# [Formal] Approaches to [Slavic] Linguistics

## *The Princeton Meeting 2005*

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# Annual Workshop on Formal Approaches to Slavic Linguistics

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## *The Princeton Meeting 2005*

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## Preface

The present volume consists of revised and edited versions of papers originally presented at the fourteenth annual meeting of Formal Approaches to Slavic Linguistics, held at Princeton University, May 6-8, 2005. FASL 14 was organized and sponsored by the Princeton Program in Linguistics (Leonard Babby, Director) and Department of Slavic Languages and Literatures (Caryl Emerson, Chair). We gratefully acknowledge additional financial support from the Office of the Dean of Arts and Sciences, Princeton University, and the Slavic and East European Language Resource Center (jointly operated by Duke and the University of North Carolina). We also extend our gratitude to Eric Hamblin, Director of Princeton's Conference and Event Services.

We wish to thank Leonard Babby, Robert Freidin, Mirjam Fried, and especially Julia Belopolsky, all of Princeton University, for their generous work on the FASL 14 Organizing Committee. We thank the Linguistics Program Manager, Gay Eggers, and the Slavic Department Manager, Kate Fischer, for guiding us through numerous logistical obstacles. We also thank Kate Fischer for maintaining the meeting's web site. Thanks also go to the graduate student assistants, Cori Anderson, Elena Chernishenko, and Vrinda Chidambaram, for their tireless work in the course of the three-day meeting. Finally, we express our appreciation to David Hunsinger, our FASL 14 *pro bono* photographer (see link at: http://www.princeton.edu/~slavic/FASL14/.)

There were 77 abstracts submitted to FASL 14, 24 of which were accepted for presentation. We were also honored to have three invited speakers, Roumyana Pancheva, Gilbert Rappaport, and Edwin Williams. All presenters were encouraged to submit their papers to the volume. These submissions underwent several stages of review, including outside peer review for each paper, producing the original scholarship that appears in these pages. We would like to acknowledge the generous contribution of time and expertise on the part of the following scholars who reviewed submissions to the volume: Maria Babyonyshev, John Bailyn, Chris Barker, Loren Billings, Lev A. Blumenfeld, Zeljko Boskovic, Wayles Browne, Greg Carlson, Cleo Condoravdi, Jeroen van Craenenbroeck, Stuart Davis, Mirjam Fried, Elena Gavruseva, Tania Ionin, Tracy Holloway King, Iliyana Krapova, Dmitry Levinson, Andrew Nevins, Asya Pereltsvaig, Maria Polinsky, Eric Potsdam, Gilbert

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Finally, we thank Jindřich Toman for handling the final stages of production of the current volume.

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# Contents

*FASL* 14, 1-16
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# The Acquisition of Passive Structures in Russian Children with SLI*

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In this paper, we present new experimental data on the acquisition of passive constructions in Russian-speaking children with Specific Language Impairment (SLI). Using these data, we demonstrate that passive structures cause significant difficulty for SLI children and that the patterns of passive structure acquisition are qualitatively different for SLI children and Typically Developing (TD) children. Finally, we suggest a possible explanation for these differences and discuss the implications of our results for theories of SLI.

## 1 Background

### *1.1 Specific language impairment*

Before turning to the description of our experiment, let us briefly review some basic information about SLI that may prove helpful in the discussion that follows. Let us start with a definition of SLI. This condition is diagnosed when a child's linguistic development is significantly below what is expected for his or her age level,[1] in the absence of contributing factors, such as mental retardation, hearing impairment, or clinically significant neurological impairment.

* We are grateful to Roman Koposov, Ljudmila Bedrina, and Julia Kosopalova for their help in organizing and carrying out the study, to Dina Brun for help with experimental materials, to Maria Pinango for helpful suggestions, and to the audience of FASL 14 and two anonymous reviewers for valuable comments.

[1] Typically, this is defined as one or more standard deviations below the mean for a given age level, as determined by a comprehensive language assessment instrument (Rice 2004).

SLI has gained the attention of linguists, developmental psychologists, and geneticists, because it is a familial condition with a genetic basis and, thus, may shed new light on the role of both our biological endowment and our environment in linguistic development and ultimate competence. At this point, it seems clear that SLI runs in families: although in the general population the rate of SLI is approximately 5%, about 25% of nuclear family members of affected children are likely to be affected (Neils and Aram 1986, Tomblin 1989). However, this fact does not necessarily demonstrate that the condition of SLI is due to genetic, rather than environmental, factors, which are also likely to be shared by family members (diet, geographic location, specific types of linguistic input provided to children, etc.). More conclusive evidence on this point is provided by twin studies, which compare the rates of SLI in identical twins and fraternal twins of affected children. The general assumption underlying the twin method is that identical twins share 100% of their genes, whereas the fraternal twins share approximately 50% of their genes. A higher rate of concordance in identical twins would, therefore, provide a strong argument for the disorder having a genetic basis. This is precisely the pattern that is typically uncovered: one study of 82 twin pairs found that 80% of identical twins of SLI children are affected by the disorder, but only 38% of fraternal twins of SLI children are similarly affected (Tomblin and Buckwalter 1994).

The nature of the linguistic impairment in SLI chidlren is a matter of intense debate. Currently, there is no agreement on even the most coarse-grained characterization of the disorder, that is, on whether SLI is a condition of language delay, with five-year-old SLI children showing linguistic development typical of a three-year-old typically developing child, or language disruption, with some components of grammar developing normally and others being significantly delayed or following a deviant pattern of development (Rice 2004, Leonard 1998). Of course, it is also logically possible that in one area of linguistic development (for instance, phonology) SLI children may show delay, while in another area of linguistic development (for instance, morphosyntax) they may show disruption.

Similarly, there is no general agreement on the more fine-grained characterization of the impairment. A range of different theories have been advocated in the literature over the last 20 years; space considerations preclude us from doing more than mentioning a few of the more linguistically–oriented of these theories. The Missing Features Hypothesis (Gopnik 1990) claims that the grammars of SLI children lack morphosyntactic features (such as number, gender, person, Case, or tense), so that the syntactic processes that involve these features (for instance, Case assignment, subject–predicate agreement) are prevented

from taking place. The Extended Optional Infinitives Stage Hypothesis (Rice and Wexler 1996) proposes that SLI children have grammars that are comparable to those of TD children during the Optional Infinitive stage, when matrix clauses lacking a tense specification are produced alongside correctly tensed clauses. The Grammatical Agreement Deficit Hypothesis (Clahsen 1991) attributes the problems typical of SLI grammars to the disruption of Spec–Head Agreement, which leads to the disruption of all syntactic processes that rely on this mechanism, such as Case assignment, subject-predicate agreement, NP-internal modifier–head agreement. Finally, the Representational Deficit for Dependent Relationships (RDDR) Hypothesis (van der Lely 1996) suggests that all syntactic processes that rely on dependent relations between two elements—binding relations, agreement relations, movement operations that form chains—are disrupted in SLI grammars. A more recent version of this theory (van der Lely 1998) proposes that obligatory syntactic operations (such as movement) are optional in SLI grammars.

The proliferation of these theories may be (at least in part) attributed to the heterogeneous nature of SLI, that is, the existence of several distinct subtypes of this disorder, as well as the possible existence of cross-linguistic variation in the manifestations of the impairment (see Leonard 1998). Despite the large number of controversies in the field, most researchers would agree on the basic description of facts: SLI children typically have problems producing and understanding certain functional elements, such as the realizations of agreement, tense, and Case, and they also frequently have problems producing and understanding certain constructions involving movement, such as wh-questions and passive constructions[2]. Thus, (1) provides some typical examples of the SLI utterances discussed in the literature.

(1) a. Patsy happy
b. Patsy paint the house yesterday
c. What Patsy paint something?

To our knowledge, the literature contains no description of the manifestations of SLI in Russian, or any other Slavic language. This disorder is largely unknown to Russian linguists and speech therapists, and does not get diagnosed, recognized, or discussed as a distinct type of language impairment. Thus, our project constitutes the first attempt to discover and describe some of the characteristics of SLI in Russian. And although the prospect of breaking new empirical ground is exciting, it is also associated with problems: there are no established facts, findings, or

[2] Some researchers would disagree even with this characterization, primarily because they view some of the functional elements enumerated above (e.g., tense or agreement) as not being problematic in SLI grammars.

diagnostic procedures on which we can rely. At this stage of our investigation, there is simply no information that could tell us which areas of grammar are most problematic for Russian-speaking children with SLI, how typical the population we are examining is going to turn out to be, or which constructions could potentially be used as clinical markers for SLI in Russian. We hope that the findings reported below will begin to provide answers to some of these questions.

*1.2 Acquisition of passive constructions*

Let us go over some of the findings on the acquisition of passive constructions that will become relevant below. English-speaking children acquire verbal passive constructions at the age of four or five; up until then they show limited production and chance comprehension of verbal passives (Maratsos et al. 1985; Borer and Wexler 1987). This pattern is not peculiar to English: it has been shown to hold of children acquiring a number of other languages, including Russian. Thus, Babyonyshev and Brun (2003) demonstrate that Russian-speaking children are also unable to generate verbal passive constructions in an appropriate adult-like fashion up to the age of four or five, showing limited production as well as at-chance comprehension of these forms until then.

The literature contains a number of explanations for the difficulties young children experience with passive constructions. Although the discussion of our experimental results does not crucially rely on the assumptions of any specific theory, for the sake of explicitness we will adopt the account developed in Borer and Wexler (1987, 1992) and Babyonyshev et al. (2001) which has the advantage of having been used in work on the acquisition of Russian and offering a coherent explanation for all of the patterns we will be concerned with here. This theory states that children up to the age of four lack the ability to represent (subject; object) A-chains. As a result, the representations of passive and unaccusative structures generated by adult grammars are ungrammatical for these children, as shown in (2):

(2) a. [The house]$_i$ was built $t_i$. (* in child grammar)
b. [The ice]$_i$ melted $t_i$. (* in child grammar)

According to this theory, when young children appear to produce verbal passive structures (as in the data of Maratsos et al. 1985), they are actually producing adjectival passive "substitutes", that is, constructions that sound the same as the target, but, crucially, do not involve the problematic (subject; object) A-chain:

(3) a. Adult passive structure :
The house$_i$ was built $t_i$. (verbal passive)

b. Child passive structure :
The house was [$_A$ built]. (adjectival passive)

Another point that will become important below is that some types of passive constructions are more difficult than others for young children. For instance, English-speaking children do better with long passives of actional predicates, e.g., *push*, than with long passives of non-actional predicates, e.g., *see, remember*, (Maratsos et al. 1985, Fox and Grodzinsky 1998). Thus, children might show better comprehension of the passive construction in (4a) than that in (4b):

(4) a. The boy was pushed by the girl. (√ in child grammar)
b. The boy was seen by the girl. (* in child grammar)

An explanation of this pattern typically adopted in the literature (see Fox and Grodzinsky 1998, Babyonyshev et al. 2001) relies on the assumption that children's "passive" constructions do not allow the transmission of the external θ-role of the predicate to the nominal in the *by*-phrase. Although this nominal cannot be interpreted in the normal fashion, through the use of θ-role transmission, an alternative mechanism can be used to assign it an (almost appropriate) interpretation within some of the passive constructions, namely, long actional passives. The preposition *by* is ambiguous, and in one of its uses it is a simple transitive P that assigns the Affector θ-role to its object. This allows children to interpret the oblique nominal without invoking θ-role transmission: the nominal is licensed as the object of *by,* which assigns the Affector θ-role to it (Rappaport 1983, Jaeggli 1986). This interpretation is compatible with the target interpretation of the oblique nominals in actional passives (the Agent θ-role), but it is not compatible with their target interpretation in non-actional passives (the Experiencer θ-role). Thus, the use of this strategy leads to a successful interpretation of long actional passives, but fails with long non-actional passives.

Somewhat unexpectedly, Russian-speaking children do not show the same acquisition pattern: they experience equal difficulties with actional and non-actional passives (Babyonyshev and Brun 2003). For them, comprehension of actional passives, illustrated in (5a), is at chance, just as comprehension of non-actional passives, illustrated in (5b).

(5) a. Dom byl postroen Vanej (*in child grammar)
house$_{NOM}$ was built$_{PERF.PASS}$ Vanya$_{INSTR}$
'The house was built by Vanya.'
b. Dom byl uviden Vanej (*in child grammar)
house$_{NOM}$ was seen $_{PERF.PASS}$ Vanya$_{INSTR}$
'The house was seen by Vanya.'

To explain this fact we must note that not all languages allow the Affector θ-role role to be assigned in the *by*-phrase. A diagnostic for the availabilty of this option is the ability of *by*-phrases to occur within NPs (Grimshaw 1990). As the ungrammaticality of (6) shows, the Russian equivalent of the *by*-phrase lacks the ability to assign the Affector θ-role. As a result, the alternative interpretation strategy cannot be used in Russian, with either actional or non-actional passives, so that both types of passive constructions cause difficulty for young children.[3]

(6) a. A book by John.
b. *kniga Ivanom.
book$_{NOM}$ Ivan$_{INSTR}$

The final point worth noting here is that passive constructions have been identified as a source of significant difficulty for English-speaking SLI children (van der Lely 1996). Van der Lely views this difficulty as an instance of the more general problem SLI children have with forming dependent relationships between elements, such as the head and the tail of the chain within the passive construction. In accounting for this pattern, van der Lely analyzes the grammar of SLI children in a way that is very reminiscent of the theory of Borer and Wexler (1987) described above. Specifically, she assumes that SLI children use adjectival passive "substitutes" as representations of verbal passive in order to avoid the problematic structures associated with movement.

With this overview in place, we are now in a position to turn to the description of our study, which is taken up in the next section.

## 2 The current study

The goal of the current study is to discover whether Russian-speaking SLI children over the age of four or five are capable of generating appropriate syntactic representations of passive structures. If the linguistic development of these children is similar to that of younger typically developing Russian–speaking children, we expect verbal passive structures to lack appropriate representations, which should result in poor (at-chance) comprehension of sentences containing these constructions. Furthermore, we expect both actional and non-actional passives to be problematic, so that their comprehension should be equally poor.

[3] A similar pattern of equal difficulty caused by actional and non-actional passives is observed in Japanese (Sugisaki 1997). This is expected, given that the Japanese preposition *ni* 'by' cannot assign the Affector θ-role.

*2.1 Participants*

The study was carried out in a medium-sized village (population approximately 860) in the Arkhangelsk region of Russia. The village was founded by a relatively small number of individuals in the 10th century AD and has remained isolated because of its cultural features and geographical location. Crucially for our purposes here, the incidence of speech and language disorders is far greater in the inhabitants of this village than in the general population: according to some estimates, more than half of them are affected. Even a superficial evaluation of this population by specialists revealed a number of distinct language-related issues, ranging from serious pronunciation difficulties to a high degree of agrammatisms and severe reading and writing difficulties.

The current study was conducted with 15 monolingual Russian children aged 6;3 to 9;10 (mean age 7;10). Only those children whose non-verbal IQ, as measured by the Universal Nonverbal Intelligence Test (UNIT, Bracken and McCallum 1988), is above 70 were included in the study. The children are divided into two groups described in Table 1: the TD group (7 children, mean age 8;3) and the SLI group (8 children, mean age 7;4). Importantly, the SLI group and the TD group are not significantly different in Age ($t(13) = 1.63$, ns) or IQ ($t(13) = 0.58$, ns)[4].

**Table 1.** Participants

| | SLI (N=8) | TD (N=7) |
|---|---|---|
| | Mean (SD) | Mean (SD) |
| Age | 7.33 (.52) | 8.24 (1.48) |
| PIQ | 90.9 (14.08) | 95.7 (18.37) |
| Syntactic complexity | .27 (.06) | .36 (.05) |
| $MLU_w$ | 5.37 (.41) | 6.21 (.71) |

Because of the absence of a normed standardized test of language development in Russian, we could not follow standard practice and rely on test scores to determine whether SLI should be diagnosed or not. In our study, children were grouped based on three criteria: clinical

[4] Note that in studies of SLI it is customary to use two control groups: a group of TD children matched to the SLI group in chronological age and a group of TD children matched to the SLI group in language development, typically measured in terms of MLU. At the current stage of our project we do not have MLU measurements for children who are sufficiently young to be included in the language-matched control group. As a result, we limit ourselves to a direct comparison of the performance of the SLI group with that of the age-matched control group; however, we also include a discussion of the performance of younger TD children on a similar task reported in Babyonyshev and Brun (2003), which can be taken as an approximation of a language-matched control group.

impressions of the specialists working with them, and either Mean Length of Utterance ($MLU_w$) or syntactic complexity of utterance that was low for this group.[5] As can be seen from Table 1 above, the SLI group and the TD group are significantly different in MLU ($t(13) = 2.85$, $p=.007$) and syntactic complexity ($t(13) = 3.39$, $p =.005$).

*2.2 Materials and methods*

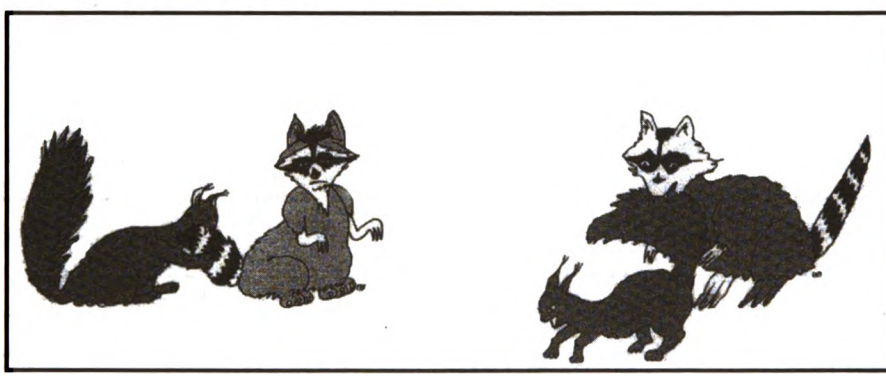
The study utilized a picture–matching task, in which a child hears a sentence and is asked to select one of a pair of pictures as the correct representation of the meaning of the sentence. A typical example of a sentence-picture pair is provided in (7):

(7) a. (Action passive)

| | | |
|---|---|---|
| Enot | **byl ukušen** | belkoj |
| racoon $_{NOM}$ | was bitten $_{PASS}$ | squirrel$_{INSTR}$ |

'The racoon was bitten by a squirrel.'

b. Accompanying picture:



Several points need to be noted about the materials used in the study. First, all of the passive sentences are reversible, that is, the event described by the verb is equally likely to be carried out by the referents of the underlying subject and object. For instance, both animals mentioned in (7a), a raccoon and a squirrel, are likely to bite. As a result, the lexical content of the sentence does not, in itself, provide information on

[5] Syntactic complexity refers to the proportion of complex structures, such as sentential complements, relative clauses, etc., in the utterances produced by each child. Both MLU and the syntactic complexity index were calculated based on a narrative recorded in the course of another experiment. Finally, the MLU calculation was based on words, rather than morphemes, which is the standard practice for highly inflected languages. These two measurements have been shown to reliably differentiate SLI children from TD children (see Reilly et al. 2004).

which nominal is the Agent and which is the Patient: to determine this it is necessary to build (and interpret) a structural representation for the sentence. Second, all passives used in the experiment are perfective in form: for the sake of keeping the test sentences as uniform as possible, we did not use any imperfective passives[6]. Third, the children were familiarized with the names of all the animals depicted in the pictures prior to the task, so that not knowing a specific word or not being sure what its referent looks like would not prevent them from choosing the appropriate interpretation for a sentence. Finally, the order of correct and incorrect selections is randomized, so that the appropriate representation of the sentence does not always appear on the right (or on the left), and a strategy cannot be developed to choose the correct answer without actually interpreting the sentences.

The experiment contained a total of 20 passive sentences (with the accompanying 20 pairs of pictures), including 10 tokens of actional passives (8a), 5 tokens of psych-predicate verb passives (8b), and 5 tokens of perception verb passives (8c).

(8) a. Osa **byla užalena** komarom
hornet$_{NOM}$ was stung$_{PASS}$ mosquito$_{INSTR}$
'The hornet was stung by the mosquito.'

b. Staruška **byla ogorčena** mal'čikami
old-woman$_{NOM}$ was upset$_{PASS}$ boys$_{INSTR}$
'The old woman was upset by the boys.'

c. Ovecka **byla uslyšana** pastuxom
sheep$_{NOM}$ was heard$_{PASS}$ shepherd$_{INSTR}$
'The sheep was heard by the shepherd.'

*2.3 Results*

The experimental task proved to be easy for the children, all of whom were able to complete it, so that there were no missing data. The responses were classified as correct (the Agent/ Experiencer and Patient are identified correctly) or incorrect (the Agent/Experiencer and Patient are identified incorrectly). The results are summarized in Table 2 below:

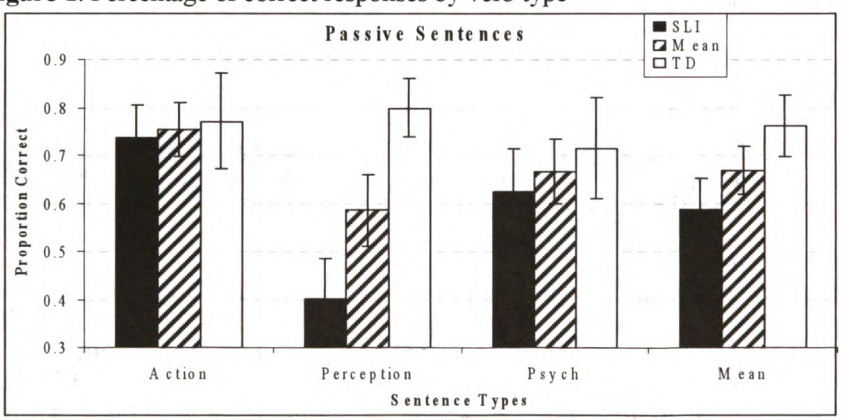
[6] Previous research has shown that, although both perfective and imperfective passives cause children difficulties in comprehension, perfective passives (or, rather, forms that sound like perfective passives – see section 1.2) are produced earlier than imperfective passives (Babyonyshev and Brun 2003). We chose to utilize perfective forms, rather than imperfective forms, for that reason.

**Table 2**. Percentage correct responses by passive type

| | SLI (n=8) | TD(n=7) |
|---|---|---|
| Action verbs | .74 (.19) | .77 (.26) |
| Perception verbs | .40 (.24) | .80 (.16) |
| Psych predicates | .63 (.25) | .71 (.28) |
| All passives | .59 (.18) | .76 (.17) |

An analysis of the results reveals several intriguing patterns. First, there is a significant difference between the percentage of overall correct selections for the TD group and the SLI group ($t(13) = 1.90$, $p = .04$, one-tailed). However, this difference is not observed for all of the types of passive verbs included in the experiment. Thus, there is no difference in the percentage of correct responses for actional passives ($t(13) = 0.29$, ns, one-tailed) or psych verb passives ($t(13) = 0.65$, ns, one-tailed). However, there is a significant difference in the performance on the perception verb passives ($t(13) = 3.72$, $p = .0015$, one-tailed).[7] This pattern can be seen clearly in Figure 1 below:

**Figure 1**. Percentage of correct responses by verb type




Second, the performance of the TD group is not significantly different for the three types of passive structures ($F(2, 12) = 0.32$, ns). In contrast, the performance of the SLI group is significantly different for the three types of passive structures ($F(2, 14) = 7.99$, $p = .005$). For the TD group, the performance on all passives, actional passives, and perception verb passives is significantly above chance, and the perfor-

[7] Note that because our hypothesis was directional, i.e., we were expecting the SLI group to perform worse than the TD group, we utilized a one-tailed t-test in the four comparisons above; a two-tailed t-test was used in all the other comparisons.

mance on psych-predicate passives is marginally above chance ($t(6) = 3.97$, $p = .007$; $t(6) = 2.73$, $p = .034$; $t(6) = 4.86$, $p = .003$; and $t(6) = 2.03$, $p = .089$, respectively). For the SLI group, the performance on actional passives is above chance; the performance on perception verb passives, psych-predicate passives, and all passives is at chance ($t(7) = 3.49$, $p = .01$; $t(7) = 1.18$, ns; $t(7) = 1.42$, ns; and $t(7) = 1.38$, ns).

To summarize, these results suggest that the TD group has good control over all three types of passive verbs, showing a slight difficulty only with psych-predicate passives. However, the SLI group demonstrates control only over the passives of action verbs: performance on psych predicate passives is only moderately successful and performance on perception verb passives is extremely poor.

## 3 Discussion

At first glance, our data appear to provide support for the theories that claim that passive structures cause particular difficulties in SLI grammars, such as the RDDR hypothesis of van der Lely (1996). However, a more detailed analysis of the data shows that the lower overall performance of the SLI group is not due to an equally poor comprehension of all types of passive constructions, which is expected under such theories. The pattern that is uncovered is quite different: the performance of SLI children on actional passives is comparable to that of TD children, their performance on psych predicate passives is slightly worse than that of TD children, and their performance on perception predicates is dramatically worse than that of TD children. In other words, in this domain the performance of SLI children is distinct from that shown by typically developing Russian-speaking children of any age, both those under the age of four, who are still experiencing problems with passive constructions, and those over the age of four or five, who have acquired the passive constructions successfully.

Let us first examine the case of typically developing Russian children under the age of four. In the absence of the appropriate representation for actional, perception, and psych-predicate passives, they are expected to utilize the adjectival passive representation in all of these constructions, as shown in (9a). This strategy should lead to chance performance in comprehension tasks. This expectation has been confirmed in previous studies: Babyonyshev and Brun (2003) found 69.9%, 58.0%, and 59.4% comprehension for action, perception, and psych predicate passives, respectively, in young Russian-speaking children (mean age 3;1). Clearly, this performance pattern is distinct from the one observed for our SLI group.

(9) a. TD children under the age of four
*structures adopted for all types of passives:*
The house was [$_A$ built]. (adjectival passive)
b. TD children over the age of four
*structures adopted for all types of passives:*
The house$_i$ was built $t_i$. (verbal passive)

Turning to the typically developing Russian-speaking children over the age of four, we see that the appropriate representation is available for all types of passive verbs, as shown in (9b). This representation is expected to be used consistently, leading to above chance performance in comprehension tasks. This pattern of performance is, in fact, attested for the TD children in the current study (mean age 8;3), who show a 77%, 80%, and 71% comprehension for action, perception, and psych–predicate passives, respectively. Once again, this performance pattern is distinct from the one shown by the SLI group.

Thus, we take our results to demonstrate that the acquisition of passive structures by Russian-speaking SLI children is a clear instance of language disruption, being qualitatively different from the acquisition pattern of typically developing children of any age. This point may not have become apparent in a study of English passives, where the behavior of SLI children, who perform better on actional than non-actional passives, is similar to the behavior of younger TD children, who also perform better on actional than non-actional passives. Our results suggest that the behavior of both Russian-speaking and English-speaking SLI children in this domain is due to a disruption of their grammars accompanied by the use of a (cross-linguistically invariant) extra-grammatical strategy, one that does not necessarily correspond to any stage of normal linguistic development in the relevant language.

Let us attempt to characterize the exact nature of the disruption that produces the pattern of acquisition described above. It is clear that the properties attributed to the SLI grammars by the RDDR Hypothesis cannot account for this pattern. Regardless of whether we consider the underlying problem to be the inability to construct dependency relations, such as that between the head and the tail of a (subject; object) A-chain, or the inability to treat obligatory movement operations, such as the movement of the underlying object to the subject position within passive constructions, as truly obligatory, rather than optional, we end up with an expectation that in Russian, an equal proportion of action, perception, and psych-predicate passives will be misrepresented and thus misinterpreted. Thus, although the inability to move the underlying object to the subject position (or represent the resulting chain) may be a part of the problem within SLI grammars, it cannot be all of it.

In purely descriptive terms, it appears that Russian-speaking SLI children mirror the acquisition path of typically developing English-speaking children, producing patterns that might be expected if they were assuming (incorrectly) that the Russian equivalent of the *by*-phrase is capable of assigning the Affector θ-role to its object (see section 1.2). Although this approach may be able to handle most of the facts, it leaves important questions unanswered. For instance, it is unclear why Russian-speaking SLI children might be tempted to misanalyze the *by*-phrase in this fashion in the absence of any evidence for such a (mis)analysis. It is also unclear why psych-predicate passives (a type of non-actional passive) should pattern with actional passives, rather than perception verb passives (another type of non-actional passive).

However, a few adjustments can make this basic approach more attractive and descriptively adequate. We start by assuming that both Russian-speaking and English-speaking SLI children are unable to represent verbal passive constructions, as has been suggested above, and utilize an extragrammatical strategy that forces them to interpret the nominal within the *by*-phrase as an Agent/Affector.[8] This results in the following representations of actional and perception predicate passives:

(10) a. Action verbs: adjectival passive + Affector *by*-phrase
√The house was [$_A$ built] by Jack.
b. Perception verbs: adjectival passive + Affector *by*-phrase
*The house was [$_A$ seen] by Jack.

Clearly, the use of this extragrammatical strategy will lead to a successful assignment of an interpretation for actional passives and an unsuccessful assignment of an interpretation for perception verb passives, which lack an agentive reading. However, in the case of psych-predicate passives, this strategy will lead to a successful interpretation in only some portion of the cases. Here, it is crucial to note that psych-predicates are ambiguous, with both an agentive and a non-agentive reading being possible for many of them. For instance, the psych–predicate in (11a) can have two interpretations: in the first one, the subject intentionally performs an action that results in a specific mental state for the object (11b), in the second one, the subject is the (non-agentive) subject matter of the object's mental state (11c). This ambiguity is well-established in the literature and has been demonstrated to hold in a number of languages (for discussion see Pesetsky 1995, Pylkkänen 1999). Crucially, if a passive structure is formed on the basis

[8] We still need to explain why this strategy is adopted, even in the absence of relevant evidence. We would like to suggest that assigning the Affector theta-role is the unmarked option for *by*-phrases cross-linguistically, so that utilizing this strategy corresponds to the adoption of a default parameter setting in this domain.

of the agentive reading of the psych-predicate verb, the extra–grammatical strategy described above should lead to a successful interpretation. On the other hand, if the passive is formed from the non-agentive reading of the verb, the strategy should fail, just as it does in the case of non-agentive perception verb passives. Thus, taking the argument structure ambiguity of psych-predicates into account may make it possible to explain the "intermediate" status of psych-predicate passives in our data.

(11) a. The clown frightened the child.
b. agentive interpretation : <Agent; Experiencer>
The clown made a scary face and the child became frightened
c. non-agentive interpretation: <Theme; Experiencer>
The child experienced the state of being afraid of the clown.

Although the approach described above is capable of accounting for our data and we consider it quite promising, we freely admit that it does not constitute a fully worked-out explanatory theory of the SLI performance patterns. One of the reasons why we have found producing such a theory difficult is that very few studies have contrasted children's performance on different types of non-actional passive verbs, such as perception verb passives and psych-predicate passives.[9] Given the fact that typically developing English-speaking children do not show distinct acquisition patterns for the passive forms of different types of non-actional verbs, the question of whether other populations might behave differently has simply not been asked in the field. The current study suggests that posing this question may lead to an interesting and informative line of research, one that is worth pursuing more intensely.

## 4 Conclusions

The results of our experiment demonstrate that passive structures are a source of particular difficulty for SLI children learning Russian. Furthermore, the patterns of passive structure acquisition shown by the SLI children are qualitatively different from those shown by the TD children:

[9] An anonymous reviewer reminds us that an early investigation of the acquisition of different types of non-actional passives can be found in Sudhalter and Braine (1985). An experiment testing six-, seven-, and ten-year-old TD English-speaking children's comprehension of three types of non-actional passives (perceptual, cognitive, and affective) uncovered no significant differences among these constructions. Although we have concerns about some of the methodological choices made in the experiment (such as the classification of specific verbs and the use of verbal categories that do not correspond to meaningful syntactic or lexical semantic classes), if we accept this finding as valid, it gives support to the view expressed above, namely, that English-speaking TD children do not distinguish among the different types of non-actional passives.

while typically developing children perform equally well on all types of passives, children affected by SLI experience significantly more difficulty with perception verb passives than other types of passives. Thus, at least in this area of grammar, the SLI children are showing deviant, rather than delayed, linguistic development. Although we have suggested a potentially promising approach to explaining these patterns of acquisition, we leave developing a fully worked-out explanation to future research.

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# Back to the Past*

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The main goals of this paper are (1) to describe certain restrictions on the use of Russian identity copulas in the past tense, (2) to examine a novel environment in which these restrictions are lifted, (3) to offer a semantic explanation of these restrictions, as well as the environment in which they no longer apply, and (4) to examine the consequences of our proposal in other contexts.

## 1 Introduction: Identity *be* vs. Raising *be*

Before we can discuss the behavior of the Russian identity copula (whether augmented with the demonstrative *èto*, or not), it is necessary to reliably distinguish the identity use of the copula from its predicate use.

### *1.1 Russian predicate Case*

Post-copular extended NP ($xNP_2$)[1] in Russian can be marked either Nominative or Instrumental in non-present tenses: [2]

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[1] We use the term xNP rather than NP or DP whenever it is irrelevant which functional layers are projected and which aren't.

[2] Everything we are going to say about the Nominative/Instrumental contrast is not valid for the present tense, where Nominative is the only option.

(1) a. Maribyla fizik/ genij/ umnaja.
Mariwas physicist/ genius/clever$_{NOM}$
b. Mari byla fizikom/ genijem/ umnoj.
Mari was physicist/ genius/ clever$_{INSTR}$
'Marie was a physicist/ a genius/clever.'

We are adopting the hypothesis that Nominative case-marking appears in identity copulas (Pereltsvaig 2001), while Instrumental is the predicate Case (Bailyn and Rubin 1991, Franks 1995, Pereltsvaig 2001, etc.). Various ways of formalizing this hypothesis have been proposed in the literature. Franks 1995 argues that Nominative occurs with the raising *be*, and the occurrence of Instrumental means that *be* is transitive. Pereltsvaig (2001) considers both variants of *be* to be transitive, but correlates Nominative with *be* occupying a functional ($I^0$) head and Instrumental with *be* in the lexical ($v^0$) head (see also Geist 1998, 1999). Finally, the proposal by Bailyn and Rubin (1991), which we will adopt, is that a Nominative-marked $xNP_2$ co-occurs with a transitive *be* (identity copula) and an Instrumental-marked $xNP_2$ indicates a raising structure (predicate copula).

*1.2 Nominative as a marker of identity*

Our first indication that Instrumental is a predicate Case is the fact that it is impossible in unmistakable equatives, which assert the identity of two individuals:

(2) Mark Tven byl na samom dele Sèmjuèl'(*em) Klemens(*om).
Mark Twain was actually Samuel Clemens$_{NOM/INSTR}$

This fact is naturally explained if Instrumental is predicative in Russian, but it does not conclusively show that Nominative marks non-predicate xNPs: it could still be the case that Nominative-marked xNPs have a dual function, being able to act as both predicates and arguments. A stronger argument for associating Nominative with lack of predication comes from the behavior of Russian small clauses, which disallow Nominative case-marking on $xNP_2$ (in examples below, we also test Accusative, to rule out Case-doubling):[3]

(3) a. Ja sčitaju ee lingvistkoj/*lingvistka/*lingvistku.
I consider her$_{ACC}$ linguist$_{INSTR/NOM/ACC}$
'I consider her a linguist.'

[3] Bailyn and Rubin 1991 note that Instrumental also appears in secondary predication and therefore claim that it always marks secondary predication. However, this claim is somewhat problematic, since absolute secondary predicates (e.g. *being a student* = "because I was a student") appear in the Nominative. Also, as Pereltsvaig 2001 notes, some semi-copulas, such as *become*, permit Nominative in colloquial speech. See Filip 2001 for a semantic analysis of the Instrumental case in secondary predication.

b. Ja sčitaju ee idiotkoj/* idiotka/*idiotku.
I consider her$_{ACC}$ idiot$_{INSTR/NOM/ACC}$
'I consider her an idiot.'

The impossibility of Nominative Case in small clauses shows that it cannot mark a real predicate. On the other hand, if Nominative Case always indicates identity, it is expected to be disallowed in small clauses.

Matushansky (2000 )(see also Geist 1998, 1999) observes that explicit aspectual affixation (perfective or secondary imperfective) on the copula has the effect of making Nominative on the post-copular xNP ungrammatical: while (4a), which lacks explicit aspectual marking, allows both Cases, both the secondary imperfective suffix *-iva-* in (4b) and the perdurative perfective prefix *pro-* in (4c) render Nominative impossible:

(4) a. Ja byla zavedujuščej/zavedujuščaja.
I was manager$_{INSTR/NOM}$
'I was a manager.'
b. Ja byvala zavedujuščej/*zavedujuščaja do etogo.
I was$_{IMP2}$ manager$_{INSTR/NOM}$ until this
'I have been a manager before.'
c. Ja probudu zavedujuščej/*zavedujuščaja do sredy.
I be$_{PERF}$ manager$_{INSTR/NOM}$ until Wednesday
'I will serve as a manager until Wednesday.'

Our explanation of this fact relies on the assumption that an identity relation between two objects cannot be bounded in time: it either holds throughout reference time or it doesn't.

*1.3 Analysis*

The evidence presented above argues that a Nominative-marked $xNP_2$ can only appear in identity copulas.[4] If true, this means that a Nominative $xNP_2$ is either a referring expression (such as *Tully* or *the greatest Roman orator*) or an existential (e.g. *a fantastic person*).

If $xNP_2$ is an existential, it cannot be interpreted in-situ and its QR is obligatory. We assume that identity sentences contain the transitive verb *be*$_{EQ}$ (the exact structure of the construction is not important for our purposes here), which takes two arguments, as in (5). As a result, no truth-conditional difference can be detected between the identity copula in (6a) and the predicative copula in (6b): if there exists an individual who is a manager and this individual is Alice, then Alice is a manager;

[4] Pereltsvaig 2001 reaches the same conclusion. However, she also assumes that a Nominative $xNP_2$ denotes a uniquely referring expression (Pereltsvaig 2001:191), an assumption which we do not adopt here.

and vice versa, if Alice is a manager then there exists an individual who is a manager and identical to Alice.

(5) ⟦*be* $_{EQ}$⟧ = λx . λy . x is identical to y

(6) a. ⟦Alice was $_{EQ}$ a manager⟧ = ∃x : ⟦manager⟧ (x) . Alice = x
b. ⟦Alice was $_{PRED}$ a manager⟧ = ⟦manager⟧ (Alice)

If Nominative and Instrumental correspond to the difference between an argument and a predicate, we can directly compare case-marking in Russian copulas to the indefinite article drop in the same environment in Scandinavian (Steblin-Kamensky 1957:66 via Pereltsvaig 2001:80fn.) and in French (Matushansky and Spector 2005).[5]

## 2 The properties of *èto* copular sentences

In languages as diverse as Hebrew (Doron 1983, 1986, Rapoport 1987, etc.), French, Haitian Creole (DeGraff 1992), and Polish (Citko 2005) a pronominal or a demonstrative can be added to identity copular clauses:

(7) a. L'état c'est moi. French
the+state this+is me
'The state is me.'
b. arik hu mar šaron Hebrew
Arik he Mr. Sharon
'Arik is Mr. Sharon.'

The Russian demonstrative *èto* can appear in identity sentences, but not in predicative ones:[6]

(8) a. *Ciceron èto byl veličajšim oratorom Rima/ Tullijem.
Cicero this was greatest$_{INSTR}$ orator$_{INSTR}$ Rome$_{GEN}$ Tully$_{INSTR}$
b. Ciceron èto byl veličajšij orator Rima/ Tullij.
Cicero this was greatest$_{NOM}$ orator$_{NOM}$ Rome$_{GEN}$ Tully$_{NOM}$
'Cicero was the greatest orator of Rome/Tully.'

This becomes particularly clear if we consider copular sentences with AP and PP predicates, which are incompatible with an identity interpretation:

[5] Matushansky and Spector 2005 argue that indefinite xNP$_2$ in French corresponds to the equative reading of the copula, whereas a bare xNP provides the true predicative reading. We adopt without argument their assumption that xNP$_2$ is marked (by Nominative Case or by the presence of the article) when some NP-internal argument slots are saturated.

[6] (8b) is infelicitous unless we know who Tully is and don't know who Cicero is.

