonstratives too.

Among the supplementary functions of the pronoun *takoj* the most widely-used by children are the searching and the actualizing functions (6% of all the recorded demonstratives, 24% of all 752 of *takoj*-demonstratives). It is not always possible to distinguish them completely, because in some cases it is unclear, if the child forgets the necessary word/isn't able to find the right word quickly (searching) or tries to make the listener create as accurate as possible picture of the situation and to emphasize features of an object or an action (actualizing). The usage of the searching function is explained by the child's insufficient lexicon. Children use *takoj* when they cannot remember the necessary word at once and tries to describe the situation by the means they have at hand. This function is the first to appear.

The actualizing function (sometimes it's also called "typifying") is very common in the adults' spoken language (Satjukova, Voejkova 2010, 201). The pronoun *takoj* here has the pragmatic value. This also makes it common among children, but, in spite of this fact, the first contexts with it are recorded only on the second stage, at 2,5. We can suppose that, while children don't care about pragmatic relations, while they don't take the listener into account (Tomasello 1999), they don't need to actualize in the listener's mind any ideas and concepts and, therefore, to use the actualizing function. So, since about 2,5 children have some presuppositions necessary for development of the idea of the listener's point of view.

The emphatic function is also one of the first to appear, but, in comparison with other functions, it is used by children rather seldom (1% of all the demonstratives); maybe, it depends on the fact, that children do not fell the need to express gradations of the meaning by language and use instead non-verbal means like intonation, gestures and mimics.

Table 1 (Functions of the demonstratives) and Table 2 (Functions of *takoj*-demonstratives) provide more details:

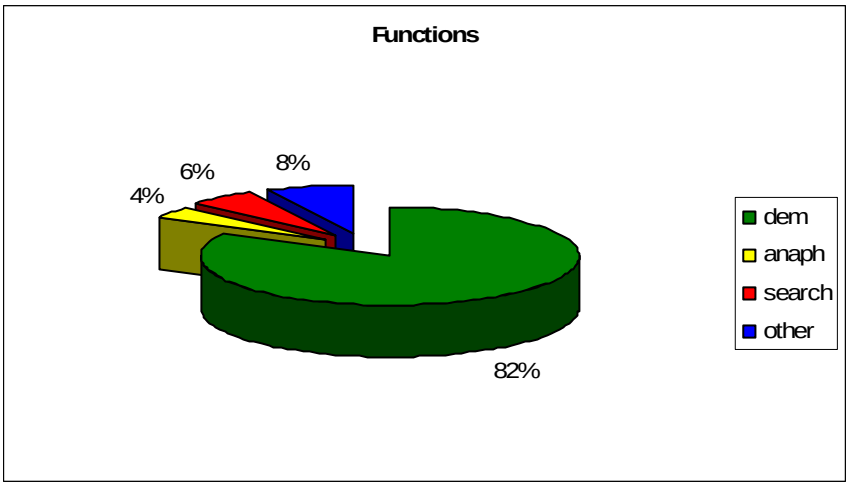

Table 1. Functions of the demonstratives: percentage.

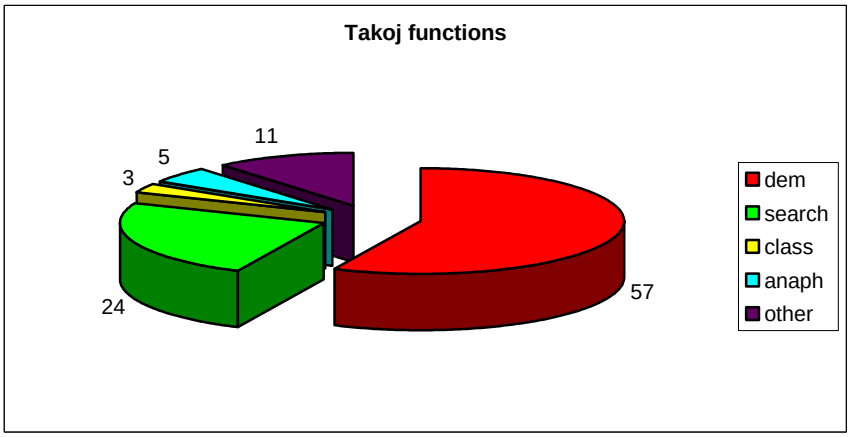

Table 2. Functions of takoj-demonstratives: percentage.

4.4 Results: The proximity opposition for the adverbs and pronouns

The proximity opposition is early acquired with the locative adverbs. *Tut* 'here' appears practically immediately after *tam* 'there', children do not confuse adverbs with each other and refer *tam* to "far" (as they understand "farness") objects and *tut* to close objects. Of course, children's conception of "far" and "close" doesn't in all correspond to the adults' one. But if we don't take into account these slight differences as well as the reference system the child have chosen, we can presume that children uses "far" and "close" adverbs regularly right.

On the whole children use more "far" than "close" adverbs (56% vs. 44% of all the recorded locative adverbs, total amount is 1035; see Table 3), especially before the age of 2 years (65% vs. 35%, total amount of adverbs in this age is 71). It is known that the first member of the opposition acquired by children is usually the marked "far" one, and on the very early stage their deictic system has the firm of "*tam* vs. zero", but the second, unmarked member also appears instead of zero very early – before 2 years.

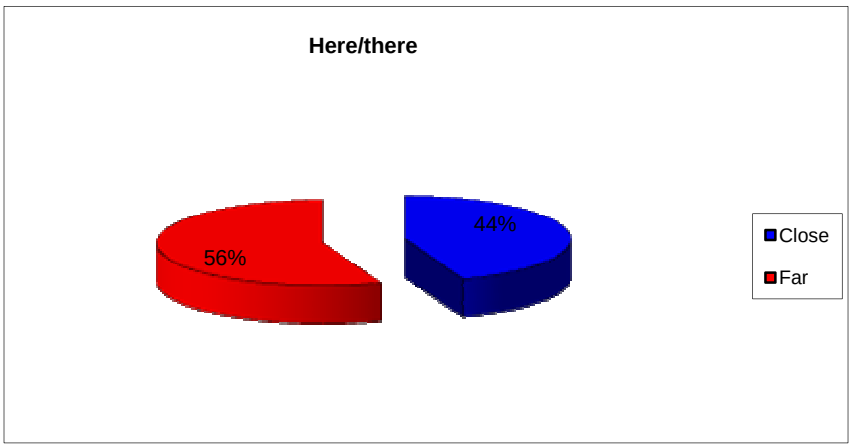

Table 3. "Far" and "close" locative adverbs: percentage.

However, this system cannot be applied to the *eto*-demonstratives. Though in the adults' speech *etot* 'this' and *tot* 'that' are just as universally opposed by proximity as *tut* and *tam*, children don't show such parallelism. The pronoun *tot* appears much more lately than *etot*, the majority of children acquire it by 2,5 (whereas *etot* is recorded at 1,8). Though there exist earlier cases of appearance; more than a year can pass sometimes between the points of appearance of *tot* and *etot*. Its usage greatly depends on the child's individual characteristics. For example, only one child in our data uses *tot* regularly (V., a boy); one child shows the first *tot* forms at 2,1 (O., a girl), but judging by other factors we prefer to call these forms phonetic variants of *etot*. Most children use *tot* extremely seldom (about 1% of all the recorded demonstratives in our data and 3% of the *eto*-group demonstratives. Total amount in the latter group is 1315. See Table 4). So, the proximity opposition at first doesn't apply to the *eto*-demonstratives, however logical it could've seemed.

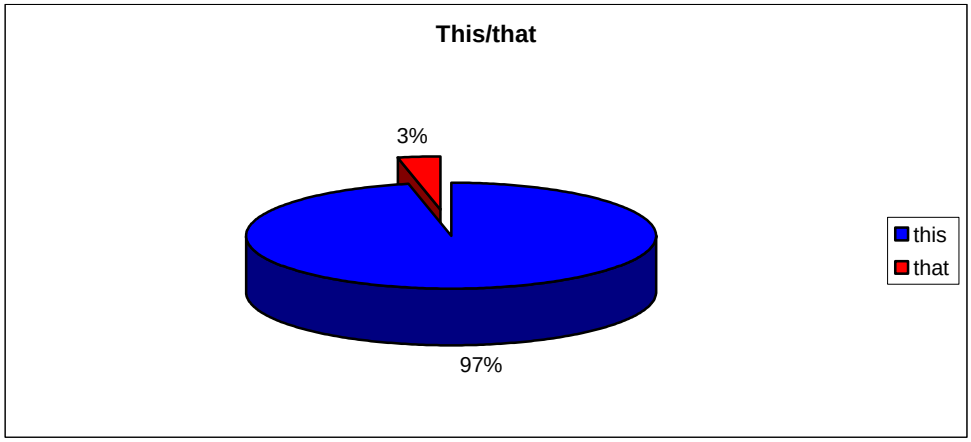

Table 4. "Far" and "close" eto-demonstratives: percentage

Our first presumption is that *etot* for children is the default deictic pronoun, which refers to any objects regardless of their location, and *tot* is the default cataphoric pronoun, which primary function is to build subordinate constructions like "*tot, kotorij*" 'that, which'. Thus, the child's language system at the age of 2,5-3,5 contains three

functionally opposed pronouns: anaphoric *on* 'he', demonstrative *etot* and cataphoric *tot*. But the data show that pronouns *tot* in deictic, "far" meaning appears earlier than in cataphoric function and refer to physically far objects or appears together with *etot* in contrasting meaning. See the example below:

(5) (Mother is coloring a picture. One is already coloured.)
C: *I* tu *tozhe*. (points)
and that-F.ACC too
'And that too.' (V., 2,5,23)

Thus, in general *etot* and *tot* are opposed by locative characteristics.

On the early stage of language acquisition[4] children manage with only one means of expressing the proximity opposition – the locative adverbs. The pronouns carrying the same meaning are surplus. *Tam* refers to far areas and objects, *zdes'* 'here' and *tut* refer to close areas, *etot* and *eto* refer to close objects. At the same time, children are interested practically only in the closest area. So, on the one hand, the "far" meaning is more important for children as marked. This meaning cannot be left unexpressed. This implies high frequency and early acquisition of *tam* and *tuda* 'to there'. On the other hand, the "close" meaning is also very important for children, because the main part of communicative situations is related only to the deictic centre (I – here – now). This implies the wider variety of means of expressing "closeness": *etot*, *eto*, *zdes'*, *tut* and *s'uda* 'to here'.

As for the speech perception, children understand *tot* in directed to them adults' utterances 2-3 months before its appearance in their own speech. Such period of time is called "the nearest development zone" (Vygotsky 1984). See example (6).

(6) Grandmother: *Prinesi mne* tot *kubik*.
give me that brick
'Give me that brick.'
(Child, V., is 2,3,19. He starts using *tot* at 2,5)

Speaking to younger children adults refrain from using this pronoun.

When children begin to understand *tot* as a separate word in the adults' speech and use it themselves, they note that *tot* is somehow connected to *etot* and construct a proportion: "*tot* : *etot* = *tam* : *zdes*'", then they transfer the long ago acquired proximity opposition from the locative adverbs to the *eto*-demonstratives. Disjunctive questions the adults pose to children ("*etu ili tu?*" 'this or that?') also help children to understand and develop the opposition. Then the *eto*-demonstratives are included in the deictic system. And only when children are able to produce syntactically complex constructions, they give *tot* the cataphoric meaning.

Thus, the relation between *etot* and *tot* passes through several stages in its development. On the first such stage only *etot* is present in the language system. It is used in a non-deictic and non-locative meaning and can be regarded as an analogue of an article (that Russian language doesn't have). On the second stage *tot* appears, also in a non-deictic and non-locative meaning. See example (7):

[4] Again, the age limits vary greatly from child to child, so the term 'stage' is used in a non-strict sense.

(7) Mother: *Davaj,* *rasskazhi* *schitalochku.* – C: *Ne* ta, *po-moemu.*
come-on tell rhyme not that-F I-think
'Come on, tell me the rhyme – It isn't that (the right one), I think.'
(L., 2,2,5)

Here and in other similar cases the first pronouns *tot* mean "right, the right one" and *ne tot* 'not that' "wrong, not right one".

On the next stage *tot* gets involved in an opposition "demonstrative epronoun 1" vs. "demonstrative pronoun 2". Children look for the meaning that can help to tell the difference between two demonstrative pronouns, and on the fourth stage the proximity opposition is transferred from the locative adverbs to the demonstrative pronouns. On the last stage *tot* obtains the cataphoric features.

This development of relations between *etot* and *tot* is similar to the development of relations between *this* and *that* in English-speaking children as described by E.Clark (Clark, Senguil 1978): at first two members do not form an opposition and are used in a non-deictic meaning, then partial contrast appears (in some contexts), and then the full contrast is set.

Nevertheless, the infrequency of *tot* in the children's speech questions the primary place of the proximity opposition for the demonstrative pronouns in the adults' speech and the system of language. Perhaps it would be more correct to describe *etot* in the first place as a purely demonstrative pronoun without references to the object's proximity and *tot* in the first place as building material for cataphoric constructions; the "far" and "close" meanings thus set in the second place. There are several arguments for that: a) the foregoing data from the children's speech; b) the fact that *etot* has a "far" pair whereas *eto* does not, so, the opposition isn't equal; c) the fact that a range of demonstratives diachronically had "close" equivalents but now don't. For example, *takoj* 'such' and *tak* 'so' were opposed to respectively *etakij* and *etak* that now are used only in special situations or have their own, non-demonstrative, lexical meaning. Moreover, demonstratives *togda* 'then' and *stol'ko* 'so much' now don't have any paired words at all.

So, the only core, central way of expressing the proximity meaning is the locative adverbs, but the problem needs further investigation.

4.5 Results: Locative adverbs as an "avant-guard" of demonstratives.

There are several evidences for the fact that the locative adverbs go ahead of the other demonstratives and "pave their way" into the system of language.

1. It is locative adverbs that are the first of demonstratives to appear in the children's speech. The very first contexts with demonstratives in our data contain the demonstrative *tam* 'there' and are produced at the age of 1,3. See example (8):

(8) Mother: *Gde* *kiska?* *Gde* *sobachka?* – Child: *Tam* (points)
where cat where dog there
'Where is the cat? Where is the dog? – There.' (B., 1,3,15)

Most children either acquire *tam* earlier that *etot* 'this' or the two demonstratives appear simultaneously. It could be supposed that *etot* as an easy means of distinguishing an object from the others and the background should appear in the first place, whereas *tam*, referring to the idea of "farness" and demanding certain cognitive abilities from the

child (including the ability of counting from the deictic centre), should be more difficult. But in reality children at first do not use language to refer to the unmarked ("close") objects and needs language to point to the marked "far" situations.

2. The locative adverbs are the first to take the supporting function, both in a supporting and a specifying variant. They are used in this function most frequently (76% of all the demonstratives in the supporting function; total amount is 60. See Table 5). Example (9) is an illustration.

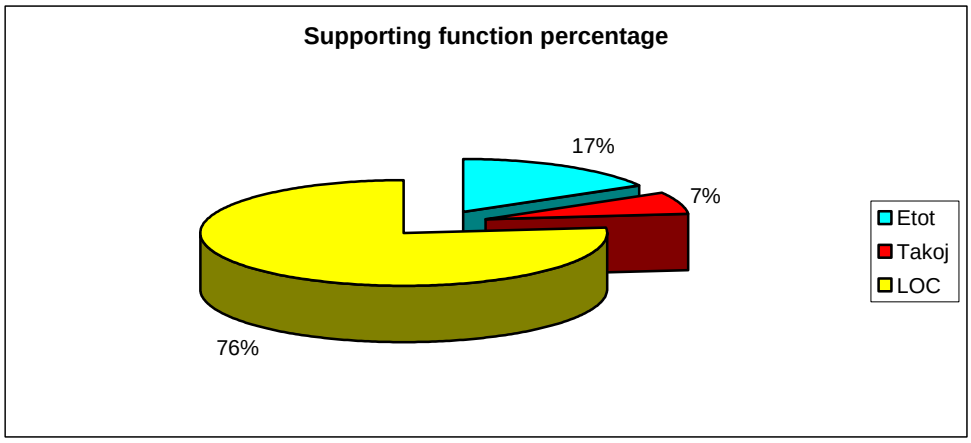

Table 5. Supporting function: percentage

(9) *Kukla dolzhna* tut *spat', v spal'nike.*
doll must here sleep in sleeping-bag
'The doll must sleep here, in a sleeping-bag.' (L., 2,0,29)

3. The locative adverbs appear most frequently in the anaphoric function (40% of all the demonstratives in the anaphoric function; total amount is 116. See Table 6 below), though children do not usually use them in cataphoric constructions, unlike the pronoun *takoj* 'such'. The "anaphora to the situation" also appears earlier with the locative adverbs than with *etot*, though for *etot* this type of anaphora is acquired rather early, at about 2 years.

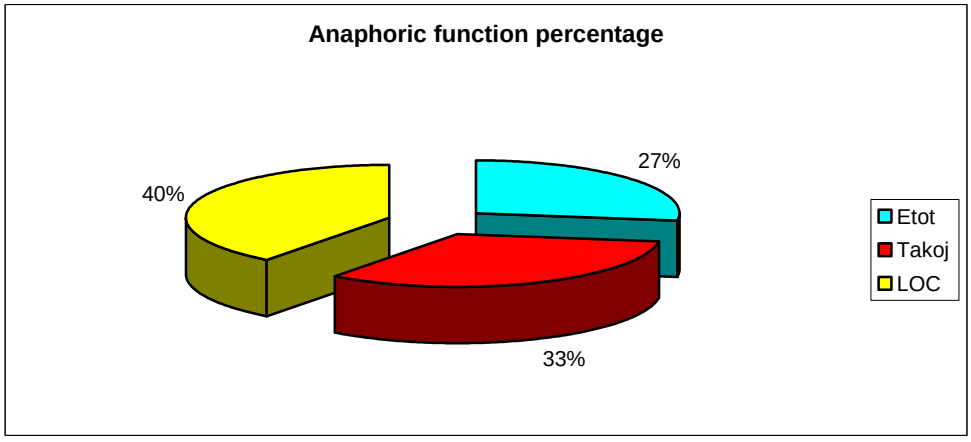

Table 6. Anaphoric function: percentage.

The locative adverbs are unchangeable and easy to pronounce (*tam*, *tut* 'here', *tuda* 'to there') short and convenient to store in memory, that's why they appear so early and are used so widely by children. We can say that they are an "avant-guard" of the demonstratives: on them children try and work through the new features and functions and then transfer the "polished" characteristics to the other demonstratives, including demonstrative pronouns. Thus, the locative adverbs help children to acquire the system of demonstratives more quickly.

4.6 Results: Ways to replace the noun: *on*, *etot*, *takoj*

The speaker resorts to the different ways of replacing the noun, when he during his speech forgets or cannot quickly extract from the mental lexicon the necessary word or when he doesn't know how to call one or another object properly.

It is known that in the adults' speech the default replacing pronoun in such cases is the pronoun *etot* 'this' (or *eto*[5]). Though this usage stands close to hesitative *eto* (used when a speaker isn't sure how to continue, can be translated as "well, ehm": "*ja… eto… poshol*" "I… ehm… went"), *eto(t)* here has its own lexical meaning. *Eto(t)* refers directly to the objects of real world and allows not to turn to full-meaning words. If *eto(t)* denotes an object in the field of vision of both communicants or one that can be unambiguously understood from the situation, this usage is called "proper demonstrative". If *eto(t)* refers to an object outside the field of vision or one the listener has to guess about, this usage is called "nominative" (Poholovka, Kravchenko 2002). Sometimes in such cases adults use the personal pronoun *on* 'he' or non-verbal deictic means (gestures, pointing looks). Usually *on* is used, when the speaker presumes that the listener exactly knows or can easily understand from the situation which referent the pronoun denotes. In other cases *on*, if not supported by the previous text nor by the unambiguous reference to an object, can be regarded as a fault and lead to a communicative failure. As for *eto(t)*, the restrictions here are weaker, and it isn't necessary for the referent to be in the field of vision of the communicants. Besides, "nominative" *on* usually appears in cases when the speaker "forgets" to look from the listener's point of view and ascribes the interlocutor his own picture of the situation (the sphere of the Theory of Mind), and *eto(t)* usually appears when the speaker isn't able to quickly remember the necessary full-meaning word (the sphere of speech production and the mental lexicon).

Back to our research, for children the set of replacing means is more manifold. Young children, on the one-word utterances stage, use pointing gestures and so-called "capsules" that can be regarded as proto-pronouns. "Capsules" are special words that don't have analogues in the adults' language and are specific for each child (each child uses her own "capsules"). Like "standard" pronouns, "capsules" can denote any object and thus replace the full-meaning words (for example, A. uses words *biba* and *bil'ba* that don't exist in Russian to call the objects she doesn't know names for). With the entrance of the pronouns, children get rid of the "capsules" but still use non-verbal deictic means both with demonstratives and separately.

Children consider the pronouns *eto(t)*, *on* and *takoj* 'such' equally possible in replacing contexts. The pronoun *eto* is usually used when children don't have the necessary full-meaning word in their mental lexicon and are not aware of its gender; three others (*etot*, *on*, *takoj*) are used when children know the word but aren't able to evoke it from the memory. All the three pronouns are used in absolutely similar contexts, and

[5] Hereinafter we use the formula *eto(t)* for the cases, when it isn't relevant if *etot* or *eto* appears.

here it is possible to speak about their competition. In most part of the contexts children use the right gender form of the pronoun ("*daj mne etu*" 'give me this-F' "*daj mne etogo*" 'give me this-M'), so, the omitted noun is present in their lexicon. It is worth noting, however, that sometimes both children and adults use oblique cases forms of the pronoun *etot* to name an unknown object. In the adults' speech those forms are described as neutral, but it is difficult to say if it's right because the oblique cases forms of neutral and masculine gender here are homonymous. See example (10).

(10) *Baba, risuj Vane vot etim*
Granny draw Vanja-DAT emph this-N/M.INSTR
(gives Grandmother a pencil)
'Granny, draw to Vanja with this' (V., 2.2.17)

Adults use *takoj* to replace the unknown/forgotten noun marginally. However, in spoken language *takoj* and *eto* both can be used in a searching function, as words that fill the hesitation pauses. Moreover, *takoj* in certain anaphoric contexts can become similar to *eto(t)* in adults' speech, and because of that children are likely to mix the two pronouns. At the same time *takoj* can replace a forgotten adjective, to describe an unknown or unclear characteristic and to be a "weak" member in a pair of antonyms ("*tsvetnye ksrandashi i* takie *karandashi*" 'coloured pencils and such pensils' – *takoj* meaning "not coloured, other than coloured"), that is to carry out the same functions in relation to adjectives as *etot* in relation to nouns. If adults use *takoj* when they want to describe the situation more clearly, children compensate the lack of adjectives in their lexicon. So, at first children do not differentiate between *eto(t)* and *takoj*, both being demonstrative pronouns. They spread all the functions and meanings of *eto(t)* upon *takoj* and the features of *takoj* for adjectives to the situations when nouns are replaced.

The first demonstratives are always used in a proper demonstrative function and refer to the object the child points to, takes in hends etc.; the nominative function appears later, when the child gets able to refer to other situations than that of the deictic centre.

Children try to maintain the communication by all available means and, if they forget the necessary noun or don-t have it in their language system, they replace it with the first appropriate pronoun that comes to mind. The communication doesn't break, the adult listener understands what the child speaks about, and the child avoids the communicative failure. On the other hand, children do not have the completely developed Theory of mind and they cannot trace if the listener understands what they speak about if they use the pronoun in the nominative function. For example, a child speaks about something, carries in mind a certain referent, but doesn't let the listener know about it and at first uses a pronoun to name it. In this case the communicative failure may occur. The first case happens on the early stages of language acquisition, when the only possible reference situation is the directly observed one. The second case can happen when children have already acquired the idea of a transferred situation, but haven't yet developed the Theory of mind.

4.7 Periodization

The data shows that the preliminary periodization we gave in chapter 4.1 in some sense properly describes the stages of development of the demonstratives system. The first stage lasts from the appearance of the first demonstratives and till about 1,11-2,2 for

different children. It can be called an "elementary demonstratives stage". The demonstrative pronoun *eto(t)* and locative adverbs are used here and only the demonstrative function is possible. On the second stage the *takoj*-demonstratives appear and other functions (anaphoric, supporting etc) are introduced. This stage lasts till 2,4-2,6 and can be called an "acquisition of basic characteristics of demonstratives stage". During this stage the demonstratives are used most frequently in comparison to other stages. On the third stage, which lasts until 2,8-3,0, children begin to make the case paradigm of demonstrative pronouns more varied (forms of non-central oblique cases appear), the number of unchangeable (adverbs and *eto*) and changeable (pronominal adjectives) demonstratives gets equal, *tot* appears and the proximity relations develop between *tot* and *etot*. On the fourth stage, which starts at 2,8-3,0, the anaphoric and supporting functions get more important and rare demonstratives *stol'ko* "so much" and *togda* 'then' appear.

5 Conclusions

1. *Age and periodization*. By the age of 4 children usually acquire the system of demonstratives in the main. At this age children are able to produce and use most demonstratives and most of their functions and meanings. Nevertheless, the ratio between different demonstratives, as well as functions and meanings, isn't the same as in the speech of adults, so we cannot register the complete correspondence with the adults' system. The acquisition of the demonstratives pass through several stages. The first to appear is the locative adverbs, then the pronoun *eto(t)*, then *takoj* and *tak*, then *tot* and other demonstratives appear. As for the functions, they also are acquired according to the stages: from the demonstrative function on the first stage to the wider usage of unusual functions on the fourth stage.

2. *Functions*. The core and practically the only possible function of demonstratives for children, unlike adults, is the demonstrative one. If in the adults' speech the demonstratives can equally be used both in demonstrative and anaphoric functions, for children the anaphoric one lies in the periphery. It starts being used regularly after the age of 3, but still the amount of demonstratives in the demonstrative function is much greater than that in the anaphoric function. First of all, the anaphoric function is related to the area of the narrative deixis. While children do not refer to the transferred situation, while they are not able to abstract themselves from the deictic centre and to shift the reference point, they do not need the anaphora. Then, the anaphora appears in the children's speech together with the appearance of the third person pronoun *on* 'he', and until a certain stage in language acquisition the anaphoric function is connected only to this pronoun. At first (before 2,5) the central function for all pronouns is demonstrative, then (from 2,5 till 3-3,5) the pronouns are distributed by functions, when *eto(t)* is considered a default demonstrative pronoun, which cannot take in other functions, and *on* a default anaphoric pronoun. The locative adverbs and *takoj*-demonstratives are close to *eto(t)* here and also can have only the demonstrative function. At last, from 3-3,5 children realize that both functions are equally possible for both groups of the demonstratives and start looking for other ways of distinguishing between *eto(t)* and *on*.

The cataphoric function, a variant of the anaphoric one, begins to be used only when children get able to produce complicated subordinate constructions and thus depends on the level of syntactic development. The supporting function that is very

common in the Russian spoken language is infrequent among children and is usually used in its specifying variety.

The *takoj*-demonstratives are in addition known in the actualization and searching functions. These functions are not always easy to clearly tell apart. Children use them when they try to express their thoughts more exactly, to provide the listener with a more clear concept of the described referent, but they lack the necessary words in the mental lexicon or cannot quickly extract the full-meaning word from their memory. Other particular functions of the *takoj*-demonstratives are rarely used by children.

3. *The development of the proximity opposition*. The proximity opposition is acquired differently for the locative adverbs and the *eto*-demonstratives. It is well known that the locative adverbs are opposed as "close" and "far" from the very appearance, and children regularly use *tam* and *tut/zdes'* in rught contexts. For the *eto*-demonstratives the acquisition of this opposition proceeds more slowly. Some children may have about a year pause between the appearance of *etot* and that of *tot*. *Tot* is used many times less frequently than *eto(t)*, a paired "close" pronoun. The proximity relations between them are set only at about 3 years. We suppose that on the early stages of language acquisition children use one means of proximity indication – locative adverbs, while other means are regarded as abundant. *Etot* at this age is seen as a default demonstrative pronoun that doesn't relate to "closeness" or "farness". When *tot* appears, the already formed proximity opposition is transferred from the locative adverbs to the *eto*-demonstratives. However, the data from the children's speech question the central place of the proximity opposition for the *eto*-demonstratives in the adults' speech. Possibly, we should consider primary the general demonstrative meaning for *etot* and the cataphoric meaning for *tot* and put the proximity meanings on the second place.

4. *The special status of locative adverbs*. The locative adverbs take a special place in the system of the demonstratives: they can be seen as an "avant-guard" of the demonstratives. They are the earliest to appear, the first to be used in the supporting function, the most frequent to have the supporting and anaphoric functions. Being unchangeable and short words they are easy to remember, acquire and produce. We argue that children work through the properties of the demonstratives on them and then transfer these properties to other demonstratives.

Thus, the producing of the demonstratives by children is described, yet the problem of perception remains and needs further investigation: it is interesting to find out when children start understanding demonstratives in the speech of adults and what strategies can adults follow when speaking to children. Moreover, it is possible to describe the process of further acquisition of the demonstratives and its becoming close to the adults' one.

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Contrasting French nominal terms to common language NPs – towards a rule-based term extractor

Ágoston Nagy

The aim of the paper is (1) to point out the specificities of French nominal terms with respect to prepositional complements and adjectival adjuncts; and (2) to contrast the internal structure of nominal terms with that of common language NPs. This analysis is used to elaborate the rule-based module of an automatic term extractor, the main aim of which is to find nominal terms in a specialised text and to filter out common language nominal expressions.
This rule-based module is complemented with a rule-based filter. The corpora used for the analysis consist of the description parts of patents written in French.
As hypothesised, the results showed that already with rule based methods, high accuracy can be achieved. Without the rule-based filtering, the program produced high recall (0,82) and low precision (0,53). The filtering resulted in the increase in both the precision (0,66) and the recall (0,83).

Keywords: *adjectival adjunct, nominal phrase, nominal term, prepositional complement, term extraction*

1 Introduction

According to the traditional approach (e.g. Wüster 1976), terms are lexical units having the following characteristics: they are related to a domain (e.g. informatics, physics), they are connected to one and only one concept that they denote. According to Justeson and Katz (1995), in computational terminology, nominal terms are in the centre of interest since these are the terms having the most complex syntactic structure ranging from simple nouns to extremely long nominal compositions (e.g. in French *donnée* 'data' and *système de gestion de base de données* 'database management system').

The aim of this article is to give an overview on the differences between noun phrases (NPs) and nominal terms, especially with respect to prepositional complements (including the preposition+noun sequences of nominal compounds) and adjectival adjuncts. This research is done for the purpose of creating a term extractor, which is a program used to automatically extract nominal terms from written, French language patent texts. As the main aim of a nominal term extractor is to extract nominal terms, and therefore exclude common language noun phrases, the internal structure of nominal terms will be contrasted to that of ordinary NPs. This contrastive analysis will be based on French grammar books and articles about the structure of NPs, like Riegel *et al* (2009) and Anscombre (1991), respectively.

Throughout the article, the notion of *term* is used for the elements to be analysed in this paper and to be extracted by the application even though the domain-relatedness of these elements is not taken into consideration when their internal structure is presented in this paper and implemented into the application. It is hypothesised that the choice of the corpus determines their domain-relatedness, and as the corpus itself highly represent specialised discourse, it does not contain terms of other domains. The analysed

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elements cannot be considered as *concepts* because concepts are the abstract mental representations of terms.

Since this automatic term extractor works on predefined syntactic patterns in order to extract nominal candidate terms, the different syntactic structures of terms have to be defined and the differences between common language NPs and terms have to be shown, and both of them as precisely as possible. In this article it is the traditional definition of terms (Würster 1976, Cabré 1999) that is used that claims that a term denotes only one concept, and as such, it has to form one lexical unit that resembles to a simple noun or a nominal compound. On the contrary, an NP is a major category, a syntactic unit having an obligatory head to which different complements, adjuncts or determiners are attached.

Out of the three examples in (1), it is only (1a) that can be a term (e.g. in the domain of public administration) and an NP in the same time, the others (1b,c) only being NPs.

(1) a. *Un hôtel de ville*
a hotel of town
'townhall'
b. *un hôtel de la ville*
'a hotel of the town'
c. *le rat noir qui fait la sieste*
'the black rat having a rest'

A term can dispose of other supplementary elements, like adjectives, but only some kinds of adjectives can be part of terms: only those that designate a subclass of the nominal head, like *binaire* 'binary' in (2a). As (2b) does not represent a subclass of files, the adjective *gros* 'big, fat' does not form a part of the term.

(2) a. *un fichier binaire*
'a binary file'
b. *un gros fichier*
'a big file'

In order that terms and NPs could be differentiated, the basic structure of French NPs will be presented especially with respect to prepositional phrases (PP) and adjectival phrases (AP) that can be adjoined to the nominal head, because these are the two where the difference between NPs and nominal terms are more pertinent.

The other aim of the article is to present the results of the term extractor I elaborated on the basis of the differences found between PPs and APs that can be adjoined to the nominal head. The term extractor also uses different filtering techniques, one rule-based and three statistical ones that can filter out elements that are not, or may not be part of terms (see Section 2).

In the second section, the different methods of term extraction will be described as well as the method of my own term extractor. In Section 3, the corpus will be presented: the latter contains patent descriptions of two scientific domains, namely informatics and human necessities. This is followed by the presentation of the two basic NP constituents, APs and PPs (Section 4), which precedes the analysis of these constituents in nominal terms (Section 5). In Section 6, the results of the automatic term extractor, the used syntactic patterns of which are based on the previous sections, will be

presented. The main aim of the next and last section is to present which are the possible sources of error of this automatic term extractor, and to find out whether these errors are due to the syntactic patterns or not.

2 Term extraction – methods, hypotheses

Terminology extraction, just like any other domain of computational linguistics, can be realised by rule-based and statistical methods, but this does not mean that these applications only use one of the two: most of them rely on both methods (Maynard and Ananiadou 2001). According to Cabré et al. (2001), it is not recommended to use only one of them, because rule-based methods result in too much noise (i.e. the number of extracted terms is bigger than that of real terms), whereas statistical methods provoke too much silence (the list of extracted terms does not contain many of the real terms). In term extraction, rule-based methods mean that terms can be extracted on the basis of their inner syntactic structure, for example if a noun is followed by another one, the whole can be marked as a term. Statistical methods mean that we look for example for sequences that occur more times in a specific corpora than in general language: these can then probably be marked as a term.[1]

According to Cabré et al. (2001), the best term extraction tools extract first candidate terms by means of statistical methods, and this list is then filtered with linguistic filters. However, in my term extraction tool, I chose the inverse direction: stopwords were firstly filtered out from the text by rule-based filters (later referred to as RBF), and then terms were extracted on the basis of their internal syntactic structure by rule-based extraction (later referred to as RBE). And as an experiment, this list was filtered with statistical methods (later referred to as SF), too.

The rule-based filtering consists of deleting nominal and adjectival stopwords from the text that cannot be part of terms. These elements are mainly connectives, that is their function is limited to provide the cohesion of a text, like *en effet* 'in fact' or *par exemple* 'for example'. These have to be filtered out because these expressions containing at least one noun cannot be or cannot be part of terms. The stopword list also comprises adjectives that has the same function, i.e. providing text cohesion: these are for example *suivant* 'following' or *précédent* 'previous'. That is, if the text contains the expression [*les*] *acides gras suivants* '[the] following fatty acids', it will be reduced to *acides gras* 'fatty acids'. Rule-based filtering takes place before rule-based extraction, therefore these stopwords are not deleted from the candidate terms themselves.

The rule-based extraction module uses a finite state automaton to recognise nominal terms. This automaton was manually created on the basis of grammar rules describing the characteristics of nominal compounds and on the basis of the findings of this article.

As an experiment, a combination of statistical methods will also be used to furthermore filter out the candidate term list. These statistical methods include firstly the

[1] The extraction of units having a high frequency as compared to other elements in a text suggest that it is collocations and not terms that are in the centre of the analysis. However, collocations represent a much broader category than terms since (1) one-word terms cannot be considered as collocations and (2) the chosen corpus contains many collocations that cannot be terms, e.g. *La présente invention concerne …* 'The present invention concerns ...' where *présente* 'present' is not part of a term, and thus have to be filtered out.

weirdness value (Ahmad et al. 1999) of which the main aim is to compare the frequency of candidate terms in the specialised corpora to their frequency in a common language corpora. In fact, weirdness is calculated in the term extractor as the proportion of the relative frequency of the candidate term in specialised discourse and its relative frequency in common language. The second one, the weight value (Frantzi & Ananiadou 1997), consists of assigning every candidate term a probabilistic value based on its textual environment (e.g. expressions preceded by *est appelé* 'is called' are more likely to become terms). It is a statistical algorithm which assigns to every word in the corpus a probabilistic value, which is high if it mostly follows or precedes terms and low if it is rarely in the environment of terms. The third one, the C-value (Frantzi & Ananiadou 1997), is used to measure the inner cohesion of the constitutive elements of a complex nominal term: for example, if the constitutive elements tend to be used separately more often, then it is these separate parts that are more probable to become terms, thus they get a higher value. This can be computed by calculating the frequency of the candidate terms and their parts apart.[2]

This article first reveals how efficient our contrastive analysis is since the patterns gained in this way will be used in a term extractor based on nominal term patterns: my hypothesis is that rule-based approach to term extraction from French patent corpora can already be efficient without statistical methods since (1) in French, terms tend to have internal structures that are not typical of common language nouns or nominal compositions and (2) patents represent a discourse type that corresponds to nearly all prerequisites of a scientific text (e.g. impersonal style, excessive usage and repetition of terms).

3 Corpus[3]

French language patents were chosen as the corpus of the analysis, because patents are written in a way to comply with the prerequisites of a specialised text, and terms can only be extracted from specialised corpora. A patent is divided into many units, like bibliographical data, summary, description and claims. From among these parts, our analysis is restricted to the description part of patents because (1) the description part is the most detailed and the longest part of a patent enumerating the advantages of the new invention and (2) as the description has to be as precise as possible, terms are frequently repeated in it as such without any modification. This leads us to the presupposition that even statistical methods can work well on these texts.

In our analysis, focus is given on patents of two different domains: one is the G06F patent class dealing with informatics and the other is the A23L class which represents the Human necessities domain. From these two areas, ten descriptions were chosen as samples on which the application was executed. In order to measure the effectiveness of the rule-based extraction, as well as of the rule-based and statistical methods, terms have manually been annotated, that is they have been marked as terms in these descriptions. Consequently, the term extractor can compare the list provided by

[2] These metrics are not presented in detail, because their application is in an experimental stage, and they do not make real part of the present article.

[3] Although the best placement for Section 3 would be after Section 5, the former was chosen to be the third section as the latter often make reference to the corpus described in Section 3.

itself and that of the previously annotated text. In the G06F corpus the manual annotation found 1752 terms, and in the A23L corpus this number was 2086[4].

In order to demonstrate the different error sources in Section 7, one description was chosen from each of the two corpora. Whenever a specific counterexample is found during the analysis or if the error rate of a specific problematic case is given, it will be based on these two texts, named together *example corpus*. The title of these texts are the following:

A23L: *Use of saffron and/or safranal and/or crocin and/or picrocrocin and/or derivatives thereof as a sateity agent for treatment of obesity*[5]

G06F: *Data exchange between an electronic payment terminal and a maintenance tool through a USB link*[6]

4 The distribution of adjectives and prepositional complements in NPs

The aim of this section is to present in more details the specificities of general NPs, laying stress on its prepositional complements and adjectival adjuncts.

4.1 The distribution of adjectives in NPs

As Cinque (1998) states, French, like most of Romance languages, is an ANA language meaning that adjectives can either precede or follow the nominal head in a NP (e.g. (3a)). On the contrary, Germanic languages, like English and German, are AN languages, that is adjectives can only precede the nominal head (6b,c):

(3) a. *la jolie chambre bleue*
the nice room blue
'the nice blue room'

b. *the nice blue room*

c. ** the nice room blue*

This statement implies that all adjectives could be placed either before or after the nominal head in French, which is not true in all cases. The default position of adjectives is the postnominal position since many adjectives (like *bleue* 'blue' in (3a)) cannot even precede the noun. According to Riegel et al. (2009), on average one adjective out of three is placed before the noun but there can be enormous differences between different types of discourse (in literary language one adjective out of two is before the noun but this proportion is one out of ten in scientific language).

[4] Although the manual annotation was carried out by one person – which is normally not recommended in computational linguistics – I did rely on terminological resources (e.g. *Le grand dictionnaire terminologique*: http://www.granddictionnaire.com/btml/fra/r_motclef/index800_1.asp) when annotating the terms in the texts.

[5]Source: http://www.wipo.int/patentscope/search/en/detail.jsf?docId=WO2007125243&recNum=1&maxRec=&office=&prevFilter=&sortOption=&queryString=&tab=PCTDescription

[6]Source: http://www.wipo.int/patentscope/search/en/detail.jsf?docId=WO2009053626&recNum=1&maxRec=&office=&prevFilter=&sortOption=&queryString=&tab=PCTDescription

From among the different adjective types, it is non-classifying adjectives[7] that can either precede or follow the noun. The default place of these adjectives is the postnominal position but these can precede the noun in case they are accentuated or if they are, in other words, focalised. (Laenzlinger 2003)

(4) a. *un roman ennuyeux*
a novel boring
'a boring novel'
b. *un ennuyeux roman*
'a boring novel'

In certain cases, there is a certain semantic difference between the prenominal and postnominal adjective. According to Bouchard (1998), adjectives following the nominal head seem to modify the semantic components of the noun as a whole whereas the same adjective, used as prenominal, tend to modify the inner semantic components of the noun. (5) and (6) show typical cases where the prenominal adjective does not mean the same as its postnominal version:

(5) a. *mon fauteuil ancien*
my armchair old
'my old armchair'
b. *mon ancien fauteuil*
'my old armchair'

(6) a. *un parent seul*
'a lonely parent'
b. *un seul parent*
'only one parent'

These examples clearly show the difference in the semantic interpretation of the pre- and post-nominal variant of the adjectives. For instance, (5a) refers to an 'armchair produced long time ago' whereas (5b) refers to an 'armchair that was not necessarily produced long time ago but which is mine for a long time'.

Some adjectives tend to precede always the noun: these are normally "short", mono- or bi-syllabic adjectives. In this case, grammars also refer to phono-rhythmical and usage factors: these adjectives tend to be frequently used in everyday communication (Laenzlinger 2003). It can easily be understood if one has a look at (7):

(7) a. *une petite chose*
'a little thing'
b. *une belle chanson*
'a beautiful song'
c. *une petite belle tour*
'a little nice tower'

[7] Non-classifying adjectives: adjectives that designate subjective properties (e.g. *nice*) and can be modified by adverbs of degree (*very nice*).

Classifying adjectives: adjectives that designate objective properties (e.g. *black*) and cannot be modified by adverbs of degree (**very black*).

On the basis of (7c), it can be concluded that more than one adjective can be placed before the noun at the same time.

However, if these adjectives are followed by a complement, the AP must be post-nominal. In other words, if the AP has a PP (or any other) complement, it must obligatorily follow the noun.

(8) a. *une longue rivière*
'a long river'
b. *une rivière* $_{AP}$*[longue de 1200 mètres]*
'a 1200 meter long river'
c. *une rivière* $_{AP}$*[moins longue que le Nil]*
'a river shorter than the Nile'
d. **une* $_{AP}$*[longue de 1200 mètres] rivière*
a long of 1200 meters river

A pre-nominal adjective also becomes post-nominal if it is modified by an adverb (10). In fact, this rule does not apply if the adverb is short and frequently used, as *tout* 'completely', *très* 'very' or *trop* 'too': in these cases, the distribution of the AP within the NP is facultative (9b).

(9) a. *une courte enfance*
'a short childhood'
b. *une très courte enfance / une enfance très courte*
'a very short childhood'

(10) a. *une enfance extrêmement courte*
'an extremely short childhood'
b. **une* $_{AP}$*[extrêmement courte] enfance*

And finally, there are some adjectives that can only be post-nominal, these are the so-called intersective predicative adjectives (Bouchard 1998) that normally denote concrete properties, such as origin, shape, colour and the fact to belong to a community. In addition, derived adjectives (such as past or present participles used as adjectives) can only be post-nominal.

(11) a. *le bureau oval*
'the oval office'
b. *un parapluie chinois*
'a Chinese umbrella'
c. *un solvant chimique*
'a chemical solvent'

(12) a. *un loyer modéré*
'a low rent'
b. *un tapis roulant*
'a conveyor belt'

Derived *intensional* adjectives constitute an apparent counter-example, as *intensional* adjectives can only be pre-nominal in French, even if they are derived from a participle, as showed in (13):

(13) a. *un prétendu chef d'Etat*
'a pretended head of state'
b. *un soi-disant dentiste*
'a self-styled dentist'

Another aspect that absolutely has to be taken into consideration is the combination of adjectives and prepositional phrases within nominal expressions. Prepositional phrases do not constitute any problems in this aspect since they obligatorily have to follow the head noun. What is a question that has to be answered is that a post-nominal adjective follows or precedes the prepositional complement. According to Laenzlinger (2003), an adjective can intervene between the head noun and the prepositional phrase but it can follow the complement as well, so its position is facultative, as illustrated by (14):

(14) a. *un minister de la Justice blanc*
a minister of the justice white
'white attorney general'
b. *un ministre blanc de la Justice*

However, if the noun and the prepositional complement form together a lexically fixed entity, adjectives tend not to intervene between them, as shown in (15), where the lexical entity that sticks together is *lunettes de soleil*, literally 'glasses of sun', that is 'sunglasses'.

(15) a. *les lunettes de soleil nouvelles*
the glasses of sun new
'the new sunglasses'
b. *??des lunettes nouvelles de soleil*

Abeillé & Godard (1999) present another approach to the relative position of nouns and adjectives within French nominal expressions. They propose the term *relative weight* in order to give a constraint on the relative ordering of adjectives with respect to nouns. In their terms, the distribution of adjectives within NPs are constrained by their weight. There are two types of weight: "lite" and "non-lite", and this distinction differences lexemes and phrases from each other. Whether an adjective is light or not are either determined by the lexicon (certain adjectives are light, others non-light, and for many adjectives this feature is underspecified), or by the rules describing the syntactic structure of phrases (most of the phrases are non-light, the others light). For example, a rule states that light adjectives must be pre-nominal, non-light ones must be post-nominal.

(16) a. *une* $_{light\ A}$*[belle] dame*
'a beautiful lady'
b. *une femme* $_{non\text{-}light\ A}$*[russe]*
'a Russian woman'

However, light adjectives cannot be adjoined to non-light nouns (such as coordinated nouns): in these cases, they can only be heavy (hence it can only follow the noun), as exemplified in (17):

(17) *non-light N[des hommes et des enfants] non-light A[jolis]*
'nice men and children'

The feature of relative weight of coordinated adjectives is another issue that has to be discussed. The weight of two light coordinated adjectives become underspecified, that is the new AP can either follow or precede the noun (as exemplified in (18)), and two coordinated adjectives for which this feature is lexically not defined become heavy (as exemplified in (19)):

(18) a. *une A non.det.[light-A[jolie] et light-A[belle]] chambre*
'a nice and beautiful room'
b. *une chambre A non.det.[light-A[jolie] et light-A[belle]]*

(19) a. *??une non-light A[A non.det.[excellente] et A non.det.[joyeuse]] femme*
'an excellent and cheerful woman'
b. *une femme non-light A[A non.det.[excellente] et A non.det.[joyeuse]]*

4.2 Prepositional complements in NPs

It is not easy to define the notion of PP in French because it is not always evident whether a PP introduces a new entity inside the NP (20a) or it is associated to the nominal head with which it forms a complex noun (20b)[8]. In the case of nominal compounds (20b), the preposition is in general followed by a noun without a determiner because the presence of a determiner would imply a complex NP where the NP preceded by a preposition could be considered as an embedded NP having a separate reference (20a). However, PPs in nominal compounds are not referential. Hence, determiners have a crucial role in differentiating between *N Prep N* type nominal compounds and NPs having a PP.

(20) a. *le verre de la voisine*
'the glass of the neighbour'
b. *le verre de lait*
the glass of milk
'the milk glass'

Riegel et al. (2009) classes as PP all phrases that is made up of a preposition followed by an entire nominal group (e.g. *le chien PP[de NP[la voisine]] the dog of the neighbour*). In the meanwhile, they also mention nominal compounds like *canne à pêche* 'fishing rod' where *pêche* 'fishing' does not constitute an NP alone. However, Bosredon and Tamba (1991) differentiates the two different prepositional structures: they think that nominal compounds are simple nouns from a semantic point of view but they constitute a NP from a formal point of view. In this way, they distinguish the PPs from the

[8] And therefore it can become a term, e.g. (20b) is a term in the domain of glass fabrication.

preposition+noun sequences that are attached to a noun and they call them constituents and formants, respectively.

In this article, prepositional formants and constituents are both considered as PPs because the boundary between formants and constituents are not so clear from a formal point of view. Firstly, there are prepositions that are not followed by a determiner in general (for example *par* ou *en*) and they do not form a compound noun with the preceding noun (e.g. (21a)). Secondly, there are nominal compounds that contain a PP with a determiner (e.g. (22a)).

(21) a. *voyage en Italie*
'a trip to Italy'
b. **voyage en l'Italie*

(22) a. *maladie de la peau*
'skin illness'
b. *?maladie de peau*

In the remaining part of this section, it is nominal compounds that will be treated in more details because they are the ones that are more likely to become terms.

In French, nominal compounds are created by nouns (23a-d) or infinitives (23e) attached to the nominal head by means of the preposition *de* (23a,b) but in some cases, they can be linked together by other prepositions (like *en* in (23c) or *à* in (23d)). Nominal compounds are written in general without a hyphen, with the exception of some cases, like (23c). (Riegel et al. 2009)

(23) a. *lunettes de soleil*
'sunglasses'
b. *professeur de hongrois*
'teacher of Hungarian'
c. *arc-en-ciel*
'rainbow'
d. *verre à eau*
'water glass'
e. *machine à laver*
'washing machine'

The presence of the hyphen is not only a question of spelling. The automatic term extractor relies on automatic annotations, and these programs (including the one I use for this analysis) does not treat hyphenated elements as different words but as one word the part of speech tag of which is a noun. Hence, nominal compounds like (23c) are recognised by the same syntactic pattern as the one used to recognise terms that are made up of only one noun, like *réseau* 'network' (rules can be found in Section 6.1).

In French, there are also nominal compounds without preposition that can be written with (24a,b) or without (24c) a hyphen.

(24) a. *le gratte-ciel*
'skyscraper'
b. *le chou-fleur*
'cauliflower'

c. *la pause café*
'coffee break'

5 PPs and APs in nominal terms

The aim of Section 5 is to present the possible nominal term structures with respect to adjectival adjuncts and prepositional complements.

5.1 APs in nominal terms

The place of adjectives is a crucial point when it has to be decided whether a specific adjective can appear in a term or not. As it was already mentioned, the default place for adjectives in an NP is the postnominal position but certain adjectives can appear in a prenominal position as well, for example in case of emotional stress. This emotional stress does not play any role in specialised languages since the latter require strong objectivity: it uses only classifying and relational adjectives and thus does not use this affective accentuation. This is exemplified in (25) where the relational adjective cannot be placed before the noun for whatever reason it would be placed before:

(25) a. *un réseau filaire*
a network wired
'a wired network'
b. **un filaire réseau*

Frequently used monosyllabic adjectives have little chance of appearing in a term because they rather designate accidental characteristics of terms. It is the case of the *intensional* adjectives that are derived from a verb (e. g. *prétendu* 'pretended') that can also precede a term but are never part of:

(26) a. *un grand réseau filaire*
a big network wired
'a big wired network'
b. *un prétendu réseau filaire*
a pretended network wired
'a pretended wired network'

In Nagy (2009), it was stated that there was no term that would start with an adjective placed before the noun in an IT corpus. Hence, this possibility will be excluded even if in other terms in other patent domains, there can be some adjectives that is placed before the verb:

(27) a. *petite aiguille*
little needle
'hour hand'
b. *premier ministre*
first minister
'prime minister'

In (27b) the ordinal adjective precedes the noun, like most of the ordinal adjectives, but this type of adjective has mostly an anaphoric role or of text organising, that is it generally refers to a specific occurrence of an already mentioned noun, thus it is usually not a part of the term.

Besides our study, no data on the proportion of terms beginning with an adjective is known that is why, on the basis of the above mentioned study, this possibility will not be taken into consideration. In the two pattern descriptions, there was only one case where an adjective in an embedded PP preceded the nominal head in a term (28):

(28) *acide gras à longue chaîne*
acid fatty with long chain
'long chain fatty acid'

5.2 PPs in nominal terms

From the different complements or adjuncts that an NP can have, it is only the PP or the AP that can appear inside a nominal term. Clauses with a finite verb cannot be part of a term since they generally introduce a new entity in the discourse. For example, in (29), a new concept appears in the relative clause, namely *utilisateur* 'user'.

(29) a. *le site web que l'utilisateur a visité*
'the web site that the user visited'

From the different complements, terms can only have a prepositional complement. As it was already mentioned in the previous sections, lexicalised prepositional nominal compounds in French generally do not contain internal determiners in the PP complement, and the preposition is followed by a noun (the term in (30a)) or an infinitive (30b)).

(30) a. *huile de tournesol*
'sunflower oil'
b. *machine à laver*
'washing machine'

These composed elements have to be considered as a lexical unit because *huile* 'oil' and *tournesol* 'sunflower' are lexical units that can appear as autonomous units but as soon as they are joined together with the preposition *de*, they designate a third different concept. However, if the preposition is followed by a determiner, the situation becomes more complex. By default, a PP complement having a determiner cannot be analysed as an element constituting a nominal term because in this case, the NP included in the PP represent a new and different concept, like in (31).

(31) a. *mise à jour d<u>u</u>[de+le] site web*
'upgrade of the website'
b. *création d'<u>un</u> site web*
'creation of a website'

In this case, it is more useful to analyse the NP in (31a) having two different independent terms, namely *mise à jour* 'upgrade' and *site web* 'website'. Hence, determiners have the function of separating different terms.

Cadiot (1993) also agrees with this point of view: a PP without determiner designates a subclass of the preceding noun whereas the PP containing a determiner only describes the occurrence of the preceding noun. In the latter case, the classification can only be indirect: this results from the extensional property of the PP with determiner whereas in the former case, PPs can classify a noun on the basis of *intensional* properties.

(32) a. *chat à poils longs*
cat with hairs long
'longhaired cat'
b. *chat aux [à+les] poils mouillés*
'cat with wet hair'

The examples in (32) clearly show that (32a) without a determiner represent a subclass of cats whereas the version with a determiner (32b) describes a cat with wet hair, which is not a subclass of cats.

Anscombre (1990, 1991) adopt the same point of view when he states that PPs without determiner describe an essential propriety of the nominal head whereas PPs with determiner describe one of its accidental proprieties. He states that a property named P is an essential property of the entity named E if P can be considered as a unit that is inalienable of E. On the contrary, P is an accidental property if this property is temporary. Hence, an essential property is an inner property whereas an accidental property is only an actual state. The examples in (33) show that in the case of *bateau à voiles* 'ship with sails', which contains a PP without determiner, there are only a few adjectives that can be used to modify the noun after the preposition: these adjectives have to represent the type of the sail (33b) whereas in the version with determiner (33d), these have to designate the actual state of the sail.

(33) a. *bateau à voiles*
b. *bateau à voiles carrés/latines*
'ship with lateen or square-rigged sail'
c. *bateau à voiles ??hissés/*déchirés*
d. *bateau aux[à les] voiles hissés/déchirés*
'ship with hauled up/torn sails'

(Anscombre 1991, 26)

Cadiot (1993) observes that the situation is similar if the PP does not contain adjectives. The presence of the determiner imply that the element preceding or following the preposition designates an entity having an autonomous reference. This is confirmed by the following pairs:

(34) a. *un bagage à main*
'hand baggage'
b. *un bagage à la main*
'a baggage in the hand'

(35) a. *Jean a un bagage à main mais il le porte au[à+le] ventre.*
'Paul has a hand baggage but he is carrying it on his belly.'
b. **Jean a un bagage à la main mais il le porte au[à+le] ventre.*
'Paul has a baggage in his hands but he is carrying it on his belly.'

Anscombre (1991) states that a PP without a determiner cannot behave like a PP that designates a non evident property of the head. For example, a car intrinsically has a steering wheel but if a car functions with hydrogen, this is a non-evident property of the car.

(36) a. *voiture à *volant*
'car with steering wheel'
b. *voiture à hydrogène*
'hydrogen car'

(37) a. **un chat à deux oreilles*
'cat with two ears'
b. **vélo à roues*
'wheeled bike'

The examples in (37a,b) are not correct because of the same reasons: cats intrinsically have two ears and bikes have wheels – these are essential properties. If these complements are modified or extended, correct NPs can be obtained since a cat with three ears or a bike having a squared wheel are not evident.

(38) a. *un chat à trois oreilles*
'a three-eared sheep'
b. *un vélo à roues carrées*
'square-wheeled bike'

However, the statement of Cadiot (1993) according to which the function of a determiner is to introduce a new entity is not always true. In fact, there are terms that contain a determiner before the nominal component not representing a separate entity, like the examples in (39).

(39) a. *cancer de la peau*
'skin cancer'
b. *vidéo à la demande*
'video-on-demand'

It would be difficult to explain why the term in question is *cancer de la peau* instead of *cancer de peau*. In a previous study Nagy (2009) showed that the proportion of NPs with internal determiner is nearly 7% in comparison with the totality of nominal terms but the proportion of NPs with determiner that can also appear without determiner was not calculated. Consequently, completely aware of the loss that it represents, terms with determiners will not be considered as possible terms during the automatic extraction process.

In the example corpus, there were only ten cases where the PP complement of a term included a determiner, two of which are represented in (40) and (41):

(40) a. *reine des prés*
queenof+the meadows
'meadowsweet'

(41) b. *sensation de la faim*
sensation of the hunger
'sensation of hunger'

Another interesting characteristic of PPs in terms is the fact that prepositions can be left out (e.g. in (42)). This observation is mainly true for recently created terms on which Béjoint and Ahronian (2008) state that this omission is due to the effect of English. Nevertheless, the order of the nouns follows French rules.

(42) a. *code source*
'source code'
b. *accès Internet*
'Internet access'

(Béjoint & Ahronian 2008, 653)

This latter is not a problem for the automatic extractor because the pattern recognising nominal compounds will recognise them without modification.

5.3 Comparison of NPs and terminological noun phrases

In Sections 5.1 and 5.2, the main differences between PPs and APs in nominal terms and NPs were treated in detail. These sections were not based on articles on terminology extraction but mostly on linguistic articles. The differences concluded from the analysis are summarised in Table 1.

Table 1. Differences between nominal terms and NPs

	Nominal terms	NPs
APs	almost only postnominal (mainly relational and non-classifying adjectives)	pre- or postnominal (classifying, non-classifying, relational or ordinal adjectives)
PPs	almost without determiners, because a PP without determiner designates a subtype of the head	with or without determiners (designating a subtype or actual state)

6 Results

In this Section, I present the rule set which was elaborated on the basis of Chapter 4 and 5 and which were integrated into the term extractor. The second part of this section describes the efficiency of the term extractor in every phase of the term extraction process.

6.1 Rule set

The syntactic rules implemented into the term extractor are presented in a regular expression format, using the standard part-of-speech category abbreviations. This rule set covers most of the rules that were created on the basis of the analysis in chapter 5 but not all the rules that were used in the term extractor. Sign + indicates an occurrence of at least one, * indicates an occurrence of zero or more.

(1) N+
(2) N+ A* (Prep N A*)+
(3) N Prep V-INF

Rule (1) extracts one noun or a sequence of nouns, rule (2) nouns with prepositional complements and rule (3) nouns followed by a preposition and an infinitive. As it can be seen from the rules, neither prenominal adjectives nor PPs with determiners are taken into consideration.

6.2 Efficiency of the term extractor

In the field of computational linguistics, efficiency of an application is measured by three values: recall, precision and F-value. In order to calculate the effectiveness of the term extractor, I will use the same metrics. In term extraction, recall is the proportion of correctly extracted terms and of all the real terms in the corpus. Precision is the ratio of correctly extracted terms to all extracted terms. F-value is the harmonic mean of recall and precision.

$$recall = \frac{number\ of\ correctly\ extracted\ terms}{total\ number\ of\ real\ terms}$$

$$precision = \frac{number\ of\ correctly\ extracted\ terms}{total\ number\ of\ extracted\ terms}$$

$$F - value = \frac{2 * precision * recall}{precision + recall}$$

To provide a baseline, I also run the application with a list of rules that recognise all NPs, and I also executed two other applications using rule-based and/or statistical modules: these are Fastr (Jacquemin 2001) and YaTeA (Aubin and hamon 2006). These two extractors rely on the TreeTagger POS-tagging[9] program, so their relatively low metrics may be due to the fact as well. The other factor that influences their efficiency is that these term extractors were not created to extract terms specifically from French patent texts. The baseline values are represented in Table 2:

[9] http://www.ims.uni-stuttgart.de/projekte/corplex/TreeTagger/

Table 2. Baseline results (YaTeA, Fastr term extractors and my own application used with patterns recognising all NPs)

	G06F			A23L		
	recall	precision	F-value	recall	precision	F-value
YaTeA	0,5826	0,3045	0,3983	0,5711	0,3451	0,4270
Fastr	0,5349	0,3962	0,4523	0,5764	0,4130	0,4806
All NPs	0,5457	0,3072	0,3931	0,5615	0,3381	0,4221

Table 2 clearly shows that all the three present nearly the same values, thus they can be considered a real baseline to be compared to my own results.

These metrics were computed on the two different types of corpora (G06F as the IT corpus and A23L as the Human necessities corpus) in the case of my own application recognising nominal terms, as well. Firstly, these values were measured when the application did not use rule-based filtering, and secondly, when the term extractor was expanded by the filtering of stopwords. Table 3 shows the results of the term extraction process with or without filtering.

Table 3. The results of term extraction with or without filtering

Patent class	Rule-based filtering	Recall	Precision	F-value
G06F	No	0,8159	0,5847	0,6812
G06F	Yes	0,8311	0,6605	0,7360
A23L	No	0,7413	0,5664	0,6422
A23L	Yes	0,7599	0,6306	0,6892

As the results show, high recall can be achieved even without any filtering (0,82 in the G06F corpus, and 0,74 in the A23L): this is due to the fact that the structure of nominal terms complies with the preliminary patterns. However, the usage of syntactic patterns results in relatively low precision, because non terminological units also match these patterns.

Filtering (RBF) did not provoke a big increase in recall values, since they got higher only by 0,01. However, as hypothesised, stopword filtering significantly increased the precision in both corpora: this augmentation was nearly 0,07 in both corpus. This is due to the fact that filtering out words that cannot be part of terms exclude non terminological term candidates.

The used statistical methods (SF), the fine-tuning of which is yet a work to done, did not have the expected efficiency. The combination of the three used values, namely C-value, weight and weirdness, led to an overall increase of 0,01 of the F-value on both corpora (results not included in Table 3). A possibility of improving statistical results is the usage of machine learning algorithms; however, this technique requires a relatively large, annotated corpus where nominal terms are marked by hand.

7 Sources of error

Most of the problems with term extraction were due to incorrect part-of-speech tags associated to words. As POS-tagging was implemented by an automatic application, namely the Machinese of the Connexor company[10], these errors would not be easy to modify later on. Nearly 20% of the cases were caused by this source of error, that is 20% of the non-recognised terms (false negatives) and sequences incorrectly marked as terms (false positives) were due to the fact that at least one of the word in the sequence was associated with a wrong POS-code. For example, in the example corpus, *terminal* was tagged as an adjective 'final' instead of a noun 'terminal', and that was the same case with *anti-oxydant* that was often tagged as an adjective 'antioxidant' instead of a noun 'antioxidant'. An other frequent case was tagging a past participle as an adjective, like *utilisé* meaning 'used'.

Another frequent source of error was that the extracted candidate term was not really a term. It represented nearly 30% of the false positive cases. These non terminological units were for example *place* 'place' or *an* 'year'. In fact, these are the sequences which may be filtered out later on with the help of statistical measures.

Nearly 15% of the false positive and negative cases were provoked by the fact that in some cases, an AP or PP that are not part of a term were marked together with the nominal head as a term. These are exemplified in (43) and (44):

(43) *norme USB classique*
'classic USB standard'

(44) *préparation de crustacés*
'preparation of shellfish'

In (43) the AP *classique* 'classic' is not part of the nominal term *norme USB* 'USB standard', and in (44), the PP *de crustacés* 'shellfish' should not be included in the first term *préparation* 'preparation' but should be tagged as a separate term, *crustacé* 'shellfish'.

8 Conclusion

In this article, the internal structure of French NPs has been reviewed and has been compared with that of nominal terms with respect to their possible adjuncts and complements, with a specific stress on APs and PPs. This comparison was made in the purpose of establishing a nearly exhaustive list of different syntactic term structures in order that the term extractor recognise most of the possible terms.

Nominal terms do not have in general APs placed before the nominal head because specialised languages only admit classifying and relational adjectives that are placed after the noun. In certain cases, terms can have APs at their beginning, for example monosyllabic adjectives like *petit* 'little' or *long* 'long' or ordinal adjectives but if the latter ones precede the noun, they only designate an accidental quality of the noun, and consequently cannot be part of nominal terms. This is also proved by the results, because in the example corpus, only one case was found where the adjective preceded a noun.

[10] http://www.connexor.eu/technology/machinese/index.html

Complements of nominal terms in general cannot be PPs with a determiner since a determiner introduce a new entity, that is a new concept and terms can only represent one concept. Even if some terms can have PPs with a determiner, their proportion is really insignificant, hence it is not reasonable to consider them as being part of a term because that would result in too much noise during the extraction process. This was also confirmed by the results: there were only ten cases where the PP complement of the nominal head contained a determiner.

The most important message of the results is that term extraction can be efficient not only with the help of statistical methods but also with linguistic methods, especially on patent corpora and when recall values are more important. The rule-based term extraction provided high recall values with middle precision values, but the latter values could significantly be increased by rule-based filtering. At this time of the research, the chosen statistical methods (SF) only provoked a little augmentation in the average metric, the F-value.

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Recycling and replacement self-repairs in spontaneous Hungarian conversations*

Zsuzsanna Németh

In this paper I explore recycling and replacement repairs as self-initiated same-turn self-repair strategies in Hungarian. The study concentrates on four factors: repair operation types, syntactic class and length of the repaired segment, and site of initiation. In accordance with previous works (especially Fox et al. 2009), I found that the main organizer of the self-repair process is the speaker's interactional aim. This interactional aim is realized in the interactional functions of repair operations: providing the speaker with extra time in the case of recycling, or exchanging an unintended item in the case of replacement. The working of these interactional functions, however, always adapts to the grammatical possibilities of the particular language. I attempted to describe how these interactional functions adapt to the structure of Hungarian.

Keywords: *Hungarian, recycling, replacement, self-repair*

1 Introduction

The focus of this paper is on the appearance of two repair operations, namely, simple recycling and replacement self-repairs in spontaneous Hungarian conversations. The purpose of the study is to reveal the most important characteristics of these two repair types in Hungarian and make a comparison with the languages examined in this respect so far, such as Bikol, Sochiapam Chinantec, Finnish, Indonesian, English, Japanese, Mandarin (Fox et al. 2009), Hebrew and German (Fox et al. 2010). I explore the length and syntactic class of words Hungarian speakers tend to initiate recycling and replacement repairs in, and describe the relationship between the two repair operations in the repair mechanism. The main hypothesis of the study is that all the analysed factors and the potential connections between them can be traced back to the interactional functions of repair operations. This assumption implies that conversation repairs make it possible for the interactants to achieve their interactional aims. Behind this idea we can find the interpretation of conversation as talk-in-interaction, where interaction is the contingent development of courses of actions (cf. Schegloff 2007, 251).

The paper is organized as follows. After the clarification of the most important concepts, Section 3 provides a description of the data and methods of the study. Section 4 presents the previous findings on recycling and replacement repair and the analysis of the Hungarian data as to repair types, word length and syntactic class. Section 5 compares recycling and replacement repairs, while Section 6 closes the analysis with some aspects of site of repair initiation. Section 7 concludes the study and summarizes the results.

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2 Definitions

2.1 Repair

According to Schegloff et al. (1977), repair is the treatment of some kind of trouble in spontaneous speech. They distinguish repair from error-correction. While error correction serves to replace an error by the correct linguistic form, repair refers to a more general domain of occurrences (Schegloff et al. 1977, 363). Following this definition, Rieger (2003, 48) regards error correction, the search for a word, the use of hesitation pauses, lexical, quasi-lexical, or non-lexical pause fillers, immediate lexical changes, false starts, and instantaneous repetitions as repair. Repair consists of three components, the repaired segment containing the repairable, repair initiation, and the repairing segment. The repairable is not necessarily audible, but can be inferred from the presence of repair initiation and the repairing segment (Rieger 2003, 48). Repair initiation, which marks a "possible disjunction with the immediately preceding talk" (Schegloff 2000, 207), can consist of a cut-off, a filler, or a combination of these, but in the case of repetitions it may be non-observable as well. The repairing segment repairs the trouble that the speaker has perceived (Rieger 2003, 48). Gósy regards repair as the correction of speech disfluencies. She defines speech disfluencies as follows: "Speech disfluencies are generally defined as phenomena that interrupt the flow of speech and do not add propositional content to an utterance" (Gósy 2007: 93).

2.2 Self-initiated same-turn self-repair

Self-initiated same-turn self-repair is the most common type of repair. It comprises the repair strategies in which the repairable and repairing segments occur in the same turn and the repair is performed by the initiator of the repairable (Rieger 2003, 48). Fox et al. (2009, 60) define same-turn self-repair as the process by which speakers stop an utterance in progress and then abort, recast or redo that utterance.

2.3 Recognizable completion

Schegloff (1979) points out that the most common location of repair initiation is just after the start of a turn-constructional unit (post-initiation) or just before its completion (pre-completion), for example, in the case of a word after its first sound or just before its last sound (Schegloff 1979, 275). The relevant domain for post-initiation (or as Fox et al. (2009) term it post-beginning) starts after the first sound is recognizable and continues until the first sound is complete; whereas the relevant domain for pre-completion begins just before the final sound is articulated, and continues until just before the final sound is complete (Fox et al. 2009, 65). We can speak about a repair initiation at recognizable completion if the repair is initiated in or after the last sound of the word (Fox et al. 2009, 71). The location of recognizable completion suggests that the definition was created from the speaker's point of view, what matters is whether a word is intended[1] to be recognizable or not. That is, the definition "plays it safe," by the time recognizable completion is reached, the hearer recognizes the word for sure. The real recognition can happen much earlier. As it focuses on same-turn self-repair, the present study also

[1] The term 'intention' will always refer to the speaker's interactional aims.

concentrates on the speaker's point of view when discussing the interactional functions of repair types.

2.4 Recycling, replacement, simple recycling, simple replacement

Recycling (or repetition) means the repeating, either with no apparent changes or with some additions or deletions, of the repaired segment (Fox et al. 1996, 230). Rieger considers repetition a very prominent self-repair strategy. It consists of the consecutive usage of the same quasi-lexical or lexical item or items (Rieger 2003, 51). At the same time she emphasizes that recycling repair (or as she terms it, repetition) can be regarded as one of the several possible types of self-repair only when it is not used to stress or emphasize what is being said, and if it is not used as a strategy to hold the floor when being interrupted (Rieger 2003, 51). In the latter case the repair is other-, not self-initiated.[2] All in all, Rieger considers the repetitions of one or several lexical items self-repair strategies when their function is to gain linguistic and/or cognitive planning time for the speaker or when used to postpone the possible transition-relevance place (Rieger 2003, 47).

Replacement repair means that the speaker substitutes a quasi-lexical or lexical item or items for another quasi-lexical or lexical item or items, when the repaired and the repairing segments belong to the same syntactic class.[3]

Schegloff et al. (1977) distinguishes four self-repair functions: word search, word replacement, repair of person references, and repair of next-speaker selections (Schegloff et al. 1977, 363 and 370-372). According to Rieger, most of these functions involve the replacement of one lexical item by another (or in the case of repetitions, by the same) lexical item (Rieger 2003, 49). Fox and Jasperson (1995) define seven different self-repair types, all of which are the combinations of four repair operations: repeating or recycling, replacing or substituting, adding or inserting, and abandoning and restarting. Notice that both Schegloff et al. (1977) and Fox and Jasperson (1995) (as well as Fox et al. 2009) regard recycling and replacement as devices to carry out the repair mechanism, but not as subcategories of repair. That is to say, recycling and replacement themselves are not the subtypes of self-repair, but can be the components of them.[4] To sum up, in the related literature we can find more categorizations of self-repair with more terms for the categories (strategies, features, types), and the status of recycling and replacement is not always obvious. In this paper, similarly to Rieger (2003, 50) and Fox et al. (2009, 62).

I will interpret recycling and replacement as repair operations, which (with the other repair operations) can compose the repair phenomenon.

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[2] This does not mean that none of the recyclings used to hold the floor can be considered self-initiated self-repairs. If they are used to postpone the possible transition-relevance place, they are self-initiated self-repairs (Rieger 2003, 51).

[3] It can be problematic how to determine the word type (i.e. the syntactic category) of the repaired segment in the case of repairs where the site of repair initiation is before recognizable completion. Well, in most of these cases the researcher can rely on the context and the fact that function words being a close class with less potential candidates are easier to be recognized.

[4] Although Rieger's list of the possible self-initiated same-turn self-repairs contains immediate lexical change and instantaneous repetition, these cannot be identical with replacement and recycling interpreted above as repair operations. One of the evidences for this is error correction, which can be found on the same list and can be accomplished by replacement (Schegloff et al. 1977, 363). Another evidence is that in the same article Rieger terms "repeating or recycling" and "replacing or substituting" *repair operations* (Rieger 2003, 50).

Simple repairs are repairs where only one repair operation is involved in the repair. This means that simple recyclings are carried out without additions, deletions, or replacements:

(1) *de* *ez* *a* *szervofék* ez ez *nem* *veszélyes?*
but this the servobrake *this* *this* not dangerous
'Is not this servobrake dangerous?'

Simple replacement repairs, however, are replacements without recyclings, additions, or deletions (Fox et al. 2009, 63).[5]

(2) *a* *legtöbbet* *nekünk* e- szörnyű *hallgatni*
the most-ACC for.us *e-* *horrible* listen-INF
'Most of them are horrible for us to listen to.'

Most of the interactional functions of recycling repair are in connection with delaying, i.e. oriented to the upcoming talk: delaying the next item due in a word search (Jefferson 1974), delaying the next content word due (Fox et al. 1996; Rieger 2003; Lerch 2007; Fox et al. 2009; Fox et al. 2010), eliciting gaze from recipients (Goodwin 1981), or treating overlaps in order to produce talk in the clear (Schegloff 1987). Replacement repair, however, usually has a retrospective orientation: its most common interactional function is to solve a problem caused by an unintended item or an unintended pronunciation.

3 Data collection

The data for the study come from two corpora, one compiled in the Institute of Psychology, University of Szeged, and the other in Kempelen Farkas Speech Research Laboratory in the Research Institute for Linguistics of the Hungarian Academy of Sciences, Budapest (Gósy 2008).[6] Its total length is 145' 4". Each corpus consists of casual Hungarian face-to-face conversations among friends (3 participants per interaction). The data represent the speech of 17 speakers across 10 interactions.

The total number of instances is 557 (415 recycling and 142 replacement repairs). Following the methodology of Fox et al. (2009) and Fox et al. (2010) the data collection was restricted to instances of simple recycling and simple replacement repairs where one or more elements of the trouble source were recycled or replaced and there was a clear syntactic relationship between the trouble source and the repair (they belonged to the same utterance). Recycling repairs that occurred in the environment of overlapping talk or were used to stress what is being said were also excluded from the investigation. I coded my data for the following features: syntactic category (function or content word)[7]

[5] Replacement and deletion differ in that in replacement the word type remains, while in deletions the word type is eliminated (Fox et al. 2009, 102).

[6] The examples of the paper come from these two corpora.

[7] Labeling function and content words syntactic classes I also follow Fox et al. (2009). While content words are open-class words with a lexical, statable meaning, the class of function words is closed and carries a grammatical meaning. The reason why they are called syntactic classes is that their distinction plays an important role in characterizing the syntactic properties of sentences (Selkirk 2008, 464).

and length (monosyllabic, bisyllabic, multisyllabic[8]) of all words in the corpus, syntactic category and length of the repaired segment in all recycling and replacement instances in the corpus, and site of initiation (before or after recognizable completion) in all recycling and replacement repairs in the corpus.

4 Repair type, syntactic category and word length in Hungarian

4.1 Recycling repair - syntactic category and word length in Hungarian

The previous studies dealing with recycling and replacement repair as self-initiated same-turn self-repairs have concentrated mainly on showing the most important characteristics of the relationship between grammar and repair. They have described how the methods of repair are shaped by the linguistic resources of languages. In order to accomplish this aim some of them compared languages with different morpho-syntactic structures (Fox et al. 1996; Rieger 2003; Lerch 2007; Fox et al. 2009; Fox et al. 2010).

Schegloff (1979) emphasizes that the privileged function of recycling is the delay of the next item due. For whatever cognitive or interactional reason the recycling happens, its purpose is always to stop the progressivity of the current turn. Continuing this train of thought Fox et al. (2009) suggest that the recycling of function words is an extremely useful device for the speaker to delay the next content word due (Fox et al. 2009, 97). Their study presents and explains the site of repair initiation in seven languages: English, Bikol, Sochiapam Chinantec, Finnish, Indonesian, Japanese and Mandarin, involving site of initiation, word length and syntactic class in the investigation. In five from their seven languages investigated speakers range from moderately to highly more likely to initiate repair in a function word than in a content word (Fox et al. 2009, 97). Fox et al. (2010) present the results of a quantitative analysis of recycle and replacement self-repairs in three languages: English, German, and Hebrew. They found that all the examined languages have function words which precede the content words they serve as adjuncts to and in all three languages there is a tendency to recycle back to function words rather than content words. On the basis of these data they predict that languages with function words preceding their respective content words (mainly verb-initial and verb-medial languages) show a preference for recycling back to function words rather than content words (Fox et al. 2010, 2504). This is supported by earlier studies (Fox et al. 1996; Rieger 2003; Lerch 2007; Fox et al. 2009), among which (Fox et al. 1996, 205) note that in the languages where speakers have no function words preceding nouns (e. g. Japanese), speakers do not use this strategy.

Lerch (2007) draws the same inference after considering the lexical categories serving as destinations of recycling in Hungarian. Hungarian speakers tend to recycle back to function words, which is not surprising as the phrase-beginning elements tend to be function words in Hungarian, hence there are several function words preceding content words. For example, while definite and indefinite articles or demonstrative determiners project an upcoming noun phrase, conjunctions and relative pronouns occur at the beginning of clauses (Lerch 2007, 127).

Hereinafter I will explore how word length and syntactic class influence the execution of recycling repair in Hungarian. Table 1a) and 1b) show the distribution of repair types (i.e. the types of repair operation) by syntactic class and word length in

[8] By multisyllabic words I mean words of three or more syllables.

Hungarian. In each case a 2x2 chi-square test was used to measure the differences between the frequencies of the certain categories. The asterisk will indicate a significant chi-square value.

Table 1a)
Distribution of repair types by syntactic class

	Dest. of recycling	Replaced item	Total
Function words	315 (76%)	48 (34%)	363
Content words	100 (24%)	94 (66%)	194
Total	415	142	557

$\chi^2(1, n=557)= 82.61^*, p= .000$

Table 1b)
Distribution of repair types by word length

	Dest. of recycling	Replaced item	Total
Monosyllabic words	304 (73%)	50 (35%)	354
Bisyllabic words	75 (18%)	32 (23%)	107
Multisyllabic words	36 (9%)	60 (42%)	96
Total	415	142	557

Monosyllabic/Bisyllabic: $\chi^2(1, n=461)= 13.99^*, p= .000$
Monosyllabic/Multisyllabic: $\chi^2(1, n=450)= 95.69^*, p= .000$
Bisyllabic/Multisyllabic: $\chi^2(1, n=203)= 21.69^*, p= .000$

Table 1a) and 1b) demonstrate that Hungarian speakers recycle back most frequently to function words (the distribution is significant) (cf. Gyarmathy 2009) and monosyllabic words (the distribution is also significant).

(3) *gondolkodom* hogy hogy *ki*
wonder-PRES.1SG *that* *that* who
'I am wondering who (is a good singer).'

Let us start the analysis with syntactic categories. Although function words make up 76% of all destinations of recycling compared with 24% to content words, to be sure that this difference comes from the interactional function of recycling we have to consider this result in relation to the whole corpus. Table 2 provides the figures for syntactic class and word length of all words in the corpus.

Table 2
Distribution of words by word length and syntactic class in the corpus

	Function words	Content words	Total
Monosyllabic words	7377	2884	10261 (46%)
Bisyllabic words	1995	4815	6810 (31%)
Multisyllabic words	209	4899	5108 (23%)
Total	9581 (43%)	12598 (57%)	22179

The corpus contains 9,581 function words (43%) and 12,598 content words (57%), which means that the frequency of function words in recycling repairs does not follow from their frequency in the corpus. If we turn to word length, Table 1b) shows that the most common destinations of recycling repairs in Hungarian are monosyllabic words (the distribution is also significant),[9] that is to say, Hungarian speakers most frequently recycle back to monosyllabic function words. Here we can ask whether the speakers make this frequent use of monosyllabic function words because most of the function words are monosyllabic or most of the monosyllabic words are function words in Hungarian. To see clearly, we have to compare the occurrence of monosyllabic and function words in the whole corpus. Table 2 shows that 77% of the function words are monosyllabic and 72% of the monosyllabic words are function words in the corpus. Thus, as Jurafsky et al. (1998) observed in the case of English, high-frequency function words are often phonologically reduced in Hungarian also, and this can explain the high frequency of monosyllabic function words as the destinations of recycling in the language. In other words, when Hungarian speakers recycle back to monosyllabic function words they are more attentive to syntactic class than they are to word length.

It is also interesting to examine word length categories separately. Table 3a), b) and c) below present the three word length categories with the corresponding figures of the whole corpus. Though each table represents the privileged status of function words, the most striking is the case of bisyllabic words. Namely, this is the only word length category where the figures for recycling repairs are in inverse ratio to the same figures for the whole corpus.

Table 3a)
Distribution of monosyllabic words in recycling repairs and the corpus

	Destination of recycling	Whole corpus
Function words	265 (87%)	7377 (72%)
Content words	39 (13%)	2884 (28%)

Table 3b)
Distribution of bisyllabic words in recycling repairs and the corpus

	Destination of recycling	Whole corpus
Function words	47 (63%)	1995 (29%)
Content words	28 (37%)	4815 (71%)

Table 3c)
Distribution of multisyllabic words in recycling repairs and the corpus

	Destination of recycling	Whole corpus
Function words	3 (8%)	209 (4%)
Content words	33 (92%)	4899 (96%)

[9] The frequency of monosyllabic words in recycling repairs does not follow from their frequency in the corpus either. While 46 percent of the words are monosyllabic in the corpus, 73 percent of the destinations of recycling are monosyllabic. The occurrence of monosyllabic words in the corpus does not justify such a high frequency in recycling repairs.

These results corroborate earlier studies (Fox et al. 1996; Rieger 2003; Lerch 2007; Fox et al. 2009; Fox et al. 2010), according to which the languages with function words preceding their respective content words (mainly verb-initial and verb-medial languages) show a preference for recycling back to function words rather than content words so as to delay the next content word due, i.e. because of the interactional function of recycling repair.

4.2 Replacement repair - syntactic category and word length in Hungarian

Fox et al. (2009) point out that English speakers tend to use replacement repairs to replace content words (61 percent of simple replacement repairs in English replace content words) and replacement repairs may occur in cases where an inappropriate word or pronunciation has been produced (Fox et al. 2009, 76). Fox et al. (2010) comparing Hebrew, English and German also presented evidence of the over-representation of content words in replacement repairs in each of the three languages. Jefferson (1974) suggests that replacing a word with another, if the repaired segment is not complete but still recognizable, allows the speaker to produce an inappropriate word without being interactionally accountable for it. She describes this process as "not having 'officially' produced the word in question" (Jefferson 1974, 193). This phenomenon is interesting here because it also supports the more frequent replacements of content words as content words are more likely to be involved in an interactional situation characterized above. Examining English, Indonesian, Bikol, Finnish and Japanese, Fox et al. (2009) remark that content words are open class, hence there are a larger number of potential candidates in any given context than there are for function words in these languages. In addition, as content words are generally of lower frequency than are function words (here we must think of single words), speakers face a greater challenge in selecting the appropriate term (Fox et al. 2009, 103). Moreover, the delaying function of recycling function words can also be an argument for the over-representation of content words in replacement repairs. Why is it necessary to delay the next content word due? As speakers face a greater challenge in selecting the appropriate content word as opposed to the selection of function words, they need more time to do it. On the whole, cognitive planning demands a greater effort in the case of content words than in the case of function words, which can more easily lead to a problem and maybe a replacement repair during the production of the word.

We can now turn to Hungarian. If we look at Table 1a) again (repeated below as Table 4 for the sake of convenience), it is conspicuous that Hungarian speakers employ content words in replacement repairs nearly twice as frequently as function words (66%-34%). Comparing this ratio with the whole corpus again (57%-43%) (Table 2), we can see that the frequency of content words in replacement repairs does not follow from their frequency in the language. This means that the arguments listed above in favour of the privileged status of content words as opposed to function words in replacement repairs proved to be true in the case of Hungarian as well.

Table 4
Distribution of repair types by syntactic class

	Dest. of recycling	Replaced item	Total
Function words	315 (76%)	48 (34%)	363
Content words	100 (24%)	94 (66%)	194
Total	415	142	557

$\chi^2(1, n=557)= 82.61^*, p= .000$

Taking into account word length, however, as Table 1b) (repeated here as Table 5) represents, the distribution is not as unbalanced as it was in the case of recycling repairs.

Table 5
Distribution of repair types by word length

	Dest. of recycling	Replaced item[10]	Total
Monosyllabic words	304 (73%)	50 (35%)	354
Bisyllabic words	75 (18%)	32 (23%)	107
Multisyllabic words	36 (9%)	60 (42%)	96
Total	415	142	557

Monosyllabic/Bisyllabic: $\chi^2(1, n=461)= 13.99^*, p= .000$
Monosyllabic/Multisyllabic: $\chi^2(1, n=450)= 95.69^*, p= .000$
Bisyllabic/Multisyllabic: $\chi^2(1, n=203)= 21.69^*, p= .000$

Though the most common replaced items are multisyllabic words, the difference is notable only between bisyllabic and multisyllabic words. To find an explanation for this, let us involve syntactic class in the examination.

Table 6a)
Distribution of monosyllabic words in replacement repairs and the corpus

	Replacement repairs	Whole corpus
Function words	37 (74%)	7377 (72%)
Content words	13 (26%)	2884 (28%)

Table 6b)
Distribution of bisyllabic words in replacement repairs and the corpus

	Replacement repairs	Whole corpus
Function words	9 (28%)	1995 (29%)
Content words	23 (72%)	4815 (71%)

[10] According to Table 2 the frequency of the certain word length categories in replacement repairs cannot follow from their frequency in the corpus.

Table 6c)
Distribution of multisyllabic words in replacement repairs and the corpus

	Replacement repairs	Whole corpus
Function words	2 (3%)	209 (4%)
Content words	58 (97%)	4899 (96%)

Although Hungarian speakers replace content words at a higher rate than function words, this difference does not appear in the case of monosyllabic words (Table 6a). This follows from the usage of the Hungarian definite article that has two alternants. *A* is used before words beginning with consonants and *az* before vowels. When the article is used for delaying its respective noun phrase, the alternant which is repeated or stretched is always *a*. As the process makes for linguistic and/or cognitive planning (Rieger 2003, 47), the speaker does not know yet which noun she will select (i.e. whether it will start with a consonant or a vowel), hence (possibly for economical reasons) she will use *a*. However, if the selected word still starts with a vowel, she has to replace *a* for *az*.

Table 6c) shows that multisyllabic content words are the most frequently replaced words in Hungarian. Here comes the question again: do the speakers make this frequent use of multisyllabic content words because most of the content words are multisyllabic or most of the multisyllabic words are content words in Hungarian? If we compare the occurrence of multisyllabic and content words in the whole corpus, in Table 2 we can see that 41% of the content words are multisyllabic, and 96% of the multisyllabic words are content words in the corpus. Thus, when Hungarian speakers replace multisyllabic content words, they are more attentive to word length than to syntactic class.

We should still explain the difference between bisyllabic and multisyllabic words. The two word length categories differ from monosyllabic words in that they show the expected proportions in favour of content words in replacement repairs. At the same time, we have to realize that the difference between bisyllabic and multisyllabic words could be explained with the high frequency of content words in the repair type only if there were more content words among multisyllabic words than among bisyllabic words in the language. Nevertheless, as Table 6b) and 6c) demonstrate, there are 4,815 bisyllabic content words and 4,899 multisyllabic content words in the corpus. The numbers are nearly the same, which means that the different representations of bisyllabic and multisyllabic words in replacement repairs cannot be explained by anything else but the fact that multisyllabic words are longer than bisyllabic ones.

All these observations point to the fact that longer words are more likely to take part in replacement repairs than shorter ones. What can be the reason for this? We can suppose that the linguistic planning of longer words demands a greater effort from the speaker in the same way as the cognitive planning of content words does. Therefore, when the speaker has already begun the articulation of a longer word, she is more likely to face a problem endangering her intended production than in the case of a shorter word. That is why speakers replace longer words at a higher rate than shorter ones. This supports the statement of Fox et al. (2009), according to which replacement may occur where an inappropriate word or pronunciation has been produced (Fox et al. 2009, 76).

Apart from replacement repairs we have another device to prove the claim that linguistic planning of longer words demands a greater effort from the speaker than linguistic planning of shorter words. We know that function word recycling can make for the delay of their respective content word providing the speaker with extra time. If this strategy was more frequent before longer words than before shorter ones, it would mean

that speakers may need extra time not only before content words but before longer words as well, namely, the linguistic planning of longer words demands a greater effort than the linguistic planning of shorter words. The great advantage of this method, as opposed to analysing replacement repairs, would be the elimination of syntactic class as all the words to be examined would be content words.

All in all, our analysis of replacement repair and the interactional functions of it has brought to light an interesting fact. Although earlier studies pointed out that replacement repair may occur because of selectional difficulties and inappropriate pronunciation (Fox et al. 2009, 76), our study highlighted that, at least in Hungarian, word length plays an important role in inappropriate pronunciation. Nonetheless, the word *unintended* may be more accurate here instead of *inappropriate* as the speaker's intended pronunciation does not always identical with appropriate pronunciation. That is to say, the perception of a word is influenced not only by its pronunciation but also by the context, which the speaker can recline upon (cf. Sacks 1995, 724), thus inappropriate pronunciation does not always appear as a problem for her. Therefore we have to say that speakers tend to carry out a replacement repair because of selecting an unintended item or because of an unintended pronunciation.[11]

5 Contrasting recycling and replacement repair in the repair mechanism

As we have seen so far, in languages with function words preceding their respective content words recycling repair can help with cognitive and/or linguistic planning, while replacement repair comes into action when the intended production is endangered. This points to the fact that recycling repair, on the grounds of its interactional function, will be a more preferred repair operation in these languages than replacement repair as it provides the speaker with extra time; replacement, however, appears when the articulation of an unintended item or an unintended articulation has already begun. This means that recycling and replacement repairs have different functions in the repair mechanism: while recycling makes for the prevention of a potential problem, replacement can only treat an already existing problem. If this is true, in the languages with function words before content words the same corpus must contain more recycling repairs than replacement repairs. The languages examined justify this statement. What is more, not only languages with function words before content words, but all of them show a preference for recycling repairs over replacement repairs.

Table 7
Recycling and replacement repair in the languages examined so far[12]

	Recycling repair	Replacement repair	Total
English	111 (76%)	36 (24%)	147
Hebrew	128 (83%)	27 (17%)	155
German	98 (69%)	44 (31%)	142
Indonesian	117 (80%)	29 (20%)	146

[11] We have to remark, however, that sometimes despite the replacement repair the repaired segment is intended.

[12] The source of the data: English, Hebrew, German: Fox et al. (2010); Indonesian, Sochiapam Chinantec, Japanese, Mandarin, Bikol, Finnish: Fox et al. (2009).

Sochiapam Chinantec	185 (92%)	16 (8%)	201
Japanese	147 (73%)	53 (27%)	200
Mandarin	115 (77%)	35 (23%)	150
Bikol	162 (88%)	23 (12%)	185
Finnish	116 (72%)	46 (28%)	162
Hungarian	415 (75%)	142 (25%)	557

Considering the data, there is a high possibility that recycling repair is a universally more preferred repair operation than replacement repair. What can be the reason for this? If we try to describe repair operations according to the nature of the trouble they treat, replacement repairs seem to be somehow "stronger" than recycling repairs as they treat an already existing problem instead of preventing a potential one.

Now we can ask that if there exists such a difference between recycling and replacement, does it also exist among the other repair operations? Could we determine a natural order among repair operations, so could we scale them according to the strength of the trouble they treat? The starting point of such a scale would be the weakest repair operation, while the endpoint would be the strongest one. If such a natural order existed, we know that recycling repair would be closer to the starting point, while replacement repair would stand closer to the endpoint. The strength level of a certain repair operation would determine the general preference of it in the repair process. The justification of this model is up to further studies.

6 Site of initiation

As most of the interactional functions of recycling repair are in connection with delaying, i.e. oriented to the upcoming talk, repair initiation in the case of this repair type can be expected after recognizable completion, while in the case of replacement repairs (which have a retrospective orientation), repair initiation can be expected before recognizable completion (Fox et al. 2009, 74). After the analysis of their seven languages, the hypothesis of Fox et al. (2009) proved to be true. However, their cross-linguistic investigation pointed out that this repair initiation pattern can be manifested in various ways in different languages. One possible explanation for the diversity is the role of other factors beyond the interactional functions of repair types. Taking into account word length and syntactic class Fox et al. (2009) found that in languages in which speakers initiate repair mainly in monosyllabic words, they tend toward initiation after recognizable completion, while in languages in which speakers prefer initiation in multisyllabic words, they tend toward initiation prior to recognizable completion. Hungarian belongs to the first group.[13]

7 Conclusion

In my paper I explored recycling and replacement repairs as self-initiated same-turn self-repair strategies in Hungarian. The study concentrated on three factors: repair operation

[13] For more details in relation to site of initiation in Hungarian cf. Recycling and replacement repairs as self-initiated same-turn self-repair strategies in Hungarian (Németh, submitted).

types, syntactic class of the repaired segment, and length of the repaired segment. In accordance with previous works (especially Fox et al. 2009), I found that the main organizer of the self-repair process is the speaker's interactional aim. This interactional aim is realized in the interactional functions of repair operations: providing the speaker with extra time in the case of recycling and restart, or exchanging an unintended item in the case of replacement. The working of these interactional functions, however, always adapts to the grammatical possibilities of the particular language.

As Hungarian belongs to the languages which have function words preceding their respective content words, Hungarian speakers recycle back most frequently to function words. This corroborates earlier studies suggesting that the languages with function words preceding their respective content words show a preference for recycling back to function words rather than content words so as to delay the next content word due (Fox et al. 2010, 2504). The study also supported that the function of replacement repairs is to solve a problem caused by an unintended item or pronunciation (Fox et al. 2009, 76), that is why Hungarian speakers tend to replace multisyllabic content words. It also turned out that they are more attentive to word length than they are to syntactic class when replace multisyllabic content words, and word length in itself plays a very important role in replacement repairs.

Finally, I tried to set up a model which describes the relationship between repair operations on the basis of how they work. While recycling, the function of which is to gain extra time for the speaker, can serve as a means to prevent a potential problem, the replacement of an unintended item or a replacement done because of an unintended pronunciation always treats an already existing problem. Replacement repairs is therefore 'stronger' than recycling. This is supported by the fact that there is a strong preference for recycling repairs not only in Hungarian but all the previously examined languages (Fox et al. 2009; Fox et al. 2010).

Now we could see how recycling and replacement work in Hungarian. If we recall one of the principal claims of the previous literature, namely, that there are underlying universal patterns in the repair mechanism though they are sometimes masked by language-specific features (Fox et al. 2009, 101), I believe that the present study confirms rather the first part of the idea. All the tested universal patterns appeared to be uncovered in Hungarian.

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Collective Learning of an Emergent Vocabulary: Naming Game with Reinforcement Learning

İsmet Adnan Öztürel Orçun Orkan Özcan

Self-emergent property of shared conventions of socially joint multiple agents in an indeterministic environment can be captured by traditional language game models. Communication of the agents can eventually make their personal vocabulary converge into a shared universal lexicon of that specific environment. In this piece of work, a naming game model is implemented by adopting a reinforcement learning scheme. Specifically, pair selection and word selection strategies of agents are investigated in comparison with the traditional models. The effects of exploration rate, and reinforced reward/punishment rate on convergence trends of the society is investigated for both strategies. It is found that this methodology does not always result in faster convergence. However, it is discussed that utilization of reinforcement learning can introduce a psychologically plausible interpretation for the population based simulations of the emergence of socially shared vocabularies.

Keywords: *language games, emergence, artificial intelligence, machine learning, reinforcement learning*

1 Introduction

Semiotic dynamics is the domain of research which elaborately investigates emergence and evolution of linguistic conventions among a population by using computational multi-agent simulations. Previous studies of the field model the evolution of language over various distinct topologies and origination of the language (Baronchelli et al. 2007, Barrat et al. 2007). Most of these works only examine emergence of shared vocabularies (Baronchelli et al., 2005; Lenaerts et al., 2005; Steels, 1996) whereas recent researches also try to capture the emergence of syntactic structures (Vogt, 2005). Moreover, this domain formalizes several observations on emergent shared word-object maps and grammars within a society of rule-based acting agents. Current methodological approaches ground the discussion on rapidly changing social interactions among individuals. For the members of a society these emergent linguistic conventions will be urgent for interchanging their experiences and knowledge about the environment, which they are continuously acting on. Therefore, it is essential for the agents to converge on a shared semiotic system to survive in a shared environment.

Interpreting how these aforementioned linguistic conventions bootstrap is also a crucial step forward. Languages games, such as naming games (Baronchelli et al., 2006), discrimination games (Steels, 1996) and guessing games (Vogt, 2005) can provide suitable simulation models to make such interpretations. Among these, specifically the naming game literature investigates the emergence of a shared lexicon within a society. The traditional naming game is a special conventional language game, which emanates from late-Wittgensteinian language games (Wittgenstein, 1953). It investigates how vocabulary spreads within a multi-agent community, where each and every agent has a perceptual channel to perceive the surrounding objects. The aim of the agents is to converge on a shared vocabulary by just collaboratively communicating with each other on an iterative

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basis. In each episode of an interaction a speaker and a hearer is randomly chosen from the population. They both attend to the same object among a set of objects, and try to agree on a shared name for that specific object.

In parallel, this paper presents an exploratory research, in which a psychologically motivated artificial intelligence method, reinforcement learning (RL) (Sutton and Barto, 1998) with an eGreedy learning algorithm, is implemented in a minimal naming game (the term minimal denotes that there is only one object in the environment). We introduce a reinforcement learning algorithm employing a value function which is updated with rewards and punishments after every successful and unsuccessful interaction respectively. Two separate models are implemented, where agents adopt a reinforcement learning strategy either to choose a partner to communicate (agent selection strategy) or a word to transmit to the hearer party (word selection strategy), by using their previous experiences. Generic models in focus, do not use any strategy and work with random selection for partners and words. The study is exploratory in nature, because it aims to see whether the convergence trends are similar to generic models, when the agents are equipped with such a constraining preliminary assumption that they are biased on choosing their communicative partners or the words they exchange.

2 Related Work

Naming game is used as a generic baseline to investigate several properties of the naming game dynamics. Within the previous literature, to attain faster convergence and less memory usage in the game, some distinctive methodologies have been developed for word and pair selection strategies.

2.1 Word Selection

Baronchelli et al. (2005) built word selection strategies for faster convergence and less cognitive effort in naming. Namely, these are play-first, play-last and play-smart. In play-first strategy the agent selects the last word that was successful in a game, while in the play-last the agent utters the last word recorded in its inventory. As a combination of those two approaches, the play-smart strategy is put forth. In play-smart strategy, if the speaker was never successful in a game, it utters the last word recorded. Otherwise, if the speaker had at least one successful game, it utters the word of the last successful iteration.

Play-smart strategy performs much better than the other two strategies. It benefits play-last strategy at the outset since considerable consensus has not been formed between the individuals of the population. Agents utter the last word they record so that new word generation is prevented universally. After successive successful interactions, agents spread the accepted word providing play-first strategy to speed up the convergence trend.

In addition, a reinforcement learning technique is applied for word selection strategy by Lenaerts et al. (2005). This study will be revisited in Section 3.

2.2 Pair Selection

Again based on naming game, Baronchelli et al. (2006) further investigates the topological social structure of the multi-agent environment. A Barabasi-Albert (BA) network is adopted in their study, in which there are fully-connected central nodes and new nodes are added to the central nodes with m = 2 links. In that way, k = 2m average connectedness is assured throughout the growth of the network.

For such a complexity, it becomes important which role is assigned first to the participating parties of a round of communicative interaction. The hearer-first case assigns a low-connected node from majority. Then the speaker happens to be a highly-connected node with high probability. The reverse is true for the speaker-first case and one more case is generated in which roles of being a speaker and a hearer are assigned with equal probability to the edges of a randomly selected link.

The hearer-first case achieves faster convergence since the speaker has a higher probability of being a hub (highly-connected node) as it is selected after the hearer. Hubs provide faster spread of consensus by keeping the number of different words low. On the other hand, if speakers were selected first then more words will be in circulation within the population since they will more likely to be a low-connected node. Therefore, pair selection significantly effects convergence trends in non-trivial population topologies. In accordance, complex networks like BA can be used as plausible real world models.

Nowak et al. (1999) presents a mathematical framework to study the performance of different learning mechanisms in an evolving population. Three distinct models of learning, namely parental learning, role model learning and random learning are employed in their model. For parental learning, they assume that successful communicators in the environment have more offsprings whereas in the role model learning they have more imitators. On the other hand, communicating individuals are simply randomly selected in the random learning. Throughout the generations newly created individuals go through a learning phase with one of these learning models. Consequently, members of the population gradually gain a shared vocabulary through generations. Within a well-defined mathematical framework, it is shown that parental and role-model learning have a significant success over random learning.

Similarly, evolutionary properties of corporate culture over a naming game model are examined by Pan Yang and Jian-Yong (2008). During the interaction between the staff, managers who are doing most of the communication affect the transmission of the corporate culture, namely event-behavior pairs. This outcome overlays the importance of the pair-selection for convergence of the event-behavior inventories.

3 Methodology

3.1 Generic Naming Game

The traditional naming game models a population of n agents $A = \{a_1, a_2, \ldots, a_n\}$, where each and every agent can equally perceive and be knowledgeable about the environment, which contains a set of objects $O = \{o_1, o_2, \ldots, o_m\}$. Agents have their own private lexicon, which defines an inventory of a set of word-object pairs, such as a_j can have an inventory $I_j = \{\{w_i, o_k\}, ...\}$ at a given time throughout the game. Every agent starts the game with an empty inventory $I = \{\}$. Iteratively in each episode of communication a

random speaker a_x and hearer a_y is chosen for $x \neq y$ and $x, y \leq n$. Both agents attend to an object o_k for $k \leq m$, and they try to agree on a name, w_i. The naming game ends after an iteration when all the agents converge on to a shared inventory, where $I_1 = I_2 = \ldots = I_n$. Minimal naming game focuses on an environmental setup where there is only one object. Therefore, a personal inventory of an agent can be reduced to a set of words, such as $I_j = \{ \sigma_1, \sigma_2, \ldots, \sigma_q \}$. Personal inventories only consist of the words, which can be used to name that specific object by an agent. Accordingly, the algorithm for an episode of communication among two randomly selected agents within the minimal naming game can be outlined as follows:

1. Randomly choose one speaker and one hearer from the population.
2. Speaker transmits a name to the hearer.
   (a) If speakers inventory is empty then it invents a new word and transmits it.
   (b) If there is one name in speakers inventory then it transmits that name.
   (c) If there is more than one name in speakers inventory then it randomly transmits one of them.
3. Hearer processes the uttered name.
   (a) If the uttered name is in hearers inventory then communication is a success.
   (b) If the uttered name is not present in hearers inventory then communication is a failure.
4. Both parties make final modifications on their inventory.
   (a) If success then both parties delete all the words from their inventories except the one, which is agreed on (the one which is transmitted by the speaker).
   (b) If failure then only hearer updates its inventory by adding the uttered name to its inventory.

3.2 Pair Selection Algorithm

Only the first step of the generic algorithm for the minimal naming game is modified to implement a pair selection strategy with reinforcement learning. In particular, in the generic algorithm the speaker and the hearer is chosen randomly among the community, whereas in the application of pair selection strategy first the speaker is chosen randomly and then that specific speaker chooses its hearer counterpart. Reinforcement learning technique is employed in a basic level to implement this idea, as the success of previous communications can be stored and used for pair selection within future iterations.

To attain this, each and every agent holds a value function, which is as big as the number of agents in the community except itself. For instance, agent a_x will have a value function $V_x = \{v_1, \ldots, v_{x-1}, v_{x+1}, \ldots, v_n\}$, which will make a_x distinctively remember how successfully it has communicated with the other agents. An empty value function is assigned to each agent, while the game is set to run. After each episode of communication only the speaker collects rewards and updates its value function accordingly. Briefly, when a speaker a_x communicates with hearer a_y, the value of v_y in V_x is updated.

An application of the eGreedy algorithm is used for the speaker to decide the most beneficial hearer (Sutton and Barto, 1998). In other words, agents use their value function to pick out the hearer with the highest value to communicate in the upcoming episode. Moreover, according to the exploration rate an exploratory move is taken by choosing a random hearer throughout the communicative iterations. Speaker makes an

exploratory move according to the given exploratory rate. The exploratory rate determines the probability of choosing the hearer randomly instead of choosing a specific hearer. That is, for a given exploratory rate of 0.2 the speakers will select a random hearer from the population with 0.2 probability. Essentially, the population will be discovered gradually with respect to the exploration rate.

3.3 Word Selection Algorithm

Lenaerts et al. (2005) completed a similar study to investigate the emergence of word-meaning mappings and the algorithm below will be a small scale replica of it. The underlying idea is to examine the emergence of a shared vocabulary using reinforcement learning with a word selection strategy.

Similar to the implementation of pair selection strategy, for the word selection strategy only the second step of the generic algorithm is modified. Speakers and hearers are chosen randomly from the community, similar to the generic algorithm. In fact, for the implementation of word selection strategy a static set of words are used, to make the model a suitable Markov decision process model. Consequently, when a speaker needs to transmit a name, if the inventory is empty a new word is selected from the universal static word set $w = \{w_1, \ldots, w_n\}$. Therefore, speakers cannot invent new words from scratch, as in the case of generic and pair selecting algorithms. However, if they do not have any names in their inventory to name an object, they just select a word from this aforementioned static set of words. If they have only one word for an object in their inventory, they just transmit that word without using any decision algorithms. Within the word selection strategy reinforcement learning is just used when there is more than one word in speakers inventory. In that case, the speaker tries to transmit the most beneficial word (the word that helped to attain more successful communication) by using reinforcement learning.

The value function of each agent holds values which indicate how beneficial a word is regarding that agent's previous experiences. Therefore, value function for an agent a_x can be represented as $V_x = \{v_1, v_2, \ldots, v_n\}$, where n is the size of the static word set. Similar to the pair selection implementation, the eGreedy algorithm is used to explore the word set. At the beginning of each episode of communication an agent picks out the highest valued word to transmit from the value function, if it will not going to conduct an exploratory move. After an interaction with the hearer only the speaker collects rewards. Specifically, when a word w_i is uttered by the speaker a_x, the value of v_i in V_x is updated by using the reinforced reward or punishment depending on the success of the interaction.