(9) Ciceron (*èto) byl izvesten/ v Rime.
Cicero (*this) was famous$_{SF}$ in Rome
'Cicero was famous/in Rome.'

The ungrammaticality of *èto* in (9) follows if *èto* requires the post-copular xNP to denote an individual, which an AP or a PP cannot do.[7]

*2.1 Restrictions on the distribution of èto copular sentences*
Typically, an *èto* copular clause with a generic or universally quantified subject is unacceptable in the past tense:[8]

(10) a. Každyj učenik èto (*byl) potencial'nyj student.
Every student this was potential (under)graduate
'Every school pupil is/*was a potential college student.'

b. Učitelja matematiki èto (*byli) buduščie alkogoliki.
teachers math$_{GEN}$ this were future alcoholics
'Math teachers are/*were future alcoholics.'

One possible explanation of the unacceptability of (10) invokes the well-known lifetime effect of the Russian Nominative. This view of the matter is confirmed when we compare (10) to (11):

(11) Vanya èto byl Svetin vtoroj muž.
Vanya this was Sveta's second husband
'Vanya was Sveta's second husband.'

The grammatical example (11) has a referential subject and implies that Vanya is dead. This effect is also observed with individual-level predicates in English, which provide a classical case of lifetime effects (Kratzer 1989, 1995, Musan 1997, and Jäger 1999, among others):

(12) a. Gregory was from America.
b. Gregory had blue eyes.
c. Gregory resembled Jörg Bieberstein.

If the sentences in (12) are uttered out of the blue, they suggest that Gregory is dead at the time of utterance of the sentence; the result is presupposition failure in a situation where Gregory is still alive (Musan

[7] The picture becomes more complicated when we consider long-form adjectives, which have been argued to modify a hidden noun (Siegel 1976) – especially if Nominative still marks an identity statement. We cannot resolve the matter here.
[8] As an anonymous reviewer points out, the judgments do not change if *èto* is omitted. We use it here as a disambiguation device in the present tense to make sure we're dealing with an identity sentence.

1997).[9] Kratzer 1989, 1995 explains the effect by proposing that tense must bind the external argument of the predicate: if the predicate is stage-level, its external argument is the event variable, and tense binds it; if the predicate is individual-level and has no event argument, tense binds the subject of the predicate, which is then its external argument, resulting in the implicature that the referent of the subject no longer exists.[10] If (10) is ungrammatical because of lifetime effects, we expect it to improve precisely under these circumstances, that is, if the referent of the subject is no longer in existence.

*2.2 Lifting the past tense restrictions*

Taking as our example a clearly generic copular sentence, we see that it falls under the lifetime constraint in the past tense, and can be rescued if the species involved is extinct (Krifka, Pelletier, Carlson, ter Meulen, Chierchia and Link 1995, p. 79 fn. 40, as cited in Musan 1997, fn. 12):

(13) a. #Slony èto byli vodoplavajuščie.
elephants this were aquatic animals
*intended*: 'Elephants used to be aquatic animals.'
b. Dinozavry èto byli presmykajuščiesja.
dinosaurs this were reptiles
'Dinosaurs were reptiles.'

A novel observation concerning universal and generic copular sentences is that another way to lift the restriction on the past tense is to introduce a "point of view shift," as in (14):

(14) S točki zrenja pervyx xristian, jazyčniki èto byli
with point view$_{GEN}$ first Christians$_{GEN}$ pagans this were
počti čerti.
almost devils
'From the point of view of early Christians, pagans were nearly devils.'

Importantly, (14), whose subject does not denote an extinct species and whose predicate is individual-level, violates the lifetime constraint, but is still grammatical. The effect disappears if a point of view adverbial is replaced by an explicit past tense adverbial:

[9] Musan 1997 claims that lifetime effects result from pragmatics (informativeness) and disappear under certain discourse conditions, which do not affect the kind of generic copula sentences we are discussing

[10] As an anonymous reviewer points out, it may be the case that the referent of the subject no longer exists as part of the speaker's world without necessarily being dead. This reading is also weakly available here. We believe that it can be resolved when the role of the point of view (discussed below) is taken into consideration.

(15) (*) V 9$^{om}$ godu N.È., jazyčniki èto byli počti čerti.
In 9$^{th}$ year AD pagans this were almost devils
*intended*: 'In the 9$^{th}$ year AD, pagans were nearly devils.'

Unless (15) is understood like (14), i.e., to mean that in the 9$^{th}$ year A.D. there existed a point of view (preferably, the general opinion) that pagans were nearly devils, it is ungrammatical. The question is why such a shift in the point of view can rescue generic (and universal) copular sentences in the past tense.

## 3 Towards an Explanation of the Point of View Shift Effects

A point of view shift is clearly an introduction of an intensional context. Usually this is done via embedding under an intensional predicate, such as a speech act verb or an attitude report verb:

(16) a. Sudjasčital, čto naši proigryvajut.
referee considered that our$_{PL}$ lose$_{IMPF}$
'The referee thought that our side was losing.'

b. Sudjasčital, čto naši proigryvali.
referee considered that our$_{PL}$ lost$_{IMPF}$
'The referee thought that our side was/had been losing.'

Assertions embedded under an attitude report predicate are evaluated with respect to some possible worlds (the choice of which depends on the semantics of the predicate):

(17) In all possible worlds compatible with the referee's beliefs at the time $t_1 < t_{NOW}$, our side was losing at the time $t_2$...

The reference time of the embedded clause is simultaneous with that of the main clause in (16a) and can precede it in (16b):[11]

(17) a. $t_2 \subseteq t_1$ simultaneity
b. $t_2 \leq t_1$ anteriority

In both cases, the reference time is the time when the attitude was expressed/held, i.e. a past time $t_1$. While in English embedding under a past tense results in the past tense marking in the embedded clause, even if the event of the embedded clause is interpreted as simultaneous with

[11] The availability of a simultaneous reading in (16b) is subject to some variability among native speakers and depends on the type of the verb used in the matrix clause (factivity, veridicality, etc.) and its aspect (perfective or imperfective), as well as on genericity or episodicity of the embedded clause. Perception verbs are in particular likely to permit a simultaneous interpretation of the embedded past (Altshuler 2004), while verbs of saying resist it.

that of the main clause, in Russian simultaneity is marked by the present tense in the embedded clause.

*3.1 Sequence of tense*

Sequence of Tense (SOT) refers to the obligatory use of past tense morphology to signify simultaneity in embeddings under a past tense matrix clause (Abusch 1997, Enç 1986, Ogihara 1996 et seq., Schlenker 1999, and many others):

(18) a. Alice knew that she was sick. SOT
⇒ Alice's knowledge at $t_1$ < $t_{NOW}$ : Alice is sick at $t_1$

Unlike English, Russian has no SOT in complement clauses (Comrie 1986, Kondrashova 1998): to signal simultaneity between the embedded clause and the main clause, present tense is used.[12]

(18) b. Vera znala, čto ona bolela. no SOT
Vera knew that she ailed
'Vera knew that she was/had been sick.'
c. Vera znala, čto ona boleet. no SOT
Vera knew that she ails
'Vera knew that she was sick.'

Russian present tense signals simultaneity with the time of the embedding clause, while English present tense always indicates simultaneity with the actual time of the utterance ($t_{NOW}$). The formalization of this generalization has to be semantic, since Russian and English differ with respect to SOT only in attitude report contexts. When the embedding verb does not report an attitude, Russian exhibits SOT, just like English:

(19) Často slučalos', čto Miša plakal. Schlenker 1999
often happened that Misha cried
'It often happened that Misha cried.'

Schlenker 1999 proposes that Russian present is a shiftable indexical whose point of evaluation is the time of either the actual or the reported attitude/speech act. English present, on the other hand, is a non-shiftable indexical, whose point of evaluation is always the actual speech time.

There is independent evidence for the proposal that SOT depends on attitude reports, rather than morphological realization of tense marking or embedding under a specific class of verbs: In English, SOT

[12] The present tense in (18c) can indicate simultaneity with utterance time rather than with the time of the embedding attitude verb, but this *double-access reading* (Ogihara 1996, Abusch 1997) is dispreferred.

can occur without embedding verbs or tense marking, as in (20a), if the attitude report is understood as placed in the past (Ogihara 1996, Abusch 1997, Schlenker 1999). As expected, in the same environment in Russian there are no SOT effects:

(20) a. Alice's (earlier) claim that she **was** sick is well-documented.
Alice's claim at t < $t_{NOW}$ : Alice is sick at t
b. Verino včerašnee utverždenie, čto ona boleet, bylo ložju.
Vera's yesterday's claim that she is.ailing was lie
'Vera's claim that she was sick was a lie.'
Vera's claim at t (< $t_{NOW}$) : Vera is sick at t

(20a) can be understood as meaning that at some point Alice made a claim that she was sick *at the moment of the claim* (though her sickness could have preceded the claim, too – this is a non-SOT reading). The same meaning is expressed in (20b) by the use of the present tense – to encode temporal anteriority, the past tense must be used.

A welcome consequence of linking SOT with intensionality is that this hypothesis explains why Russian relative clauses appear to exhibit SOT (Kondrashova 1998), just like their English counterparts:

(21) Vera znala čeloveka, kotory plakal. relative clause: SOT
Vera knew person who cried
'Vera knew a/the person who was crying/*had been crying.'

Since there is no attitude report involved, tenses are used as in main clauses, to indicate simultaneity or anteriority with respect to the utterance time.[13]

*3.2 Point of view shifts*

Frame adverbials introducing a shift in the point of view also introduce an intensional context, but they behave differently from attitude report predicates.

(22) S točki zrenija/ po utverždeniju sudji naši proigryvali.
with point $view_{GEN}$/ over assertion referee $our_{PL}$ $lost_{IMPF}$
'From the referee's point of view/according to the referee, our side was losing.'

Just like (16b), (22) is under-determined as to whether the time of the losing event precedes the time of the attitude report or is simultaneous with it. However, unlike in (16a), present tense may not be used to signal simultaneity:

[13] Japanese differs from both Russian and English in that it has no SOT either in relative clauses or in complement ones (Ogihara 1999, Kusumoto 1999).

(23) * S točki zrenija/ po utverždeniju sudji naši proigryvajut.
with point $\text{view}_{\text{GEN}}$/ over assertion referee $\text{our}_{\text{PL}}$ $\text{lose}_{\text{IMPF}}$

If point of view adverbials behaved as embedding attitude report or speech act predicates, (23) would have meant that the losing event was simultaneous with the referee's assessment, i.e., it would have been interpreted as (16a). Instead (23) is ungrammatical. In other words, point of view adverbials trigger what looks like SOT in Russian: present tense marking cannot be used to mark simultaneity with the past tense attitude report.

In some way, the fact that the attitude report expressed by the point of view adverbial was made in the past blocks the present tense on the verb, and the past tense is the only remaining marking that is compatible with simultaneity. This observation explains the unexpected acceptability of generic and universal past tense copular sentences discussed in section 2.2: the only stipulation we have to make is that sentences such as (15), containing an explicit time adverbial, which are acceptable only under a very specific interpretation, that of expressing a general opinion held at a certain time, contain a hidden point of view adverbial, responsible for their interpretation.

Before we pass to the question of how to formalize these observations, we should note that point of view shifts have been independently observed to have grammatical effects in a number of different constructions. Thus Ross 1970, Kuno 1987, and Zribi-Hertz 1989, among others, note that shifting to another point of view licenses logophoric reflexives:

(24) a. *Physicists like himself are a godsend.
b. $\text{John}_i$ thinks that [physicists like $\text{himself}_i$] are a godsend.
c. *Mary thinks that [physicists like $\text{himself}_i$] are a godsend.

Backward binding with psych-verbs (Akatsuka 1976, Giorgi 1984, Pesetsky 1987, Belletti and Rizzi 1988, Grimshaw 1990, etc.) might be a special case of the same effect.

Another environment where point of view plays a crucial role is the choice of pronominal subjects (*ce* vs. *il/elle*/etc.) in copular sentences in French (Coppieters 1974, 1975, 1982). (25) illustrates one of Coppieters' observations: a pronominal subject (*il*) is ungrammatical with a nominal predicate unless it is coreferential with the holder of the attitude reported by the embedding predicate:

(25) *(Paul croit qu') il est le chef.
Paul believes that he is the boss
*Paul believes that he is the boss.*

Finally, Cabredo Hofherr 2004 notes that the use of the weak deictic *ce/das* instead of the expletive in French and German impersonals is also influenced by the point of view. We conclude that grammatical effects of point of view shifts are attested in a number of distinct constructions and languages, and pass on to figuring out how it can be formally encoded in our case.

*3.3 Proposal*

As mentioned above, Schlenker 1999 proposes that Russian present tense is a shiftable indexical encoding simultaneity with respect to either the actual or the reported attitude/speech act. He also suggests that Russian past tense is a shiftable indexical encoding precedence. This predicts that in environments embedded under past tense attitudes, both past and present tense are compatible with simultaneity with the reported attitude. This leads us to expect (23) to be grammatical.

To block present tense marking under point of view adverbials, we adopt an additional syntactic licensing condition on shifted indexicals (contra Schlenker 1999 and with Stowell 1995, 1996, Ogihara 1996, Kondrashova 1998, etc.):

**(26) The shifting condition**

A shifted indexical is licensed by a c-commanding attitude report predicate.

In other words, our proposal combines a semantic licensing condition (an embedding attitude report must be present) with a syntactic one (the predicate expressing the embedding attitude must c-command the shifted indexical). Point of view adverbials, being adjuncts, do not c-command the proposition they embed.

The shifting condition in (26) yields the following results for various environments where SOT effects could be expected to arise:

(i) **Relative clauses**: no attitude is introduced; as a result, the present tense is indexical ($t_{NOW}$) and cannot be shifted; the past tense is also indexical and indicates temporal precedence

(ii) **Complements of verbs like *utverždat'* 'claim' or nouns like *utverždenie* 'a claim'**: the present tense can be indexical ($t_{NOW}$), in which case no licensing is required (this produces the double-access reading (Ogihara 1996, Abusch 1997)); it can also be shifted (this produces the reading of simultaneity with the embedding attitude predicate), in which case it is licensed by the embedding predicate under

c-command; the past tense can be indexical and indicate temporal precedence with respect to the time of utterance the availability of the simultaneous interpretation for the past tense is conditioned by the properties of the matrix verb, but in principle possible; it can also be shifted, in which case it indicates temporal precedence with respect to the matrix predicate[14]

(iii) **Complements of verbs like *slučit'sja* 'happen'**: no attitude is introduced (Schlenker 1999); as a result, the present tense is indexical ($t_{NOW}$) and cannot be shifted; the past tense is also indexical and not shifted, it need not be licensed and indicates temporal precedence

(iv) **Point of view adverbials like *po mneniju* 'in the opinion of'**: indexical present tense ($t_{NOW}$) can be used, producing the double-access reading; shifted present tense (simultaneous with the frame attitude adverbial) cannot be licensed since there is no c-command relation; the past tense is indexical with respect to the utterance time ($t_{NOW}$) and is compatible with simultaneity since the shifted present tense is not available here

(v) **Temporal adjunct clauses introduced by *kogda* 'when', *do togo, kak* 'before', etc.:**[15] no attitude report predicate is present, so the shifted interpretation cannot arise, and thus indexical present or past tenses must be used.

To summarize, our mixed condition in (26) correctly predicts SOT effects in Russian with point of view adverbials or in the absence of attitude report embedding (i.e., in relative clauses, temporal adjunct clauses and in complements of verbs like 'happen'), but not in complement clauses.

*3.4 Possible alternatives (which nonetheless do not work)*

3.4.1 Free Indirect Discourse. One possible alternative hypothesis is

[14] We need a shifted interpretation of the past tense to permit past-shifted readings under the future:

(i) Tomorrow we will set our time machine for the 30th century, bring back a functioning interstellar drive and **prove to everyone that we have traveled into the future**.

(ii) ...i dokažem, čto my s'jezdili v buduščee
...and prove that we traveled in(to) future

The past tense in (ii) indicates temporal precedence only with respect to the matrix.

[15] These clauses are modifiers on the tense of the main clause, exactly like temporal non-verbal adjuncts, such as *nakanune* 'earlier'. See (Ogihara 1996 and Kusumoto 1999).

that (14) is an instance of Free Indirect Discourse (Doron 1991, Schlenker 1999, Sharvit to appear, among others). "The hallmark of Free Indirect Discourse is that an indexical like 'today' can refer to a moment which is before the time of the actual utterance." (Schlenker 1999:25):

(27) ⟨John was talking to Ann with great passion.⟩ Yes, indeed, today he wanted to marry her.

(28) ⟨Lev was talking to Vera with great passion.⟩

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Da, | da, | segodnja | on | xočet/#xotel | ženit'sja | na | nej. |
| yes | yes | today | he | wants/wanted | to-marry | on | her |

'Yes, indeed, today he wanted to marry her.'

As (28) shows, this hypothesis is disproved by SOT effects: Russian Free Indirect Discourse behaves like embedded clauses in requiring present tense for simultaneity,[16] while adverbials introducing a past point of view require the past tense marking on the main verb for the simultaneous interpretation, thus producing an SOT effect.

In addition, Free Indirect Discourse is clearly a stylistically marked environment, which is not true for environments created by point of view adverbials.

3.4.2 Genericity. It is also possible that the effect, which arises in generic and universal copular sentences, is due to some (unclear) property of genericity. However, as (29) shows, generic statements in the past tense are not required to express a past point of view.

(29) Lions were still wide-spread in the 19th century.

A suitable choice among the individual-level predicates makes a past-tense generic statement acceptable without a point of view shift.

*3.5 Russian generics revisited*

It should now be easy to see how our approach applies to the past tense generic copular sentences that caused us to re-examine SOT effects in Russian. We propose that, just like Free Indirect Discourse environments are embedded by a hidden attitude report, the point of view environments are introduced by either a hidden or an overt point of view adverbial. As a result, we enter an attitude environment, where the indexicals of present and past tenses can potentially be shifted. However, the condition in (26) requires the embedding attitude report to

[16] Our theory incorrectly predicts the availability of the past tense and the impossibility of the present tense here, unless we assume some sort of embedding under a hidden attitude predicate (cf. Ross 1970). Any theory needs to make a similar assumption to explain how these environments are interpreted.

c-command the shiftable indexical, which an adverbial does not do – thus, we cannot use the shifted present tense and must use an indexical past for the simultaneous interpretation.

We predict that this effect should arise outside the generic sentences that we discussed, but this prediction is difficult to verify. In examples like (22), the point of view is introduced by an overt adverbial and so can be attributed to a particular individual. In the absence of such an adverbial, a "general opinion" interpretation seems to be the only one available. The null point of view adverbial may be forced to refer to a specific attitude holder if a point of view antecedent is introduced in the preceding context:

(30) (Early Christians held some very strong beliefs. For example,)
Jazyčniki èto byli počti čerti.
pagans this were almost devils
'Pagans were nearly devils.'

Such an antecedent can be introduced only by specifying the attitude itself. None of the contexts in (31) can serve to provide an antecedent for the null point of view adverbial:

(31) a. I just read something interesting about early Christians.
b. Early Christians differed from other sects. For example...
c. Early Christians didn't like pagans. For example...

However, even a passing reference to the relevant belief system is sufficient:

(32) Early Christians weren't very tolerant. For example...

The contrast between (31) and (32) shows that the null point of view adverbial doesn't have a complex structure that could contain a pronominal element. When the point of view is different from that of the speaker, it is either anaphoric or arbitrary.

## 4 Conclusions

We proposed that the behavior of present and past tense morphemes in Russian is determined (a) by the lexical content of these morphemes, i.e., by their ability to be shifted and by the default nature of the past morpheme, and (b) by a syntactic/semantic constraint on their licensing given in (26), i.e., the requirement that they be c-commanded by an attitude report predicate when they are shifted.

This approach allows us to predict the appearance of SOT effects in intensional environments involving point of view shifts, as well as in all of the standard environments usually considered in SOT discussions.

However, despite these desirable results, we acknowledge that such a mixed syntactico-semantic account is not ideal – it would be preferable to have an explanation of a uniform (syntactic or semantic) character.

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# Against the Scrambling anti-Movement Movement*

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## 1 Introduction: Free Word Order and Scrambling

This article argues against two recent non-movement accounts of free word order in Russian—van Gelderen (2003) (hereafter VG) and Bošković (2004) (hereafter B) and in favor of Scrambling-as-Movement. Both VG and B claim (a) that the (re)ordering of major constituents in Russian results from *a process that is not movement*, and (b) that (most) Russian (re)orderings result from a process distinct from that of Japanese. In sections 2 and 3 of this article I present the VG and B approaches and argue against them. In the final section, I argue that Japanese and Russian do not differ in the manner described by either author, and that a unified discourse-driven account of Scrambling as Last Resort movement is both theoretically more desirable and empirically more successful.

The issue at hand is the proper account of alternative word orders for identical major constituents in so-called "free" word order languages. Typical cases are given in (1) (local) and (2) (long-distance) for Japanese and (3) for Russian (the bold element is the constituent separated from canonical (thematic) position):

(1) a. Mary-ga sono hon-o yonda (Japanese)
Mary$_{NOM}$ that book$_{ACC}$ read
'Mary read that book.'
b. **sono hon-o** Mary-ga ___ yonda
that book$_{ACC}$ Mary$_{NOM}$ read
'That book Mary read ___.'

(2) **sono hon-o** John-ga [ Mary-ga ___ katta to] itta]
that book John$_{NOM}$ Mary$_{NOM}$ bought that thinks
'That book John thinks that Mary bought ___.'

(3) a. Mal'čiki čitajut knigi. SVO
boys$_{NOM}$ read books$_{ACC}$
b. Mal'čiki **knigi** čitajut __. SOV

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c. **Knigi** mal'čiki čitajut __. OSV
d. **Knigi** čitajut **mal'čiki** OVS
e. __ Čitajut **mal'čiki** knigi. VSO
f. __ Čitajut knigi **mal'čiki** VOS

Standard accounts since Ross (1967), especially Saito (1989, 1992), have assumed or argued for a "scrambling" transformation, which derives (2) as shown in (4)[1]:

(4) **sono hon-o** John-ga [ Mary-ga ____ katta to] itta]
that book $John_{NOM}$ $Mary_{NOM}$ bought that thinks

*movement* (Scrambling)
*Reconstruction* (if A'-mvt)

Motivation for a movement account of scrambling is given in Saito (1989), based on the contrast between Japanese (5a) and (5b):

(5) a. [**sono hon-o**$_1$ [John-ga [$_{CP}$ [ Mary-ga **e**$_1$ katta to]$_2$
that $book_{Acc}$ $John_{NOM}$ $Mary_{NOM}$ bought that
[ Bill-ga $e_2$ itta] to] omotteiru]].
$Bill_{NOM}$ said that think
'That $book_1$, John thinks that [that Mary bought **e**$_1$]$_2$, Bill said **e**$_2$.'

b. *[[ Mary-ga **e**$_1$ katta to]$_2$ [John-ga [$_{CP}$ **sono hon-o**$_1$
$Mary_{NOM}$ bought that $John_{NOM}$ that book-
[$_{TP}$ [ Bill-ga**e**$_2$ itta]] to] omotteiru]].
$Bill_{NOM}$ said that think
'[that Mary bought $e_1$ ]$_2$, John [that book]$_1$ thinks that Bill said **e**$_2$.'

In (5a), $CP_2$ is scrambled out of an embedded clause, and $NP_1$ is then scrambled out of $CP_2$. All moved elements c-command their traces, and the derivation is fine. In (5b), however, $NP_1$ is moved first, followed by its containing $CP_2$. The resulting structure violates the Proper Binding Condition, because within $CP_2$, the contained NP trace $\mathbf{e}_i$ is not c-commanded by its antecedent, *sono hon-o,* now stranded. Thus, "traces created by scrambling and those created by WH-movement in English behave in exactly the same way with respect to the Proper Binding Condition (PBC)" (Saito 1989, p. 190)

Furthermore, Saito (1989, 1992), Webelhuth (1989), Mahajan (1990), and Bailyn (1995, 2001, 2003) show with a number of syntactic tests for Japanese, German, Hindi and Russian respectively, that standard WH-movement constraints also apply to the derivation of free word order, implicating movement. Such constraints include the Coordinate Structure Constraint, Subjacency, Weak Crossover, the Adjunct Condition and others. Finally, Saito (1989) shows that Scrambling licenses Parasitic Gaps in Japanese. We therefore approach the problem from the perspective that theories advocating non-movement should at very least maintain the level of descriptive

[1] In a Copy Theory, Reconstruction involves pronouncing the higher copy and interpreting the lower one.

adequacy movement accounts attained in the GB literature.

More recently, however, the Minimalist Program of Chomsky (1995) and later work has compelled us to ask questions of *motivation* about any movement transformation posited: "Is the movement in question (syntactically) obligatory?", "Is the movement driven by interface (in this case interpretive) considerations?", "Do features drive the movement, and if so, which?"

In the case of Scrambling, preliminary answers to these questions throw some doubt on the movement account. First of all, Scrambling appears always to be optional (that is, we are never *forced* to derive (1b) from (1a).) Second, Scrambling appears to be semantically inert in that some Logical Form (LF) relations, such as Quantifier Scope, are not affected by its operation in Japanese (Saito's "radical reconstruction" property), meaning it may have no interface relevance (and hence should be superfluous, on minimalist assumptions). Finally, it is not clear what features might drive such movement. For these reasons, various alternatives to movement have been recently proposed, two of which I discuss, and ultimately reject, in what follows.

## 2 "Early Spell-Out"

Van Gelderen (2003) argues that Minimalism allows for the possibility that there exist "Early Spell-Out" languages (such as Russian) in which major constituents in a derivation can essentially move directly from the Numeration to Spell-Out, without passing through any syntactic component. This is possible in Russian because case is internally licensed, and assuming that case is a purely PF phenomenon, the syntactic component can be sidestepped, deriving the effect of free word order.[2] In such cases "Scrambling is the result of the lack of merger, meaning that constituents arrive to PF unattached, which allows great freedom of linear order... This is what occurs in languages such as Russian" (p. 7). In short, "certain languages have ways of checking features that do not require Merge to occur" (p. 12). This is what allows all 6 of the possible constituent orders found in Russian (cf. (3)). Note that crucially for VG, nominals *do* undergo syntactic formation (to the level of DP) after which the predicate and its arguments are arranged at PF according to discourse principles without any further syntactic processes taking place.[3] Languages of this kind are predicted by VG to have the following properties:

[2]It is not clear to me what is meant by "internal licensing", that is, what morphological property of a language allows it to license case internally. Examples of such languages other than Russian are not presented in VG, so I will limit the discussion of this issue. Japanese, crucially, does not have this property, and is not an early spell-out language for VG.

[3]This simplifies VG's particular claim for the six Russian constituent orders shown in (3). In fact, VG claims Early Spell-Out accounts for only three of the six orders, namely VSO, OSV and VOS, the so-called "unmerged" structures. The other three

(6) Properties of languages with Early Spell-Out (VG, pp. 23-25):
   i. Free Constituent Order: all word orders of major constituents are available
   ii. Islands: "every partial structure will be opaque for extraction"
   iii. Ambiguity: The relative order of two quantifiers will always be ambiguous
   iv. Adjuncts: "no difference is expected between arguments and adjuncts in Early Spell-Out structures"

*2.1 Against early spell-out*

First, let us consider the issue of free constituent order under VG's system. Sub-constituents, such as argument DPs, are created by Merge in the usual way. Once V, $DP_1$ and $DP_2$ are built, then the derivation is sent off to Early Spell-Out. The result is any one of the six orders given in (3), the distinctions being determined by linear rules of discourse (information) structure. Crucially, for VG there is no process of syntactic Merge between a verb and its arguments in Russian (as opposed to Japanese, where the verb-final order results from complements merging with heads in head-final fashion.) However, in abandoning any kind of VP-internal merger, VG encounters significant problems with both *selection* and *constituency*. Let us consider each in turn.

Within Minimalism, c-selection is replaced by feature checking, as in Adger 2003, where the requirement that a Preposition take an NP complement, say, is formalized as the P head bearing an uninterpretable [+*u*N] feature, which must be eliminated by being checked, at Merge, by a complement bearing an interpretable [N] feature, that is, by a nominal. So P must take an NP complement. Verbs that take CP complements, (indicative, interrogative, subjunctive, etc), small clause complements, and so on, are similarly marked. The featural requirements that constitute c-selection are satisfied when Merge with the appropriate category occurs.

It should be immediately apparent that the Early Spell-Out system, which expressly denies a merger process, will not as it stands be able to handle selectional relationships. Selectional restrictions cannot be captured at the level that determines linear order (PF) due to lack of adjacency. Nor are they able to be satisfied earlier in the derivation under VG. This leaves the LF component as the only possibility; and this is the level where VG assumes such relations are handled. But what exactly is the process of 'checking' like at LF? Is it configurational? Does it involve features? Does it require adjacency? It is generally assumed that categorial requirements cannot be fully reduced to semantics (*ask the time* vs. **wonder the*

(SVO, SOV, and OVS) result from Merge in the usual way. Space considerations prevent me from arguing against this classification of Russian word order patterns. Instead, I will concentrate on the general approach and its empirical and theoretical weaknesses, for which the "unmerged" orders are enough to make the case.

*time*), so it would not appear that selection can be somehow checked at LF, despite VG's assumption that it can. Any kind of combinatorial approach to selection is unavailable to VG, as the account bypasses syntactic combination. If selection is handled through feature checking, as in Adger 2003, the uninterpretable categorial features driving selection must be eliminated before LF. Some other device is required. Without further elaboration on how selection is to be handled, the system has weakened the grammar far more than it has strengthened it.[4]

The next problem for Early Spell-Out involves *constituency*. The Early Spell-Out system denies constituency of both VP/*v*P and TP. In some respects, it essentially restates Hale's 1973 non-configurationality parameter. However, substantial evidence for VP and TP constituency exists for Russian—ellipsis and sluicing (Grebenyova, this volume), coordination, and other standard constituency tests demonstrate the necessity of the VP and TP groups. A third problem concerns the claim that embedded clauses are fully opaque to scrambling. It is generally known that extraction is possible at least from subjunctive *čtoby* clauses (see Bailyn 1995 and elsewhere). It is not clear how Early Spell-Out can derive surface order in these cases but not allow separation from the argument clause in indicatives. Fourth, changes in word order directly affect scope, as shown in Ionin 2001, an aspect of free word order that Early Spell-Out denies the possibility of (recall that LF relations have no connection to PF orders in this system). VG claims all double quantifier structures will be ambiguous, contrary to the well-observed fact that surface scope is highly preferred to inverse scope by most speakers in both derived word orders.[5] Thus the VG system loses empirical coverage in its effort to answer some of the questions about Scrambling raised under Minimalism.[6]

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[4] Similarly, in a diathesis system, such as Babby (forthcoming), selectional properties are captured as a two-tiered representation of argument structure. Selection is thus lexical, though the system assumes a rigid order of hierarchical combination, which leads to strong empirical predictions about word order. Early Spell-Out weakens the predictive force of both a Bare Phrase Structure and a diathetic approach and would need additional machinery to account for constituency and derived word orders.

[5] The same is apparently not true of Japanese (see Bošković & Takahashi 1998) among many others. This distinction is what leads Bošković (2004) to argue that Russian does in fact have overt movement in such instances, although he labels it Topic/Focus movement. We return to this proposal in Section 3 of this article. For now suffice it to say that Russian facts speak against Early Spell-Out and in favor of movement, as Bošković shows.

[6] Note also that VG does not in fact eliminate Scrambling from the grammar. Japanese, where not all six constituent orders occur, must have Scrambling as movement and (left-branching) VP constituency to assure V-final structures. Thus the VG typology posits *both* Early Spell-Out languages (Russian) *and* Scrambling languages (Japanese), hence *more* language types, without relevant discussion of the loss of explanatory adequacy. I will not discuss this further, other than to note the problem.

## 3 Base-Generation and LF Lowering

Bošković (2004) builds on Bošković & Takahashi (1998)'s account (hereafter BT) of Scrambling as a base-generated process followed by obligatory LF lowering. In this system, θ-roles are features.[7] Languages differ as to whether θ-relations are 'weak' and can be checked at LF (Japanese) or whether they are 'strong' and must be checked at Merge, hence no Scrambling (English). Thus Scrambled elements are pronounced in their base-generated position and then undergo obligatory lowering to their LF position in order to check their θ-role. There is no optional movement, and radical reconstruction effects in interpretation follow automatically after lowering. The proposal is schematized in (7):

(7) **sono** **hon-o** John-ga [ Mary-ga ___ katta to] itta]
that book $John_{NOM}$ $Mary_{NOM}$ bought that thinks

*LF Lowering*

*(base position)* *(LF position: θ-checking)*

*3.1 Against scrambling as base-generation and lowering*

Despite the theoretical desirability of elimmating the optionality of Scrambling in this way, the original BT proposal has been challenged in the literature (see Bailyn 2001, Boeckx 2003 among others). The reader is referred to those works for detailed argumentation. Two major issues, however, require some discussion, and are as follows:

A. The BT account of Scrambling predicts the absence of surface interpretive effects associated with the high (scrambled) position. Empirically, this claim appears too strong, as shown in (8-10), where we see surface scope effects and anti-reconstruction binding effects respectively:

Russian Surface Scope Effects (see also Ionin 2001)

(8) a. Kto-to xočet, čtoby Boris uvidel každogo mal'čika.
Someone wants that Boris saw [every boy]
'Someone wants Boris to see every boy.'
i) ∃x ∀y ii) *∀y ∃x (?? for some speakers)

b. **[Každogo mal'čika]** kto-to xočet, čtoby Boris uvidel ***t***.
[every boy]$_{ACC}$ someone wants that Boris saw
'Every boy, someone wants Boris to see.'
i) *∃x ∀y ii) ∀y ∃x

In (8a), we see that Russian quantifiers prefer surface scope interpretations, as discussed in Ionin (2001). When an embedded

[7] Needless to say, this is far from an uncontroversial assumption. See Chomsky 1995 among many others for discussion. I will assume in what follows that such a characterization of thematic relations *is* possible, and my critique of BT will be limited to empirical domains, rather than taking on this larger, framing assumption.

object is scrambled, it acquires surface scope. On theories where quantifier scope is determined at LF (the standard assumption), (8b) is incompatible with Lowering, since the scrambled element should always be interpreted in its low thematic position. The same problem occurs with anti-reconstruction effects shown in (9).

Anti-Reconstruction Effects (see Heycock 1995)

(9) a. ***[How proud of John$_i$]** do you think **he$_i$** should be ***t***?
b. **[Which question [that Gore$_i$ got during the debate]]** do you think **he$_i$** messed up on ***t*** the worst?

(10) a. *Ja xoču, čtoby on$_i$ srazu zabyl
I want that he right away forget
nekotorye voprosy Goru$_i$
some questions to Gore
'I want him$_i$ to immediately forget some questions to Gore$_i$.'
b. **[Nekotorye voprosy [Goru$_i$]]** ja xoču,
some questions to Gore I want
čtoby on$_i$ srazu zabyl ***t***
that he right away forget
'Some questions to Gore$_i$ I want him$_i$ to immediately forget.'

(10b) shows that for Russian scrambling, just as for English wh-movement (9b), some fronted constituents containing an R-expression obviate the Principle C violation that is incurred when they are in base position as in (10a). This is then a case of "anti-reconstruction". Note that the R-expressions in the (b) sentences are either adjuncts or within adjuncts. This has led to the proposal that adjuncts are attached late in the derivation, never being associated with the lower position, hence the anti-reconstruction effect. However, in a system where the displaced argument *itself* must obligatorily lower at LF, the LF representation will not have the argument and modifier in the same location, making semantic interpretation impossible. A system like that of Heycock 1995, where the reconstructability of an element depends on its referential status, is crucially not available in the BT system.

B. The BT account specifically requires that there be no trace (or copy) in scrambled (high) position. This is necessary to make the Lowering process itself syntactically legitimate. However, this also implies the lack of any locality or other syntactic constraints on Scrambling, assuming the usual accounts of such constraints as being constraints on chains or constraints on traces. However, the predicted lack of locality and other syntactic constraints on scrambling is contradicted by literature on many free word languages (see Saito 1989, 1992, Webelhuth 1989, Mahajan 1990, Bailyn 1995, 2001, 2002 among many others). A partial list is given in (11):

(11) Known syntactic constraints on Scrambling
a. Proper Binding Condition (Saito 1989)
b. Subjacency (Webelhuth 1989)
c. Complex NP Constraint (Webelhuth 1989)
d. The Empty Category Principle (incl. *that-t* effect) (Bailyn 1995)
e. No extraction out of Russian *čto*-clauses (Bailyn 1995)
f. Coordinate Structure Constraint (Webelhuth 1989, Bailyn 1995)
g. Constraint on Extraction Domains (Webelhuth 1989)
h. Constraint on extraction out of Russian adnominal genitives (Bailyn 1995)

Space considerations preclude a full presentation of syntactic effects in scrambling here. However, Russian examples of Subjacency and ECP effects are given in (12) and (13-14) respectively:

(12) a. *Kogo$_i$ ty pozvonil [agentu [ kotoryj ljubit $t_i$ ] ]?
Whom you phone spy who loves
'Whom did you phone a spy who loves?'
b. ***Borisa$_i$** ty pozvonil [agentu [ kotoryj ljubit $t_i$ ] ]
Boris you phone spy who loves
'It's BORIS you phoned a spy who loves!'

(13) a. **Komu** ty xočeš', [ čtoby Ira pozvonila $t_i$ ] ?
who you want that Ira phoned
'Who do you want Ira to call?'
b. ***Kto** ty xočeš',[ čtoby $t_i$ vljubilsja v Iru ] ?
who you want that fall in love (to) Ira
'Who do you want that fall in love with Ira?'

(14) a. Ja **Borisu$_i$** xotel, [ čtoby Ira pozvonila $t_i$ ]
I Boris wanted that Ira phone
'I wanted Ira to phone Boris.'
b. *Ja **Boris$_i$** xotel, [ čtoby$t_i$ vljubilsja v Iru ]
I Boris wanted that fall in love (to) Ira
'I wanted Boris to fall in love with Ira.'

Clearly, known Scrambling is sensitive to Subjacency and ECP effects. This is not expected under BT. BT do not directly address the issue of the PBC. However, they do acknowledge the problem of known syntactic constraints on Scrambling in a footnote: "We ignore here the Coordinate Structure Constraint, the Left Branch Condition, and the Specificity Condition, since it is not at all clear that these are movement constraints" (BT, fn 17, p. 358). No proposals are made as to how to account for the parallel effects of those constraints on Scrambling and WH-movement in a system without Scrambling-as-Movement. An important generalization is thus lost, and empirical coverage of the resulting theory, however theoretically preferable, is sacrificed without sufficient theoretical compensation, until CSC and other scrambling effects are accounted for. The empirical coverage of GB accounts has to be maintained in non-movement accounts in some

other way, not provided by BT (or VG).

*3.2 Movement but not scrambling?*

In Bailyn 2001 I presented these and other objections to the BT account, primarily using Russian data, showing the effects discussed above (that Scrambling has interpretive effects and that locality constraints hold), and that adjuncts can Scramble (another effect not predicted by the BT account). In reply, Bošković (2004) (B) acknowledges the importance of such examples, but argues that they do not undermine the BT approach of Base-Generation and Lowering. "Russian examples that Bailyn (2001) uses to argue against Bošković & Takahashi's (1998) analysis of scrambling *are irrelevant to the analysis because they do not in fact involve scrambling* (Bošković 2004: 613, emphasis JFB). In particular, B concedes that movement *is* involved in Russian instances which show interpretive effects and are subject to standard movement constraints, but that these instances are not in fact Scrambling. Rather, these are cases of "Topic/Focus Movement," which is assumed by B to be a standard syntactic movement process.

In the final section of this article I address the general issue of whether or not there is a significant distinction between the derivation of free word order variation in Japanese and Russian, as argued in both VG and B, concluding that the difference between the two languages is more superficial than claimed in those accounts. Before that discussion is possible, however, it is critical to examine the nature of B's proposed distinction between the two language types.