3.4 Experiments

Regarding the outlined algorithms three different experiments are conducted to compare the convergence trends of generic, pair selecting and word selecting algorithms. The benchmarks N_w (total number of words generated), N_d (total number of distinct words generated) and S (success rate, the probability of being successful in an iteration), which are used to provide a concise comparison with the previous works of the literature are borrowed from Baronchelli et al. (2005). Conditions, which are detailed below are tested over a simulation framework, which is implemented in Python 2.7.

- Generic, pair and word selection algorithms are compared according to the N_w, N_d and S, for 50 agents with an eGreedy exploration rate of 0.2, where both the reward and the punishment values are fixed to be 0.05.
- The effects of varying the rate of exploration examined on convergence trends of pair and word selection models for 50 agents, where both the reward and the punishment values are fixed to be 0.05.
- The effects of reward/punishment rates on convergence trends of pair and word selection models are examined for 50 agents, where the eGreedy exploration rate is set to be 0.2.

4 Results and Discussion

Behavior of the population for the previously mentioned naming game algorithms can be interrelated in terms of their convergence trends (namely, how fast the population reaches to a final state), total number of words created in the population at a given time during the simulation (which can also be referred as the amount of memory used among agents) and number of distinct words created by the population. When the performance of the generic minimal naming game algorithm is regarded as a baseline, the application of reinforcement learning on pair and word selection strategies does not provide better results in terms of faster convergence. From Figure 1, Figure 2 and Figure 3 it can be interpreted that generic algorithm outperforms the other two modified ones. However, it can also be stated that given the right conditions in terms of simulation variables, populations which adopt both pair and word selection algorithms can also converge on a shared lexicon. Moreover, from above mentioned figures it can also be observed that memory complexity nearly overlaps for the generic and pair selection algorithms, whereas it is comparatively larger for the word selection algorithm. In fact, the memory selection algorithm forces agents to discover the state space with exploratory name selections even when the population starts to form a consensus. Therefore, word selection models have greater memory complexity and slowest performance.

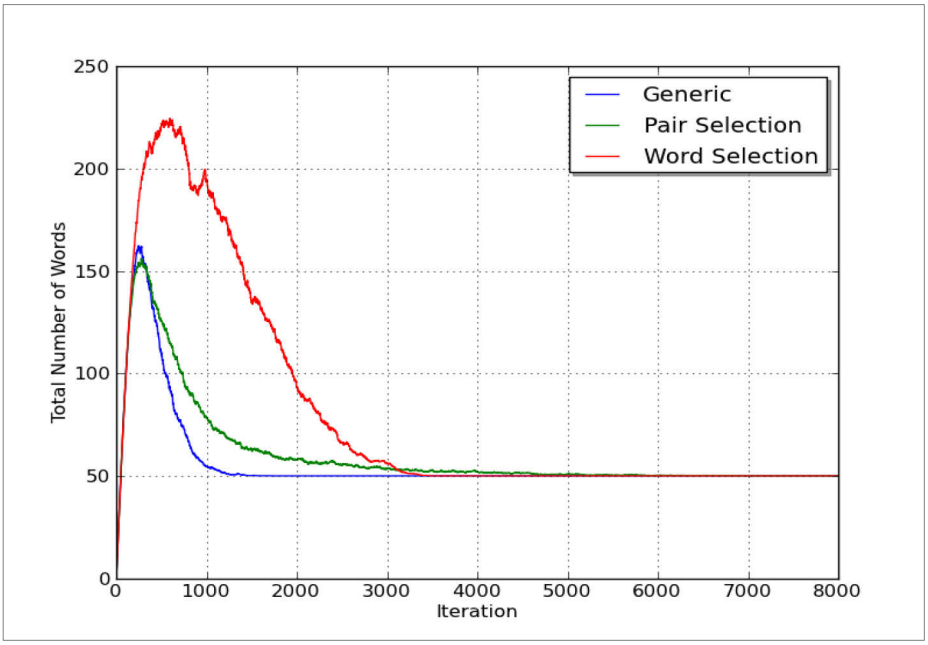

Figure 1. Total Number of Words (Nw) vs. Iterations for generic, pair and word selection algorithms, where number of agents is 50, exploration rate is 0.2, reward and punishment rates are 0.02. Results are averaged for 30 runs.

Despite their latency in convergence, an examination of N_w and N_d values of the modified algorithms in-correlation can be valuable to observe the grouping structures within the population. In depth, in a given time among the populations having the same total number of words, greater number of distinct words may be an indication for the grouping within the society. Precisely, lower rate of N_w/N_d denotes the generation of groups, which agree on distinct words among themselves in the population. The highest grouping rate can be observed through the iterations, where society reaches the peak values of N_w and N_d, in Figure 2 and Figure 3. For the generic algorithm N_w/N_d is 2.81, whereas this ratio is slightly changing around 1.90 for both the pair and word selecting models. The selection strategies directly effect the selection mechanisms for agents of the modified algorithms. Therefore, successfully communicating agents come up with a group in pair selection model. Similarly, words which lead to successful communication will also make the society partition into groups according to distinct words which are favored by distinct groups. The participants of each group form agreements within their groups. This has direct implications on slower convergence for modified algorithms, as the group based conventions needs to be globally spread to attain a universal agreement.

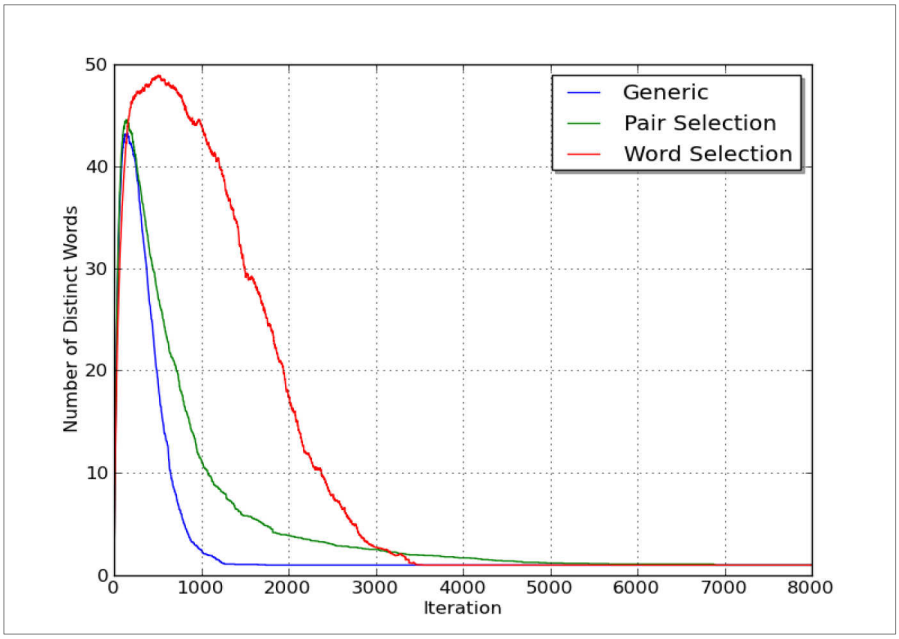

Figure 2. Number of Distinct Words (Nd) vs. Iterations for generic, pair and word selection algorithms, where number of agents is 50, exploration rate is 0.2, reward and punishment rates are 0.02. Results are averaged for 30 runs.

Subsequently, the rate of spread for agreements is also dependent on the exploration rate. For the pair selection algorithm, it is expected that an increase in exploration rate will yield a faster convergence. This is because the agents, who adopt the role of a speaker within an iteration, transmit their vocabulary to a higher proportion of the society for greater rate of exploration. In consequence, when the exploration rate approaches to 1, the pair selection algorithm will behave as a generic algorithm. This so-called direct relation between exploration rate and faster convergence for the pair selection algorithm can be observed on Figure 4. For the word selection algorithm it is expected that an increase in the exploration rate will delay the convergence of the population on a shared vocabulary. This is because, an increase in the exploration rate will force the word selecting agents to transmit varying words from the static word set. In that case, total number of distinct words can increase drastically for higher exploration rates in a word selection algorithm simulation. Significantly, as it can be observed from Figure 5 this assertion does hold for word selection, since time of convergence gradually increases proportionally with the probability of choosing a random word to explore the state space.

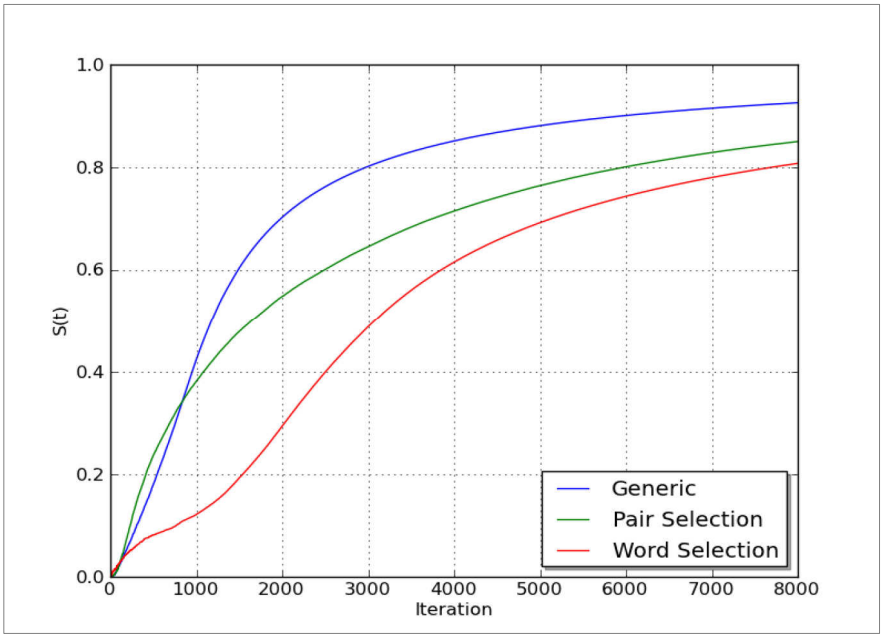

Figure 3. Success Rate (S) vs. Iterations for generic, pair and word selection algorithms, where number of agents is 50, exploration rate is 0.2, reward and punishment rates are 0.02. Results are averaged for 30 runs.

The amount of reinforced reward and punishment rates for the pair selection algorithm does not effect the convergence trend as it can be seen from Figure 6. The amount of reward that the speaker gains does not play a role, because in any case previously granted reward for that hearer will determine the future selections for the speaker. On the other hand, for the word selecting algorithm an increase in reward/punishment ratio will decrease the time needed for convergence. Selection of any highly rewarded word will dominate the value function of an agent. Hence, as it can be seen on Figure 7. convergence comes earlier if a word gets a higher reward after successful interactions, than the punishment it gets after unsuccessful ones. However, equal reward and punishment values (reward/punishment rate = 1) will result in slower convergence as their effects on value functions can cancel each other out at the beginning of consensus formation for the word selection algorithm.

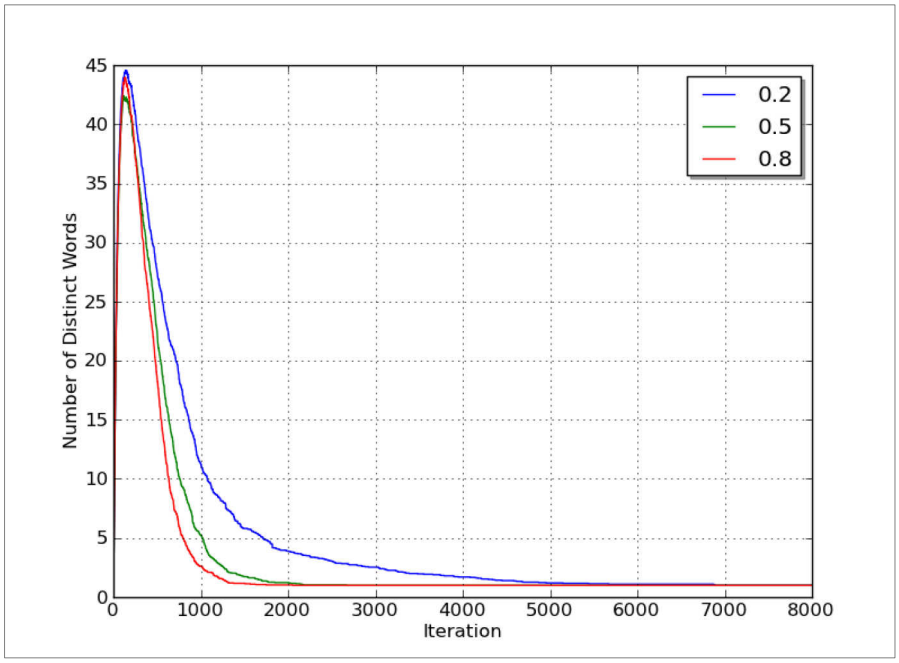

Figure 4. Number of Distinct Words (Nd) vs. Iterations for pair selection algorithm for varying exploration rates 0.2, 0.5 and 0.8, where number of agents is 50, reward and punishment rates are 0.02. Results are averaged for 30 runs.

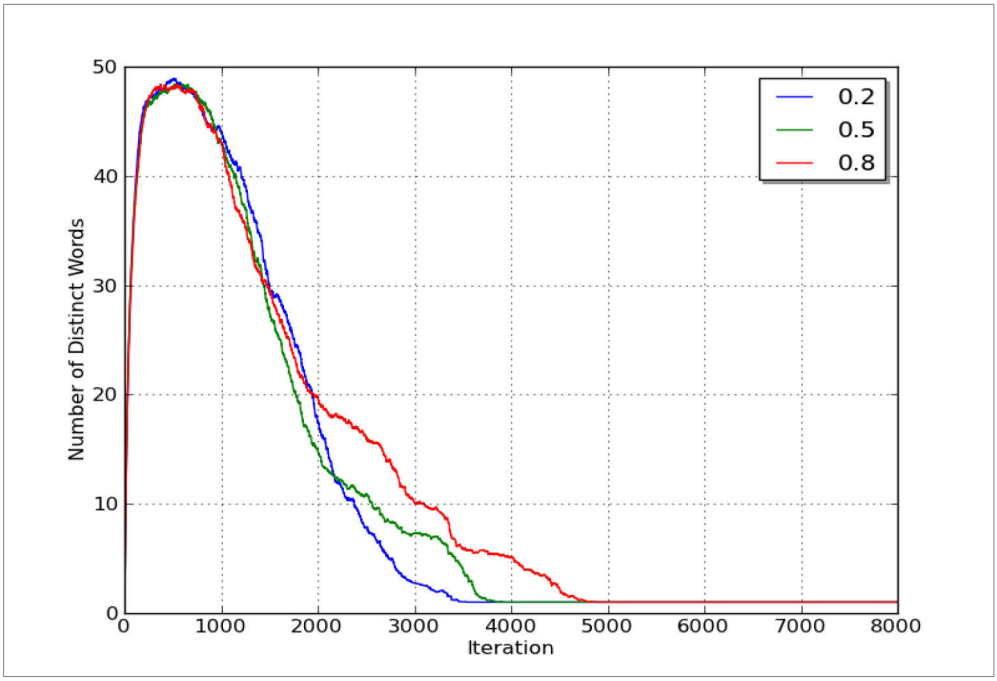

Figure 5. Number of Distinct Words (Nd) vs. Iterations for word selection algorithm for varying exploration rates 0.2, 0.5 and 0.8, where number of agents is 50, reward and punishment rates are 0.02. Results are averaged for 30 runs.

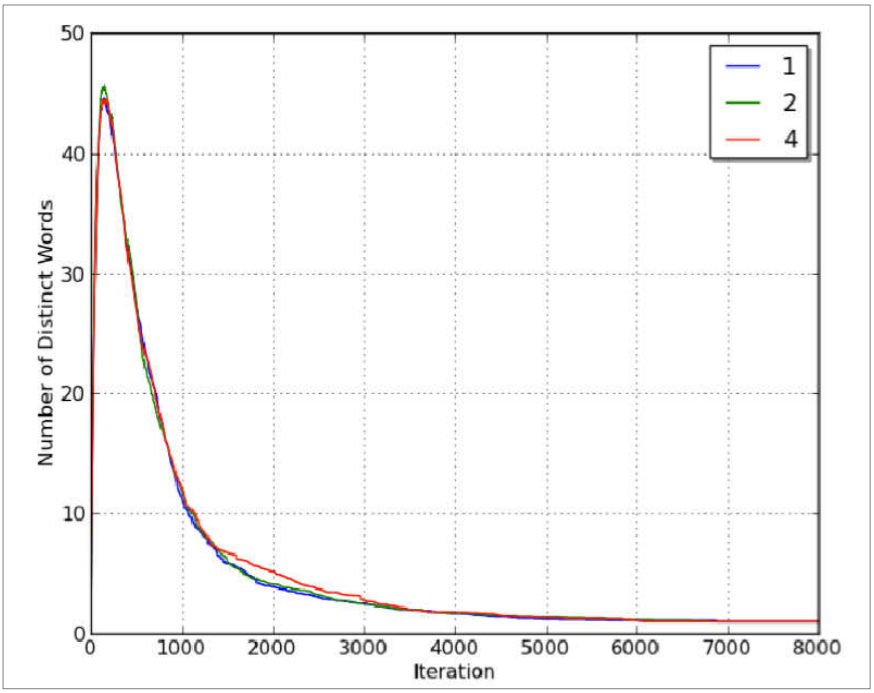

Figure 6. Number of Distinct Words (Nd) vs. Iterations for pair selection algorithm for varying reward/punishment rates 1,2,4 and 8, where number of agents is 50, reward and punishment rates are 0.02. Results are averaged for 30 runs.

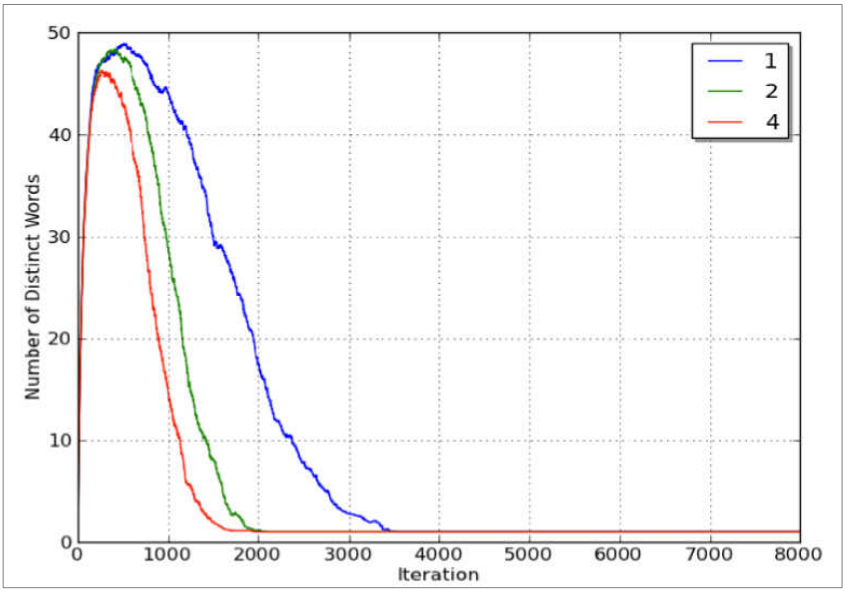

Figure 7. Number of Distinct Words (Nd) vs. Iterations for word selection algorithm for varying reward/punishment rates 1,2,4 and 8, where number of agents is 50, reward and punishment rates are 0.02. Results are averaged for 30 runs.

5 Conclusion

In this piece of work, the tradition naming game model is extended with reinforcement learning to study pair and word selection strategies. Briefly, modified reinforcement learning models of the naming game can also bootstrap shared vocabulary similar to the traditional model, if convenient simulation variables are provided. Convergence trends of the traditional naming game model and modified models are compared and contrasted. Specifically, the effects of different exploration rates, reward and punishment values and memory complexities are comparatively investigated. It is concluded that the convergence trends of the modified models behave similarly to the traditional models however the modified models need more time to converge.

Reinforcement learning algorithm applications for pair selection and word selection strategies are employed to boost communicational convergence of the agents. It is presented that reinforcement learning which is a psychologically motivated artificial intelligence approach could also be devised to study the emergence of linguistic conventions. Within such computational models social structure and language co-evolve. The modified selection strategy algorithms that we have implemented support the co-evolution of vocabulary and structure of the society. For future research, different topological settings can be applied on the network of the agents in order to study their effects on semiotic dynamics.

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Negation and (lack of) *DO*-support in a case of pseudo-archaic English*

Sandra Ronai

The paper is an attempt to describe and account for a case of register variation in English, namely, the language-internal parametric variation with respect to the raising of main verbs in negative sentences. The corpus is a book of fantasy literature, *The Silmarillion* (J.R.R. Tolkien). By providing a quantitative and qualitative description of negation with and without DO-support, the author sketches a representation of the peripheral grammar and explains the extent of its deviation from the standard. After a broad empirical description of this 'pseudo-archaic English', the presentation focuses on the detailed results of a statistical research of the data, followed by the actual comparison of the two structures, their syntactic representations (in the theoretical framework of Generative Grammar) and to the environments in which each of them occurs. Finally, the paper adopts a hypothesis on language change that might explain the simultaneous availability of two competing constructions.

Keywords: *language change, language-internal parametric variation, literary corpus, negation, peripheral grammar*

1 Introduction

This paper is an attempt to describe and maybe even offer an account for a case of register variation in English. In a book of fantasy literature, The Silmarillion, written by J.R.R. Tolkien and edited by Christopher Tolkien, we can find many examples like 'he knew not' or 'they found him not', together with other occurrences of 'did not know' and 'did not find him'.

Although this case study is based on a corpus of 'literary' (i.e., artificial) English, I consider its analysis a valid line of research, as it may shed some light on some phenomena that reflect the diachronic evolution of 'real' English. Specifically, this lack of DO-support indicates that the raising of the lexical verb is still possible in this sub-variety of English. But how can this be, since we know that movement is never optional?

Inspired by Liliane Haegeman's analysis of non-overt subjects in finite clauses in the 'abbreviated English' of diaries and informal notes (Haegeman and Guéron 1999, 625), I will try to illustrate the parametric variation that exists language-internally with respect to the raising of main verbs in English negative sentences. By providing a quantitative and qualitative description of negation with and without DO-support in Tolkien's English, I would like to sketch a representation of this particular 'peripheral

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grammar' and explain the extent of its deviation from the 'core grammar' (to use the terminology introduced by Haegeman and Guéron 1999, 633).

My paper is organized as follows: the first section is a presentation of what I would like to call 'pseudo-archaic English'. After some necessary information on the corpus and some speculative reasons as to why the book was written in this special 'pseudo-archaic' style, I go on to review the most poignant characteristics of the register, from the vocabulary to morphology and of course syntax.

Then, in section 2, I show the detailed results of my statistical research of the empirical facts, drawing, I hope, a comprehensive picture of negation in The Silmarillion. By adopting (in 2.1) two classifications of negation, one according to its scope, and one according to the position it occupies in the syntactic structure, I was able to isolate one after the other all the negative constructions that are irrelevant for my chosen structure: in 2.2 I delimitate the cases in which negation is expressed in the lexical domain, 2.3 is dedicated to the special cases in which negation can occupy a position within the Left Periphery, while 2.4 isolates those cases in which negation is indeed in the functional layer of the IP, but is realized by an auxiliary construction.

Finally, after sorting through all the data, in 2.5 I proceed to the actual comparison of the two structures, the DO-support and the Raising one, paying particular attention to the environments in which each of them occurs (and trying to see if there is any pattern). Based on these observations, in section 3 I will provide the syntactic representation of the two structures involved, and I will also adopt a hypothesis on language change that might explain the simultaneous availability of two competing constructions. Finally, I add some further tentative considerations and I draw the conclusions.

2 Pseudo-archaic English

The special register that I will try to analyze in this paper is something which could be characterized as 'pseudo-archaic English' – 'archaic' because, as we shall see, it employs a series of linguistic strategies which used to be part of earlier stages of English, but are no longer present in the contemporary language.

2.1 Preliminary considerations

A few clarifications about the corpus are in order before anything else. Published posthumously in 1977, *The Silmarillion* is not a unitary novel, but a collection of related, but separated, stories. This is relevant from a linguistic point of view, as it may explain certain inconsistencies and the lack of uniformity of the language.

As we find out from the *Foreword*, the book had to be compiled from a large number of writings that Tolkien had sketched throughout his life, starting from some notes dating back to 1917 and going through successive variants composed not only in different genres (originally, some were even in alliterative verse copying the style of Anglo-Saxon epic poetry), but also in different registers (what the editor calls 'tones'). Thus, some of the archaic grammatical structures that we can find can very well be some residues of the book's rather unusual process of creation.

From a sociolinguistic perspective, the register that I will be trying to analyze ca be considered a special kind of *idiolect*, influenced by the author's background. J.R.R. Tolkien was a philologist and an expert in old languages (not only Latin and Ancient Greek, but also Welsh, Finnish, Old Norse and of course Old English) and had worked for many

years as a professor of Anglo Saxon literature at Oxford. Therefore, it would not be too far fetched to assume that he wanted to emulate the style of the old literary works, by enriching the English that he used in ordinary day-to-day interactions with some 'higher' structures that can be reminiscent of an older language.

On the other hand, the influence of the editor is not to be overlooked. When the book was first published, four years after the death of its author, Tolkien was already famous for having written *The Hobbit* and his masterpiece, *The Lord of the Rings*. The two books take place in a fantasy universe which the writer had imagined in far greater detail. *The Silmarillion* was explicitly intended to be the mythology and history book of Tolkien's fictional world. Because of this, the language had to give the illusion of being 'older', somehow remote from the language of the readers, just like the King James Version of the Bible, for instance. This literary device has consequences on the peripheral grammar of the book. The English of *The Silmarillion* is certainly not Early Modern English, but an artistically coined 'older language'.

We do not know the exact story of the manuscripts, but Christopher Tolkien confesses that he had to "work out a single text selecting and arranging it in such a way as seemed to me to produce the most coherent and internally self-consistent" book (Tolkien 1977, 3). His notions of coherence and consistency refer mainly to the narrative aspects, which are not of interest to us – but, without doubt, the same selection operation had to be applied to the language itself, from the level of words and word forms to syntactic structures. We can never be sure whether the archaisms that we find were there in the older versions or were introduced during the editing process. Or maybe, on the contrary, the language of the original material was even more archaic and it was modernized afterwards.

In fact, if we are to take the case of the negative construction that is the main topic of this paper, the apparent optionality of movement (sometimes main verbs raise above the negative marker, sometime they do not) could simply be such a residue: the editors were unable to create uniformity – they changed some verb forms, but left others unchanged. Alternatively, we might find some deeper reasons for it in the internal workings of this peripheral grammar. In order to do that, I will have to sketch a more general picture of the grammar first.

2.2 Pseudo-archaic grammar. General characteristics.

The deviation from the standard can be seen not only at the level of the vocabulary and morphology, but also at the syntactic level. Let us start by examining the lexical archaisms.

First of all, the book abounds in rare, archaic and/or poetic words, mostly nouns (*raiment* instead of 'clothes', *thrall* and *thralldom* instead of 'slave' and 'slavery', the plural *brethren* for 'brothers' *etc.*) and verbs (*to halt* instead of 'to stop', *to hearken* instead of 'to listen', *to essay* instead of 'to try' *etc.*). A few older adverbs are also used: *nigh* instead of 'close to' and *well-nigh* instead of 'almost', *ere* instead of 'before', *afar* instead of 'far away', *but* with the meaning of 'only', *save (only)* instead of 'except', *apace* instead of 'fast' – but their usage is relatively limited, and they alternate with their more modern counterparts. I provide some examples in order to illustrate how they are used:

(1) a. Eregion was *nigh to* the great mansions of the Dwarves. (= close)
b. … death drew *nigh* him, for there was venom on the fangs of the wolf.
c. … and *well-nigh* all the dragons were destroyed. (= almost)
d. Thingol was long silent *ere* he spoke. (= before)
e. … that they are *but* a part of the whole and tributary to its glory. (= only)
f. None have ever come back from the mansions of the dead, *save only* Beren son of Barahir. (= except)

Another interesting lexical archaism is the unusual usage of some of the verbs. For instance, *to stay* is also used as a transitive verb, with the meaning of 'to stop', as in:

(2) a. But Fëanor followed him, and at the door of the king's house *he stayed him*.
b. … for the Orcs wavered, and *their onslaught was stayed*.
c. … and Beleg, *staying his steps* beside the sleeper, saw that it was an Elf.

These examples suggest that the lexicon of *The Silmarillion* contains two separate verbs pronounced as *stay*: the normal, intransitive (unaccusative) verb, and a second, transitive verb, with an argument structure which includes two arguments (as in (2a) above) and can undergo passivization (2b).

The auxiliaries for the Future tenses are also slightly different from our common usage: *will* and *would* retain their original volitional meaning, while the unmarked, non-volitional cases are, for the most part, expressed by *shall* (and its past form, *should*, for indirect speech):

(3) But if this be your will, Thingol, *I will perform it*. And when we meet again *my hand shall hold* a Silmaril from the Iron Crown.

After having looked at all the occurrences of *will* and *shall*, I can confirm that the selection of one of the two auxiliaries is not determined by the subject (with *shall* for first person and *will* for second and third person or *vice versa*), but is indeed a matter of volition. In fact, when it is explicitly stated that characters do not want to do something, but know that it will happen, they use *shall*, and not *will*.

Moreover, there are a couple of cases where the verb *to will* is used not as an auxiliary, but as a full verb with the meaning of 'to want, to decide', which is rather rare today:

(4) Therefore *he willed that* the hearts of Men should seek beyond the world.

As far as inflectional morphology is concerned, in a number of contexts, Tolkien's pseudo-archaic language retains two verbal endings, *-st* for second person singular (*hast*, *hadst*, *canst*, *wouldst*, *dost*, *seest*, *knowest*, *thinkest*, *hiddest*, *givest*, *saist*, *namest etc*) and *-th* for third person singular (*hath*, *attempteth*, *rejoiceth*, *wieldeth*, *cometh*, *lieth*, *draweth*, *seeth etc*). For *be*, we can find the forms *art* and *wert* (second person singular).

Personal pronouns, too, may have a richer morphology, as the number distinction for the second person is in some cases conserved. Thus, we find the older forms *thou* (Nom.) – *thee* (Acc.) – *thy* (Gen.) – *thine* (Gen. predicative) for singular, and *ye* – *you* – *your* – *yours* for plural. Another, rarer, archaic usage is that of *mine* instead of *my* in front of a word starting with a vowel, as in *mine instrument*.

What is very interesting is that these two features are not used throughout the book, but are restricted to the speech of the characters, while the narrator uses *you* for both singular and plural and has all third person singular verbs ending in *-s*, not *-th*. This rather unnatural separation was used, presumably, to create the illusion of 'history' (the events happened long ago, when people spoke differently, and were recorded afterwards, when the language was closer to ours). However, it is only these two morphological traits that mark the distinction between the language of the author and the language of the characters; all other archaic elements are used uniformly. Moreover, in some rare cases, a character will use a *your* instead of *thine* – for this, I am fairly certain that it was an omission of the editors, and not something else.

Another peculiarity of Tolkien's language, this time a syntactic one, is that it preserves some traces of differential auxiliary selection for the perfect aspect. In today's language, this appears only in some frozen constructions, like the Easter greeting 'Christ is risen!' (instead of 'has risen'), but it is a know fact that Old English, just like some Romance languages like Italian or French, always selected the auxiliary *be*, and not *have*, for unaccusative verbs:

(5) *Se halga fæder wæs in agan.*
the holy father was in gone
'The holy father had gone in.'

(6) *Is nu geworden.*
is now become
'It has happened.'[1]

In a few cases, Tolkien's English follows the Old English rule for unaccusatives, and we can find some examples like:

(7) a. ... and he knew that his hour *was come*.
b. For the Noldor *were become* fierce and desperate.
c. But in the morning when the storm *was passed*...
d. ... and with them the Third Age *is ended*.

Finally, the last archaistic feature that I would like to mention here comes from the domain of nominal expressions. Throughout the book, we can find a handful of scattered post-nominal adjectives, which suggest that, in these cases, the noun raised to a higher functional projection within the DP:

(8) a. *Tears unnumbered* ye shall shed!
b. … its springs are in the wells of *sorrow unfathomed* at the foundations of the Earth.
c. … the gift of *life unending* is not for all.
d. … the blood of the Firstborn and a strain of the *spirits divine* that were before Arda…

[1] Examples (5)–(6) from Quirk and Wrenn 1955, 617, cited in Haegeman and Guéron (1999, 244).

With this, I will stop the inventory of the main characteristics of the pseudo-archaic English that we can find in *The Silmarillion*. Hopefully, this will serve as a useful context for integrating the archaistic structure that is the topic of my paper, *i.e.*, negation without *DO*-support. Before analyzing the specific construction, however, I feel the need to draw a broader picture of how negation is expressed in my chosen corpus.

3 Negation in *The Silmarillion*.

In the 365 pages of the paperback edition, I counted 1,426 cases of negation in *The Silmarillion*. However, the construction I target – a negative lexical verb that raises above the negative marker – is just one of the ways in which negation can be expressed in English. Before I could compare the number of occurrences of 'he knew not' with the number of occurrences of 'he did not know', I needed to see how these numbers compare to the general picture.

3.1 Classifications of negation

After gathering all the data, the first step was to identify the real clausal negations and take out those instances where the negative element does not create a negative context at the level of the whole sentence. In other words, I needed to discriminate between the three types of negation, from the point of view of *scope* (for this classification, I follow Cornilescu 2003, 37-38):

1. *word* or *affixal negation* – negation takes scope over a single word and is expressed by means of an inherently negative affix, generally a prefix: 'immeasurable', 'unmoved', 'unrest', 'discontent' *etc.*

2. *phrasal* or *constituent negation* – it takes scope over a certain phrase but does not render the whole utterance negative:

(9) a. … his kin, that dwelt [*not* [$_{\text{AdvP}}$ far away.]]
b. … for thou hast received [*not only* [$_{\text{NP}}$ forgiveness] but [$_{\text{NP}}$ bounty]].
c. But the delight and pride of Aulë is [$_{\text{PP}}$ in the deed of making], and [$_{\text{PP}}$ in the thing made], and [*neither* [$_{\text{PP}}$ in possession]] [*nor* [$_{\text{PP}}$ in his own mastery]].

3. *sentential* (or *nexal*, or *clausal*) *negation* – the negative element takes scope over the entire clause.

Affixal negation belongs to the domain of word formation rules, so I did not take it in consideration at all. However, I did consider all the instances of constituent negation, and tried to separate them from sentential negation. For this, I employed some of the diagnosis tests first proposed by Klima (1964) and explained by Huddleston & Pullum (2002, 787-790):

(10) a. His kin dwelt not far away.
b. *His kin dwelt not far away, *did it*?

c. His kin dwelt not far away, *didn't it*?
(the tag question has to be negative → affirmative sentence)
d. *His kin dwelt not far away, *and neither* did his enemies.
e. His kin dwelt not far away, *and* his enemies did so *either*.
(it does not accept a 'neither' continuation → affirmative sentence)
f. *His kin dwelt not far away, *not even* his grandpa.
g. His kin dwelt not far away, *even* his grandpa.
(it does not accept a 'not even' continuation → affirmative sentence)

In this way, out of the initial 1,426, I was able to isolate 82 occurrences of clear constituent, and not sentential, negations. All the cases that leave some space for ambiguity have not been left out, but included in the total numbers and considered sentential negation. I did this because, as we shall see in the next section, utterances where negation can have both a local and a clausal interpretation are important exactly for the raising/non-raising optionality that gives rise to lack of *DO*-support. For the moment, whenever the two readings were equally plausible, I chose the sentential one. In this way, I now had 1,344 negations to sort through.

Then, another classification of negation helped me narrow down my data (I used mainly Zeijlstra 2004, 39). Standard English is, like Classical Latin or Standard Dutch, a non-Negative Concord language; therefore, the single, necessary and sufficient, negative element that renders the clause negative can be expressed:

1. in the *functional domain*, *i.e.*, by a *negative marker* that takes scope over the VP or over some other projection of the split IP layer, or

2. in the *lexical domain*, *i.e.*, through a *negative quantifier* that binds one of the arguments or even the adjuncts of the verb.

This is illustrated by the simple contrast in the Latin example in (11), where (11a) has negation in the functional domain (the negative marker *non*), while in (11b) sentential negation is expressed in the lexical domain, with a negative pronoun in the Subject (= Spec of IP) position:

(11) a. Non *erat* *ullus* *domi.*
NOT be-IND.IMPERF.3SG any house-LOCATIVE.SG
'There wasn't anybody home.'
b. Nemo *erat* *domi.*
nobody-NOM be-IMPERF.PRES.3SG house-LOCATIVE.SG
'Nobody was home.'

3.2 Negation in the lexical domain.

The *Silmarillion* data collected by me included numerous instances of sentential negation in the lexical domain. Since the specific pseudo-archaic register that I am analyzing is exactly like the core grammar with respect to the absence of Negative Concord, I could safely assume that all the cases of negation through a negative quantifier are not within the scope of my target construction. Thus, I took another 542 utterances out of my data. Before abandoning them, however, I would like to give some examples of negation in the

lexical domain. In addition to all the negative quantifiers given by Huddleston and Pullum (2002, 831), Tolkien uses two other older forms, *none* (for *no one*) and *naught* (for *nothing*). Let us take them one by one.

The most often-used negative quantifier seems to the determiner *no*, which can appear in different positions: as an argument, in the subject DP (12a), in a direct object DP (12b), or in a prepositional phrase (12c); and as an adjunct, like the adverbial (location, manner, instrumental, separative, sociative) elements expressed by the PPs in (12d)–(12h):

(12) a. As yet [$_{DP}$ *no* flower] had bloomed.
b. But they could understand [$_{DP}$ *no* word of the tongue of the Naugrim].
c. … and be subject [PP to no command or ban].
d. Swiftly the wolf grew, until he could creep [$_{PP}$ into *no* den].
e. … you may [$_{PP}$ by *no* means] pass through the realm of King Thingol;
f. [$_{PP}$ By *no* sign] did he reveal that he knew already of Beren and the quest
g. [$_{PP}$ From *no* blood] wilt thou shrink.
h. … you shall fly from the Land of the Star [$_{PP}$ with *no* star] to guide you.

The negative pronouns *none* and *nothing* (and its archaic variant *naught*) can also appear in various syntactic positions: subject (13a, 14a, 15a), direct object (13b, 14b, 15b) or prepositional object (13c, 14c):

(13) a. They swore an oath which *none* shall break, and *none* should take.
b. They loved none but themselves.
c. and he sat (...) in the deepest shadows of his house, speaking to none.

(14) a. ...for nothing could escape the sight and scent of Huan.
b. He forgets nothing, and he knows all things that shall be.
c. In nothing did Melian show greater favour to Túrin than in this gift.

(15) a. Therefore naught was done at that time.
b. ...and, having naught left but his love for Níniel, he girt himself with a sword and went after her.

Finally, sentential negation can also be expressed by the negative adverbs of place (*nowhere*) and time (*never*), and by the adverbial phrases *no more* and *no longer*. I will return later to the problem of their position (before or after the main verb), but for now let us see some examples:

(16) a. He dwells nowhere long, but moves in all the deep waters about or under the Earth.
b. … for they *never* beheld the Light that was before the Sun and Moon.
c. Then she halted in wonder, and fled *no more*, and Beren came to her.
d. From the shadow of death you can no longer save Lúthien.

3.3 Negation in the CP

Apart from these, there are two more negative elements, *neither* and *nor*, which can introduce sentential negation in contexts such as these:

(17) a. ...he swore an oath to her [1]/ that he would *neither* slay Beren [2]/ *nor* imprison him [3]/.
b. The Orcs made *no* boast of that duel at the gate [1]/; *neither* do the Elves sing of it, for their sorrow is too deep [2]/.
c. *No* aid will the Valar lend you in this quest [1]/; but *neither* will they hinder you [2]/.
d. ... and I will maintain my power in the Vale of Sirion 1/ (...), so that none shall mark thy going [2]/, *nor* shall *any* find there the hidden entrance against thy will [3]/.
e. ... and there *naught* faded [1]/ *nor* withered [2]/, *neither* was there *any* stain upon flower or leaf in that land [3]/.

As we can see, the clauses introduced by *neither* and *nor* are indeed negative, because negative polarity items (NPIs) such as *any* can only appear in the syntactic environment of sentential negation, and not of constituent negation (Huddleston and Pullum 2002, 823). But this kind of sentential negation cannot be placed either in the lexical or in the inflectional domain. What is its position, then?

Following Moscati (2006), in my B.A. diploma paper (Ronai 2010, 51-56) I have shown that what traditional Latin grammars call 'negative link words' are in fact negative complementizers, with negation being expressed in the CP layer. These are the subordinating conjunctions *ne* ('not to') and *neve/neu* ('and not to') and the negative coordinating copulative conjunction[2] *neque/nec* ('and not'):

(18) *Veni* *Athenas* [1]/ neque *me* quisquam *ibi* *adgnovit* [2]/.
come-1st.SG Athens-ACC AND-NOT me anyone there recognize-3rd.SG
'I came to Athens and nobody recognized me there.'
(Cic., *Tusc.*, V, 104)

(19) *Litteras* *nuntiosque* *misit* [1]/,
letters-ACC messengers-ACC-AND send-IND.PERF.3rd.SG
ne *eos* *frumento* *iuvarent* [2]/.
NOT-TO them corn-ABL help-SUBJ.3rd.PL
'Sent letters and messengers… (with orders) that they should not assist them with corn.'
(Caes. *B.G.*, I, 26, 6, trans. W.A. McDevitte)

(20) *Obsecrant* [1]/ *ut* *suis* *fortunes* *consulat* [2]/
entreat-IND.3rd.PL to their property-ACC protect-SUBJ.2nd.SG
neu *se* *ab* *hostibus* *diripi* *patiatur* [3]/.
AND-NOT-TO them by enemies plunder-INF allow-SUBJ.2nd.SG
'<They> solemnly entreat him to protect their property, and not to suffer them to be plundered by the enemy'
(Caes. *B.G.*., VII, 8, 4, trans. W.A. McDevitte)

[2] Without going into the syntactic intricacies of their underlying structures, for the purposes of the present paper, I will treat coordinating conjunctions on a par with subordinating ones.

Comparing these three last examples with the data in (17), we can easily extend the analysis and consider *neither* and *nor* to be English negative complementizers that introduce sentential negation at the Left Periphery, in the same way that Latin negative complementizers do. Curiously, Moscati (2006) analyses complementizer negation in Latin, Irish, Scottish Gaelic, Basque, Gbe languages and Hebrew, but does not take English into consideration. Whether or not this strategy is specific to this particular 'pseudo-archaic' peripheral register (possibly even modeled after the Latin construction) remains to be clarified by further research. For now, I will be content with isolating the 88 cases of negation with *neither* and *nor* in the CP layer.

On the other hand, there are some examples where *neither* and *nor* do not introduce a new negative clause, but a constituent. Often, there is an entire string of negated phrases, each introduced by a *neither* or a *nor*. Consider the following data:

(21) a. But [$_{DP}$ [[$_{DP}$ *no* wizardry] [$_{DP}$ *nor* spell]], [[$_{DP}$ *neither* fang] [$_{DP}$ *nor* venom]], [[$_{DP}$ *nor* devil's art] [$_{DP}$ *nor* beast-strength]]], could overthrow Huan.

b. ... [$_{DP}$ [$_{DP}$ *neither* law], [$_{DP}$ *nor* love], [$_{DP}$ *nor* league of hell], [$_{DP}$ *nor* might of the Valar], [$_{DP}$ *nor* any power of wizardry]], shall defend him from the pursuing hate of Fëanor's sons.

c. [$_{DP}$ [$_{DP}$ *Neither* rock], [$_{DP}$ *nor* steel], [$_{DP}$ *nor* the fires of Morgoth], [$_{DP}$ *nor* all the powers of the Elf-kingdoms]], shall keep from me the treasure that I desire.

(22) Yet [[*neither* [$_{PP}$ by wolf]], [*nor* [$_{PP}$ by Balrog]], [*nor* [$_{PP}$ by Dragon]]], would Morgoth have achieved his end, but for the treachery of Men.

In (21), despite the repeated use of the negative element before each of the DPs, there is basically one complex DP, formed by the coordination of the others. This complex DP occupies the subject position and happens to be negated.

So, in the three examples, we have a case of negation expressed by a negative quantifier in [Spec, IP] position, just like in (13a), (14a) and (15a) above. As for (22), the negative elements are placed in front of three individual PPs for one single complex constituent, no different than the much simpler PP we have in the following example:

(23) [$_{PP}$ By *no* sign] did he reveal that he knew already of Beren and the quest.

Moreover, this strategy, used no doubt for the poetic (or at least emphatic) expressiveness that it has, exists in other languages as well. (24) and (25) are the Romanian translations of (21c) and (22) respectively.

(24) [$_{DP}$ [$_{DP}$ Nici *piatra*], [$_{DP}$ nici *oţelul*], [$_{DP}$ nici *focurile lui Morgoth*], [$_{DP}$ nici *toate puterile regatelor Elfilor*]], *nu mă vor despărți de comoara pe care o poftesc.*

(25) *Însă* [[nici [$_{PP}$ *prin lup*]], [nici [$_{PP}$ *prin Balrog*]], [nici [$_{PP}$ *prin Dragon*]]] *n-ar fi izbutit Morgoth să-şi împlinească ţelul, dacă n-ar fi fost ticăloşia Oamenilor.*

I have, consequently, considered all the examples like those in (21) and (22) as instances of one single negation, and I have counted them together with the cases of negation expressed by negative quantifiers.

3.4 Negation in the IP.

After eliminating the lexical domain negation (542 cases) and the CP negation (88 cases) from the total of 1,344 cases of sentential negation, I was left with 714 cases of negation in the functional domain, expressed by the negative marker *not*, which takes scope in the IP layer. The results so far are summarized in Table 1 below:

<table>
<tr><td rowspan="2">TOTAL</td><td colspan="3">Sentential negation</td><td rowspan="2">Constituent negation</td></tr>
<tr><td>at the Left Periphery</td><td>in the lexical domain (negative quantifiers)</td><td>in the functional domain (IP layer)</td></tr>
<tr><td rowspan="2">1426</td><td>88</td><td>542</td><td>714</td><td rowspan="2">82</td></tr>
<tr><td colspan="3">1344</td></tr>
</table>

Table 1: Negation in The Silmarillion

At this point, I feel that I should mention a few considerations about the nature of *not*. In the sub-register that I am studying, *not* is the only negative marker available (there are no instances of *n't* at all). In regular contemporary English, however, *not* is restricted to the written and more formal register, while, in speech, it is only used when it is Focused, the normal negative marker in the oral and/or informal register being *n't*.

Not is analyzed as a negative adverb, *i.e.*, a maximal projection that occupies the Specifier position of the NegP, while *n't* is a negative head which is cliticized on the auxiliary verb: there is successive-cyclic head-to-head movement from V^0 to T^0, then to Neg^0 and finally to Agr^0 (Haegeman and Guéron 1999, 320). For a thorough discussion of *not* (negative adverb) *versus* head *n't* (and how this affected the rise of Negative Concord in those varieties of English that have lost *not*), see Zeijlstra (2004, 278). But for the purposes of this paper, I will follow Haegeman's analysis and consider *not* an AdvP in [Spec, NegP]

Coming back to the corpus of negation expressed by *not*, I had to embark on the rather painstaking task of classifying the 714 examples left, by separating them according to which type of verb they include (main verb, auxiliary, modal or copula).

This had to be done because the register phenomenon that interested me is only visible in the case of main verbs – the rest of the categories undergo raising in Standard English as well. As we can see, the examples which I will immediately give do not show any kind of deviation from the core grammar.

The raising verbs that appear in negative sentences in the corpus are the following:

1. Copula BE:

(26) a. … and I would weep, if I *were not* so weary.
b. But this Man *is not* Beren.
c. The fate of Men after death, maybe, *is not* in the hands of the Valar.

2. Passive auxiliary BE:

(27) a. But the island *was not moved* again.
b. In that time the woodmen *were not troubled* by the Orcs.

3. Progressive auxiliary BE:

(28) Fingolfin and Maedhros *were not sleeping*.

4. Perfect auxiliary BE:

(29) The wise have said that the hour *was not* yet *come*.

5. Perfect auxiliary HAVE:

(30) a. Ilúvatar *has not revealed* what he purposes for the Elves after the World's end, and
Melkor *has not discovered* it.
b. … for Finwë alone *had not fled* from the horror of the Dark.

6. SHALL / SHOULD:

(31) a. This kingdom thou *shalt not take* for thine own!
b. … demanded that Gorthol *should not be slain*.

7. WILL / WOULD:

(32) a. I *will not debate* with you, Dark Elf.
b. I *would not dwell* longer in the same land.
c. Maeglin *would not remain* in Gondolin as regent of the King.

8. MAY / MIGHT:

(33) a. By the laws of the Eldar I *may not slay* you at this time.
b. … for she *might not endure* the cold and the pathless voids.

9. MUST:

(34) for those who will defend authority against rebellion *must not* themselves *rebel*.

10. CAN / COULD:

(35) a. Further counsel I *cannot give*.
b. Melkor hated the Sea, for he *could not subdue* it.

There are a total of 416 instances of negation with one of these raising verbs in the data. Subtracting them from the 714 cases of IP negation, we are left with the 298 examples of verbal negation expressed either by DO-support, either by raising of the

main (non-copula, non-auxiliary, non-modal) verb. I have included the detailed classification of the types of verbs in Table 2.

RAISING VERBS	Copula *BE*	**81**
	Passive auxiliary *BE*	**64**
	Progressive auxiliary *BE*	**1**
	Perfect auxiliary *BE*	**3**
	Perfect auxiliary *HAVE*	**56**
	SHALL / SHOULD	14 + 14 = **28**
	WILL / WOULD	23 + 63 = **85**
	MAY / MIGHT	9 + 7 = **16**
	MUST	**2**
	CAN / COULD	19 + 60 = **79**
	TOTAL	**416**
MAIN VERBS		**298**
TOTAL		**714**

Table 2: Negation in the functional domain (IP layer).

3.5 *DO*-support *vs.* Raising

The remaining part of this section is concerned with a contrasting quantitative analysis of the two structures involving negation with main verbs, the one with and the one without *DO*-support. I have done the statistics only for the two structures with respect to each other, since, in my opinion, it would not have been in any way relevant to look at the percentages out of the number of IP negations, or out of the total number of sentential negations.

The truly important fact is to see how many of the sentences have raising and how many resort to *DO*-support, within the specific and limited range of sentences that do not need an auxiliary for any other reasons (like expressing the perfect or progressive aspect, or the Future, or deontic or epistemic modality). But before including the actual figures, I would like to provide some of the contexts in which the two strategies appear.

The first thing to note is that there are certain fragments (paragraphs or even pages) where one strategy seems to be predominant. Here are two such short passages:

(36) a. Then Thingol fortified the marches of his realm, and *went not* to war, nor any out of Doriath save Mablung and Beleg (…). To them Thingol gave leave to go, so long as they *served not* the sons of Fëanor.
b. Thus Elendil held himself in readiness, and *did not meddle* in the evil deeds of those days; and ever he looked for a sign that *did not come*.

Another curious fact is that main verb negations that are immediately followed by another negation expressed by raising of an auxiliary tend to adopt the raising strategy as well:

(37) a. … and though he *knew not* yet that Maedhros *had not* forgotten him at the burning of the ships,
b. The oath *says not* that we *may not* bide our time
c. … and though they *knew not who* in truth he was they *would not* admit him to that land.

Here is another example, this time with the same verb, *to have*, which is first a full lexical (with its possessive meaning) and is then used as an auxiliary for the perfect:

(38) And thou, Melkor, shalt see that no theme may be played that *hath not* its uttermost source in me (...). For he that attempteth this shall prove but mine instrument in the devising of things more wonderful, which he himself *hath not imagined*.

With the examples I provided in (37) and (38) above, what I wanted to illustrate was not the use of negation with the auxiliaries (where the raising strategy is the only one available), but the preference for one of the two types of constructions available for the lexical verb.

If this is not pure coincidence, it may indicate a tendency towards uniformity – one of the two variants was chosen once, and the following negative contexts reinforce the choice. If this is true, then it would parallel what happens in actual language change.

As Butters (2001, 205-207) explains, linguistic change can be understood as a process of mutual reinforcement of an innovative element, through inter-speaker feedback (one language user produces an utterance which is slightly deviant from the norm, then the interlocutors take up the deviation and amplify it).

However, there are numerous passages in *The Silmarillion* that do no show any kind of preference towards one or the other of the two strategies, and we can even find examples of one main verb negation through raising and one main verb negation through *DO*-support in the same sentence, as in the examples below:

(39) a. This was known to the kings, but they *hindered it not*, so long as the Elendili departed from their land and *did not return*.
b. … and he *saw not* to the depths of Melkor's heart, and *did not perceive* that all love had departed from him for ever.

In (37b), the two verbs even belong to the same class, but this does not stop them from using different strategies for expressing negation.

With respect to certain specific constructions, we can see that some are uniform in their behavior and some are not. Negative questions, for instance, always employ the *DO*-support strategy, as we can see in these examples:

(40) a. *Do I not strike* near the truth?
b. *Dost thou not see* that these things have now a life of their own...?

On the other hand, negative imperatives alternate between *DO*-support and lack thereof:

(41) *Do not flaunt* the title of your wife before me!

(42) a. *Doubt not* the power of Morgoth Bauglir!
b. *Slay him not*, but lead him hither to the King's judgement!
c. *Go not* forth!
d. *Enter not* into it!
e. *Let them not* so swiftly *forget* that their father is a lord of the Noldor!

Even the same verb, in this case copula *BE*, can form a negative imperative by either of the two strategies:

(43) a. *Be not hasty*!
b. *Do not be troubled*!

All in all, these examples do not point to any kind of coherent pattern. Let us then turn to the statistics.

At a first glance, the slightly greater number of non-*DO*-support constructions could be an indication that the raising strategy is the unmarked one in the peripheral grammar of pseudo-archaic English:

Used strategy	**Total = 298**	**Percentage**
DO-support	**123**	**41.28 %**
Raising of the lexical verb	**175**	**58.73 %**

Table 3: Main verb negation.