B's primary claim is this: Russian has (morphologically unmarked) Topic/Focus movement, which is assumed to be standard (upward) A'-movement. The high (scrambled) position determines interpretive effects (scope).[8] The usual locality and other constraints apply as the movement is carried out, and adjuncts can participate.[9]

Let us examine the motivation for claiming that the two languages are so different: B's primary argument is that those

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[8] Surface scope effects mask the unusual nature of B's assumption about (standard) A'-movements (WH-mvt and TOP), namely that surface position alone determines interpretative effects (as vs. "Japanese-style" Scrambling). This contradicts the general assumption that A'-movement can reconstruct (for binding) (Fox 1999, a.o.) ([*Which pictures of himself*] *does John hate t?*). A'-reconstruction for binding is mentioned only in a footnote, in which B appeals to a derivational Binding Theory, following Epstein et al (1998), whereby binding relations are established in the course of the derivation (before wh-movement). Derivational approaches are indeed promising for Principle A (Grewendorf & Sabel 1999). However, Principle C appears to apply only at LF (Saito 2003), meaning that another aspect of B's proposed distinction between standard A'-movements and Scrambling is weakened, in that anti-reconstruction facts with WH-movement *and* Scrambling cannot be treated in parallel fashion under the non-movement approach to Scrambling.

[9] B later adds that Russian also has Japanese-style Scrambling, a claim to which I return below. For now what matters is the concession that (most) Russian free word order results from overt movement which is distinct from Lowering and thus not contraexemplary to the claims made about Japanese.

Russian examples that do not have the radical reconstruction property can not result from Scrambling. "The undoing property is taken to be the defining and most interesting property of Japanese-style Scrambling (JSS)" (B, p. 618). The crucial difference between the two languages concerning interpretation and word order involves quantifier scope, and is illustrated in (16-17):

(16) **[Daremo-ni]**$_i$ dareka-ga [ Mary-ga $\mathbf{t}_i$ atta to ] ometteiru
everyone$_{DAT}$ someone Mary met that thinks
'Someone thinks that Mary met everyone.'
i) $\exists x \forall y$ ii) *$\forall y \exists x$

(17) **[Každogo mal'čika]**$_i$ kto-to xočet, čtoby Boris uvidel $\mathbf{t}_i$.
[every boy]$_{Acc}$ someone wants that Boris saw
'Every boy someone wants Boris to see.'
i) *$\exists x \forall y$ ii) $\forall y \exists x$

In (16), the scrambled embedded object does not acquire surface scope in Japanese. In (17), on the other hand, the surface order determines scope, as we have seen. This difference is significant, and will be discussed below. Otherwise, the primary distinction seems to be related to the fact that Russian has no overt Topic/Focus devices other than word order (and intonation), whereas Japanese regularly marks Topics with *wa*. However, the overt nature of this particle does not entail that non-*wa*-marked word order variation in Japanese might not also serve a discourse function. Indeed there are significant examples of the discourse relevance of Japanese free word order (Miyagawa 1997 and Bailyn 2001). At the same time, Japanese Scrambling obeys the Proper Binding Condition, as in (5), as well as Subjacency and other movement constraints, Saito (1989, 1992, 2003). These effects are not accounted for in BT or B.[10]

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[10]B responds to the issue of the PBC in an extended footnote, where it is claimed that PBC effects in Scrambling are irrelevant for two reasons: first, because the PBC does not hold in German remnant movement instances, where a fronted infinitive can contain the trace of a lower element as in (i):

(i) [ *t* Gelesen] [hat das Buch keiner ]
read has the book no one
'Read the book, no one has.'

However, Van Riemsdijk (pc) points out that cases such as (i) mask the more general situation of the PBC applying exactly as expected in cases like (ii), where the presence of *was-für* split clearly implicates movement.

(ii) *[ [ *t* Für Bücher gelesen] [weiss ich nicht was erhat]
for books read know I not what he has
'I don't know what for books he has read.'

Thus something like the PBC holds in case of German remnant movement cases, although bare infinitival constructions like (i) may involve base-generation. Cases such as (ii), as well as English WH-movement, Japanese LF-WH movement, *and Japanese Scrambling* can be united in this regard only by assuming movement constrained by the PBC applies.

Second, B rejects a PBC account because "it is crucial to apply the PBC at S-Structure... [and] is therefore incompatible with the Minimalist program, which has

One more aspect of B's account requires discussion. B shows that not all instances of Russian word order variation involve Topic/Focus movement. Japanese-style Scrambling (JSS) also occurs in Russian. This is important for B because scrambling in Russian is (sometimes) able to escape WH-islands:

(18) Ty **doktor**$_i$ videl kogda [$_{IP}$**t**$_i$ pod'ezžal ]?
you doctor$_{NOM}$ saw when came
'The doctor did you see when (he) came?'

(19) *Kto$_i$ ty videl kogda [$_{IP}$**t**$_i$ pod'ezžal ?] (WH-island)
who you saw when came
*'Who did you see when came?' (Müller & Sternefeld 1993)

Because (18) appears to escape island constraints, it cannot for B be an instance of Topic/Focus movement, which (always) obeys islands. B therefore claims that (18) is an instance of JSS (Base-generation and Lowering), as vs. (19), which shows the effects of a WH-island violation. However, Lowering cannot be the correct account of (18). For if (18) is Japanese style-scrambling, then the Lowering account immediately predicts Japanese-style *low quantifier scope* in such constructions, since the undoing property always characterizes JSS on B's assumptions. This prediction is not borne out:

(20) Ty **každuju devušku**$_i$ videl kogda
you [every girl]$_{Acc}$ saw when
[kakoj-to mal'čik celoval **t**$_i$]?
some boy-Nom kissed
'Did you see when some boy kissed **every girl**?'
i) *$\exists x \forall y$ ii) $\forall y \exists x$

In (20), an embedded quantifier escapes a WH-island, but has surface scope. If the undoing property (Scope) is the primary diagnostic for JSS, then (20) must be overt movement, since it has surface scope. If escaping islands is the diagnostic, then (20) must be non-movement (JSS). B's account has achieved a paradox.[11]

To sum up thus far: the claim that Russian free word order is (usually) driven by movement whereas in Japanese it is not encounters significant problems. Despite the proposed distinction,

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no place for S-structure conditions" (p. 617). Instead a sideways movement account of (5) is proposed. However, this account cannot extend to the other known PBC cases. The minimalist attempt to eliminate S-structure conditions entirely is laudable, but cannot sacrifice empirical coverage. Replacing the PBC account of (5) weakens the argument against movement, since the PBC clearly applies to known instances of movement such as English WH-movement, and thus a significant parallelism between Scrambling and WH-movement becomes no more than an unexplained coincidence in a non-movement account.

[11] I return to the issue of the correct account for the difference between Japanese and Russian in this regard below. For now the high scope facts in (18) are simply provided as evidence that the undoing property and the island-escaping property cannot be used as a "cluster" of diagnostic properties, determining whether or not overt movement has occurred.

both languages obey movement constraints in Scrambling, both use surface word order to encode discourse relations, (Miyagawa 1997, Bailyn 2001), and Scrambling, constrained in its operation like other movement processes, is the best candidate for how they are derived.

As for the nature of the contrast in (18), I follow Müller & Sternefeld (1993) in accounting for this contrast as coming from the nature of the two movements involved. In Minimalist terms, different features trigger WH-movement and Scrambling. The former cause a Relativized Minimality violation in WH-island contexts (19), the latter do not (18). Many speakers do not find (18) perfect, exactly as expected if there is a mild Subjacency violation but no Relativized Minimality violation. Thus it appears clear that Russian in fact has one mechanism for deriving free word order—Movement. In the next section we turn to the issue of whether there remains good cause to claim that Japanese is really any different.

## 3 On Supposed Differences between Japanese and Russian

VG and B each propose radically distinct grammars for Russian and Japanese. For VG Japanese has Scrambling (movement), but Russian has Early Spell-Out (non-Movement). Both are discourse-driven. For B, following BT, Japanese has Base-Generation and Lowering (non-movement), whereas Russian primarily has Topic-Focus Movement (directly driven by discourse). Thus both admit the need for movement in describing free word order and both acknowledge the well-known connection between free word order and discourse effects, about which there exists a significant literature (Adamec 1966, Kovtunova 1976, Yokoyama 1986 and many others). In this situation, then, it is only natural for research attention to be focused on one primary question: is it possible to limit the derivation of free word order to a single device, whose motivation is discourse-driven, and which is driven by an interpretive component of the grammar?[12] We have seen that a Movement account is preferable for Russian. The next question is this: is there evidence that Japanese word order variation is also derived by movement? And of course there is the original evidence in Saito 1989, and further evidence in Kawamura 2004 and Saito 2003. Further, there is the question of surface interpretive effects. We have seen that scope does not appear to change with word order variation. But anti-reconstruction effects like those in (14) for Russian also obtain in Japanese, as shown in the contrast between (21a) and (21b):

[12]I assume that there is a distinct level of information structure, as proposed in many places (Rochemont 1980, Vallduví 1992, Lambrecht 1994, Bailyn 1995, Zubizarreta 1998 a.o.). However, nothing here in making the case for movement requires that discourse relations be an independent linguistic level. The question of how discourse relations are encoded does not bear on the issue of whether syntactic movement is (always) involved, for which the empirical evidence presented here remains the strongest argument.

(21) a. *[kare-wa [Mary-ga [John-ga tukutta jodan-o]$_i$
he$_{TOP}$ Mary$_{NOM}$ John$_{NOM}$ made joke$_{ACC}$
tukatta to] omotteiru].
used C thinks
*'He$_i$ thinks that Mary used the joke that John$_i$ made.'

b. **[John-ga tukutta jodan-o]$_i$** [kare-wa [Mary-ga
John$_{NOM}$ made joke$_{ACC}$ he$_{TOP}$ Mary$_{NOM}$
*e*$_i$ tukatta to] omotteiru].
used C thinks
'The joke that John$_i$ made, he$_i$ thinks that Mary used.'

(21a) shows a Principle C effect, with an R-expression inside an embedded object bound by a higher pronoun. (21b) shows that Scrambling of the object bleeds the effect, that is, it does *not* behave as if it radically reconstructs, contrary to what the Lowering account predicts. The general picture is thus emerging that Japanese too uses overt movement to derive free word order.

Of course there remain two outstanding questions concerning the claim that Japanese and Russian both have discourse-driven overt Scrambling, subject to essentially the same constraints. First, why do the two languages differ in the interaction of scope and word order, if not by movement vs. non-movement? Second, why can adjuncts not scramble in Japanese?

Let us take the second question first. I assume that the restriction in question is not on non-arguments per se, but rather on adjuncts in particular in Japanese. This is confirmed by the fact that adjuncts also are not acceptable in *wa* topic constructions, which are certainly not theta-driven. As for scope, Japanese appears to have an scope principle distinct from other languages in that it is interpreted without regard to movement (Hungarian is a well-known example of the opposite, see Kiss 1986). This is of course true for Japanese WH phrases, which can also be scrambled without scope changes (the WH-Q effect). Let us call this the Scope Locality Effect:

(22) The Scope Locality Effect (Japanese):
*A quantifier must be interpreted in its local argument domain*

With (22) in place, we can maintain a strong derivational system of free word order in which overt A'-movement, driven by discourse-considerations, derives alternative word orders in all languages. Reconstruction applies in the usual way (interpreting of a lower copy where relevant). Scope differences derive from (22), and we are left with two kinds of languages: Scrambling languages (Japanese and Russian) and non-Scrambling languages (English), and one kind of Scrambling: movement.

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# Sentential and Constituent Negation in Russian BE-sentences Revisited

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## 1 The Problem: An Apparent Anomaly in Gen Neg BE Sentences

The main question of this paper is: what is the negation of (1)?

(1) Kolja v Londone.
Kolja-NOM in London
'Kolja is in London.'

There are two potential candidates, (1-NE) and (1-NET)[1,2].

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[1] This question was first discussed by Arutjunova (1976, p.214), who observed that a yes-no locative question like *Kolja v Londone?* 'Is Kolja in London?' (our substitution for her similar example) admits two alternative forms for a negative answer, (1-NE), whose form corresponds to that of the affirmative (1), and (1-NET), whose form is like that of an existential sentence. She notes that (1-NET) is more widely used, and that it is (1-NET) which expresses general sentential negation. Our conclusions largely agree with hers.

[2] The question arises for all examples with definite subject, "null copula", and a locative or locative-possessive predicate, including also those in (i) and (ii).

(i) Tvoe pal'to na vešalke. Arutjunova (1976, p.214)
your $coat_{NOM}$ on coatrack
'Your coat is on the coatrack.'

(ii) Vaše pis'mo u sekretarja. Kondrashova (1996)
your $letter_{NOM}$ at secretary
'The secretary has your letter.'

(1-NE) Kolja ne v Londone.
Kolja$_{NOM}$ NEG in London
'Kolja is not in London.'

(1-NET) Koli net v Londone.
Kolja$_{GEN}$ NEG.BE in London
'Kolja is not in London.'

For many sentences, such as (2a), "what their negation is" is uncontroversial.

(2) a. Petrov rabotaet v Akademii.
Petrov$_{NOM}$ works at Academy
'Petrov works at the Academy.'

b. Petrov ne rabotaet v Akademii.
Petrov$_{NOM}$ NEG works at Academy
'Petrov doesn't work at the Academy.'

c. Petrov rabotaet ne v Akademii.
Petrov$_{NOM}$ works NEG at Academy
'Petrov works somewhere other than at the Academy.'

Everyone would agree that the negation of (2a) is (2b). Sentence (2b) is an instance of syntactic sentential negation (S-Neg), and semantically it expresses the contradictory of (2a). Constituent negation (C-Neg) gives a contrary proposition (2c), whose properties we discuss in Section 3. It may be used to deny (2a), but one wouldn't call it "the negation of (2a)."

The negation of a simple locative sentence like (1) presumably "should" be (1-NE), which differs from (1) only by the addition of the negative morpheme *ne*. But it has been argued (Babby 1980, Chvany 1975, Harves 2002a), and widely accepted, that (1-NE) involves constituent negation, and that the negation of (1) is (1-NET). Sentence (1-NET) has Genitive of Negation (Gen Neg), a sure sign of S-Neg status. As is well known (Peškovskij 1956, Babby 1980), syntactic S-Neg but not C-Neg licenses Gen Neg, even in cases where the semantics is virtually indistinguishable, as in the NEG > ∀ reading shared[3] by (3a-b), either of which could be considered a semantic negation of (4).

(3) a. My ne rešili vsex zadač.
we NEG solved all problems$_{GEN}$
'We didn't solve all the problems.'

b. My rešili ne vse zadači / *vsex zadač.
we solved NEG all problems$_{ACC}$ / *all problems-GEN
(*lit.* 'We solved not all the problems.')

[3] This is the only reading for (3b), while for (3a) it is a marked reading (Padučeva's (1974) *smeshchennoe otricanie* 'shifted negation') requiring special intonation.

(4) My rešili vse zadači.
we solved all problems$_{ACC}$
'We solved all the problems.'

But the idea that (1-NET) is the negation of (1) seems anomalous (Babby 1980, Harves 2002b), since *net* '(there) is/are not' and Gen Neg are generally found in existential sentences and impossible in locative sentences, and (1) is a typical Locative sentence (Arutjunova 1976, 214-15, Kondrashova 1996). It does not have *est'* '(there) is/are', and the subject, Topic, and Perspectival Center (Borschev and Partee (2002a, 2002b)) are most naturally understood to be aligned: (1) predicates being in a certain location of Kolja. Typical *net*-sentences are negations of *est'* 'BE'-sentences, and typical *est'*-sentences are Existential, as in (5a-b).

(5) a. V xolodil'nike est' eda.
in refrigerator BE food$_{NOM.SG}$
'There is food in the refrigerator.'
b. V xolodil'nike net edy.
in refrigerator NEG.BE food$_{GEN.SG}$
'There isn't any food in the refrigerator.'

In section 2, we show that contrastiveness is not a reliable diagnostic of C-Neg, but new arguments support the conclusion that (1-NE) indeed involves C-Neg. In Section 3, we argue that recent perspectives on syntax, semantics, and pragmatics of negation show that (1-NE) is not syntactically or semantically "the negation of" (1), but is a pragmatic negation of (1) in some contexts. In Section 4, we address the problem of sentence (1-NET). Invoking Borschev and Partee's (2002b) Perspective Structure and Paducheva's Observer (Padučeva 1992, 1997) plus Topic-Focus structure, we offer a novel account of the relation of (1-NET) to (1). Putting the pieces of our story together, we argue that either (1-NE) or (1-NET) may be a "functional" or "pragmatic" (Horn 1989) negation of (1) in appropriate contexts. Our goal is to show that attention to syntactic, semantic and pragmatic aspects of negation and of BE-sentences can help explain the relations among (1), (1-NE), and (1-NET).

## 2 Identifying Constituent Negation

### *2.1 Arguments that (1-NE) involves constituent negation*

To argue that (1-NE) involves constituent negation, i.e. has structure (6a) rather than (6b), it has been standard since Babby (1980) to state that negation in (1-NE) must be interpreted contrastively, meaning that its use requires an overt or implicit paired contrasting 'correction'.

(6) a. Constituent-negation structure: Kolja $\varnothing_{be}$ [ne [v Londone]]

b. Sentential-negation structure: Kolja [ne [$\varnothing_{be}$ v Londone]]

Although (1-NE) may often be intended and understood contrastively, contrastiveness is not obligatory for (1-NE), according to many speakers. Sentence (7) is even clearer: it may be relevant only that the person on duty was not at his post. The speaker need not know where he/she was.

(7) Dežurnyj $\varnothing_{be}$ (byl) ne na meste.
person on duty is (was) NEG at place
The person on duty is (was) not at his/her proper place.

Contrastiveness is largely a pragmatic, not structural, matter (Horn 1989, Padučeva 2004, p.430-1). One factor that facilitates a non-contrastive reading for such sentences is for the mentioned Location to be the "normal location" for the subject (Padučeva 2004, p.430), as in (7).

So to argue that the negation in (1-NE) must be C-Neg and not S-Neg, one cannot depend on evidence about contrastiveness. But we have found stronger arguments that (1-NE) is indeed *not* syntactic S-Neg.

One argument comes from future and past tense quantificational sentences. If (1-NE) could have structure (6b), then so could (8c); and then we can ask whether (8c) shares scopal possibilities with (8a), unambiguously syntactic S-Neg, or with (8b), unambiguously syntactic C-Neg. We find that in (8b), negation cannot take scope over the subject, while in (8a), it can (optionally). But (8c) allows only narrow scope[4] for the negation, so (8c) and (1-NE) must have the C-Neg structure of (6a)[5].

(8) Context: We are talking about why the Royal Ballet won't be performing in London while our friend is or will be there.

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[4] We ignore possible exceptional readings involving metalinguistic denial (Horn 1989).

[5] For a syntactic analysis, what we have said above can be recast as follows: Subjects start at Spec,VP, and move to Spec,IP; there is a NegP somewhere between VP and IP where S-Neg English *not* and Russian *ne* sit. The source of the scope ambiguity in (8a) is the two options for the subject: It can take wide scope in its final position, or narrow scope in its base position, via reconstruction. On the other hand, in the C-Neg case of (8b), *ne* sits in some DP-internal position, where it does not c-command any other DP in the sentence, and thus C-Neg never takes wide scope with respect to clausemate DPs.

The fact that the negation in (8c) occupies a position which does not c-command the subject's base position is uncontroversial, given our data. The exact analysis for (8c) can be debated, though. For instance, one may argue that there is a NegP in (8c), but for some reason it cannot be filled, or that NegP is not projected in (8c) (more in the minimalist spirit), or, even more radically, that not only is NegP absent in (8c), but IP too. Under this last analysis, there is no null copula at all, there is no subject movement, and the structure of the clause is analogous to the structure of small clauses. All of these different options preserve the validity of our argument: there is no way for C-Neg to scope over the subject. The fact that there is no "NEG > $\forall$" reading in (8c) forces the conclusion that there is no S-Neg structure for (8c).

a. Vse baleriny ne budut v Londone.
All ballerinas$_{NOM}$ NEG BE.FUT in London
AMBIG: (i) ∀ > NEG : all of the ballerinas will [not be in London];
i.e. None of the ballerinas will be in London; or
(ii) NEG > ∀ [dispreferred but possible with a marked Topic-Focus structure] not all will be in London[6].

b. Vse baleriny budut ne v Londone.
All ballerinas$_{NOM}$ BE.FUT NEG in London
UNAMBIG: Only (i): ∀ > NEG

c. Vse baleriny ne v Londone.
All ballerinas$_{NOM}$ NEG in London
UNAMBIG: Only (i): ∀ > NEG

Another argument to the same conclusion comes from the following pair of sentences.

(9) a. Kolja ne byl v ètot moment v Londone.
Kolja$_{NOM}$ NEG BE.PAST at this moment in London
'Kolja was not in London at that moment.'

b. *Kolja ne v ètot moment v Londone.
Kolja$_{NOM}$ NEG at this moment in London

If *ne*+∅ were possible, (9b) would be as good as (9a). That it is not[7] is another argument against S-Neg structure for sentences like (1-NE).

In summary, contrastiveness is not a reliable diagnostic of C-Neg, but we have found a stronger argument that sentences like (1-NE) involve C-Neg, not S-Neg, by comparing their behavior with that of sentences that have *ne* preceding (S-Neg) or following (C-Neg) an overt copula.

*2.2 The puzzles that remain*

If (1-NE) does not involve syntactic sentential negation, can (1-NE) be "the negation of (1)"? We believe that the usual assumption of a "no" answer rests on overly simple notions of "the negation of" a given sentence; in Section 3 we defend a context-dependent "yes" answer.

And what about (1-NET), which has been argued to be the negation of (1)? That question will be addressed in Section 4.

[6] Similar examples were described in Padučeva (1974: 143,155) as involving *smeščennoe otricanie* 'shifted negation'; a particular Topic-Focus structure (marked by word order and intonation) allows negation to take scope over a preceding quantifier.

[7] Sentence (9b) is definitely '*' on the S-Neg reading. On a C-Neg reading it is either '*' or semantically anomalous—we do not know which.

## 3 Syntactic, Semantic, Pragmatic Notions of Negation

In classical semiotics (Morris 1938), ***syntax*** treats properties of expressions; ***semantics*** relates expressions to their denotata; ***pragmatics*** relates expressions, their denotata, and their uses in possible contexts.

Similarly we need to distinguish syntactic, semantic, and pragmatic notions relating to negation, and doing so is not always simple. The question "Is sentence S1 the negation of sentence S2?" is not a single question; it is only in the simplest cases that it may seem so.

*3.1 Syntactic notions of S-Neg, C-Neg*

3.1.1 English: Jespersen's Nexal/Special Neg, Klima's S-Neg, C-Neg. As Horn (1989) observes, Jespersen's (1924) and Klima's (1964) criteria for S-Neg in English can conflict. Jespersen's criterion for S-Neg ("nexal negation") is canonical position of the negative morpheme; Klima's is a battery of tests including tag questions, *too* vs. *either* tags, *so* vs. *neither* conjunction. Both regard *John didn't arrive, John didn't eat anything* as S-Neg; both regard *They're arguing about nothing* as C-Neg. But some Jespersen C-Neg ('special negation') cases clearly come out as S-Neg for Klima, e.g. *No one objected, John ate nothing, Not everyone agreed.*

3.1.2 Russian: Russian syntactic S-Neg, C-Neg. For Russian, Jespersen's and Klima's criteria converge: translations of Klima's S-Neg sentences *do* all have pre-verbal *ne*. So for Russian the syntactic terms S-Neg/C-Neg correspond to Russian *priglagol'noe/ nepriglagol'noe otricanie* 'preverbal/ non-preverbal negation'.

(10) a. Russian Syntactic S-Neg: *Ivan ne prišel.* 'Ivan didn't come.' *Nikto ne prišel.* 'No one came.' *On ne rešil vsex zadač.* 'He didn't solve every problem.' *Vsego ja ne ponjal.* 'I didn't understand everything.'

b. Russian Syntactic C-Neg: *Èto byl ne portret.* 'That wasn't a portrait.' *Prišel ne Ivan.* 'Not Ivan came.' *Petja ezdit ne bystro.* 'Petja drives not quickly.' *On rešil ne vse zadači.* 'He didn't solve every problem.' *Ja ponjal ne vsë.* 'I didn't understand everything.'

c. Unclear cases: *Kolja ne v Londone. Kolja ne gotov. Kolja ne ženat. Kolja ne durak.* 'Kolja is not in London/ ready/ married/ a fool.'

The main unclear cases for Russian, thus, are present tense BE sentences with no overt verb. The question is whether such sentences have the structure in (6a) or (6b), or are ambiguous. We have seen some ways to settle the question in Section 2. In Section 3.1.3, we review two prominent syntactic properties of Russian C-Neg and S-Neg sentences, before turning in Sections 3.2 and 3.3 to semantic and pragmatic notions.

3.1.3 Properties of syntactically S-Neg sentences in Russian. For Russian, S-Neg sentences differ in systematic ways from C-Neg sentences. We mentioned in Section 1 that S-Neg and not C-Neg licenses Gen Neg. *Ni*-words and *ni*-phrases are also licensed by S-Neg and not by C-Neg. We illustrate with the licensing of *ni – ni* coordinations.

(11) a. Ni tvoja, ni moja kniga ne byla na stole.
NI your NI my book NEG be$_{PAST}$ on table
'Neither your nor my book was on the table.'

b. *Ni tvoja, ni moja kniga byla ne na stole.
NI your NI my book be$_{PAST}$ NEG on table
(no licensing by C-Neg 'not on the table')

*3.2 Semantic notions. The semantic negation OF p*

It is principally in semantics that we find (various) definitions of what it is for one sentence to be the negation *of* another, or more strictly, for one proposition to be the negation of another.[8] The familiar truth-tables of logic present the simplest case, an idealization: assume that all propositions are true or false (i.e., ignore presuppositions), and define negation truth-functionally: ¬**p** is T(rue) if and only if **p** is F(alse). When applied to natural language phenomena, this notion is referred to as *propositional* (*contradictory*) *negation*. *Contrary negation* is a weaker notion: **q** is a contrary negation of **p** iff **p** and **q** cannot both be true but can both be false. Sentence (2b) in Section 1 expresses the contradictory of (2a)[9]; (2c) expresses a contrary of (2a).

Semantically, a proposition may be analyzed as a set of possible situations, namely those in which it is true. If **U** is a universe of possible situations, then proposition **p** is a subset of **U**, its contradictory is **U - p** (the complement of **p** in **U**), and any contrary **q** of **p** is a set which is disjoint from **p** and is a proper subset of the complement of **p**. It can be seen then that whether **q** is a contradictory or a contrary of **p** is relative to **U**. "Shrinking" **U** by removing from consideration situations where neither **p** nor **q** is true (e.g. removing from **U** all situations that violate presuppositions of **p**) converts **q** from a contrary to a contradictory. For instance, *general negation* introduced in Padučeva (1974) is defined as propositional negation that preserves presuppositions, so the general negation of **p** is the complement of **p** in a set of situations where all

[8] What we are interested in is a "correspondence" notion of "negation of", in which we consider pairs of affirmative and negative sentences which would be well-formed in the same contexts, e.g. with respect to an implicit background Yes-No question. This is not the same as the notion of "denial of," a discourse relation of an utterance to a preceding (or implicit) assertion.

[9] In 3.3 we note that for (2b) to be the contradictory of (2a), either (2a) must not be taken to presuppose the existence of Petrov, or the universe **U** mentioned in the next paragraph must be restricted to possible worlds where Petrov exists.

presuppositions of **p** are met. The general negation of **p** is the *contradictory* of **p** in such a set but a *contrary* in sets not preserving presuppositions of **p**, i.e. in a maximal universe **U**. The choice of **U** is often a pragmatic matter; we illustrate further in Section 3.3.

The status and treatment of presuppositions, and of linguistically encoded "pragmatic" factors such as Topic-Focus structure (compare Babby (1980) with Babby (2001)) and point of view (including Borschev and Partee's Perspective Structure, Paducheva's Observer), important for many of our examples, complicate the individuation of the sentences we are talking about. Does a shift in presuppositions or in Topic-Focus structure create a 'different sentence' or a different interpretation of the same sentence? (See structures (1 i-ii) in Section 4.)

What is the relation between the semantic and syntactic notions we have introduced? It is not straightforward.

If a sentence has no scope-taking elements or presuppositions (a rare case), then its S-Neg will denote its contradictory, but in other cases it may not. E.g., "Every boy did not come" on the universal wide scope reading is a *contrary* of "Every boy came," and not its *contradictory*. Syntactic C-Neg is often interpreted as contrary negation (as in (2c)), but not always: in a restricted set of situations, it can be contradictory (if, e.g., the negated constituent is contrastively focused).

The conclusion is that not all syntactically S-Neg sentences are semantic contradictory "negation of" a "corresponding" affirmative. And not all syntactically affirmative sentences "have" a contradictory negation expressible by a "corresponding" S-Neg sentence. A good example is (12): both (12a), the syntactically closest S-Neg counterpart of (12c), and (12b), with C-Neg, express mere contraries of (12c).

(12) a. Kolja ne pošel iz za Vas na koncert.
Kolja NEG go$_{PST.PF}$ because-of you to concert
'Because of you, Kolja didn't go to the concert.'

b. Kolja pošel ne iz za Vas na koncert.
Kolja go$_{PST.PF}$ NEG because-of you to concert
'Kolja went to the concert, (but) not because of you. '

c. Kolja pošel iz za Vas na koncert.
Kolja G go$_{PST.PF}$ because-of you to concert
'Kolja went to the concert because of you. '

A contradictory of (12c) would be true in any situation in which (12c) is not true, including situations in which Kolja did not go to the concert (whether or not that was because of you) and situations in which he went but not because of you. But the only way to express such a proposition, if at all, is with a paraphrase "It is not true that... ."

*3.3 Semantic and pragmatic notions*

Given current dynamic theories, the line between semantics and pragmatics is not sharp or stable. But whatever the labels, it is important to take presuppositions and context into account, since these crucially affect the background universe **U** of relevant possibilities.

Since pragmatics concerns relations among expressions, their denotata, and contexts of use, it is natural that *pragmatic negation* should be a three place relation: Given contextual assumptions[10] $\Sigma$, a speaker may use sentence S' with semantic interpretation **q** as the pragmatic negation of sentence S with interpretation **p** if relative to all situations which satisfy $\Sigma$, **q** is the contradictory (i.e. complement) of **p**.

We can illustrate the notion of pragmatic negation clearly with our *Petrov* example (2a-c). Imagine a universe **U** partitioned into 4 situation types: $W_1$, worlds in which Petrov does not exist; $W_2$, in which Petrov exists but doesn't work; $W_3$, in which Petrov works but not at the Academy; and $W_4$, in which Petrov works at the Academy. The affirmative (2a) picks out $W_4$. What is its contradictory negation?

Relative to **U**, ignoring all presuppositions, even the existence of Petrov, the answer is $W_1 \cup W_2 \cup W_3$, not a realistic interpretation of (2b).

For a more realistic interpretation of (2b), consider only contexts (situations[11]) in which Petrov exists[12], shrinking **U** to $W_2 \cup W_3 \cup W_4$. The affirmative (2a) with *Petrov* as Topic is true in $W_4$.and false in $W_2$ and $W_3$; and (2b) is its contradictory, while (2c) is only a contrary.

Now suppose we take *Petrov works* to be Topic in (2c) and in another possible interpretation of (2a); those choices carry the pragmatic presupposition that Petrov works, further shrinking the relevant universe **U** to just $W_3 \cup W_4$. In such a restricted universe, the contradictory of (2a) is equally expressed by (2b) and (2c). In that case it is natural for the speaker to use the more informative (2c) to negate (2a).

So (2c) is a good "pragmatic negation" of (2a) in such a context: it is more informative than (2b), and its user conveys presuppositions she presumes are shared.

If we treat most presuppositions as pragmatic[13], then Paducheva's (1974) general negation defined in section 3.2 may be viewed as pragmatic negation: it amounts to contradictory negation in a universe **U** that has been restricted to include only possible worlds in which all

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[10] Contextual assumptions may include pragmatic presuppositions plus further assumptions about the conversational background and context of utterance.

[11] In a fuller account, we would need to distinguish between situations as 'contexts' and situations as 'partial possible worlds' where semantic values are evaluated; see Stalnaker (1978) on the "diagonal proposition" for *You are a fool.*

[12] This may be considered a semantic presupposition of the proper name.

[13] The debatable labels 'semantic' vs. 'pragmatic' are not the issue here. What is crucial is the role of presuppositions in Paducheva's definition.

presuppositions are satisfied, but as contrary negation in an unrestricted, maximal universe. There seem to be differences between Russian and English in the choice of S-Neg vs. C-Neg to express general negation (cf. Paducheva 1974, p. 152) in contexts where they are pragmatically equivalent. But a full discussion would have to go further into presuppositions and topic-focus articulation (Hajičová et al. 1998, Paducheva 1985, Rooth 1992) than space allows.

Note that pragmatic context-sensitivity concerns not only presuppositions, but aspects of context such as location and point of view. If A and B are in different locations, B's repetition of A's sentence in (13) expresses a pragmatic contrary negation (denial) of A's assertion.

(13) A: John is here.
B: (No,) John is *here*.

*3.4 Half of the solution*

We can now describe the sense in which (1-NE) can be "the negation of (1)": (1-NE) is not S-Neg, but it can be the pragmatic negation of (1). Semantically it is only a contrary of (1); but context may pragmatically "shrink" the universe U, making (1-NE) effectively a contradictory of (1).

On the other hand, (1-NET) is S-Neg, but it's not obvious that it is the negation of (1) on any formal grounds (syntactic or semantic): so where does its intuited relation to (1) derive from? That is the other half of the puzzle that we still have to try to solve.

## 4 The Resolution of the Problem

We will not discuss at any length the debates about whether (1-NET) is an Existential (Borschev and Partee 1998, 2002a, 2002b, 2002c), a Locative Babby (1980), Chvany (1975), Harves (2002a,b), a Perceptional subtype of Locative sentence (Paducheva 1997 and p.c.) or a mixed Existential-Locative type (Partee and Borschev 2004, In press). What we say here extracts certain ideas from these earlier works without following them exactly. Our main assumptions are stated in (i) – (iii) below:

(i) There is a specific property that is marked via the Nom/Gen distinction in negative sentences. On Borschev and Partee's approach, it is Perspective Structure (namely, the location of Perspectival Center); on Paducheva's approach it is the location of Observer. In affirmative sentences, we have no morphological evidence about Perspective Structure or Observer. We will assume that affirmative sentences like (1) are perspectivally ambiguous; see the structures (1 i-ii) farther below.

(ii) It is Topic-Focus structure that is crucial for word order, overriding Perspective Structure when they do not agree[14]. Evidence for the primacy of Topic-Focus structure over Perspective Structure in determining word order is the near-impossibility of (14)[15].

(14) *Doma on.
At-home he
(He is at home.)

In the default cases, Subject-Predicate, Topic-Focus, and Perspective Structure are all aligned. Definiteness and animacy are also non-randomly associated with Subject/Topic/Perspectival Center.

(iii) If (i) and (ii) are correct, then affirmative sentences have no morphosyntactic indicators of Perspective Structure, since the word order is determined by Topic/Focus, and there is no Nom/Gen distinction. We therefore reject the earlier assertions by Borschev and Partee that Kolja is obligatorily the Perspectival Center in (1)[16]. Instead we posit the two structures (1 i-ii) below for (1).

(1) (i) [[ Kolja $_{\text{PERSP CENTER}}$] $_{\text{TOP}}$] $\varnothing_{\text{be}}$ v Londone.
(ii) [ Kolja $_{\text{TOP}}$] $\varnothing_{\text{be}}$ [ v Londone $_{\text{PERSP CENTER}}$].

Now we are prepared to resolve the puzzle of (1-NET).

Step 1. In the default case, Kolja in sentence (1) is both Topic and Perspectival Center, as in (1-i). The choice between (1-i) and (1-ii) does not affect truth conditions (as long as we presuppose the existence of both Kolja and London), but does affect felicity conditions: (1-i) can only be felicitously used in a context in which the situational Perspectival Center is Kolja, and would be infelicitous in a context in which the situational Perspectival Center is London.[17]

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[14] Although the frameworks make direct comparison impossible, this statement draws in part on related claims in (Kondrashova 1996) and in Padučeva's work. It also suggests parallels between Perspective Structure, Kondrashova's level of NP structure, and what Babby (1980) attributed to Theme-Rheme structure; the use of Topic-Focus structure in this paper is closer to what Babby (1980) said about the distinct Given-New structure.

[15] The word order in (14) requires fronted "expressive" Focus and de-accented Topic.

[16] A majority of the authors favor something like this hypothesis. One author (VB) is skeptical about assumptions (i-iii), believing that the Perspectival Center in (1) is unambiguously Kolja, and in (1-net) London. He favors an alternative hypothesis on which (1) and the S-Neg (1-net) share Topic-Focus structure but not Perspective Structure. If the speaker is in London, the most natural Perspectival Center is on London. If Kolja is in London, the speaker may choose to shift the Perspectival Center to Kolja, resulting in (1), with 'exceptional' Perspectival Structure. But if Kolja is not in London, the Perspectival Center most naturally stays on London, making (1-net) a more natural negation of (1) than (1-ne) in such a situation, even though (1) and (1-net) have different Perspective Structure.

[17] Following Borschev and Partee (2002a, 2002b), we take Perspective Structure to

Step 2. The opposite choice of Perspectival Center for (1), indicated in (1-ii), is also possible, though it is more marked (because of the misalignment of Topic and Perspectival Center). The sentence with this structure can be felicitously used only in contexts in which the situational Perspectival Center is London: for instance, the speaker is in London, and is discussing who else is in London now.

Step 3. The "expected negation" of (1-i) would be (15).

(15) *[[ Kolja $_{\text{PERSP CENTER}}$] $_{\text{TOP}}$] ne $\varnothing_{be}$ v Londone. (S-Neg but *)

But (15), with *ne* + $\varnothing_{be}$, is impossible, as shown in Section 2.

For steps 4 and 5, we need to consider the assumed Topic-Focus and Perspective Structures of the unambiguous (1-NE) and (1-NET), (1-NE') and (1-NET') respectively.

(1-NE') [[Kolja $_{\text{PERSP CENTER}}$]$_{\text{TOP}}$] $\varnothing_{be}$ ne v Londone.
(1-NET') [Koli $_{\text{TOP}}$] net [ v Londone $_{\text{PERSP CENTER}}$].

Step 4. In the absence of the possibility of (15)[18], a speaker who wants to deny that Kolja is in London on structure (1-i) while preserving Topic-Focus and Perspective Structure must use syntactic C-Neg, giving (1-NE). As we argued above, this can be considered a good "pragmatic negation" of (1) in such a context.

Step 5. If the affirmative sentence has structure (1-ii), then the contradictory negation of (1) can be expressed by (1-NET) while preserving Topic-Focus and Perspective Structure.

In situations where it is most natural to make Location the Perspectival Center (or place of the "Observer"), (1-NET) is strongly preferred; this is illustrated in (16a-b), where the use of *zdes'* 'here'

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reflect a property of situations. Describing a given situation, one must use a sentence with corresponding Perspective Structure marking or pragmatic infelicity will result.

[18] It should be noted that there are other instances of NP $\varnothing_{be}$ Pred structures which have no S-Neg counterparts at all, and which cannot be "rescued" with the use of *net* + Gen Neg; (i) is such a sentence; even its past tense counterpart (ii) cannot be negated with S-Neg. It seems that the Perspectival Center on the Location is crucial in licensing *net* + Gen Neg (see also Babby 1980), and the impossibility of (15) is secondary, if relevant at all..

(i) Ėta devuška s xarakterom.
This girl with character
'This girl has a strong character.'
(i') *Ėta devuška ne s xarakterom.
(i'') *Ėtoj devuški net s xarakterom.
(ii) Ėta devuška byla s xarakterom.
This girl was with character
'This girl had a strong character.'
(ii') *Ėta devuška ne byla s xarakterom.
(ii'') *Ėtoj devuški ne bylo s xarakterom.

creates a very strong bias in favor of Location as Perspectival Center. Conversely in (17a-b), the adverb *poka* 'so far, yet' forces the choice of nominative subject, with Kolja as Perspectival Center. Since Perspectival Structure is subjectively assigned, often both are possible.

(16) a. Koli zdes' net.
Kolja$_{GEN.SG}$ here NEG.be
'Kolja isn't here.'
b. #Kolja ne zdes'.
Kolja$_{NOM.SG}$ NEG here
'Kolja isn't here.'

(17) a. Kolja poka ne v Londone.
Kolja$_{NOM.SG}$ so far NEG in London
'Kolja is not yet in London.'
b. #Koli poka net v Londone.
Kolja$_{GEN.SG}$ so far NEG.be in London
'Kolja is so far not in London.'

To formalize what we have done in Steps 3-5 in terms of propositions as sets of possible situations, we assume a universe **U** with 4 situation types, shown in (18). The assumption that Perspective Structure reflects a property of situations gives us the four possibilities shown. For a given situation, one must use a sentence with corresponding Perspective Structure marking to avoid pragmatic infelicity.

(18) W1: Kolja is the Perspectival Center; Kolja is in fact in London.
W2: Kolja is the Perspectival Center; Kolja is not in London.
W3: London is the Perspectival Center; Kolja is in London.
W4: London is the Perspectival Center; Kolja is not in London.

Sentence (1-i) is felicitous in $W_1$ and $W_2$, true in $W_1$ and $W_3$.
Sentence (1-ii) is felicitous in $W_3$ and $W_4$, true in $W_1$ and $W_3$.
The impossible S-Neg (15) would be felicitous in $W_1$ and $W_2$, true in $W_2$ and $W_4$..
The S-Neg (1-NET) is felicitous in $W_3$ and $W_4$, true in $W_2$ and $W_4$.
The C-Neg (1-NE) is felicitous in $W_1$ and $W_2$, true in $W_2$ and $W_4$.

As we stated in Step 3, the "expected" negation (1-i) is the impossible (15): It is S-Neg, and has the same Topic-Focus Structure, Perspective Structure, and felicity conditions, and contradictory truth-conditions.

In Step 4, we noted that given the impossibility of (15), the best choice for negating (1-i) is (1-NE): (1-NE) has C-Neg, but it matches the impossible (15) in all other respects.

And in Step 5 we noted that a perfect choice for negating (1) on structure (1-ii) is the S-Neg (1-NET), which matches (1-ii) in Topic-Focus Structure, Perspective Structure, and felicity conditions, and has contradictory truth-conditions.

In conclusion, we argue that while (1-NET) may not be an Existential sentence, we do not consider it an accident that (1-NET), like Existential sentences, suggests a 'Perspective' or 'Observer' centered 'in London' (e.g. it is natural if the speaker is, or imagines the situation from the perspective of being, 'in London'), and remarks on the perceived absence of Kolja; sentence (15) resists such a perspective. Natural languages frequently use similar means to express non-perceivability or perceived absence and nonexistence (Padučeva 2004, 27, 246).

We have argued that either of these negations can become the preferred one in a given context in the absence of the all-purpose general negation for the case in which Kolja is Perspectival Center, an absence possibly caused by the defectiveness of the verb *byt'* 'be'[19]. While the story remains incomplete in the absence of a better understanding of the interaction of syntactic, semantic, and pragmatic "preferences", it is clear that closer attention to the fine-grained semantics and pragmatics of negation and of *be*-sentences can help us to understand and resolve the puzzles of such apparently imperfect matches between affirmative and negative *be*-sentences.

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[19] But see footnote 18, which casts doubt on the centrality of the defectiveness of the verb *byt'*. An important topic for future research is to fit these Existential and Locative sentences into the larger class of copular sentences with various kinds of predicates and null or non-null forms of *byt'*, and in particular to see which others lack S-Neg counterparts and why.

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# The Russian *vsjakij*

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The quantifier *vsjakij* has drawn considerable attention from semanticists in the Russian tradition. This article proposes an analysis based on the morphological structure of the word, using Carlson's (1977) theory of kind reference. The result is an account that allows us to give a unified treatment to generic and "existential" uses of *vsjakij*, which, to my knowledge, has never been done before. There remain a number of problematic cases; those are noted and, where possible, analyzed as well. If the proposed account is correct, *vsjakij* turns out to be a near-exception to a well-known universal stating that no language has determiners specialized for kind reference (see, for example, Gerstner-Link and Krifka 1995, p. 967, Dayal 2004, p. 394).[1]

## 1 Contexts of Use for *vsjakij*

We start by listing a number of contexts where *vsjakij* can be used.

1. Generic universal quantifier: *vsjakij* can be used in generic sentences like (1), but it is ugrammatical in episodic cotexts like (2). It is also bad with proper nouns (3) (examples from Kronhaus 1984):

(1) *Vsjakij* čelovek smetren
vsjakij$_{\text{NOM.MASC}}$ man$_{\text{NOM}}$ mortal
'All men are mortal.'

(2) **Vsjakij* student prišel na lekciju
vsjakij$_{\text{NOM.MASC}}$ student$_{\text{NOM}}$ came to lecture
'Every student came to the lecture.'

[1] Many of the examples in this paper are borrowed from the works cited. Examples from real texts have been found in the National Corpus of Russian Language (http://ruscorpora.ru). The author would like to thank Nicholas Asher, Maria Brykina, Philip Dudchuk, Nadya Frid, Natalia Kondrashova, Yuriy Lander, Elena Paducheva, Barbara Partee, Elena Rudnitskaya, Tatyana Yanko and the anonymous reviewers for helpful comments. The remaining errors are, of course, my own

(3) **Vsjakaja* Aksinja živet v Sovetskom Sojuze
vsjakij$_{\text{NOM.FEM}}$ A. lives in Soviet Union
'Every Aksinja (that is, every woman of that name) lives in the Soviet Union.'

2. Meaning close to Russian *raznyj*, English *various*:

(4) U nas žili *vsjakie* koški
at us lived vsjakij$_{\text{NOM.PL}}$ cats
'We have had all sorts of cats (in our house).'

3. Some, but not all contexts of "Indirect negation" in the sense of Haspelmath 1997: *vsjakij* van be used in the scope of implicit negation, but not in the scope of negation in a higher clause, nor in the scope of a downward entailing operator where no negation is present.

(5) Vasja s'el sup bez *vsjakoj* ložki
V. ate soup without vsjakij$_{\text{GEN.FEM}}$ spoon
'Vasya ate the soup without any spoon'

(6) Ja poterjal *vsjakoe* terpenie
I lost vsjakij$_{\text{ACC.NEUT}}$ patience$_{\text{ACC}}$
'I lost all my patience.'

(7) *Ja ne dumaju čto *vsjakij* prišel
I not think that vsjakij$_{\text{NOM.MASC}}$ came
'I don't think that anyone came.'

(8) *Malo u kogo iz prisutstvujuščix byli *vsjakie*
few at who from present were vsjakij$_{\text{NOM.PL}}$
vozraženija
objections$_{\text{NOM}}$
'Few of those present had any objections.'

4. Standard of comparison:

(9) Vasja zabintoval ranu lučše *vsjakogo* vrača
V. bandaged wound better vsjakij$_{\text{GEN.MASC}}$ doctor
'Vasya bandaged the wound better than any doctor.'

The list of contexts is not exhaustive, and is intended as an initial data set against which to evaluate our proposal.

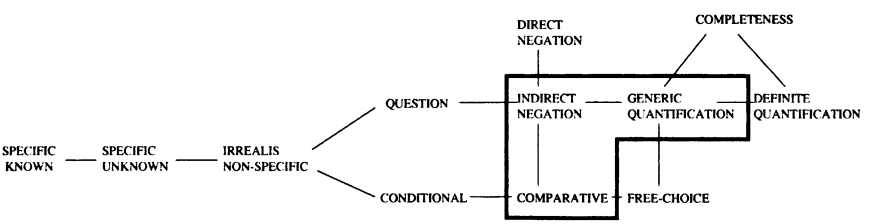
## 2 Previous Accounts

Early descriptions of the Russian quantifier system, such as Levin 1973, Paducheva 1974 treat *vsjakij* as a simple universal quantifier similar to *každyj*. Levin notes, though, that *vsjakij* does not apply when the number

of quantified objects is bounded. It was Kronhaus (1984) who noted the peculiarity of distribution in (1-3); his explanation is the following (my translation): "*Vsjakij* combines with a noun phrase associated with some property (intensional reference type). It means that the intensional property implies the predicate property irrespective of the object having that property." Thus (2) is ungrammatical because here the 'predicate property' does not apply irrespective of the object' denoted by the subject NP. The ungrammaticality of (3) is due to proper names lacking intensions. However, Kronhaus deliberately narrows the scope of his investigation to just those contexts that are called "generic universal" in the previous section.

Paduceva (1989) states that *vsjakij* requires the quantified set to be infinite, non-uniform, and the quantification happens not over individuals, but over properties of those individuals.

Tatevosov 2002 is an investigation of universal quantification across languages. The result is a semantic map extending one constructed for indefinite pronouns in Haspelmath 1997. This map divides uses of a pronoun or quantifier into classes. It is stated that classes of use for any linguistic item occupy a continuous area on the map. Moreover, it is expected that within each class of uses, an item that can be used in one context can also be used in others from the same class. The map for *vsjakij* is shown on Picture 1 (I extended it to cover the standard of comparison cases; Tatevosov considers them ungrammatical for some reason). Even though such a map does not in itself constitute an analysis[2], it can serve as a valuable tool in determining the distribution of a linguistic item. Note, however, that the second type of contexts ('various') has no place on this map.




**Picture 1**. Semantic map according to Haspelmath 1997, Tatevosov 2002.

## 3 Hints from Morphology

It is well known that most Russian pronouns can be organized in a table

[2] Indeed, Tatevosov 2002, along with Croft 2002, claims that no further analysis is possible.

where rows correspond to ontological classes, and columns to pronoun series. Pronouns are placed in the cells according both to their morphology and semantics. The correspondence is not perfect either way, but sufficient to make rough predictions.

| | | | | | | |
|---|---|---|---|---|---|---|
| kto | kto-to | kto-nibud' | kto-libo | | | vse |
| čto | čto-to | čto-nibud' | čto-libo | | | |
| gde | gde-to | gde-nibud' | gde-libo | zdes' | | vezde |
| kuda | kuda-to | kuda-nibud' | kuda-libo | sjuda | tuda | |
| kogda | kogda-to | kogda-nibud' | kogda-libo | | togda | vsegda |
| kakoj | kakoj-to | kakoj-nibud' | kakoj-libo | | takoj | **vsjakij** |

As we see, *vsjakij* occupies the cell in the table belonging to the pronouns of the same ontological class as *kakoj* and the series of universal quantifiers. The strategy I will follow is to assume that its meaning is compositional[3]—to try and derive it from the meaning of the row and column in the table where *vsjakij* resides. The goal of this paper is to investigate how far one can take such a hypothesis; to see where it works and where it breaks. We would expect that in some cases our analysis will give the right predictions, in others it will fail, but the way it fails may also be of interest.

This idea has been studied, in a less formal way, in Paducheva 1989:

> In any case, the idea that individual properties of objects are irrelevant constitutes the main component of the meaning of the word *vsjakij*. Indeed, *vsjakij* in its non-quantifier uses means `having arbitrary properties' (cf. *Ljudi byvajut vsjakie* `There are all kinds of people', i.e., not only good, but also bad) ... The link between the word *vsjakij* and the idea of quality is predetermined by its morphology—the qualitative pronominal suffix *-ak-*, cf. the same suffix in the words *dvo-jak-ij* `twofold', *in-ak-ij* `different', *t-ak-oj* `such', etc. (p. 19).

## 4 The Meaning of *kakoj*

Before we can state our hypothesis formally, we need to provide some analysis for the *wh*-word *kakoj* ('which', 'what kind', 'like what').

At first sight it seems that, just as *kto* `who' is for asking questions

[3] This is not to say that I am ready to provide analyses for the *vs'-* and *-ak-* morphemes. The "compositionality" claim should be understood informally

about animate entities, *čto* 'what' is for questions about inanimate entities, expressed, for example, by definite descriptions, *gde* 'where' is about places expressed by adverbs and PPs, in the same way by using *kakoj* one asks a question about the properties of the object referred to by its sister NP, expressed by adjectives.[4] An answer to such a question should have the <<e, t>,<e,t>> type. Upon further examination, however, we find, first, that nonsubsective adjectives are not good answers to questions formed with *kakoj* (10c), and, second, that nouns designating subkinds of the sister NPs do serve as answers to such questions (10d):

(10) — Kakaja u tebja sobaka?
what at you dog
'What kind of dog do you have?'

a. — Bol'šaja.
'A big one.'

b. — Staraja.
'An old one.'

c. — ??Igrušečnaja.
'A toy one.'

d. — Ovčarka.
'A shepherd.'

We arrive at the following conclusion: *kakoj* forms questions about subkinds of the kind expressed by its sister NP.

## 5 Formalizing the Basic Hypothesis

In parallel with *kakoj*, we hypothesize that *vsjakij* is a universal quantifier over subkinds of the kind denoted by its sister NP. This can be expressed by the following formula:

$$\textbf{vsjakij} = \lambda Q\, \lambda P\, \forall k\, ((k < \text{nom}\,(Q)) \rightarrow P(k))$$

Here nom is a type shift operator converting a predicate into its corresponding kind (of type e) (Partee 1987), and the expression $k1 < k2$ means that $k1$ is a subkind of $k2$.

One extra assumption is needed: when *vsjakij* forms a DP by itself, its $Q$ argument is filled by the predicate **human** when *vsjakij* is in masculine, feminine gender or in plural (11), and by prediicates **event** or **information** when it is in singular neuter (12), (13).[5]

[4] There are at least two distinct meanings of *kakoj*. For the moment I disregard those uses that correspond to English *which* (but see section 9).

[5] I use English translations for Russian lexical entries in the formulas I write, hoping that no significant distortion is introduced.

(11) *Vsjakij* obradovalsja etomu izvestiju
Vsjakij$_{\text{NOM.MASC}}$ was glad this$_{\text{DAT}}$ news$_{\text{DAT}}$
'Everyone was glad to hear the news.'

(12) So mnoj *vsjakoe* slučalos'
with me vsjakij$_{\text{NOM.NEUT}}$ happened
'All kinds of things happened to me.'

(13) O Vasje *vsjakoe* rasskazyvajut
about V. vsjakij$_{\text{ACC.NEUT}}$ they.tell
'They say all kinds of things about Vasya.'

## 6 Digression: Kind-Referring NPs

Before we start looking at the behaviour of *vsjakij*, we need to review briefly kind-referring NPs in general and Russian kind-referring NPs in particular. According to Carlson 1977, these NPs have two groups of uses: generic and "existential". A limited number of predicates accept kinds as arguments directly, as in

(14) Tigr ohranjaetsja zakonom
tiger is.protected law$_{\text{INSTR}}$
'The tiger is protected by law.'

For most predicates, however, the truth value of the sentence is computed on the basis of truth values of the corresponding predicate applied to the specimens of the kind. In the case of generic use the sentence may be true, for example, when all the "normal" specimens have the requisite property:

(15) Sobaki predany hozjainu
dogs devoted master$_{\text{DAT}}$
'Dogs are devoted to their master.'

In the case of "existential" use, for a sentence containing a kind-referring NP to be true the predicate needs to hold for some "realisation" of the kind—that is, for some object belonging to the kind:[6]

(16) Segodnja u menja po kuxne begali tarakany
today at me along kitchen ran cockroaches
'Today there were cockroaches running in my kitchen.'

In English kind-referring NPs are of two types: singular NPs with the definite article and bare plurals. In Russian, an article-less language, bare singulars correspond to definite singular NPs in English, and bare plurals

[6] I omit the complications concerning stages.

correspond to English bare plurals. Singular NPs are mostly used generically, plurals can have both generic and "existential" uses.[7] [8]

## 7 Checking the Hypothesis

*7.1 Generic universal quantifier*

*Vsjakij*-NPs in the singular (with count head nouns) are used almost exactly in the same contexts where kind-referring singular NPs are used. This explains the distribution we see in (1-3): (2) is ungrammatical, because singular kind-referring NPs are not used in episodic contexts; (3) because proper names do not have kinds associated with them.

Besides, our working hypothesis correctly predicts that

(17) *Vsjakaja* sobaka predana svoemu xozjainu
vsjakij$_{\text{NOM.FEM}}$ dog$_{\text{NOM}}$ devoted its$_{\text{DAT}}$ master$_{\text{DAT}}$
'Every dog is devoted to its master.'

is more likely to allow exceptions than

(18) Každaja sobaka predana svoemu xozjainu
Each dog devoted its$_{\text{DAT}}$ master$_{\text{DAT}}$
'Each dog is devoted to its master.'

The translation we get for (17) is the following formula:

$$\forall\, k\, ((k < \textbf{dog}) \rightarrow \text{NORMALLY}_x\, (\text{R}(x,k) \rightarrow \textbf{devoted-to-master}(x)))$$

Two steps of quantification are involved here: one arises when we derive the meaning of the verb that takes kinds as arguments, and the other is the quanitifier over kinds denoted by *vsjakij*. The first of these allows exceptions. In (18) there is just one, object-level quantifier, and no exceptions are allowed.

There arises a problem: *vsjakij* does not combine with predicates that

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[7] Carlson 1977 states that the choice between interpretations lies within the predicate—individual level predicates select for generic interpretation of kind-referring NPs, and stage level for "existential" interpretation. However later (Carlson 1989) examples were found showing that other factors can influence the choice, topic-focus structure among them.

[8] This treatment of Russian bare NPs conforms to Chierchia 1998. In Dayal 2004, indefinite readings for bare singulars in article-less languages are also claimed to stem from kind reference. However, the following examples show that her analysis has problems with scopal and anaphoric behaviour of such NPs, at least for Russian:

(*) (Ne v každom dome byla koška,) a sobaka byla vezde
(Not every house had a cat,) but dog was everywhere
'Not every house had a cat, but there was a dog everywhere ( ∃)'

(**) V komnate byla devuška$_i$. Ona$_i$ govorila s drugoj devuškoj.
'There was a girl$_i$ in the room. She$_i$ talked to another girl.'

select for kind as their argument:

(19) ??*Vsjakij* tigr oxranjaetsja zakonom
vsjakij$_{\text{NOM.MASC}}$ tiger is.protected law$_{\text{INSTR}}$
'Any kind of tiger is protected by law.'

A possible explanation for this fact is that among the subkinds generated by *vsjakij* some are equally bad when combined with the predicate (if expressed by singular NPs):

(20) *Staryj tigr oxranjaetsja zakonom
old tiger is.protected law$_{\text{INSTR}}$
'The old tiger is protected by law.'

*7.2 "Existential" use*

Our analysis predicts the right truth conditions for sentences containing *vsjakij*-NPs in plural, if one views them as always having "existential" interpretation. For example, (4) is analyzed as follows:

$$\forall k\ ((k < \text{nom}(\textbf{cat})) \rightarrow \exists x\ (\text{R}(x,k)\ \&\ \textbf{lived-with-us}(x)))$$

that is, for every subkind of the kind CAT, at least one representative of that kind lived in our house. Here R($x$,$k$) means that the individual $x$ (or stage, if we follow Carlson's analysis literally) is an instance of kind $k$. (Cf., however, section 8.)

At the same time generic uses of NPs with *vsjakij* in plural are impossible:

(21) **Vsjakie* ljudi smertny
vsjakij$_{\text{NOM.PL}}$ people$_{\text{NOM}}$ mortal

Grammaticality judgements for bare kind-referring NPs and *vsjakij*-NPs can be summarized in the following tables:

| Bare kind-referring NPs | | |
|---|---|---|
| | Singular | Plural |
| Existential | - | + |
| Generic | + | + |

| *Vsjakij*-NPs | | |
|---|---|---|
| | Singular | Plural |
| Existential | - | + |
| Generic | + | - |

We see that the tables are mostly similar, however the cell for generic plural remains problematic.

*7.3 Indirect negation*

For examples like (5), one needs to provide some analysis of *bez* 'without'. Here is our proposal: sentence S *bez* X has the meaning

$$S'(e) \ \& \ \neg \ \textbf{participate}(X', e)$$

where $e$ is the event described by the main clause (either a free variable whose value is supplied by the context, or a variable subject to existential closure), and **participate**($x$,$e$) means that entity $x$ takes part in event $e$.

It is natural to stipulate that a kind participates in an event iff some realisation of it does. Under these assumptions, we arrive at the following analysis for (5):

$$\forall k \ ((k < \text{nom}(\textbf{spoon})) \rightarrow (\textbf{Vasja-ate-soup}(e) \ \& \ \neg \ \exists x \ (R(x,k) \ \& \ \textbf{participate} \ (x,e))))$$

which corresponds to its intuitively understood truth conditions.

It is also clear why (8) is bad. For this sentence our analysis gives two possible meanings : wide-scope *vsjakij*

$$\forall k \ ((k < \text{nom}(\textbf{objection})) \rightarrow \text{FEW}_x \ (\textbf{present} \ (x)) \ (\exists y \ (R(y,k) \ \& \ \textbf{have} \ (x, y))))$$

('For each kind of objection, few of those present had such objections'), and narrow-scope *vsjakij*

$$\text{FEW}_x \ (\textbf{present} \ (x))(\forall k \ (k < \text{nom}(\textbf{objection})) \rightarrow \exists y \ (R(y,k) \ \& \ \textbf{have} \ (x, y)))$$

('Few of those present had objections of every kind'). While it is possible to get both of them under a highly marked intonation contour, neither of these readings corresponds to the meaning one would expect from an "indirect negation" indefinite pronoun by Haspelmath's classification ('Few of those present had any objections'). Here a wide-scope universal quantifier is not equivalent to a narrow-scope existential, thus *vsjakij* does not behave as an indefinite.

Examples like (6) are harder to deal with. In order to avoid presupposition failure (for the verb *poterjat'* 'lose'), we need to assume that *terpenie* refers only to those subkinds of patience that the speaker initially had. The particular mechanism providing such an accommodation is unclear.

As for the example (7), the meaning under consideration is unavailable since raising the quantifier would need to cross a tensed clause boundary, violating an island constraint.

As we see, the predictions of our analysis are more informative than those of the semantic maps approach, where all these contexts belong to the same cell of the map.

One problem with the account I present for indirect negation contexts is that, at least in the *bez* construction, the morphological number of *vsjakij*-NP corresponds to the number of objects that might participate in the event described. This casts serious doubts on the idea

that kind reference is involved.[9]

(22) Vasja s'el sup bez *vsjakoj*
V. ate soup without vsjakij$_{GEN.FEM}$
ložki /?*vsjakih* ložek
spoon$_{GEN}$ vsjakij$_{GEN.PL}$ spoons$_{GEN}$
'Vasya ate the soup without any spoon/?any spoons'

(23) Vasja vtaščil rojal' na sed'moj etaž
V. brought piano to seventh floor
bez ?*vsjakogo* pomoščnika /*vsjakih*
without vsjakij$_{GEN.MASC}$ assistant$_{GEN}$ /vsjakij$_{GEN.PL}$
pomoščnikov
assistants$_{GEN}$
'Vasya lifted the piano to the seventh floor without any ?assistant/ assistants'

*7.4 Standard of comparison*

Analysis of comparatives is a complicated task, and I am unwilling to take sides in the debates on this problem. Therefore I would like to keep the presentation in this section informal. Variants of formal analysis can be found in Schwarzschild and Wilkinson 2002, Heim 2000.

Note, however, that the semantics of comparatives involving *vsjakij* is consistent with it being a universal quantifier: compare

(24) Vasja spel pesnju lučše každogo iz učenikov
V. sang song better each$_{GEN}$ of students
'Vasya sang the song better than every student (in his class).'

(25) Vasja svaril sup lučše *vsjakogo* povara
V. cooked soup better vsjakij$_{GEN.MASC}$ cook$_{GEN}$
'Vasya cooked the soup better than any cook would.'

It should also be noted that when an NP with an object level referent serves as a standard of comparison in an episodic sentence, the resulting sentence presupposes the existence of a real event with the participation of that object. For example,

(26) Vasja narisoval košku bystree Peti
V. drew cat faster P.$_{GEN}$
'Vasya drew a cat faster than Petya did'

[9] An anonymous reviewer proposes to view these examples as an evidence for polysemy. While I will need to treat *vsjakij* as poloysemous (see sections 8 and 9), in this case I do not see how to restrict an additional quantifyong-over-individuals sense to just negative contexts, short of stipulation.

presupposes that Petya has also drawn a cat. But if the standard of comparison is a kind-referring NP, this requirement no longer holds: in (27) no professional artist needs to draw anything in the real world.[10]

(27) Vasja narisoval košku ne xuže professional'nogo xudožnika
V. drew cat not worse professional$_{GEN}$ artist$_{GEN}$
'Vasya drew a cat no worse than a professional artist.'

Considering this, sentences like (9) are analyzed adequately. The event 'bandaging the wound by a *k*-th doctor' here is as hypothetic as in (27), in contrast with (28):

(28) Vasja probežal stometrovku bystree každogo iz sportsmenov
V. ran 100.meters faster each$_{GEN}$ of sportsmen
'Vasya ran 100 meters faster than each of the sportsmen.'

Thus we have an additional argument that *vsjakij* involves reference to kinds.

*7.5 Predicate position*

One more context where *vsjakij* is used (not mentioned in the list at the beginning of this paper) is in the position of the main predicate of the sentence:

(29) Vasja byvaet *vsjakim*
V. is.at.times vsjakij$_{INSTR.MASC}$
≈ 'Vasya is different in different situations'

To analyze *vsjakij* in such examples, we assume that the trace left by quantifier raising is subject to the pred type shift, which converts it into a predicate. Thus (29) is interpreted in the following way: for every subkind of human, in some situations Vasja belongs to that subkind.[11] As a formula:

$$\forall k\,((k < \text{nom}(\textbf{human})) \rightarrow \exists s\,(\text{pred}(k)(s, \textbf{v})))$$

*7.6 Explaining the distribution of vsjakij on the semantic map*

According to Haspelmath (1997), the set of contexts where a pronoun can be used always forms a continuous region on the semantic map in Picture 1. Thus it makes sense to look at the group of contexts adjacent

[10] A separate explanation is needed as to why negated comparatives are better in such examples.

[11] I chose *byvat'*, not *byt'* 'be' as the main verb, because otherwise Vasja would need to belong to all the subkinds simultaneously, which would make the sentence *Vasja vsjakij* self-contradictory or at least requiring a special context.

to those occupied by *vsjakij* on Haspelmath's map, to see whether we can predict the non-occurrence of *vsjakij* in these contexts.

In the context of protasis of conditionals *vsjakij*, in order to receive the interpretation of an indefinite pronoun, would need to scope higher than the conditional itself, thus violating an island constraint on extraction:

(30) *Jesli proizojdet *vsjakaja* neožidannost',
if will.happen vsjakij$_{\text{NOM.FEM}}$ unexpected.event
Vasja prežde vsego obratitsja k Pete
V before all will turn to P.
'If anything unexpected happens, Vasya will first of all turn to Petya.'

If the condition is expressed by an adjunct PP, rather than a tensed clause, *vsjakij* becomes possible:

(31) Pri *vsjakoj* neožidannosti Vasja prežde vsego
at vsjakij$_{\text{LOC.FEM}}$ unexpected.event V. before all
obratitsja k Pete
will turn to P.
'In case of any unexpected event Vasya will first turn to Petya.'

In the free choice contexts, as a rule, the choice to be made is not among subkinds, but among particular objects. When one constructs an example with choice among subkinds, *vsjakij* can be used:

(32) Ty možeš povesti sebja *po-vsjakomu*
you can behave self like.vsjakij$_{\text{DAT}}$
'You can act any way you like.'

Note that both for conditionals and free choice uses our predictions are again more precise than Haspelmath's: his theory is not able to distinguish between uses that correspond to the same cell of the map.

As for questions, it seems impossible to build an example of question where our analysis of *vsjakij* would predict that it behaves as an indefinite pronoun.

(33) *U tebja jest' *vsjakie* voprosy?
at you are vsjakij$_{\text{NOM.PL}}$ questions
'Do you have any questions?'

Finally, in direct negation contexts in Russian, the usage of negative concord pronouns with *ni-* seems to be mandatory. So while there seem to be no semantic reasons for prohibiting *vsjakij* here, syntactic considerations overrule it. The same also holds for other Russian pronouns, like *každyj* and the *–libo* series (cf. Pereltsvaig 2004).

## 8 "Collective" Use

Our analysis so far gives wrong predictions for examples like the following:

(34) Vasja nabil škaf vsjakimi korobkami
V. filled cupboard vsjakij$_{\text{INSTR PL}}$ boxes$_{\text{INSTR}}$
'Vasya filled the cupboard with all sorts of boxes.'

What this example means is not that for every kind *k* of boxes Vasja has filled the cupboard with boxes of that kind. Rather, the senence says, first, that Vasja has filled the cupboard with boxes (which together form a collective object *x*), and, second, that each subkind of boxes had its representative within *x*.

Informally it is not hard to justify the existence of such use by analogy with the collective use of the quantifier *vse* `all, everybody'. Just like *vse* serves as the endpoint for enumerating individuals that constitute a collective:

(35) V komnate sobralis' Vasja, Petja, Maša, Sereža... v obščem,
in the.room gathered V., P., M., S.... in short,
vse.
everybody.

*vsjakij* is the endpoint for enumerating subkinds:

(36) Vasja nabil škaf korobkami: bol'šimi, malen'kimi,
Vasja filled the cupboard with boxes: big, small,
kartonnymi, derevjannymi... v obščem, *vsjakimi*.
cardboard, wooden... in general, all sorts of boxes.

As soon as we acknowledge the existence of such "collective" use, a question arises whether we still need the "existential" one separate from it, since the truth conditions are in most cases equivalent. The following example shows that the "existential" use does indeed exist:

(37) Vasja učastvoval vo *vsjakih* sporah
V. took.part in vsjakij$_{\text{LOC PL}}$ arguments$_{\text{LOC}}$
'Vasya took part in all sorts of arguments.'

This sentence does not describe one event, but a series of events and different realisations of subkinds of *spor* 'argument' participate in different events. Thus the "existential" reading allows us to derive us the following analysis of the sentence:

$$\forall k\ ((k < \textbf{argument}) \rightarrow \exists e \exists x\ ((\mathrm{R}(x,k)\ \&\ \textbf{take-part}\ (\mathrm{v},x)(e))))$$

which corresponds to the intended reading. When we try to apply the

"collective'" meaning to this example, we get the following: there is a compound object $x$ composed of arguments, for every subkind of arguments there is a representative in $x$, and Vasya took part in $x$. But to take part in a compound event, it is sufficient to take part in one of its components, so we clearly do not get the intended meaning. Moreover, the statement that Vasya took part in such a compound event is not more informative than the statement that Vasya took part in some argument—presumably this rules out "collective'' reading on Gricean grounds.

## 9 More Problematic Cases. Historical Development

Some more uses of *vsjakij* are hard to predict from our hypothesis. They are probably best described as a result of historical development.

The most frequent of these (in spoken Russian, this is perhaps the most frequent type of usage of *vsjakij* in general) are cases where *vsjakij* means `insignificant', `not worth describing'. In this use, *vsjakij* can combine both with common nouns and proper names:

(38) U nas žili *vsjakie* koški
at us lived vsjakij$_{\text{NOM.PL}}$ cats$_{\text{NOM}}$
'Some (insignificant) cats lived in our home.'

(39) Ešče *vsjakie* Vasi budut mne sovetovat'!
also vsjakij$_{\text{NOM.PL}}$ Vasya$_{\text{PL}}$ will me give.advice
'Vasya wants to give me advice!' (The speaker does not think Vasya is worth listening to)

This type of usage probably derives from the "existential" and "collective" uses we considered. (In fact, the only surface difference between (38) and (4) is that in the latter *vsjakij* bears sentence accent, while in the former it is unstressed.) The words *raznyj* and *različnyj*, both meaning 'various' or 'different', undergo similar development, as does the English expression *all sorts of*. In (38), (39), *vsjakij* can be replaced by *raznyj* with no change in meaning.

Other uses are probably remnants of an older situation, when *vsjakij* was used more widely than today. Consider the following examples from XVIII century Russian:

(40) I tysjačie, gromoglasno objaviv sobranie vojska, na lobnom meste zapisyvali imena graždan dlja *vsjakoj* tysjachi.
'And commanders of thousands, having proclaimed loudly the gathering of the troops, wrote down in the square the names of citizens for every thousand.' [Karamzin. Marfa Posadnitsa]

(41) My rasstalis' i poehali *vsjak* v svoju storonu.
'We parted and each went his own way.' [Radiščev. A journey from St. Petersburg to Moscow]

This kind of development is unexpected. Normally the meaning of a lexical entry becomes less transparent and further removed from its inner form as language evolves.[12] Here the opposite seems to be the case. One possible explanation is to relate this old kind of use to a different meaning of *kakoj*—'which', which is also present in modern Russian, along with *kotoryj*. Then we will have two separate meanings for *vsjakij* in XVIIIth century Russian, parallel to the two meanings for *kakoj*. In the modern language one of them is mostly lost. However, with some groups of nouns the old usage remains.

One such group is formed by nouns denoting events or situations, namely *raz* and *slučaj*. *Na vsjakij slučaj* 'just in case' is an idiom which involves no quantification at all.

The expression *vsjakij raz* does involve quantification. However the quantification is not over subkinds but simply over events. Moreover, the number of events is allowed to be bounded:

(42) Vasja četyreždy zapeval pesnju, no *vsjakij* raz
V. four times started song, but vsjakij$_{\text{ACC.MASC}}$ time$_{\text{ACC}}$
zabyval slova
forgot words
'Vasya started the song four times, but each time he forgot the words.'

*Vsjakij* also behaves in a similar manner when combined with nouns designating time periods. This use is absent from the author's idiolect, but there are dozens of occurrences in modern texts from the corpus (see also Paducheva 1989, p. 17):

(43) Okazyvajetsja, on *vsjakij* den' za pjat' verst prihodit v pomeščičij dom, čtoby prostyo poobedat'.
'It turns out he walks five versts every day to the squire's house just to eat dinner.' [Moris Simaško. The Fifth Rome. Chapters from a book (2000). Oktjabr' N7, 2001]

(44) No kak to'ko načinalo temnet', ja *vsjakuju* minutu, kak Zoluška, pogljadyvala na strelku normal'nyh čelovečeskih časov.
'But as soon at it began to get dark, I, like Cinderella, looked every minute at the hand of an ordinary normal watch.' [Irina Poljanskaja. Passage of a shadow. 1996]

It seems, however, that in this type of context the number of time periods

[12] Examples are everywhere. The English word *redneck*, say, no longer means a person whose neck is necessarily red.

quantified over cannot be bounded.

## 10 Conclusions

It is unlikely that a completely uniform account of the meaning of *vsjakij* is possible. However, our present hypothesis seems to fare reasonably well. It is the first analysis that is able to show the connection between the generic universal and the "existential" readings, and at least partially explains number marking on *vsjakij*. Indirect negation, standard of comparison and predicative uses are also analyzed adequately. Of the cases that do not fall under our basic analysis, "collective" readings, first noted here as a problematic case, are similar to collective readings of ordinary universal quantifiers like Russian *vse*, English *all*; other problems are probably best described as a result of historic development.

Our analysis is able to predict the distribution of *vsjakij* with greater accuracy than the description based on semantic maps.

Finally, it is a well known fact that no known language has a determiner specialized for kind reference. If our analysis of *vsjakij* is correct, it does not serve as a direct counterexample to this universal, but a universal quantifier that has reference to kinds as an essential component of its meaning could still be relevant data for those who investigate the range of possible typological variation.

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# Copula Sentences Reconsidered*

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The main goal of this paper is to provide new empirical evidence, based on the properties of different types of Polish copula constructions, in favor of the existence of two distinct types of small clauses. Similar claims, based on a different set of facts, were made in Heycock and Kroch 1999, Pereltsvaig 2001, Matushansky 2000, Rapoport 1987, Rothstein 2001. What is novel to the present proposal are the exact structures assigned to the two types of small clauses.

## 1 Verbal, Pronominal, and Dual Copula Sentences

Many languages are known to have two or more types of copula elements. The two most common copula types are verbal and pronominal; the latter found in Arabic (Eid 1983), Hebrew (Doron 1983, Rapaport 1987, Greenberg 2002, and Rothstein 2001), Russian (Pereltsvaig 2001), and Polish (Rothstein 1986). The following examples from Polish illustrate the two copula types.

(1) Jan *jest* moim najlepszym przyjacielem. *verbal copula*
Jan is my best friend
'Jan is my best friend.'

(2) Jan *to* mój najlepszy przyjaciel. *pronominal copula*
Jan PRON my best friend.
'Jan is my best friend.'

Interestingly, in Polish the two types of copulas can occur together in what I will henceforth refer to as *dual copula sentences*:

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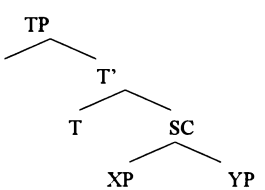
(3) Jan *to* *jest* mój najlepszy przyjaciel.
Jan PRON is my best friend
'Jan is my best friend.'

At first glance, the existence of languages with more than one copula element appears to add plausibility to the so-called *two* be *approaches* to copula verbs, which claim that the lexicon contains two copulas, *be* of identity and *be* of predication, which happen to be homophonous in languages like English (Higgins 1973, Partee 1986, Rapoport 1987, Russell 1919, Zaring 1996, among many others). However, the fact that the two copulas can co-occur in languages like Polish casts some doubt on this view. If indeed the pronominal copula *to* is equative and the verbal copula *być* predicational, the acceptability of dual copula sentences such as the one given in (3) above is rather unexpected. It is not clear how a single sentence can be simultaneously equative and predicational.[1]

An alternative to such a lexical ambiguity view is to correlate the use of a different copula with a difference in structure. My main goal in this paper is to consider one implementation of such a structural ambiguity view, point out some problems with it, and suggest an alternative. The analysis to follow is loosely modeled upon Matushansky's (2000) and Pereltsvaig's (2001) account of the contrast between nominative and instrumental marked nominals in Russian verbal copula sentences. It involves a symmetric bare small clause for pronominal copula sentences and a rich small clause structure, headed by a functional projection, for verbal copula sentences, as shown in (4a-b).[2] Following Bowers (2002), I will refer to this functional projection as a πP; nothing, however, hinges on this terminological choice.

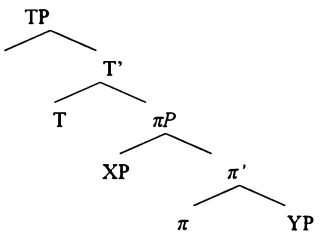
(4) a. bare small clause: pronominal copula sentences




[1] Dual copula sentences are also not ambiguous between an equative and a predicational interpretation. For more discussion, see section 4 of this paper.

[2] This is not the only logical possibility. Due to space limitations, I will not consider the opposite view, on which verbal copula sentences involve a bare small clause and pronominal ones a rich small clause. As I show in Citko (2005), this alternative makes a number of incorrect predictions for verbal copula sentences.

b. rich small clause: verbal copula sentences




Both copulas are functional in character; the pronominal copula in (4a) occupies a $T^0$ position and the verbal one in (4b) a $\pi^0$ position. A natural question to ask at this point is which of the two structures is the right one for dual copula sentences. It seems quite clear that they cannot involve a bare small clause structure, since such a structure is simply too 'bare' to accommodate both the verbal and the pronominal copula. The only option left is thus a rich small clause structure. Assigning such a structure to dual copula sentences makes a straightforward prediction that they should pattern with verbal copula sentences, since the two involve the same structure. Testing this prediction will be the focus of the next two sections, which examine a number of diagnostics that distinguish between verbal and pronominal copula sentences, and then test the behavior of dual copula sentences with respect to these diagnostics.

## 2 Syntactic Properties of Polish Copular Sentences

Perhaps the most obvious difference between pronominal and verbal copula sentences in Polish involves category selection. Pronominal copulas are only possible with nominal predicates:[3]

(5) a. Jan to mój najlepszy przyjaciel. *DP predicate*
Jan PRON my best friend
'Jan is my best friend.'

[3] Such a selectional restriction is not uncommon from a typological perspective. Pustet (2003) proposes the following implicational universal governing the selectional restrictions imposed by copula verbs:

(i)nominals > adjectivals > verbals

This implicational universal says that if a language allows a copula with an element to the right of the scale, it will allow the same copula with the element(s) to its left.

b. * Jan to przyjacielski. *AP predicate*
Jan PRON friendly
'John is friendly.'
c. * Jan to w przyjacielskim nastroju. *PP predicate*
Jan PRON in friendly mood
'John is in a friendly mood.'

The verbal copula *być*, on the other hand, is more permissive in that it allows all non-verbal predicates as its complements:

(6) a. Maria jest studentką. *DP predicate*
Maria is student
'Maria is a student.'
b. Maria jest mądra. *AP predicate*
Maria is smart
'Maria is smart.'
c. Maria jest w domu. *PP predicate*
Maria is at home
'Maria is at home.'