But at a closer look, if we are to take into consideration the percentage of *DO*-support for certain individual verbs, or classes of verbs, we will notice that the situation is not as clear-cut as it first appeared. In Table 4, I provide some examples that I find relevant.

VERB	*DO*-support	Raising of the lexical verb
to know	**5 (13.58 %)**	**32 (86.42 %)**
to love	**2 (22.22 %)**	**7 (77.77 %)**
to die	**4 (44.44 %)**	**5 (55.55 %)**
to come	**5 (26.32 %)**	**14 (73.68 %)**
to dare	**4 (33.33 %)**	**8 (66.66 %)**
to go	**3 (37.4 %)**	**5 (62.5 %)**
to slay	**0 (0 %)**	**2 (100 %)**
to have (possessive)	**0 (0 %)**	**5 (100 %)**
to find	**2 (22.22 %)**	**7 (77.77 %)**
to betray	**2 (100 %)**	**0 (0 %)**
VERBS OF PERCEPTION	**21 (75 %)**	**7 (25 %)**

Table 4: Main verb negation – some examples

I have to acknowledge the fact that the relatively small size of the corpus renders the statistics not very reliable. For many of the verbs, the percentages are within chance level, and no serious quantitative analysis can be based on such a small number of examples. However, Table 4 does contain some facts that are puzzling and worth noticing.

The first is that the lexical verb *to have* is never involved in a *DO*-support configuration. This has to be linked with the phenomenon in some actual British English dialects, where, as Haegeman and Guéron (1999, 322-324) explain, possessive *HAVE* is a raising verb.

Next, the behavior of the verb *to dare* in Tolkien's peripheral language confirms a tendency that exists in 'real-life English' as well. According to Hudson (1997, 59), *DARE* is currently undergoing a transformation process and is on its way to becoming a modal verb.

The fact that in my corpus it appears in few *DO*-support cases and in twice as many raising configurations reflects this tendency, suggesting that the 'pseudo-archaic language' that I am analyzing is somehow in harmony with the standard grammar.

Finally, one other fact that we can understand from the table is that it would not be at all wise trying to come up with a semantic analysis of the verbs (like classifying them according to their meaning and predicting, on the basis of the class, which strategies they will adopt).

How can a certain verb, *to know*, have such a completely opposite behavior with respect to the behavior of the rest of the verbs in its semantic category (in this case, verbs of perception and mental processes, specifically: *to understand*, *to perceive*, *to comprehend*, *to see*, *to hear*, *to remember*, *to forget*, *to foresee*, *to purpose* (= 'to intend'), and *to wish*)?

Since semantics cannot give us the answer, I will try to base my attempt at providing an explanation on syntax, together with a few extra-linguistic considerations.

4 (Lack of) *DO*-support – syntax

In order to find a possible explanation for the data and to come up with a plausible reason why raising of the main verb is available in the pseudo-archaic peripheral grammar, I will adopt a diachronic perspective.

By retracing the steps of the rise of *DO*-support in standard English, I will, hopefully, be able to see if Tolkien's language suffers a reverse process, *i.e.*, a loss of *DO*-support as an effect of the fact that main verbs can still undergo raising.

The phenomenon was first thoroughly studied by Ellegård (1953), who, on the basis of some very extensive corpus analyses, established that the loss of main-verb-raising and the emergence of *DO*-support happened during the 15th and 16th centuries (Hudson 1997, 41).

Taking up Ellegård's data, a number of linguists tried to offer explanations of the causes of the phenomenon. The most useful description I could find in the literature was that of Hudson (1997), who, in his article, compares two opposing accounts for the rise of *DO*-support.

One of these accounts, that I will be adopting, belongs to Kroch (1989, 1994) and is rooted in the Principles and Parameters framework. Kroch had proposed a theory of Grammar Competition, according to which linguistic change consists in the resetting of a Parameter: at a certain moment in time, speakers of a language may have two alternative grammars, which differ with respect to a Parameter. But a process of selection takes place and one of the two variants is gradually eliminated, with the Parameter receiving a new value.

What is important to remember from this hypothesis is that the old and the new pattern are considered to be two distinct grammatical systems, of which one eventually takes precedence over the other (Hudson 1997, 53).

In our case, the relevant Parameter is the raising of the main verb: lexical verbs used to have the possibility to raise, but they have lost it, and *DO*-support entered the language as a last-resort strategy.

As Hudson (1997, 42) puts it, "the only reason for using auxiliary DO in Modern English is because the syntax requires an auxiliary and no other auxiliary is needed by the sentence's meaning. *DO* fills the gaps when non-auxiliary verbs are not allowed and where other auxiliaries are not needed."

This explanation can be applied to our corpus. Below I have tried to draw a syntactic representation of the structure with and without raising.[3]

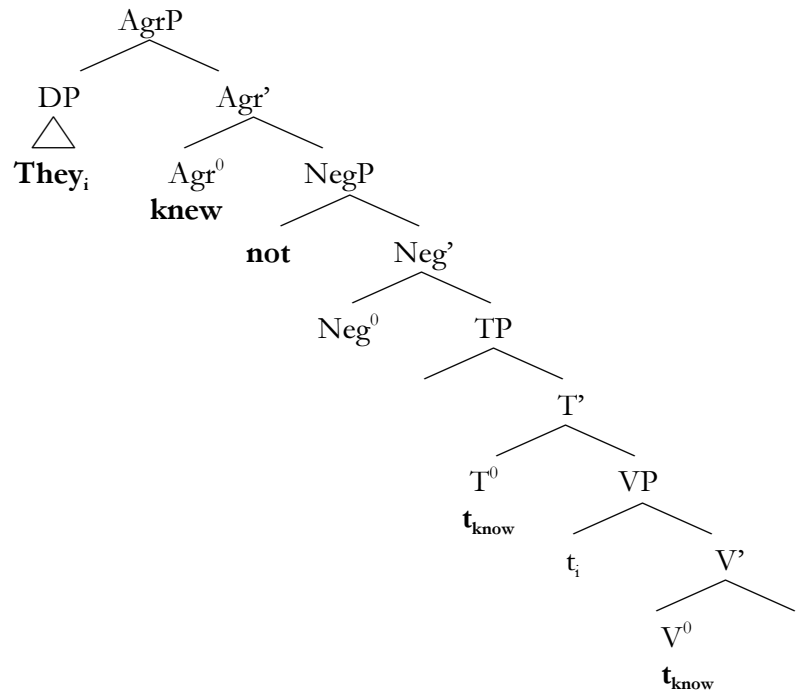
As Haegeman and Guéron (1999, 316-321) explain, in contemporary English *DO* enters the derivation in the head of T and raises to the head of AgrP, while the lexical verb stays in its base position (the second tree).

For the structure without *DO*-support, I will assume that the main verb undergoes head-to-head movement from V to Agr, thus ending up in a position just above the

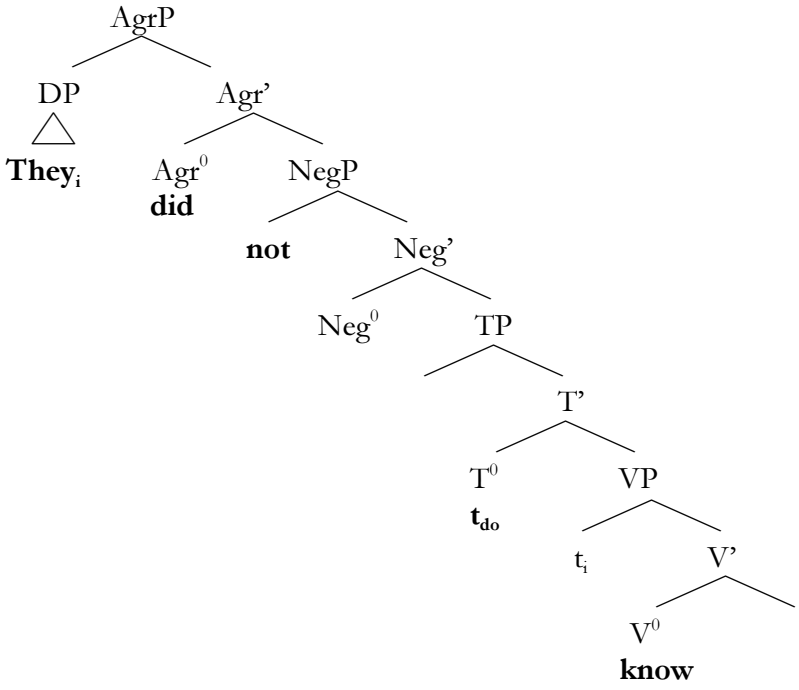
[3] One of the anonymous reviewers criticized the paper for adopting a 'slightly outdated model of grammar'. I accept this observation, and agree up to a certain point. However, the rather pre-Minimalist model of grammar that I make use of in this paper is more than sufficient for the specific purposes I have set, namely, describing a certain structure in a certain peripheral grammar. Any further and deeper discussion of the mechanics of two syntactic configurations is beyond the scope of my paper.

negative marker, which, as I have already mentioned, is a maximal projection in the [Spec, NegP] position. I have tried to represent this in the first tree:

(44)



(45)



5 Tentative account and conclusions

So far, I have elucidated the representation of the two competing structures and I have adopted Kroch's (1989, cited in Hudson 1997) hypothesis that the rise of *DO*-support in

Modern English is the result of a change in the raising parameter. Now, I will try to speculate as to why the pseudo-archaic peripheral grammar in the chosen corpus seems to have both of these structures.

The first idea that comes to my mind is that Tolkien's *Silmarillion* language (due to the reasons that I have mentioned in section 1.1) has been artificially brought back to the stage in which English had two alternative grammars, with different values for the raising parameters (like in the 15th century). There is, therefore, some minor code-switching happening whenever the author selects one of the two strategies. The motivation for the selection can be different, and, as Butters (2001) would explain, chance might play a role in this as well.

The important fact is that the possibility of code-switching between two alternative grammars exists in this case of pseudo-archaic register. Thus, the language of *The Silmarillion* is peripheral grammar in itself, but, in addition to this, it includes two separate sub-grammars that give rise to the two constructions. The fact that the data includes comparable numbers of instances of the two strategies and that no apparent pattern can be discerned is another argument in favor of this unbalanced state of the two alternative systems.

As to the reasons for which this apparent reversal of language change has been made, we should take a sociolinguistic approach. Butters (2001, 201) points out that "sometimes consciously and sometimes unconsciously, people speak like the people they want to think of themselves as being; linguistic differentiation is a matter of the presentation of self in everyday life."

I think that this idea can be applied to books as well: books are written as the readers expect them to be written – or, at least this is true in the case of *The Silmarillion*. The author and the editor knew that fans expected an 'old' book. Its special status as the 'background' for Tolkien's other works, the fact that the plot is set in the earliest eras of his fantasy universe and the author's esthetic preference for a seemingly 'older, higher' language have led to the creation of a register which adopts some structures of earlier stages of the language, *i.e.*, a pseudo-archaic peripheral grammar.

It is, I believe, also important to state that the goal of this retroactive change was not the exact imitation of a particular stage in the actual history of the English language, but rather the creation of an artificial variety that would have the 'feel' of an older language. Tolkien was not a generative linguist; he knew nothing about syntactic trees, raising or parameters – he was, however, a dedicated scholar and a philologist with a keen sense of language, or, better said, of the effect language can have on readers. Therefore, even if, syntactically, his system is not perfect and lacks a certain coherency, from the 'stylistic sociolinguistic' point of view referred to above, his attempt was successful.

In this paper, I have tried to present the general characteristics of this special (albeit literary) variety of English, and I have focused on the one syntactic characteristic that seemed to be the most relevant. I am aware of the fact that I have barely touched upon the issue of the two competing syntactic systems (the raising and the support strategies), and that the actual mechanism that regulates the choice for one or the other of the structures was not clearly explained. Furthermore, the analysis of this problem in the language of a literary text raises questions about the syntactic situation in the history of 'real' English. All these are, of course, topics for further research.

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Different interpretations of *plusieurs, quelques* and *certains* in French and their counterparts in Slovene

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This paper focuses on a comparative and contrastive analysis of different interpretations of the French determiners *plusieurs, certains*, and *quelques*, and their Slovene counterparts. The semantic, syntactic, and pragmatic influence is treated in order to identify the major similarities and differences between the two languages, and to account for any possible deviations that may characterize the interpretation of Slovene translations of the chosen French indefinite determiners. This preliminary study is based on a number of different studies of French quantifiers. The examples illustrate the different morphosyntactic systems in the two languages.

This paper shows that French and Slovene interpretations of the selected indefinite determiners do not always correspond. The paper also represents the restrictions that prevent the same interpretation in both languages, and sheds some light on why Slovene does not always allow for two interpretations, even though two interpretations may be entirely acceptable in French if the context allows it.

Keywords: *indefinite determiners, existential interpretation, non-existential interpretations*

1 Introduction

The following article is a preliminary study which will analyse how the indefinite determiners for expressing quantity in French and Slovene determine the meaning of a phrase and how French and Slovene quantifiers[1] can be interpreted. It will also look at the various kinds of quantity that indefinite determiners express. The study will only include French *quelques, plusieurs* and *certains*[2] and their Slovene equivalents. In Slovene, the category of indefinite determiners is mainly covered by nominal and adjective pronouns (Toporišič, 2004). The most common and expected Slovene translations are: *nekaj* for *quelques* (some), *več* for *plusieurs* (several/more), *nekateri* for *certains* (certain).

I have taken some researches on French quantifiers as a base for an analysis and comparison to their Slovene counterparts. This paper attempts a comparative and contrastive analysis of the indefinite determiners in French and Slovene, in terms of their uses and meanings in order to find the major similarities and differences between French and Slovene and to account for any possible deviations that may characterize the interpretation of Slovene translations of the chosen French indefinite determiners. As far as I know, there haven't been many detailed studies on Slovene quantifiers. In Slovene, they are mentioned in different grammar books and in dictionary of standard Slovene language (SSKJ) but till now they haven't been the subject of any specifics linguistics analysis.

French uses various determiners (*déterminants*): articles (*articles*) and adjectives (*adjectifs*) for expressing the determinacy of the nominal phrase. The prescriptive Slovene is not familiar with articles, as the Slovene nominal phrase does not need an article in

[1] Wilmet 1986: a determiner indicating extensity is said to be quantifier.

[2] In general the form *certains* is used for *certains* and *certaines*.

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order to be realized. In addition, Slovene is not familiar with in/determinacy as a nominal morphological category, but knows it as an adjective category. Nominal phrases express determinacy nonetheless. In Slovene, determinacy is expressed with an adjective suffix *lepi* (*nice*), or with the "article" *ta* (*this*) in colloquial language in which even *en* (*one*), functioning as an "indefinite article" or numeral, can be used for expressing determinacy (Marušič and Žaucer 2007). Determinacy in Slovene can either be expressed on the lexical or discursive level. French and Slovene also differ in grammatical number, as French only knows singular and plural, whereas Slovene also knows dual.

The indefinite determiners *certains*, *quelques*, *plusieurs*, and their Slovene counterparts normally occur on a quantitative level in which the exact number of a quantity is not precisely determined. They can mark both smaller indefinite amounts of units and indefinite units. The expressed quantity and the interpretation depend on the context and situation, and can change according to different circumstances. These NP with indefinite determiners denote the nominal referent, which is introduced into the discourse as unknown. The chosen Slovene and French determiners introduce new quantities into the discourse. The difference between the grammatical number and the indefinite number of the involved values sometimes make it difficult to find exact Slovene equivalents for the abovementioned quantifiers.

This preliminary study will provide a comparison and analysis of structures, along with possible interpretations of chosen indefinite determiners. The existential interpretation will be discussed at the beginning, and will be followed by partitive, taxonomic, referential, distributive, generic, and specific interpretations. Nominal phrases are not necessarily existential, as there are other possible interpretations, which depend on the context. All the examples selected have the indefinite NP subject. Sentences with special operators, which can facilitate one or another interpretation, are excluded from this work.

As in different grammars and dictionaries *certains/plusieurs/quelques* are often treated as synonyms (Leeman 2004, Bacha 1997), it is presumed that will not considerably influence the interpretations. It is also assumed that the translation of these determiners and the interpretation should not be problematic in spite of different morphosyntactic systems.

2 Dictionary definitions of the chosen quantifiers

QUELQUES (Eng: some, a few)

TLF[3]: is used to mark a small but indeterminate number of people or things; *un certain nombre de..., parmi plusieurs autres*
Pt.Robert: a small number, a certain number of...; *plusieurs*
Fr-Slo dictionary: *quelques-un(e)s: nekateri; nekaj*

PLUSIEURS (Eng: several, more)

TLF: a certain number, most often of a small quantity, more than two (sometimes only more than one); *quelques, maint.*
Pt.Robert: more than one, a certain number; *quelques*
Fr-Slo dictionary: *več, mnogi*

[3] TLF: Trésor de la langue française.

CERTAINS (Eng: certain)

TLF: denotes an unknown number of people whose identity or number can not be specified or has no interest in being specified

Pt.Robert: Some among others: *aucun, plusieurs, quelqu'un (quelques-uns)*

Fr-Slo dictionary: *nekateri*

DICTIONARY OF THE SLOVENE LANGUAGE (SSKJ)

English equivalents of the indefinite determiners or pronouns in SSKJ provided in parenthesis are usually found in Slovene-English dictionaries:

NEKAJ (*some*):

pronoun: expresses an unknown or purposely unnamed object or phenomenon;

adverb: expresses indefinite smaller number or quantity

VEČ (*several*): *adverb*:

expresses a larger quantity or amount;

expresses an indefinite larger number or quantity,

NEKATERI (*some / several / certain*): *pronoun*:

expresses a smaller number of unspecified individuals of a specific kind;

expresses a smaller number of individuals which are known, but do not wish to or cannot name themselves.

3 Some semantic characteristics

Determiners expressing an indefinite quantity can be divided into two categories: determiners which only have a quantitative value (*quelques* and *plusieurs)* and determiners which also have a qualitative value (involving distinctions based on qualities) (*certain(e)s, différent(e)s* and *divers(es)*) (Gondret 1976, Flaux et al. 1997). Even though *certains* belongs to the second category, it is discussed together with *plusieurs* and *quelques*, since the three determiners share some common characteristics.

Certains is not used as a quantitative indefinite determiner as often as it is used as a characterizing determiner. It involves the fact that the speaker knows the identity of the referent he is speaking about, and presupposes his existence (Leeman 2004). *Certains* enables the speaker to speak about the chosen objects or persons without making it clear why and how they are specific, and what makes them different from the others in the set. It therefore denotes the fact that it does not speak about objects or persons in general. *Plusieurs* and *quelques* are different in that they only express a part of units from a larger set.

The most common dictionary translations and the most expected Slovene translations for French indefinite determiners *plusieurs/quelques/certains* are *več/nekaj nekateri*, which were also checked in Slovene-French parallel corpus Spook. *Več* is an adverb, expressing a larger indefinite quantity. It remains always unchangeable but demands a singular form of a verb it is referring to. *Nekaj* can be used as a pronoun or an adverb, expressing indefinite smaller quantity. As a pronoun it changes according to declinations and also demands a singular form of a verb. The adverbs *več* and *nekaj* demand a singular form of a verb and neutral form where the structures with participle demand it. *Nekateri* is a pronoun but can also have an adjective use, expressing a smaller number of unspecified individuals with specific characteristic. It demands a plural form of a verb and distinguishes between feminine, masculine and neutral.

Due to case and verb agreement and other various syntactical structures demanded by *nekaj/več/nekateri* (*some/plusieurs/certain*), Slovene translations are divided into two lines.

In Slovene, *certains* can sometimes[4] also be translated as *določen*[5] *(defined)*, even though it does not name definite units but merely denotes that we are speaking about something that differs from the rest in the whole set, and that we do not wish to name it explicitly. Standard Slovene dictionary explains adjective *določen* as: presented in a manner that makes it impossible to doubt what expresses the noun (SSKJ 2008). The interpretation is similar to French interpretation of *certains*.

Certain also distinguishes between gender and number *(certain,-e, -s)*, *quelque* only distinguishes between singular and plural number *(quelque(s))*, whereas *plusieurs* only occurs in a plural form, and is therefore unchangeable. *Quelques* and *plusieurs* share many semantic characteristics and can be interchangeable in identical contexts. In such cases, their substitution causes some differences in interpretation of meaning (1a,b).

(1) a. *Quelques /Plusieurs/ certaines femmes parlent.*
some /several/ certain women talk-PRES.3.PL.[6]
b. *Nekaj/Več ženske govori.*
some/several women talk-PRES.3.SG.
Nekatere ženske govorijo.
certain women talk-PRES.3.PL.
'Some/Several/certain women are talking.'

The "synonyms" for *quelques* and *plusieurs* that we find in various grammars and dictionaries normally do not help us in determining the number precisely: *one or more (un ou plusieurs), (a) little / few (peu), a few units (quelques unités), a definite amount of units (un certain nombre d'unités,…)* and often refer us from one term to another (Leeman 2004). *Quelques* and *plusieurs* are prototypically used when marking more than two units, (2a). They can also mark a set of just two units (Bosveld-De Smet 1994, Wilmet 1986). The Slovene equivalents for *quelques* and *plusieurs* (2b) – *nekaj/več* usually mark three elements at the least. In Slovene *two* denotes dual, and does not have the meaning of *several*. The dual form in Slovene can be expressed in noun or adjective declinations and also on the verb conjugation.

(2) a. *Deux / Quelques / Plusieurs personnes sont entrées.*
two / some / several people are entered-PTC.PL.F
b. *Dve osebi sta vstopili.*
two person-D AUX.D entered-PTC.D.F
Nekaj / Več oseb je vstopilo.
some/ several people is entered- PTC.N.SG
'Two/Some/More people entered.'

Unlike *plusieurs* and *quelques*, *certains* can denote at least two units (Leeman 2004):

[4] Examples from Slovene-French parallel corpus Spook.

[5] The normative use advises against it, whereas the "spontaneous" does not.

[6] In the glosses in this paper the following abbreviations are used: D = dual, PTC = participle, N = neutral, CLIT = clitic, INF = infinitive, D.AR. = definite article, PR = pronoun, GEN = genitive, DAT = dative, ACC = accusative.

(3) a. *Certains enfants ne peuvent pas partir*
certain children not can-PRES.3.PL.CLIT not go
en colo: Ali et Marie.
prep. holiday.camp A. and M.

b. *Nekateri otroci ne morejo iti v kolonijo:*
certain children not can-PRES.3.PL. go-INF. in holiday.camp
Ali in Marie.
Ali and Marie

b'. * *Nekatera otroka ne moreta iti v kolonijo:*
certain-D children-D. not can-PRES.3.D. go-INF. in holiday.camp
Ali in Marie.
A. and M.
'Certain children can't go to holiday camp: Ali and Marie.'

The literal Slovene translation (3b) with the plural *nekateri otroci* is also suitable in this case. Although the NP *nekateri otroci* (*some children*) is preserved, we would expect that at least three children should be numbered in Slovene, to satisfy the plural. The example (3b') which could be a real dual (*nekatera otroka – m. dual)* is unacceptable. We cannot put *nekateri* in a dual form, but nevertheless, it can sometimes mark only two units.

4 Different interpretations of *plusieurs, quelques* and *certains* and their counterparts in Slovene

4.1 Existential interpretation

The existential interpretation of a NP is only possible with a certain type of predicate and with a certain reference point. The basic existential sentences introduce a new referent into the discourse. They can also introduce a referent which cannot be identified by the speaker, or define a certain characteristic with the help of an argument. According to Dobrovie-Sorin and Beyssade (2004) some sentences assert existential reading and the others presuppose this existence. No referent with an existential interpretation acts as a "part" of a set, due to the fact that the existence of a new referent is completely subdued to the action expressed by the predicate. The three given indefinite determiners (*quelques, plusieurs, certains*) can also be classified as existential determiners in certain NP. Whenever an existential interpretation is possible in a set of sentences, it can be paraphrased with an impersonal structures such as *il y a* in French and with the help of existential verbs in Slovene, e.g. *biti, obstajati* (*to be, to exist*).

Keenan and Stavi (1986) (in Bosveld-de Smet 1994) define the indefinite determiner as one performing an existential function (4). In both languages (4) can be explained in a way that there *exist* children, playing in the garden. It is the time and space setting that makes it possible to specify individual units in the discourse.

(4) a. *Quelques /Plusieurs/ Certains enfants jouent dans le*
some /several/ certain children play-PRES.3.PL in D.AR
jardin.
garden

b. *Nekaj/Več otrok se igra na vrtu.*
some /several children self play-PRES.3.SG on garden
Nekateri otroci se igrajo na vrtu.
certain children self play-PRES.3.PL on garden
'Some/Several/Certain children are playing in the garden.'

In Slovene it would be possible to say: *Otroci se igrajo na vrtu*, without any determiner. The context with the time and space settings can make this phrase also existential. Slovene does not use articles and can also omit determiners. If there is no special need to express the quantity of a NP, then the Slovene noun can be bare and still have an existential interpretation.
Even though the chosen determiners are acceptable in this case, which points to an existential interpretation in both languages, because *otroci, ki se igrajo* ('the children, which are playing'), are asserted to exist. Bosveld-De Smet (1994) states that due to its semantic value, *certains* does not necessarily possess an existential property but rather a characteristic one.

The following examples show an interesting use of *plusieurs, quelques* and *certains* and their Slovene counterparts. In this existential interpretation, *plusieurs, quelques* and *certains* are not interchangeable. The example (5) could be seen as impolite, as both languages show the same restrictions caused by the actual language use. In the example (6), *certains/nekateri* remain completely unacceptable, because both overly determine a single unit out of a whole set. They also express a quality, but we are asking for a number of minutes - the quantity. Only the example (7) can be treated as perfectly natural and therefore acceptable. In Slovene we would rather ask (7b') for a *couple of minutes* or for *some time,* instead of *few minutes.* This example is taken from a spoken language. Due to its frequent pragmatic use, *par* lost his primary meaning of *two units* or *a couple.* It can be used when asking for a small amount of something.

(5) a. *?As- tu plusieurs minutes?*
have-PRES.2.D you several minute
b. *?Imaš več minut?*
have-PRES.2.D several minute
'Have you several minutes?'

(6) a. **As- tu certaines minutes?*
have-PRES.2.D you certain minute
b. ** Imaš nekatere minute?*
have-PRES.2.D certain minute
'Have you certain minutes?'

(7) a. *As- tu quelques minutes?*
have-PRES.2.D you some minute
b. *Imaš nekaj minut?*
have-PRES.2.D some minute
'Have you some minutes?'
b'. Imaš par minut?
have-PRES.2.D couple minute
'Have you a couple of minutes?'

The examples (5, 6) are completely correct syntactically in French and Slovene, but unacceptable in this case due to their pragmatic function. The speaker is asking for some time and at the same time alludes that he is not satisfied with the limited amount of time he was given, which is probably the reason for the aggressive tone of the question. In the third question, the speaker only asks for a moment of time (Gatonne 1991).

The existential interpretation shown in the examples (6, 7, 8) only demands a certain type of answer when *quelques/plusieurs/certains* are used, which is clear from the examples (8–13). It is interesting that this type of negative answer in which indefinite determiners cannot be negated with the construction "*ne...pas*" is only necessary in the case of "weak" indefinite determiners (in the sense of Corblin 1997), including *certains/plusieurs/quelques*. Slovene translations reveal a considerable structural similarity to French sentences. In the negative answer, Slovene does not negate a certain part of the units (*regrets, sons*), but uses sentential negation (11, 13, 15) instead.

(8) a. *Avez- vous quelques remords ?*
have-PRES.2.PL you-2.PL some regret
'Have you any regrets?'

b. *Je n' ai pas de remords / ??quelques remords.*
I not have CLIT ART regret some regret
'I don't have any regrets./ some regrets.'

(9) a. *?Imaš nekaj obžalovanj?/ Ali kaj obžaluješ?*
have-PRES.2.PL some regret or what regret-PRES.2.SG
'Do you have some regrets?/ Do you regret anything?'

b. **Nimam nekaj obžalovanj./ obžalovanj /Ne obžalujem.*
not.have-PRES.1.SG some regret / regret. /no regret-PRES.1.SG
'I don't have some regrets./ regrets./ I don't regret.'

(10) a. *As- tu certains remords?*
have-PRES.2.PL you-.2.SG certain regret
'Do you have certain regrets?'

b. *Je n' ai pas de remords. /Je n' en ai aucun. /*
I not have CLIT ART regret /I not PR have any /
??Je n' ai pas certains remords.
I not have CLIT certain regret
'I don't have regrets./ I don't have any./ I don't have some regrets.'

(11) a. **Imaš nekatera obžalovanja? / Ali kaj obžaluješ?*
have-PRES.2.PLF certain regret or what regret-PRES.2.SG
'Do you have certain regrets?/ Do you regret anything?'

b. **Nimam nekaterih obžalovanj. / obžalovanj. /*
not.have-PRES.1.SG certain regret / regret. /
Ne obžalujem.
no regret-PRES.1.SG
'I don't have certain regrets. /regrets / I don't regret.'

(12) a. *As- tu plusieurs fils?*
have-PRES.2.SG you several son
'Do you have more sons?'

b. *Je n' en ai pas. / Je n' ai pas de fils. /*
I not PR have CLIT/ I not have CLIT ART son /
??Je n' ai pas plusieurs fils.
I not have CLIT several son
'I don't have them./ I don't have sons./ I don't have several sons.'

(13) a. *Imaš več sinov?*
have-PRES.2.SG several son
'Do you have more sons?'
b. *Nimam jih. / sinov. / ??več sinov.*
not.have-PRES.1.SG them-GEN / son-GEN.PL / several sons
'I don't have them / sons / more sons.'

The answers (10b, 12b, 14b) would be acceptable if they provided a contrast to something. In this case, the second part of the sentence should not deny the referent's existence (*Je n'ai pas quelques doutes, j'en ai beaucoup*) (Leeman 2004). In the case of (10), the sentence cannot be continued with a quantitative expression or with a number, meaning that *certains* probably has a qualitative value as well.

4.2 Partitive and taxonomic interpretation

An interpretation in which the predicate is not set at a particular time and space can be partitive. Partitive interpretation is not limited to certain predicates but rather depends on the context. Indefinite NP's without context are normally first interpreted with an existential function, even though *plusieurs, quelques* and *certains* can get a partitive interpretation. Partitive interpretation includes the "isolation" of a particular subtype taken from a particular set, whereas existential interpretation includes the introduction of particular subtypes (Bosveld-de Smet 1994). In a partitive interpretation the referent of Slovene and French NP is presented as a subset of one larger set

In some cases, *plusieurs, quelques* and *certains* are existential and not partitive (14). In (14), what is referred to is *the existence of solutions*, which is regarded as a set (Leeman 2004). The same interpretation occurs in Slovene in which the verb *obstajati* ('to exist') itself implies a whole. Slovene existential phrase can also be used without any determiner (*Obstajajo rešitve* /exist-PRES.3.SG solutions-NOM.PL).

(14) a. *Il y a quelques / plusieurs /certaines solutions.*
He there have-PRES.3. SG some / several / certain solution
b. *Obstaja nekaj / več rešitev.*
exist-PRES.3.SG some/ several solution
Obstajajo nekatere rešitve.
exist-PRES.3.PL certain solution
'There exist some/several/certain solutions.'

On the other hand *certains, plusieurs* and *quelques* can also be partitive and non-existential (15). The division (*la partition*) of the whole is based on the supposed whole. The existence of *all pencils* is not referred to, and the pencils are not introduced as new referents. We only judge a limited part of pencils (15) that can be numbered, e.g. *There are some blue pencils amongst the pencils in the box*. It is clear from the example that the mentioned determiners also have a partitive interpretation in both languages. The *pencils* only refer to

those that are blue. In the following example, it is shown that Slovene is familiar with partitive interpretation (15b) as well.

(15) a. *Quelques /Plusieurs/ Certaines crayons sont bleus.*
some /several/ certain pencils are blue
b. *Nekaj / Več svinčnikov je modrih.*
some/ several pencils is blue
Nekateri svinčniki so modri.
certain pencils are blue
'Some/Several/Certain pencils are blue.'

In both languages, the quantitative determiners in a partitive interpretation denote individuals with some special characteristics. From the same reason, it is obvious from the following example (16) that *certains* allows for a partitive interpretation, because of its principal characteristic to define and limit individuals i.e. *sad students*.

(16) a. *Certains étudiants sont tristes.*
certain students are sad
b. *Nekateri študentje so žalostni.*
certain students are sad
'Certain students are sad.'

In French, partitive interpretation is not possible in sentences containing the indefinite article *des* or partitive articles, as they do not allow for a quantitative interpretation (17). As Slovene does not use articles, this phrase without any kind of determinant, cannot be interpreted as partitive. Also the partitive article in Slovene does not exist and it cannot influence the Slovene phrase. Partitive interpretation is not possible (b), because only *all students could be sad*. We can conclude that quantitative determiners are necessary to denote a part of *students being sad*, because only the characteristic of being sad is not sufficient for a partitive interpretation.

(17) a. *Des étudiants sont tristes.*
I.AR. student are sad
b. *Študentje so žalostni.*
student are sad
'Students are sad.'

Besides partitive interpretation (18), some examples allow also for taxonomic interpretation (19). These cases do not denote individual units but rather express subtypes and subcategories of a given kind (Bosveld-de Smet 1994). They can also express a special category marked by the NP.

(18) a. *Quelques / Plusieurs / Certaines pommes sont pourries.*[7]
certain / several / some apples are rotten

[7] Examples (18, 19) are taken from Bosveld-de Smet (1994).

b. *Več / Nekaj jabolk je gnilih.*
several / some apples is rotten
Nekatera jabolka so gnila.
certain apples are rotten
'Some/Several/Certain apples are rotten.'

(19) a. *Quelques / Plusieurs / Certaines* insectes sont utiles à l' homme.
several / some / certain insects are useful to D.AR man-DAT
b. *Več / Nekaj žuželk je koristnih človeku.*
several / some insects is useful-GEN man-DAT.
Nekatere žuželke so koristne človeku.
certains insects are useful-NOM man-DAT.
'Some/Several/Certain insects are useful to man.'

Example (18) denotes *a few apples* from the basket of apples, which are rotten. In (19), the taxonomic interpretation is expressed in *a certain type of insects that are useful to man*. Taxonomic interpretation is regularly used along with the indefinite determiner *certains*, as the determiner itself expresses a number of chosen individual units.

4.3 Referential interpretation

Referential interpretation allows for the interpretation of the NP with its nominal nucleus, functioning as the argument in the sentence (Corblin 1987). We can also refer to a referential interpretation in case it is obvious from the context that the speaker is familiar with the referent's identity, whereas the addressee is not (Leeman 2004).

(20) a. *Plusieurs questions sont résolus: la livraison, le paiement,…*
several question are unsolved D.AR delivery, D.AR payment
b. *Več vprašanj je nerešenih: dostava, plačilo, …*
several question is unsolved delivery payment
'Several questions are unsolved: delivery, payment,…'

Quelques and *certains* are similar in that they do not allow for referential interpretation. *Quelques* denotes the speaker's unfamiliarity with the subject, whereas *certains* denotes that the speaker does not want to reveal the identity of the person he is thinking about. The following French examples (21a, 22a) are therefore unacceptable. But in Slovene *nekaj (some)* does not seem to have such restrictions. Although *nekaj* (*some*) denotes indeterminacy it is highly natural to name these persons. The unfamiliarity with the subject can be explained in the sentence (21b), functioning as a reply to and an explanation for *some students*. As we can see, *nekateri* acts in a different way. Obviously its denotation is too strong, to be explained in the same sentence (22b). When it is used in one sentence, then we will not explicitly name these persons. We could start a new phrase just enumerating the people we had in mind with *certain*. (22b) could be acceptable with the replacement of *nekateri* with *določeni* (defined). *Določeni* (22b') is even stronger in determining individuals and is the only completely acceptable in this place, where the phrase contains the explanation (*professors*). This example justify that the translation of *certains* by *določen* is not a "mistake".

(21) a. *?Il y a quelques étudiants pour nous aider: Paul, Anne*
he there have some students for us help-INF Paul, Anne
et Michel.
and Michel

b. *Nekaj študentov nam bo pomagalo:*
certain students us-DAT will-FUT.3.SG help-PTC.N.SG
Paul, Anne et Michel.
Paul, Anne and Michel
'There are some students to help us: Paul, Anne et Michel.'

(22) a. *?Certaines personnes sauront vous aider:*
certain people know-FUT.3.PL you-DAT help-DAT
les professeurs.
D.AR professors

b. *?Nekatere osebe vam bodo znale pomagati:*
certain people you-DAT will-FUT.3.PL help-PTC.F.PL help-INF
profesorji.
professors

b'. *Določene osebe vam bodo znale pomagati:*
defined people you-DAT will-FUT.3.PL know-PTC.F.PL help-INF
profesorji.
professors
'Certain people will know how to help you: the professors.'

There would be no doubts when ending these examples without enumeration or explanation.

4.4 Collective and distributive interpretation

Indefinite expressions allow for the possibility of a collective and distributive interpretation. Distribution is a conceptual element (Muller 2006) that demands a predicate with a plural argument, which is susceptible to distribution. The distribution's role in (1) is that it distributes as many acts of *speaking* as there are *women*. The semantic consequence of distribution is the reduction of quantity according to the number of given objects in a sentence (in this case *ženske* [*women*]). Different distributions can depend on the context in which case the chosen indefinite determiners are not replaceable:

(23) a. *Ton frère et ses amis ne sont que*
your brother and his friends not are only
*quelques /*plusieurs/ *certains imbéciles qui se feront*
some /several/ certain fools who self make-FUT.3.PL
arrêter à la première occasion
arrest-INF PREP D.AR first occasion

(Corblin 1987)

b. *Tvoj brat in njegovi prijatelji, to je nekaj /*več / *nekateri*
your brother and his friends this is only / some / several
bedakov, ki jih bodo aretirali ob prvi
fools who them-ACC will-FUT.3.PL arrest-PTC.PL.M at first
priložnosti).
occasion

b'. *Tvoj brat in njegovi prijatelji so le bedaki, ki jih*
your brother and his friends are only fools who them-ACC
bodo aretirali ob prvi priložnosti.
will-FUT.3.PL arrest-PTC.PL.M at first occasion
'Your brother and his friends are just some/several/certain fools, who will be arrested at the first occasion.'

The translation (23b) is literal and rather awkward in Slovene. The translation (b') in which Slovene omits the indefinite determiner of quantity and replaces it with the adverb *le* (*only*) is better. The Slovene adverb *le* denotes the limited condition of the units it is referring to. It does not explicitly express the quantity but expresses its full limitation on the referred individuals. It can also be combined with *nekaj* and *nekateri* but not with *več*. It is probably due to the semantics of *več* which refers to a larger quantity whereas *nekaj* and *nekateri* refer to a smaller quantity.

The following example (24) can be interpreted collectively in Slovene and French (*Some/several/certains friends ate one pizza together.)* or distributively (*Each friend ate his own pizza.)*. In this case, the perfective aspect of the Slovene verb does not affect the interpretation.

(24) a. *Quelques /Plusieurs /Certains amis ont mangé une pizza.*
some / several / certains friend have-PRES.3.PL ate one pizza

b. *Nekaj / več prijateljev je (po)jedlo pico.*
some / several friend is (after)eat-PTC.N.SG pizza
Nekateri prijatelji so (po) jedli pico.
certain friends are (after)est-PTC.M.PL pizza
'Some/several/certain friends ate a pizza.'

A number of examples exist in which the predicate refers to individual units. In these cases, only the distributive interpretation is possible in both languages. Although the predicate is in plural it attributes the property of *being Slovene* to each atomic individual of mass denoted by the quantifiers. There is the same number of *boys* and the same number of those, who are Slovene, what enables the distributive reading.

(25) a. *Quelques /Plusieurs/ Certains garçons sont slovène.*
some / several / certain boys are Slovene

b. *Nekaj / več fantov je Slovencev.*
some / several boys is-PRES.3. SG Slovene
Nekateri fantje so Slovenci.
certains boys are-PRES.3.PL Slovene
'Some/Several/Certain boys are Slovene.'

Corblin (1997) classified the indefinite determiners into quantifiers (*certains*) and proper indefinite determiners (*au sens strict*). These are further classified into vague

determiners (*indéfinis vagues*), including *plusieurs* and *quelques*, and numerals. Quantifiers only allow for distributive interpretation, whereas proper indefinite determiners also allow for collective interpretation. *Plusieurs* and *quelques* are plural indefinite determiners in the "narrow sense" (*sens étroit*), as Corblin (1997) names them. The two determiners often allow for a collective interpretation, but they also tolerate a distributive interpretation (26).

(26) a. *Quelques/Plusieurs élèves ont confectionné une affiche.*
some / several students have made one poster
(Leeman 2004)

b. *Nekaj študentov je izdelalo (en) plakat.*
certain students is made one poster
'Some/Several/Certain students made a poster.'

In French, there are two ways of interpreting *quelques/plusieurs* in the example (26a). One proposes that *some/several students made the poster together*, whereas the other states that *each student made his own poster*. The double interpretation is not possible in Slovene. To interpret these sentences in a distributive manner in Slovene, the object would have to be either dual or plural (29, 31), depending on the number expressed by the subject.

As opposed to *quelques* and *plusieurs*, *certains* is normally only given a distributive interpretation. This is again due to the qualitative characteristic of *certains*. But this is not the case in Slovene. *Nekateri* denotes some of the students, who *made* only one *poster*. The different number, plural expressed in subject and singular expressed in object, prefers the collective interpretation of *nekateri*.

(27) a. *Certains élèves ont confectionné une affiche.*
certain students have-PRES.3.PL made one poster
(Leeman 2004)

b. *Nekateri študentje so izdelali (en) plakat.*
certains students are-PRES.3.PL made-PTC.PL.M one poster
'Certain students made a poster.'

Even if indefinite determiners were substituted with names, the example could be read both collectively and distributively in French. The results in Slovene are similar to those in the abovementioned example, in which a distributive interpretation is not acceptable, as it would call for a dual or plural object (29b, 31b). Both interpretations of the phrase would not be possible even if the numeral *en* (*one*) was added to the object *poster* in (28b). It can therefore be deduced that Slovene phrases with names instead of quantitative determiners and singular object only allow for a collective interpretation. Examples expressing the same number in subject NP and Object NP can have also a distributional reading (29, 31).

(28) a. *Ivana et Julija ont confectionné une affiche.*
Ivana and Julija have made a poster

b. *Ivana in Julija sta naredili (en) plakat.*
Ivana and Julija are-PRES.3.D made-PTC.D.F one poster-ACC.SG
'Ivana and Julija made a poster.'

(29) a. *Ivana et Julija ont confectionné deux affiches.*
Ivana and Julija have made two posters
b. *Ivana in Julija sta naredili dva plakata.*
Ivana and Julija be-PRES.3.D made-PTC.D.F two posters-ACC.D
'Ivana and Julija made two posters.'

(30) a. *Ivana, Julija et Miha ont confectionné une affiche.*
Ivana, Julija and Miha have-PRES.3.PL made one poster
b. *Ivana, Julija in Miha so naredili plakat.*
Ivana, Julija and Miha are-PRES.3.PL made-PTC.PL.M poster-ACC.SG
'Ivana, Julija and Miha made a poster.'

(31) a. *Ivana, Julija et Miha ont confectionné des affiches.*
Ivana, Julija and Miha have-PRES.3.PL made I.AR posters-ACC.PL
b. *Ivana, Julija in Miha so naredili plakate.*
Ivana, Julija and Miha are-PRES.3.PL made-PTC.PL.M posters-ACC.PL
'Ivana, Julija and Miha made posters.'

The example (28) could be interpreted distributively only in the sense that Ivana and Julija *were making a poster*, whereas Miha and Luka *were making a mosaic*. In (28b), *Ivana and Julija* probably made one poster. An imperfect verb could raise the possibility of a distributive interpretation, even if the latter is in the borderline between acceptable and unacceptable in Slovene. If the object *plakat* (*poster*) is put in the dual (*dva plakat**a***), it denotes that they could have made *two posters together*, or that *each girl made her own poster*. In this case, both collective and distributive interpretations are possible. Considering the fact that *nekaj/več/nekateri* usually denote at least three persons or objects in Slovene, it would be highly unlikely to replace them with merely *Ivana and Julija*. It would be much more plausible to replace the three determiners with *Ivana, Julija and Miha* (30, 31), even if it results in a similar situation, namely if the perfect verb is replaced by the imperfect verb *so izdelovali plakat* (*were making a poster*), a distributive interpretation is possible: *eni so izdelovali plakat, drugi trije pa so izdelovali mozaik* (*three children were making a poster, and the other three were making a mosaic*). Nonetheless, the acceptability of this interpretation remains highly limited, as Slovene prefers the use of a plural or dual object in the case of a collective interpretation.

It can be deduced from the abovementioned examples that in Slovene, the collective and distributive interpretations are the most acceptable in the cases in which the subject and the object express the same quantity. This variation from singular to plural is not necessarily significant in French, as phrases with plural subject and singular object can easily accept both interpretations. It was shown that Slovene can change the interpretation with the use of an im/perfect form of the verb in perfect.

The following example is interesting as all the three indefinite determiners in NP subject position can only have distributive interpretation (Asnes 2005):

(32) a. *La tête de quelques / plusieurs / certains garçons dépassait du*
D.AR head of some several certain boys stick.out D.AR
rideau.
curtain

b.* *Glava nekaj /več / nekaterih fantov je pokukala*
head some /several / certain-GEN boys-GEN is peep
izza zavese.
out.from.behind curtain

c. *Glave nekaj / več / nekaterih fantov so pokukale*
heads some/ several / certain-GEN boys-GEN are peep
izza zavese.
out.from.behind curtain
'A head of some/several /certain boys stuck out of the curtain.'

Because of the distributive quantification of *quelques, plusieurs* and *certains*, only a distributive interpretation is possible, regardless of the fact *la tête* ('the head') is in singular. It is interesting that Slovene in this case does not allow for a singular of *glava* ('head'), but demands a plural form to obtain the only possible interpretation, the distributive one.

4.5 Generic and specific interpretation

We can speak of specific interpretation when the indefinite determiner denotes individual elements from a set with the same characteristics. When these individual elements cannot be defined, we speak of generic interpretation. The generic interpretation of an indefinite determiner is only possible in certain syntactical contexts, which are not existential, and at the same time substitute the agent. Indefinite determiners can, however, always be interpreted specifically (33) (Corblin 1987). The numeral, or rather indefinite article *un(e)* can be interpreted generically (34).

The example (33) indicates a specific interpretation, because we define a number of virtues that refer to the whole class defined by the indefinite determiners. Ansombre (2001) says that generic NP in this case is distributed. The example (34), on the other hand, indicates that the meaning of only one virtue refers to the whole class. On the contrary standard Slovene does not use the numeral or indefinite article *en(a)* ('one'). Only the spoken Slovene could use *en* ('one') or *nek* ('a certain') for a indeterminacy and to express genericity (Schlambergar-Brezar 2004). A generic interpretation (34) in Slovene is expressed without any determiner. The other possible way to make a general reading out of a Slovene phrase is to use the quantifier *vsak* ('each'): *vsaka družba* 'each society'. Sentences containing *each* make a claim about all the members of the class which is quantified over. It is about a general interpretation based on the distributional reading.

(33) a. *Quelques / Plusieurs/Certaines sociétés reposent sur des*
some / several /certain societies base-PRES.3.PL on I.AR
principes.
principles

b. *Nekaj / Več družb temelji na principih.*
some / several society base-PRES.3.SG on principle
Nekatere družbe temeljijo na principih.
certain society base-PRES.3.PL on principle
'Some/Several/Certain societies are based on principles.'

(34) a. *Une société repose sur des principes.*
one society base-PRES.3. SG on I.AR principle
(Corblin 1987)

b. *Družba temelji na principih.*
society base-PRES.3.SG on principle
'A society is based on principles.'

In (35) the indefinite determiners *quelques/nekaj* and *plusieurs/več* can be interpreted generically, but *certains/nekateri* can only be interpreted specifically (36). The two interpretations coincide in both languages. In case of specific interpretation, *certains* can also be translated in Slovene as *določen* ('defined') instead of *nekateri* ('certain'), as it places an even greater stress on the specifics of the marked units. *Certains/nekateri* does not allow for generic interpretation, as it heavily stresses the referent's identity in the sense *not all*.

In the example (35) (Leeman 2004), the genericity is based on the quantitative opposition plural-singular; *quelques/plusieurs* and *a long*. We insist on the quantity and wish to convey: *Better to have more drawings than only one long speech*. *Certains* cannot accept this interpretation and opposition, as it is not a real quantifier. It is the same in Slovene; *nekateri* denotes individuals which are specific in one way, that is why only a specific interpretation is possible in (36) (Leeman 2004).

(35) a. *Quelques / Plusieurs schémas valent mieux qu' un long discours.*
some / several drawing worth-PRES.3.PL better that one long speech

b. *Nekaj/Več risb pove več kot dolg govor.*
some /several drawing say-PRES.3.SG more than long speech
'Some/Several drawings are worth a thousand words.'

(36) a. *Certains schémas valent mieux qu' un long discours.*
certain drawing worth-PRES.3.PL better that one long speech

b. *Nekatere risbe povedo več kot dolg govor.*
certain drawing say-PRES.3.PL more than long speech
'Certain drawings are worth a thousand words.'

The distribution of one interpretation or the other can change according to the context and is therefore very problematic. Since Slovene has no articles, it cannot properly limit some individuals without any determiner. French could do so by using the indefinite article *des* in "partitive genericity". This *open class* (Corblin 2001) presents an introduction to quasi-genericity, which is marked by *certains* and also *nekateri*. Also (Anscombre 2001) claims, when the NP is not distributed it can have a partitive interpretation of a class. Only a part of this class is concerned by NP. As it was mentioned above, the characteristic nature of *certains* and *nekateri* can always delimit some atomic individuals and make them "general" in some contexts (37). Here, the partitive genericity in French and Slovene is possible in the field of *dogs, loving classical music*.

(37) a. *Certains chiens aiment la musique classique.*
certain dogs like-PRES.3.PL D.AR music classical
b. *Nekateri psi imajo radi klasično glasbo.*
certains dogs have-PRES.3.PL like-ADJ classical music
'Certain dogs like classical music.'

Plusieurs allows for a generic interpretation in (38), whereas it is not optimal in the case of *quelques* in (39). According to the context, the example (39) can only indicate that not all *pays voisins* ('neighboring countries') are included in it. Both Slovene equivalents share the same semantic characteristics as the French quantifiers. They cannot include *all neighboring countries,* and they cannot say which *neighboring countries* are considered. The interpretation of *quelques/nekaj* is thus similar to that in (40) in which *certains/nekateri* is used (Corblin 1987). The examples (39) and (40) once again show partitive-genericity. A generic interpretation (38) is only logical again if we insist on quantity (*plusieurs pays*), the same as in (35).

(38) a. *Plusieurs pays voisins finissent par se fédérer.*
several country neighbouring finish-3.PRES.PL by self federate-INF
(Corblin 1987)
b. *Več sosedskih držav se na koncu združi.*
several neighbouring country self on end federate-PRES.3.SG
'Several neighbouring countries eventually federate.'

(39) a. *Quelques pays voisins finissent par se fédérer.*
some country neighbouring finish-PRES.3.PL by self federate
(Corblin 1987)
b. *Nekaj sosedskih držav se na koncu združi.*
some neighbouring country self on end federate-PRES.3.SG
'Some neighbouring countries eventually federate.'

Similarly, *certains/nekateri* do not allow for generic interpretation in the following example, as they do not apply to any number of 'neighboring countries'. What is more, *certains* as well as *nekateri* indicate that not a whole class of countries is included. The same interpretation can be used in Slovene, since 'some countries' (*nekatere države)* are limited to a number of chosen countries in reality and do not include a whole class of *countries.*

(40) a. *Certains pays voisins finissent par se fédérer.*
certain country neighbouring finish-PRES.3.PL by self federate
(Corblin 1987)
b. *Nekatere sosedske države se na koncu združijo.*
certain neighbouring country self on end federate-PRES.3.PL
'Certain neighbouring countries eventually federate.'

Corblin (1997) argues that indefinite determiners in the "narrow sense" (*sens étroit*), which include *plusieurs* and *quelques*, allow for a generic interpretation even in sentences that do not explicitly express genericity (41). A generic interpretation is therefore acceptable in both Slovene and French in certain contexts: *a larger amount of people cannot agree upon who will govern and how.* This has to do with the fact that similarly as in (35) and (38), we insist on a larger quantity as opposed to singular.

Plusieurs and *več* do not include all the units of a set, but in general readings, they can be interpreted largely, to be generally applied to all the units.

(41) a. *Plusieurs personnes ne peuvent s' entendre pour gouverner.*
several people not can self agree for govern
(Corblin 1997)

b. *Več ljudi (Mnogi ljudje) se ne more*
several people (many people) self not can-PRES.3.SG
dogovoriti za vladanje.
agree for govern
'Many people can not agree to govern.'

On the contrary, indefinite determiners 'in the large sense' (*sens large*), e.g. *certains,* do not allow for generic interpretation. In the following example (42), *certains* denotes 'certain people, who have a problem with governing'. In this case, generic interpretation is not acceptable. There is once again the specificity of *certains/nekateri* which proves the qualitative characteristic of these two quantifiers, which do not allow for generic readings neither in Slovene nor in French.

(42) a. *Certaines personnes ne peuvent s' entendre pour gouverner.*
certain people not can self agree for govern-INF
(Corblin 1997)

b. *Določeni /Nekateri ljudje se ne morejo dogovoriti za vladanje.*
defined /certain people self not can agree for governing
'Certain people can not agree to govern.'

The NP *več ljudi* (*more people*) in (41) is quantitative, whereas the phrase *določeni ljudje* ('defined people') in (42) is characterizing and quantitative.

To sum up, the characterizing use of the indefinite determiner that refers to the referent's identity prevents generic interpretation. *Certains* only occurs in specific interpretation, as its meaning is limited to specific referents whose identity is known to the speaker, who does not wish to reveal it. It can therefore not be used in generic interpretation. On the contrary, *quelques* can be used both in specific and generic interpretation, which can sometimes be prevented by the context. *Quelques* and *plusieurs* denote the speaker's unfamiliarity and are most often used in cases in which they propose a hypothesis.

General interpretation in Slovene can be easily expressed without any quantifier or determiner. The role of use of quantifiers only accentuates the indefinite quantity of referring individuals. On the other hand French can use articles to replace determiners and change the semantic value of NP, which is impossible in Slovene.

5 Summary

The role of the indefinite determiners is to single out a chosen class of individual units (NP) out of a whole set, and name it with *plusieurs/quelques/certains* or *več/nekaj/nekateri,* which are their most common equivalents in Slovene. The quantifier reaches across the minimal sentence to which it belongs, regardless of its syntactical characteristics.

The study proves that beside the absence or presence of the referential context determining the interpretation, also the number expressed in subject NP or object NP and the nature of predicate, can largely influence the interpretation in French and Slovene.

Plusieurs/quelques/certains and the Slovene equivalents can be used in existential structures, and in sentences that assert existentiality. They can also be used in non-existential sentences, especially when they do not have a reference point (Kleiber 2001). In this case, the existence of individual units and subtypes is not placed in time and space. In order to enable the existential interpretation, the referential context needs to be placed in space and time.

Existential interpretation is not possible without a "specific" predicate containing detailed information on the referent's object. In this case, a different kind of non-existential interpretation needs to be chosen. Whenever a sentence is open to standard generic, partitive, or taxonomic interpretation, existential interpretation is not possible. In case of specific partitive interpretation, difficulties occur in defining the whole set along with its particular limitations. The limited whole is restricted by the noun's semantics, the context, and the semantic value of the determiner.

It is common for the chosen French and Slovene indefinite determiners to mark a unit of individuals taken from a larger set, which can also be marked as partitive. The chosen examples were generally not difficult to translate. There were just some structures demanding transformations of phrases and there were also some instances in which the interpretations do not match in French and Slovene. *Quelques* and *plusieurs* so as *nekaj* and *več* proved to be replaceable in most cases with slightly changing the NP quantity. *Certains* proved to have some specific characteristics in French and in Slovene.

In most examples *nekateri* demands a different syntactic structure. Also in most interpretations *certains* and *nekateri* do not share the same interpretations as *quelques/plusieurs* and *nekaj/več*. For example, they are regularly used in taxonomic interpretation, only in specific (and not generic) interpretation and do not allow for referential interpretation. This characteristic can be explained with a partition of *certains/nekateri*, i.e. *certain among the others*. Concerning the collective and distributive interpretation, the most differences between the two languages appeared. *Certains* is normally given only a distributive interpretation but *nekateri* prefers collective interpretation.

The differences that most often occur in the case of collective and distributive interpretation concern *quelques/plusieurs* again. They prefer the collective interpretation but allow also for distributive interpretation. But *nekaj/več in Slovene* normally allow only for collective interpretation. There are only some examples on the borderline of acceptability, which can be interpreted in a distributive way in Slovene as well.

The study highlights that as opposed to French, Slovene does not allow for both interpretations in some cases. This largely depends on the number expressed by the subject and object NP, and on the im/perfectivity the verb. Since verbal im/perfectivity depends on the syntactic position, the perfectivity and imperfectivity of the verb in Slovene was mentioned. The influence of the verb aspect seems to be important only in collective/distributive interpretation, nevertheless it was expected that the verbs' im/perfectivity influence would be larger.

The difference appeared also in the field of generic and specific interpretation, where French can replace a quantifier with an article, which is not possible in Slovene. On the other hand Slovene can have a bare NP to express genericity.

The result showed that there are similarities and differences between two systems of the three indefinite determiners in French and Slovene. The similarities between them facilitate the interpretation and translation, whereas differences make the translation more complicated and give the possibility to examine the different language systems.

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Umlaut and lowering are not phonological in Swiss German*

Regula Sutter

Bromberger and Halle (1989) argued that phonology relies on rule ordering and is therefore fundamentally different from syntax. However, recent advances within the framework of Government Phonology (GP) show that phonology is even more syntax-like than previously assumed. This paper supports the latter view by showing that an example that seems to support Bromberger and Halle's view (Kiparsky 1968) is factually wrong on many accounts and does thus not prove the necessity of rule ordering. A secondary aim of this paper is to show how a restrictive theory can be used to predict which phenomena do and do not occur in human languages. In a final section, alternative treatments of umlaut and lowering are sketched out.

Keywords: *Government Phonology, phonology-syntax relationship, rule ordering, Swiss German*

1 Introduction

Bromberger and Halle (1989) claimed that phonology is fundamentally different from syntax (and the rest of linguistics), because phonology depends on the use of rewrite rules and their extrinsic ordering, while other linguistic modules do not. Government Phonology (henceforth GP, for references cf. section 5 below) has always taken a different stance on this, and according to the latest developments in the theory (cf. Kaye and Pöchtrager 2009, Pöchtrager 2006, Živanovič and Pöchtrager 2010 among others) there are even less differences between syntax and phonology than previously assumed.

Why should phonology be so different from all the other linguistic modules? The null-hypothesis surely is to assume that all modules should be similar, rather than have one of them stand out. Hence the burden of proof lies with those who claim that one of the modules, namely phonology, is different. The only synchronic argument Bromberger and Halle (1989) mentioned to support their claim is the (in)famous case of Canadian Raising, where two dialects are said to differ in their respective ordering of the two relevant rules (flapping and raising). Kaye (1990, in press) shows in great detail why this argument does not hold. However, the phonological literature provides a few more examples that seemingly support Bromberger and Halle's idea. In this paper I will discuss one of those examples that relies on rule ordering and therefore seems to support B&H's view: the example of Swiss German umlaut and lowering put forth by Kiparsky (1968). At this example my alarm bells stated ringing immediately and red lights were flashing[1]: my phonological theory told me that there was something very wrong. Something like this example could not possibly exist according to my theory. Now these are the interesting examples, of course, therefore I started to look more closely. It turned out quickly that the two rules involved are factually wrong. I will spend large parts of this paper showing why the phenomena under discussion are impossible according to GP, or

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[1] This metaphor is of course J. Kaye's.

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in other words, what made my alarm bells ring in the first place. It lies in the nature of this discussion to rely heavily on GP definitions and assumptions. However, the actual findings do not hinge on the actual theory used. It is a fact that the rules do not properly reflect the data, and are therefore wrong. For a more detailed argumentation that is theory-independent I refer to Sutter (to appear).

An anonymous reviewer has pointed out that "in the 1960's there was a certain idea of what belongs to the domain of phonology, and this idea has changed radically in the course of the past decades. Some things that were considered phonological then (e.g. Umlaut in German, the Great Vowel Shift, Ablaut in the English strong verb system and many othrs) are no longer [...] considered phonological[…]." If this were true, my argument would indeed be "shooting at a straw man", as said reviewer put it. Although I am aware that umlaut has been called morphological before (cf. Rieder 2000 and references in Wiese 1996), I know of no theory (apart from GP) which excludes umlaut on a principled basis. I am aware, however, of a number of publications in a very recent framework (Optimality Theory, to be precise) that argue *in favour* of a phonological treatment of umlaut (e.g. Féry 1994, Klein 2000, Trommer 2009 for German, Hermans & van Oostendorp 2008 for a dialect of Dutch). The case, at least for umlaut in German(ic), is far from being as clear as this reviewer put it.

The same anonymous reviewer wrote: "There is no point in contrasting two *theories* in such a way, especially at such a great temporal distance" (emphasis original). I could not agree less: science involves evaluating other (older) approaches and comparing them to the current one. As long as examples of the older model are still used in modern textbooks and quoted in scholarly discussions, the temporal distance between the advent of the respective theories loses its importance. It is our task as phonologists to prove that those examples (and, as a consequence, the theory they are couched in) fail, and that our approach has a higher level of explanatory adequacy.

There are, thus, two lines I will follow in this paper: First and foremost, I will show that a purported case of rule ordering is in fact no argument for Bromberger and Halle's view that phonology is different from syntax, because the apparently supportive example is wrong on many accounts.

Secondly, I will show how a theory can be used effectively to separate the wheat from the chaff: if said theory is restrictive enough, it will predict those things to be possible that do occur in human languages. And also, it will deem impossible those things that do not occur in any language.

This paper is organised as follows: in the next section I will introduce Kiparsky's example that seems to prove the necessity of rule ordering. In section 3 I will provide more relevant data for both umlaut and lowering. In section 4 I will very briefly show why the rules proposed by Kiparsky are wrong – independently of the theory that is used. Section 5 explains how the theory I use can exclude both rules from the possible phonological processes on a principled basis. Section 6 will sketch out alternatives for the treatment of lowering and umlaut, before this paper closes with a short summary of the major points.

If not indicated otherwise, all data are taken from my native dialect, which is spoken in an area that lies between those where the Kesswil and Schaffhausen dialects are spoken (see next section), sharing boarders with both of them. I will refer to this dialect as Swiss German. Although the exact realisation of some items might vary across the three dialects, the conclusions drawn are of a more general nature and true for all of them.

2 Kiparsky's example

Kiparsky (1968) argues that the microvariation found in plural forms of certain words of the Swiss German dialects of Schaffhausen and Kesswil in north-eastern Switzerland can easily be accounted for by reversely ordering two rules (cf. (1) below). According to rule 1 (umlaut) a vowel is fronted in an umlaut-inducing environment, while rule 2 (lowering) states that a back mid vowel (*o*) will be lowered (to *ɔ*) before a coronal obstruent or *r*. These two rules are in a bleeding relation in Schaffhausen: both underlying forms *boge* and *bode* undergo umlaut, with the result *böge* and *böde*, respectively. Now neither of these forms is a valid input for the second rule, lowering, because only *o* can undergo lowering. In Kesswil, the rules are reversely ordered, and lowering takes place first: the *o* in *bode* is lowered to *ɔ*, but the *o* in *boge* is not, because it is not in pre-coronal position. Umlaut takes place next, and because plural is an umlaut-inducing environment, both the underlying *o* in *boge* and the lowered *ɔ* in *bɔde* are umlauted. The difference between the dialects of Schaffhausen and Kesswil are, according to Kiparsky, a consequence of this reverse ordering: The plurals of the words *boge* are the same – *böge* – but the plurals of underlying *bode* are different – *böde* in Schaffhausen and *bɔ̈de* in Kesswil.

(1) (Kiparsky 1968: 178-179)

Schaffhausen			**Kesswil**		
underlying	*boge*	*bode*	underlying	*boge*	*bode*
umlaut	*böge*	*böde*	lowering	–	*bɔde*
lowering	–	–	umlaut	*böge*	*bɔ̈de*
surface	*böge*	*böde*	surface	*böge*	*bɔ̈de*

Koutsoudas et al. (1974) have shown that restrictions on possible surface forms can account for the facts, and there is no need to extrinsically order the rules in this example. I will argue that the problem lies much deeper: Both rules are in fact wrong. I will show why and where they went wrong below, but let me first introduce some more data for both umlaut and lowering.

3 Swiss German Data

I will start with providing more data on umlaut and the distribution of *o* and *ɔ*. For umlaut, I will introduce four so-called umlaut-inducing environments: nominal and verbal diminutives, verbalisers and nominal plural. This list is by no means exhaustive, but provide common places to encounter umlaut. In the case of lowering, I will provide examples for *o* and *ɔ* in both coronal and non-coronal environments.

3.1 Umlaut: nominal diminutives

Diminutives of nouns are formed by adding the suffix *-li* to a stem. The resulting diminutive nouns denote endearment more often than smallness, and the Swiss are notorious for using them extensively. The diminutive *-li* is very productive, it can be attached to a wide variety of nouns.

The words in (2)a) are common words of Swiss German and frequently used with and without the diminutive. Those in (2)b) are examples of recent loans that also show

umlauted vowels in the diminutive. The word *t:ü:li* was originally used by IT people almost exclusively, but it is increasingly common beyond these circles.

While the words in (2)c) do not show umlaut in the diminutive, the one in (2)d) has two ways of forming a diminutive. People use them interchangeably, there is no difference in meaning between the two forms.

(2)	a. *fatə ~ fɛtəli*		'thread ~ id.-DIM.'
	fokəl ~ fökəli		'bird ~ id.-DIM.'
	rɔs: ~ rös:li		'horse ~ id.-DIM.'
	hu:s ~ hü(:)sli		'house ~ id.-DIM.'
	paum ~ pɔimli		'tree ~ id.-DIM.'
	b. *t:u:l ~ t:ü:li*		'tool (IT) ~ id.-DIM.'
	kxompju:t:ɐ ~ kxompjü:t:əli		'computer ~ id.-DIM.'
	t:elefo:n ~ t:elefö:ntli		'telephone ~ id.-DIM.'
	c. *pupi ~ pupəli*	**püpəli*	'childish person ~ id.-DIM.'
	jok:əl ~ jok:əli	**jök:əli*	'klutz ~ id.-DIM.'
	d. *aut:o ~ aut:ö:li ~ ɔit:əli*		'car ~ id.-DIM. ~ id.'

3.2 Umlaut: verbal diminutives

Verbs also have diminutives in Swiss German. Although this is not productive in Standard German, we find a number of fossilised forms. Non-linguists do not necessarily see a connection between them. (Words given in German orthography.)

(3)	(**traufen*) ~ *träufeln*	'* ~ to trickle' (cf. Traufe 'eaves')
	kochen ~ köcheln	'to boil ~ to simmer'
	streichen ~ streicheln	'to smooth sth out ~ to stroke'
	tropfen ~ tröpfeln	'to drip ~ to trickle'

In Swiss German, the verbal diminutive suffix -(*ə*)*lə*, is still productive, but not as ubiquitous as the nominal diminutive. Its meaning can be one of endearment or of doing something only half-heartedly.

(4)	a. *patə ~ pɛtələ*		'to bathe ~ id.-DIM.'
	xɔx:ə ~ xö:x:ələ		'to cook ~ id.-DIM.'
	šo:nə ~ šö:nələ		'to spare ~ id.-DIM.'
	t:urnə ~ t:ürnələ		'to do gymnastics ~ id.-DIM.'
	šlauf:ə ~ šlɔif:ələ		'to loop sth ~ id.-DIM.'
	b. *faksə ~ fɛksələ*		'to fax ~ id.-DIM.'
	c. *štak:ə ~ štak:ələ*	**štɛk:ələ*	'to stutter ~ id.'
	ka:kə ~ ka:kələ	**kɛ:kələ*	'to teeter ~ id.'

Again, words in (4)a) are common words, more or less frequently used in the diminutive. Although not exactly as productive as the nominal diminutive, the verbal

diminutive suffix can also be attached to recent loan words, cf. (4)b). The words in (4)c) are examples for verbal diminutive without umlaut.[2]

3.3 Umlaut: verbalizers

There are several ways of deriving verbs from nouns, one of them results in a verb that expresses something along the lines of 'do something in/with/like X'. Although not as productive as the above, it can be used to create new words that are readily understood. As in the examples above, words in (5)a) are common, as are the related verbs. (5)b) exemplifies nouns that have entered the language relatively recently but can be verbalised. The second example contains front vowels only and is therefore not subject to umlaut. I include it as additional evidence that this verbaliser is indeed used with new words. The verb in (5)c) is not commonly known, but is readily understood to mean 'do something like a Matter' (Matter being a family name). However, in my extended family it took on a more specific meaning, after my cousins called Matter: *mat:ɐlə* is avoiding to eat the last piece of cake, meat, bread, etc. by eating only half of it, then half of the rest, and so on, until it becomes impossible to divide the rest any further.

(5)	a.	*fat:ɐ ~ fɛt:ɐlə*	'father ~ play father[3]'
		fot:o ~ föt:ələ	'photo ~ take pictures'
		tsmɔrkə ~ tsmɔ̈rkələ	'breakfast ~ have breakfast'
		sunə ~ sünələ	'sun ~ sunbathe'
		sau ~ sɔiələ	'pig ~ eat like a pig/be untidy'
	b.	*kxompju:t:ɐ ~ kxompjü:t:ɐlə*	'computer ~ play/work on a computer'
		ɛs:əmɛs: ~ ɛs:əmɛs:lə	'text message ~ to text'
	c.	*mat:ɐ ~ mat:ɐlə* **mɛt:ɐlə*	'surname ~ do sth like a Matter'

It is important to note that while the recent loans in (5b) seem to suggest that umlaut is productively applied to new examples, the spontaneous creation of (5c) shows that umlaut does not necessarily apply with each new use of this verbaliser.

3.4 Umlaut: nominal plural

As in Standard German, there are several ways of forming a plural, the suffix to be used depends on the inflectional class. The list below shows several words with a *-Ø* suffix (6)a), with the suffix *-ɐ* (a central, rounded vowel) (6)b) and *-ə* (6)c). Recent loans don't usually have plurals with umlaut (6)d), and although the variant *kɛp:t:ɔ̈p:* with an umlauted vowel is not acceptable for all speakers, I have encountered it several times in normal conversations with native speakers. (6)e) shows plurals without umlaut.

[2] According to the *Schweizerisches Idiotikon* (Antiquarische Gesellschaft 1939), the verb *štak:ə* is attested in the form *stagge*^{n} (Vol. 10, col. 1553) for dialects of the investigated area, even though it is not in use today in the dialect presented. Similarly, *ka:kə* is attested as *gäge*^{n} (Vol.2, col. 137), but rare today.

[3] As in *müət:ɐlə unt fɛt:ɐlə* 'to play house'.

(6)	a.	*ʃpaːsː ~ ʃpɛːsː-Ø*	‘jest-SG. ~ PL.’	
		soːn ~ söːn-Ø	‘son-SG. ~ PL.’	
		ʃɔːfː ~ ʃɔ̈ːfː-Ø	‘sheep-SG. ~ PL.’	
		hunt ~ hünt-Ø	‘dog-SG. ~ PL.’	
	b.	*platː ~ plɛtː-ɐ*	‘leaf-SG. ~ PL.’	
		holts ~ hölts-ɐ	‘wood (material)-SG. ~ PL.’	
		xɔrn ~ xɔ̈rn-ɐ	‘grain-SG. ~ PL.’	
		ʃtruːx ~ ʃtrüːx-ɐ	‘shrubbery-SG. ~ PL.’	
	c.	*fatːɐ ~ fɛtːɐr-ə*	‘father-SG. ~ PL.’	
		tːɔxtɐ ~ tːɔ̈xtɐr-ə	‘daughter-SG. ~ PL.’	
		muətːɐ ~ müətːɐr-ə	‘mother-SG. ~ PL.’	
	d.	*kxompjuːtːɐ ~ kxompjuːtːɐ-Ø*	‘computer-SG. ~ PL.’	**kxompjüːtːɐ*
		tːelefoːn ~ tːelefoːn-Ø	‘telephone-SG. ~ PL.’	**tːeleföːn*
		lɛpːtːɔpː ~ lɛpːtːɔ̈pː-Ø/lɛpːtːɔpː-s	‘laptop-SG. ~ PL.’	
	e.	*ʃtunt ~ ʃtunt-Ø*	‘hour-SG. ~ PL.’	DIM.: *ʃtüntli*
		xunt ~ xunt-ə	‘patron-SG. ~ PL.’	DIM.: *xüntli*
		koːf ~ koːf-ə	‘kid-SG. ~ PL.’	DIM.: *köːfli*
		ʃtrɔːsː ~ ʃtrɔːsː-ə	‘street-SG. ~ PL.’	DIM.: *ʃtrɔ̈ːsːli*
		pːuːɐ ~ pːuːr-ə	‘peasant-SG. ~ PL.’	DIM.: *pːüːɐli*

Note that there is nothing inherent to the stems in (6)e) that prevents them from being umlauted: they all show umlauted vowels in the diminutive.

3.5 Lowering: coronal environments

According to Kiparsky’s rule of lowering, a back mid vowel is lowered in the context before a coronal obstruent or *r*. We would therefore expect to find no *o* before coronals, but only *ɔ*. In fact we find both *o* and *ɔ* in this context:

(7)	a.	*ɔrtə*	‘order’	b.	*oranʃ*	‘orange (adj)’
		kɔtːə	‘godmother’		*otːɐ*	‘otter’
		hɔsə	‘trousers’		*blos*	‘just’
		jɔtlə	‘to yodel’		*otɐ*	‘or’
		pːɔʃtə	‘to shop’		*oʃtə*	‘east’

This shows that the lowering rule makes false predictions, it is not even observationally adequate.

3.6 Lowering: non-coronal environments

The open back rounded vowel *ɔ* is also found in non-coronal contexts. It could be argued that in a model that generates surface forms from (historically older?) underlying forms, such as the one adopted by Kiparsky, these *ɔ*’s should be the result of lowering just as the ones in coronal environments. However, as I do not see how the knowledge of historical facts about a language should be relevant for a syncronic model, I will not pursue this point any further. The data below are merely provided for completeness’ sake.

(8)	*rɔkːə*	'rye'	*šɔkːi*	'chocolate'
	trɔfːə	'hit-PastPart.'	*kɒfːə*	'walk-PastPart.'
	nɔpːə	'knop'	*šɔpːə*	'baby bottle'
	ɔxs	'ox'	*ɒxː*	'hole'

After having presented more data from Swiss German, I will now point out some weaknesses of Kiparsky's example.

4 Where they went wrong

I will point out very briefly a few problems with Kiparsky's rules. For a more detailed analysis of these point see Sutter (to appear).

4.1 Lowering

To introduce his rule of lowering, Kiparsky presents a very restricted set of data that is, according to him, representative of both the Schaffhausen and the Kesswil dialects (Kiparsky 1968, 178, his spelling):[4]

(9) Retention of *o*:
before *l*: *foll*, *holts*, *gold*
before labials: *grob*, *ops*, *hobəl*, *xnopf*, *dobə*, *ofə*, *xopf*
before velars: *xoxxə*, *xnoxxə*, *rokx*, *kflogə*, *bogə*
Lowering to *ɔ*:
before r: *hɔrn*, *tɔrn*, *šɔrə*
before dentals and palatals: *rɔss*, *xrɔttə*, *ɒsə*, *ksɔttə*, *bɔdə*, *pɔšt*

The rule he proposes is the following (Kiparsky 1968, 178):

(10) $\begin{bmatrix} \text{V} \\ \text{-high} \\ \text{+back} \end{bmatrix} \rightarrow \text{[+low]} \; / \; \underline{\quad\quad} \; \begin{bmatrix} \text{+consonantal} \\ \text{-grave} \\ \text{-lateral} \end{bmatrix}$

This rule might fit the restricted set of data Kiparsky presents, but this set can easily be extended such that the rule no longer holds, as has become obvious in (7) above: it is easy to find words with coronal obstruents (what he calls dentals and palatals, p. 178) that are preceded by *o*, not *ɔ*. For additional problems with these data see Sutter (to appear).

4.2 Umlaut

The umlaut rule as given by Kiparsky is problematic as well. His example of Swiss German does not state the exact umlaut rule, but only references an earlier discussion of

[4] Kiparsky does not gloss his examples. Their translations, in order of appearance: full, wood (material), gold, crude, fruit, plane (tool), button, upstairs, fireplace, head, to cook, bone, skirt, flown, arc, horn, thorn, to scratch, horse, toad, to listen, cooked, floor, post office.

umlaut (in Old High Germanic and the Prignitz dialect of Low German) in the same paper. The rule Kiparsky references is the one given in (11) below:

(11) Umlaut rule for Low German (Kiparsky 1968, 176)
V → [-back] / …

The first obvious problem is that the rule does not include a context. As Kiparsky notes (p. 176): "I leave open here the question of what exactly the environment of umlauting in modern German is, which is irrelevant for present purposes." This rule, as stated here, is therefore not verifiable.

The second problem is that of the proposed change: a vowel becomes [-back] in a non-specified context. As I will show in more detail in section 5.3.1, this might well be true for the alternations *a*/*ɛ*, *o*/*ö*, and *u*/*ü*, but not for *au*/*ɔi*. The rule does not reflect the observed patterns of vowel correspondences, and has therefore to be rejected because it does not even achieve observational adequacy.

In the light of the other problems I see with this rule this may only be a minor issue: Swiss German does not belong to the Low German, but to the Upper German dialect family.

These problems are independent of the phonological theory used. However, in the next section I will pretend to be unaware of these problems to showcase how a restrictive theory can predict the failure of the example.

5 The predictions of Government Phonology

> One of the perennial questions of phonological theory is the proper delimitation of its domain. That is, any phonological theory must be explicit about which phenomena should be included in the domain of phonological description and which should not. (Wiese 1996, 113)

This statement is still valid today, although the viewpoint has shifted away from description to explanation. Government Phonology (Harris 1994, Kaye 1989, 1995, 2000, Kaye, Lowenstamm and Vergnaud 1985, 1990 to name but a few) makes clear statements about what should and should not be included. It contains a number of conditions that have to be met by phenomena in order to be part of the phonological domain. These conditions were not designed specifically to exclude certain phenomena, but to make the resulting theory as restrictive as possible, while still capturing the patterns that recur time and time again in the world's languages. In what follows I will introduce two of these conditions on phonological processes (i.e. the Non-Arbitrariness Principle and the Minimality Hypothesis) in some detail, and test both phenomena (lowering and umlaut) against them. There are other conditions as well (cf. Kaye 1995, 313, Kaye and Pöchtrager 2011), and only the satisfaction of all of them makes a phenomenon a phonological process: all of these criteria are necessary, but none of them is sufficient on its own. However, as the rules proposed by Kiparsky clearly violate the two conditions introduced below, this is sufficient to rule them out as phonological processes.

Apart from these conditions, the theory also has a very restrictive set of possible mechanisms – "all phonological phenomena can be described in terms of putting things together or taking them apart" (Kaye 1989, 11). In other words: elements can be linked to a skeletal position, or they can be de-linked. In an ideal world, a phonological theory

can express exactly those processes that satisfy the conditions for phonological processes, and vice versa: every phenomenon that can be expressed does fulfil the requirements for a process. This gives independent evidence for the (non-)phonological nature of a process, because the conditions mentioned above and the possible mechanisms are formulated independently from each other. I will therefore also shortly talk about the expressibility of umlaut and lowering.

5.1 The Non-Arbitrariness Principle

According to the Non-Arbitrariness Principle "[t]here is a direct relation between a phonological process and the context in which it occurs" (Kaye, Lowenstamm and Vergnaud 1990, 194). Put differently: There has to be a connection between a process (what happens?) and its context (where does it happen?). This does not only require a process to have a trigger, but also that this trigger be the immediate cause of the process at hand. In other words: The context in which the process takes place has some property that is directly responsible for the process. It could be said that a process does not take place *in* a certain context, but *because* of that context.

This is in stark contrast to SPE-type rules: The generic rule as given in (12) basically translates to "anything goes to anything in any context." There is no connection whatsoever between *what* happens and *where* it happens.

(12) Generic rule
A → B / C ___ D

5.1.1 Arbitrariness tested: Umlaut

Although the umlaut rule in (11) above is formulated in an arbitrary way, this does not make the phenomenon per se arbitrary, but is a consequence of the theory it is phrased in.

Umlaut is commonly seen as the fronting of a stem vowel, or, more generally speaking, the assimilation of a stressed vowel to a following vowel (cf. Pompino-Marschall 2000, 757). In GP this could only be expressed as the spreading of an **I** element, and the changes we observe (*a* changes to *ɛ*, *o* changes to *ö*, *ɔ* to *ɔ̈*[5] and *u* to *ü* – disregarding *au* to *ɔi* for the moment) support this view. The trigger we are looking for has to be an **I** element. As umlaut is observed in derived forms only[6], its trigger must be found in the suffix. I will investigate each of the environments from section 3 and see whether the trigger can be found there.

The suffix for nominal diminutives is *-li*, which indeed contains an **I** element in the *i*. The Non-Arbitrariness Principle is thus satisfied so far. Both the verbal diminutive and the verbaliser have the suffix *-(ə)lə*. The exact status (and melodic make-up) of *ə* has to be further examined, but from what we know it seems highly improbable that it does contain an **I** element. There is certainly no **I** element in the *l*. The plural comes in different guises: *-Ø*, *-ɐ*, and *-ə*. The latter, as we have seen before, most probably does not contain an **I** element. The second one, *ɐ,* is also still being examined, but even less

[5] According to Kiparsky there is no umlaut from *ɔ* to *ɔ̈*, but *ɔ̈* is always the result of lowering *ö*. Nothing hinges on this distinction.

[6] More on this in section 5.2.1 Minimality tested: Umlaut.

likely to contain an **I** element, and it is outright impossible to find one in a phonologically empty suffix[7].

What we find is that although there is a possible trigger in nominal diminutives, the chance to find one in all other suffixes ranges from highly improbable to outright impossible.

5.1.2 Arbitrariness tested: Lowering

Lowering is a term from articulatory phonetics, not from phonology. The mechanisms involved in lowering, say, *i* to *e* are very different from the ones in lowering *ɔ* to *a*. This can be seen easily from the prototypical 7-vowel system represented in (13) below:[8]

(13)

i	(.**I**)		*u*	(.**U**)
e	(**A**.**I**)		*o*	(**A**.**U**)
ɛ	(**I**.**A**)		*ɔ*	(**U**.**A**)
		a	(.**A**)		

As we are investigating a case of lowering *o* to *ɔ*, we are looking at role switching, or, more specifically, the promotion of **A** to be the head of the phonological expression. Remember that according to Kiparsky's rules lowering happens before coronal obstruents and *r*. The property that sets coronals apart from all other consonants is the presence of an **A** element. This **A** can be the head of the phonological expression (for the stops and the nasal *n*) or an operator (for fricatives, *r* and *l*) (cf. Kaye 2000). Although it is tempting to see a connection – it is **A** that gets promoted to head status and **A** that is the relevant context – this is not what we call a causal relationship. There are three major issues with this: (i) why should the presence of an **A**, regardless of its role as head or operator, influence the role of an element in a preceding phonological expression? (ii) how can the **A**s in the expression (**A**.**I**) be prevented from being promoted as well? Or, in less theoretical words, why is it only *o* that is lowered, but not *e*? (iii) the lowering rule excludes the coronals *l* and *n* from triggering lowering, although they, too, contain an **A** element.

It should be clear now that the simple presence of an **A** element in the context is not possibly the trigger for the lowering as described by Kiparsky. There is no trigger that would satisfy the Non-Arbitrariness Principle.

5.2 The Minimality Hypothesis

The Minimality Hypothesis states that "[p]rocesses apply whenever the conditions that trigger them are satisfied" (Kaye 1992, 141). This means that there are no different levels or strata of phonology in which only a certain subgroup of processes applies, with other processes applying at other levels or strata. In fact, any kind of rule ordering is excluded: whether a process applies or not depends solely on the context. Whenever the trigger of

[7] Postulating a floating **I** element leads to circularity in this case: we would need two similar suffixes, one with a floating **I** element that triggers umlaut, and one without a floating element for the cases without umlaut. However, we can only conclude which roots take the suffix with a floating **I** from the observation of umlaut and vice versa. There is no external evidence for such a floating element. This analysis has therefore to be rejected.

[8] I refer the reader to the literature mentioned at the beginning of the section, especially Harris (1994) and Kaye (2000) for an introduction to element theory.

the process is present, that process will automatically apply. This has the simple but far-reaching consequence that any phonological process is exceptionless. The data in section 3 has already provided examples for exceptions, let me summarise them again below.

5.2.1 Minimality tested: Umlaut

For umlaut, we have seen exceptions in all four environments I have introduced. Some of the data is repeated below for ease of reference.

(14)	*xuə ~ xüəli*	'cow ~ id.-DIM.'	*pupi ~ pupəli*	'infantile ~ id.DIM.'
	patə ~ pɛtələ	'to bathe ~ id.-DIM.'	*štaːkːə ~ štaːkːələ*	'to stutter ~ id.'
	fatːɐ ~ fɛtːɐlə	'father ~ play father[9]'	*matːɐ ~ matːɐlə*	'surname ~ do sth like a Matter'
	hunt ~ hünt-Ø	'dog-SG. ~ PL.'	*štunt ~ štunt-Ø*	'hour-SG. ~ PL.'

We would expect to find **püpəli*, **štɛkːələ*, **mɛtːɐlə*, **štünt* if umlaut were excetionless.

But the Minimality Hypothesis makes an even stronger prediction: GP does not recognise different cycles of phonological derivation with processes applying in some cycles, but not in others. Therefore, all processes are predicted to apply to lexical forms as well as derived forms. If the nominal diminutive ending *-li* triggers umlaut, we expect all words ending in *-li* to be umlauted, regardless of the meaning of that *-li*. This can easily be tested. There are at least three reasons for a word to end in *-li*: (i) in a nominal diminutive, as discussed, (ii) in shortened forms that have an *i* added to a truncated stem that ends in *l*, (iii) if the stem ends in *-li*. Examples of (i) were given in section 3.1. Examples for (ii) and (iii) are given in (15)a) and (b) respectively. We find umlaut in none of of these forms.

(15)	a.	*muli*	'mule'	from *muːltːiɐ*	b. *prokːəli*	'broccoli'
		xuli	'biro'	from *xukəlšriːpɐ*	*prunsli*	'kind of cookie'
		pːuli	'pullover'	from *pːuloːvɐ*	*juli*	'July'
		xnopli	'garlic'	from *xnoplaux*	*alkxaːli*	'alcali'

The same case can be made for other suffixes of the umlaut-inducing kind: All words that end in *-(ə)lə* (as in the verbal diminutive and the verbaliser) and *-ə*, *-ɐ* and *-Ø* (as in the plural) are predicted to be umlauted, regardless of the morphological or semantic content (if any) of these final segments. It is more than obvious that this is not the case, especially in the case of *-Ø* – it would mean that umlaut has to apply to all the words in the language.

Umlaut obviously does not satisfy the Minimality Hypothesis. In the next section we will apply the same kind of reasoning to lowering.

5.2.2 Minimality tested: Lowering

The killer case for lowering would be to find o before coronal obstruents or r, because they should, according to the lowering rule, all be lowered to *ɔ*. The data from (7) is repeated here as (16) for convenience. In the best case, the rule grossly overgenerates. As it stands, it is empirically wrong, regardless of the theoretical framework.

[9] As in *müətːɐlə unt fɛtːɐlə* 'to play house'.

(16)	before r	*ɔrtə*	'order'	*oranʃš*	'orange (adj)'
	before s	*hɔsə*	'trousers'	*plos*	'only, just'
	before š	*p:ɔštə*	'to shop'	*oštə*	'east'
	before t:[10]	*kɔt:ə*	'godmother'	*ot:ɐ*	'otter'
	before t[11]	*jɔtlə*	'to yodel'	*otɐ*	'or'

It is obvious that not all *o*s are lowered in the relevant context. There is nothing to add to this.

5.3 Expressibility

The two conditions mentioned above – the Non-Arbitrariness Principle and the Minimality Hypothesis, provide us with easily testable predictions: If there is a local trigger that can be causally related to the phenomenon, and if that phenomenon is exceptionless, we are dealing with phonological processes. Let me repeat here that there are more conditions like that (Kaye 1995, Kaye and Pöchtrager 2011), and that all of them are necessary properties of phonological processes, but none of them is sufficient by itself. This allows for triangulation to make sure that it is not a single overly restrictive or ill-designed criterion that excludes a phenomenon from being phonological. If a phenomenon satisfies all but one criterion, this is an indicator that the theory is wrong or incomplete and it will have to be changed (cf. Pöchtrager 2006 for such a radical redesign).

There is one more point to keep in mind. A theory of phonology is well-designed if it can express exactly the set of phenomena it independently defines as phonological. Again, if a phenomenon satisfies all criteria, but is not expressible, the theory is too restrictive or the criteria are too lose. On the other hand, if a phenomenon is expressible by the theory but it does not satisfy one or more of the criteria, the theory is not restrictive enough. The same is true if the theory is able to express phenomena that are not attested in any human lnaguage. In all of these cases some part of the theory will have to be changed.

5.3.1 Expressibility: Umlaut

Umlaut seems easily expressible at first sight: There is an **I** element that spreads leftwards from somewhere near the right edge of the word. But there are problems as soon as we try to be more formal: (i) the source of **I**, (ii) the target of **I**, (iii) deriving *ɔi* from *au*, (iv) the formalisation of the environment.

I will shortly turn to each of these problems now. (i) In most cases it is not clear where **I** comes from. I have dealt with this in section 5.1.1., no more needs to be said. (ii) It is just as unclear, where this **I** spreads to. In most cases it spreads just one nuclear position to the left, as we expect it to (cf. (17)a) and most of the other examples in this paper). In other cases, however, it skips one position (cf. (17)b)).

[10] This is spelled as *t* in most sources.

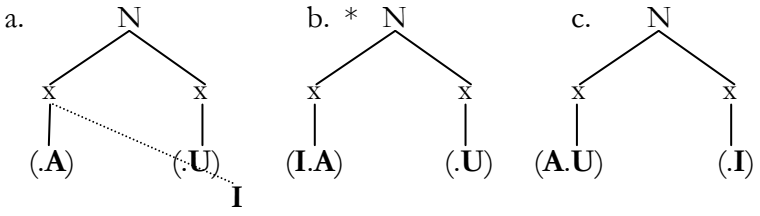
[11] This is spelled as *d* in most sources.

(17)	a.	*plat:* ~ *plɛt:-ɐ*	'leaf-SG. ~ PL.'
		xɔx:ə ~ *xɔ̈x:ələ*	'to cook ~ id.-DIM.'
		tsmɔrkə ~ *tsmɔ̈rkələ*	'breakfast ~ have breakfast'
		sunə ~ *sünələ*	'sun ~ sunbathe'
		paum ~ *pɔimli*	'tree ~ id.-DIM.'
	b.	*fokəl* ~ *fökəli*	'bird ~ id.-DIM.'
		kxompju:t:ɐ ~ *kxompjü:t:ɐli*	'computer ~ id.-DIM.'
		kxompju:t:ɐ ~ *kxompjü:t:ɐlə*	'computer ~play/ work on acomputer'
		fat:ɐ ~ *fɛt:ɐr-ə*	'father-SG. ~ PL.'
		t:ɔxtɐ ~ *t:ɔ̈xtɐr-ə*	'daughter-SG. ~ PL.'
		muət:ɐ ~ *müət:ɐr-ə*	'mother-SG. ~ PL.'
	c.	*aut:o* ~ *aut:ö:li* ~ *ɔit:əli*	'car ~ id.-DIM. ~ id.'

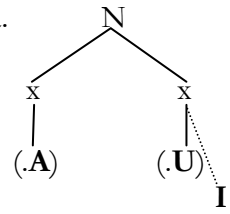
The rule seems to be to spread to the stressed nucleus (the head of the domain). There are two problems with this: (a) the example of (17)c shows that this does not always hold: both forms, *'aut:ö:li* and *'ɔit:əli* 'car-DIM.' are possible and used interchangeably, and in both cases it is the first nucleus that bears stress. (b) For the **I** element from near the right edge of the domain to spread to the stressed nucleus, the two positions are required to be adjacent on some level of representation. However, there is no external evidence to justify a level that contains just the domain head and the nucleus that is the source of the **I** element. Proposing such a level would be pure stipulation. Because the stipulated level is solely needed for the treatment of umlaut, and umlaut is the only phenomenon that relies on such a level, any argumentation would be circular and has therefore to be rejected.

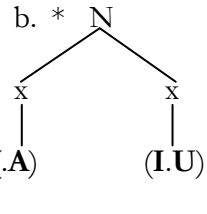
(iii) It is impossible to derive *ɔi* from *au* by way of adding an **I** element. The diphthong we start out with consists of an **A** element as the head of the diphthong and an **U** element. We expect the spreading **I** to target the head of the diphthong, indicated by the dashed line in (18)a). The resulting diphthong is shown in (18)b), its realisation would be *ɛu*. But what we observe is *ɔi* instead, represented in (18)c). Going from (18)b) to (18)c) is not expressible in GP. One reason for that is that linking and de-linking of elements can never be contingent on any other operation, therefore two elements can not swap place.

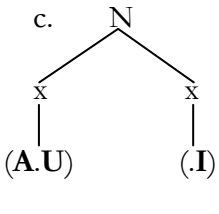
(18)



If the **I** element (unexpectedly) was to target the right member of the diphthong, the problems are similar (cf. (19)a–c) below): Again, it is impossible to reach the representation of the actual outcome in (19)c).

(19) a. 

b. * 

c. 

Generally, this kind of "cocktail-approach" to elements (add all ingredients, shake well, distribute across available positions ad libitum) is not part of GP's inventory of possible operations. It is therefore not possible to derive *ɔi* from *au* by means of adding an **I** element.

(iv) The problem of the environment has been lurking in every corner. Kiparsky did not specify an environment claiming that it is "irrelevant for present purposes" (Kiparsky 1968, 175). It has become clear from the data I have provided in section 3 that the relevant environments are morphologically defined, not phonologically. This is by no means a new discovery: umlaut in German(ic) has been described as morphological often (e.g. Rieder 2000, references in Wiese 1996), and there is no reason to believe Swiss German should be any different. However, according to the phonology-morphology interface proposed in Kaye (1995), phonology is blind to morphology: The meaning of a suffix cannot have a bearing on how that suffix is treated by phonology.

It has become clear that umlaut is not as straightforward as it seems at first sight: it is impossible to formalise in a restricted theory of phonology.

5.3.2 Expressibility: Lowering

As with umlaut, there are difficulties in formalising lowering. These problems are strongly connected to the ones discussed in the section on arbitrariness. Let me just repeat the main points: (i) it is only *o* (**A**.**U**) that is lowered, but not *e* (**A**.**I**). (ii) here there is no identifiable trigger, there is no reason for the process to take place.

5.4 Conclusion

In this section I have presented a list of reasons (by no means exhaustive) that lead GP to the prediction that processes like the ones proposed by Kiparsky (1968) for Swiss German cannot possibly exist. As I have shown in section 4, this is in perfect accordance with the result of a closer inspection of the rules and the data they are based on: The rules were shown to be facually wrong, just as GP predicted. The question therefore remains: what are umlaut and lowering, if not phonological processes? I will sketch out an answer to this question in the next section.

6 Alternatives

Native speakers apply umlaut to words that have entered the language only recently, so it must be something that is alive in the language today. But what is it, if not phonological? To answer this question, let me take a de-tour to English:

In English there is a suffix *-en* to form verbs from adjectives ((20)a) below). But, as the examples in (20)b) show, it cannot be applied to any adjective.

(20) a. *red* *redden* b. *blue* **bluen*
white *whiten* *green* **greenen*
quick *quicken* *cold* **colden*

How does a speaker of English know whether this suffix can be used with a certain adjective or not? Although the suffix can only be attached to words that end in an obstruent, it is surely not a question of phonology. This, along with many other, similar cases provides evidence for a word-building module in language – a module that joins roots and suffixes together to form new words. A module that permits the suffix *-en* to be attached to *red*, *white* and *quick*, but never to *blue*, *green* or *cold*. It is that same module that makes sure that *keep* + PAST is realised as *kept*, and that *mouse* + PL. is *mice*. And obviously it is also the same module that is responsible that *pfau* + PL. is *pfauə*, but *pfau* + DIM. is realised as *pfɔili*. The two stems *pfau-* and *pfɔi-* are not derived from one another, or from a common source. They are both entries in the psychological lexicon, just as *mouse* and *mice* are both separate entries. The similarity between the two stems simply helps retrieving them (for reasoning for phonology as an addressing system to the psychological lexicon cf. Kaye 1995)

The case for lowering is much easier: It is no more than an illusion. Both *o* and *ɔ* are present in the vowel inventory of Swiss German, and in most cases neither is derived from anything, let alone from each other. Instead, words lexically contain either open *ɔ* or closed *o*.

7 Summary

In the face of a purported case of rule ordering, this paper set out to prove that this is not a counterargument to GP's stance that rule ordering does not exist in phonology. This provides an important argument against Bromberger and Halle's (1989) claim that phonology is different from other linguistic modules, and supports thus the view that phonology and syntax are indeed similar. The evidence at hand, namely Kiparsky's example of microvariation in two dialects of Swiss German, was shown to be irrelevant, because both rules it relies on are factually wrong. It was also shown how a restrictive theory will predict such mismatches. Any theory needs to define what belongs to the domain of phenomena it can explain. In the best case, a triangulation of several arguments excludes circularity. Two conditions on phonological processes and an independent clue – expressibility – showed that neither umlaut nor lowering as proposed by Kiparsky could be possible processes. An alternative treatment of the two phenomena was sketched out: words lexically contain either an open *ɔ* or a closed *o*, there is no process of lowering before coronal obstruents. Umlaut is not a phonological process either. It is an illusion that arises from an independently motivated word building module that joins roots and suffixes to form new words. The different roots have separate entries in the psychological lexicon, and are not derived from a common source.

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On the configurationality of Hungarian Dative constructions: An experimental study*

Ádám Szalontai

The present paper reports on the findings of two experiments designed to establish the (non-)configurational nature of Hungarian dative constructions. Phenomena from the realm of Conditions A and C of Binding Theory and the scope taking properties of non-increasing quantifiers were used to create stimuli which were tested in native speaker acceptability judgment experiments. The test based on Condition A showed a clear hierarchical asymmetry between the two internal arguments, while those based on quantifier scope and Condition C did not provide evidence either for a hierarchical or non-hierarchical approach to internal constituent structure. It is argued that these tests failed because of reasons independent of structural relations between constituents.

Keywords: *configurationality, Hungarian, dative structures, binding, quantifier scope*

1 Introduction

The present paper aims to follow up on the configurationality debate regarding the Hungarian Verb Phrase. More specifically it will report on two experiments aimed at establishing the (non-)configurational nature of the internal arguments in dative constructions, thereby extending the debate which has previously been limited to the more general Subject-Object relation. The results of the experiments will show that there is some, but yet still inconclusive evidence in favor of a configurational approach to the syntax of the internal arguments.

In section 2 I will introduce the key phenomena which have been used in the debate as well as distinguishing those that can serve as adequate tests for establishing internal argument relations. In section 3 I will present the design and results of the two experiments which used these phenomena as testing tools. In section 4 I will discuss why some of the tests failed to produce conclusive evidence in favor of either approach and why, even so, the results of the two experiments still show that a configurational approach is preferable. Section 5 will conclude the paper.

2 State of the debate

The most thoroughly worked out theory of the Hungarian VP is that by É. Kiss (1987a, 1987b, 1991, 2002 and 2003), which relies on a number of phenomena to argue that the constituents of the VP are base generated in a non-configurational manner. The main merit of the approach developed by É. Kiss can be viewed as its ability to provide an explanation for a wide range of data in an intuitive and simple way. However, this theory

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is hybrid in nature, involving (mutual) c-command, linear ordering and the thematic hierarchy in a direct manner to account for the observable (a)symmetries in the post-verbal region. There have been configurational analyses developed, such as Horváth (1986), Marácz (1989) and Speas (1990), however these rely on auxiliary hypotheses and theory internal assumptions which are more difficult to maintain in more recent versions of transformational theory.

Surányi (2006a) reviewed the phenomena, which have been used to support the non-configurational approach, and argued that in fact some of the data provide inconclusive evidence for the flat structure hypothesis, while there is further data that favor a configurational analysis coupled with scrambling movement.

There is also a more recent theory developed by É. Kiss (2008). In this version of the theory the base structure of the constituents is initially hierarchical, but during the derivation this structure flattens out, thereby both symmetries and asymmetries can be accounted for. The flattening out is made possible by an appeal to Phase Theory, in such a way that when a phasal boundary (which in Hungarian is restricted to the *v*P) is reached in the derivation, the elements left within that phase are free to linearize in any order. At present I will not differentiate between these two approaches as both are hierarchical at the point of the merger of the constituents.

As noted above, most of the data which has been analyzed by the cited works concerns subject-object (a)symmetries. While data of this type is the natural starting point in the research for structural relations between arguments, the full picture of constituent configurationality can only be gained if this inquiry is made more complete by a systematic survey of the relevant phenomena pertaining to the relation between the internal arguments. Albeit this relation might be more elusive to capture than in the case of the subject-object hierarchy, due to factors such as the potential base structure variation of accusative-dative hierarchies, and the uncertainty of the argumenthood of the dative constituent in the case of certain verbs.

In what follows I will give a brief overview of the main phenomena which have been appealed to in the debate thus far (section 2.1). I will then provide a more detailed discussion of the data that are relevant to establishing the (non)-configurational nature of internal argument relations (section 2.2). For ease of comparability, in this review I will follow the presentation of Surányi (2006a).

2.1 Phenomena relevant for the Subject-Object relations

There are a number of phenomena, which have been implicated in the debate on the configurationality of the Hungarian VP. Most of these I will not devote a lot of space to, as they are either well explained by both the flat VP approach and the scrambling approach, and thus are not good tools for the purpose of this paper; or they are not well adaptable to experimental testing of the two internal arguments. Therefore I will only briefly review the most important of them here.

The most apparent indication that constituents within the VP may conform to different ordering principles is the fact that they exhibit free surface word order, contrary to elements higher up in the clausal structure. While this observation may be taken to support an analysis which claims that constituents are freely merged in any order in a flat structure, the same result can be reached by assuming a scrambling operation which has been argued for in partially free word order languages such as German and Japanese.

The lack of Weak Crossover effects (WCO)[1], and Superiority phenomena were taken as further indicators that the Hungarian VP lacks a hierarchical constituent structure. However, these properties of Hungarian can be explained via scrambling as well. In the case of WCO, scrambling can occur prior to the A-bar movement of the phrase containing the bound element, resulting in a derivation in which crossover, and thus deterioration of grammaticality, does not arise. Likewise, scrambling of the base structure can be used to explain why superiority phenomena, which require the relative base order of *wh*-elements to be kept when fronted, are not present in Hungarian. If it is assumed that *wh*-movement is possible either from the base order or the scrambled order, then all possible word orders are accounted for. Since both the scrambling and the flat structure approach explain the lack of these phenomena in Hungarian, no test based on them would be able to make a distinction between the two competing theories.

Another group of phenomena concerns *that*-trace effects and movement of a *wh*-element across a [SpecCP], which is filled by another *wh*-element (as observed by É Kiss 1987). It has been noted that in configurational languages like English, the complementizer blocks the extraction of a subject (but not the object) from a local clause, this phenomena is known as the *that*-trace effect. In Hungarian the *that*-trace effect is not observable, subjects and objects are extractable according to the same conditions, thus it can be argued that there is no hierarchical distinction between them. Similarly, the movement of a subject *wh*-phrase across a *wh*-filled [SpecCP] yields ungrammaticality in English, but a similar movement with an object *wh*-phrase results merely in degradation of acceptability. In Hungarian no such differences can be observed.

Surányi (2006a,b) argues, that these observations can be explained independently of the hierarchical differences between the constituents at base structure. The lack of *that*-trace effects has been correlated with *pro*-drop (Perlmutter 1971), as well as with the availability of *v*P-internal subjects (Bennis 1986; Szczegielniak 1999). Concerning *wh*-extraction, there are also possible explanations, which do not rely on the configurationality of constituents, such as the possibility of multiple specifier configurations (Rudin 1988) or the potential availability of a *v*P-internal surface subject position (Sabel 2002). These theories have been developed on the basis of configurational languages, thus the potential non-configurationality of Hungarian is not at issue.

Since tests based on *that*-trace effects would be expected to distinguish between subjects and objects and not between two internal arguments, these tests were not included in the present study.

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[1] WCO effects obtain when there are two constituents in an asymmetrical hierarchical relation, where the higher constituent contains a variable β that is bound by an element α within the lower constituent. If α is A-bar moved to a position higher than β, there is a deterioration in acceptability (the "effect") (Postal, 1971; Wasow, 1972). This is illustrated by the following English example:

(i) *? Who$_i$ does his$_i$ mother love t$_i$?*

If α is the object and β beta is the subject, then in languages like English, where the subject asymmetrically c-commands the object, α is assumed to be lower than β. This does not seem to be the case in Hungarian, where an object-subject WCO effect does not obtain.

2.2 Phenomena related to the present experiments

In what follows I will expand on three phenomena, two from the realm of binding and one from that of quantifier scope taking that will form part of the perception experiments reported in this paper. These observations were also made before, but have not been adapted specifically for the testing of internal argument relations. This will be expanded on in section 3. Here I will examine how they have been used in the debate thus far.

2.2.1. Condition C

The formulation of Condition C of Binding Theory makes it a candidate to be used to pinpoint hierarchical differences between two constituents. If the two c-command each other, then if a referential expression in one is bound by a co-referential element in the other, ungrammaticality should arise, regardless of surface word order. This is so, because Condition C calls for there to be no such point in the derivation where an r-expression is c-commanded by a co-referential element. É. Kiss claims that this is exactly the case, as sentences with a post-verbal phrase containing an r-expressions and another phrase realized by a coreferential pronouns (as arguments) are deemed to be ungrammatical, such as the following example taken from É. Kiss (2002):

(1) **Tegnap felhívta [a fiúk$_i$ anyja] [őket$_i$].*
yesterday up.called the boys mother.POSS them
'Yesterday the boy's mother called them.'

Surányi (2006a) reports on data that suggest that native speaker judgments are much more varied than what would be expected based on a flat VP account. 10 out of 25 informants found the sentences of the type illustrated by (1) to be degraded, but not wholly ungrammatical, while 7 found them to be acceptable, and 8 rejected them as ungrammatical. Surányi goes on to suggest that the degradation of these sentences might be due to factors independent of hierarchical conditions on binding. Citing Varga (1981) he observes that there is a preference for pronouns to occur close to the verb post-verbally, and not to be separated from it by a stress bearing element. Thus if the subject is fronted to a topic position and the accusative pronoun is left in an immediate post-verbal position there is a significant improvement in grammaticality judgments, whereas similar improvement is not attested if the pronoun is in the subject constituent.

Thus data from the realm of Condition C do not give as clear an indication of structural hierarchies as its formulation would theoretically make possible. There are possibilities to get a more detailed picture of this set of data by including structures that involve a silent *pro* instead of an overt pronoun, such as the following.

(2) *Mi van Péterrel?*
'What have you heard of Peter?'
a. *?Végül Péter$_i$ főnöke fel hívta pro$_i$.*
eventually Peter.NOM boss.POSS.NOM up called
'Eventually Peter was called by his boss.'
b. **Végül Péter$_i$ főnökét fel hívta pro$_i$*
eventually Peter.nom boss.poss.acc up called
'Eventually Peter called his boss.'