Dual copula sentences pattern with pronominal copula sentences with respect to selection; they are only compatible with nominal predicates:

(7) a. Warszawa *to* *jest* [$_{DP}$ stolica Polski].
Warsaw PRON is capital Poland
'Warsaw is the capital of Poland.'
b. * Warszawa *to* *jest* [$_{AP}$ polska].
Warsaw PRON is Polish
'Warsaw is Polish.'
c. * Warszawa *to* *jest* [$_{PP}$ w Polsce].
Warsaw PRON is in Poland
'Warsaw is in Poland.'

Another difference between the two types of copula constructions involves case. Thus, the pronominal copula requires its complement to be nominative:

(8) a. Gwiazda poranna to gwiazda wieczorna.
star morning PRON star$_{NOM}$ evening$_{NOM}$
'The morning star is the evening star.'
b. *Gwiazda poranna to gwiazdą wieczorną.
star morning PRON star$_{INSTR}$ evening$_{INSTR}$
'The morning star is the evening star.'

The verbal copula, on the other hand, requires its nominal complement to be instrumental.[4] Bailyn (1995, 2001), and Bailyn and Citko (1999) propose that instrumental case is assigned by the head of the rich small clause, the π head in (4) above. Since pronominal copula sentences lack the π head, the ungrammaticality of instrumental case follows. The only case assigning head is T, which is responsible for nominative case assignment.

(9) a. Jan jest lekarzem.
Jan is doctor$_{INSTR}$
'John is a doctor.'
b. *Jan jest lekarz.
Jan is doctor$_{NOM}$
'Jan is a doctor.'

With respect to case assignment, dual copula sentences also pattern with pronominal copula sentences rather than verbal ones. They are only compatible with nominative case marked complements:

(10) a. Warszawa to jest stolica Polski.
Warsaw PRON is capital$_{NOM}$ Poland$_{GEN}$
'Warsaw is the capital of Poland.'
b. *Warszawa to jest stolicą Polski.
Warsaw PRON is capital$_{INSTR}$ Poland$_{GEN}$
'Warsaw is the capital of Poland.'

The third difference between the two types of copula sentences involves their behavior with respect to movement. Extraction of the instrumental marked element out of verbal copula sentences is possible. This is illustrated in (11a) for short wh-movement, (11b) for long wh-movement, and (11c) for scrambling.[5]

(11) a. *Kim*$_i$ jest Jan $t_i$?
who$_{INSTR}$ is Jan
'Who is Jan?'
b. ?*Kim*$_i$ myślisz, że jest Jan $t_i$?
who$_{INSTR}$ you-think that is Jan
'Who do you think that Jan is?'

---

[4] There are some potential counterexamples to this generalization, such as the example given in (i). Such examples, however, are quite restricted and limited to introductions and other kinds of fixed expressions.

(i) Jestem Nowak.
I-am Nowak$_{NOM}$
'I am Nowak.'

[5] The slightly degraded status of (11b-c) has to do with an independent fact about Polish, namely the general slight infelicity of long distance extraction out of embedded clauses.

c. ?*Najlepszym kandydatem*$_i$ myślę, że jest Jan $t_i$
best candidate$_{INSTR}$ I-think that is Jan
'I think that Jan is the best candidate.'

Extraction out of pronominal copula sentences, however, results in ungrammaticality:

(12) a. *Co$_i$ fizyka to $t_i$?
what physics PRON
'What is physics?'
b. **Co*$_i$ myślisz, że fizyka to $t_i$?
what you-think that physics PRON
'What do you think physics is?'
c. **Nauka o naturze*$_i$ myślę, że fizyka to $t_i$.
study about nature I-think that physics PRON
'I think that physics is the study of nature.'

In this respect, dual copula sentences pattern again with pronominal copula sentences rather than verbal ones:

(13) a. *Co fizyka to jest $t_i$?
what physics PRON is
'What is physics?'
b. **Co*$_i$ myślisz że fizyka to jest $t_i$?
what you-think that physics PRON is
'What do you think that physics is?'
c. **Nauka o naturze*$_i$ myślę że fizyka to jest $t_i$?
study about nature I-think that physics PRON is
'The study of nature, I think that physics is.'

To summarize the discussion so far, we have seen that dual copula sentences pattern with pronominal copula sentences rather than verbal ones with respect to three syntactic properties: category selection, case, and movement. In the next section, I examine semantic differences between verbal and pronominal copula sentences, and show that in this respect, dual copula sentences pattern together with pronominal ones here as well.

## 3 Semantic Properties of Copular Sentences

Higgins (1973) distinguishes four types of copular sentences: predicational, identity (or equative), specificational, and identificational, illustrated in (14a-d) respectively.[6]

[6] The division of copular sentences into these four types is by no means uncontroversial. Quite commonly, identificational sentences are assimilated to specificational ones (for a

(14) a. John is a bank robber. *predicational*
b. The bank robber is John. *specificational*
c. The morning star is the evening star. *equative*
d. That place is Boston. *identificational*

Predicational sentences ascribe some property, such as that of being a bank robber in (14a), to the subject. Specificational sentences tend to have a list-like interpretation; typically the pre-copular element provides a variable and the post-copular one provides a value for this variable. Identity or equative sentences establish identity between two individuals. And identificational sentences, which Higgins distinguishes from identity statements, are used to teach the names of people or things. With this typology in mind, let us look at the distribution of Polish copulas. Since predicational sentences turn out to be the most complicated of the four, I will start the discussion with the other three types.

Specificational sentences allow both pronominal and dual copulas but not verbal ones, as shown in (15).[7]

(15) a. Mój najlepszy przyjaciel to Jan.
my best friend PRON Jan
'My best friend is Jan.'
b. #Mój najlepszy przyjaciel jest Janem.
My best friend is Jan
'My best friend is Jan.'
c. Mój najlepszy przyjaciel to jest Jan.
my best friend PRON is Jan
'My best friend is Jan.'

Higgins' identificational sentences exhibit a similar pattern; pronominal and dual copulas are fine, whereas the verbal copula is ungrammatical.

(16) a. To miasto to Boston.
this town PRON Boston
'This town is Boston.'
b. *To miasto jest Bostonem.
this town is Boston
'This town is Boston.'

---

recent implementation of this proposal, see Mikkelsen 2004). In a similar spirit, specificational clauses are sometimes treated as a subset of equative clauses (Heycock and Kroch 1999) or predicational (Moro 1998, 2000, Adger and Ramchand 2003).

[7] The only plausible interpretation for (15b) is one in which my best friend is impersonating or pretending to be Jan, which I take to be a predicational rather than specificational interpretation.

c. To miasto to jest Boston.
this town PRON is Boston
'This town is Boston.'

Not surprisingly, equative sentences exhibit precisely the same pattern of copula use:

(17) a. Doktor Jekyll to pan Hyde.
doctor Jekyll PRON Mr Hyde
'Doctor Jekyll is Mr Hyde.'
b. #Doktor Jekyll jest panem Hyde.
doctor Jekyll is Mr Hyde
'Dr Jekyll is Mr Hyde.'
c. Doktor Jekyll to jest pan Hyde.
Doctor Jekyll PRON is Mr Hyde
'Doctor Jekyll is Mr Hyde.'

Predicational sentences are somewhat more complex. Given the discussion so far, we would expect them to be ungrammatical or infelicitous with pronominal or dual copulas. This would result in a clear-cut complementary distribution. This prediction, however, is not confirmed. While it is true that the verbal copula is the default for predicational sentences, it is not true that the use of pronominal (or dual copulas) is impossible. As shown in (18), all three copulas are possible in predicational sentences:

(18) a. Jan jest lekarzem.
Jan is doctor
'Jan is a doctor.'
b. Jan to lekarz.
Jan PRON doctor
'Jan is a doctor.'
c. Jan to jest lekarz.
Jan PRON is doctor
'Jan is a doctor.'

The following examples, obtained via a Google search, also illustrate the predicational use of pronominal copulas. Since the postcopular element is non-referential, they cannot be interpreted as identity statements. The use of the pronominal copula in these examples casts doubt on the view that the pronominal copula is an equative marker, which is how Doron (1983), Rapoport (1987), and Rothstein (1995) analyze the role of the pronominal copula in Hebrew.

(19) a. Gwarancje zatrudnienia to nic nowego.
guarantees of employment PRON nothing new
'Employment guarantees are nothing new.'
(www.wnp.pl/news)

b. Wszystko to nic.
everything PRON nothing
'Everything is nothing.'
(www.republika.pl/mariuszparlicki)

c. Unia to nic nowego.
union PRON nothing new
'The Union is nothing new.'
(www.radio.bialystok.pl/rep/unia/index.php)

Greenberg (2002) analyzes the pronominal copula in Hebrew as a marker of genericity. Extending her proposal to Polish would leave unaccounted for the obligatory presence of this copula in equative sentences, which are not generic in any intuitive sense of the word. Another common view regarding the contribution of the pronominal copula is that it is an emphatic marker of sorts. While there is some intuitive plausibility to this account, it leaves unaccounted for all the syntactic facts discussed in Section 3. It raises a natural question of why the use of an emphatic marker should have such an effect on the syntactic properties such as category selection, case, and extraction possibilities.

A more promising alternative is to think of the pronominal copula as correlating with the essential/non-essential distinction, or individual/stage-level distinction. This conclusion is confirmed by the fact that the pronominal copula is infelicitous with predicates which are inherently viewed as stage level, such as *fugitive*, *passenger*, *pedestrian* or *spectator*:

(20) #Jan to (jest) zbieg / pasażer / przechodzień / widz.
Jan PRON is fugitive/ passenger/ pedestrian/ spectator
'Jan is a fugitive/passenger/pedestrian/spectator.'

Furthermore, the status of (20) improves if the predicates are coerced into more individual level interpretation:

(21) a. Jan to (jest) wieczny zbieg.
Jan PRON is permanent fugitive
'Jan is a permanent fugitive.'

b. Jan to (jest) częsty pasażer naszych linii lotniczych.
Jan PRON is frequent passenger our airline
'Jan is a frequent passenger of our arline.'

c. Jan to (jest) najbardziej uważny przechodzień, jakiego znam.
Jan PRON is most careful pedestrian which I-know
'Jan is the most careful pedestrian I know.'
d. Jan to (jest) nasz najwierniejszy widz.
Jan PRON is our most.faithful spectator
'Jan is our most faithful spectator.'

The table in (22) summarizes the differences between the three copula types in Polish:

(22)

| | VERBAL COPULAS | PRONOMINAL COPULAS | DUAL COPULAS |
|---|---|---|---|
| **CATEGORY** | *DPs, APs, PPs* | *DPs* | *DPs* |
| **CASE** | *Instrumental* | *Nominative* | *Nominative* |
| **EXTRACTION** | *Grammatical* | *Ungrammatical* | *Ungrammatical* |
| **INTERPRETATION** | *Predicational* | • *Specificational* • *Identity* • *Predicational (inherent property)* | • *Specificational* • *Identity* • *Predicational (inherent property)* |

## 4 Alternative: Two Types of Rich Small Clauses

The discussion in the previous two sections shows that pronominal and dual copula sentences differ from their verbal counterparts with respect to category and case selection, extraction possibilities, and interpretation. This parallelism between pronominal and dual copula sentences is unexpected on the account that assigns a bare small clause structure to pronominal copula sentences, and a rich one to verbal ones. Since a bare small clause structure cannot accommodate both the verbal and the pronominal copula, the only possible structure for such sentences is a rich small clause structure. This, however, incorrectly predicts that dual copula sentences should pattern with verbal rather than pronominal ones. Given a natural assumption that the similarities between pronominal and dual copula sentences imply parallelism in structure, I conclude that pronominal copula sentences cannot involve a bare small clause either.[8] In other words, all copula sentences involve a rich small clause. This conclusion raises a question of how to account for the differences

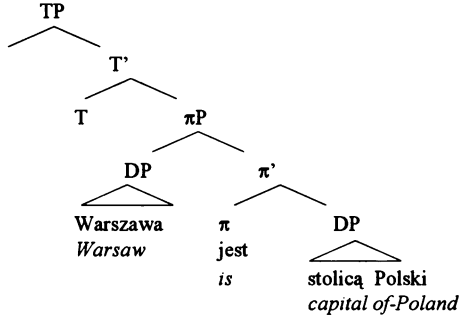
[8] This suggests that bare small clauses do not exist (see also den Dikken (to appear), Adger and Ramchand (2003) for a similar conclusion based on data from different languages..

between verbal copula sentences on the one hand, and pronominal and dual ones on the other. A natural possibility is to attribute these differences to the type of the functional head heading the small clause. This is the line of thought I would like to pursue here.

With respect to the structure for verbal copula sentences, I will not depart from the proposal I considered above, namely that they involve a rich small clause headed by a π head, as shown in (23).

(23) a. Warszawa jest stolicą Polski.
Warsaw is capital$_{INSTR}$ Poland$_{GEN}$
'Warsaw is the capital of Poland.'

b.

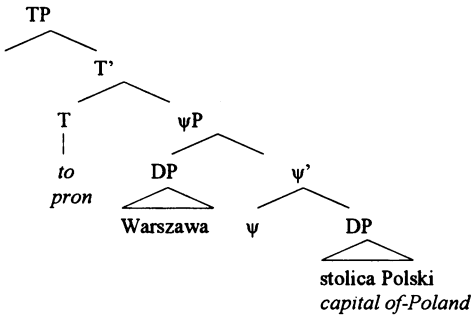



Given this structure, the properties of verbal copula sentences can be accounted for as follows. The π head assigns (or values) Instrumental case. Furthermore, π does not impose any category restrictions on its complement. Following Adger and Ramchand (2003), I assume that π is eventive in character, which sheds some light on why it is compatible only with a predicational interpretation. The movement possibilities follow on the assumption that πP is a phase in the sense of Chomsky 1999 and 2001. As such, it has an 'edge property' in the form of an extra EPP feature, which allows the complement of π to land in its Spec before undergoing further movement to Spec,C.

By contrast, I assume that pronominal and dual copula sentences involve a small clause headed by a distinct functional projection. For the sake of concreteness, I will call this projection a ψP.

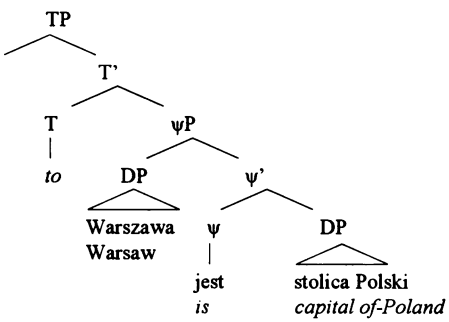
(24) a. Warszawa *to* stolica Polski.
Warsaw PRON capital$_{NOM}$ Poland$_{GEN}$
'Warsaw is the capital of Poland.'

b.




(25) a. Warszawa to jest stolica Polski.
Warsaw PRON is capital Poland
'Warsaw is the capital of Poland.'

b.



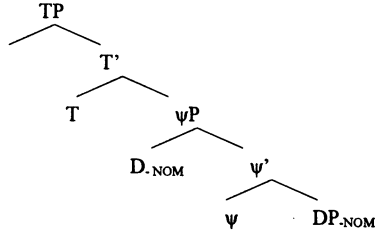

The differences between the two types of rich small clauses posited here, namely the π headed and the ψ headed one, follow from the selectional properties of T; a filled T selects a ψP whereas an empty one a πP.

A natural question to raise here is how properties of pronominal and dual copula sentences follow from the structure assigned to them. The proposal I would like to make is that ψ requires *syntactic symmetry*, exhibiting a similar behavior to a conjunction head (& head of Johannessen 1998, Munn 1993, Zoerner 1995, among many others). This symmetry requirement is manifested in three ways. First, the ψ head requires its complement to be of the same category as its specifier. This explains why pronominal and dual copula sentences are only possible with nominal predicates, which are the only ones that can agree in category with the nominal subjects. In a certain sense, it is reminiscent of the Coordination of Likes Constraint in the coordinate domain.

Second, ψ requires identity in case between its specifier and complement. I further propose that ψ does not have any case assignment

capabilities of its own. As a result, both noun phrases in a pronominal or dual copula structure receive nominative case from the T head via a *Multiple Agree* mechanism of Hiraiwa 2001.

(26) *Multiple Agree with T*




Again, case assignment properties of a ψ head are similar to the case assignment properties of an & head. Neither can assign case on its own, and both require the specifier and the complement to bear the same case.

And third, the reason why ψP disallows wh-movement is that it lacks an extra EPP feature, which prevents movement out of it. This property of ψPs also has an analog in the coordinate domain, in the form of the Coordinate Structure Constraint.

## 5 Conclusion

To conclude, this paper argued for a new typology of copula sentences, in particular for a revision of a structural ambiguity approach to copula sentences in Polish. It examined three types of Polish copula sentences: verbal copula sentences, pronominal copula sentences, and dual copula sentences. It showed that dual copula sentences pattern with pronominal copula sentences with respect to category selection, case assignment, extraction possibilities, and semantic interpretation. All three types were argued to involve a T head selecting a phrase headed by a functional element, either by a predicational π head or by a symmetric ψ head. Verbal copula sentences were argued to involve a small clause headed by a π head, whereas both pronominal and dual copula sentences were argued to involve a small clause headed by a ψ head.

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# The Semantics of the Slovenian Dual*

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## 1 Introduction

While it may be well known that Slovenian has a morphological dual as a well-established category of everyday use (cf. Corbett 2000), the semantics of this form has to our knowledge not yet been studied in detail. Contrary to initial expectation, the dual cannot be used in several cases where two entities are referred to, and the plural must be used instead. In this contribution, we argue that the semantics of the Slovenian Dual must receive an account along the lines of Sauerland's (2003) analysis of number. In particular, we establish the following two claims:

(i) The dual is purely presuppositional. It cannot be used to assert duality.

(ii) The plural is more general than the dual, and used whenever the presupposition of the dual is not satisfied.

Sauerland (2003) argues for an analysis of the English number based on similar assumptions. In particular, he proposes that English number is purely presuppositional and that the plural is less marked that the singular (cf. Sauerland, Andersen, and Yatsushiro 2005). This contrasts with earlier analyses of English number that assume that number morphology on nouns is interpreted as a semantic distributivity operator, while number marking on pronouns is interpreted presuppositionally (Schwarzschild 1996 and others). The Slovenian evidence presented here provides further support for the claim that number is purely presuppositionally interpreted across languages.

We furthermore propose that the dual is subject to an additional pragmatic requirement that duality is relevant for present purposes. This

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accounts for the fact that in Slovenian the Dual cannot be used with body parts that usually occur in pairs like the hands unless duality is asserted.

*1.1 Morphological dimensions*

Slovenian is one of the few Slavic languages to have retained dual forms. The Slovenian dual cannot be considered as a dying out grammatical category at all, at least in the Central dialect spoken in the area around Ljubljana, which we focus on in this paper. In the Southern Slovenian dialects the facts seem to be different because of the influence of neighboring Croatian (see (5*) below). In the Central dialect, however, the dual is in everyday use. Morphologically the dual is distinct from the plural in nominal (a), pronominal (b) and verbal (c) inflection as the paradigms in table 1 show. Only with feminine nouns, the dual and plural forms are homophonous.

**Table 1**. Paradigms of Dual

| a) Noun (`fish') | SG | DL | PL |
|---|---|---|---|
| NOM | rib-**a** | rib-**i** | rib-**e** |
| GEN | rib-**e** | rib | rib |
| DAT | rib-**i** | rib-**ama** | rib-**am** |
| AKK | rib-**o** | rib-**i** | rib-**e** |

| b) Pronoun (1.MASC) | SG | DL | PL |
|---|---|---|---|
| NOM | jaz | midva | mi |
| DAT | meni, mi | nama | nam |
| AKK | mene, me | naju | nas |

| c) Verb (`to work') | SG | DL | PL |
|---|---|---|---|
| 1.P. | déla-**m** | déla-**va** | dél**amo** |
| 2.P. | déla-**š** | déla-**ta** | déla-**te** |
| 3.P. | déla | déla-**ta** | déla-**jo** |

*1.2 General constraints of use*

In many cases, the use of the dual is obligatory and the use of the plural instead is fully ungrammatical and not accepted by the speakers, as we show in the examples below—at least in the central part of the Slovenian dialects where the dual number has developed and is maintained to present time (see also Derganc 1994).

(1) a. Kaj sta délala včéraj zvečér?
What be 2.DL work PPA.DL yesterday evening
'What have you-DL done yesterday evening?'

b. Kópat' **sva** se**šla**.
bath-Supin $be_{1.DL}$ Refl $go_{PPA.DL}$
'We-DL went out to swim.'

As far as the speaker refers to two persons in (1), the dual (in masculine gender, in this case) has to be used. The use of plural, as in (1') below, is only accepted if the question is addressed to at least three persons or if the context includes more than two persons. If this is not so, both the question and the following answer are ungrammatical, if the asking and/or the answering person uses the plural.

(1') a. *Kaj ste délali včéraj zvečér?
what $be_{2.PL}$ $work_{PPA.PL}$ yesterday evening
b. *Kópat' **smo** se**šli**.
$bath_{SUPIN}$ $be_{1.PL}$ Refl $go_{PPA.PL}$

Similar facts hold where the speaker would use the polite plural form addressing a single person (2); if two are addressed, the dual must be used instead of politeness plural (2').

(2) Se me spòmni**te**, gospód predsédnik?
$Refl_{ACC}$ $Pro_{GEN}$ $remember_{PL}$ mister president
'Do you remember me, mister president?'

(2') Se me spòmni**ta**, gospó**da**?
$Refl_{ACC}$ $Pro_{GEN}$ $remember_{DL}$ $gentlemen_{DL}$
'Do you remember me, gentlemen-DL?'

The dual use must also be used consistently with pronouns anaphoric to duals as (3) shows. Furthermore it must always be used in cases of coordination of two singulars as shown in (4). It cannot be doubted, therefore, that this category is an obligatory part of the Slovenian language and the dual is a stable part of the Slovenian number system—in the dialectal regions where it is established in general—not being a subject of modern language change.

(3) a. A ne poznàš Petra in Vere?
Q Neg $know_{2.SG}$ P.GEN and V.GEN
'Don't you know Peter and Vera?'
b. Sevéda **ju**.
of course $Pro_{CL.ACC.DL}$
'Of course I do.'
b'. *Sevéda **jih**.
of course $Pro_{CL.ACC.PL}$

(4) a. Tó sta Peter in Vera.
That $be_{DL}$ Peter and Vera
'That are Peter and Vera.'
b. *Tó so Peter in Vera.
That $be_{PL}$ Peter and Vera

In contrast to Central Slovenian, in some regions at the southern periphery where the dual was morphologically lost or never established to a comparable extent, speakers show a considerable confusion in the use of pronominal forms, which can serve them as plural pronouns (like in Croatian of the neighboring area) as well as dual forms (mostly learned at school). The memorial inscription presented in (5), found near the village of Šmarjenear Koper[1] contains a pronoun referring semantically to dual subjects (which is rather the plural form as found in Croatian), but associated by plural verb forms.

(5) Na tem mestu so padli
on $Dem_{Loc}$ $place_{Loc}$ $be_{3.PL}$ $fall_{PPA.PL}$
14.III.1944 kot žrtve...Viler Valerij(..), Viler Anton(..). 14
March 1944 as $victim_{PL}$
slava jima.
honour $Pro_{DAT.PL/DL}$
'On this place have fallen... on March 14, 1944 as victims Viler Valerij and Viler Anton. Honour to them.'

Those confusions are not found in the central part of the language territory, where the dual morphology in masculine gender cannot be variated at all (see Derganc) and the dual can and should therefore be considered as morphologically and semantically well based.

Nevertheless, its use bears some questions of general interest, as it was not clearly defined so far in which situations a speaker is obligated to take a dual form—or, to apply a plural instead. In this concern, we partly refer to some striking details of Slovenian dual use constraints, which are already known and have partly been studied in several contexts, such as things occurring by pairs like body parts or family members (6).

(6) a. Umij si rok-e!
$wash_{IMP}$ $Refl_{DAT}$ $hand_{PL}$
'Wash your hands!'
b. *Umij si rok-i!
$wash_{IMP}$ $Refl_{DAT}$ $hand_{DL}$

[1] We are thankful to Danila Avguštin for providing us the exact data of the inscription.

This is a strong, well known fact concerning body part concepts; body parts occurring twice cannot be referred to by using dual. The possible explanations of the today's situation of the Slovenian must include both the morpho-phonological history of those forms (being older duals or expressions for object pairs) and the semantic account.

The Dual is licensed, however, and would be required if the speaker refers explicitly to both hands (7) or to the fact that there were two books which he bought (8).

(7) Umíj si obé rok-i!
wash$_{IMP}$ Refl$_{DAT}$ both hand$_{DL}$ ('Wash both hands!')

(8) Kúpil sem dve knjíg-i.
buy$_{PPA}$ be$_{1.SG}$ two book$_{DL}$ ('I bought two books.')

Our most important observation is a general rule of partition between dual and plural use. The phenomenon in question can be observed systematically and we try to characterize it as a perceptual property due to a number ranking from a less to a more specific one; it is shown that dual—as being more specific than plural is—stands in pragmatic competition with the plural. The use of the dual must be licensed by features of the context, and otherwise the plural must be used even when it has dual reference. Consider example (9).

(9) Tó je Boeing 737. Motórje imà na krílih.
that be$_{3.SG}$ B.737 engine$_{ACC.PL}$ have$_{3.SG}$ on wing$_{PL/DL}$
'This is a B.737. Its engines are on the wings.'

Though a B-737 aircraft has only two engines, which were well seen on the wings, a speaker always uses plural instead of dual in those situations. It does not sound acceptable, if dual is used instead;

(9') *Tó je Boeing 737. Motórja imà na krílih.
That be$_{3.SG}$ B... engine$_{DL}$ have$_{3.SG}$ on wing$_{PL/DL}$
'This is a B.737. Its engines are on the wings.'

The situation changes if the two engines are explicitly mentioned in a foregoing sentence (as being two); if they are only mentioned in a more abstract way like in (9) and their duality is not referred to, the plural use may continue for a longer context. The first change from plural to dual is then initialized by the use of the word *obá* (both) as in (9'') or the numeral *dvá* (two) as in (10).

(9'') Tó je... Obá motórja imà na krílih.
that be$_{3.SG}$ both$_{DL}$ engine$_{DL}$ have$_{3.SG}$ on wing$_{PL/DL}$
'That is... Both engines are on the wings.'

(10) Pri DC 10 sta dva motórja na krílih, èden pa zádaj.
In DC 10 $be_{DL}$ two $engine_{DL}$ on $wing_{PL/DL}$ one but behind.
'In DC 10 two engines are on the wings and one behind.'

## 2 The analysis

If initially introduced, a dual item generally needs to be overtly explained by a concrete numeral or pronominal reference. Even one apparent counterexamples seem to support this generalization: Slovenian the translation of Tolkien's famous novel "Two Towers" is entitled "Dva stolpa" (two-DL tower-DL), however, the movie released later was entitled just "Stolpa" (tower-DL). While this may initially be seen as evidence for optionality of the dual, we propose that the use of the dual in the movie title reflects an expectation on the part of the movie translators that the addressees of the movie are familiar with the two towers already because of the popularity of the books, while the translators of the book could not assume such familiarity.

*2.1 The Semantic Analysis*
In this section, we argue that the distribution of the dual in Slovenian is best explained within a semantics of number that has two properties: it is presuppositional and it makes use of a semantic markedness hierarchy of number features. Such a semantics was proposed by Sauerland (2003) for Singular and Plural, and below we present an extension to the Dual. First, though, we discuss two rival accounts: one where the feature dual is purely syntactically licensed, and another one, where the dual is interpreted as an operator.

*2.1 The Syntactic Analysis*
In the previous section, we showed that the dual in (11) and (12) (repeated from (7) and (8)) can only be used if the words *obé* 'both' and *dve* 'two' are present.

(11) Umíj si obé rok-i!
$wash_{IMP}$ $Refl_{DAT}$ both $hand_{DL}$
'Wash both hands!'

(12) Kúpil sem dve knjíg-i.
$buy_{PPA}$ $be_{1.SG}$ two $book_{DL}$
'I bought two books.'

It is tempting to conclude that dual morphology must be purely formally licensed within the constructions in (11) and (12) similar to grammatical gender in German (13).

(13) a. eine schöne Gabel
$a_{FEM}$ $beautiful_{FEM}$ fork
b. ein schöner Löffel
$a_{MASC}$ $beautiful_{MASC}$ spoon

For German gender, we assume that the lexical entries of nouns bear an uninterpreted, grammatical gender feature that the determiner and adjective agree with. Similarly one could suggest that the lexical entries of *obé* 'both' and *dve* 'two' in Slovenian bear a grammatical dual feature that the noun in (11) and (12) agrees with. This account would assume that the dual may semantically be no different from the plural. The difference lies only in the formal licensing requirement of the dual.

However, there are at least two arguments against such an account of the Slovenian dual. The first argument arises from a consideration of the agreement of coordinated DPs. In the previous section, we already pointed out an example (3'), where a coordination of two singulars requires dual agreement, similarly to the following example:

(14) Janez in Tone sta srečn-a.
John and Tony $be_{DL}$ $happy_{DL}$
'John and Tony are happy.'

Since neither *obá* nor *dva* occur in (14), the coordination *in* 'and' would have to bear the grammatical dual feature. However, this would lead us to expect that all coordinated subjects should trigger dual agreement. This prediction is not bourne out: For example in (15), where a singular is coordinated with a plural, the verb phrase exhibits plural agreement.

(15) Janez in gospodje so srečn-i
John and $gentleman_{PL}$ $be_{PL}$ $happy_{PL}$
'John and the gentlemen are happy.'

Therefore, a purely syntactic account of dual agreement would have to take into account the number of both conjuncts in the way captured by rule (16). Evidently such an account is not elegant as it does not capture the semantic principle underlying agreement with coordinations: that DUAL is used whenever the referent of the coordination consists of exactly two individuals.

(16) a. [DP-SING and DP-SING] is assigned the feature DL
b. If A does not apply, [DP and DP] is assigned the feature PL

The second argument against a syntactic component in the account of DUAL is based on example (17). In (17), DUAL must be used on the subject though neither dva nor obá applies to the subject NP. *Dveh* 'of two' occurs only embedded as part of the possessive phrase that applies

to the subject (the possessive Genitive forms are formally unspecified for the dual/plural distinction).

(17) Voznika dveh avtomobil-ov st-a se krega-l-a.
driver$_{DL}$ two$_{GEN\ DL}$ car$_{GEN\ DLL}$ be$_{DL}$ REFL$_{ACC}$ argue$_{PPA\ DL}$
'The drivers of the two cars were arguing.'

To analyze (17) as a form agreement between the possessive *dveh* and the entire subject DP is syntactically implausible because agreement relations are always local (cf. Bobaljik & Yatsushiro, to appear).

An even stronger case of the same type is (18) where the only possible syntactic licensor of DL would be the coordination inside of the relative clause.

(18) Možá, ki sta poročena z Mojco in z Ano, sta
man$_{DL}$ who be$_{3.DL}$ married$_{DL}$ with M. and with A. be$_{DL}$
srečna.
happy$_{DL}$
'The men who are married to Mojca and Ana are happy.'

We conclude therefore that the distribution of DUAL on noun phrases must receive a purely semantic explanation. The role of *dve*, *obe*, and coordinations on such an analysis must be indirect—the interpretation of such words affects the number of a referent in such a way that DUAL must be used. In the following two sections, we consider two semantic analyses of number.

*2.3 The operator analysis*

The most widely assumed analysis of the plural assumes that the plural morpheme *-s* in English is interpreted as an operator. This operator applies to the singular interpretation of a noun and yields a plural interpretation.

(19) NP + *-s* is true of a entity X if and only if NP is true of all singular parts x of X

For a language like Slovenian that has a dual, we could extent the operator account with the interpretation rule for the dual in (20).

(20) NP +[DL] is true of an entity X if and only if X is consists of exactly two singular parts, x and y and NP is true of x and of y

However, the operator account faces a number of problems. For one, Sauerland (2003) argues that the operator analysis of the plural is problematic even for English and it seems highly implausible that number morphology should be interpreted in substantially different ways in English and Slovenian. Secondly, the operator analysis of the dual in

(20) faces problems above and beyond the incompatibility with the analysis of number in English. The presence of these problems, therefore, provides independent support for the claim that the operator analysis of number is not correct.

One reason against the operator analysis of the dual is that it predicts that dual forms should be useable to assert duality. This prediction derives from the fact that the interpretation predicted for sentences with an existential dual is exactly that ascribed to sentences with *two* in English. For example, Barwise and Cooper (1982) propose that English sentences with *two* are interpreted as paraphrased in the following:

(21) "two NP VP" is true if and only if there are distinct singular entities x and y that both satisfy NP and satisfy VP either distributively or collectively

For example Schwarzschild (1996) argues that a plural individual can satisfy a predicate distributively (i.e. all singular parts satisfy the predicate) or collectively (i.e. not the singular parts, but the plurality as a whole satisfies the predicate).

If we combine a dual with an existential operator, exactly the same interpretation results for "NP-DUAL VP." However, as we have seen in Section 1, examples (6) and (9), the dual cannot be used to assert duality.

A second problem that arises at this point is that it predicts a conflict between *dve* and dual marking in examples where both apply. Consider again example (22) (repeated from (8)):

(22) Kúpil sem dve knjíg-i.
buy$_{PPA.PF}$ be$_{1.SG}$ two book$_{DL}$
'I bought two books.'

The operator analysis predicts that *book*$_{DL}$ is interpreted as a predicate that is true of pluralities consisting of two books. But, if *dve* is interpreted like *two* in English, it should quantify over singular individuals. Therefore, (22) is predicted to be a logical contradiction contrary to fact.

Finally, examples like (23) (repeated from (17)) pose a further problem for the operator analysis, which is a dual-version of a problem Sauerland (2003) points out for the operator analysis of the plural. In (23), 'two cars' is the argument of 'driver'. Therefore, the dual operator could not be applied before 'driver' combines with its argument. But if we apply the dual-operator to 'driver of the two cars', the result would be an interpretation where each driver was driving two cars, and therefore at least four cars would need to be involved. However, each car would have only one driver in the relevant scenario. Therefore, the operator analysis, in this case, predicts only an interpretation for (23) that is actually not available, while the interpretation noted in (23) cannot be predicted

(23) Voznika dveh avtomobil-ov st-a se krega-l-a.
driver$_{DL}$ two$_{GEN}$ car$_{GEN.DL/PL}$ be$_{3.DL}$ Refl$_{ACC}$ argue$_{PPA.DL}$
'The drivers of the two cars were arguing.'

In sum, we have seen that an operator analysis of the Slovenian dual is untenable. This result also has broad theoretical interest: It shows that the traditional operator analysis of number of Bennett (1973) and adopted by many others cannot be correct with new arguments that go beyond those of Sauerland (2003). In the next section, we show now that the presuppositional analysis of number of Sauerland (2003) carries over quite straightforwardly to the dual.

*2.4 The presuppositional analysis*

The presuppositional analysis does not assume that the visible pieces of number morphology are directly interpreted. Rather Sauerland (2003) proposes that number marking on nouns just like number marking on verbs is due to agreement. The only place where number marking is interpreted is an abstract φ-head. This head is located above DP as shown in (24) for the Slovenian dual form *dve knjíg-i* 'two books'.

(24) [ φ$_{DUAL}$ [ dve knjíg-i ]$_{DP}$ ]$_{φP}$

The number feature in φ is always interpreted as a presupposition and must be satisfied relative to the common ground of the present discourse (Stalnaker 1977). For the Slovenian Dual, however, we propose that in addition the duality of the referent must be relevant for the present purposes. Specifically, we propose the presuppositions in (25) for the three number features.

(25) a. [[PLUR]] presupposes nothing

b. [[DUAL]] presupposes that the DP complement of φ denote an entity consisting of at most two singular (atomic) parts and this numerosity must be relevant

c. [[SING]] presupposes that the DP complement of φ denote a singular (atomic) entity

In addition to the lexical entries in (25), the general maxim 'Maximize Presupposition' constrains the use of the number features. Because PLUR is strictly more general than DUAL and SING, this maxim entails that PLUR can only be used when neither DUAL nor SING can be used (cf. de Saussure 1993[1910]). Similarly the presence of SING blocks the use of DUAL with singular reference (see also below). Note furthermore that the number features in (25) cannot be directly combined with DP that denote quantifiers for type reasons.

Following Sauerland (2003), we assume that this mismatch is resolved by quantifier raising and refer to Sauerland's paper for the details.

The claim that DUAL is interpreted as a presupposition rather than an operator is supported by the distribution of DUAL in Slovenian that we observed in the first section. Consider first the coordination in (26) (repeated from (14)):

(26) Janez in Tone sta srečn-a.
John and Tony $be_{2.DL}$ $happy_{DL}$
'John and Tony are happy.'

Following Sauerland (2003), we assume that the subject of (26) contains three φ-heads, one in each conjunct and one above 'and', as shown in (27). For the structure of coordination itself any recent proposal is compatible with our approach. For concreteness, we assume that *in* 'and' projects an &P (Munn 1992).

(27) [ $\varphi_{DUAL}$ [ [$\varphi_{SING}$ Janez ]$_{\varphi P}$ in [ $\varphi_{SING}$ Tone ]$_{\varphi P}$ ]$_{\&P}$ ]$_{\varphi P}$

Because of the presupposition of DUAL in (25b), it must be the case that Janez and Tone are two distinct individuals. But, since this is trivially satisfied as it follows from the default assumption that different names refer to different people, it follows that use of the DUAL in (26) is felicitous. Furthermore, the presupposition of the DUAL is evidently not satisfied in the case of coordinations involving plurals or duals such as example (15) above. In this way, the 'rule' (16) is derived.

Secondly, consider example (28) with DUAL and *dve* 'two' (repeated from (22)). Slovenian does not distinguish between definites and indefinites. We assume that *dve knjígi* can be interpreted as existential quantification over plural entities having exactly two singular parts. As mentioned above, DUAL cannot combine with this quantifier, but only with a trace bound by the quantifier as shown in (29). Since *dve* restricts quantification to dual entities, the presupposition of the dual is satisfied: All the values of the variable x in representation (29) that satisfy the restrictor are dual entities. And since duality is also asserted by the use of *dve* in (28), duality must be relevant.

(28) Kúpil sem dve knjíg-i.
$buy_{PPA.PF}$ $be_{1.SG}$ two $book_{DL}$
'I bought two books.'

(29) [2 books]$_x$ [ John bought [$\varphi_{DUAL}$ x] ]

In subsequent anaphoric reference to a dual (such as the books in (28)), dual must also be used because it has been established that the entity referred to must have at most two members and that this is relevant. This analysis carries over to the cases with *obe* 'both' straightforwardly.

Now consider the version of (28-a) without *dve* 'two' in (30) (repeated from (8)) where only the plural is possible. Again assume that the object is interpreted existentially (a definite interpretation is not salient here because of the imperfective aspect of the verb; see below). The dual presupposition would only be satisfied if all pluralities consisting out of books consisted of exactly two books. This, however, is generally not the case, at least not for books.

(30) *Kupoval sem knjig-i.
buy$_{PPA.IPF}$ be$_{1.SG}$ book$_{DL}$
'I bought books.'

Example (31) illustrates a language specific property of the Slovenian dual. It concerns the distinction between the *arbitrary* and the *paral* dual (Humboldt 1827, Rukeyser 1997). Other languages with a dual are reported to differ in this regard (e.g. Sanskrit), though Breton and some Australian languages seem to have a restriction similar to Slovenian.[2] The Slovenian fact (31) follows from our proposal that the duality must also be relevant. We assume that when duality is relevant, it must be asserted by *dve* or *obe*.

(31) *Umij si rok-i!
wash$_{IMP}$ REFL$_{DAT}$ hand$_{DL}$
'Wash your hands!'

Consequently, use of the dual in (32) is predicted by our analysis if it is part of the common ground that each car has one driver. We assume that if the duality of the cars is relevant, also the duality of the drivers is relevant.

(32) Voznika dveh avtomobil-ov st-a se krega-l-a.
driver$_{DL}$ two$_{GEN.DL}$ car$_{GEN.DL/ACC}$ be$_{DL}$ REFL$_{ACC}$ argue$_{DL}$
'The drivers of the two cars were arguing.'