Surányi notes that although judgments with these types of sentences also do not yield strong evidence, they showed a tendency to support the assumption that the subject is structurally higher than the object, as subject pronouns co-referring with object possessors are perceived to be much worse than their opposite counterparts.

2.2.2 Condition A

While it is not straightforward as to what Condition C indicates as far as subject-object hierarchies are concerned, structures that exhibit violations of Condition A provide some more direct evidence in favor of a configurational approach, as can be seen in the following example, taken from É. Kiss (2008):

(3) a. *A kurzuson tanultak egymástól$_i$ a diákok$_i$.*
the course learned eachother.from the students
'It was at the course where the students learned from each other.'

b. **A kurzuson tanult egymás$_i$ a diákoktól$_i$.*
the course learned eachother the students.from
'It was at the course where the students learned from each other.'

While this data can be taken to serve in favor of a hierarchical approach, it has also been claimed that the asymmetry between the elements in this case is not in terms of their syntactic positions but rather the positions that they occupy on the Thematic Hierarchy (É. Kiss, 1991, 1994b). A configurational approach would explain this observation in a straightforward way, relying on the structural relation between the two constituents: subject anaphoras are ungrammatical since they cannot be bound in their base position by the object antecedent.

2.2.3 Quantifier Scope

Surányi (2006a,b) claims that besides explaining the observations that have traditionally been called upon to support the flat VP approach, the configurational/scrambling approach can explain additional phenomena that fall out of the range of the competing theory. One such phenomenon is the observation (Szabolcsi 1997, Surányi 2002) related to the scope taking properties of post-verbal non-increasing Quantifier Phrases (QP). As discussed in Surányi (2004), there is an asymmetry in terms of scope possibilities for *few*-QPs depending on which constituent they occur in, as exemplified by the following sentences (taken from Surányi (2004)).[2]

(4) *Tavaly végzett el…*
last year completed….

a. *minden diák kevés kurzust.* (S>O, *O>S)
every student.NOM few courses.ACC

b. *kevés kurzust minden diák.* (S>O, O>S)
few courses.ACC every student.NOM

O>S:
'It was last year that all of the courses were such that few students completed them.'

[2] The postverbal arguments are not meant to have a focused discourse-structural status.

S>O:
'It was last year that few of the students completed every course.'

c. *minden* *kurzust* *kevés* *diák.*
every course.ACC few students.NOM

d. *kevés* *diák* *minden* *kurzust.*
few students.NOM every course.ACC

The contrast can be explained by assuming that non-increasing QPs like *few*-QPs cannot take inverse scope higher than their A-position (see Szabolcsi 1997, and references therein). Thus while *minden* 'every' is free to scope over *kevés* 'few' regardless of which constituent it occurs in, *kevés* can only take scope over *minden* if it is hierarchically higher at its base structure A-position, or at its scrambled A-position (Surányi 2006a). In the case of (4b), the object *few*-QP is in its scrambled A-position, taking scope over the subject. In the case of (4c): the subject *few*-QP takes scope over the object from the subject base position. This observation can be exploited to detect hierarchical asymmetries between constituents. Furthermore, while the explanation for such phenomena is available in the case of the hierarchical approach, it requires a direct reliance on linear order on a flat-VP approach.

3 The Experiments

The experiments were conducted in two sets. Tests were based on observations regarding Conditions A and C of Binding Theory, and the scope of non-increasing QPs as presented in section 2.2.

When the verbs for the target sentences were chosen, a number of factors were considered in order to maintain control over the variables involved. High frequency ditransitive verbs were preferred in order to facilitate informants in imagining the contexts where the target sentences could have been uttered. It was anticipated, based on Haider and Rosengren (2003), that there might be verbal classes with a different base order of constituents. The observations made there were that the thematic roles given by the verb can have an influence on the base order of the internal arguments; this possible factor was also taken into consideration when the verbs for the study were selected.

The results of the first experiment showed that in order to achieve more conclusive evidence, data needed to be collected in administered sessions, in order to achieve a common ground of understanding with informants as to what their judgments should be based on, and to immediately answer potentially arising questions.

3.1 Experiment 1

Experiment 1 was conducted with 8 informants via an online questionnaire. For this experiment 4 verbs were chosen, *alárendel* 'to subordinate', *átad* 'to give over', *bemutat* 'to introduce' and *elárul* 'to betray'. In the case of the Condition A and C based tests the informants had to give acceptability judgments on a 7 point scale, while they had to choose between possible scope readings in a multiple-choice format.

3.1.1 Conditon A

For the Condition A test, sentences were constructed using the above verbs in sets of 4. Each set contained a verb in first person singular, followed by a pronoun and a reflexive pronoun alternating between different cases and word orders to produce the 4 possible variations, as shown below.

(5) a. *Elárultam* *egymást*$_i$ *nekik*$_i$.
betrayed.1sg eachother.acc them.dat
b. *Elárultam* *nekik*$_i$ *egymást*$_i$.
betrayed.1sg them.dat eachother.acc
c. *Elárultam* *egymásnak*$_i$ *őket*$_i$.
betrayed.1sg eachother.dat them.acc
d. *Elárultam* *őket*$_i$ *egymásnak*$_i$.
betrayed.1sg them.acc eachother.dat
'I betrayed them to each other.'

These target sentences were embedded in contexts such that they were always the initial sentence of the condition, and the following context made it clear that the pronoun and the reflexive were co-referential.

If a configurational base structure is assumed than the surface word orders represented in (5) can each be possibly assigned one of the structures in (6).

(6) a. [ACC [DAT]] accusative > dative base hierarchy
b. [DAT [ACC]] dative > accusative base hierarchy
c. [ACC [DAT [t_{ACC}]]] dative > accusative base hierarchy with scrambling
d. [DAT [ACC [t_{DAT}]]] accusative > dative base hierarchy with scrambling

Owing to the formulation of Condition A, it was expected that if the internal arguments are configurational, then there would be a discernable pattern in the acceptability judgments in such a way that there would be either a 1-2-1 pattern or a 3-1 pattern in received acceptability scores. A 1-2-1 pattern would be made up of one variant which received clearly higher scores than the other three, one which received clearly lower scores than the others, and two whose scores place them between the highest and lowest ranked variants. A 3-1 pattern would arise if one variant was clearly better than the rest, which did not show significant difference relative to each other. Let us see why the options in (6) give rise to these expectations.

It was anticipated that one of the four possibilities, either (6a) or (6b), the variants that did not involve scrambling, would represent the base order of the constituents in such a way that Condition A would be violated, and would thus be marked down significantly. Another one of the two non-scrambled variants, would turn out to be grammatical, this would be the one representing the base structure of constituents in such a way that that Condition A is adhered to. The remaining two possibilities, (6c) and (6d) represent surface word orders that result from the scrambling of the constituents in such a way that a trace is left in their base positions. It was anticipated that these structures would exhibit scores between the grammatical and ungrammatical variants, since the surface word order would affect the binding relations between antecedent and anaphor. This could happen in two possible ways: (i) in the base order the antecedent

precedes and binds the anaphor, then as a result of scrambling, the anaphor is moved to precede the antecedent in the surface word order leaving behind a trace in a bound position, it is possible that this surface word order will result in a *deterioration* of grammaticality due to the interference the pre-posed anaphor causes to the processing of the binding relation between the antecedent and the trace; (ii) in the base order the antecedent does not bind the anaphor, thus violating Condition A, however then as a result of scrambling the antecedent precedes the anaphor in the surface word order, it is then possible that the surface word order allows for an *amelioration* of the Condition A violation through the linear precedence of the antecedent. It was hypothesized that informants would either show both (i) and (ii), resulting in a 1-2-1 patterning of the acceptability scores. Or, they would show neither (i) nor (ii), in which case a 3-1 pattern would emerge. This pattern would be made up of 3 structures deemed to be grammatical and 1 deemed to be ungrammatical, as the constraint of Condition A calling for there to be a point in the derivation such that the anaphor is bound by the antecedent would be satisfied in the base order (either (6a) or (6b)) as well as the two scrambled word orders, in essence singling out the incorrect base order. It was also thought possible that a 2-2 pattern would arise, which would indicate that the surface word order did not effect the binding relations.

3.1.2 Condition C

Tests based on Condition C were similarly constructed. In this case one of the constituents consisted of an r-expression embedded in a possessed noun phrase, and a pronoun. As with in the case of the Condition A test, all 4 possibilities, exemplified below, were presented to the informants, who were asked to rate them on a 7 point scale.

(7) *Elárultam…*
betrayed.1sg…

a.	*János$_i$*	*apósát*	*neki$_i$.*	c.	*János$_i$*	*apósának.*	*őt$_i$.*
	John's	father-in-law.ACC	he.DAT		John's	father-in-law.DAT	he.ACC
b.	*neki$_i$*	*János$_i$*	*apósát.*	d.	*őt$_i$*	*János$_i$*	*apósának.*
	he.dat	John's	father-in-law.ACC		he.acc	John's	father-in-law.DAT

'I betrayed John's father-in-law to him.'
'I betrayed him$_i$ to John$_i$'s father-in-law.'

Since Condition C of Binding Theory is formulated within the field of the same theoretical assumptions, but with conditions mirroring those of Condition A, the results were expected to be also mirroring those of the Condition A based test. Notably the same two types (1-2-1, 3-1) of patterning of grammaticality judgments were expected. Here again it was hypothesized that deterioration and amelioration as described in (i) and (ii) above would either determine the judgments of the scrambled structures and thus result in a 1-2-1 pattern, or a 3-1 pattern would emerge. In this case however the one singled out would not be the incorrect base order, but the correct one, as Condition C calls for there not to be a point in the derivation where an r-expression would be c-commanded by an antecedent. This condition would be violated in the incorrect base order as well as both of the structures resulting from scrambling.

To give an illustration, let us assume an accusative > dative base order. If this is so, then of the examples given above if a 3-1 pattern emerges then (7a) would be singled out as the correct variant while (7b-d) would receive lower scores, but these would be clustered together. In case of 1-2-1 pattern, again (7a) would be singled out with the

highest score, and the variant representing alternate base order (7c) would receive the lowest score of the four. The two remaining variants, representing scrambled orders (7b) and (7d) would receive scores between the two extremes.

3.1.3 Scope of QPs

Target sentences of the QP scope based test were also designed with the same four verbs as for the Condition A and C test. For each verb there were again four target sentences to be judged. The variation in the target sentence sets arose from the combination of different word orders and case of the constituents, as exemplified below.

(8) *A megszállás alatt árultak el…* (m.r.= member of the resistance)
the occupation under betrayed PRT…
a. *kevés kémnek minden ellenállót.* c. *kevés ellenállót minden kémnek.*
few spy.dat every m.r.acc few m.r.acc every spy.dat
b. *minden ellenállót kevés kémnek.* d. *minen kémnek kevés ellenállót.*
every m.r.acc few spy.dat every spy.dat few m.r.acc
'It was under the occupation that few members of the resistance were betrayed to each and every spy.'
'It was under the occupation that to few spies were betrayed all members of the resistance.'

The target sentences were presented to the informants without a context. Then the two possible scope readings were paraphrased and presented in a multiple-choice format. The informants were asked to identify the reading that they could associate with the target sentence, there were also options identifying both readings as possible as well as identifying that neither of the readings is possible for the informant.

The results were expected to pattern in a way as to mark one of the four stimuli as not ambiguous while both possible scope readings were available in the other three. This was expected because there would be only one variant where the *few* quantifier would be hierarchically lower than the universal quantifier throughout the derivation: in the base hierarchy without scrambling movement. Since this would be the only variant in which *kevés* could not take scope over *minden,* ambiguity would not arise. If the *few*-QP in this one variant had dative case marking, then the base hierarchy of the constituents would be identified as accusative > dative, if it was marked for accusative case, the base hierarchy would be dative > accusative. It was expected that ambiguity would be observed if the informants marked both scope readings as possible.

3.1.4 Results and Discussion

The results for the Condition A based test are given in the table below. The four columns present the mean acceptability judgment scores of the four variants associated with each verb. The grammatical case of the antecedent and the anaphor are given in the top row, the constituent which is higher linearly precedes the lower one.

	Anaphor.ACC Antecedent.DAT	Antecedent.DAT Anaphor.ACC	Anaphor.DAT Antecedent.ACC	Antecedent.ACC Anaphor.DAT
bemutat 'introduce'	1,71	2,85	**6,00**	**7,00**
alárendel 'subordinate'	1,42	2,71	**3,85**	**5,85**
elárul 'betray'	2,00	2,89	**4,86**	**6,85**
átad 'hand over'	1,57	2,42	**4,57**	**4,00**
average	1,67	2,71	**4,82**	**5,85**

Table 1. Acceptability scores for the Condition A based test

If we observe which variants received the highest scores it is apparent that the difference in acceptability judgments is much bigger in terms of the variation in the case of the anaphora, than within the possible word orders associated with a case variant. This result provides strong evidence in support of a hierarchical approach, assuming a structural account of anaphor binding. The patterns for the individual verbs seem to indicate a 1-2-1 pattern as described in section 3.1.1 above, although not in a clear-cut way in all cases. This would indicate that scrambling results in amelioration and deterioration in the case of anaphora binding. The order which received the highest over all scores was the order in which an accusative antecedent preceded a dative anaphor (the rightmost column), indicating that the base hierarchy of the two internal arguments is accusative > dative. The order that received the lowest score was the one in which the dative antecedent followed the accusative anaphor (the leftmost column), pointing to the same conclusion.

The results of the Condition C based tests are presented in the table below, the information relating the linear order and case of the r-expressions/pronouns is structured in the same way as in Table 1. The scores indicate the extent to which the subjects found the binding relation between the possessor r-expression and the pronoun in its co-argument acceptable.

	Pronoun.ACC R-exp.DAT	R-exp.DAT Pronoun.ACC	Pronoun.DAT R-exp.ACC	R-exp.ACC Pronoun.DAT
bemutat 'introduce'	3,14	2,28	2,57	3,00
alárendel 'subordinate'	2,42	2,42	2.57	3,00
elárul 'betray'	3,42	2,42	3.00	3,00
átad 'hand over'	2,28	2,83	3.00	2,71
average	**2,82**	**2,48**	**2.78**	**2,92**

Table 2. Acceptability scores of the Condition C based test.

What is apparent from these results is that the neither of the expected patterns surfaced, in fact each mean figure falls within the 2,28–3.00 range. In other words, all possible variants exhibit rather low scores. This seems to indicate that the two constituents c-command each other in any given variation, therefore there is no apparent hierarchical asymmetry between them (Katalin É. Kiss p.c.). Therefore these results as they stand are not adequate to determine the base hierarchy of the constituents, since in fact they apparently serve as an argument against the configurational approach to internal argument structure. However, if this were the case, then lower scores would be expected for all variants, as they are all supposed to violate Condition C, and thus induce ungrammaticality. This is evident if we consider the Condition A violating variants in the previous test (the leftmost column in Table 1), which received lower scores relative to all of those in Table 2. In fact, while at least one configuration for each verb has received a mean value of 3,00 in the Condition C test, the mean value of the 'unacceptable' configuration in the Condition A test is 1,67. If each configuration in Table 2 violates Condition C of Binding Theory, we would expect mean values in the proximity of this latter figure. Thus in fact this test serves as argument in favor of neither of the two approaches.

The results for the QP scope based tests are given in the following table.

	every.ACC few.DAT	few.DAT every.ACC	few.ACC every.DAT	every.DAT few.ACC
ad 'give'	ambiguity	ambiguity	no ambiguity	no ambiguity
alárendel 'subordinate'	no ambiguity	ambiguity	ambiguity	ambiguity
elárul 'betray'	ambiguity	no ambiguity	ambiguity	ambiguity
bemutat 'introduce'	no(slight) ambiguity	no ambiguity	slight ambiguity	ambiguity

Table 3. Results in terms of ambiguity of the quantifier scope based test

In this case there are no raw scores, rather the possibility of ambiguity was assessed from the result of the multiple-choice test. Word order and case variants are indicated as before.

Recall that the expected results for the QP scope based tests were such that there would be one word order variant in which there would be no ambiguity in terms of scope readings for the two quantifiers. This hypothesis is borne out, but not entirely to the expected degree. There are two verbs where more than one variant was observed as not ambiguous. Of these the case of *ad* 'give' seems to be explainable on the lines that non-ambiguity arises when the *few* quantifier is on the accusative constituent regardless of the surface word order. This would suggest that when scope taking occurs in the derivation, the accusative constituent is in an asymmetrical position with relation to the dative constituent. Recall that the initial observation made regarding scope taking of *few* was that it could not take inverse scope higher than its A position, thus this data would indicate that, at least in the case of *ad* the base structure is dative > accusative. On these

lines the other three verbs tested point to a different base order, since in their case non-ambiguity arises when the *few* quantifier is in the dative constituent. The most interesting case of these three is *elárul* 'betray', which produced one case of non-ambiguity, however in the unexpected *few*.DAT > *every*.ACC surface word order, where non-ambiguity would only be expected if it was a scrambled order, however in such a case the *every*.ACC > *few*.DAT would also be expected to exhibit similar non-ambiguity, but as the table shows, it does not. Of the other two verbs *elárul* 'betray' shows the expected results as discussed in section 3.1.3, while *bemutat* 'introduce' shows a similar pattern to *ad*, however this pattern points to a different potential base hierarchy.

Since the results of the QP scope test are to a degree in conflict with the results of the Condition A test I will not attempt to unify the two to arrive at a definite base hierarchy for the verbs tested. But the fact that both of the tests showed some patterning may be taken as an indication of hierarchies between the two constituents. I will thus take these results as supporting evidence for the hierarchical view. After the completion of Experiment 1 it was believed that this difference in results between the three tests may be reduced if the design of the experiment was modified. Recall that when determining the possible scope readings the informants were presented with four options, which included both possible scope interpretations. It was hypothesized, that by presenting these, the judgments of the informants might have been influenced in such a way that one of the presented readings ruled out the other, when in fact that should also have been available. This point was influential in the design of Experiment 2.

The fact that the Condition C test provided evidence not in line with that of Condition A can possibly be explained by independent factors, relating to the design of the experiment. The stimuli in this test contained sentences in which proper names and pronouns were used post-verbally. As noted in section 2.2.1 Surányi (2006a) argued that the preferred position of post-verbal pronouns might be influenced by factors related to pronouns, independent of binding conditions. In this experiment I chose to test four verbs, to control for possible variation between them, this was done at the expense of excluding stimuli which would have tested Condition C violations without the use of pronouns. This was remedied in the second round of experimentation.

In conclusion to the discussion of Experiment 1, it can be noted that results were found which support the hierarchical base structure approach to internal argument structure. However the evidence is conflicting in terms of what this hierarchy is, and whether or not it varies between different verbs/verb classes. Furthermore the Condition C test does not support the hierarchical approach. It is possible that an improved design of the experiment will resolve these issues.

3.2.1 Experiment 2

Experiment 2 was administered because of the perceived problems of experiment 1. While the types of tests used remained unchanged, new target sentences were devised, with a new type of condition for the Condition A and C tests, and new contexts were written for all conditions. To accommodate for these new conditions in terms of testing time and to reduce the burden of the experiment on the informants, two verbs were selected from the four used in experiment 1. There were a total of 14 informants.

A more detailed instruction was written for the informants including sample sentences which had been given grammaticality judgments. The sample sentences dealt with similar Binding Condition violations and scope interpretations, and the informants were asked on their opinion of the judgments that were provided for the sentences, and this provided an opportunity to focus the informants' attention on what to base their

judgments on. To make judgments more uniform and to ease the task of the informants a 5 point scale was presented and a description for each 'grade' was provided for the informants.

The stimuli in the Condition A based test were rewritten in such as way as to involve proper names as antecedents to make binding relations easier to establish. Furthermore a new set of stimuli was introduced involving possessive structures. This was done to see what effect embedding, and thereby distancing the anaphor from the antecedent would have on the results. Below I present one variant from each stimuli group, which were made up of four possible stimuli variants as in Experiment 1. The test sentences were always the first in a larger context which made it clear that the anaphor and the antecedents were co-referential.

(9) a. *Amikor bemutatod egymást$_i$ [Jánosnak és Annának]$_I$...*
when introduce.2SG eachother.ACC John.DAT and Anna.DAT
'When you introduce Anna and John to each other….'

b. *Miután bemutattam [Jánosnak és Annának]$_I$ egymás$_i$ apját...*
after introduce.1SG John.DAT and Anna.DAT eachother father.DAT
'After I introduced John and Anna to each other's fathers…'

The stimuli in the Condition C based test were also rewritten. The major change in these was the introduction of a new set where the pronouns were replaced with epithets, to marginalize any possible effects independent of binding conditions, namely those relating to pronouns as mentioned above. A set where pronouns were kept in the place of epithets was used as control. I will give an example of an epithet stimulus below, again each group of stimuli contained four possible variants as before.

(10) a. *Mielőtt átadtam a szerencsétlent$_i$ János$_i$ felettesének…*
before over.gave.1SG the miserable.ACC John superior.POSS.DAT
'Before I handed over to John's superior that miserable guy…'

b. *Mielőtt átadtam őt$_i$ János$_i$ felettesének,…*
before over.gave.1SG he.ACC John superior.POSS.DAT
'Before I handed him over to John's superior…'

In order to control givenness, the target sentences were usually the first sentence in the context. If this resulted in very awkward contexts then the target sentences was embedded within the context, however, the context sentences were constructed in a way that there would be no element preceding the target sentence which could be a potential binder of the anaphor/pronoun within the target sentence. The expected results were the same as in the case of Experiment 1 as described in sections 3.1.1 and 3.1.2.

The stimuli for the test based on quantifier scope were redesigned in such a way that informants had to judge to what extent a question, containing the stimuli matched with an answer that that described one of the possible scope readings. What informants gave judgments on was how well they thought the answer and the question fit. (11) illustrates this condition.

(11) *Miért mutattál be minden osztályvezetőnek kevesebb, mint*
why showed in every head-of-department.DAT fewer than
öt új munkatársat?
five new co-workers.ACC

Azért, mert a most felvett munkatársak úgy oszlanak el a cégnél, hogy mindegyik osztályvezető alá átlagosan csak néhány kerül közülük, és mivel a cég már elég nagy, nem várhatom el az osztályvezetőktől, hogy minden új munkatársat személyesen ismerjenek.

Because the newly employed co-workers are distributed in the company in such a way that on average only a few of them will work together with each head of a department, and because the company is now fairly large, I can't expect each department head to know every new employee personally.

Scope reading: every > few

For each of the two verbs there were eight conditions: four target sentences were produced with the combination of different case and word order possibilities, and each of these target sentences was presented with two possible scope readings as contexts, one in which the *few*-QP took scope over the *every*-QP and one in which this relation was reversed. The answers were constructed in such a way that they would present one scope reading while blocking out the other. The reason for using questions to present the stimuli was that the *wh*-operator takes scope over the entire clause, thus limiting the scope taking possibilities of the two post-verbal quantifiers to their local domain.

It was expected that informants would give low points to questions that did not entail the scope readings presented in the answers, relative to the points they would give to questions where scope readings were congruent with the context described in the given answer. If the observation about *few*-type QPs proved to be true, the judgments would point to one order-case variant as significantly worse than the other seven, namely one in which the *few*-QP followed the *every*-QP linearly, and the given answer was presented in a context in which *few* took scope over *every*. Out of the eight variants two satisfy this condition differing from each other only in the case of the *few*-QP, the one with the lower acceptance score would be the one which represents the base hierarchy of the two constituents.

3.2.2 Results

I. Condition A

The results for the Condition A based test are given in the table below:

verb	anaphor case	surface word order	average acceptability scores
ad 'give'	dative	DAT > ACC	**4.78**
		ACC > DAT	**4.78**
	accusative	DAT > ACC	2.35
		ACC > DAT	2.78
bemutat 'introduce'	dative	DAT > ACC	**4.78**
		ACC > DAT	**5.00**
	accusative	DAT > ACC	1.78
		ACC > DAT	2.92

Table 3. Acceptability scores for Condition A based test: plain

verb	anaphor case	surface word order	average acceptability scores
ad 'give'	dative	DAT > ACC	2.78
		ACC > DAT	3.53
	accusative	DAT > ACC	**3.85**
		ACC > DAT	3.71
bemutat 'introduce'	dative	DAT > ACC	2.78
		ACC > DAT	**4.28**
	accusative	DAT > ACC	2.21
		ACC > DAT	3.03

Table 4. Acceptability scores for Condition A based test: possessive

As can be seen from the data in table 3, the factor which seems to be crucial in determining the acceptability scores is the case of the anaphor, and not the word order of the constituents. This pattern is, however, not like either of the two (1-2-1, 3-1) predicted patterns or the one (1-2-1) observed in Experiment 1. This 2-2 pattern seems to indicate that the word order of the constituents did not have an effect on the binding relation established when the two constituents were merged into the structure. If this assumption is correct, then this set of data suggests, that the base hierarchy of the constituents is accusative > dative; corroborating the result of the same test in Experiment 1.

The results of the possessive structure stimuli failed to produce the same pattern, and generally received worse scores than their 'plain' counterparts. The scores for *ad* 'give' do not vary enough to draw conclusions. The scores for *bemutat* 'introduce' however show a certain amount of patterning in line with the 3-1 predicted pattern. The stimuli with dative anaphor and an accusative > dative word order received a markedly higher score than the other stimuli in the set. This result also indicates an accusative > dative base order.

II. Condition C

The results of the Condition C based test are presented in the tables below.

verb	pronoun case	surface word order	mean acceptability scores
ad 'give'	dative	DAT > ACC	2.21
		ACC > DAT	2.60
	accusative	DAT > ACC	2.64
		ACC > DAT	3.20
bemutat 'introduce'	dative	DAT > ACC	1.64
		ACC > DAT	**3.17**
	accusative	DAT > ACC	2.14
		ACC > DAT	3.12

Table 5: Acceptability judgment scores for Condition C test: pronoun

verb	epithet case	surface word order	mean acceptability scores
ad 'give'	dative	DAT > ACC	2.03
		ACC > DAT	2.83
	accusative	DAT > ACC	2.57
		ACC > DAT	3.28
bemutat 'introduce'	dative	DAT > ACC	2.32
		ACC > DAT	**3.57**
	accusative	DAT > ACC	2.14
		ACC > DAT	3.50

Table 6: Acceptability judgment scores for Condition C test: epithet

The Condition C based test produced some results which are in line with the expectations outlined in section 3.1.2. However these results are only borne out in the case of the verb *bemutat* 'introduce', as highlighted in tables 5 and 6. Based on the results of the Condition A test, it can be argued that the base hierarchy of dative constructions, for the verbs tested, is accusative > dative. In the case of *bemutat* this is corroborated by the Condition C based tests as well; the highest acceptability scores were given to variants where a dative pronoun/epithet is preceded by an accusative name. It is apparent, however, that these scores do not seem to be meaningfully differentiable from the scores of the other varieties. Furthermore the verb *ad* does not show any patterns that would indicate a definite base hierarchy. I will return to the possible issues in relation to this test in section 4.

It is interesting to note that the replacement of the pronouns with epithets did not alter the results, which might indicate that the problems raised concerning the post-verbal distribution of pronouns does not play a significant role, at least as far as their morphology or prosody is concerned.

III. Quantifier scope

The results for the quantifier scope based test are presented in the table below.

word order *ad*	context	average score	word order *bemutat*	context	average score
few.DAT>∀.ACC	*few* > ∀	4.71	*few*.DAT>∀.ACC	*few* > ∀	3.96
	∀ > *few*	3.14		∀ > *few*	3.92
∀.ACC>*few*.DAT	***few* > ∀**	**3.92**	**∀.ACC>*few*.DAT**	***few* > ∀**	**3.60**
	∀ > *few*	2.57		∀ > *few*	4.07
few.ACC>∀.DAT	*few* > ∀	3.64	*few*.ACC>∀.DAT	*few* > ∀	4.07
	∀ > *few*	4.21		∀ > *few*	4.00
∀.DAT>*few*.ACC	***few* > ∀**	**3.71**	**∀.DAT>*few*.ACC**	***few* > ∀**	**4.21**
	∀ > *few*	4.42		∀ > *few*	4.00

Table 7: Acceptability judgment scores of the quantifier scope based test.

For each verb the four possible word order variants of with the two quantifiers are further broken down according to the context that they occurred with, resulting in a total of eight variants for each verb.

Recall that it was assumed that the quantifier scope based test worked in such a way that out of the eight possible variants one would be marked as significantly worse than the rest. This would be the variant where the *few*-QP followed the universal quantifier in linear order, and the scope reading offered by the context was such that *few* took scope over *every*, as the theoretical prediction was that in one of these cases the *few*-QP could not take scope over the universal quantifier. There were two potential candidates that qualified for these parameters; the difference between them was the case of the *few*-QP, these stimuli I have highlighted in bold in table 7 above. In the case of *ad* it is apparent that the test failed to produce the result that was expected, as it was neither of the two stimuli, which produced the lowest result. The fact that the lowest result was produced by a variant where the universal quantifier took straight scope over the *few*-QP seems to indicate a major flaw in the design of this test. In the case of *bemutat* the resulting scores seem to be in line with the expectations as the lowest score was produced by one of the candidates, while its minimal pair produced the highest score. Albeit the range between worse and best scores was somewhat compressed. This data indicates that the base hierarchy in the case of *bemutat* is accusative > dative, which is in line with the observations of the Condition A based test of both Experiments as well as the QP scope based test of Experiment 1. The difference in scores seems to be too marginal to be able to be used as an indicator of base order, however there is a pattern which would be unexpected if the base structure was flat.

4 Discussion

The most obvious observation deductible from the two experiments is that the results failed to produce as clear-cut an answer to the research question posed at the beginning of this paper as one could have hoped for considering the theoretical possibilities entailed by the test used in the experiments. The question now arises as to how to interpret the overall results. It is my view that although the results were not optimal, they

still indicate the presence of a structural hierarchy between the two arguments in question. From the data gathered, that hierarchy seems to be accusative > dative. The fact that the test results were not so clear can be seen as evidence that the asymmetry between internal arguments is in a way less apparent than that between the external and the internal arguments, as attested to by the literature cited above.

First let us consider the two tests that did not produce clearly interpretable results. One of these was the test involving scope readings. I believe that the fact that this test did not yield the desired results can be explained by its relative difficulty, and the presence of factors which were not foreseen and thus not controlled properly by the contexts. The difficulty of the experiment lay in that it required very active participation from the informants in terms of imagining situations in which different scope readings were felicitous based on a relatively short context provided. Since for this test each verb had four conditions, diverging from each other in minimal ways, it is possible that the informants did not invest the effort to establish new possible scope readings for each stimulus, but used one that they had already established. This is supported on the one hand by the feedback from the informants about the difficulty of the task and by such cases as the following: one of the informants marked a question-answer pair in this test as unacceptable, but when the administrator elaborated the context for ease of comprehension, the informant changed her initial evaluation to a four (almost completely grammatical). Situations like this suggest that the stimuli related to the scope interpretation of two post-verbal quantifiers involved added amounts of complexity which made them unsuitable for experiments of this sort, due to the increased number of variables to be controlled. One way of possibly overcoming this obstacle would be to increase the number of informants so as to decrease the diverging effect that individual strategies for achieving scope interpretation have.

The Condition C based test suffered from a similar problem. It was noted in Surányi (2006a) that the results may have been influenced by the preference of post-verbal pronouns to occur in a position adjacent to the verb. This effect was believed to have been countered by the use of epithets. Since the epithets did not produce significantly different results to the pronouns it can be stated that, if there is an effect related to pronouns in these cases it is not associated with their morphological or prosodic properties. This factor may possibly be related to the subject and object *pro*-drop property of Hungarian, more specifically, the possible accessibility requirements (Ariel 1990) that overt and covert pronouns impose on their antecedents in a *pro*-drop language.

There is however, some independent evidence which casts some doubt on the proper interpretation of the results of tests based on classic formulations of Condition C. Binding relations and co-reference have been extensively studied with acceptability judgment experiments by Gordon and Hendrik (1997) (hence forth G&H). Their findings indicate that there is a difference between the predictive capacity of the three Conditions of Binding Theory, more specifically, while Conditions A and B predict with relative accuracy the acceptability judgments of native speakers, this is not the case with respect to Condition C.[3] It was found for example that in structures where a name is

[3] The notion that the phenomena dealt with by Condition C differ from those dealt with by Condition A is supported by studies such as Grodzynsky and Reinhart (1993), which made the observation using language acquisition and aphasia studies that Conditions A is more robust than Conditions B and C. Their claim is that Condition A is the only domain where true variable binding occurs, thus divorcing binding from co-reference in general.

linearly preceded by a pronoun, co-reference is seldom established, even when there is a lack of a c-command relation between the two. These findings accord with those of the present study in that both found that Conditions A and C show a difference in their ability to predict native speaker acceptability judgments.

It is apparent from their reported results of the experiments testing Condition C that the scores of acceptability judgments tend to reach lower than expected points for stimuli that are theoretically predicted to be grammatical. Conversely for those stimuli predicted to be ungrammatical the acceptability judgment points are higher than expected. Acceptability judgments are thus placed on a spectrum which is compressed compared to what is theoretically predicted, resulting in smaller differences between acceptability scores of individual variants.

The results for the two following stimuli which were tested by G&H and can be compared with the results of the present study are presented below with their proportion of acceptance. First let us consider stimuli that can highlight the subject object asymmetries in English.

(12) a. *His$_i$ roommates met John$_i$ at the restaurant.* .29
b. *He$_i$ met John$_i$'s roommates at the restaurant.* .22

It can be seen that these results show that while the variant which is predicted to be correct by Binding Theory reaches an acceptability rate of only .29, there is still a difference between it and the variant deemed incorrect by the Theory. The results in G&H also point to potential differences between verbs, and thus are in line with the findings of the present study concerning Condition C. Compare the proportions of acceptance of the following stimuli with those of their structural counterparts in (12).

(13) a. *Her$_i$ brother visited Lisa$_i$ at college.* .29
b. *She$_i$ visited Lisa$_i$'s brother.* .35

With respect to dative constructions the G&H study made the following observations, in this case the number indicates the average acceptability score given on a 6 point scale:

(14) a. *Jane introduced Bill$_i$ to his$_i$ new teacher.* 5.61
b. *Jane introduced his$_i$ new teacher to Bill$_i$.* 2.65

When compared with the results of Experiment 2 the score for structure like the one in (14a) with the verb *bemutat* received the score 3.17, the highest score in the set, while the counterpart for (14b) received 3.12, the second highest score. This difference between English and Hungarian may be due to a possible difference between the English dative PP which *contains* the pronoun, and the Hungarian *neki*, which may be analyzed as the dative pronoun itself, not embedded in a PP. It is not as yet clear as to what *neki* is structurally, as it can either be structurally complex, involving a silent *pro* element, thus being on par with its English PP counterpart, or an NP, in which case it is structurally parallel with the accusative NP, unlike the English dative constituent.

Nonetheless, as shown above in section 3.2.2 (II. Condition C), this test produced results that show some patterning that seem to be systematic enough that their occurrence is not explainable by chance, (at least in the case of one of the verbs) allowing for the conclusion that there are structural differences between the constituents. Combined with the findings of G&H, it can be stated that there are more factors at play

concerning phenomena related to Condition C, which require a more elaborate approach in testing (a)symmetries of the present type, than the one assumed in the tests reported on in this paper.

If these results can be taken as an indication that phenomena associated with Condition C of Binding Theory are not clear evidence for either a flat or a hierarchical structure, then the need for establishing a point in the derivation where the two constituents are in a symmetric relationship is weakened. This can possibly serve as a counterargument to 'phasal flattening' approach outlined in É. Kiss (2008).

5 Conclusion

The goal of this paper was to test (non)-configurational nature of the internal arguments in Hungarian dative constructions, and if possible to establish what base hierarchy of these constituents is. To do this, three tests, based on phenomena which have played key roles in the debate on configurationality, were used in two experiments. The results of these tests could not conclusively establish the base hierarchy. The Condition A based tests strongly support a hierarchical base structure with an accusative > dative hierarchy. The Condition C based tests failed to clearly support either the flat or the hierarchical VP approach. Furthermore, these experiments are in line with others which show that classic Condition C does not accurately predict native speaker behavior to the same extent as Condition A. The quantifier scope based test gave some evidence in support of a hierarchical base structure, but was less clear on what that hierarchy may be. In light of these results it is the conclusion of this paper that the phenomena traditionally cited in the debate on configurationality cannot be relied on in a straight forward way to conclusively establish the nature of the hierarchical relation of internal arguments to each other, therefore empirical investigations in this area will need to rely on more sophisticated methods than those that are often assumed to yield hard and fast results.

Appendix 1: Examples of stimuli used in Experiment 1

In this appendix I present the stimuli used in experiment 1. Because of lack of space I could only present all variants of each stimuli for one of the cases in the Condition A test, however all stimuli for the Condition A and C tests were created with the same alternations. Where it is not spelled out 'C' stand for 'context'.

Condition A:

Target sentences were given with contexts to

(1) *Alárendeltem egymásnak$_i$ őket$_i$.*
subordinate1.SG eachother.DAT them.ACC

(2) *Alárendeltem őket$_i$ egymásnak$_i$.*
subordinate1SG them.ACC eachother.DAT

(3) *Alárendeltem nekik$_i$ egymást$_i$.*
subordinate1.SG them.DAT eachother.ACC
'I subordinated them under each other. '

(4) *Alárendeltem egymást$_i$ nekik$_i$.*
subordinate1SG eachoterACC them.DAT

C: Így papíron úgy tűnik, mintha mindkettőjüknek lenne még egy beosztottja. (**C**=Context)
This way on paper it seems as if both of them had one more subordinate.

(5) *Bemutattam egymásnak$_i$ őket$_i$.*
introduce.1SG eachother.DAT them.ACC
'I introduced them to each other.'

C: A week after that they met again, and today is their wedding.

(6) *Elárultam egymásnak$_i$ őket$_i$.*
betrayed.1SG eachother.DAT them.ACC
'I betrayed them to each other.'

C: I think that there should be no secrecy in a marriage.

(7) *Átadatam egymásnak$_i$ őket$_i$.*
gave.over.1SG eachother.DAT them.ACC
'I gave them over to each other!'

C: This wasn't the first time that the two brothers used this trick to go home from the precinct.

Condition C:

(8) *Alárendeltem János$_i$ apósának őt$_i$.*
subordinate1sg. John's father-in-law.dat him
'I made John work under his father-in-law.'

(9) *Bemutattam őt$_i$ János$_i$ apósának.*
introduce.1sg him John's F-in-L.dat
'I introduced John to his father-in-law.'

(10) *Elárultam János$_i$ apósát neki$_i$.*
betrayed.1SG John's F-in-L.ACC him
'I betrayed John's father in law to him.'

(11) *Átadtam neki$_i$ János$_i$ apósát.*
give.over.1SG him John's F-in-L.DAT
'I gave over John's father-in-law to him.'

Conditions

Subordinate: I didn't think that it would bother John that his father-in-law was his boss.
Introduce: It's strange, but in fact John has never met his father-in-law before.
Betray: I know that John likes his father-in-law, but he needed to know what happened to the family's savings.
I had to tell him how John was treating his wife.
Give over: John/John's father was drunk again and due to the regulation I could only let him leave with a relative.

QP scope:

Recall that in this test there were also 4 variants for each stimuli presented below the arose by alternating the case and the word order of the two internal constituents. In some cases this resulted in the use of different contexts than the ones presented.

(12) *A cégnél rendeltem alá kevés férfinek minden nőt.*
at the company subordinate few men.dat every woman
'It was at the company that I placed every woman under a few men (bosses).'

C1: Out of the men who had subordinates only a few had women subordinates.
C2: There were a few people who had subordinates and all of them were male.

(13) *A hetedik osztályban adtam minden tanulónak kevés feladatot.*
the seventh grade.in gave1sg every student.DAT few tasks.ACC
'It was in the seventh grade that I gave every student few tasks (to do).'
C1: Every student received few tasks.
C2: There were few students who received all of the tasks.

(14) *A megszállás alatt árultak el minden kémnek kevés ellenállót.*
the occupation under betrayed every spy.DAT few resistants.ACC
'It was under the occupation that few members of the resistance were betrayed to every spy.'
C1: Few members of resistance were betrayed to each and every spy.
C2: Every spy knew about only a few members of the resistance.

(15) *A múlt heti értekezleten mutattam be kevés részvényesnek minden új*
the last week's meeting introduced.1sg few sareholders.dat every new
munkatársat.
coworker.acc
'It was at the meeting last week that I introduced many new co-workers to few shareholders.'
C1: There were few shareholders and every new co-worker was introduced to them.
C2: I introduced the new co-workers to the shareholders, but there were only a few of them to whom I introduced all of the co-workers.

Appendix 2: Examples of stimuli used in Experiment 2

For this experiment, like experiment 1 there were four variants for each of the conditions presented, some of the conditions differed slightly from those presented due to change in meaning as a result of changing the case of the constituents.

Condition A test
There were two types of stimuli, (1) represents the 'regular' while (2) represents the more complex, possessive structure. The stimuli with *kiad* 'to give out' were created in the same fashion; due to lack of space I will not present these. Minimal pairs to (1) and (2) were produced by varying the word order of the constituents.

(1) *Amikor bemutatod egymást$_i$ [Jánosnak és Annának]$_i$....*
when introduce2.sg eachother.acc John.dat and Anne.dat
'When you introduce John and Anne to each other....'
C: …mention it to them that they both know me.

(2) *Miután bemutattam egymás$_i$ apját [Jánosnak és Annának]$_i$,…*
after introduce1.SG eachother's fathers.ACC John.DAT and Anne.DAT
'After I introduced their fathers to John and Anne,…'
C: '...the four of them sat down in a corner and the two young people asked lots of questions about the other's childhood.'

Condition C test
In this test, as in the case of the condition A test there were two types of stimuli, which differed from each other only in the use of pronouns instead of epithets, here I will give only the epithet versions. Both the epithet and pronoun variants had minimal pairs based on word order variations

(3) *Mielőtt átadtam a szerencsétlent$_i$ János$_i$ felettesének…*
before gave.over.1sg the miserable.ACC John's s upperior.DAT
'Before I handed John, that miserable guy over to his boss…'
C: I thought a lot about what to do, John is a nice guy, and I know that he will probably loose his job as an officer, but if I don't follow regulations, then I will also lose my job.

(4) *Amikor bemutattam a szerencsétlennek$_i$ János$_i$ új főnökét...*
when introduced.1sg the miserable.DAT John's new boss.ACC
'When I introduced his new boss to that miserable guy, John…'
C: ...it was apparent that John will have a very difficult time. I knew that John doesn't like the kind of people who don't always mean what they say.

QP scope test
In this test informants had to judge how well a question fitted the given answer. The answers gave the contexts for the different scope readings that were thought to be available in his question. (5) represents stimuli where the few-QP had accusative case, while (6) represents the stimuli where the few-QP had dative case. The minimal pairs to (5) and (6) arose from varying the word order of the constituents. Similar stimuli were constructed with the verb *bemutat* 'introduce', I will not give examples of those due to lack of space.

(5) *A parancsnokság miért adott ki minden űrhajónak*
the command why gave.out every spaceship.DAT
kevesebb, mint öt műszert?
fewer than five instruments.ACC
'Why did the (central) command give every spaceship fewer than five instruments?'

Every > fewer than 5 context
Because they wanted each spaceship to perform fewer than five experiments, so that they would have ample time for them.

Fewer than 5 > every context
Because the spaceships needed to perform different experiments and for the most part they didn't need the same instruments, there were fewer than five instruments that all of the spaceships needed.

(6) *A paracsnokság miért adott ki minden műszert kevesebb, mint öt*
The command why gave.out every instument.ACC fewer than five
űrhajónak?
spaceships.DAT
'Why did the (central) command give every instrument to fewer than five spaceships?'

Every > fewer than 5
In the past every spaceship got one from each of the instruments, but these new instruments are so expensive that they can afford only three or four of each.

Fewer than 5 > every
Because only the best prepared crews can do all of the experiments and only these spaceships need to be fully equipped. The other spaceships only have routine tasks, they ferry supplies to these research ships, or they take space tourists to the moon, after all this is a major source of income.

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The Mystery of the Missing Argument: Hebrew Object Drop

Sharon Taube

This study explores Hebrew null objects in light of existing analyses both for Hebrew and for other languages. Previous accounts of Hebrew object drop are evaluated empirically, and are shown to be incapable of accounting for the range of facts. It is proposed that the empty objects are unpronounced topics. The content of these gaps is examined, with the conclusion that neither a pronoun nor a lexical DP underlies them. While each of these options has substantial advantages, they both leave some of the data unexplained. I thus propose that the lexical content of the dropped object is not specified; rather, it merges as a bundle of features, among them topichood, which allows PF to leave it unpronounced, and a referential index, which picks out its exact reference from the context. This account enables the content of the null object to remain flexible and to be determined with respect to the discourse.

Key words: *argument drop, feature bundle, Hebrew, object drop, topic drop*

1 Introduction

In certain environments, Hebrew allows an object position to remain empty. The examples below demonstrate null objects in three environments in which this phenomenon is most commonly found. In (1) and (2) the null object appears in a second conjunct of a coordinated CP and a coordinated VP, respectively. In (3) the null object appears in an answer to a question.

(1) *Dani katav et ha-šir ve-Miriam tirgema ø.*
Dani wrote ACC the-song and-Miriam translated
'Dani wrote the song and Miriam translated it.'

(2) *Dani kisa et ha-salat ve-sam ø ba-mekarer*
Dani covered ACC the salad and-put in.the-fridge
'Dani covered the salad and put it in the fridge.'

(3) Q: M*acata et ha-maftexot?*
found.2sg ACC the-keys
'Did you find the keys?'
A: *Ken, macati ø.*
yes found.1SG
'Yes, I found them.'

This research is concerned with the essence of the empty category and the way by which it is derived[1]. I begin by examining previous analyses of Hebrew null objects as either traces of Ā-movement or remnants of VP Ellipsis (section 2). These analyses,

[1] This study excludes null objects in generic, non-referential, and arbitrary contexts. In all the examples used here, the null object has a specific referent.

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proposed in Doron (1990, 1999) and assumed in Goldberg (2005), are evaluated with respect to Hebrew data. I point at their inability to account for the range of facts.

Having rejected both analyses, and with the goal of offering a unified treatment for all occurrences of Hebrew object drop, I observe that Hebrew null objects are systematically interpreted as topics. This generalization leads to an account of the phenomenon as an instance of topic drop, whereby an object is PF deleted due to its topichood (section 3). I then examine the lexical content of the unpronounced object, considering two available possibilities: that the silent object is a pronoun and that it is a full DP (section 4). I reject both these possibilities on empirical grounds, proposing instead that the null object is not inherently specified for lexical content but rather merges as a feature bundle (section 5).

2 Previous analyses

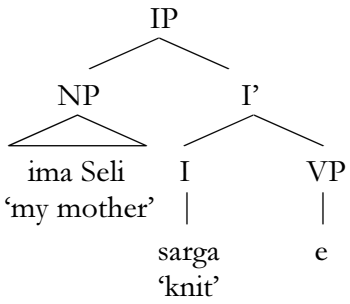
The study of Hebrew object drop has yielded the proposal in Doron (1990, 1999), and later in Goldberg (2005), according to which, two different derivations occur in Hebrew which result in the surface appearance of a null object. I explore these two analyses--V-stranding VP Ellipsis and Ā-trace--and point to their problematic nature in sections 2.1 and 2.2. Section 2.3 examines a particular construction in which the null object induces an ambiguity between a sloppy and a strict interpretation. I show how this construction further weakens the existing proposals.

2.1 V-Stranding VPE

The idea that Hebrew null objects are in fact derived by V-Stranding VPE was first introduced in Doron (1990). Under this account, the object position is empty because the entire VP undergoes VP Ellipsis (VPE). Unlike in English VPE, however, the verb first raises to I; since it is now outside the VP it is not affected by VPE and remains overt. This analysis, dubbed V-stranding VPE by Goldberg (2005), leans on the existence of V to I movement, which indeed has been independently motivated for Hebrew (Doron 1983). An equivalent account has been proposed for null objects in other languages, among them Korean and Japanese (Otani and Whitman, 1991) and Irish (McCloskey 1991). Figure (1) represents this derivation for the answer in (4). Both the data and the structure are taken from Doron (1990).

(4) Q: *At* *saragt* *et* *ha-sveder* *ha-za?*
you knit ACC the-sweater the-this
'Did you knit this sweater?'
A: *Lo,* *ima* *šeli* *sarga* ***ø.***
no mother my knit
'No, my mother did.'

Figure 1: VP Ellipsis



Under this account, all VP-internal material but the verb is predicted to be null. Thus, this account is excluded when the null object is followed by overt VP-internal material. This is because such overt VP-internal material indicates that the VP is intact, as discussed by both Doron (1990, 1999) and Goldberg (2005). Such cases are common with ditransitive verbs, when a null direct object (DO) is followed by an overt indirect object (IO). Such an utterance is demonstrated in (5). In the example, the DO is null but an overt IO (the PP Goal *la-maxbesa* 'to the cleaners') indicates that the VP is intact.

(5) Q: *Lakaxta et ha-sdinim l a-maxbesa?*
took.2SG ACC the-sheets to.the-cleaners
'Did you take the sheets to the cleaners?'
A: *Lo, ba-sof lakaxti ø le-ima šeli.*
no in-the-end took.1SG to-mother my
'no, I ended up taking them to my mom's.'

The data above cast doubt on the V-stranding VPE account for this type of sentence, as discussed by Doron and Goldberg. But one might propose to save the V-stranding VPE idea as follows. If the IO raises outside the VP prior to VPE (in addition to verb raising), then it too escapes VPE and appears overt. This is not implausible for Hebrew, which allows argument scrambling, in which the IO precedes the DO. Below is such an example:

(6) *Dani natan le-Dorit et ha-sefer.*
Dani gave to-Dorit ACC the-book
'Dani gave the book to Dorit.'

If this word order is a result of IO raising outside the VP, perhaps to some focus projection between IP and VP, then VPE would not affect the IO and would leave it overt, just as the IO in (5).

This scenario allows the V-stranding VPE account to hold even in those cases in which a null DO is followed by an overt IO. However, I reject this possibility. I draw from the treatment of similar Turkish data in Şener and Takahashi (2010). The authors use Binding Condition A to argue against IO raising when the DO is null. If the IO raises outside the VP it cannot be c-commanded by the DO, which remains lower in the structure, and as a consequence, it cannot be bound by it. Binding principle A of the Binding Theory requires that an anaphor be c-commanded by its antecedent. Thus, a successful binding relationship between an anaphor or a reciprocal IO and an antecedent

DO (either overt or null) indicates that the IO remains in its base position within the VP, from which it can be c-commanded by the DO. Now consider this example:

(7) Q: *Ma asita im kol ha-kufsa'ot?*
what did.2SG with all the-boxes
'What did you do with all the boxes?'
A: *Samti ø [axat al ha-šniya]*
put.1SG [one on the-second]
'I put them on each other.'

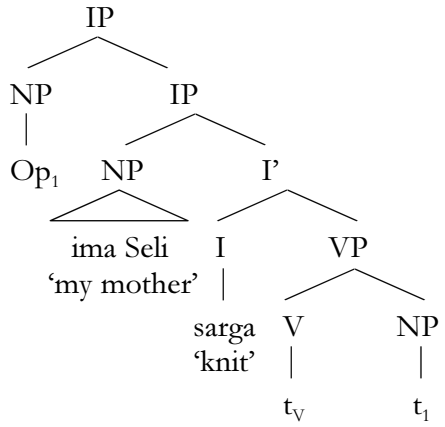
The IO reciprocal 'on each other' is bound by the null object, whose reference – 'the boxes' or 'them' – is the antecedent. I conclude that the IO remained in its original VP-internal position. VPE, had it occurred, would eliminate it; yet it is overt.

This result rules out the V-stranding VPE analysis for this construction; and by extension, it suggests that V-stranding VPE may not be tenable for Hebrew, at least whenever an overt IO follows the gap. I maintain that it should be rejected across the board.

2.2 Ā trace

Another derivation which results in an empty object position is termed by Doron (1990, 1999) Null Object Construction. Based on Huang's (1984) proposal for Chinese, Doron assumes that a null object is an Ā-variable, bound by an empty operator which is located higher in the structure. The derivation is illustrated below, based on Doron's representation for the answer in (4).

Figure 2: Ā trace[2]



Since the null object is an Ā-trace, it is not expected to occur in islands. Doron presents data of ungrammatical null objects in islands. However, Hebrew null objects have intricate restrictions, not yet fully understood, which may account for the

[2] The structure shows V to I movement although such movement, if it exists, is irrelevant to this derivation.

ungrammaticality of Doron's examples. Below I bring five examples of null objects in island environments which are grammatical.

NP Complement Island:

(8) *Her'eti* *et* *ha-tmuna* *le-dina,*
showed.1SG ACC the-picture to-Dina
ve-mišehu *hefic* *šmu'a* [$_{NP\ complement}$ *še-her'eti* *ø* *gam* *le-Yosi.*]
and-someone spread rumor that-showed.1SG also to-Yosi
'I showed the picture to Dina and someone spread a rumor [that I also showed it to Yosi].'

Adjunct Island:

(9) *Fiksasnu* *et* *ha-mismaxim* *le-London*
faxed.1PL ACC the-documents to-London
[$_{Adjunct}$ *lamrot* *še-kvar* *šalaxnu* *ø* *le-Berlin.*]
despite that-already sent.1PL to-Berlin
'We faxed the documents to London even though we had already sent them to Berlin.'

CP coordination:

(10) [$_{CP}$ *Dina* *he'evira* *et* *ha-meser* *le-Yosi*]
Dina passed ACC the-message to-Yosi
[$_{CP}$ *ve-Dani* *he'evir* *ø* *le-Mixal.*]
and-Dani passed to-Michal
'Dina passed the message to Yosi and Dani did to Michal.'

VP coordination:

(11) *Mixal* [$_{VP}$ *kibla* *et* *ha-mafte'ax* *mi-Dani*]
Michal received ACC the-key from-Dani
[$_{VP}$ *ve-natna* *ø* *le-Sarit.*]
and-gave to-Sarit
'Michal received the key from Dani and gave it to Sarit.'