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[2] In Breton according to Rukeyser (1997) a paral dual *daouarn* ('pair of hands') and an arbitrary dual *daou zorn* ('two hands') are distinguished similar to *a pair of shoes* vs. *two shoes* in English. Because of a blocking effect, we expect that the form for the arbitrary dual cannot be used for natural duals similar to the Slovenian dual. The Australian languages Rukeyser surveys seem to have similar properties. In Slovenian, however, there is no special form for the natural dual, and therefore we do not think (31) is the result of blocking by a more specific form.

To conclude this section, we have shown that the analysis of number best suited to account for the distribution of the Slovenian dual is a presuppositional account along the lines of Sauerland (2003).

*2.5 Markedness*

The Slovenian number system argues not just for a presuppositional account of number as we just saw, but also that the number categories stand in markedness relationships. For languages with just singular and plural, Schwarzschild (1996) argued that the plural is semantically less marked, and Sauerland, Andersen, and Yatsushiro (2005) present further evidence. Sauerland (submitted) extends this line of argumentation to other cases, and discusses the Slovenian dual at length. In this section, we summarize the arguments that show that the dual is more marked than the plural in Slovenian because this assumption is important for our account of the Slovenian facts.

Following Heim (1991) and Sauerland (2003), we assume a pragmatic principle 'maximize presupposition' that requires that a speaker must always use the lexical item with the strongest presupposition he is certain to be satisfied. This explains that the plural cannot be used in examples like (28) even though the plural has no presupposition at all according to the lexical entry in (25-a): In examples like (28) the presupposition of the dual is satisfied and therefore maximize presupposition obliges the speaker to use the dual. Use of the plural in such a case would violate maximize presupposition.

That the plural is less marked than the dual is argued by the cases from the previous section where the dual is blocked and the plural must be used. Specifically, consider example (30) again. Use of (30) does not entail that I bought three or more books, but is fully compatible with a situation where I bought two books. This is predicted by the `maximize presupposition' principle.

*2.6 Additional support: Aspect*

In addition, verbal aspect gives some rise to use constraints of number too;

(34) Pred hišo sem posádil dvé cédri.
In front of house $be_{1.SG}$ plant $_{PPA.PF}$ two $cedar_{DL}$
"In front of the house I planted two cedars."

(35) Ko sem cédre (#cédri) sadíl, ...
When $be_{1.SG}$ $cedar_{PL}$ ($cedar_{DL}$) $plant_{PPA.IPF}$
"When I planted (the two) cedars, ..."

With imperfective aspect a speaker is mostly more likely to use plural then dual for dual objects; this fact can be interpreted as correlated to the

degree of definiteness with respect to the object in the sentence as described e.g. in Filip (1999), Krifka (1989), Kühnast *et al.* (2004). Even when referring to two objects in (35) the same speaker is influenced by the indefinite effect produced by the durational verb form.

## 3 Conclusion

The two main results of our survey of the use of the dual in Slovenian are that the dual is restricted to environments where duality has already been established, and that the plural can be used otherwise without implying numerosity greater than two. We argued that these observations support a presuppositional account of number and the view that the plural is the semantically unmarked number.

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# Early Preference in Relative Clause Attachment: The Effect of Working Memory Differences*

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## 1 The Relative Clause Attachment Ambiguity

The present questionnaire study investigated how Russian speakers interpret sentences with complex noun phrases (NPs) illustrated in (1).

(1) Someone shot the servant of the actress that was on the balcony.

Such sentences are ambiguous between two readings: one in which the servant is on the balcony referred to as early preference, $NP_1$ preference, or high attachment, and one in which the actress is on the balcony (late preference, $NP_2$ preference, or low attachment). Research on similar syntactic ambiguity resolutions has usually asked questions as (i) What are the processes by which the relative clause (RC) is attached to an appropriate NP? and (ii) Do these processes vary from language to language and if so why? First, we answer the latter question.

In their pioneer study, Cuetos and Mitchell (1988) found that in contrast to English speakers who preferred the low attachment interpretation (the actress was on the balcony) Spanish speakers preferred the high attachment interpretation (the servant was on the balcony) for sentences like (1). These results have been replicated since then in a large number of questionnaire studies, with at least 15 different languages tested to date (see table 1).

Note that Romanian contrasts with French and Spanish, while

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Norwegian and Swedish contrast with Dutch and German, so the distinction cannot be reduced to differences between Romance and Germanic languages.

**Table 1.** Cross-linguistic differences in relative clause attachment ambiguity resolution

| Low attachment | High attachment |
|---|---|
| Brazilian Portuguese (Maia et al. 2004), Romanian (Ehrlich et al. 1999), Norwegian (Ehrlich et al. 1999), Swedish (Ehrlich et al. 1999), English (Fernández and Bradley 1999), Arabic (Quinn et al. 2000) | French (Pynte and Colonna 2000), Spanish (Fernández 2003), German (Walter et al. 1999), Dutch (Wijnen 2001), Croatian (Lovrič 2003), Polish (Nowak 2000), Japanese (Kamide et al. 1998) |

The evidence on cross-linguistic differences raised numerous new problems. It seemed that the machinery for sentence processing must vary from language to language. This raised, in its turn, several important questions. Are some of syntactic processing strategies language-specific? Are they determined based on previous experience with similar structures? On the other hand, do the differences between languages lie outside the parser, in language-specific aspects of the grammar? The affirmative answer to the former question leads us to Exposure-Based accounts on RC-attachment while the affirmative answer to the latter question—to Universalist accounts. We return to the problem later in the section.

Though the overall attachment preference is different for different languages, there are effects that seem to hold for every language, namely, constituent length of the stimuli—extra weight of (i) the remote left context, (ii) NP1 and NP2, and (iii) the relative clause. Consider some recent studies on these effects.

Bradley, Fernández, and Taylor (2003) provided off-line questionnaire evidence that English speakers were more likely to choose low attachment in sentences with one prosodic word matrix subject (2a) than for sentences with two prosodic words matrix subject (2b).

(2) a. The plot concerns the guardian of the prince who was exiled.
b. The *unusual* plot concerns the guardian of the prince who was exiled.

Pynte, Mitchell, and Colonna (2002) presented on-line eye-tracking evidence that French-speaking participants preferred high attachment in sentences where NP1 contained an adjective modifier, (3a), and low attachment where NP2 contained an adjective modifier, (3b).

(3) a. Il aime la *souriante* soeur des Anglais qui
he loves the smiling sister of the British who
arrive(nt) à l'agence de voyages.
arrive(s) in the travel agency.
'He loves the smiling sister of the British who arrive(s) in the travel agency.'

b. Il aime la soeur des *souriants* Anglais qui
he loves the sister of the miling British who
arrive(nt) à l'agence de voyages.
arrive(s) in the travel agency.
'He loves the sister of the smiling British who arrive(s) in the travel agency.'

A massive amount of data from Brazilian Portuguese (Maia et al. 2004), Croatian (Lovrič and Fodor 2000, Lovrič 2003), Dutch (Wijnen 2001), English (Fernández and Bradley 1999), French (Pynte and Colonna 2000), German (Walter et al. 1999), Hindi (Vasishth et al. 2004), Japanese (Kamide et al. 1998), and Spanish (Fernández 2003) shows that short RCs, (4a), are more likely to attach low than long RCs, (4b).

(4) a. The doctor met the son of the colonel who tragically died.
b. The doctor met the son of the colonel who tragically died *of a stroke.*

Thus, heavier subjects, heavier NP1s, and heavier RCs favor high attachment, while heavier NP2s favor low attachment. The question is why they behave this way.

We now consider different answers to the former question posed in the introduction. Repeat it here–What are the processes by which the relative clause is attached to an appropriate NP? There have been several attempts to explain cross-linguistic differences as well as weight effects: The Modifier Straddling Hypothesis (Cuetos and Mitchell 1988), the Two-Factor Model (Gibson and Pearlmutter 1994), the Tuning Hypothesis (Mitchell et al. 1995), the Attachment-Binding Hypothesis (Hemforth, Konieczny, and Scheepers 1996), the Construal Hypothesis (Frazier and Clifton 1997), the Implicit Prosody Hypothesis (Fodor 1998), and the Informativeness Hypothesis (Hemforth, Konieczny, and Scheepers 2002). The first three accounts are exposure-based while the others are universalist.

In our opinion, one of the most consistent accounts available to date is the Implicit Prosody Hypothesis (IPH) proposed by J.Fodor (1998). IPH predicts that a prosodic contour in silent reading influences syntactic ambiguity resolution in a certain way. Namely, prosodically heavy constituents tend to attach to prosodically heavy hosts, that is, to bigger constituents while prosodically light constituents prefer to attach low in

all languages. Behavior of heavy constituents, however, may vary depending on (i) the relative weight of the constituent itself and the weight of its possible hosts (hence the effects of extra weight in NP1 and NP2 and extra weight in RC), (ii) the prosodic phrasing preferences for the whole sentence (hence the effect of extra weight in the subject and other constituents), and (iii) the prosodic phrasing preferences of a specific language (i.e., some languages are more likely to make a pause on the clause boundary than others, this preference affects the phrasing of a sentence, and thus favors high or low attachment). Under IPH, the constituent length affects prosodic phrasing, and prosodic phrasing affects RC-attachment.

In the following section we concentrate exclusively on the Cognitive account on the relative clause attachment—the third general camp in this scientific area. This account does not rely on either language-specific differences among grammars, as exposure-based accounts do, or language-specific syntactic processing strategies, as universalist accounts do. Instead, the main claim of the Cognitive account is that differences in processing are driven by general limitations in human information processing.

## 2 Working Memory and Relative Clause Attachment

A number of experimental results have provided substantial evidence that syntactic processing in sentence comprehension requires the allocation of verbal memory resources. Sentences with more complex syntactic structures are more difficult and time-consuming in processing, and participants with bigger Working Memory (WM) perform better on resource-demanding tasks. Individual differences in WM have been found to influence both lexical and syntactic ambiguity resolution (Miyake et al. 1994, Pearlmutter and MacDonald 1995, among others).

Mendelsohn and Pearlmutter (1999) were the first to report that WM differences affect relative clause attachment resolution on English material. In a reading comprehension test, Low-Span participants (that is, those getting < 4 result on Daneman and Carpenter's (1980) reading span task) preferred high attachment, while High-Span participants (>= 4 on Daneman and Carpenter's test) showed no preference. Mendelsohn and Pearlmutter hypothesized that the Low-Span participants may have focused primarily on the verb and its arguments, including NP1, due to their relatively limited processing resources. Thus, NP1 was more active for the computational system than NP2, and consequently, it was more likely to be chosen as the attachment host. At the same time, the High-Span participants probably were able to keep both NPs relatively active, and that is why their preference was at the chance level. Felser, Marinis,

and Clahsen (2003) presented results from on-line and off-line experiments with English-speaking children (mean age 6;8). The listening span task used as the pretest was adopted from Gaulin and Campbell (1994): children were divided into two groups, Low-Span participants (<= 1.5) and High-Span participants (>= 2). The authors reported that while High-Span children preferred high attachment, Low-Span children preferred low attachment. Note that these children's results differ from Mendelsohn and Pearlmutter's (1999) results obtained from adults. The High-Span child participants of Felser, Marinis, and Clahsen behave like Low-Span adults do, choosing NP1. Felser, Marinis, and Clahsen argued that the cause for this is the same for High-Span children and Low-Span adults: either have relatively restricted WM resources and concentrate on verb arguments, that is, on NP1. As for the Low-Span children, they have even more limited resources than High-Span children and Low-Span adults. The authors proposed that the Low-Span children use the memory-friendly Recency Strategy. Since this strategy is purely linear, not structural, it is less costly, and is available even for participants with low WM resources.

Finally, in a recent questionnaire study Swets et al. (2004a) examined English-speaking and Dutch-speaking adults. Unlike the previous studies, participants in Swets et al. (2004a) were divided into three groups: Low-Span participants, Middle-Span participants, and High-Span participants. The results indicated that Low-Span participants preferred NP1 attachment, Middle-Span participants showed no preference, and High-Span participants preferred NP2 attachment. Clearly, the results of this experiment are in contradiction to the Mendelsohn and Pearlmutter's (1999) study: Why did High-Span participants prefer low attachment?

As for the differences between English-speaking and Dutch-speaking participants, the WM effect was the same for English and Dutch participants. However, as is well known, Dutch shows overall preference for high attachment, while English is a low attachment language. Swets et al. (2004a) concluded that WM differences may not be an apt explanation for the cross-linguistic variation in attachment preferences.

The results about interaction of the working memory span and attachment preference obtained so far can be summarized as follows:

1. Low-Span children prefer the memory-friendly Recency Strategy, and thus show *low attachment* preference.
2. High-Span children and Low-Span adults focus on the matrix verb argument, and thus show *high attachment* preference.
3. High-Span adults are able to keep NP2 as well as NP1 relatively active for attachment and choose the actual host using the

*semantics* of the stimuli, or they prefer NP2 attachment, for whatever reason, and thus show *low attachment* preference.

Do the prosody effects and the WM effect have the same source and the same explanation, or are they two independent, additive effects? In other words, can we merge our Cognitive account and the Implicit Prosody Hypothesis? Namely, can we accommodate the Implicit Prosody Hypothesis into the Cognitive account?

One of the first parsing models for natural language—the Sausage Machine—was designed by Frazier and Fodor (1978) to accommodate the limitations of short term working memory. However, in a recent study, Fodor (2002) concluded that the idea of input chunking looked less plausible than the idea of prosodic chunking because the former cannot explain cross-linguistic differences. Another attempt to explain the cross-linguistic variation in attachment preferences with the help of the individual differences in participants' WM span was described in the recent study of Swets et al. (2004a) mentioned above: because both English (that is a preferentially low RC-attachment language) and Dutch (that is a preferentially high RC-attachment language) did not show any difference in High-Spans' and Low-Spans' responses, the authors confirmed Fodor's conclusion. However, in their next study Swets et al. (2004b) formulated a new idea about the correlation between prosodic segmentation and individual differences in WM: not only a specific-language prosodic contour, but also individual differences in WM may cause cross-linguistic differences. Namely, High-Span participants chunk more material together than do Low-Span participants. Therefore, the complex NP and the RC are processed all at once. This tendency leads the participants to prefer high attachment. At the same time, Low-Span participants insert a break between the NP and the RC that leads to a low attachment preference. In other words, WM differences affect prosodic phrasing as the constituent length does, and prosodic phrasing directly affects RC-attachment. However, whether speakers really employ such chunking should be confirmed in future experiments. In the experiment described in Swets et al. (2004b) the authors forced participants to parcel the sentences in a certain way by presenting each sentence divided into three chunks: the complex NP (*The sister of the actress*), the RC (*who shot herself on the balcony*), and the matrix VP (*was under investigation*). If the mechanism argued for by Swets et al. (2004b) really exists, the differences between High-Span participants and Low-Span participants must be eliminated in this experiment, because the design forces participants to use a specific chunking

pattern instead of choosing one depending on individual WM properties. However, the described experiment is not finished yet.

## 3 Relative Clause Attachment in Russian

Here we first consider in Section 3.1 all previous RC-attachment experiments conducted on Russian, and then, in Section 3.2, we present a new experiment that compares High-Span and Low-Span Russian participants' relative clause attachment strategies.

### *3.1 What attachment preference does Russian have?*

The first RC-attachment study on Russian described in Sekerina (2003) demonstrated a preference for high attachment. Sekerina conducted two experiments. The participants of the first, off-line, experiment were instructed to choose one of the two interpretations of ambiguous sentences like (5).

| | | | | | |
|---|---|---|---|---|---|
| (5) | Nikolaj | xorošo | znal | syna | polkovnika, |
| | Nikolaj | well | knew | the son | the colonel |
| | kotoryj | pogib | v | avtomobil'noj | katastrofe. |
| | who | was killed | in | a car | accident. |

Interpretation 1: 'Nikolaj knew well the son whose father, the colonel, was killed in a car accident'.

Interpretation 2: 'Nikolaj knew well the colonel's son who was killed in a car accident'.

The second experiment tested reading time data. The experimental materials were the same as in the first experiment. The results showed a strong preference for high attachment: above 75% of sentences were interpreted with NP1 attachment.

Sekerina and Fedorova (2004) further investigated factors that affect RC-attachment in Russian. In a series of three questionnaires, they manipulated the length of the RC (6).

(6) Kolin brat$_{NOM}$ posmotrel prem'eru$_{ACC}$ p'esy$_{GEN}$,
Kolja's brother saw the premiere the piece
kotoruju xvalili (*vo vsex gazetax).*
that was praised (*in all newspapers*).
'Kolja's brother saw the premiere of the piece that was praised (*in all newspapers*)'.

Surprisingly, in contrast to the findings for other languages (see Section 1 above), the RC length did not have an effect on attachment preferences, with 65% high attachment preference found irrespective of

the RC length (see S&F1, S&F2, and S&F3 in Figure 1).
High Attachment, %

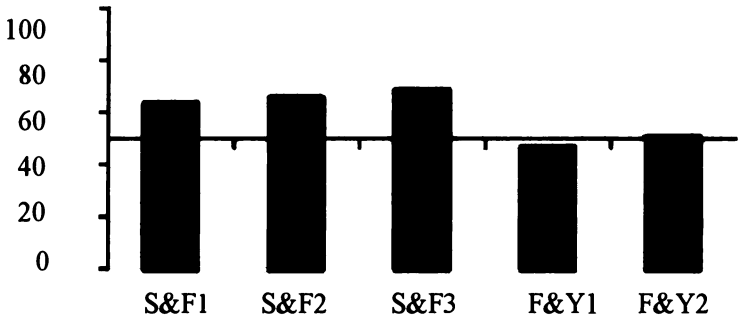


**Figure 1.** The results of the Russian questionnaire studies (S&F 1, 2, 3—Sekerina & Fedorova (2004), F&Y 1, 2—Fedorova & Yanovich (2004)).

After the five experiments in Sekerina (2003) and Sekerina and Fedorova (2004), it would seem obvious that Russian has overall high attachment preference. However, neither of the two new RC-attachment questionnaire experiments presented in Fedorova and Yanovich (2004) showed the preference for high attachment—participants choose high or low attachments of sentences approximately 50% of the time (see F&Y_1 and F&Y_2 in Figure 1). The results of all previous Russian questionnaire studies are shown in Figure 1. While some experiments showed a strong high preference effect, other experiments did not. How could that be?

The differences are unlikely to be caused by length effects—both sets of studies controlled the RC-length in their stimuli. We hypothesize that the differences in preferences obtained in these studies are due to the confounding by variability in the participants' working memory. WM differences have not been controlled for in either Sekerina and Fedorova (2004) or Fedorova and Yanovich (2004). However, as was shown in Section 2, WM differences can dramatically affect the attachment preference. To test this hypothesis, we replicated the first experiment of Fedorova and Yanovich (2004), but grouped participants into High and Low Spans by creating and administering a Russian adaptation of Daneman & Carpenter's (1980) reading span.

*3.2 The experiment: Relative clause attachment and working memory*
We started with developing a reading span task for Russian which did not exist. For this, we adapted the Daneman and Carpenter (1980) reading span task for English. In this task, participants are required to read 20 blocks of sentences which vary in length from two to five sentences. A participant starts with the first block that contains only two sentences, reads them aloud and is required to repeat the last word of each sentence in the order they were presented. By the time the participant reaches the last block, she will have to report the last words of five sentences in the order in which they were presented. The score is based on the largest set-size successfully recalled, with fractional values assigned for partially correct sets varying from 2 to 5 items (Daneman and Carpenter 1980).

3.2.1. Russian reading span task participants. Thirty-six adults participated in this experiment as volunteers. All were native speakers of Russian, ranging in age from 18 to 40. Participants were naive about the goals of the experiment.

*Materials and Design.* In our reading span task, participants read sentences presented on a computer. They were instructed to press a key once they read a sentence, and a new one followed. After each block, a participant saw a blank computer screen during which she was required to recall the last word of each sentence in the block. All participants completed the reading portion of the experiment in less than 20 min. Based on the results, we divided the participants into two equal groups: Low Span, 18 participants with reading span less or 4, and High Span, 18 participants with reading span equal to 4, 4.5 or 5.

3.2.2. RC Attachment ambiguity questionnaire.
*Materials and design.* Sixteen Russian experimental items were constructed in pairs. One sentence in each pair contained a short RC, and the other a long RC, (7). The first parts of long RCs were exactly the same as the whole short RCs. All of the sentences were globally ambiguous with respect to attachment of RC.

(7) Prestupnik$_{NOM}$ zastrelil služanku$_{ACC}$ aktrisy$_{GEN}$,
The criminal shot the maid the actress
kotoraja ego prjatala (*v kamorke na čerdake osobnjaka).*
who was hiding him (*in the small room of the mansion's attic*).
'The criminal shot the maid of the actress who was hiding him (*in the closet of the mansion's attic*)'.

The experimental sentences were counterbalanced across two lists. In

addition to the experimental sentences, five training sentences and 36 fillers were included in the lists to divert the participants' attention from the specific grammatical structure under investigation. Thus, each list consisted of 57 items: five training items, eight short RC items, eight long RC items, and 36 fillers.

*Procedure.* Participants were tested individually in a quiet room. The sessions lasted approximately 15 min. Each sentence of the questionnaire was presented to a participant on the computer screen. She was instructed to read each sentence aloud and then to press the "Next" button. After that she saw a comprehension question and two answer alternatives, presented as labels on two different buttons at the center of the computer screen. For the experimental trials, the questions were to clarify which attachment a participant preferred, e.g. *Kto prjatal prestupnika?* 'Who was hiding the criminal?' with two possible answers *Služanka* 'Maid' and *Aktrisa* 'Actress'. For the fillers, a simple comprehension question was presented. Participants were instructed to choose one of the two alternatives by pressing the corresponding button and say the chosen answer out loud. A computer program recorded participants' choice and automatically produced the scores. Answers to the fillers were registered as either 'right' or 'wrong'. Two participants with more than 15% errors in the comprehension task were discarded and replaced. Answers to the experimental sentences were scored in terms 'N1' (NP1 or high attachment) or 'N2' (NP2 or low attachment).

*Results.* The percentages of high attachment preference of the RC-sentences as a factor of the reading span are shown in Table 2.

**Table 2.** High attachment preference, %

| Reading Span | Short RCs | Long RCs |
|---|---|---|
| >= 4 | 35 | 61 |
| < 4 | 72 | 88 |

As a whole, in this experiment we found:

1. Strong early preference effect: 64% high attachment preference overall.
2. Strong reading span effect: no preference for High-Span participants (48% high attachment), and a strong high attachment preference for Low-Span participants (80%).

3. Strong effect of the RC-length: 74.5% high attachment preference for Long RCs and 53.5% for Short RCs.
4. No interaction between RC-length and reading span.

*Discussion.* First, our results present further strong evidence that a participant's reading span crucially affects RC-attachment ambiguity resolution, in line with Mendelsohn and Pearlmutter (1999). However, different results for High-Span participants were reported in Swets et al. (2004a): their High-Span group preferred low attachment.

**Table 3.** The effect of reading span on RC attachment with Russian experiment regrouped.

| Experiment | Reading Span | | |
|---|---|---|---|
| | Low | Middle | High |
| M&P 1999 | high | - | no effect |
| Swets 2004a | high | no effect | low |
| Russian | high (80%) | - | no effect (48%) |
| Russian revised | high (84,9%) | no effect (52,7%) | low (33%) |

Note, however, the High-Span groups of Mendelsohn and Pearlmutter (1999) and Swets et al. (2004a) do not correspond directly to each other: some of the High-Span participants in the former scoring >= 4 on Daneman and Carpenter's (1980) test would be in the High-Span group of Swets et. al. (2004a) while others would be in the Middle-Span group (3.5 <= reading span < 4.5). Thus, the results of these two studies cannot be compared directly to each other; they cannot be matched with the results of our experiment.

We can try to regroup our participants into three reading span groups that correspond directly to Swets et al.'s groups. In this case, the first group – High-Spans (>= 4.5 on a Russian adaptation of Daneman and Carpenter (1980) reading span task) – becomes small, with only six participants in it. The two remaining groups will consist of 14 Middle-Span (>= 3.5) and 16 Low-Span (<= 3) participants. After we have regrouped our participants this way, the results of our experiment look surprisingly similar to the results of Swets et al. (2004a), as Table 3 demonstrates.

If we group our participants as Mendelsohn and Pearlmutter did, we obtain results Mendelsohn and Pearlmutter's; if we group the participants as Swets et al. did, we obtain results that are similar to Swets et al.'s. That means that in fact the results of Mendelsohn and Pearlmutter (1999) and Swets et al. (2004a) may be not different either: what is different is their grouping of participants.

The suggested regrouping of the Russian participants into three reading span groups instead of two has an important consequence: High-Span participants (N=6, reading span >= 4.5) demonstrate a stable low attachment preference. This means that the explanation proposed by Mendelsohn and Pearlmutter (1999) who attribute their no preference results to the semantics of the stimuli is far from perfect. It fails to account for low attachment preference found for High-Span participants in the Swets et al. (2004a) and in the Russian experiment. We leave this question for future research. The preference of Middle-Spans' participants can be easily explained: if there are two different strategies for the attachment resolution used by High-Spans and Low-Spans, it is only natural that Middle-Spans use the two strategies equally frequently.

The second important result of our experiment is that no interaction between the RC-length effect and the WM effect was observed: the two proved to be independent factors. Of course, this finding should not be considered a reliable conclusion on the cross-linguistic stability of the WM effect, since our experiment was the first to test the interaction. For instance, it may prove that the WM effect and the constituent length N1 Attachment effects will interact in a different language, due to the specific prosody of this language.

Now to the most intriguing of our results: Fedorova and Yanovich's (2004) and the present experiments were conducted on the same material, but yielded strikingly different results: 46% high attachment preference in the former and 64% in the latter (see Figure 2). Consequently, it is not surprising that the results shown in Figure 1 are so different. As can be seen from the comparison of the results of the two Russian experiments, attachment preference even for the same stimuli presented to different participants may vary dramatically.

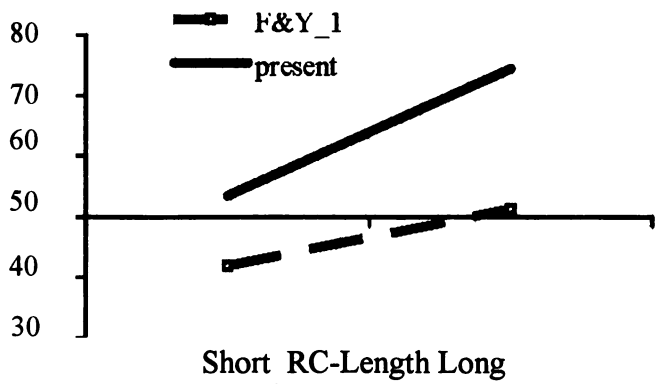


**Figure 2.** Comparison of the two Russian experiments, the present one and F&Y1.

We know that Low-Spans prefer to attach the RC high, and that High-Spans attach it low or at chance level. Because in the present experiment the number of High-Spans and Low-Spans was approximately equal, it is to be expected that overall high attachment was 64%. On the other hand, we do not know what reading span of F&Y1's participants was. However, because the overall attachment preference in F&Y1 was at chance level, we can hypothesize that most of the participants must have been High-Spans. They prefer low attachment or do not have any preference at all.

If this hypothesis about why F&Y1 showed chance level attachment is true, how can we explain the overall high attachment preference observed in most RC-attachment studies in Russian (see Figure 1)?

To answer this question, we need to estimate the 'real' ratio of High-Span to Low-Span participants in these experiments. Bringing together the data obtained in various previous Russian experiments with Russian adaptation of Daneman and Carpenter (1980) test, we counted that 297 (64.5%) out of 460 participants had reading span < 4. Thus, there were more Low-Span that High-Span participants in our experiments. Though these data do not suffice to make conclusions about what is the 'real' ratio is, it is safe to say that Low-Span participants constitute the majority[1]. So it is not surprising that Russian participants taken as a group preferred high attachment because this is precisely the behavior we would expect from Low-Span participants.

## 4 Conclusion

We conclude that reading span in addition to other factors influences RC-attachment ambiguity: while the Low-Span participants prefer high attachment, the High-Span participants prefer low attachment. Middle-Spans use both strategies and thus show no attachment preference.

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[1] In all experiments on Russian mentioned in the paper, the participants were either undergraduate students or their relatives; all of them are residents of Moscow, Russia. The participants ranged in age from 18 to 60.

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# On the Incompatibility of Multiple Wh-Movement with Left-Branch Extraction in Serbo-Croatian*

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In this paper I deal with wh-movement phenomena in Serbo-Croatian (SC). More specifically, I am going to focus on the properties of multiple wh-movement (MWHM) and its relation to apparent violations of the left-branch island constraint (Ross 1967).

While the analysis of multiple wh-fronting has been discussed widely in the literature (see for example Rudin 1985, 1988, Bošković 1997, 2002, Stjepanović 1998, 1999, Grewendorf 2001), left-branch extraction (LBE) constructions have not received that much attention and, crucially, there has been no discussion on the interaction between both phenomena. In this paper I aim at filling this gap. I will show that while more than one wh-phrase can be fronted, not more than one left branch can. Željko Bošković (pc) points out that this has not been dealt with in the literature and, more importantly, none of the analyses of these phenomena account for this restriction on LBE.

This paper is organized as follows: section 2 discusses the analysis of MWHM that I am going to assume here, namely, the one in Bošković 2002, which is in turn based on Stjepanović's (1998, 1999) work. Section 3 discusses the analysis of LBE in Bošković 2003, which I will also follow here. In section 4 I show that MWHM is not compatible with LBE. In section 5 I provide an account of this incompatibility, building on the analyses of both MWHM and LBE that I am assuming here. Section 6 is devoted to the conclusions and questions for further research.

## 1 Multiple Wh-Movement and Focus

As is well known, SC, like other Slavic languages, allows more than one wh-phrase to appear at the beginning of the sentence. Thus (1) below is grammatical in SC, but ungrammatical in English (2):

(1) $Ko_i$ $šta_j$ $t_i$ vidi $t_j$ ?
who what sees

(2) *Who what sees? (cf. Who sees what?)

Moreover, as shown in (3) below, the multiple fronting is obligatory:

(3) ?*Ko vidi šta?
who sees what

Tempting as it is to say that what drives MWHM is a multiple (strong) wh-feature in Comp, Bošković (2002), building on Stjepanović's (1998, 1999) work, argues that wh-movement in SC is not driven by any wh-feature in Comp, but by Focus. This conclusion is based on the observation that wh-movement patterns with Focus movement, not with general wh-movement.

In fact, all focused phrases move obligatorily in SC regardless of their category (that is, no *in situ* Focus is possible), as we can see in (4) and (5) (from Bošković 2002):

(4) JOVANA savjetuje.
$Jovan_{Acc}$ advises
'S/he advises JOVAN.'

(5) ?*Savjetuje JOVANA.

This means that wh-phrases in SC move overtly even in an echo question interpretation, assuming that echo wh-phrases are also inherently focused. The example in (6) supports this claim:

(6) ?*Jovan kupuje šta?
Jovan buys what
'Jovan buys what?'

However, we will see in section 4 below that there is one syntactic condition under which not all wh-phrases have to move (or rather, when not more than one wh-phrase can move), namely, when a left branch is extracted.

There are two more (non-syntactic) conditions under which a wh-phrase stays *in situ*, although I am not going to discuss them in detail here. One of these conditions is when the phonological shape of the wh-phrases is identical, as shown in (7) below:[1]

[1] In this case, both wh-phrases have presumably moved, but phonological constraints favor pronunciation of the lower, rather than the upper, copy (see Bošković 2002, Nunes 2004).

(7) *Šta šta uslovljava?
what what conditions
'What conditions what?' (cf. Šta uslovljava šta?)

The other exception is with D-linked wh-phrases, which can optionally stay *in situ* (Bošković 1997), presumably because D-linked wh-phrases are less likely to be focused, due to their old information status (Focus generally involves new information).

Table (8) below summarizes this interaction between Focus and MWHM across different kinds of wh-phrases that I have discussed in this section. The shaded area in the table will be discussed in detail in sections 4 and 5, where I will argue that LBE is not driven by Focus.

(8) Focus and MWHM (Summary)

| Types of wh-phrases | Focus? | MWHM? |
|---|---|---|
| Non D-linked | Yes | Yes |
| D-Linked | Yes | Yes |
| | No | Optional |
| Same phonological shape | Yes | No (but see fn.1) |
| Left Branch | No (see section 5) | No (see section 4) |

## 2 Left-Branch Extraction

Another aspect in which many Slavic languages differ from, say, English is that we can extract the left branch of a constituent. This contrast is illustrated in (9-10) below:

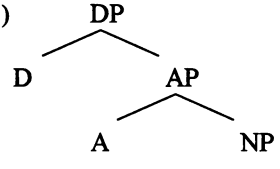
(9) Čiji$_i$ si kupio [t$_i$ kola]?
whose is bought car
'whose car did you buy?'

(10) *Whose$_i$ did you buy [t$_i$ car]?
(cf. Whose car did you buy?)

Ross (1967) already showed that the left-branch condition can be violated in Russian, although he did not offer an analysis for it.

Abney's (1987) dissertation provided an analysis of noun phrases where Adjectives take NPs as their complements and the resulting AP is dominated by a DP layer, as in (11) below:

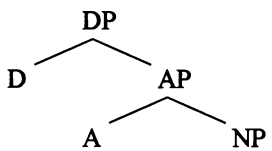
(11)



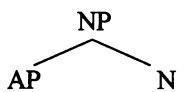
Under this analysis, it follows that the left branches cannot be extracted, since they are not phrasal constituents.[2]

Notice that this analysis is the opposite of the traditional analysis of nominal phrases, under which adjectives are adjoined or are complements to NPs. Bošković (2003) makes the interesting claim, which I summarize in this section, that both Abney's approach and the traditional one are correct. They just reflect the structure of nominal phrases in two different types of languages, namely, languages with determiners and languages without determiners. This is illustrated in (12) below:

(12) a. Languages with Ds (English, Bulgarian...)




b. Languages without Ds (SC, Latin...)




It turns out that languages with determiners never allow LBE, whereas languages without determiners may allow such movement operations.[3] Thus, we have the following implicational universal:

(13) If a language allows LBE, it must not have determiners.

Interestingly, the only Slavic languages that do not allow LBE are Macedonian and Bulgarian, and they both have determiners. Moreover, all modern Romance languages have determiners, and none of them allow LBE (see Uriagereka 1988). Conversely, Latin also allowed LBE, and Latin did not have determiners.

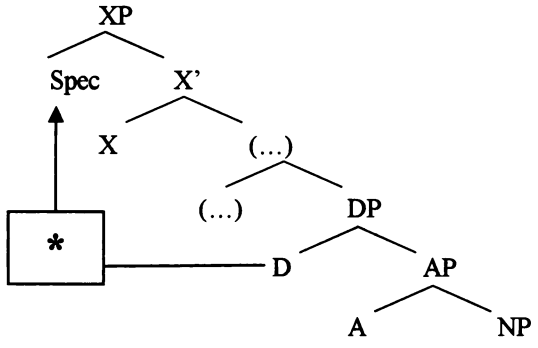
Notice that only in the second group of languages is the left branch (the material to the left of the noun) a phrasal constituent (AP in (12b)). The fact that languages allow LBE only if they do not have determiners

[2] Moreover, even if we did not have an AP layer in the structure, the D alone would never be able to move to a specifier position, given the Chain Uniformity Condition (Chomsky 1995).

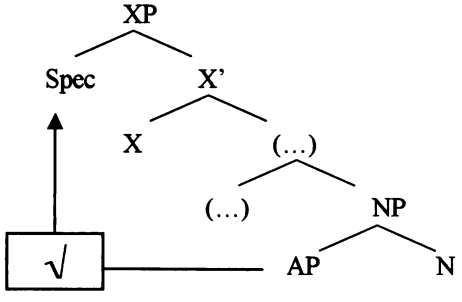
[3] There are languages without determiners that do not allow LBE, like Slovenian or Sami (Mikael Vinka, pc).

is thus expected given the structures in (12) if we follow the Chain Uniformity Condition, by virtue of which a head cannot move to a specifier position. This is illustrated in (14) below:

(14) a. Languages with Ds




b. Languages without Ds




I am abstracting away here from the fact that, even in languages that do allow LBE, if the phrase that moves were inside a specifier/subject, then the condition on extraction domains would be violated. This would happen even if the string of words that is moving *does* form a constituent, so we would be predicting that only left branches inside objects, but not inside subjects, can be moved, contrary to fact; see Fernández-Salgueiro (forthcoming) for discussion on this topic.

Turning now to wh-words, in languages that have determiners wh-words fall in this category (D). But what about languages without determiners? Is it possible to say that in these languages wh-words are actually adjectives? The fact that the case paradigm is the same for wh-words, for possessives and adjectives suggests so.

Given the discussion above, let us assume then that when we have a wh-element that has moved leaving its "right branch" behind, this must mean that the AP/wh-phrase that can be seen in (12b) has moved.

We saw in section 2 that, under Bošković's analysis, the driving force for wh-movement in SC was Focus, rather than a strong wh-feature in Comp. The question that immediately arises is whether this is also the case in LBE involving wh-phrases, are we just considering the same kind of movement operation involving different structures, that is, elements of different 'size' (i.e., a full DP/wh-phrase vs. a left branch AP/wh-phrase) or are these actually movement operations that involve different features and/or satisfy different requirements.

In section 5 below, I will argue that these movement operations are driven by different kinds of features. Full DPs/wh-phrases move for Focus reasons, while a left branch AP/wh-phrase moves due to a strong wh-feature in Comp. Before I present the arguments for this analysis, let us consider first the data that show the interaction between MWHM and LBE, which is the main focus of this paper.

## 3 Left-Branch Extraction Is Not Compatible with Multiple Wh-Movement

As I said before, the analyses that I have been assuming so far do not rule out examples like (15) or (16):

(15) *Čiji$_i$ kakva$_j$ [$t_i$ otac] kupuje [$t_j$ kola]?
whose what father buy cars

(16) ?*Kakva$_j$ čiji$_i$ [$t_i$ otac] kupuje [$t_j$ kola]?
what whose father buy cars
Intended meaning 'Whose father buys what cars?'[4]

In both of these sentences, two left branches involving wh-words have been fronted to the beginning of the sentence, presumably in order to satisfy the Focus requirement that we saw in section 2. However, we can see that the result is ungrammatical in both cases. Notice, also, that this is independent of the order in which the left branches inside the subject and the object move.

The obvious question that arises now is: Why is it that only one left branch can be fronted even when the language allows MWHM for Focus reasons? In the following section I argue that this is because wh-movement in the case of left branches is not driven by Focus.

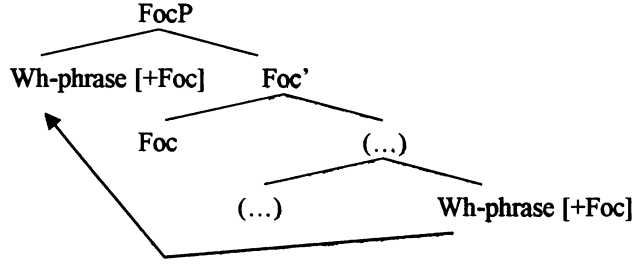
[4] As one anonymous reviewer points out, (16) becomes acceptable if the object precedes the verb.

## 4 Proposal

We said in section 2 that the fact that all wh-phrases must move overtly in SC is explained if they are inherently focused as Bošković (2002) and Stjepanović (1998, 1999) argued.

Let's assume then that wh-phrases in SC are assigned Focus, and let's assume further that [+Foc] phrases have to move to a Focus position in the left periphery of the clause (*a la* Rizzi 1997), as illustrated in the tree in (17):

(17)




The question that arises now is: Is this the way in which movement of a wh-left branch works?

Notice first that in an LBE, the whole NP is not assigned Focus, since the head and the complements of the NP actually stay *in situ*, which would be impossible if the NP were focused (recall the contrast between (4) and (5) in section 2).

However, if we say that it is only the wh-phrase that is focused (and not the NP containing it) we run into the problem that I pointed out in section 4. It seems, then, that in LBE contexts the wh-phrases are not assigned Focus either (otherwise both would be able to move to the left periphery).