Subject Island:

(12) *Ani* *yodea* *še-her'et* *et* *ha-tmuna* *le-Dani,* *aval*
I know that-showed.2SG ACC the-picture to-Dani but
[$_{subject}$ *ze* *še-her'et* *ø* *le-Yosi*] *ze* *mamaš* *lo* *beseder.*
this that-showed.2sg to-Yosi it really no all.right
'I know that you showed the picture to Dani, but showing it to Yosi was really wrong.'

Since Hebrew null objects are insensitive to islands, the Ā-trace analysis cannot account for them. Note that in each of the island examples above, the empty object position is followed by an overt indirect object. The examples were constructed this way so as to eliminate the possibility that the above are cases of V-stranding VPE. VPE is known to be insensitive to islands (Doron 1990), and Doron uses this trait as a diagnostic: her claim is that when a null object appears in an island, it is derived by VPE. However, the island data above show that this distinction does not hold; the examples can be construed neither as Ā-traces nor as VPE.

I have argued in this section that neither of the previously proposed analyses can cover all the object drop data. One solution to this problem might be to say that some object drop occurrences are derived by V-stranding VPE and others by Ā-trace; indeed this solution is adopted by both Doron and Goldberg. This current proposal, however, aims at developing a unified treatment for all object drop occurrences.

2.3 Sloppy/strict ambiguity

I now focus on a particular construction in which the null object induces an ambiguity between a strict and a sloppy reading. First I present the phenomenon and then I discuss the problem that it poses for the existing analyses of Hebrew object drop. The ambiguity between sloppy and strict interpretations is typically (although not exclusively) found in a CP conjunction, as in example (13).

(13) *Dina$_i$ sama et ha-simla šela$_i$ al ha-kise*
Dina put ACC the-dress her on the-chair
ve-tali$_k$ talta ø$_{i/k}$ ba-aron.
and-Tali hung in.the-closet
'Dina put her dress on the chair and Tali hung it/her dress in the closet.'

The antecedent object in the first conjunct contains a possessive pronoun (in our example the antecedent object is *et ha-simla šela* 'her dress'). The gap in the second clause can have two interpretations: under the strict reading, Tali hung Dina's dress in the closet. Under the sloppy reading, Tali hung her own dress in the closet.

Sloppy readings are normally explained by VPE (Doron 1999). Doron uses the availability of sloppy readings in Hebrew to support the V-stranding VPE idea, as do Otani and Whitman (1991) for Japanese. However, a construction with an overt IO excludes the VPE possibility, as discussed above. This is exactly what we have above in (13). The overt PP 'in the closet' is incompatible with the VPE idea. While Doron claims that sloppy readings are necessarily derived by VPE, the above example shows that VPE is not tenable in such cases and we must look somewhere else for an explanation for sloppy readings.

To conclude this section, the accounts proposed so far cannot explain the Hebrew phenomenon in question, especially if one aims at deriving all occurrences of Hebrew object drop from a single mechanism.

3 The missing object as a topic

In this section I observe that all instances of Hebrew referential null objects are instances of topic drop. I conclude this from two properties: 1. they drop in contexts in which they have a discourse antecedent, and 2. they alternate freely with pronouns (with one exception to be discussed). However, I show that this does not mean that they are fronted prior to dropping. I demonstrate that other arguments beside objects can undergo topic drop. I further propose that topic drop is a PF phenomenon. In section 3.2 I extend the topic drop idea to null objects that induce sloppy readings, by arguing that they are restrictive topics.

3.1 Null objects and topic drop

It has long been observed that referential null objects are discourse-dependent. This observation goes back at least to Huang (1984). In this central work, Huang treats empty objects as bound by topic NPs, which themselves may be either overt or null. Sigurðsson & Maling (2008) address the linkage between referential null objects and discourse in Germanic languages. In Hoji (1998), Japanese null objects are said to pick out as their referent the most discourse-salient candidate. As for Hebrew, I propose that the null objects themselves are understood as topics. Topics are necessarily given; as for null objects, their reference (or 'antecedent') is present in the discourse, and the object gap is understood as referring back to it. Cross-linguistically, topics can be marked by various means: they can be fronted (or otherwise moved), pronominalized, cliticised, and/or de-stressed. Under the view suggested here, Hebrew topics are allowed to remain silent (which can possibly be viewed as extreme de-stressing).

That Hebrew null objects are topics can be concluded from the environments in which they appear. Examining these environments reveals that each such environment establishes the object as a topic by providing a discourse antecedent. One such environment is a coordinated structure, and it is responsible for what Sigurðsson & Maling (2008) term Conjunct Object Drop (COD). It is illustrated in examples (1) and (2), repeated below as (14) and (15). In COD, the object is brought to the attention of the hearer in the first conjunct and drops in the second conjunct, where it is understood as a topic, referring back to its antecedent in the first clause.

(14) *Dani* *katav* *et* *ha-šir* *ve-Miriam* *tirgema* *ø / oto.*
Dani wrote ACC the-song and-Miriam translated it
'Dani wrote the song and Miriam translated it.'

(15) *Dani* *kisa* *et* *ha-salat* *ve-sam* *ø / oto* *ba-mekarer.*
Dani covered ACC the salad and-put it in.the-fridge
'Dani covered the salad and put it in the fridge.'

Another environment is a question-answer pair such as in (3), repeated below as (16). The question establishes the object as the topic of conversation, allowing a gap in the answer.

(16) Q: *Macata* *et* *ha-maftexot?*
found.2sg ACC the-keys
'Did you find the keys?'
A: *Ken,* *macati* *ø /* *otam.*
yes found.1SG them
'Yes, I found them.'

An interesting property of Hebrew null objects is that they may appear without a linguistic antecedent. In such a case, the situation makes them available as topics even though they are not mentioned. Such an occurrence is demonstrated below:

(17) [the speaker presents a new bag].
Yafe? kaniti ø / et ze be-mivca.
nice bought.1SG ACC this in-sale
'Is this nice? I bought it on sale.'

Note that in each of these last three examples, the null object can alternate with an overt object pronoun. Since pronouns are generally topics, this provides further support for the generalization that null objects are dropped topics.

Despite the approach taken here, the phenomenon of Hebrew object drop cannot be analyzed in terms of topic movement. Hebrew topicalization, i.e. fronting a topic-object to initial position, is reserved for restrictive topics and is generally infelicitous with ordinary topics. Restrictive topics are defined in Erteschik-Shir (1997, 2007) as elements drawn from a given set (a *topic set* in the term used by Erteschik-Shir, or *D-linked* using Pesetsky's 1987 terminology). Any of the members of such a set can become a restrictive topic. These topics *can* be fronted in Hebrew, unlike non-restrictive topics. Consider the topicalized sentence below:

(18) *Et ha-xalav hu sam ba-mekarer.*
ACC the-milk he put in.the-fridge
'He put the milk in the fridge.'

Now let us consider the contexts in which this instance of topic fronting is possible. Below are two contexts. (18) is felicitous following (19b). Yet it is ruled out following the context in (19a).

(19) a. *Dani hevi xalav me-ha-super.*
Dani brought milk from-the-supermarket
'Dani brought milk from the supermarket.'
b. *Dani hevi xalav ve-tapuxim me-ha-super.*
Dani brought milk and-apples from-the-supermarket
'Dani brought milk and apples from the supermarket.'

The reason for this sharp contrast is that in context (19a), 'the milk' is a regular topic, hence its topicalization fails. However, context (19b) makes available a topic set: {milk, apples}, thus 'the milk' in (18) is interpreted as a restrictive topic: an item selected from the topic set. Its topicalization is therefore successful.

I have shown that the topichood of the object in (19a) is an insufficient condition for topicalization. However, the object can be null:

(20) *Dani hevi xalav me-ha-super ve-sam ba-mekarer.*
Dani brought milk from-the-supermarket and-put in-the-fridge
'Dani brought milk from the supermarket and put it in the fridge.'

This section was dedicated to distinguishing between topic drop and topiclization. These two phenomena are separate processes and the former does not derive from the latter.

While this study focuses on object drop as topic drop and does not concern topic drop in general, it is worth noting that other arguments can potentially be null when interpreted as topics. Consider the following answers in examples (21) and (22), in which

the subject and the PP goal, respectively, are null. Both appear in a context which makes them topics.

(21) Q: *Ma dani ose?*
what Dani does
'What is Dani doing?'
A: *Mexin shiurey bayit.*[3]
prepare lessons home
'He is preparing homework.'

(22) Q: *Heveta la-maxbesa et ha-sdinim?*
brought-2SG to.the-cleaners ACC the-sheets
'Did you bring the sheets to the cleaners?'
A: *Lo, ba-sof heveti rak et ha-magavot.*
no in.the-end brought-1SG only ACC the-towels
'No, in the end I only brought the towels there.'

According to Erteschik-Shir (2005, 2006), processes triggered by information structure occur at the PF interface. These processes include other ways of marking topics, such as dislocation (for instance topicalization and scrambling) and de-stressing. This approach is also taken in Sigurðsson & Maling (2008), where the alternation between a pronominal argument and a gap is analyzed as a occurring post-syntactically, at PF. In this spirit, I treat Hebrew object drop, which I claim is topic drop, as occurring at PF. This idea is further developed in section 5.

Such an account of object drop does not rely on the existence of syntactic elements and processes such as null operators and verb raising. It requires only that the object be identified as a topic at PF, and thus be allowed to remain unpronounced.

Before this section is concluded, I would like to make clear that these non-generic null objects are not obligatory and that they characterize informal speech, whereas in more formal registers, a pronoun is used in the same position. It is also important to note that not every (non-restrictive) topic object may drop. Hebrew imposes various restrictions on object drop, among them semantic and phonological ones, that are yet to be fully studied[4].

3.2 The topic drop analysis and sloppy readings

In this section I examine how the topic drop analysis extends to sloppy readings. As discussed above, a null object in the second conjunct whose reference contains a possessive pronoun is potentially ambiguous between a sloppy and a strict reading. The strict reading easily conforms to the topic drop analysis. To illustrate this, let us consider

[3] Hebrew is a partial *pro*-drop language. Agreement-related *pro*-drop is only available for non-present tense and for non-3rd person. Since the example uses present tense and 3rd person, a *pro*-drop analysis is irrelevant here.

[4] One such semantic restriction requires that the null object be inanimate, whereas animate null objects are hardly acceptable. For this reason, the examples throughout this paper are limited to inanimate null objects.

again example (13), repeated below as (23). This time let us imagine a context that calls for a strict reading, i.e. one where the dropped object refers back to the object in the first clause (as the indices show). The context is provided in the example:

(23) [Speaker: Dina is so untidy that Tali must always clean up after her. Last night before they went to bed…]
Dina$_i$ sama et ha-simla šela$_i$ al ha-kise
Dina put ACC the-dress her on the-chair
ve-tali$_k$ talta ø$_i$ ba-aron
and-Tali hung in.the-closet
'Dina put her dress on the chair and Tali hung it in the closet.'

The topic of the second clause is Dina's dress, which is mentioned overtly in the first clause. Due to its topichood it can drop.

More challenging to the topic drop idea is the sloppy interpretation. Under this reading, the referent of the dropped object is *not* the previously mentioned object. In our example, the gap now refers to Tali's dress, which is not previously mentioned. I repeat the example, this time preceded by a question which provides a context that calls for a sloppy interpretation:

(24) Q: *Mi sama et ha-simla šela eyfo?*
who put ACC the-dress her where?
'Who put her dress where?'
A: *Dina$_i$ sama et ha-simla šela$_i$ al ha-kise*
Dina put ACC the-dress her on the-chair
ve-tali$_k$ talta ø$_k$ ba-aron
and-Tali hung in-the-closet
'Dina put her dress on the chair and Tali hung her dress in the closet.'

The null object now refers to Tali's dress, which is not available as a topic in this discourse. Note, however, that what *is* available in this discourse is a topic set: the set of dresses {Dina's dress, Tali's dress}. A multiple WH-question as in (24) is a type of discourse that provides a topic set, as discussed in Pesetsky (1987) and in Erteschik-Shir (1997, 2007). The dropped object in the second conjunct refers to one of the items in this set, namely to Tali's dress.

Note that as opposed to the topic set {milk, apples} from example (19b), the items in the topic set in (24) are each linked to an item from another topic set, the set of dress owners {Dina, Tali}, which is also made available by the discourse. This linking allows the restrictive topic in the second conjunct to be null; its content can be recovered through its link to the subject of its clause.

I conclude therefore that Hebrew object drop may apply to restrictive topics, as well as to regular topics, as long as the restrictive topic can be identified through linking to an item in the discourse.

4 The content of the missing object

I have established that the empty category is a constituent identified as a topic (or restrictive topic) and deleted at PF. I now address the question of the content of that

constituent. The current cross-linguistic literature on null arguments makes available two options: that the silent constituent is an unpronounced pronoun (see e.g. Neeleman and Szendröi 2005), and that it is a full DP (see e.g. Kim 1999, Şener and Takahashi 2010). I will examine each of these options in turn.

4.1 The null object as a pronoun

The idea that an empty object is a pronoun (but not necessarily *pro*) has been proposed in various works, among them that of Neeleman and Szendröi (2005). Let us consider the possibility that the dropped object of Hebrew is indeed a pronoun. At first glance this idea seems appealing for the case at hand. As was shown in section 3, Hebrew (non-generic) null objects alternate freely with overt object pronouns. Consider again examples (14) through (17), in which the language allows either an overt pronoun or a gap, without any change in meaning. This flexibility points to the possibility that the constituent in question is merged in the syntactic component as a pronoun. At the phonetic component, due to its topichood, a choice can be made whether to realize the pronoun phonetically or leave it unpronounced (see Sigurðsson & Maling 2008).

If this idea is on the right track, then we expect every occurrence of null object to not only be grammatical with a pronoun but also to have the same interpretation. While this is indeed what we find in a wide range of dropped object utterances, excluded are those dropped objects that produce a sloppy reading. I demonstrate this below with sentence (13), repeated as (25). This time, unlike examples (14)-(17), an overt pronoun in the position of the gap does not yield an equivalent interpretation. While the gap creates sloppy/strict ambiguity, the overt pronoun *ota* 'it', as the indices indicate, can only be interpreted with the strict reading. In other words, it necessarily refers back to the object from the first clause.

(25) *Dina$_i$ sama et ha-simla šela$_i$ al ha-kise*
Dina put ACC the-dress her on the-chair
ve-tali$_k$ talta ø$_{i/k}$ / ota$_{i/*k}$ ba-aron.
and-Tali hung it in.the-closet
'Dina put her dress on the chair and Tali hung (it) in the closet.'

This example shows that an object gap and a pronoun do not completely overlap in interpretation, since a pronoun does not allow a sloppy reading. If we aim to define the content of the null object in a way that encompasses sloppy readings, then we must abandon the possibility that the null object merges as a pronoun.

4.2 The null object as a full DP

Having rejected the pronoun idea, I now examine the possibility that the null object starts out as a full DP, identical to the antecedent object DP. A solution along these lines has been adopted for East Asian languages such as Japanese, Korean, and Chinese (e.g. Oku 1998, Kim 1999). Its most obvious advantage is that it can explain sloppy readings while not excluding strict readings. This flexibility is demonstrated below with the same sentence. As the indices indicate, both the gap and the full DP allow a sloppy as well as a strict reading.

(26) *Dina*$_i$ *sama et ha-simla šela*$_i$ *al ha-kise*
Dina put ACC the-dress her on the-chair
ve-Tali$_k$ *talta* ***ø***$_{i/k}$ / *[et ha-simla šela*$_{i/k}$*] ba-aron.*
and-Tali hung ACC the-dress her in-the-closet
'Dina put her dress on the chair and Tali hung her dress in the closet.'

It seems then that the full DP account is satisfactory, covering the entire range of data. But this is not the case. There it a type of null object construction that is not accounted for by the full DP analysis. In this construction the antecedent is a quantified object, as in (27), where the antecedent is 'three books'.

(27) *Dani katav [šloša sfarim] ve-miriam tirgema* ***ø.***
Dani wrote [three books] and-Miriam translated
'Dani wrote three books and Miriam translated them.'

The only possible interpretation of the null object in the second clause is co-reference with the object in the first clause; namely, Miriam translated those same three books that Dani wrote. Another potential meaning--that Miriam translated three *other* books--is not available.

This property of the gap is not replicated with an overt full DP. I demonstrate this below with a minimally different sentence, in which an overt full DP is inserted in the same position as the gap above.

(28) *Dani katav [šloša sfarim] ve-miriam tirgema [šloša sfarim].*
Dani wrote [three books] and-Miriam translated [three books]
'Dani wrote three books and Miriam translated three books.'

This configuration does not allow co-reference between the object in the first clause (the three books written by Dani) and the object in the second clause (the three books translated by Miriam). The only available interpretation is that Miriam translated three *different* books.

A necessary conclusion from these data is that a full DP does not underlie an unpronounced object, at least when the antecedent object is quantified. If the dropped object in (27) started out as a full DP, then we would expect it to yield the same interpretation made available by a full DP in (28), contrary to fact.

Before we move on, it is worthwhile to consider (27) again. The inability of the gap to refer to different items calls for an explanation. The reader may suspect that it is pragmatics that favors the reading in which the same three books are first written and then translated. But an explanation in terms of topichood is more appropriate here. If the entire utterance is about the same three books, then (27) is a classic case of COD construction: the first-clause object 'three books' is interpreted as a topic and thus is allowed to drop in the second clause. However, if the utterance is about six books (three that are written and three that are translated) then the object in the second conjunct has no discourse antecedent and cannot be understood as a topic. The result is topic drop failure.

Let us recap. We are interested in exposing the content of the null object; we have considered two options: a pronoun and a full DP. Section 4.1 has shown that the pronoun account leaves out sloppy readings. Section 4.2 has shown that the full DP idea

excludes quantified antecedent objects. A solution to this problem might be to have two separate accounts, each covering *some* of the data. However, my goal is to find a unified solution, one that will include all constructions allowing null objects.

5 The null object as a feature bundle

This problem may warrant a different approach. We have put an effort into finding out what it is that merges in syntax only to be unpronounced at PF. An alternative way to think about this problem is to say that PF is responsible for the lexicalization as well as for the silence. Note that all the null objects discussed here can freely alternate with overt material. My proposal is that in the syntactic component the constituent in question lacks lexical content; both its overt and null realizations are dealt with post syntactically, in the phonological component. PF does not suppress existing lexical material; rather, it can realize it or not. This idea means that the constituent in question is not inherently specified: it merges in syntax as a feature bundle, and it is only at PF that its features translate into phonetic content.

Proposals along these lines were introduced in Hoji (1998) and Sigurðsson and Maling (2008), although the details are different. Hoji suggests that "…the content of the supplied N-head is most likely a feature bundle, excluding phonological features" (p. 142). Sigurðsson & Maling maintain that "all pronominal arguments are syntactically computed feature bundles that may or may not be spelled out in PF" (p. 10). I extend this notion so that the feature bundle may realize phonetically either as a pronoun, a gap, or a lexical DP.

The feature bundle minimally carries these three features: topichood, the relevant theta role, and a referential index. This last feature, the referential index, connects the constituent to the discourse: it indicates what it refers back to. It also dictates what phonetic realization is allowed. For example, when the index signals that the constituent refers back to an item out of a topic set which connects to a second-clause subject (a sloppy interpretation), a pronoun will not be a possible phonetic realization. In this scenario PF may either copy the phonetic content of the first-clause object or leave the constituent null. If, on the other hand, the index indicates co-reference with an antecedent object, a pronoun becomes a legitimate phonetic choice. The desired flexibility is thus maintained, and the variety of interpretations that an object gap yields is accounted for.

6 Conclusion

Hebrew object drop is analyzed as topic drop, where a constituent identified as a topic is PF deleted. The content of that constituent is not inherently specified. More work is needed in order to turn this preliminary idea into a more elaborate account. In the meantime, it allows us to account for all object drop occurrences discussed above. Its appeal lies in its capacity to encompass a wide range of object drop cases in Hebrew; something that previous proposals have been unable to do.

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Modality in the Grammar of Modern Mayan Languages

Igor Vinogradov

This paper presents a first attempt of a comparative study of expression of modal meanings in the grammar of modern Mayan languages. There is no separate category of tense in the grammar of almost all modern Mayan languages; so modality along with aspect are main semantic domains expressed by the verbal grammar. This paper is dedicated to the study of grammatical means used to express modal meanings in the Mayan languages, as well as the distribution of these means. Particular attention will be focused on the categories of imperative and irrealis.

Keywords: *grammar, imperative, irrealis, Mayan languages, modality*

1 Introduction

The Mayan family is one of the most closely studied language families of Central America. The main reason for that is quite simple: these languages have been attracting scientists' attention for a long time due to the hieroglyphic writing on steles, monuments, pottery of ancient times. Historical interest called forth linguistic interest, but Mayan writing system resisted decryption attempts for a long time. Only in the middle of the 20th century Russian scientist Yuri Knorosov reached some success. But the interest, the Mayan languages presented, did not fade away ever since, quite the contrary, it has considerably increased. The linguists obtained the rare opportunity to observe the development of language family in the diachrony. The comparative, historical and typological studies of different linguistic fields are appearing constantly. One of them, dedicated to the expression of modal meanings in the grammar of modern Mayan languages, is presented in this paper. It should be considered a first step in the comparative and typological study of modality in Mayan languages. In this study we only consider the basic features of the grammar of Mayan languages; we do not separately analyze any particular language or any sub branch of the family. These problems remain open for future investigations.

This paper consists of three main chapters. Chapter 2 describes imperatives as a part of grammatical category of mood in modern Mayan languages. Chapter 3 deals with the category of irrealis and provides some typological reasons for its separation from the category of mood into an independent grammatical category. Analyses of original texts, written in the Tzotzil language (a dialect of Zinacantan), taken from the collection of Laughlin (1977), gave the material for examination of the category of irrealis. Chapter 4 covers the study of structure and semantics of the TAM-category (the common category of time, aspect, and mood) in Mayan languages. Here, the main attention is focused on Yucatec, because this language is quite well-classified and has a very wide system of TAM-markers. Generally, this paper is based on the analysis of three Mayan languages: Quiche, Tzotzil, and Yucatec; yet sometimes we also use the data of other languages of the family: Jakaltek, Mam, Q'eqchi', Tzutujil, Tzeltal, Sakapultek, Chol.

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1.1 Mayan languages

Languages of the Mayan family are spoken in the south of Mexico, Belize, and Guatemala. The family consists of six branches (Yucatecan, Huastecan, Mamean, Quichean, Kanjobalan, Cholan – see figure 1) and approximately 30 languages; this number varies according to the differentiation between separate languages and their dialects. More than 6 millions people speak different languages of the Mayan family nowadays. The most widespread languages are Quiche (Guatemala), Yucatec (the Yucatan peninsula, Mexico) and Cakchiquel (Guatemala). Some of the languages, such as Lacandon, Mocho, Itza', are on the edge of death (Lewis 2009). By now, only two Mayan languages are considered to be dead: there are no more speakers of Chicomuceltec and Cholti'.

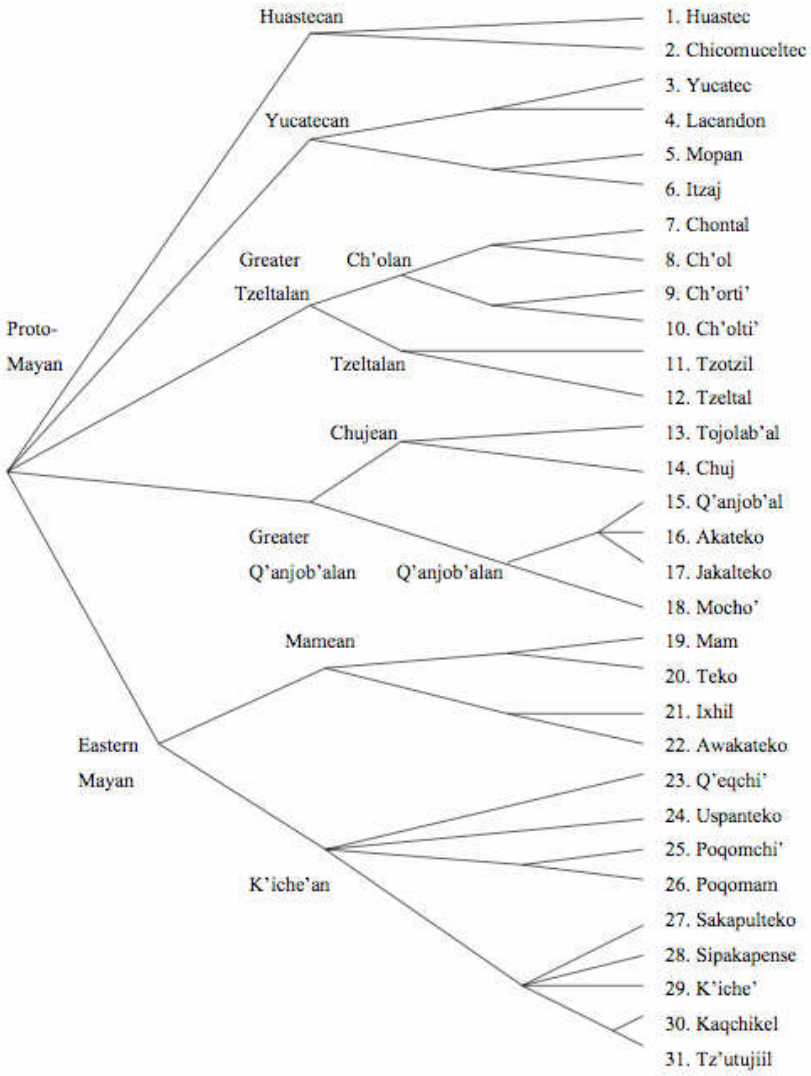

Figure 1. The classification of Mayan languages[1] (from Wichmann & Brown 2003)

[1] The names of the languages are cited here in original (Spanish-Mayan) orthography without changes. In the text of this paper above and below we use the most widespread names which may not correspond to the names at this figure.

1.2 Modality

There are two main modal domains in Mayan grammar, *irreality* and *imperative*. Traditional descriptions provided by the grammar of European languages consider irrealis (or subjunctive) and imperative as values of a common grammatical category of *mood*. The semantic field of modality is complex and, at least, bipolar (traditionally, two types of modality are distinguished: epistemic and deontic). Generally speaking, the difference between these two types is that "epistemic modality has to do with knowledge, <…> while deontic modality has to do with right and wrong according to some system of rules" (Portner 2009, 2). Another way to consider the complex of modality meanings is to see epistemic and deontic modalities "as sub-sets of a more general distinction between speaker-oriented and agent-oriented modalities" (Kroeger 2006, 166).

So, it is also possible to consider irrealis and imperative as values of two different categories within the limits of semantic domain of modality: *irrealis* (that involves "agent-oriented" modality) and *mood* (that involves "speaker-oriented" modality), respectively. In some languages of the family irrealis belongs to the common category of tense, aspect and mood (TAM-category). The difference between these theoretical approaches is shown in the following diagram (see figure 2):

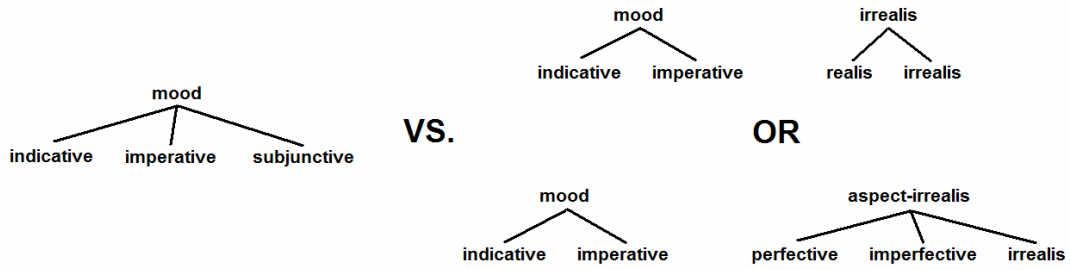

Figure 2: Theoretical approaches to the structure of the modal grammatical categories in the Mayan languages

In this paper, we will accept the second approach, according to which there are two different grammatical categories: *mood* and *irrealis*.

2 Imperative

In some languages of the Mayan family there are no markers of imperative meaning, which means they have no category of mood at all, because indicative meaning never bears any special markers in Mayan languages. For example Quiche and Sakapulteko. There are no special markers of imperative contexts in these languages, so the markers of imperfective aspect are used instead. See example (1a) with transitive verb 'to wrap up'. This marker may be accompanied by the suffix of irrealis, as it could be seen in (1b) with intransitive verb 'to walk'.

(1) a. *K-a-pis* *chupam* *ri* *tojb'al* *a-q'ij* (Quiche)
IPFV-2SG.ERG-wrap.up inside DEF price 2SG.POS-day
k-ya' *ch-a-we*.[2]
IPFV-give that-2SG.POS-for[3]
'Wrap up the payment you will be done.'
(Camajá Cabrera 2002, 47)

b. *K-at-b'in-aq*!
IPFV-2SG.ABS-walk-IRR
'Walk!'
(Mó Isém 2007, 184)

There are no differences between positive imperative and negative imperative (prohibitive) sentences. In fact, imperative sentences don't differ from the similar indicative sentences in Quiche. Compare the structure of verb forms (aspectual prefix + prefix of number and person of the subject + verbal root) in examples (1a) and (2).

(2) *Ri* *a* *Xwan* *x-u-pis* *ri* *me's* *chupam* (Quiche)
DEF MASC Juan PFV-3SG.ERG-wrap.up DEF cat inside
ri *rex-taq* *u-xaq* *che'*.
DEF verde-PL 3SG.POS-leaf tree
'Juan wrapped up the cat in the green leafs.'
(Camajá Cabrera 2002, 47)

However, most of the Mayan languages do have the grammatical category of mood presented by *imperative* and *indicative* moods. As it was mentioned before, indicative mood is always unmarked. So our task, as far as the category of mood in Mayan grammar is concerned, is to examine the imperative mood and its different markers, which are used depending on the transitivity of a verb. For example, in Tzotzil imperative is expressed by the suffix *-o* with transitive verbs and by the suffix *-an* with intransitive ones. Compare the forms of the verbs *mala* 'wait' and *chotol* 'sit down' in example (3).

(3) *Mo'oj,* *mu* *x-a-ti'-on,* *mala-o* *j-likel-uk,* (Tzotzil)
no NEG IPFV-2.ERG-eat-1.ABS wait-IMP one-moment-DIM
chotl-an-ik.
seat.down-IMP-PL
'No, don't eat me! Wait a minute! Sit down!'
(Laughlin 1977, 48)

Moreover, for instance Jakaltek and Mam each have only one imperative suffix, used either with transitive or intransitive verbs. In other cases imperative meaning is expressed by pure verbal stem or by a marker of irrealis. So, in Jakaltek, one of the

[2] The orthography of language examples remains the same as in the cited source.

[3] Abbreviations: 1 – first person; 2 – second person; 3 – third person; ABS – absolutive; APPL – applicative; DEB – debitive; DEF – definitive; DIM – diminutive; DIR – directional; ENCL – enclitic; ERG – ergative; EVID – evidential; HORT – hortative; IMP – imperative; INDEF – indefinite; INF – infinitive; IPFV – imperfective; IRR – irrealis; LOC – locative; MASC – masculine; NEG – negative; OPT – optative; PAS – passive; PAST – past tense; PFV – perfective; PL – plural; POS – possessive; POSS – possessive noun; PTCP – participle; Q – question marker; QUANT – quantifier; REM – remoted; SG – singular.

languages of the Kanjobalan branch, if a verb is transitive, just its pure stem without any aspectual, modal or personal affixes is used to mark imperative meaning. (See examples (4a,b)).

(4) a. *Hal hun-uj tzoti' w-et an*! (Jakaltek)
say one-INDEF word 1SG-to 1.POS
'Say a word to me!'
(Grinevald Craig 1977, 70)

b. *Oc-aŋ, pisy-aŋ.*
enter-IMP sit.down-IMP
'Come in and sit down.'
(Grinevald Craig 1977, 70)

The opposite case could be found in the Mam. A finite verb form without aspect affixe is used there to mark imperative meaning in case with intransitive verbs. (Compare examples (5a,b)).

(5) a. *B'li-m-a aq'uuntl ky-uk'a xjaal*! (Mam)
know-IMP-2SG work 3.POS-with person
'Ask about the work with the people!'
(England 1983, 174)

b. *Txi'-ya b'eeta-l*!
go-2SG walk-INF
'Go walk!'
(England 1983, 173)

Such difference between transitive and intransitive verbs in the way of expressing imperative can be explained by the ergative strategy of person marking in most of the Mayan languages. As suggested in (Dixon 1979), a language has a "true universal concept of (deep) subject <…> formed by grouping agent-like argument of a transitive verb and the single actant of intransitive verbs" (Manning 1996, 7), that can also be called as logical subject.

> The logical subject is the highest argument at argument structure of the basic form of a predicate. <…> For semantic reasons certain grammatical processes will universally pick out this notion of (deep) subject regardless of the surface pivot of the language. This is because it is the (deep) subject that can control events. These processes include deciding the addressee of imperatives… (Manning 1996, 7)

Thus, the presence of two different imperative markers in the Mayan languages, distribution of which depends on the transitivity of a verb, can be explained by the different marking of agents of transitive verbs and single arguments of intransitive verbs in ergative and accusative languages.

As could be concluded, some Mayan languages of the Quichean branch do not have category of mood at all, since there is no difference between imperative and indicative sentences in these languages. Yet there is another group of the languages that do have this difference; the grammatical category of mood in these languages is presented by indicative and imperative. Some languages, such as Jakaltek or Mam, that fall out of this differentiation could be symbolically placed between these two groups. They present specific theoretical interest. From all evidence, in these languages the

transitive and intransitive verbs have quite significant difference from grammatical point of view. For example, in Mam transitive verbs do have a category of mood, while intransitive verbs do not.

3 Irrealis

Not all linguists admit typological adequacy of the term *irrealis*; see, for example, critical opinions in (Bybee 1998). This scholar considers this term too ambiguous to be satisfactory for linguistic typology. Yet nowadays the term becomes conventional and is used more and more widely. As far as the Mayan languages are concerned, the category of irrealis is of great importance.

Irrealis is a highly heterogeneous category that embodies a variety of semantic features. Elliott (2000: 66) defines it as follows: "…an *irrealis* proposition prototypically implies that an event belongs to the realm of the imagined or hypothetical, and as such it constitutes a potential or possible event but it is not an observable fact of reality". A wide range of grammatical meanings could fall (or not fall) under this definition. Therefore the aim of typologists is to make a universal list of meanings that are marked by the category of irrealis in the languages of the world and to explain exceptions to this rule. We will describe the usage of irrealis markers in Mayan languages and compare it with typological pictures obtained via comparative studies of this category, such as (Bugenhagen 1993), (Bowern 1998), or (Elliott 2000), in order to argue that irrealis in the Mayan languages has some specific semantic and morphosyntactic features which make Mayan irrealis dissimilar to the same category in other languages.

In Mayan languages irrealis is mostly used to express one of the following meanings: negation (6), imperative (7), desire (8), purpose (9), counterfactual condition (10); (see examples from different languages below).

(6) *M-ix* *utz* *ta.* (Tzutujil)
NEG-2PL:all good IRR
'You all aren't good.'
(Miestamo 2007, 562)

(7) *K-at-war-oq*! (Sakapultek)
IPFV-2SG.ABS-sleep-IRR
'Sleep!'
(Mondloch 1981, 83)

(8) *K-w-aaj* *nu-to'-iik.* (Quiche)
IPFV-1SG.ERG-want 1SG.ABS-help:PAS-IRR
'I want someone to help me.'
(López Ixcoy 1997, 138)

(9) *X-ul* *in-atin-q.* (Q'eqchi')
PFV-come 1SG.ABS-bathe-IRR
'I came to bathe.'
(Zavala 1993, 85)

(10) *Ati* *j-mil-ik-ot-e,* *ch'abal-ot* *xa.* (Tzotzil)
if 1.ERG-kill-IRR-2.ABS-ENCL not.exist-2.ABS already
'If I had killed you, you would not have existed yet.'
(Haviland 1981, 338)

It is important to note that if the condition applies to present or future tense and therefore is not counterfactual, the marker of irrealis doesn't appear. (Compare examples (10) and (11)).

(11) *A* *timi* *o* *bu* *k-il-e* *ta* *j-ti',* (Tzotzil)
EMPH if REL where 1.ERG-see-ENCL IPFV 1.ERG-eat
xi *ti* *bolom-e.*
3.ERG.PFV:say DEF tiger-ENCL
'If I see him anywhere, I'll eat him, – said the tiger.'
(Laughlin 1977, 52)

Two other meanings that are present in some Mayan languages could be added to this list of meanings expressed by irrealis: approximateness and indefiniteness. In (12) approximateness is expressed by the suffix of irrealis added to a numeral, and in (13) the indefinite pronoun is formed by means of the suffix of irrealis.

(12) *Ak'-b-o-n* *ox-eb-uk* *peso.* (Tzeltal)
give-APPL-IMP-1.ABS three-QUANT-IRR peso
'Give me about three pesos.'
(Polian 2007, 21)

(13) *I-bat* *s-k'el-b-el* *s-na* *ti* *oy* *k'us-uk* (Tzotzil)
PFV-go 3.ERG-look-APPL-PTCP 3.POS-casa if exist what-IRR
y-u'un.
3.POS-POSS
'They went to look at his house [to see] if he had anything.'
(Laughlin 1977, 154)

In many cases irrealis is "quasi-obligatory" and under certain conditions can (or even must) be omitted. So, in Tzutujil irrealis is never used in the contexts of verbal negation if a verb occurs in imperfective aspect, while it is obligatory with a verb in perfective aspect. (Compare examples (14a,b)).

(14) a. *Ja* *ch'ooy* *ma* *t-uu-tij* *ja* *kéeso.* (Tzutujil)
DEF rat NEG IPFV-3.ERG-eat DEF cheese
'The rat isn't eating / won't eat the cheese.'
(Dayley 1985, 321)

b. *Ja* *ch'ooy* *ma* *x-uu-tij* *ta* *ja* *kéeso.*
DEF rat NEG PFV-3.ERG-eat IRR DEF cheese
'The rat didn't eat the cheese.'
(Dayley 1985, 321)

Interesting fact of "quasi-obligatoriness" of irrealis is presented in the Tzotzil language when we face the need to express desire. There are many ways to express desire

in Tzotzil, and most common involve the use of the particle *chak* and the verb *k'an*. With the particle *chak* irrealis is normally used, but is expressed by the special suffix with intransitive verbs and by the absence of aspectual prefix with transitive ones (this distribution of the markers of irrealis can be observed in Tzotzil in many contexts), as it is shown in examples (15a,b).

(15) a. *Batz'i chak vay-ik-on, xi la ti* (Tzotzil)
really want sleep-IRR-1.ABS 3.ERG.PFV:say EVID DEF
antz-e.
woman-ENCL
'I'd like to get to sleep, said the woman.'
(Laughlin 1977, 181)

b. *Ak'-b-o-n tal j-p'ej-uk li lo'bol-e,*
give-APPL-IMP-1.ABS DIR one-QUANT-DIM DEF fruit-ENCL
chak j-lo' k-a'i.
want 1.ERG-eat 1.ERG-feel
'Give me a fruit. I feel like eating one.'
(Laughlin 1977, 40)

The rule of irrealis usage with the verb *k'an* is more complex. Haviland (1981) suggested, that the suffix of irrealis is used with the verb *k'an* only when this verb is preceded by the particle *ak'o* 'let (+ inf.)'. (Compare examples (16a,b)). This particle diachronically consists of the verb *ak'* 'to give' and the imperative transitive suffix *-o*, and irrealis is used with any form of this verb, not only imperative. (See examples (16b,c)).

(16) a. *Aa mi ch-a-k'an ch-a-kel l-av-ajnil-e?* (Tzotzil)
ah Q IPFV-2.ERG-want IPFV-2.ERG-look DEF-2.POS-wife-ENCL
xi la.
3.ERG.PFV:say EVID
'"Ah, do you want to see your wife?" – he asked.'
(Laughlin 1977, 28)

b. *Ta j-k'an ak'o p'ol-ik-uk li kalak'-e.*
IPFV 1.ERG-want let breed-PL-IRR DEF hen-ENCL
'I want my hens to breed.'
(Haviland 1981, 333)

c. *Mu xa s-k'an x-ak' il-uk ti s-sat*
NEG already 3.ERG-want IPFV-give see-IRR DEF 3.POS-face
un-e.
then-ENCL
'He didn't want to show his face now.'
(Laughlin 1977, 49)

Thus, we could conclude that the category of irrealis in most of Mayan languages is used in following cases:

- negation (not only verbal),
- imperative (sometimes including prohibitive),
- desire,
- purpose,

- counterfactual condition,
- approximateness, and
- indefiniteness.

Elliott (2000: 70) presents the following semantic domains usually covered by category of irrealis in different languages: *potential events*, *conditions* (including counterfactual), *imperative*, *negation*, *habitual*, *interrogation*. The list of all cases which can bear markers of irrealis in the languages of New Guinea could be found in (Bugenhagen 1993). There are fifteen items on the list: *future tense*, *purpose*, *obligation*, *apprehensive*, *habitual*, *hypothetic condition*, *desire*, *imperative*, *doubt*, *present tense*, *counterfactual condition*, *possibility*, *prohibitive*, *negation*, *past tense*. Thus, the Mayan irrealis in general does not present any unexpected usage. It should be noted, though, that it has some special features. Firstly, irrealis in Mayan languages is never used in contexts with habitual meaning. Secondly, the usage of irrealis for the purpose of marking approximateness and indefiniteness in some languages of the family may be considered uncommon.

Bowern (1998) proposes an interesting typological hierarchy of irreal meanings that could be presented in the following way (see figure 3; arrows mean implications):

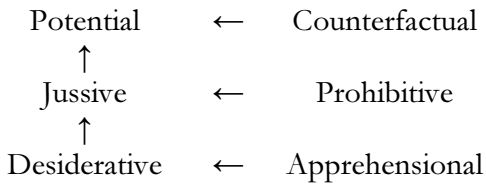

Figure 3. Hierarchy of irreal meanings (according to Bowern 1998)

> So, if a language marks a particular modality for irrealis then it will mark every positive category further up the hierarchy for irrealis also. If a language marks volition [i.e. desiderative meaning] with the irrealis, then it will also mark potential events and commands [i.e. jussive meaning] for irrealis. (Bowern 1998)

In general, this scheme appears to be correct for all languages of the family. There is only some vagueness with the principal irreal meaning, according to Bowern (1998), – potential. In Mayan this meaning can be expressed in different ways; for example, in Tzotzil, one of the following words is used to express potentiality: a) the word *oyuk* compounded by the existentional predicate *oy* and the suffix of irrealis, b) the verb *t'ak* that is used very seldom, c) the spanish loanwords *pwede* or *pwedes*, d) the particle *chak*, etc. Although irrealis is sometimes (but not always) used in these contexts, presence of loanwords is evidence of outlying position of potential meaning in the semantic structure of the domain of irreality in Tzotzil and in all Mayan languages in general. However, some means of expressing potentiality contain markers of irrealis, so we can consider the irrealis in Mayan languages as follows:

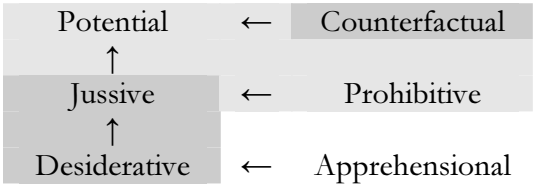

Figure 4. Irrealis in Mayan languages with regard to the universal hierarchy of irreal meanings

At this scheme the meanings expressed by the category of irrealis in the Mayan languages are marked by the grey color. The color saturation marks the frequency and "universality" of each irreal meaning. It isn't possible to make a universal diagram for all Mayan languages because of significant differences between languages among the family in grammatical meanings marked by irrealis (for instance, not all languages regard negation as an irreal meaning, only few languages mark approximateness by irrealis, etc.). Even the dialects of the same language may differ in the way of using modal categories (irrealis or imperative). So, in some southern dialects of Tzeltal prohibitive is marked by imperative, which is different from northern dialects (Polian 2007). (Compare examples (17a) from Tzeltal of Oxchuk (northern dialect) and (17b) from southern Tzeltal).

(17) a. *Ma me x-ok'-at.* (Tzeltal)
NEG please IPFV-cry-2.ABS
'Don't cry.'
(Polian 2007, 9)

b. *Ma me ok'-an.*
NEG please cry-IMP
'Don't cry.'
(Polian 2007, 9)

Finally, it should be noted that in most of Mayan languages category of irrealis is not fully grammaticalized, it is confirmed by a wide range of cases of "quasi-obligatoriness" of irrealis, as well as by the usage of markers of irrealis with different parts of speech (as in examples (6), (12), (13)). There are different means of expressing irrealis in the Mayan languages: postpositional particles (as in Tzutujil, examples (6), (14b)), affixes (as in Quiche or Q'eqchi', examples (8) and (9)), absence of aspectual marker (as sometimes in Tzotzil, example (15b)). But the set of these means is constant for every specific language; this is the main reason to consider irrealis as a highly heterogeneous, but indivisible morphosyntactic category.

4 TAM-category

One of the most interesting features of the Mayan verbal grammar is a specific interaction between the categories of irrealis and aspect. In rare cases the markers of aspect combine with the markers of irrealis within a single verb form, and it seems to be a universal principle for all languages of the family. In most languages it doesn't apply to imperative contexts. Although in some languages like Tzotzil or Tzeltal this principle seems correct for the category of imperative too. But we have already seen the sentence (1b) in Quiche where the prefix of imperfective combines with suffix of irrealis in the phrase with imperative meaning. So, for many Mayan languages it would be reasonable to consider aspectual, irreal (and sometimes temporal, but not imperative) meanings as values of one common grammatical TAM-category.

Of course, there are some exceptions to this rule. A good example can be provided again by the Tzotzil language. Here in the relative sentences of counterfactual condition the irrealis is used along with the perfective aspect. (See example (18)).

(18) *Ati* *l-a-k-il-uk* *volje-e,* *laj-k'op-on* (Tzotzil)
if PFV-2.ABS-1.ERG-see-IRR yesterday-ENCL finish-speak-1.ABS
ox.
not.now
'If I had seen you yesterday, I would have already spoken to you.'
(Haviland 1981, 339)

Note, that the use of a verb form without any aspectual prefix is also possible in the same sentence. However, transposition of personal markers is needed, then the sentence will have exactly the same meaning (See examples (18) and (19)).

(19) *Ati* *k-il-ik-ot* *volje-e,* *laj-k'op-on* (Tzotzil)
if 1.ERG-see-IRR-2.ABS yesterday-ENCL finish-speak-1.ABS
ox.
not.now
'If I had seen you yesterday, I would have already spoken to you.'
(Haviland 1981, 339)

The possibility of combining aspect and irrealis markers in a single verb form can be explained in the following way: the relative sentence of counterfactual condition is a nominalization. The conjunction *ati* 'if' consists of the emphatic particle *a* and the definite article *ti* that is always followed by the enclitic *-e*. So, from syntactical point of view there is an emphasized substantive formed by a whole sentence. The use of irrealis with substantives is very common in the Tzotzil language.

A typologically uncommon phenomenon occurs in Mayan languages of the lowland area (Yucatecan branch and some Cholan languages): the TAM-category is usually expressed in two positions at once within a single verb form; see examples (20) and (21). An analogous phenomenon occurs also in some languages of the highland area, but it is not so definite there.

(20) *Choñkol* *k-ts'ujts'-uñ* *jiñi* *ñeñe'.* (Chol)
DUR 1.ERG-kiss-IPFV DEF baby
'I am kissing the baby.'
(Coon 2010, 25)

(21) *T-u* *búukint-ah* *hun-p'éel* *ma'loob* *nòok'.* (Yucatec)
PFV-3.ERG put.on-PFV one-QUANT good dress
'He put on a good dress.'
(Andrade and Máas Collí 1990)

In these examples we could see two markers of aspect within a single sentence: durative and imperfective in (20), and two perfective markers (the difference in their meanings is not perfectly clear) in (21).

The same "double marking" also occurs with modal meanings. Moreover, modal markers are sometimes combined with aspectual ones. The number of possible combinations here is highly strict: one specific marker can only combine with strictly definite another one. All the studies dedicated to the problem of modal-aspectual system of the languages of Yucatecan branch still cannot give an answer, why can the markers only combine in one way, and not the other. In these cases some other meanings from

the semantic domain of modality (desiderative, debitive, optative, hortative) can be expressed together with irrealis or aspect. Examples (22a,c) present combinations of optative, hortative, and debitive markers in Yucatec with markers of irrealis (22a) and imperfective (22b,c); note, that other combinations (for example, optative with imperfective or debitive with irrealis) are impossible.

(22) a. *Káa xi'k ti' le noh beeh-o'.* (Yucatec)
OPT go:IRR LOC DEF big road-ENCL
'Let him take the large road.'
(Andrade and Máas Collí 1990)

b. *Ko'x uk'-ik sa'.*
HORT drink-IPFV atole
'Let's drink atole.'
(Blair and Vermont-Salas 1965)

c. *He'l tak in kut-al han-al ti' u mayak-il!*
DEB but 1SG.ABS sit.down-IPFV eat-IPFV LOC 3SG.POS table-DEF
'But I will sit down and I will eat at his table!'
(Andrade and Máas Collí 1990)

Yucatec provides a great variety of modal and aspectual markers, which include some markers with temporal meanings too. In the sentence (23) the marker of past remoted tense is present in combination with the suffix of irrealis.

(23) *Úuch k'oha'nchah-k-ech máasima?* (Yucatec)
PAST.REM be.sick-IRR-2SG.ERG Q
'You've been sick for a long time, haven't you?'
(Blair and Vermont-Salas 1965)

Finally, some particles that express modal meanings can be used together (see example (24) where markers of hortative, optative and irrealis occur in the same sentence), that makes the TAM-system of Yucatec even more complicated.

(24) *Ko'x káa han-ak-o'on ts'o'ok-ol-e' k-a* (Yucatec)
HORT OPT eat-IRR-1PL.ERG finish-IPFV-ENCL IPFV-2SG.ABS
bin.
go
'Let's eat, then you can go.'
(Andrade and Máas Collí 1990)

Thus, in Mayan languages such as Yucatec there is no way to consider irrealis (or mood, because it includes many other modal meanings that all have their own markers that differ from the markers of irrealis) as a grammatical category, separated from the category of aspect and possibly tense. The "secondary" modal meanings as hortative, desiderative, debitive, etc. are not expressed by grammatical means in most of the languages from the Mayan highland area.

5 Conclusions

There are two main modal domains quite separated in the grammar of modern Mayan languages: imperative and irrealis. As far as the category of imperative is concerned, its usage is somewhat reduced in most of the languages of the family and is non-existent in some languages at all. In which case its functions are carried out by the category of irrealis.

As far as the category of irrealis is concerned, we examined two main groups of Mayan languages. These groups are distinguished according to the interaction between irrealis and other verbal categories such as aspect and tense. In the first group that consists of the languages of the Mayan lowland area irrealis, aspect and tense form one common grammatical category (the TAM-category), that is notable for highly complicated internal structure – semantical and syntactical. Some "additional" modal meanings, such as debitive, optative, or hortative, are expressed in the grammar of these languages. In the languages of the Mayan highland area the category of irrealis is much more isolated, but it nevertheless has some specific restrictions on the use in combination with aspectual markers. The Mayan irrealis was analyzed from typological point of view; and this analysis brought to light two specific features: first, irrealis never marks habitual aspect in Mayan languages; and second, it is used quite seldom to mark potential meanings.

A deep, profound study of modality in the languages of Mayan family needs a careful analysis of every language (and sometimes every dialect). This paper only describes some basic features and preliminary results. Such phenomena as TAM-category (its syntactic and semantic structure; interaction of different markers), the category of irrealis (the whole variety of cases of its use in typological), the specific interaction of the categories of aspect and mood (that is apparently closely connected to the general meaning of these grammatical and semantical categories), have not been thoroughly explored yet and present a great material for future analysis.

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Lexical Positive Polarity Items in Romanian*

Mihaela Zamfirescu

The term polarity item has been used to define the linguistic constructions whose acceptability in a sentence depends on whether that sentence is grammatically negative or affirmative. This paper discusses lexical positive polarity items in Romanian, like *olecuta* ('a little') and *ca dracu* ('as hell'), which cannot occur within the scope of clausemate negation, hypothesis confirmed by native speakers of Romanian in one of the two experiments that the paper presents. Following Israel (1996), the focus, in this paper, lies on the meaning of PPIs, analyzing PPIs as scalar operators, that denote large or small quantities, that have an emphatic or attenuating effect, intensifying or attenuating the rhetorical force of an utterance. Following Israel's (1996) proposal, polarity sensitivity is understood in this paper as sensitivity to scalar reasoning, and the inferences relevant to polarity licensing do not depend on semantic entailment alone, but on a general ability for scalar reasoning.

Keywords: *positive polarity, scalar operators, pragmatic content*

1 Background: Syntactic and Semantic Accounts of Polarity Items

For years, many studies on polarity items have focused on providing a suitable definition of the licensing conditions, since polarity items are defined in terms of their distributions, but there are a number of important works, like Fauconnier's (1977) study, Kadmon and Landman's (1993) study and Israel's (1996 and the following) theory that focus on the nature of polarity sensitive items themselves. Following Israel (1996), this paper views polarity items in terms of the semantic and pragmatic contents they encode in observable discourse, building on Israel's (1996) claim that polarity items are polarity sensitive because of the meanings they encode.

With respect to the licensing of negative polarity items (NPIs), NPIs can be licensed by negative contexts, and negative contexts are introduced by negative elements (i.e. they require a negative operator above them in order to be licensed), such as the ones in figure (1) (figure presented in Zeijlstra, 2004).