Let us assume instead that in an LBE it is another feature that drives the movement of the wh-phrase. I would like to propose here that what drives this movement is actually a strong wh-feature in Comp. This analysis has the desirable consequence that it captures the fact that only one left-branch can be moved, and is also compatible with Bošković's (2002) claim that there is only one wh-feature in Comp (multiple wh-fronting being driven by Focus).

Besides conforming to the hypothesis that the wh-feature in Comp can only attract one wh-phrase, notice that this approach makes the following prediction: LBE obeys superiority effects, unlike MWHM (see Rudin 1988 and Bošković's 1997, 2002 for evidence that MWHM is not subject to superiority in matrix clauses). This follows directly from the

idea that the wh-feature in Comp attracts a wh-phrase and so, given economy considerations (Chomsky's (1995) Shortest Move), only the wh-phrase that is closer to the attracting feature should move. Conversely, movement for Focus reasons, under the account assumed here, is greedy, so any elements displaying a [+Foc] feature should move to the left periphery of the clause, and no superiority effects are, in principle, expected.[5]

The examples in (18) and (19) below indeed show a superiority effect, which is predicted by this hypothesis that movement of a wh-left branch is driven by an (attracting) wh-feature in Comp:

(18) Čiji$_i$ je [$t_i$ otac] kupio kakva kola?
whose is father bought what car

(19) ?*Kakva$_i$ je čiji oca kupio [$t_i$ kola]?
what is whose father bought car
Intended meaning: 'Whose father bought what car?'

Notice my use of the indefinite article above in '*a* superiority effect'. In the standard cases, as is well known, superiority effects arise only when one of the candidates for movement c-commands the other. In other words, an element $\alpha$ is closer to a target $\gamma$ than $\beta$ is iff $\alpha$ c-commands $\beta$. In the contrasting cases in (18) and (19) above though, this condition is not met; *čiji* does not c-command *kakva* but still, the former has to move, and movement of the latter is ruled out. This suggests that this c-command condition that is part of the definition of closeness should be revised or, at least, weakened, in order to account for why superiority is sometimes observed in cases like the ones that I have discussed here.[6]

## 5 Conclusions

In this paper I have tried to provide a hypothesis that accounts for why multiple LBE of wh-phrases is not possible in SC, by building on previous analyses of both MWHM and LBE. Notice that the analysis that I have proposed here is compatible with these previous analyses of both

[5] A potential problem for the analysis presented here arises in the light of examples such as (i)

(i)Ko je kakvo$_i$ juče [$t_i$ auto]prodao?
Who is what yesterday car sold
'Who sold what car yesterday?'

As one anonymous reviewer points out, LBE (of *kakvo*) does not seem to be driven here by a wh-F in Comp.

[6] It is also worth noticing that this problem might not arise under an Attract view of superiority, if distance is defined only from the point of view of the target.

MWHM and LBE that I have been assuming here, so their conceptual and empirical advantages remain intact.

Different questions have arisen throughout this discussion that I am leaving for further research. First, we saw in section 3 that it seemed to be enough for APs/wh-Ps to have constituent status in order to move, although the condition on extraction domains would be violated if that constituent were moved from inside a specifier/subject.

Second, we have the problem with the superiority effect that I discussed in the previous section, where I noted that c-command does not seem to play a role in determining which element is closer to the target. It seems, though, that the two problems might be related, in the sense that the left branch inside a specifier/subject is not allowed to enter into syntactic operations in the 'main spine' of the syntactic tree. This is of course straightforward if the AP/wh-phrase is assembled by Merge. It would not be so obvious if the AP/wh-phrase were assembled by an *adjunction* operation, which as we know yields different command relations given May's (1985) segment/category distinction and also given the more recent idea (Chomsky 1995, 2000, 2001) that Merge (set-Merge) creates sets while adjunction (pair-Merge) creates ordered pairs. I explore this possibility in detail in Fernández-Salgueiro (forthcoming).

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# Telicity as a Semantic Parameter

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## 1 The Basic Idea: Telicity as Maximalization

The goal of this paper is to provide a framework for characterizing telicity in Germanic languages and the semantics of perfectivity in Slavic languages. We propose that their semantic intersection can be analyzed by means of the maximalization operator $MAX_E$, which allows us to formulate the semantic telicity parameter as in (1). The maximalization operator $MAX_E$ on events is characterized in (2):

(1) *The semantic telicity parameter.* In Germanic languages, the maximalization operator $MAX_E$ applies at the level of $VP$ (or $V''$) denotations. In Slavic languages, it applies at the level of $V$ denotations.

(2) *The maximalization operator* $MAX_E$ is a monadic operator, such that $MAX_E(\sum) \subset \sum$. It maps sets of events, (partially) ordered by an ordering criterion for objects on a scale, onto sets of maximal events.

As a point of departure, we take the empirical hypothesis that only a small number of verb roots (i.e., simple, underived verbs) lexically incorporates an ordering criterion with respect to which events in their denotation could be maximalized. It follows then that the vast majority of maximal predicates is endocentrically built from verb roots by combining them with expressions that impose an ordering on the unordered sets of events denoted by verb roots. Different languages will use different strategies for the expression of the ordering criterion. They will be partly dictated by what type of information a given language packages into verb roots and morphological operations on verbs. Hence, the telicity parameter proposed in (1) is an attempt at addressing the following question:

(3) To what extent are the semantic components inducing the ordering on events, and which sanction the application of $MAX_E$, expressed by V-internal means, and to what extent are they expressed by V-external means at the level of *VP* (and possibly also IP)?

## 2 Background

We assume the general framework of event semantics with ontological domains structured by the mereological 'part-of' $\leq$ relation, defined from the mereological sum operation '$\oplus$' (see Link 1983, 1987, Bach 1986, Krifka 1986, 1998, Lasersohn 1990, Landman 1989, 2000, among many others). Verb meanings include an eventuality type (a set of eventualities), and the grammar of natural languages distinguishes two main types of root verbs, as given in (4). Atomic root verbs contain the atomic number measure function '#' in their logical representation: If ATOM(e), then #(e) = 1; if $\neg e \otimes e'$, then $\#(e \oplus e') = \#(e) + \#(e')$ (see Krifka 2001); whereby '$\otimes$' is an overlap relation and '$\oplus$' a sum operation.

(4) a. **atomic root verbs**: $^{a}V$'atomic$^{o}$ = $\{e \mid P(e) \wedge \#(e)=1\}$
b. **non-atomic root verbs**: $^{a}V$'non-atomic$^{o}$ = $\{e \mid P(e)\}$

Since atomic root verbs lexically specify what counts as one event unit in their denotation, they can straightforwardly be modified by adverbs of quantification like *three times*: cp. *John arrived three times* (*on time last semester*). Non-atomic root verbs lack the atomic function, and they can be modified with various quantity expressions, just in case the context allows us to determine what counts as 'one countable event unit': cp. *John swam (*)three times yesterday*. Since this shift in interpretation requires reference to the discourse context, it is enforced at the level of *IP* interpretations (see Stalnaker 1978, Chierchia&McConnell-Ginet 1999, among others). As in Bach (1986), root verbs like *arrive* take their denotations from an atomic join semilattice, just like count nouns like *apple*. The 'minimal' events denoted by the predicates are the atoms and the 'non-minimal' events are the non-atomic elements (= plural sums). In contrast, the denotation of each atelic root verb like *run* is taken to have the form of a non-atomic (not-necessarily-atomic) join semilattice, just like mass nouns like *wine*. In so far as the non-atomic (mass) join semilattice structure is more general than the atomic (count) one, as Partee (1999) proposes, mass and non-atomicity are the *unmarked* case, whereas count and atomicity are the *marked* case.

## 3 Germanic Languages

### *3.1 Maximalization and root verbs*

For Germanic, (1) predicts that $MAX_E$ will fail to apply to the denotations at the *V* level. In this section, we will show that this follows, given that the requisite ordering criterion on events cannot be induced from the meanings of expressions of the *V* category alone. Consequently, they will be unmarked with respect to maximality.

Generally, $MAX_E$ picks out maximal events relative to a partial ordering imposed by some criterion. Different ordering criteria impose different kinds of ordering relations on an unordered set of events. Once the ordering relation is imposed on a set of events we may distinguish "separate stages, i.e. subevents" (see Dowty 1991, p. 568) that incrementally develop one into the other. We characterize 'stages' here in Landman's technical sense, introduced in (1992) and defined in (2004) as follows:

(5) If $e_1$ and $e_2$ are events and $e_1$ is a ***stage*** of $e_2$ ($e_1 \preceq e_2$) then:
   i. *'Part of'*: $e_1 \leq e_2$, $e_1$ is part of $e_2$ (and hence $\tau(e_1) \subseteq \tau(e_2)$).
   ii. *Cross-temporal identity*: $e_1$ and $e_2$ share the same essence: they count intuitively as the same event or process at different times.
   iii. *Kineisis*: $e_1$ and $e_2$ are qualitatively distinguishable, $e_1$ is an earlier version of $e_2$, $e_1$ grows into $e_2$.

Let us first consider the relation between $MAX_E$ and *atomic root verbs* in Germanic languages. Atomic root verbs largely correspond to achievements in Vendler's (1957) sense (see Kratzer 2004, for example), or verbs denoting 'singulary changes' in Dowty's (1979, *Chapter 3.8*) sense: cp. *arrive, leave, notice*; German *gewinnen* 'to win', *platzen* 'to burst'. They denote unordered sets of singular events, each of which is conceptualized as instantaneous. Therefore, they fail to offer anything but a trivial part-whole structure at best. However, $MAX_E$ generally requires as its input denotations with a non-trivial (partial) ordering on the members of a set. Hence, $MAX_E$ fails to apply to verbs that denote sets of singular atomic events.

In Germanic languages, all the verbs *not* denoting achievements, are *non-atomic*. Cross-linguistically, the class of atomic root verbs is fairly limited, and the majority of root verbs is non-atomic. All non-atomic root verbs denote unordered sets of eventualities that are temporally extended. They can be divided into two large classes: those whose denotations comprise individual-level (IL) properties and those that comprise stage-level (SL) properties (see Carlson 1977). IL root verbs mainly denote *static states* (see Bach 1981, 1986) like *know, believe, love.* Since they describe 'tendentially stable' properties of individuals (see Chierchia

1995) that do not (easily) change throughout their life times, they have no distinguishable stages, temporally or otherwise, which could be subjected to ordering and maximalization. Hence, they are inherently non–maximal or atelic.

SL non-atomic root verbs comprise *dynamic states* (in the sense of Bach 1981, 1986) like *live, sit, stand, lie* and *processes* like *eat, walk* characterized by 'indefinite changes of state' (see Dowty 1979, *Chapter 3.8*). Their applicability freely changes over time, and events in their denotation can be homomorphically mapped to their run times by means of the temporal trace function $\tau$ (Link 1987, Krifka 1989, 1992, 1998). Since any of their stages (down to the relevant minimal ones) is qualitatively of the same nature as the whole, we cannot determine just by the nature of any given stage whether it counts as 'one event (stage) growing into another'. Rather, we need an externally given scale relative to which an event is maximal. Thus a particular running event may be maximal relative to a temporal measure of two hours (as in *run for two hours*), or a spatial path of five miles (as in *run five miles*). With verbs like *eat* the scale is provided by the referent of the argument that describes what is consumed. Thus stages of events in the denotation of *eat a breadstick* will be ordered with respect to the parts of a breadstick, and $MAX_E$ will pick out the maximal event of eating of the whole breadstick, while stages of events in the denotation of *eat dinner* will be ordered with respect to courses of a dinner. In short, events can only be maximal relative to some independent ordering criterion, based on some scale of objects, as stated in our definition of $MAX_E$ in (2). We understand 'scale of objects' in the wide of sense: namely, comprising concrete objects like the ordered parts of a single bread stick and also abstract objects like measuring scales based on extensive measure functions such as HOUR.

This proposal is closely related to arguments independently made elsewhere. For example, according to Zucchi (1999), events never culminate *per se*, but with respect to some participant related to them. Krifka (1989) argues that events can never be directly measured, because they have no measurable dimension *per se*. For example, *for an hour* in *John walked for an hour* indirectly measures the walking event by measuring the temporal trace standing in a homomorphic relation to it.

### *3.2 Maximalization at the level of VP interpretations*

In the previous section, we propose that *no* members of the category *V* on their own can introduce $MAX_E$ into the logical representation of sentences. It then follows that it is the lexical material introduced at the levels above the *V* level, possibly also interacting with world knowledge, which contributes towards specifying the ordering criterion on events

and thus sanctions the application of $MAX_E$. Consequently, in Germanic languages, most telic/maximal predicates are syntactically constructed.

In the simplest case, the criterion that imposes a partial ordering relation on events can be recovered in a compositional way from the structure of a *VP*, or its containing sentence. The mechanism by which the scale of events is then induced from it, and which sanctions the introduction of $MAX_E$, into the logical structure of that *VP* directly follows the semantic composition of a sentence, and hence is a part of the grammar of natural languages. In this simplest case, the ordering criterion is incorporated in the lexical information constraining the Strictly Incremental (*SINC*) Theme relation, as characterized in (6).

(6) *$MAX_E$ and STRICTLY INCREMENTAL (SINC) THEME relation*: $MAX_E$ maximalizes a set of events (partially) ordered by the ordering criterion derived from the lexical information constraining the *SINC THEME* relation on that set of events.

(6) is close to, but stricter than, a similar proposal of Landman ... (1998, p.243, also 2004, p.113) that regards maximalization effects in cumulative (plural) readings. The lexical semantics of *SINC* verbs is defined in (7), following Krifka (1992, 1998 and elsewhere) and Dowty (1988, 1991):

(7) A part of the meaning of *strictly incremental (SINC)* verbs is characterized by a homomorphism entailment: a homomorphism between the lattice structure (part-whole structure) associated with the event argument *e* and the lattice structure associated with the Strictly Incremental Theme argument *x*. The thematic relation $\theta$ is *strictly incremental,* iff
i. $MSO(\theta) \wedge UO(\theta) \wedge MSE(\theta) \wedge UE(\theta)$, and
ii. $\exists x,y \in U_P \exists e,e' \in U_E[y<x \wedge e'<e \wedge \theta(x, e) \wedge \theta(y, e')]$

Intuitively, i. and ii. in (7) ensure a strict *one-to-one mapping* between the proper parts of *e* and the proper parts of *x*. *UO* (uniqueness of objects) is related to a general requirement on thematic relations viewed as functions (cp. also Carlson's (1984) 'thematic uniqueness', and Dowty's (1987) 'uniqueness of role-bearers'). *UE* (uniqueness of events) applies to events involving instantiations of objects that can be subjected to at most one event instantiation of a given type. *MSO* (mapping to subobjects) prohibits a proper part of *e* from being mapped to the whole object *x*. *UO*, *UE* and *MSO* apply to verbs like *eat*, but not to *read, push, ride* or *see*. *MSE* (mapping to subevents) guarantees that no proper part of *x* be mapped to the whole event *e*. It applies to verbs like *eat* and *read*, but not to *push, ride* or *see*. In addition, the *SINC* relation only applies to events *e* and objects *x* which have non-trivial proper parts. For example, it cannot apply to *notice a dot*.

To illustrate how (6) and (7) work, let us consider (8). In (8), a part of the interpretation of the *SINC* Theme argument, the number phrase *at least three sandwiches*, is a scale of objects. This follows assuming that numerals are lexically associated with a scale of numbers (see also Landman 1998), and trigger scalar implicatures (Gazdar 1979, Levinson 1984).

(8) Mary ate at least three sandwiches in an hour/(*)for an hour.

The maximalization operator $MAX_E$ cannot be directly applied to such a lexically derived scale of objects, but rather it operates on a scale of events which is induced from it (for independent arguments see Landman 1998, 2004). The scale of events is automatically induced when the verb *eat*, which is strictly incremental (see (7) above), is composed with *at least three sandwiches*, which incorporates the requisite ordering criterion and saturates its *SINC* Theme position. As a result, the verbal predicate EAT(AT-LEAST-THREE-SANDWICHES) is associated with a scalar implicature, consisting of numerical statements describing events of differing sizes. For example, among them will be $e_1$, an event of Mary's eating one sandwich, and also $e_2$, an event of Mary's eating two sandwiches, and so on. Since *at least three sandwiches* has no lexically specified endpoint due to the contribution of *at least*, neither does EAT(AT-LEAST-THREE-SANDWICHES). When $MAX_E$ is applied to the denotation of EAT(AT-LEAST-THREE-SANDWICHES), it singles out the largest unique event $e_i$, which leads to the most informative proposition among the alternatives in a given context. That is, when calculating what may count as such an event, we consider increasingly larger events as alternatives, eating of three sandwiches, eating of four sandwiches, and so on. Suppose that (8) can be verified by a situation in which $e_5$ is the maximal event. This means that $e_1$, $e_2$, $e_3$, $e_4$ and $e_5$ are now reinterpreted as its cross-temporally identical stages with the maximal event $e_5$ being the largest stage. The stages $e_1$, $e_2$, $e_3$, $e_4$ and $e_5$ are ordered with respect to the single scale of five sandwiches and its subparts.

Our analysis has four important consequences. First, $e_1$, $e_2$, $e_3$, $e_4$ and $e_5$ are not just summed up into a plural event sum, each of which involves an eating of a single sandwich, for example. Instead, $MAX_E$ yields a predicate denoting a new type of event *sui generis*:

(9) The maximal event represents a new entity in the domain of events, instead of being merely a maximal sum of events.

Second, if $e_i$ falls under $MAX_E(P)$, then it cannot have a proper part $e_{i-1}$ that also falls under the same $MAX_E(P)$, given that $MAX_E$ picks out the maximal (unique) event out of a set of events that satisfy the property described by $P$ at a given situation. But this means that $MAX_E(P)$ is

quantized in the sense of Krifka's (1986, 1992 and elsewhere) definition, here given in (10):

(10) $\forall X \subseteq U_P$ [$QUA_P(X) \leftrightarrow \forall x,y[X(x) \wedge X(y) \rightarrow \neg y <_P x]$]
A predicate $X$ (e.g., *an apple, arrive*) is quantized iff no entity $y$ that is $X$ can be a proper subpart of another entity $x$ that is also $X$.

Since all quantized predicates are telic (see Krifka 1998), our analysis predicts that (8) will be compatible with the time-span adverbial with the time-span adverbial *in an hour*, one of the standard diagnostics for telicity, but not with the durative adverbial *for an hour*.

Third, when a verb denotes a process eventuality (or activity in Vendler's sense), none of its nominal arguments stands in a thematic relation to it that would allow it to provide an ordering criterion for the requisite scales of events. For example, *push three carts* cannot be taken to denote a set of maximal events (because, intuitively, the maximality depends on the length of the pushing and not the number of the carts), while *eat three apples* does denote such a maximal set.

Fourth, given that our analysis correctly predicts telicity of examples like (8), it points to a new solution of the 'quantization puzzle' (cf. Partee p.c. to Krifka, Zucchi&White 1996, Rothstein 2004, and others), which arises with predicates like *at least three sandwiches, a long/short distance, a large/small quantity; many x, a lot of x, (a) few x, some x, most x; the* CN mass/plural; *a ribbon*. On their own, they fail to be quantized, according to (10), but compose with strictly incremental verbs to yield *VP*'s that are quantized/telic with respect to the diagnostic adverbials, contrary to the principle of *aspectual composition* (see Krifka 1986, 1992 and elsewhere).

Our account also correctly predicts that $MAX_E$ in (11a) amounts to the identity function, because the *SINC* Theme argument *exactly three sandwiches* lexically specifies the upper bound of the largest stage in the denotation of *eat exactly three sandwiches*. Moreover, it predicts that $MAX_E$ fails to apply to the denotation of *VP*'s in (11b), as the compatibility with the diagnostic durative adverbial *for an hour* shows.

(11) a. Mary ate exactly three sandwiches in / (*)for an hour.
b. Mary ate bread/sandwiches *in / for an hour.

This follows given that mass (*bread*) and plural terms (*sandwiches*) generally have no scale lexically associated with them. Therefore, they cannot induce an ordering on the part structure of a *VP* denotation, when they saturate its *SINC* argument position. Consequently, the question of what constitutes the maximal event stage (in its denotation at relevant situations) cannot arise, and *eat sandwiches* and *eat bread*, just like *eat* alone, are non-atomic and non-maximal (or atelic). This also clearly

shows that (strict) incrementality of such predicates does not guarantee maximality (telicity).

Among the best examples of *SINC* verbs are verbs of consumption (*eat, drink*), creation (*build, write, construct, draw*) and destruction (*destroy, demolish, burn*), for example. Such prototypical members of the *SINC* class have a Theme argument whose referent undergoes a gradual and permanent change of state in its physical extent/volume and in this way determines the extent of the described event. As Krifka (1986, 1992, 1998), Dowty (1991), Filip (1993/99) and Rothstein (2004), among others, observe, there are many telic predicates denoting events whose extent is not determined by the physical extent/volume of the referent of one of their overtly expressed arguments. For example, in (12), *wash* describes changes in the degree of cleanliness, whereby certain degree segments on the implicit scale are lexicalized: cp. *dirty, half-clean, clean*. It is the parts of this scale (a kind of abstract 'object' with respect to the mappings defined in (7)), possibly in conjunction with the parts of a shirt (its collar, sleeves, etc.), which are correlated with the parts of the washing event.

(12) a. John washed the shirt in an hour / for an hour.
b. John washed the shirt for an hour, but got only the collar clean /... but none of its parts got (completely) washed.

Verbs like *wash* are traditionally classified as taking the Incremental (*INC*) Theme argument (see Krifka 1986, 1992; Dowty 1991). They differ from verbs with a Strictly Incremental (*SINC*) Theme argument in so far as only the mapping to subevents (*MSE*) applies to them, but not the other three mappings, defined in (7). Most importantly, the ordering criterion on events required by $MAX_E$ cannot be determined in a compositional way from the structure of *VP*'s headed by *INC* Theme verbs alone (in contrast to *VP*'s head by *SINC* Theme verbs). Instead, the possibility of the telic interpretation of such *INC VP's* presupposes that we can identify (i) a suitable ordering criterion in the domain of 'objects' (broadly construed), and (ii) a plausible incremental relation by which the ordering criterion induces a (partial) ordering relation on events; both (i) and (ii) heavily rely on the conventional information evoked by the lexical material within the *VP* and the context of use of its containing sentence. It is, therefore, not surprising that *VP*'s like *wash the shirt* easily alternate between a maximal (telic) and a non-maximal (atelic) interpretation, depending on the context, as (12a) shows. Moreover, as (12b) shows, *wash the shirt* can be continued with a clause that explicitly denies the (possible, intended, expected, or 'normal') final stage of the described event, which suggests that maximality (telicity) is here a matter of a conversational implicature. Given such observations, *VP*'s

like *wash the shirt* are best viewed as unmarked with respect to telicity (our maximality), as also Partee (1999) proposes.

In contrast, *VP*'s headed by *SINC* Theme verbs are fully determinate with respect to maximality (telicity). This is clearly evident from their interaction with the diagnostic temporal adverbials in (8). (13) shows that negating the final stage of events they describe leads to a contradiction, which suggests that maximality (telicity) is *entailed* by such *SINC VP*'s. This follows if we assume, as we do, that the ordering criterion on events required by $MAX_E$ is determined in a compositional way from their structure alone.

(13) Mary ate three sandwiches, ??but only finished two.

English has a large class of verbs like *wash* that head *VP*'s alternating between a telic and an atelic interpretation, depending on the context, as also Partee (1999) observes. Kratzer (2004) discusses many such verbs, among which are *read, iron, polish, examine, barbecue, roast, iron, bathe, massage, wash, comb, brush, fry, decorate, describe, drain, mop.*

Moreover, virtually any root verb can serve as a building bloc from which maximal (telic) predicates are endocentrically built, provided the described event can be understood as involving some conventionally and/or contextually determined scale with a well-defined final event stage. Examples are easy to find, let us just give two in (14a) and (14b), both of which are headed by not incremental verbs: namely, the non-atomic *see* in (14a), taken from Krifka (1989), and the atomic *discover* in (14b). Determining the ordering criterion crucially relies on the numerical phrase *seventeen clouds* in (14a) and the universal quantifier *all* in the DO-DP in (14b), while the incremental relation comes from the context of use and general world knowledge. The corresponding sentences (14a') and (14b') in which the direct objects contain no quantifiers have the non-maximal/atelic interpretation, at least in the most neutral circumstances. It is precisely because the English root verbs *see* and *discover* are unmarked with respect to maximalization that the *VP*'s they head can have the maximal or non-maximal interpretation.

(14) a. Mary saw seventeen clouds *for/in three minutes.*
a'. Mary saw clouds *for three minutes.*
b. Albert discovered all his relatives living in Iowa *in six weeks.*
b'. John discovered crabgrass in his yard/fleas on his dog *for six weeks.*

Without going into further details here, we draw the following conlusions. First, the class of *SINC* verbs is quite restricted, and so is the number of *VP*'s whose telicity can be computed in a systematic way by applying compositional semantic rules to independently motivated syntactic structures. Second, we propose that $MAX_E$ is a null operator, which relies on the ordering criterion working in tandem with

incrementality. Telicity has no expression in any dedicated syntactic operation, and is not systematically correlated with any overt morphology like the accusative case or a quantifier, for example. Thus, the same DP like *three apples* can be the direct object of a verb heading a maximal (telic) or a non-maximal (atelic) *VP*: cp. *I ate three apples* vs. *I carried three apples*. Third, often the requisite ordering criterion and/or the incremental relation cannot be determined by the lexical semantics of a head verb and its arguments alone, but also rely on inferences based on the linguistic or extra-linguistic context, world knowledge and cognitive principles of interpretation. Therefore, telicity in Germanic languages often arises from the interplay of syntactic, semantic and a variety of contextual and pragmatic factors, and often is not a matter of entailment, but instead a matter of conversational implicature. (See also Rappaport Hovav 2005.)

## 4 Slavic Languages

### *4.1 Maximalization and root verbs*

If $MAX_E$ is an operator that applies at the level of *V* denotations in Slavic languages, according to (1), then it is predicted that there will be verbs, both underived (root) and derived, whose semantic structure incorporates the ordering criterion with respect to which events in their denotation count as maximal.

In Slavic languages, root verbs manifest a systematic one-to-one correlation between atomicity and grammatical aspect: namely, non-atomic root verbs are imperfective, while atomic root verbs are perfective. (One of the most exhaustive lists of Russian perfective underived (root) verbs can be found in Isačenko 1962, §204, pp. 352-355.) In contrast to Germanic languages, most atomic root verbs in Slavic languages do not denote what is conceived of as punctual events. Traditional Vendlerian 'achievement' verbs are *derived perfectives*: cp. Czech *zpozorovat* 'to notice'/'to spot', *uvidět* 'to catch sight of', *poznat* 'to recognize', *dosáhnout* 'to reach (the summit)', *vyhrát* 'to win (the race)'. Most Slavic atomic root verbs denote events with some temporal extent, including Vendler's accomplishments: cp. Czech *říci* 'to say', *obléci (se)* 'to dress (up)', for example. Such perfective atomic root verbs are compatible with incremental adverbials like 'gradually', which clearly indicates that they cannot be assimilated to the achievement class, as the Czech example (15) shows:

| | | | | | |
|---|---|---|---|---|---|
| (15) | Postupně | mi | to | řekl$^{P}$. | Czech |
| | gradually | me$_{DAT}$ | it$_{Acc}$ | said | |
| | 'He gradually told me about it.' | | | | |

The perfective verb *říci* 'to say' introduces the abstract predicate SAY into the logical representation which relates three arguments. The relation holds between an Incremental Theme *y* (a statement, a kind of 'object of performance'), here realized as the accusative pronoun *to* 'it', and an event *e* if and only if *e* is an event of saying in which *x* (Agent) utters a complete statement *y*. Now, on its own and in its basic meaning, the perfective verb *říci* 'to say' is atomic, which means that it has a set of singular events in its denotation and introduces *#(e)=1* into the logical representation, and each single event is also maximal relative to exactly one complete statement. That is, *říci* 'to say' lexically determines the ordering criterion based on the part-structure of the referent of its incremental argument *y*, on which it imposes the requirement *#(y)=1*. It also determines the maximality requirement, which motivates the presence of $MAX_E$ in its logical representation. The logical representation of *říci* 'to say' is roughly as follows, leaving out information not relevant to the present purposes: $^{a}$*říci*$^{o}$ = $\lambda x,y,e[MAX_E$ (SAY(e)) $\wedge$ Agent(e) = x $\wedge$ Inc.Theme(e) = y $\wedge$ #(y)=1 $\wedge$ #(e)=1]. In contrast, the English root verb *say* determines no ordering criterion, and consequently no maximality requirement. As we have seen, this generally holds for all Germanic root verbs.

*4.2 Maximalization and Derived Verbs*

As is well-known, derivational operators on Slavic verbs have effects on their grammatical aspect, lexical meaning and argument structure. In addition, we argue for a novel function of such derivational operators: namely, they add information to the denotation of a verb stem which sanctions the application of $MAX_E$ to it, *provided they function as triggers of ordering criteria that induce scales of events*. Different derivational operators impose different part-of ordering relations on unordered sets of events denoted by verbs to which they are applied.

A paradigm example of such derivational operators is a subset of prefixes that have uses that incorporate vague cardinality or measure function, and whose domain is some (contextually determined) quantifiable dimension of events. The measure function induces a part-of ordering relation on events relative to the size of the measured event dimension. A distinguishing characteristics of such 'measure' prefixes is that they impose constraints on the occurrence of other expressions of quantity or measure in the same clause. Paradigm examples are the (ac)cumulative use of the prefix *na-* and its converse, the attenuative use of the prefix *po-*, illustrated in (16):

(16) a. Vot ja vdóvol' / *němnóžko **NA**-guljálsja$^{P}$! Russian
well I enough / *a little $_{CM}$-walk$_{PAST\ REFL}$
'Boy, did I walk a lot!'

b. Ja (*)vdóvol' / němnóžko **PO**-guljál$^{P}$.
I (*)enough / a.little $_{ATN}$-walk$_{PAST}$
'I took a short walk' / 'I walked only a little.'

When *na-* and *po-* are applied to a root predicate meaning 'walk', they derive new predicates meaning approximately 'to walk a lot' and 'to walk a little', respectively. Following Filip (2000), the schematic meaning of prefixes used as expressions of a vague measure is given in (17a). Each prefix used in this way introduces an additional quantity entailment, as we see exemplified for *na-* (17b) and *po-* in (17c):

(17) a. PREFIX$\mu \rightarrow \lambda x[\mu_C(x) = n_C]$
whereby, $n_C$ r $C_C$, with $C_C$ being a certain conventionally or contextually determined value of comparison.
b. $NA_{CM}$: $n_C \geq C_C$ and $C_C$ is considered to be a high estimate.
c. $PO_{ATN}$: $n_C \leq C_C$ and $C_C$ is considered to be a low estimate.

In (17), the variable *x* represents what is measured, which, in the simplest cases at least, are participants, times, locations, or event occurrences, depending on the context. We assume that the (contextually dependent) measure function $\mu_C$ maps entities *x* to some contextually determined number $n_C$. We assume that measure functions map entities to intervals on a scale (see also Schwarzschild 2002). The prefix *na-* requires that the amount of the measured entities $n_C$ must meet or exceed a certain conventionally or contextually determined value $C_C$, while *po-* requires that it meet or fall short of it.

Suppose that the context of (16b) specifies that what *po-* measures is the temporal trace of events in the denotation of *poguljál*, and what counts as walking for a short time is at most 10 minutes in that context. The temporal trace of 10 minutes provides the ordering criterion, represented as a temporal scale, and the homomorphism between it and the part structure of the associated event yields the corresponding scale of events. Among them will be an event of walking for 10 minutes, and an event of walking for 9 minutes, and so on, any of which counts as walking for a short time. This then sanctions the application of $MAX_E$ to the denotation of a predicate that consists of the prefix *po-* and the root 'walk.' $MAX_E$ singles out the unique event $e_i$, which leads to the most informative proposition among the alternative events of walking for a short time in a given context. Starting with the walking event whose temporal trace is 10 minutes, the interpreter considers increasingly smaller events as alternatives, walking for 9 minutes, and so on. Suppose that (16b) can be verified by a situation in which walking for 7 minutes took place. The event of walking for 7 minutes is the unique event of walking for a short time, and also the maximal event in this situation.

Once $MAX_E$ is applied, the surface perfective verb with its appropriate inflectional suffixes can be formed.

Our account of Slavic prefixed verbs is predicated on two important assumptions, in which the grammar of telicity in Slavic and Germanic languages overlap: First, the maximalization operator $MAX_E$ is clearly separate from the ordering criterion. Second, $MAX_E$ is a phonologically null operator that applies to denotations of expressions that lexically specify an ordering criterion. In Slavic languages, verbal prefixes are not overt exponents of $MAX_E$, but instead they lexically specify the ordering criterion. The advantage of this proposal is that it allows us to motivate certain puzzling properties of Slavic prefixes, which are intractable on most current approaches to Slavic aspect.

Most current approaches to Slavic aspect take prefixes to be systematically linked to telicity of verbs, and telicity to be the semantics of perfectivity, which amounts to prefixes being equated with perfective marking on verbs. In one syntactic implementation of this idea, prefixes phonologically spell out the telic head feature in a functional projection above the *VP* (see Borer 2004, Kratzer 2004, for example). According to Borer (2004), Slavic prefixes spell out perfectivity very much like the English inflectional suffix *-ed* phonologically spells out the past tense head feature. If this view were correct, then applying prefixes to perfective verb bases, simple or prefixed, ought to be excluded, because it would amount to perfectivizing what already is a perfective base, and be subject to the same general constraints that exclude progressives of progressives as ungrammatical, for example: cp. **John was being running*. However, this prediction is invalid, because prefixes can be applied to perfective verb bases, and more than one prefix can be stacked on one verb, as the Czech example (18) shows.

(18)

| | | |
|---|---|---|
| sednout$^P$ si | →**od**-sednout$^P$ si | →**po-od**-sednout$^P$ si |
| sit.down$_{INF}$ REFL | SOURCE-sit.down$_{INF}$ REFL | ATN-SOURCE-sit.down$_{INF}$ REFL |
| 'to sit down' | 'to sit down away from' | 'to sit down a small distance away from' |

Second, if prefixes were markers of perfective aspect, it would follow that they should not co-occur with the imperfective suffix on the same verb. Generally, formal expressions of one member of a given category system are in complementary distribution with expressions of other members of the same category system. For instance, the formal expression of the past tense precludes the expression of the present tense on the same verb: cp. **work-s-ed*, **work-ed-s*. However, a prefix freely co-occurs with the imperfective suffix on the same verb, in secondary imperfectives like the Russian *zapisyvat'* [PREF.write.**IPF**.INF] 'to write / to be writing down.' Now, taking the syntactic proposals at face value, and all else being equal, this would mean that the prefix would here spell

out the telic/perfective head feature in a functional projection above the *VP*, and, at the same time, the suffix the atelic/imperfective one. Secondary imperfectives would thus be overtly marked as being simultaneously perfective and imperfective. Of course, this problem does not arise when it is recognized that Slavic prefixes and the imperfective suffix operate at different levels of grammatical description, as Filip (1993/99, 2000 and elsewhere) proposes: namely, prefixes are derivational morphemes pure and simple, modifiers of eventuality types (or exponents of 'inner aspect'), while the imperfective suffix is an inflectional exponent of the imperfective aspect (or 'outer aspect'). It is interpreted as a compositional operator that takes scope over semantic structures that specify eventuality types. This view of the Slavic situation was adopted in Kratzer (2004).

In sum, we have seen that general demands of internal coherence on morphological systems require that Slavic verbal prefixes are not to be analyzed as overt exponents of the telicity/perfectivity head feature. If the above observations are correct, then the crucial difference in the encoding of telicity in Slavic vs. Germanic languages cannot lie at the level of representation at which prefixes originate. Slavic prefixes just like Germanic prefixes function as derivational operators that derive new lexical predicates at the lexical level, and in fact, most observations that Kratzer (2003) makes with respect to German prefixes also hold for Slavic prefixes. If German prefixes are not taken to be systematically linked to telicity of German verbs, then there is no more reason for Slavic prefixes to be. Take the Russian verb *vy-deržat'* 'to bear', 'to endure' in (19b). Although it is prefixed and formally perfective, semantically, it cannot be telic, if we understand 'telicity' in terms of 'maximalization on events', as we propose here, or in terms of 'culmination' (see Kratzer 2004), 'quantity' (see Borer 2004), or some other notion in current accounts of telicity.

(19) a. deržat'$^{I}$ 'to (be) hold(ing)' → b. **vy-deržat'**$^{P}$ 'to bear', 'to endure'

The existence of non-maximal perfective verbs like *vy-deržat'* 'to bear', 'to endure' in (19b) is fully consistent with the semantic telicity paratemer (1): It requires that *all* lexical verbal predicates denoting (sets of) maximal events be realized as formally perfective; it does not require that *all* perfective verbs denote (sets of) maximal events.

The puzzles posed by the stacking of prefixes, as illustrated in (18), have constituted some of the most discussed data in Slavic linguistics since Filip (1993/99, 2000, 2004, and elsewhere) introduced them in connection with verbal aspect (see Svenonius 2003, 2004, Ramchand 2004, DiSciullo and Slabakova 2004, and many others). For example, not all the combinations of prefixes are admissible, as the contrast between

(18) and (20a,b) illustrates. Admissible combinations of prefixes on the same verb must comply with the general semantic constraint on the grammar of measurement, as Filip (2004) argues, based on Bach's (1981) intuitive insight that "we do not use the expressions that chunk up our experience with (singular) expressions that provide that experience already chunked up" (ibid., p.74). (For an alternative formulation of this constraint see also Rothstein 2004.)

(20) a. *po-do-sednout$^{P}$ si
*$_{MEAS\text{-}GOAL}$-sit$_{INF}$ REFL
*small.distance-to-sit.down

b. *do-po-sednout$^{P}$ si
*$_{GOAL\text{-}MEAS}$-sit$_{INF}$ REFL
*to-small.distance-sit.down

Measure expressions of time like *for an hour* and space like the goal phrases such as *to the post office* trigger scalar implicatures (see also Krifka 1998), and hence are the paradigm examples of expressions that induce a partial ordering relation on events, which in turn sanctions the application of $MAX_E$. This can be seen as motivating the observation that measure prefixes cannot co-occur with goal prefixes on the same verb stem, because each specifies a separate ordering criterion and a separate upper bound for the potential maximal event (see Filip 2004).

### *4.3 Further supporting evidence*

Verbal predicates that encode maximality in what the grammar of a language treats as formally perfective are more restricted in their syntactic distribution, interpretive possibilities and meaning shifts than verbal predicates that are not grammatically perfective. According to our main hypothesis given in (1), in Slavic languages, the maximality of *VP*'s is fully determined by maximal verbs already at the V level. Hence, for Slavic, the second main prediction is that a maximal verb, which is formally perfective, will constrain the semantic (and syntactic) properties of constituents within a *VP*, but no material within a *VP* can override the maximalization requirement of its perfective head verb.

The best examples confirming this prediction involve *VP*'s headed by maximal (perfective) verbs that take bare mass or plural Incremental Theme arguments. For example, (21) asserts that the event culminated when all the children constituting some specific group had their coats on.

(21) Za pět minut / *pět minut oblékl$^{P}$ děti do zimních kabátů.
in five minutes/*five minutes dressed children$_{PL.ACC}$ in winter coats
'He put winter coats on (all) the children in/??for five minutes.' Czech

This means that the denotation of the bare plural noun *děti* 'children' undergoes a shift from its inherently property-denoting interpretation **children'** (predicative type $<e,t>$) into the maximal individual interpretation $\sigma$x.**children'**(x) '(all) the children' (argumental type *e*). In general, the perfective verb that is marked for maximality enforces the

maximal interpretation of its Incremental Theme argument that is inherently unmarked in this respect (see also Filip 2004). Arguments that are not Incremental Themes do not undergo this shift in perfective sentences (see *ibid.*, Filip 1993/99 and elsewhere). We also see that (21) is incompatible with the durative adverbial *pět minut* '(for) five minutes', indicating that (21) has maximal events in its denotation. The perfective (maximal) verb *obléci* 'to dress (up)' cannot undergo a shift into a non-maximal interpretation, and in order to express non-maximal events of dressing, we have to use the morphologically related imperfective verb *oblékat* 'to (be) dress(ing) (up).' Generally, in Slavic languages, a non-maximal *VP* will be headed by an imperfective head verb, in the majority of cases. In contrast, English atomic root verbs like *discover* are unmarked for maximality, therefore they may head maximal or non-maximal *VP*'s depending on the lexical material within a given *VP*, as we saw in (14b, b'). In (14b'), it is the non-maximal bare mass or a plural argument, which gives rise to a non-maximal interpretation of a *VP*.