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Figure 1: The class of negative elements

Negative Element	Properties	Examples
Negative markers	*yield* (sentential) negation	*Not* (English) *Nu* (Romanian)
Negative quantifiers	quantifiers that always introduce a negation and bind a variable within the domain of negation	*Nothing* (English) *Niets* (Dutch)
N-words	quantifiers that introduce negation in particular syntactic configurations	*Nessuno* (Italian) (Romanian)
Semi-negatives	Verbs or prepositions that have a negative connotation and that can be paraphrased with a true negative sentence	*Sans* (French) *Fara* (Romanian) *Doubt* (English) *Refuza* (Romanian)

However, the story is not that simple, since besides negation, which is the prototypical trigger, there are many triggers that have little, if anything to do with negative constructions, as is shown in the following examples, taken from Linebarger (1987), where NPIs are allowed within the scope of: *adversative predicates* as in (1), *antecedents of conditionals* as in (2), *comparative 'than' clauses* as in (3), *relative clauses headed by a universal* as in (4), *questions* as in (5), *few* as in (6), *too* as in (7), *only* as in (8).

(1) a. *He refused* to budge an inch.
b. **He promised* to budge an inch.
c. *She was surprised that there was* any *food left.*
d. **She was sure that there was* any *food left.*
e. *I'm sorry that I* ever *met him.*
f. **I'm glad that I* ever *met him.*
g. *I doubt he* much *likes Louise.*
h. **I think he* much *likes Louise.*

(2) a. *If you steal* any *food they'll arrest you.*
b. **If you steal food, they'll* ever *arrest you.*

(3) a. *He was taller than we* ever *thought that he would be.*
b. **He was* so *tall that* we ever *thought he would bump his head.*

(4) a. *Everyone who knows* a damn thing *about English knows that it's an SVO language.*
b. **Someone who knows* a damn thing *about English knows that it's an SVO language.*

(5) a. *Have you* ever *met George*?
b. **You have* ever *met George*.
c. *Who* gives a damn *about Bill?*
d. **Bob* gives a damn *about Bill*.

(6) a. *Few people have* any *interest in this.*
b. **Some people have* any *interest in this.*
(7) a. *John is too tired to* give a damn.
b. **John is tired enough* to give a damn.

(8) a. *Only John has* a hope in hell *of passing.*
b. **Even John has* a hope in hell *of passing.*

Analyzing all these negative contexts, the question that many studies tried to answer was what exactly these contexts have in common, and thus, proposals for the licensing of NPIs can be divided in accounts that claim that the licensing principle is syntactic in nature, or accounts that claim that the licensing principle is semantic/ pragmatic in nature.[1]

Syntactic accounts have focused on the licenser – licensee relation, aimed at determining which conditions have to be satisfied for the NPI to be 'in construction with' the trigger (Klima, 1964). These approaches presented the licensing requirement as a syntactic c-command requirement: an NPI has to be syntactically c-commanded by negation. The cases of non-negative triggers were explained by appealing to pragmatic explanations (cf. Baker, 1970), where NPIs have to be within the scope of negation, although negation need not be actually present in the sentence where the NPI occurs, but a negative statement may be entailed by it. According to Linebarger (1981), NPIs are licensed either in the immediate scope of negation in the Logical Form of a sentence S or when there is a proposition entailed or implicated by an S in whose LF the NPI occurs in the immediate scope of negation. In addition to the licensing conditions, syntactic approaches want to determine the position licensers can occupy in clause structure, especially when we deal with contexts such as questions, conditionals, comparatives, and complements of adversative predicates, where NPIs are licensed without overt negatives. The positing of abstract negative complementizers (Laka, 1990) and neg-features in the CP (Progovac, 1994) are two ways of addressing the previously mentioned problem.[2]

Building on theories concerned with scalar predication (Horn, 1972), scale reversal (Fauconnier, 1975) and the property of monotonicity within the account of generalized quantifiers (Barwise and Cooper, 1981), in order to explain the licensing properties of the contexts presented previously in examples (2) – (8), Ladusaw's[3] (1979) proposal is that

[1] The aim of this section or paper, for that matter, is not to provide a detailed description of the disadvantages of the syntactic or semantic accounts of polarity items. This section aims at providing the major concerns of the studies on polarity items in order to motivate the claim that the licensing and use of PPIs in Romanian belongs to pragmatics.

[2] A theory of NPI licensing based on Baker (1970) and Linebarger's (1981) extension of the original claim by Klima (that a negative polarity item yields a grammatical sentence if it is 'in construction with' an affective operator) faces several challenges since it may overgenerate and it does not provide a uniform way of determining indirect licensing.

[3] Ladusaw's (1979) theory investigates the semantic feature under which an NPI is allowed. The condition is that an NPI must be in a domain-sensitive environment. Roughly speaking, a

NPIs can only occur in *downward – entailing (DE) contexts*, the property of licensing inferences from sets to subsets, from the general to the specific, where NPI licensing is formulated in terms of entailment relations between sentences.[4]

(9) a. *Beth didn't see a bird on the porch.* →
b. *Beth didn't see a penguin.*

As pointed out in Rothschild (2006), a context is DE[5] (downward-entailing) if whenever the sentence is true you can replace the predicate in the context with a more exclusive one and still get another true sentence. The previous example, under (9) showed that *negation* is DE, while the following examples show that *few congressmen* is DE.[6]

(10) a. *Few congressmen eat vegetables.*
[spinach] ⊆ [vegetables]

→ Few congressmen spinach.

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sentence has a domain-sensitive environment if the truth value of the sentence is sensitive to the expansion of the domain in which more individuals satisfy the predicate in the environment.

Ladusaw has the great merit of being able to give content to the [+ Affective] feature that Klima proposed. An expression is affective (an NPI trigger, i.e. an expression in the sentence whose presence is necessary in order to make a PI legitimate; a trigger is also known as a licenser) if it licenses inferences in its scope from supersets to subsets, from general properties to specific instances.

[4] In order to better understand the concepts we are working with, I believe that we should present a bit of terminology. Consider a predicate P'. P' is more inclusive than a predicate P, just in case P' applies to everything that P applies to in addition to at least one other thing. A predicate P' is more exclusive than P if P' is more exclusive than P. Thus, 'coat' is more inclusive than 'red coat', and 'saw a chicken' is more exclusive that 'saw a bird'. S entails a sentence S' just in any situation in which S is true, S' is also true. Entailment does not depend on the meanings of various lexical predicates in a sentence.

[5] The following example shows that *many* is upward entailing. Upward entailing contexts are those where replacement of P by a more inclusive predicate preserves truth. Unlike upward entailing functions (UE), which are order preserving and closed under supersets, downward-entailing (DE) functions are order reversed and closed under subsets. UE functions support inference from sets to supersets and DE functions support inference from sets to subsets. In DE contexts, expressions denoting sets can be substituted for expressions denoting subsets *salva veritate* (see Giannakidou 2008, for further details)

(i) *Many congressmen eat spinach.*
[spinach] ⊆ [vegetables]

Many congressmen eat vegetables.

[6] There are the cases of NPIs which are acceptable despite the fact that they are not in the scope of a DE operator, and these cases include NPI licensing by adversative verbs, 'after', 'only' and 'exactly', some of which are borrowed from Linebarger (1981).

(i) a. *She was amazed that there was any food left.*
b. *I was surprised that he budged an inch.*
c. *We were astounded that she lifted a finger to help, considering her reputation for laziness.*
(ii) a. *Only John has ever been there.*
b. *Only the students who had ever read anything about phrenology attended the lectures.*

b. *Few congressmen eat spinach.*
[spinach] ⊆ [vegetables]

↛ Few congressmen eat vegetables.

Zwarts (1998) argues for a hierarchy of NPIs, in which three classes of NPIs are licensed by the restrictive logical properties of their respective contexts. In other words, he differentiates between different, logically defined categories of licensers which manifest different grades of negativity. Zwarts (1998) distinguishes between three types of negation: sub-minimal (for example *few*), minimal (for example *nobody*) and classical negation (*not*) which act as licensing triggers for weak, strong and super-strong NPIs. In the class of weak NPIs we can enumerate examples like: *can abide, sleep a wink,* in the class of strong NPIs we can enumerate *a thing* and *lift a finger,* while *one bit* is an example of super-strong NPI. The three types of negative expressions are distinguished from each other by their logical behaviour characterized by conditions imposed on the functional behaviour of the underlying hierarchy. The functional behaviour is argued to provide licensing conditions for the three previously mentioned classes of NPIs: the first is a downward-entailing environment reflecting Ladusaw's (1979) proposition, the second covers anti-additive expressions[7] and the third covers anti-morphic expressions, corresponding to classical negation. The theory claims that the three licensing conditions are downwards applicable in the sense that they hold for NPIs that are members of a class with a weaker condition.

Positive polarity items (PPIs) were first identified as a class by Baker (1970). One characterization that many studies elaborated on was that PPIs cannot occur in the scope of clausemate negation.[8] In other words, PPIs are said to be anti-licensed by negation.

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[7] Following Ton van der Wouden (1997), we provide the following definitions: Let B and B* be two Boolean algebras. A function *f* from B to B* is anti-additive iff for arbitrary elements X, Y ε B: *f* (XUY) = *f* (X) ∩ *f* (Y). The following example shows that 'no N' is anti-additive.

(i) *No girl sings or dances.* ↔
No girl sings and no girl dances.

Let B and B* be two Boolean algebras. A function *f* from B to B* is antimultiplicative iff for arbitrary elements X, Y ε B: *f* (X∩Y) = *f* (X) U *f* (Y). Noun phrases of the form 'not every N' is antimultiplicative.

(ii) *Not every girl sings and dances.* ↔
Not every girl sings or not every girl dances.

A hierarchy of monotone decreasing functors: (cf. van der Wouden, 1997)
Monotone decreasing: *f* (X ⊆ Y) → *f*(Y) ⊆ *f*(X) – *few, seldom, hardly*
Antimultiplicative: *f* (X∩Y) = *f* (X) U *f* (Y) – *not every, not always*
Anti-additive: *f* (XUY) = *f* (X) ∩ *f* (Y) – *nobody, never, nothing*
Antimorphic: *f* (X∩Y) = *f* (X) U *f* (Y)
f (XUY) = *f* (X) ∩ *f* (Y) – *not, not the teacher, allerminst*

[8] The following example, taken from Szabolcsi (2004) shows that PPIs can occur within the immediate scope of clausemate negation if the latter is construed as an emphatic denial of a similarly phrased statement.

(i) *He found something.*
Wrong! He DIDn't / DID NOT find something. √ not > some

Szabolcsi (2004) claims that the denial reading can be suppressed when we judge the negated clause in the context of a 'why – question.

(ii) *Why did John look so disappointed?*
Because he didn't find something. * not > some

Borrowing a definition presented in Ladusaw (1979: 168): "NPIs are appropriate in structures in the scope of a downward-entailing expression. PPIs are appropriate elsewhere." It was argued by Ladusaw (1979) that in English all PPIs are excluded from monotone decreasing contexts containing a negation. Nevertheless, 'some' and 'already' seem to be fine in the following contexts.

(11) a. *No more than three guests have eaten* some *of the soup.*
b. *No more than seven customers have* already *paid their bills.*

With respect to Dutch, van der Wouden (1997) presents the following 'laws of polarity': strong PPIs are incompatible with all monotone decreasing contexts, PPIs of medium strength are compatible with downward monotone contexts but incompatible with anti-additive ones, weak PPIs are compatible with downward monotonic and anti-additive contexts, but incompatible with antimorphic ones.

Van der Wouden proposes to reinterpret Ladusaw's (1979) generalization by claiming that English PPIs uniformly abhor anti-additive contexts: neither 'already' nor 'some' nor 'rather' may be combined with sentence negation either. However, the following examples[9] borrowed from Ladusaw (1979: 134) suggest that the situation of English PPIs is not that clear either and we should find a way to differentiate between various types of PPIs as well.

(12) a. **Someone hasn't eaten some of his soup.*
b. **John hasn't already finished the exam.*
c. **John wouldn't rather be in Cleveland.*

(13) a. **No one ate some of the soup.*
b. **No one has already finished the exam.*
c. **No one would rather be in Cleveland.*

(14) a ?*Few people ate some of the soup.*
b. *Few people have already finished the exam.*
c. *Few people would rather be in Cleveland.*

(15) a. ?*Hardly anyone ate some of the soup.*
b. ?*Hardly anyone has already finished the exam.*
c. *Hardly anyone would rather be in Cleveland.*

Szabolcsi's (2004) analysis of PPIs, an analysis, described in licensing terms, built on the NPI-PPI parallelism, starting from the fact that the distribution of PPIs is far

[9] The following examples, taken from Szabolcsi (2004) show that PPIs like 'someone/ something' are sensitive to other operators and not only to clausemate negation. For example 'some' cannot be in the immediate scope of a negative quantifier or 'without', but it can occur below 'at most five'.

(i) a. *John didn't call someone.* * not > some
b. *No one called someone.* * no one > some
c. *John came to the party without someone.* * without > some
(ii) *At most five boys called someone.* √ at most 5 > some

The difference that we notice when looking at the two sets of operators mentioned before is that 'no one' and 'without' are antiadditive operators and 'at most five' is monotone decreasing.

more complex than the fact that they cannot scope below negation (*I (*don't) see something* – unless 'some' scopes over 'not', or 'not' is an emphatic denial).

Szabolcsi (2004) claims that PPIs like 'someone/ something' are double NPIs, in the sense that they simultaneously show the licensing needs of the class of NPIs that must be in the scope of an additive operator and that must be in the scope of a monotone decreasing operator (cf. van der Wouden's typology[10]). In other words, they have both a strong NPI feature, like 'yet', which requires a clausemate antiadditive licensor, without intervention and a weak NPI feature, like 'ever', which requires a DE operator (not necessarily clausemate), without intervention. These features are 'dormant', unless activated by a 'yet'-licensing environment. The peculiar PPI distribution is due to the fact that a 'yet'-licensor activates both features but licenses only one of them, namely the antiadditive feature. The 'ever'-feature requires the presence of a second licenser. These features need to be interpreted as negations which either cancel out (dormancy) or enter into two separate resumptive quantifications.

These PPIs are "rescuable" in the sense that embedding a sentence like **you didn't see something* in a larger NPI licensing context (*I don't believe that you didn't see something.* – can mean *'I don't believe that you saw nothing'*) makes the new constellation legitimate, context which exhibits an interesting combination of properties. The generalization that Szabolcsi (2004) proposes is that: *PPIs do not occur in the immediate scope of a clausemate antiadditive operator AA-Op,* unless *[AA-Op > PPI] itself is in an NPI-licensing context, where "immediate" means that there is no scopal intervener.*[11]

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[10] The typology proposed by van der Wouden (1997) shows that NPIs and PPIs are not in complementary distribution but rather show a mirror image typology. Looking at the following two tables, borrowed from Falaus (2008), we notice that weak NPIs are licensed in all types of negative contexts, while strong PPIs are ruled out from the scope of downward entailing, antiadditive and antimorphic operators.

Positive polarity-sensitive Items

Negation/ Operators:	Strong	Medium	Weak
Minimal/ Downward entailing (e.g. 'few')	*	√	√
Regular/ Antiadditive (e.g. 'nobody')	*	*	√
Classical/ Antimorphic (e.g. 'not')	*	*	*

Negative Polarity-sensitive Items

Negation/ Operators:	Strong	Medium	Weak
Minimal/ Downward entailing (e.g. 'few')	*	*	√
Regular/ Antiadditive (e.g. 'nobody')	*	√	√
Classical/ Antimorphic (e.g. 'not')	√	√	√

[11] With respect to Romanian PPIs, Falaus (2008), building on Szabolcsi (2004) and on Savescu (2005) shows that *'un N oarecare'* in Romanian can take scope below an anti-additive operator (the scope of a negative predicate *'refuza'* and the scope of *'inaintea'*), as in the following example and provides the following generalization: *oarecare – PPIs do not occur in the immediate scope of a clausemate antimorphic Op (AM-Op) unless [AM-Op >PPI] itself is in a weak licensing context.*

(i) a. *Am refuzat o bursa oarecare fara sa stiu de ce.*
have.1SG refused a grant whatsoever without SUBJ know.1SG why
'I refused some grant without knowing why.'
√ refuse > oarecare

b. *Inaintea unei competitii oarecare trebuie sa dormi bine.*
before a.GEN competition whatsoever must SUBJ sleep.2SG well
Before any competition whatsoever, you must sleep well.'
√ before > oarecare

The present paper did not set out to investigate the connection between PPIs like *olecuta* ('a smidgen'), *ca dracu* ('as hell') and indefinites like *un N oarecare* ('some N'), but I must thank an

Although it can be said that the syntactic or semantic accounts of polarity items presented in this section manifest different disadvantages, what we want to retain from this section, as a conclusion, is that:

i. Licensing of NPIs in some accounts is done by negation, either by *entailment* (with negation) or (conventional or conversational) *implicature* (where there is no negation).
ii. The DE condition is a sufficient condition on NPIs rather than a necessary condition, as was argued by Ladusaw (1979).
iii. The great achievement of the DE account was the possibility of characterizing semantically the class of NPI – licensers.
iv. The theories presented above agree in their characterization of negation as a core case of an NPI licensor, but differ with respect to what other expressions are included in the set of core cases.
v. The claim that 'PPIs resist overt negation' (Ladusaw, 1979: 135), requires some modification because it is easily falsified[12].

The fact that inferencing plays an important role in the grammar of polarity sensitivity does not itself entail that the relevant inferences need to be represented in a sentence's logical form, nor even that they depend on a sentence's literal truth-conditional meaning.

(16) a. *Mary rarely drinks milk.* →
Mary rarely drinks skim milk.
b. *Few people understand the importance of syntactic theory.* →
Few people understand the importance of the minimalist program.
c. *Lou is too old to be spending all night at discos.* →
Lou is too old to be spending all night at Studio 54.
d. *Everyone who's eaten ice cream has had a taste of heaven.* →
Everyone who's eaten Vivoli's has had a taste of heaven.

Building on examples, such as the previous ones, the Scalar Model of Polarity, that will be presented in the following chapter, has as starting point Ladusaw's downward entailment theory, but as will be shown, it departs from the DE theory because it defines licensing environments in terms of the pragmatic interpretation of sentences in context,

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anonymous reviewer for having underlined this lacuna in the earlier version of this paper. As a matter of fact I hope to be able to present the results of two experiments conducted with native speakers of Romanian whose aim was twofold: to bring evidence to confirm my intuition that Romanian exhibits quite a large number of weak PPIs, that can be found in the scope of DE operators and of anti-additive operators and second to see if the previously mentioned PPIs (*olecuta, ca dracu*) are 'rescuable' in the sense of Szabolcsi (2004).

[12] PPIs such as *would rather* may yield ungrammaticality in a comparative, a construction which lacks an overt negation, as is shown in (ia). On the other hand, *would rather* is perfectly fine in the context of an expression such as *no fewer than five congressmen*, although it contains an overt negation, as is shown in (ii). Note that in (ib), the alternative with *prefer* suggests that the restrictions on the distribution of *would rather* are indeed the source of ungrammaticality.

(i) a. **John is more often away from home than he would rather be.*
b. *John is more often away from home than he prefers to be.*
(ii) *No fewer than five congressmen would rather be in Florida now.*

and not in terms of the truth-conditional semantics of scopal operators (cf. Ladusaw, 1979). The benefit of the Scalar Model of Polarity is that, by contrast with the DE account, it can account for:

i. licensing in environments which are not, strictly speaking, downward entailing,
ii. failure of licensing in environments which are incontrovertibly downward entailing.

2 The Scalar Model of Polarity

The starting point of the analysis of polarity items in the Scalar Model of Polarity proposed by Israel (1996), represents Horn's (1972) study on semantic scales. Semantic scales (cf. Horn, 1972) are those whose members (predicates) are ordered by semantic (or logical) entailment and where the mention of any member of the scale unilaterally entails the lower or weaker members to its right and conversationally implicates the negation of the higher or stronger scale members to its left.

Items belonging to scalar categories may be ordered according to their strength along that semantic dimension. According to the logic of a Horn scale (Horn, 1972), scalar expressions, <e1, e2, …, en>, are ranked in terms of their entailments so that for an arbitrary sentence frame S and expressions ej > ek, S(ej) unilaterally entails S(ek), where e1, e2, …, en are: lexicalized items, of the same word class, from the same register; and "about" the same semantic relations or from the same semantic field.

(17) STRONG WEAK (cf. Cornilescu, 1985)

1……2…….m…….m+1……n	
< n…..n-1……4 3 2 1>	the cardinal scale
< the first…..the second……..the n-th>	the ordinal scale
< all……many……...……..some>	the quantificational scale
< must……should…..……...may>	a deontic scale

Basically, stronger predicates entail weaker ones.

(18) a. *It is cold.* → *It is cool.*
b. *He has three children.* → *He has two children.*

A scalar model (cf. Israel, 1996) is a structured set of propositions ordered along one or more parameters in a way that supports inferencing. The model consists of a propositional function with one or more open variables, each ranging over a scale of possible values. According to Israel (1996), the propositional function effectively defines a type of eventuality, and the variables stand for the various ways this eventuality may be realized. A scalar model can be either simple with one variable and values ordered along a single scale, or complex with many variables and thus with many scales and inferencing in a scalar model is defined relative to the propositional function on which is built.

A very important feature of the scalar model is the idea that polarity items themselves conventionally express certain pragmatic functions and they are licensed where they can discharge these functions and that polarity items are sensitive to the logical structure of the contexts in which they appear because the rhetorical attitudes they encode crucially depend on the kinds of inferences one might draw from their use.

Polarity contexts are defined by their effects on scalar inferences and as proposed by Israel (1996), polarity items encode semantic properties which make them sensitive to such inferences. The scalar model receives support from the fact that polarity items come from semantic domains which are inherently scalar and measure terms or degree adverbs qualify as polarity items that bear this feature.

In this paper polarity items are analyzed as forms whose felicity depends on the sorts of inferences one might draw from their use in context. These inferences are scalar in nature and reflect the scalar semantics of the polarity items themselves. According to Israel (1996), polarity items are scalar operators whose profiled content is construed against the background of an ordered set of alternatives and which are thus interpreted within the information structure provided by the scalar model. Israel's (1996, 1997) Scalar Model of Polarity predicts a reliable correlation between a polarity item's sensitivity and its scalar semantic properties and that polarity items are conventionally specified for two semantic features, quantitative value and informative value, and the interaction of these two features in a single lexical form is what creates the effect of polarity sensitivity. As proposed by Israel (1996), sensitivity arises from the interaction of the two scalar semantic properties, q-value and i-value, each of which functions independently of polarity sensitivity, but which together constitute the necessary and sufficient conditions for a construction to be polarity sensitive. As claimed in the Scalar Model of Polarity, both features are grounded in the logic of scalar reasoning and the rhetoric of interpersonal communication. The combination of these two features in a single form limits that form to contexts which allow the scalar inferences needed to make both values felicitous.[13]

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[13] Polarity Items in the Scalar Model of Polarity:

Emphatic NPIs: *any, ever, at all, the least bit, in the slightest, give a damn, have a chance in hell, can possibly, can dream of.*

(i) a. *I didn't* drink a drop *in any of my three pregnancies. To be honest I stopped drinking when we were planning to get pregnant*
(http://www.stuff.co.nz/life-style/blogs/pg-parental-guidance-advised/3832782/Would-you-drink-while-pregnant)

b. *In training, for example, when you feel your position on the team is in danger then you have to be fully focused. And if needs be, you send a clear signal saying: I'm not going to* budge one inch.
(Michael Ballack, http://www.stern.de/sport/fussball/michael-ballack-im-not-going-to-budge-one-inch-620376.html)

Attenuating NPIs: *be all that, any too, overmuch, long, much, great shakes, be born yesterday, trouble to V, need.*

(ii) a. *The new house is not* all that *different from your old one.*
(http://dictionary.reference.com/browse/all+that)

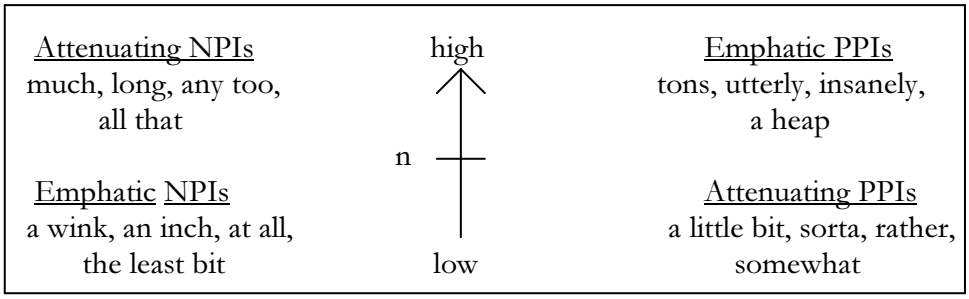
b. *Here are a few celebrity marriages that didn't last very* long. *Many of them had quickie weddings.*
(http://marriage.about.com/od/entertainmen1/a/shortestmarriages.htm)

Emphatic PPIs: *tons of* N, *scads of* N, *constantly, utterly, insanely, in a flash, within an inch of* N, *be bound to* V, *gotta* V.

(iii) a. *ASHES 2009: We're in* tons of *trouble - Ponting and Katich smash brilliant centuries to tear England apart.*
(http://www.dailymail.co.uk/sport/cricket/article-1198667/ASHES-2009-Were-tons-trouble--Ponting-Katich-smash-brilliant-centuries-tear-England-apart.html)

b. *After last season's foreboding "will they or won't they return?" season finale,* scads of *scandal, and the endless enticing ads that have been running on TLC, the highly anticipated* Jon & Kate Plus 8 *season premiere aired last night.*
(http://www.ew.com/ew/article/0,,20281011,00.html)

Figure 2: Polarity Items in the Scalar Model of Polarity (cf. Israel, 1996)



The quantitative value need not be absolute but is in fact often understood as relative to some scalar norm, represented as 'n' in the diagram. This diagram divides polarity items along three parameters according to whether they are PPIs or NPIs, high-scalar or low-scalar, emphatic or understanding.

(19) *I really don't* give a hoot. *I just desperately want to win this trophy.*[14]

An expression like, 'give a hoot', expresses a minimal amount of interest/ concern and contrast with all expressions that denote a considerably high amount of interest/ concern. Being an emphatic item it contributes to a strong proposition. Thus, this expression can only be used in scale reversing contexts, where inferences run from minimal amounts of concern to maximal amounts of concern.

A sentence like (19) is grammatical because it licenses the inference that 'she doesn't care much'.

(20) **I give a hoot.*

By contrast, (20) cannot generate such an inference and the reason for its failure is that such an expression expresses a weak proposition incompatible with its inherently emphatic nature.

The same logic applies to attenuating polarity items; these forms require a construal in which they are entailed by some default norm within the scalar norm.

(21) *He's helluv (hell of) tall.* (Israel, 1996)

In the previous sentence 'helluv' signals that the predicate holds to a very high degree. Being an emphatic PPI, it can only be used in scale preserving contexts, where inferences run from high scalar values to low scalar values.

Attenuating PPIs: *some, somewhat, rather, sorta, a tad, a hint, a smidgen, would just as soon.*

(iv) a. *It's* sorta *interesting to see that even Steve Jobs has to deal with these kind of email rants.* (http://twitter.com/sophiestication/status/14089094280)

b. *Mix a dash of synchronicity with* a smidgen of *serendipity, then serve.* (http://fromsmilerwithlove.com/)

[14] Michael Ballack, http://www.stern.de/sport/fussball/michael-ballack-im-not-going-to-budge-one-inch-620376.html

Quantitative value reflects the fact that most PSIs encode a scalar semantics. Israel views a scale as an ordering of elements along some gradable dimension of semantic space. Thus, for a form to encode a specific Q-value, it has to designate some relative or absolute position within such an ordering. The high and low q-value of polarity items is understood relative to the contextual norms associated with a given dimension. For most PSIs q-value is a transparent element of meaning, because quantifiers and degree modifiers designate an abstract scalar extent or degree, often without reference to any particular dimension.

Informative value is a pragmatic feature encoding a speaker's attitude to the content he/ she conveys. Thus, emphatic utterances express great involvement and commitment to what is said while understatements denote deference and a desire to mitigate face threatening acts. Basically, informativity is a property of sentences used in contexts. Emphatic sentences make a stronger claim than might have been expected while understating sentences make a weaker claim that might have been expected.

The advantage of interpreting polarity items in the lines proposed by the Scalar Model of Polarity is that, as presented by Israel (1996), it suggests a compromise between previous accounts of polarity items, in the sense that it underlines the importance of implicature to explain what licenses the NPI in certain examples and the importance of inferencing as the crucial mechanism of licensing. As was mentioned previously, on Israel's account the distribution of polarity items, as with any lexical items, is constrained by the meaning they encode. The following examples, borrowed from Israel (1996) show that *'most',* which is neither DE nor UE, licenses NPIs.

(22) a. *Most of the students who ate an apple got sick.*
↛ Most of the students who ate some fruit got sick.

b. *Most of the students who ate some fruit got sick.*
↛ Most of the students who ate an apple got sick.

Most is not UE on its first argument because it may be that while there were a lot of rotten apples, the rest of the fruit turned out to be fine. The inference under (b) is not valid either because it may be that it was just those students who ate apples that avoided getting sick, so *most* cannot be DE in the previous example.

As presented in Israel (1996), the following examples show that NPIs should be acceptable as long as an appropriate scalar model is contextually available.

(23) a. ?*Most of the students who studied an awfully long time got an A.*
b. ??*Most of the students who studied at all wore earrings.*
c. *Most students who studied at all got an A.*

The PPI 'awfully' under (a) is odd because its emphatic force would seem to suggest that the more students studied the less likely they were to get an A. in the example under (b), the NPI 'at all' is bizarre because the scalar model required to license 'at all' would have to somehow link the effort of studying with the preference for wearing earrings, and given normal background assumptions, the scalar model is no longer available. But the same NPI sounds acceptable in the example under (c) because the required scalar model pairing studiousness with good grades does form a part of the stereotypical understanding of schoolwork.

As a conclusion, what we want to retain from Israel (1996) is that, *most* does license polarity items by virtue of its inferential properties, but that these are not logical properties of the form itself, nor even of the sentences it occurs in, rather they reflect the complex interaction of syntactic, semantic and especially pragmatic factors which determine the availability of an appropriate scalar construal.

3 Romanian PPIs in the Scalar Model of Polarity

This paper examines the lexicalization patterns of PPIs in Romanian showing that items or expressions like *olecuta* ('a little') in (24a) denotes a minimal scalar degree and qualifies as an attenuating PPI and *sumedenie* ('tons') in (24b) denotes a maximal scalar degree and qualifies as an emphatic PPI. Polarity items, like *olecuta* ('a little') and *sumedenie* ('tons') are conventionally specified for two semantic features, quantitative value and informative value, and the interaction of these two features in a single lexical form is what creates the effect of polarity sensitivity.

(24) a. *Sînt* olecuţă *tristă, e ultima zi şi a început să plouă la Viena.*
Am-I little sad is last day and started SA rain in Vienna.
'I am a little sad, it is the last day and it started raining in Vienna.'

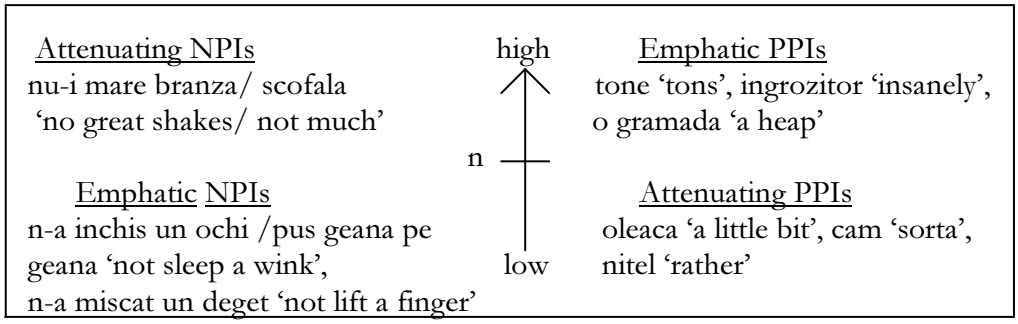
b. *Bucurestiul are* o sumedenie *de muzee foarte bune.*
Bucharest-the has a multitude of museum-pl. very good.
'Bucharest has tons/ scads of interesting museums.'

The aim of this section is to show that lexical PPIs in Romanian can be described according to the parameters of the Scalar Model of Polarity proposed by Israel (1996), showing that in Romanian polarity items can be understood as scalar operators which must be interpreted with respect to an appropriately structured scalar model: they are forms whose lexical semantic-pragmatic content make them sensitive to scalar inferences.

3.1. The Lexicalization Patterns of PPIs in Romanian

As was stated in the previous section, following Israel's (1996) proposal, polarity items are conventionally specified for two semantic features, quantitative value and informative value, and the interaction of these two features in a single lexical form is what creates the effect of polarity sensitivity. The following figure, adapted from Israel (1996) shows examples of polarity items in Romanian, divided along three parametres, whether they are PPIs or NPIs, high-scalar or low-scalar, emphatic or understanding.

Figure 3: Romanian Polarity Items in the Scalar Model of Polarity



The following sentence, under (25a) makes a strong claim by denying that Mary slept even the smallest amount imaginable, and the sentence under (25b) makes a weak claim by denying only that Mary slept for a long time. Thus, 'a wink' marks a low, in fact a minimal, quantitative value and produces an emphatic sentence, and 'much' marks a relatively high quantitative value and produces an understatement.

So, *un ochi* and *geana pe geana* mark a low, minimal quantitative value and produce an emphatic sentence, and *mult* marks a high quantitative value and produce an understatement.

(25) a. *Maria n- a inchis* un ochi *toata noaptea./*
Maria not has closed an eye all night /
Maria n- a pus geana pe geana *toata noaptea.*
Maria not has put eyelash on eyelash all night
'Mary didn't sleep a wink all night.'

b. *Maria n- a dormit* mult.
Maria not has sleept much
'Mary didn't sleep much.'

Looking at PPIs, analyzing the following examples, we note that the situation is quite reversed. Emphatic forms denote high scalar values and attenuating forms denote low to mid scalar values.

Now, we can consider the contrast between the low-scalar PPI *olecuta /niscaiva* = 'a little bit' and the high-scalar *o gramada / tone* = 'scads'. The use of the negative operator "nu" = 'not' shows that these expressions qualify as PPIs.

(26) a. *Belinda (*nu) a castigat* o gramada/ tone *de bani la*
Belinda (*not)has won a heap/ tons of money at
ruleta.
roulette
'Belinda (*not) won scads of money at the Blackjack tables.'

b. *Belinda (*nu) a castigat* olecuta/ niscaiva *bani la ruleta.*
Belinda (*not)has won a little / some money at roulette
'Belinda (*not) won a little bit of money at the Black jack tables.'

The sentence under (26a) constitutes an emphatic assertion to the effect that Belinda won a very large quantity of money, while the example under (26b) asserts only that Belinda won a small quantity of money. *O gramada / tone* = 'scads' defines a very high

quantity and produces an emphatic sentence, while *olecuta* / *niscaiva* = 'a little bit' defines a small quantity and produces an understatement.

The following tests, proposed in Israel (1996), suggest that emphatic PSIs represent a distinct class from understating PSIs. In this respect, certain intensifying devices allow some intensifiers but exclude hedged constructions within their scope. Emphatic polarity items allow modification by intensifying *literally*, but understating polarity items reject it.

(27) a. *Silvia literalmente a castigat* tone *de bani la ruleta.*
Sylvia literally has won tons DE money at roulette
'Sylvia literally won scads of money at the Blackjack tables.'

b. **Silvia literalmente a castigat* olecuta *de bani la ruleta.*
Sylvia literally has won a little DE money at roulette
*'Sylvia literally won a little bit of money at the Blackjack tables.'

Emphatic polarity items allow occurrence after the introduction 'You'll never believe it!', while understating polarity items reject it.

(28) a. *N- o sa-ti vina sa crezi niciodata!*
not will CL-2ND.P.SG come SA believe never
Silvia a castigat tone *de bani la ruleta.*
Sylvia has won tons DE money at roulette
'You'll never believe it! Sylvia won scads of money at the Blackjack tables.'

b. ?*N- o sa-ti vina sa crezi niciodata!*
not will CL-2ND.P.SG come SA believe never
Silvia a castigat olecuta *de bani la ruleta.*
Sylvia has won a little DE money at roulette
?'You'll never believe it! Sylvia won a little bit of money at the Blackjack tables.'

Coordinating conjunctions like 'or at least' require that the first conjunct represents a stronger claim than the second conjunct.

(29) a. *Silvia a castigat* tone *de bani la ruleta*
Sylvia has won tons DE money at roulette
sau macar a castigat olecuta *de bani.*
or at least has won a little DE money
'Sylvia won scads of money at the Blackjack tables or at least she won a little bit.'

b. **Silvia a castigat* olecuta *de bani la ruleta*
Sylvia has won a little DE money at roulette
sau macar a castigat tone *de bani.*
or at least has won tons DE money
*'Sylvia won a little money at the Blackjack tables or a least she won scads.'

Coordinating conjunctions like 'in fact' require that the second conjunct make a stronger claim than the first conjunct.

(30) a. *Silvia a castigat* olecuta *de bani la ruleta*,
Sylvia has won a little DE money at roulette
de fapt a castigat tone *de bani.*
DE fact has won tons DE money
'Sylvia won a little bit of money at the Blackjack tables, in fact she won scads.'

b. **Silvia a castigat* tone *de bani la ruleta*,
Sylvia has won tons DE money at roulette,
de fapt a castigat olecuta *de bani.*
DE fact has won a litlle DE money
'*Sylvia won scads of money at the Blackjack tables, in fact she won a little bit.'

Having tested 60 items or expressions[15] with the help of the previously mentioned tests we can conclude that 16 items/ expressions qualify as attenuating PPIs and 44 qualify as emphatic PPIs, some of which are exemplified below.[16] Example (31) shows attenuating PPIs and example (32) shows emphatic PPIs.

(31) a. *Poate printre toate răutăţile, mai găsim şi* o fărâmă *de*
maybe among all malices, still find also a crumb DE
bunătate.
kindness
'Maybe we can still find a little happiness among all sorrows.'

b. *Sînt* olecuţă *tristă, e ultima zi şi a inceput să plouă la*
Am-I little sad, is last day and has started SA rain in
Viena.
Vienna
'I am a little sad, it is the last day and it started raining in Vienna.'

c. *Dani Coman: "George Copos sa mai aiba* nitica *rabdare!"*
Dani Coman: George Copos SA still have a bit patience
'Dani Coman: George Copos should have a little bit of patience.'

(32) a. *E frig* ca dracu' *aici in sufletu' tau.*
is cold like hell here in soul-the your
'It's cold as hell, here in your soul.'

b. *Vor castiga la LOTO* cand o pica frunza de
will-they win at LOTO when will-ARCH.3RD.P.SG fall leaf-the DE
pe brad.
from firtree
'They'll win the lottery when hell freezes over.'

[15] We came to test the 60 items/ expressions by looking at examples of English PPIs analyzed/ mentioned in Israel's (1996) study because unfortunately, there aren't any studies on lexical PPIs in Romanian, at least not to my knowledge.

[16] For reasons of space I have chosen not to write all of the items/ expressions that qualify as lexical PPIs.

c. *Bruma: "Am tinut* o gramada de *diete aberante!"*
Bruma: have-I kept a heap of diets anomalous
'Bruma: I have been on/ tried tons of ludicrous diets.'

3.2. The Lexicalization Patterns of PPIs in Romanian

PPIs in Romanian are not a homogenous class, but no matter how varied they are[17] we wish to make the claim that they license the same type of inferences: PPIs are scale preserving, allowing inferences from high values to low values.

A polarity sensitive item is a lexical form or a grammatical construction which specifies an expressed proposition p's location within a scalar model and which, by virtue of imposing a particular informative value on that proposition, further requires that p either entails or be entailed by a default context proposition q available within the model.

Inferencing in a scalar model is defined relative to the propositional function on which it is built. For an affirmative function inferences run from high values to low values on the scale, whereas, with negative propositions the direction of entailments is reversed and inferences run from low values on the scale up to higher values. Polarity licensors – negation, conditionals, questions and universal quantifiers – are united by the sort of inferences they allow over elements occurring in their scope.

The following examples show that items like *gramada* ('tons / scads'), *ca dracu* ('as hell') in the examples under (a) are scale preserving, allowing inferences from high values to low values, whereas, *olecuta* ('a little') and *destul* ('pretty') which denote low scalar values cannot allow inferences to high scalar values.[18]

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[17] Examples:

(i) Degree Adverbs: *destul, enorm, putin (putintel), oleaca (olecuta), nitel, cam*
QPs: *extraordinar de, grozav de, teribil de, atat de, ingrozitor de, uimitor de, exagerat de, colosal de, fabulos de, imens de, infinit de, desavarsit de, anormal de, neverosimil de, nemaipomenit de tanar, nemaivazut de.* This class also includes terms like: *crunt de, cumplit de, fioros de, groaznic de, infernal de, jalnic de, monstrous de, oribil de.*
NPs, pseudo-partitive constructions: *un strop, o farama, un dram, o umbra, o picatura, un graunte, un crampei, tone, o groaza (fig), o gramada, o puzderie, o sumedenie, o droaie, o armata, un card.*
PPs: *intr-o clipa, intr-o clipita, intr-o clipeala din ochi , la Pastele Cailor, la Sfantu' Asteapta, la mosii cei verzi, la calendele grecesti, la mama dracului, la dracu-n praznic*
AdvPs (these AdvPs/ expressions have a complex structure and function as a single syntactic unit, cf. Gramatica Academiei): *un pic, cat ai clipi, cat ai zice mei, cat ai zice peste, cat ai scapara din ochi, cat ai scapara dintr-un amnar, cat te-ai sterge la ochi, cat te-oi freca la ochi, cat ai bate din palme, cat ai da in cremene, unde si-a intarcat dracul copiii, unde si-a spart dracul opincile*
Verbal Idioms: *cand mi-oi vedea ceafa, cand va face broasca par, cand va face plopul pere si rachita micsunele, cand o prinde mata peste, cand va face spanul barba, cand mi-o creste iarba-n barba si-ntre deste, cand o sta oul in cui, cand o da din piatra lapte, cand or zbura bivolii, cand o pica frunza de pe brad, cand mi-o creste par in calcaie, cand mi-o creste par in palma si-ntre deste, cand o zbura porcu, in doi timpi si trei miscari.*

[18] In order to verify if native speakers of Romanian confirm the hypothesis that PPIs are scale preserving, allowing inferences from high values to low values. Seventy-six native speakers of Romanian took part in the experiment – 30 students of English philology (Faculty of Foreign Languages and Literatures, University of Bucharest) and 46 other native speakers (friends, family). The questionnaire the participants worked with comprised of 24 pairs of sentences, 12 pairs allowing

(33) a. *Ne* *spune* o droaie/ sumedenie *de* *minciuni.* →
CL-1ST.PL.DAT say a lot/ lot DE lie-PL
'He/ She tells us heaps of lies.'
→ *Ne* *spune* oarece/ putine *minciuni.*
CL-1ST.PL.DAT say some lie-PL
'He/ She tells us some lies.'
b. *Ne* *spune* oarece/ putine *minciuni.* ↛
CL-1ST.PL.DAT say some lie-PL
'He/ She tells us some lies.'
↛ *Ne* *spune* o droaie/ sumedenie *de* *minciuni.*
CL-1ST.PL.DAT say a lot DE lie-PL
'He/ She tells us heaps of lies.'

(34) a. *Este* incredibil *de* *proasta.* →
is-3RD.SG incredibly DE stupid-FEM
'She is incredibly stupid.'
→ *Este* cam *proasta.*
is-3RD.SG sorta stupid-FEM
'She is sorta stupid.
b. *Este* cam *proasta.* ↛
is-3RD.SG sorta stupid-FEM
'She is sorta stupid.
↛ *Este* incredibil *de* *proasta.* →
is-3RD.SG incredibly DE stupid- FEM
'She is incredibly stupid.'

In conclusion, what we want to retain from this section is that for an affirmative function inferences run from high values to low values on the scale, upward entailing

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inferences from high values to low values and 12 pairs not allowing inferences from low values to high values. Out of the 60 items or expressions that I mentioned previously and which qualify as PPIs, I only chose 12 items/ expressions for this experiment because many of these expressions are synonymous and I considered that it is sufficient to test one or two examples from the same morpho-syntactic class. For reasons of space I chose to present here only one of the examples that were present in the questionnaire, and hopefully I will be able to present the experiment in detail in a future paper. The instructions for the grammaticality judgment tasks were provided on the questionnaire, thus the participants had to mark Yes or No, if the item/ expression used in the first sentence allows inferences to the second sentence, as in the following example:

(i) *Are* oleaca de/ nitica *rabdare* *cu* *acesti* *copii.*
has a little DE/ some patience with these children
'He/ She has a little bit of patience in dealing with these children.' ↛
Are o gramada *de* *rabdare* *cu* *acesti* *copii*
has a pile DE patience with these children

The results for the previously mentioned example show that 18% of the participants believe that it is possible to allow inferences from the low value *oleaca* / *nitica* = 'a bit' to the high value *gramada* = 'lots/ tons' and 82% of the participants believe that it is not possible to allow such an inference. Looking at all the percentages we obtained we can clearly state that the prediction we started out from is valid, as we established the ratio of speakers that has to consider a sentence well-formed at 70% in order to count as proof of its grammaticality. Thus, native speakers of Romanian attested the fact that PPIs are scale preserving, allowing inferences from high values to low values.

functions (UE) are order preserving and closed under supersets, UE functions support inference from sets to supersets.

4 Experimental Data

The aim of the first experiment was to verify if native speakers of Romanian recognize the items/ expressions we used as PPIs. One hundred native speakers of Romanian took part in the experiment – 50 students of English philology (Faculty of Foreign Languages and Literatures, University of Bucharest) and 50 other native speakers (friends, family). The questionnaire the participants worked with comprised of 108 sentences, 54 assertive contexts and 54 negative contexts (all the items that were tested in assertive contexts, were also tested in negative contexts). The instructions for the grammaticality judgement tasks were provided on the questionnaire, thus the participants had to mark Yes or No, if the sentences seem correct or not in Romanian, on examples such as the following[19]:

(35) a. *Sînt* olecuţă *tristă, e ultima zi şi a inceput sa ploua la*
am little sad is last day and has started SA rain in
Viena.
Vienna
'I am a little sad, it is the last day and it started raining in Vienna.'

b. *Dani Coman: "George Copos sa mai aiba* nitica *rabdare!"*
Dani Coman: George Copos SA still have a bit patience
'Dani Coman: George Copos should have a little bit of patience.'

c. *Sfatul meu este sa fii* putintel *mai atent si*
advice-the my-DAT is SA be a bit more attentive and
sa nu te grabesti.
SA not CL-2ND.SG.ACC hurry-2ND.SG
'My advice is to be a bit more attentive and no to hurry.'

d. […]*vreau sa dispari* cat ai clipi
[…]want-I SA disappear how many/much would-2ND.SG blink
'I want you to disappear in a jiffy / in the twinkling of an eye.'

e. *O să te paraseasca cat* te-
will CL-2ND.SG.ACC leave how much/many CL-2ND.SG.ACC
oi freca la ochi.
will.2ND.SG rub at eyes
'He will leave you in a flash.'

[19] Example (35):
a. http://webcache.googleusercontent.com/search?q=cache:4slrSpuM6sJ:danoaca.wordpress.com/2009/09/04/olecuta-si-gata/+olecuta&cd=16&hl=ro&ct=clnk&gl=ro
b. http://www.9am.ro/.../dani-coman-george-copos-sa-mai-aiba-nitica-rabdare.html
c. http://www.fotonud.ro/forum/showthread.php?tid=948
d. http://webcache.googleusercontent.com/search?q=cache:U54MTfpFhLsJ:www.versuri.ro/versuri/eeggkm_arssura%2Bdoar%2Bo%2Bzdreanta.html+cat+ai+clipi&cd=21&hl=ro&ct=clnk&gl=ro
f. http://74.125.93.132/search?q=cache:P7ewVI2tPdMJ:ceafa.dictionarweb.com/+cand+mi-oi+vedea+ceafa&cd=5&hl=ro&ct=clnk&gl=ro

f. *O să faceți dumneavoastră turism pe litoral* când mi-
will make you tourism on seaside when CL-1ST.SG.DAT
oi vedea ceafa fără oglindă...
will-1ST.SG see nape without mirror
'You'll promote tourism at the seaside when hell freezes over.'

For the sentences previously mentioned the results[20] show that:

i. 72% of the participants consider example (35a) grammatical and 28% judged it as ungrammatical. The same item, olecuta, was tested in the negative context:[21] *Nu intrerup* olecuta *seria anecdotelor (posibil autentice) pentru a relata o fraza citita in dimineata asta* 'I am not interrupting a little the series of possibly authentic jokes to tell you about a comment I read this morning.' and 91% of the participants consider this sentence ungrammatical and 9% judged it as grammatical.

ii. 74% of the participants consider example (35b) grammatical and 26% judged it as ungrammatical. The same item, nitica, was tested in the negative context: *Nu iti trebuie* nitica *inteligenta pentru a coace o prajitura* 'You don't need a shred of intelligence to bake a cake', and 80% of the participants consider this sentence ungrammatical and 20% judged it as grammatical.

iii. (35c) was tested in its negative form: *Sfatul meu este sa nu fii* putintel *mai atent si sa nu te grabesti*, and 97% of the participants consider this sentence ungrammatical and 3% judged it as grammatical. The same item, *putintel*, was tested in the following assertive context: *Iata un fel* … putintel *mai scump […]* 'This is a type of meal … a bit expensive […]', and 77% of the participants consider this sentence grammatical and 23% judged it as ungrammatical.

iv. The AdvP *cat ai clipi* was tested in the following assertive context: *Ma ajuta* cat ai clipi 'He'll help me in the twinkling of an eye', and 80% of the participants consider the sentence grammatical and 20% judged it as ungrammatical. The same expression was tested in the negative context: *Nu ma ajuta* cat ai clipi, '*He won't help me in a jiffy', and 83% of the participants consider this sentence grammatical and 17% judged it as ungrammatical.

v. The AdvP *cat te-oi freca la ochi* was tested in the following assertive context: *Vei intelege problema* cat te-oi freca la ochi 'You'll understand this problem in a jiffy', and 42% of the participants consider the sentence grammatical and 58% judged it as ungrammatical. The same expression was tested in the negative context: *Nu vei termina lucrarea* cat te-oi freca la ochi 'You won't finish the paper in a jiffy' and 73% of the participants consider this sentence ungrammatical and 27% judged it as grammatical.

vi. The idiomatic expression "cand mi-oi vedea ceafa" in (35f) was tested in the following assertive context: *O sa te mai ajut* cand mi-oi vedea ceafa 'I'll help you when hell freezes over), and 83% of the participants consider this sentence

[20] We established the ratio of speakers that has to consider a sentence well-formed at 70% in order to count as proof of its grammaticality.

[21] In order to answer one of the questions that an anonymous reviewer asked, I need to mention that the affirmative sentence came from a corpus that I am trying to set up and which contains a little over 100 examples, while the 'wrong' sentences do not come from any corpus. In order to obtain 'wrong' sentences I modified originally affirmative sentences by inserting the negative operator, because I couldn't find any examples where these items/ expressions appear in the scope of negation.

grammatical and 17% judged it as ungrammatical. The same expression was tested in the following negative context: *Nu o sa te primesc inapoi* cand mi-oi vedea ceafa '*I won't allow you back in my life when hell freezes over', and 98% of the participants consider this sentence ungrammatical and 2% judged it as grammatical.

Looking at the percentages we obtained we can clearly state that the prediction we started out from is valid – native speakers of Romanian attested the fact that the expressions/ items used in the examples qualify as PPIs.

Taking a closer look at examples like the ones under (35d,e), we where we tested the occurrence of items/ expressions similar to 'in a jiffy/ in the twinkling of an eye' – were lower than we would have liked them to be. Among the possible explanations for the low percentages obtained for examples (35d,e) could be that:

i. some PPIs can appear in the scope of clausemate negation if focused.
ii. Since expressions like 'in a jiffy/ before you can say Jack Robinson' denote minimal spans, but still produce an emphatic effect, some of our participants might have interpreted them as NPIs, which would be understandable since minimal quantity and emphatic effect looks like a diagnosis for NPIs.[22]

In conclusion, this paper argued in favour of an analysis of lexical PPIs in Romanian in the lines of the Scalar Model of Polarity proposed by Israel (1996), viewing lexical PPIs as scalar operators, specified for two scalar semantic features, quantitative value and informative value, whose lexical semantic-pragmatic content make them sensitive to scalar inferences. The inferences relevant to polarity licensing do not depend on semantic entailment alone; they seem to depend on a general ability for scalar reasoning.

Polarity items are governed by the same sort of inferencing which determines the rhetoric of scalar emphasis and the interpretation of superlatives, and this inferencing is essentially pragmatic. The inferences relevant to polarity licensing need not to be and frequently are not logical at all, that is, they do not depend entirely on semantic entailment and they cannot be captured at any single level of representation.

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[22] Nevertheless, items/ expressions similar to 'in a jiffy/ in the twinkling of an eye/ before you can say Jack Robinson' qualify as emphatic PPIs, actually inverted PPIs (cf. Israel, 1996) and the role such forms play within the structure of a scalar model will be the subject of a future paper which will aim at showing that inverted polarity refer to roles that involve entities which militate against the realization of a proposition, and also that inverted polarity items do not undermine the SM.

For short, a scalar model is basically a conceptual tool for thinking about the relations between different possible eventualities. The structure of the model is such that if one knows the status of a given eventuality (i.e. whether it does or does not hold), one may automatically infer the status of other, related eventualities within the model. According to Israel (1996), this is the key problem inverted polarity items face. Elements on any scale, within a scalar model are always ranked in terms of the inferences they support for a given propositional schema. In scale preserving contexts, elements that form the propositions with the most entailments are ranked the top of the scale and those elements (that under the same conditions) form the propositions with the fewest entailments are ranked at the bottom. → the ranking does not depend on the objective properties of the scalar elements alone, but is crucially determined by the way these properties interact with a given propositional schema.

Polarity sensitivity is a sensitivity to scalar reasoning. Scalar reasoning plays a pervasive role in the structure of rhetorical utterances in general and polarity items reflect the conventional exploitation of scalar reasoning and complex scalar models for specific rhetorical purposes in discourse.

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