The semantic telicity parameter does not preclude *imperfective* verbs, and *VP*'s from containing lexical material that specifies an ordering criterion for the application of predicates they express. However, verbal expressions headed by imperfective verbs are grammatically non-maximal, and any apparent maximality effects we observe in imperfective sentences are a matter of conversational implicature, arising due to their context of use as well as world knowledge, and are cancellable. For example, (22) can have the maximal interpretation meaning that Ivan ate and finished eating all the three pears, but it can also be continued without a contradiction with ' ... and he didn't finish eating any of them.'

(22) Ivan jel[I] tri gruši. Russian
Ivan ate three $\text{pear}_{\text{SG.ACC}}$
'Ivan ate three pears.'

## 5 Conclusion

This paper provides a general framework for capturing the similarities and differences in the encoding of telicity, understood as a maximalization operation in the domain of verbal denotations. Although we focused on a small segment of data from Germanic and Slavic languages, the presented framework should give us the basic tools for dealing with other telicity data not only in Germanic and Slavic languages, but also in typologically unrelated languages. Among the many questions that remain to be answered, let us conclude with the following one: Why does the maximalization operation on plural events (via $MAX_E$) differ from the maximalization operation on the denotation

of plural nominal predicates like *sandwiches*? Recall that $MAX_E$ maps sets of events (partially) ordered by an ordering criterion onto sets of maximal events. In contrast, the maximalization operation on the denotation of plural nominal predicates also applies to unordered sets.

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# Sluicing Puzzles in Russian*

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The general goal of this paper is to explore the properties of sluicing (IP-ellipsis) in Russian and to see how the Russian data shed light on the general processes underlying the phenomenon of sluicing. The first issue we will address is what positions wh-remnants occupy in sluicing constructions in Russian, considering the properties of wh-movement in Russian. We will then turn to sluicing with multiple wh-remnants, which I will refer to as *multiple sluicing*, following Takahashi (1994). Here we will investigate how the interpretative properties of multiple interrogatives in Russian affect the multiple sluicing possibilities in this language. Finally, I will present the data showing that superiority effects emerge under sluicing in Russian. This is unexpected, given that Russian does not exhibit superiority effects in corresponding non-elliptical interrogatives. In addressing the question of what causes superiority effects under sluicing, I will propose an analysis which makes use of an independent property of ellipsis, namely, quantifier parallelism.

## 1 The Phenomenon of Sluicing

Sluicing is a phenomenon of clausal ellipsis, first explored and named by Ross (1969). It generally represents a construction where only a wh-element is pronounced in an interrogative clause. Sluicing occurs in embedded clauses, as in (1), as well as in main clauses, as in (2).

(1) John bought something but I don't know what ~~[John bought t]~~.

(2) a. *A:* John loves somebody.
b. *B:* Who?

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I will assume an analysis of sluicing where this elliptical construction is viewed as the result of wh-movement out of IP followed by IP-deletion at PF, following the line of research in Ross (1969), Lasnik (1999) and Merchant (2001), among others. On this analysis, the derivation proceeds as shown in (3).[1]

(3) *Step 1:* John bought something. I wonder [$_{CP}$ what [$_{IP}$ John bought *t*]].

*Step 2:* John bought something. I wonder [$_{CP}$ what [$_{IP}$ ~~John bought *t*~~]].

Sluicing is common across languages and Russian is not an exception in allowing both embedded and main clause sluicing, as demonstrated in (4a) and (4b), respectively.

(4) a. Ivan kupil čto-to, no ja ne pomnju čto [~~Ivan kupil *t*~~].
Ivan bought something but I not remember what Ivan bought
'Ivan bought something but I don't remember what.'

b. *A:* Ivan kupil čto-to.
*B:* Čto [~~Ivan kupil *t*~~]?

Besides the kind of sluicing we find in English, Russian also allows multiple sluicing (i.e., IP-deletion with multiple wh-remnants), as in (5).

(5) Každyj priglasil kogo-to na tanec, no ja ne pomnju kto kogo.
everyone invited someone to dance but I not remember who whom
'Everyone invited someone to a dance but I don't remember who (invited) whom.'

The availability of such structures in Russian is not surprising, since it is well known that Russian is a multiple wh-fronting language. That is, bare wh-phrases of the kind we see in (5) are all obligatorily fronted in non-elliptical multiple questions in Russian:

(6) a. Kto$_1$ kogo$_2$ [$t_1$ ljubit $t_2$]?
who whom loves
'Who loves who?'
b. *Kto$_1$ [$t_1$ ljubit kogo]?

However, given what we know about the properties of wh-movement in non-elliptical wh-questions in Russian, the multiple sluicing construction raises certain questions about the structure of the *sluice* (i.e., the clause in which IP-ellipsis takes place). Specifically, contrary to the standard

[1] There are alternative LF-copying analyses of ellipsis, as advocated by Williams (1977), Lobeck (1995) and Chung, Ladusaw and McCloskey (1995), as well as strictly semantic approaches, as developed in Dalrymple et al. (1991), Jacobson (1992), and Hardt (1999). See Ross (1969), Merchant (2001) and Stjepanović (2003) for extensive arguments in favor of the deletion approach.

assumption that the interrogative complementizer is the licenser of IP-ellipsis, there are reasons to consider a categorially different licenser of sluicing in Russian. I examine this issue in detail in the next section.

## 2 Sluicing and Properties of Wh-movement in Russian

One of the most important questions in investigating ellipsis is what categories license the deletion of their complements. For instance, it has been established that Infl licenses the deletion of its complement VP in VP-ellipsis (Williams 1977; Lobeck 1991, 1995; Lasnik 1999, 2000; and Merchant 2001). As for sluicing, beginning with Ross (1969), researchers have been identifying the interrogative complementizer as the head licensing the deletion of its complement IP. This conclusion is largely based on the fact that sluicing is restricted to interrogative clauses and requires a wh-remnant. Lobeck (1995) and Merchant (2001) examine a number of contexts in English, such as declarative clauses, lexically governed IPs and relative clauses (including clefts and free relatives), where one might expect IP-deletion to be licit, yet it is unavailable in those contexts. Thus, Merchant (2001) concludes that the IP in sluicing structures must be a complement of an interrogative wh-complementizer (i.e., $C^0$ bearing [+Q] and [+wh] features). Thus, the resulting structure of the sluice is as in (7), where the wh-phrase is in Spec,CP and the interrogative $C^0$ licenses the deletion of its complement IP at PF.

(7) John bought something. I wonder [$_{CP}$ what [$_{IP}$ ~~John bought *t*~~]].

Slavic languages, however, exhibit a rather different pattern of wh-movement from the kind found in Germanic. Stjepanović (1998) and Bošković (1998, 2002) argue extensively that multiple wh-fronting in Slavic involves focalization. Sometimes focus movement is combined with checking the strong [+wh] feature of the interrogative $C^0$, as in Bulgarian and most contexts in Serbo-Croatian, and sometimes focus alone drives wh-fronting, as in Russian (Stepanov 1998).

Let me demonstrate the logic of these arguments with respect to Russian. Stepanov (1998) argues that wh-movement in Russian is not driven by a [+wh] feature of $C^0$ and, therefore, the wh-phrases do not end up in Spec,CP in overt syntax. The argument is based on the lack of superiority effects in Russian. Stepanov assumes the economy approach to superiority, where $C^0$ with a strong [+wh] feature attracts the closest element with a matching [+wh] feature to Spec,CP for feature checking, as formulated in Chomsky's (1995) Minimal Link Condition (MLC). This approach explains the presence of superiority effects in English. Consider the familiar paradigm from English in (8). In both (8b) and (8d), $C^0$ attracts *what*, which is not the closest wh-phrase to $C^0$. The closer wh-phrase is *who*, hence wh-movement in (8b) and (8d) is not economical.

(8) a. Who bought what?
b. *What did who buy *t*?
c. Who did John persuade *t* to buy what?
d. *What did John persuade who to buy *t*?

As Stepanov (1998) reports, Russian wh-questions do not exhibit superiority effects in virtually any contexts. This is illustrated in main clause and embedded questions in (9).

(9) a. $Kto_1$ $kogo_2$ [$t_1$ ljubit $t_2$]?
who whom loves
b. $Kogo_2$ $kto_1$ [$t_1$ ljubit $t_2$]?
c. Ja ne znaju [kto kogo ljubit].
I not know who whom loves
'I don't know who loves who.'
d. Ja ne znaju [kogo kto ljubit].

How can these facts be reconciled with the economy account of superiority? Note that the economy considerations of MLC only come into play when there is actually a Comp with a strong [+wh] feature present in the structure. Thus, Stepanov (1998) proposes that Russian does not, in fact, have a strong [+wh] feature. Instead, it has a weak [+wh] feature (like, for example, in Japanese), which does not trigger overt wh-movement and hence does not cause superiority effects.

This raises the question of why wh-phrases obligatorily front in Russian. Stepanov attributes such fronting to focalization. The analysis relies on the correlation between *wh*-fronting and *focus*-fronting of non-wh-phrases in Slavic, discovered by Stjepanović (1998). The generalization is that, not only wh-phrases but R-expressions must move if contrastively focused in Slavic, as demonstrated by the Russian paradigm in (10).

(10) a. $Kto_1$ $kogo_2$ [$t_1$ ljubit $t_2$]?
who whom loves
'Who loves who?'
b. *$Kto_1$ [$t_1$ ljubit kogo]?
c. $IVANA_{ACC}$ $I_{NOM}$ $met_{FEM.SG}$ *t*.
'I met IVAN'
d. *Ja vstretila IVANA.

Thus, Stepanov (1998) concludes that wh-phrases in Russian are fronted to a *focus* position below CP.[2]

Returning to sluicing, given that the interrogative $C^0$ is the structural licenser of IP-deletion, how do the remnant wh-phrases in Russian sluicing structures survive deletion if they are not in Spec,CP? I propose that not only an interrogative $C^0$ can license IP-deletion, but focus ($Foc^0$) can do it as well, producing the structure as in (11). Thus, not only Spec,CP occupants can survive this deletion process.[3]

(11) Ivan kupil čto-to, no ja ne pomnju [$_{FocP}$ **čto** [$_{IP}$ ~~**Ivan kupil**~~]]?
Ivan bought something but I not remember what
'Ivan bought something but I don't remember what.'

As for the precise nature of the focus head in Russian, Stepanov (1998) argues that it is $Agr_SP$, based on the position of adverbs. However, that seems problematic since the subject DP seems to be already occupying Spec,$Agr_SP$ in any wh-question containing a non-wh-subject, as in (10c). In this case, there is no room for the focused elements in the same projection. Thus, there might be an independent FocP in languages like Russian. The exact solution probably lies in the status of EPP in Russian, which would determine whether subjects undergo raising in Russian or remain within *v*P. It is beyond the scope of this paper to go into these matters, therefore I will only conclude that wh-phrases undergo focalization in Slavic and that the licenser of IP-deletion in these languages is not the strong [+wh] feature of $C^0$ but rather the strong [+focus] feature of $Foc^0$.

If the line of reasoning above is on the right track, the question arises whether the [+wh] feature is required in licensing IP-ellipsis or, perhaps, focus alone can license it. In order to answer this question, we need to find out if sluicing is possible with focused remnants that are not wh-elements. The data from Russian below show that contrastively focused R-expressions can in fact be the remnants of sluicing. In (12), an R-expression *Ivana* survives IP-deletion and in (13), one wh-phrase and two R-expressions survive such clausal ellipsis.

(12) *A:* Ty skazala čto on budet uvažat' Mašu?
you said that he will respect $Maša_{Acc}$
'Did you say that he will respect Maša?'

---

[2] Stepanov (1998) further explains the insensitivity of such focalization to superiority by suggesting, following Bošković (1998), that each wh-phrase itself carries a strong [+focus] feature and therefore the wh-phrases do not compete with each other with respect to economy.

[3] The idea that $Foc^0$ can trigger the deletion of its complement is implicitly present in Merchant (2001:81-82) and is proposed for Hungarian in van Craenenbroeck and Lipták (2005).

*B:* Net. Ja skazala čto IVANA [~~on budet uvažat' t~~].
no I said that Ivan$_{Acc}$ he will respect
'No. I said that (he will respect) IVAN.'

(13) *A:* Ty ne pomniš kogda Ivan vstretil Mašu?
you not remember when Ivan$_{NOM}$ met Maša$_{Acc}$
'You don't remember when Ivan met Maša?'
*B:* Net. Ja ne pomnju POČEMU SERGEJ LENU.
no. I not remember why Sergej$_{Nom}$ Lena$_{Acc}$
'No. I don't remember WHY SERGEJ (met) LENA.'

Note that the structures in (12)-(13) cannot be instances of pseudogapping, since pseudogapping is not available in Russian:

(14) *Maša budet čitat' knigu, a Ivan budet gazetu [~~čitat' t~~].
Maša$_{Nom}$ will read book$_{Acc}$ and Ivan$_{Nom}$ will newspaper$_{Acc}$
'Maša will read a book and Ivan will a newspaper'

Another possibility to consider is a Gapping analysis of (12) and (13). However, given the properties of Gapping, it too cannot account for the cases under consideration. Like in English, Gapping in Russian is largely restricted to local coordinations with the conjunctives *a* ('and') and *ili* ('or'), which is not the case in (12) and (13).[4]

This outcome leaves two possibilities: (i) [+wh] and [+focus] features are both capable of licensing IP-deletion; or (ii) the [+focus] feature is the licenser of IP-deletion in general. The possibility (ii) is the stronger one and therefore is more difficult to maintain, especially outside of Slavic. However, it seems promising since the majority of the environments that do not permit sluicing, discussed by Lobeck (1995) and Merchant (2001), contain elements that cannot be contrastively focused, such as relative pronouns in relative clauses and complementizers like *that* and *if*. I leave the testing of the focus-licensed-sluicing hypothesis for further research, concluding that the overall direction of reducing the licensing requirements of sluicing to those of contrastive focus seems plausible and insightful.

## 3 Multiple Sluicing and Semantics of Multiple Interrogatives

In this section, I draw a generalization about how the interpretive properties of multiple interrogatives affect the sluicing possibilities in Russian. Consider the contrast between (15) and (16) below.

[4] For extensive empirical arguments against a Gapping analysis of (12) and (13), see Grebenyova (in preparation).

(15) Každyj priglasil kogo-to na tanec, no ja ne pomnju kto kogo.
everyone invited someone to dance but I not remember who whom
'Everyone invited someone to a dance but I don't remember who (invited) whom.'

(16) ??Kto-to priglasil kogo-to na tanec, no ja ne pomnju kto kogo.
someone invited someone to dance but I not remember who whom
'Someone invited someone to a dance but I don't remember who (invited) whom.'

The contexts that allow multiple sluicing in Russian seem to crucially depend on the interpretation of multiple interrogatives in this language. Russian, unlike languages like Serbo-Croatian or Japanese, lacks single-pair readings in multiple interrogatives, as demonstrated in Grebenyova (2004). Multiple interrogatives in general can have a Pair-List (PL) or a Single-Pair (SP) reading, with the SP reading being more restricted crosslinguistically, as pointed out by Wachowicz (1974), Hagstrom (1998) and Bošković (2001). The readings are demonstrated in the scenarios in (17) and (18) with respect to the English question in (19), which is infelicitous on the SP scenario in (18) since English also lacks SP readings.

(17) *Scenario 1 (PL):* John is at a formal dinner where there are diplomats and journalists. Each journalist was invited by a different diplomat. John wants to find out all the details, so he asks the host:

(18) Scenario 2 (SP): John knows that a very important diplomat invited a very important journalist to a private dinner. John wants to find out all the details, so he asks the caterer:

(19) Who invited who to the dinner? *PL/*SP*

Bulgarian and Russian pattern with English in lacking the SP reading in multiple interrogatives, as demonstrated in (20).[5] Languages like Serbo-Croatian and Japanese, on the other hand, allow both PL and SP readings.

(20) a. [Bulgarian]
Koj kogo e pokanil na večerjata? *PL/*SP*
who whom AUX invited to dinner
'Who invited who to the dinner?'

[5] The SP reading becomes available in D-linked multiple questions in all these languages (e.g. *Which diplomat invited which journalist?*). I restrict the discussion above to questions containing non-d-linked wh-phrases.

b. [Russian]
Kto kogo priglasil na užin? *PL/*SP*
who whom invited to dinner
'Who invited who to the dinner?'

(21) a. [Serbo-Croatian]
Ko je koga pozvao na večeru? *PL/SP*
who AUX whom invited to dinner
'Who invited who to the dinner?'

b. [Japanese]
Dare-ga dare-o syokuzi-ni manekimasita-ka? *PL/SP*
$who_{NOM}$ $who_{ACC}$ $dinner_{DAT}$ invited-Q
'Who invited who to the dinner?'

Therefore, it is plausible to analyze the degraded status of the Russian multiple sluicing example in (16) as the result of the antecedent clause imposing a single-pair reading on the interrogative clause in the sluice, since this is a reading which a multiple wh-question cannot have in Russian.[6]

There is another reading, sometimes not easily distinguished from the SP reading, namely, the *Order* reading, as in (22) from English. Multiple sluicing is available with this reading in Russian if the antecedent provides the relevant context, as in (23).

(22) John and Bill were fighting. Who hit who first?

(23) *Maša i Ivan pošli na večer. Kto-to iz nix priglasil drugogo na*
Maša and Ivan went to party. One of them invited the-other to
*tanec, no ja ne znaju kto kogo.*
dance but I not know who whom.
'Maša and Ivan went to a party. One of them invited the other to a dance but I don't know who invited who.'

Thus we arrive at the rather straightforward generalization that the only interpretations of wh-interrogatives available under sluicing in a given language are the interpretations generally available to wh-interrogatives in that language.[7] This presents another argument for the analysis of the sluices as full interrogative clauses.

One of the predictions of this outcome is that multiple sluicing should not be available with adjunct wh-questions since the order reading is impossible with adjuncts. The prediction is borne out, as shown in (24).

[6] For specific accounts of what prohibits SP readings in certain languages, see Bošković (2001) and Grebenyova (2004).

[7] But see Grebenyova (in preparation) for discussion of certain English examples that appear to contradict this generalization.

(24) *Kto-to sprjatal gde-to zdes' klad, no ja ne znaju kto gde.
someone hid somewhere here treasure but I not know who where
'Someone hid the treasure somewhere here but I don't know who hid it where.'

Another control test for the generalization above comes from Serbo-Croatian, a language allowing SP readings in multiple interrogatives. The Serbo-Croatian equivalent, from Stjepanović (2003), of the unacceptable Russian example in (16) is fine, as expected:

(25) [Serbo-Croatian]
Neko je video nekog, ali ne znam ko koga.
somebody is seen somebody but not know who whom
'Somebody saw someone, but I don't know who whom.'

## 4 Superiority under Sluicing

In this section, we will examine another property of sluicing in Russian. Apparently, sluicing enforces superiority effects in contexts where parallel non-elliptical structures do not exhibit any superiority effects. This was observed for Serbo-Croatian multiple sluicing in main clauses with null $C^0$ by Stjepanović (2003). The same is true of Russian multiple sluicing in both main and embedded clauses.

First, consider the data in (26) and (27) (slightly modified examples from Bošković (1998)), demonstrating that superiority effects in Serbo-Croatian are present in embedded but not in main clauses.

(26) a. Ko $\text{šta}_1$ o njemu govori $t_1$?
who what about him says
'Who says what about him?'
b. $\text{Šta}_1$ ko o njemu govori $t_1$?

(27) a. Pavle je pitao *ko* $\textit{šta}_1$ o njemu govori $t_1$.
Pavle aux asked who what about him says
'Pavle asked who says what about him.'
b. ??Pavle je pitao $\textit{šta}_1$ *ko* o njemu govori $t_1$.

However, as Stjepanović (2003) points out, superiority effects emerge in Serbo-Croatian in main clauses under sluicing:

(28) *A:* Neko voli nekog.
somebody loves somebody
'Somebody loves somebody.'
*B1:* Ko koga?
who whom
*B2:* *Koga ko?

The same effects hold under sluicing in embedded clauses in Serbo-Croatian, but that is of no relevance since this corresponds to the facts in the parallel non-elliptical structures.

Let us now examine the same contexts in Russian, a language without any superiority effects in either main or embedded clauses in non-elliptical structures, as we recall from the data in (9) from Stepanov (1998), repeated below.

(29) a. Kto$_1$ kogo$_2$ [$t_1$ ljubit $t_2$]?
who whom loves
b. Kogo$_2$ kto$_1$ [$t_1$ ljubit $t_2$]?
c. Ja ne znaju [kto kogo ljubit].
I not know who whom loves
'I don't know who loves who.'
d. Ja ne znaju [kogo kto ljubit].

However, like in Serbo-Croatian, superiority effects emerge in Russian under Sluicing in both main in embedded clauses, as demonstrated in (30) and (31).

(30) a. *A:* Každyj priglasil kogo-to na tanec.
everyone invited someone to dance
'Everyone invited someone to a dance.'
b. *B:* Kto kogo?
who whom
c. *B:* *Kogo kto?

(31) a. Každyj priglasil kogo-to na tanec, no ja ne pomnju *kto kogo.*
everyone invited someone to dance but I not remember who who
'Everyone invited someone to a dance but I don't remember who (invited) who.'
b. *Každyj priglasil kogo-to na tanec, no ja ne pomnju *kogo kto.*

These are rather surprising facts, given that sluicing is known to sometimes repair the derivation (e.g., amelioration of island effects under sluicing investigated by Ross (1969), Lasnik (2000) and Merchant (2001)). It is surprising that, in the cases above, sluicing seems to destroy it. Of course, if superiority effects are essentially minimality effects and minimality is encoded into the definition of Attract (Chomsky 1995), such violations cannot technically exist in any derivation and therefore cannot be repaired by deletion. This means that we would not expect superiority effects in non-elliptical structures in a language like Bulgarian to disappear under sluicing. Merchant (2001) reports data demonstrating that this is indeed the case in Bulgarian. This, as Merchant points out, presents additional evidence for the deletion approach to ellipsis, since superiority is a diagnostic of movement and movement

could have taken place out of the ellipsis site only if a full clause is present in the structure from the beginning and is deleted at PF. But why would sluicing invoke superiority effects in languages and contexts that lack superiority effects without ellipsis, as in Serbo-Croatian and Russian?

Stjepanović (2003) attempts to explain the Serbo-Croatian data as follows. Assuming that the feature licensing TP-deletion must be on $C^0$, she concludes that $C^0$ must be merged in overt syntax in sluicing constructions. The strong [+wh] feature of $C^0$ then triggers superiority effects in Serbo-Croatian matrix sluices.

This account, however, has a difficulty in that it is difficult to extend this analysis to Russian. Since the [+wh] feature is weak in Russian, merging $C^0$ overtly cannot result in superiority effects. I would like to explore an alternative account and suggest that the superiority effects observed under Sluicing follow from an independent property of elliptical structures, namely, quantifier parallelism.

I adopt the notion of parallelism of Fiengo and May (1994), further developed by Fox and Lasnik (2003), which requires that variables in the elided and antecedent clauses be bound from parallel positions. I also assume that the variable introduced by an indefinite in the antecedent clause is bound by existential closure (Kratzer 1997) and that wh-words like *who* and *what* are quantifiers over individuals.

Let us now consider the LF of the antecedent in Russian multiple sluicing in (32a), given in (33).

(32) a. *A:* Každyj priglasil kogo-to na tanec.
everyone invited someone to dance
'Everyone invited someone to a dance.'
b. *B:* Kto kogo ~~[priglasil na tanec]~~?
who whom invited to dance
c. *B:* *Kogo kto ~~[priglasil na tanec]~~?

(33) $\forall x \exists y$ [*x* priglasil *y* na tanec]
invited to dance

This is the only reading available in (32a), since surface quantifier scope is preserved in Russian. This can be seen in (34) and even more clearly in the unacceptable (35), based on an English example in Fox (2000:70). For similar observations, see also Ionin (2001), Pereltsvaig (in press), and Bailyn (this volume).

(34) Kakoj-to paren' poceloval každuju devušku. $\exists x \forall y$ / $*\forall y \exists x$
some $guy_{NOM}$ kissed every $girl_{ACC}$
'Some guy kissed every girl.'

(35) #Odin/kakoj-to časovoj stoit naprotiv každogo zdanija.
one/some guard is-standing in-front-of every building
'One/some guard is standing in front of every building.'

Now consider the LF representations of the acceptable sluice in (32b) and the unacceptable one in (32c), given in (36b) and (36c) respectively. Do they meet the parallelism requirement? That is, are the variables in these sluices and in the LF of the antecedent (repeated as (36a)) bound from parallel positions?

(36) a. $\forall x \exists y$ [*x* priglasil *y* na tanec] ← *LF (antecedent)*
invited to dance
b. kto *x* kogo *y* [*x* priglasil *y* na tanec] ← *LF (wh1 > wh2)*
who whom invited to dance
c. kogo *y* kto *x* [*x* priglasil *y* na tanec] ← *LF (wh2 > wh1)*
whom who invited to dance

The parallelism in variable binding is met between (36a) and (36b), but it is not met between (36a) and (36c). That is, the quantifier binding the object variable is inside the scope of the quantifier binding the subject variable in the antecedent clause, while it is outside the scope of the parallel quantifier in the sluice in (36c).

To test this further, let us scramble the object quantifier over the subject in the antecedent clause, as in (37a). This results in an acceptable sluice with the *wh2>wh1* order in (37b), as predicted by the parallelism account, since now the object quantifier is outside the scope of the subject quantifier in both the antecedent and the sluice.[8]

(37) a. *A:* Každogo$_1$ kto-to priglasil $t_1$ na tanec
everyone$_{ACC}$ someone$_{NOM}$ invited to dance
'Someone invited everyone to a dance.' *(with $\forall x \exists y$)*
b. *B:* Kogo kto?
whom who
c. *B:* *Kto kogo?
who whom

And the subject>object order of the wh-phrases in (37c) is unacceptable now, which strengthens the parallelism account proposed above.[9]

[8] The universal quantifier is used as the object here to maintain the pair-list reading requirement in Russian multiple interrogatives.

[9] Steven Franks (p.c.) reports a Russian informant who does not share the judgments in (37). The same informant, however, is sensitive to superiority effects in Russian. As Merchant (2001) reports for Bulgarian, a language with robust superiority effects, such effects do not go away under sluicing if they are present in non-elliptical contexts. Thus, parallelism and superiority are independent properties of grammar and can be distinguished from each other under ellipsis only if a speaker is insensitive to superiority

Thus, the apparent superiority effects under sluicing turn out to be parallelism effects and not minimality effects.

## 5 Conclusions

To summarize, we have examined several properties of sluicing in Russian and reached the following results.

First, given the movement of wh-phrases to a focus position between CP and TP in Russian, it is plausible that not only Spec,CP occupants can survive the process of IP-deletion. I proposed that $Foc^0$ can license the deletion of its complement in Russian and that the [+wh,+Q] features are located in $Foc^0$. As a consequence of this proposal, we have discovered that contrastively focused R-expressions can also be the remnants of sluicing in Russian.

Second, we have seen that sluicing licensing contexts depend on the interpretation of multiple interrogatives in a given language. That is, sluicing where an antecedent imposes the SP reading on the interrogative in the sluice is unacceptable in Russian, just as non-elliptical multiple interrogatives are unacceptable under the SP reading in this language.

Finally, considering the quantifier parallelism requirement in ellipsis allowed us to analyze apparent superiority effects under sluicing as parallelism effects. That is, the unacceptability of certain sluices is caused by the lack of parallelism in quantifier-variable binding between the antecedent and the sluice. This approach predicts that there is no language with fixed isomorphic scope that allows for free ordering of wh-phrases in sluicing structures. The results of further testing of this prediction in Polish and Serbo-Croatian as well as certain observations about specificity in sluicing are discussed in Grebenyova (in preparation).

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effects in non-elliptical contexts (as my Russian informants and myself are). The attested variation with respect to superiority effects is itself an interesting puzzle for syntactic theory and is need of further exploration.

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# Non-Agreement, Unaccusativity, and the External Argument Constraint*

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## 1 Introduction

This paper examines non-agreeing (i.e., impersonal) predicates in Russian from the point of view of argument structure and morphosyntactic constraints on the operation AGREE. Admittedly, an analysis of impersonal sentences that takes argument structure as its starting point is by no means new (see, for example, Babby 1989, 1994, 1998, and 2005). However, a close examination of the interaction between external arguments and the functional head T in the syntax reveals a new generalization that has previously gone unnoticed in the literature, namely, that only syntactically unaccusative predicates license non-agreement in Russian.[1] This paper thus contributes to current discussions of non-agreement not by raising new empirical problems and subsequently solving them, but rather by discovering a new generalization and attempting to explain why it should hold.

In order to account for this generalization it is argued that the syntax of non-agreement in Russian is due to the presence or absence of an external argument in Spec, *v*P. Specifically, I will argue that external arguments are syntactically encoded with a [participant] feature since they are volitional controllers of the event expressed by their predicates, following a recent proposal made by Adger and Harbour (2005). This feature value requires that the head these arguments check Case against be φ-complete. Direct internal arguments, on the other hand (i.e., direct objects), lack such a feature value, and may therefore have their Case valued by a φ-incomplete head. This proposal therefore predicts that non-agreeing predicates will never occur in the presence of agentive external

* Many thanks to Jim Lavine and one anonymous reviewer for helpful comments and suggestions made on an earlier draft of this paper. Thanks also to Daniel Harbour for numerous fruitful discussions of non-agreement in Slavic and beyond.

[1] I take an unaccusative predicate to be any predicate that does not project an external argument position syntactically.

arguments in Russian, since external arguments must always have their Case valued by a φ-complete T.

The remainder of this paper is organized as follows. In section 2 I present a range of impersonal sentence types in Russian, each of which contributes to an analysis of non-agreement that requires discussion of the interaction between argument structure and T. Here I also present a recent proposal made by Lavine and Freidin (2002) that attempts to account for the distribution of non-agreeing predicates in East Slavic but which, I argue, does not explain the occurrence of non-agreeing predicates in two types of unaccusative constructions in Russian: the genitive of negation construction and distributive sentences with the preposition/particle *po*. Finally, in section 3, I present my analysis.

## 2 Non-agreeing Predicates in Russian

Non-agreeing predicates surface in a number of different constructions in Russian, and each of them has been discussed in the generative literature by a number of scholars for at least four decades.[2] In current minimalist terms non-agreement in human language is best described as the absence of an AGREE relation between T(ense) and the φ-features on an available argument DP/NP (following Chomsky 2000, 2001). The functional head T is said to be defective or φ-incomplete in such sentences, since it does not receive a complete φ-feature value from any DP/NP. In Russian, the lack of such feature-sharing via AGREE is morphologically manifested in the past tense by the neuter singular morpheme *-o,* while in the present and future tenses, the 3rd personal singular *-et/-it* is used. For the sake of clarity, I limit the majority of my examples in this paper to those in the past tense, since here the φ-gender mismatch between a given NP and T is morphologically clear. The first example discussed here is the well-known case of *tošnit'* 'to be nauseous.'

(1) a. Mašu tošnilo. (Chvany 1975:38)
Maša$_{\text{ACC.FEM}}$ nauseated$_{\text{NEUT}}$
'Maša was nauseated.'
b.*Maša tošnilas'.
Maša$_{\text{NOM.FEM}}$ nauseated$_{\text{FEM}}$

[2] Due to space limitations, I will not address cases of seemingly non-agreeing predicates that occur with quantified subjects of transitive predicates, such as those discussed in Pereltsvaig (to appear). I assume that this construction represents a different type of agreement, rather than non-agreement, whereby an NP complement of Q does not share its φ-features with Q via the feature-sharing operation AGREE, resulting in a kind of partial agreement between Q and T. In addition, I will limit discussion here to cases of finite non-agreeing predicates, setting the question of infinitives aside.

This predicate, along with *rvat'* 'to vomit', selects for a single internal argument that receives accusative Case, and obligatorily occurs as a non-agreeing predicate, evidenced by the neuter *-o* morphology on the predicate in (1a). Unlike the morpholexical behavior of the verb *korčit'* 'to convulse', shown in (2) below, morphological suffixation of *-sja* cannot take place with *tošnit'*, as shown in (1b), which would allow both for the internal argument to surface in the nominative Case and for the predicate to agree with its argument.

(2) a. Sestru korčilo ot boli. (Babby 1989:33)
sister$_{\text{ACC.FEM}}$ convulsed$_{\text{NEUT}}$ from pain
'My sister was writhing in pain.'
b. Sestra korčilas' ot boli.
sister$_{\text{NOM.FEM}}$ convulsed$_{\text{FEM}}$ from pain
'My sister was writhing in pain.'

An additional type of non-agreeing predicate occurs in cases of so-called "adversity impersonals" (Babby 1994) or "accusative unaccusatives" (Lavine 2000, Lavine and Freidin 2002). This impersonal construction requires the presence of a transitive predicate and the obligatory absence of a volitional external argument.

(3) "Adversity Impersonals" (Babby 1994)
a. Ego sbilo s nog motociklom.
him$_{\text{ACC.MASC}}$ knocked$_{\text{NEUT}}$ from feet motorcyle$_{\text{INST}}$
'A motorcycle knocked him down.'
b.*Ego sbilo s nog motociklistom.
him$_{\text{ACC.MASC}}$ knocked$_{\text{NEUT}}$ from feet motorcyclist$_{\text{INST}}$
'A motorcyclist knocked him down.'
c. Motociklist sbil ego s nog.
Motorcyclist$_{\text{NOM.MASC}}$ knocked$_{\text{MASC}}$ him$_{\text{ACC}}$ from feet
'A motorcyclist knocked him down.'

As the example in (3a) shows, the predicate in this construction assigns accusative Case to its internal argument, surfaces with non-agreeing morphology, and requires the obligatory absence of an animate, agentive, volitional controller of the event. The sentence in (3b) shows that even if an agentive external argument is demoted to a *by*-phrase position syntactically, the construction is ungrammatical. In order for a truly volitional agent to occur with the predicate *sbit'* 'knock', it must occur in the nominative Case and agree with the verb.

Two additional types of non-agreement occur with intransitive predicates that are traditionally analyzed as unaccusative. I first present data from the most well-known diagnostic for unaccusativity in Russian involving non-agreement—the genitive of negation (Gen-Neg), first

proposed as a diagnostic by Pesetsky (1982).[3] In this construction, only direct internal NP arguments (i.e., direct objects, subjects of unaccusatives) may receive genitive Case under negation (see 4-5). External arguments, in contrast, cannot receive genitive Case and must value nominative Case, agreeing with their predicates (see 6).

(4) Direct objects of transitives
a. Anna ne kupila knigi.
$\text{Anna}_{\text{NOM FEM}}$ not $\text{bought}_{\text{FEM}}$ $\text{books}_{\text{ACC}}$
'Anna didn't buy the books.'
b. Anna ne kupila **knig**.
$\text{Ana}_{\text{NOM FEM}}$ not $\text{bought}_{\text{FEM}}$ $\text{books}_{\text{GEN}}$
'Anna didn't buy any books.'

(5) Subjects of unaccusatives
a. **Otveta** ne prišlo.
$\text{Answer}_{\text{GEN MASC}}$ not $\text{came}_{\text{NEUT}}$
'No answer came.'
b. **Moroza** ne čuvstvovalos'.
$\text{Frost}_{\text{GEN MASC}}$ not $\text{felt}_{\text{NEUT}}$
'No frost was felt.'

(6) Subjects of transitives/unergatives
a. ***Nikakoj studentki** ne kupilo knigi.
No $\text{student}_{\text{GEN FEM}}$ not $\text{bought}_{\text{NEUT}}$ $\text{books}_{\text{ACC}}$
'No (female) students bought books.'
b. ***Ni odnoj devuški** ne pelo.
Not one $\text{girl}_{\text{GEN FEM}}$ not $\text{sang}_{\text{NEUT}}$
'Not a simgle girl sang.'
c. Ni odna devuška ne pela.
Not one $\text{girl}_{\text{NOM FEM}}$ not $\text{sang}_{\text{FEM}}$
'Not a single girl sang.'

A second diagnostic for unaccusativity in Russian, first discussed by Babby (1980) and Pesetsky (1982), concerns the use of distributive *po*-phrases. Pesetsky shows that like genitive NPs under negation, distributive *po*-phrases are limited to direct objects and subjects of unaccusative predicates, as shown in (7). Note that like the Gen-Neg diagnostic discussed above, when the single argument of an unaccusative predicate participates in this construction and receives dative Case from *po* (see 7b), non-agreeing morphology occurs on the predicate.

[3] While Pesetsky (1982) is credited here and elsewhere with first using Gen-Neg as a diagnostic for unaccusativity, note that Chvany (1975) provided empirical arguments from Russian, including Gen-Neg (prior to Perlmutter's 1978 Unaccusative Hypothesis), in support of a theory in which verbs do not necessarily have subjects in Deep Structure.

(7) a. Ja dal mal'čikam **po jabloku**.
I gave $\text{boys}_{\text{DAT}}$ *po* $\text{apple}_{\text{DAT}}$
'I gave the boys an apple each.' (Pesetsky 1982:69)

b. **Po gruše** upalo s každogo dereva.
*po* $\text{pear}_{\text{DAT. FEM}}$ $\text{fell}_{\text{NEUT}}$ from each tree
'A (different) pear fell from each tree.' (Chvany 1975:26)

c.*V každoj kvartire smejalos' **po mal'čiku**.
in each apartment $\text{laughed}_{\text{NEUT}}$ *po* $\text{boy}_{\text{DAT. MASC}}$
'A boy laughed in each apartment.' (Schoorlemmer 1995:33)

In each of these examples a dative NP *jabloku* 'apple' in (a), *gruše* 'pear' in (b), and *mal'čiku* 'boy' in (c) appears as the complement to the preposition/particle *po*, which imposes a distributed reading over its object. Thus, in (7a), the number of 'apples' is equal to the number of 'boys', with a single apple distributed to each boy. Similarly, in (7b), there are equal numbers of 'pears' and 'trees', where a different pear falls from each tree. The example in (7c) shows that external arguments (here, an unergative subject) do not occur in this construction.

*2.1 Agentive subjects and non-agreement: Counterexamples?*
The impersonal sentences presented above all share the following characteristics: (i) φ-incomplete T, (ii) no NOM DP/NP, and (iii) no external argument. The link between NOM Case and subject-verb agreement falls out from the Chomskyan (2000, 2001) assumption that NOM Case is the morphological spellout of AGREE between φ-features of a probe T and a goal DP/NP. It therefore comes as no surprise that non-agreement would occur in the absence of NOM Case. However, the third characteristic of the examples discussed above, i.e., the lack of an external argument, has previously not been linked to φ-incomplete T. Before offering an explanation for this phenomenon, I first address two sets of apparent counterexamples, which suggest that the unaccusativity diagnostics discussed above may not be as reliable as they might seem.

2.1.1 Distributive *po*-phrases and External Arguments. Although the use of distributive *po* has long been used as a reliable syntactic diagnostic for unaccusativity, in certain cases it is unclear just how strong this diagnostic is. For example, in spite of the ungrammaticality of examples such as (7c) above, when a numeral phrase occurs as the complement of distributive *po*, subjects of transitives and unergatives occur freely in this construction, i.e., the construction ceases to hold as a diagnostic for unaccusativity. This puzzle has been discussed by Borik (1995), Schoorlemmer (1995), Harves (2002, 2003) and most recently by Kuznetsova (2005).

(8) a.*Každyj den' **po turistu** smotrelo fil'm.
every day *po* tourist$_{DAT}$ watched$_{NEUT}$ film
'Every day a tourist watched a film.'

b. Každyj den' **po pjat' turistov** smotreli fil'my.
every day *po* five$_{NOM}$ tourists$_{GEN.\ PL}$ watched$_{PL}$ films
'Five tourists watched films every day.'

c. *V každoj kvartire pelo **po čeloveku**.
In each apartment sang$_{NDUT}$ *po* person$_{DAT.\ MASC}$
'A person sang in each apartment.'

d. Konkurs proxodil po četyrem nominacijam (v každoj
competition proceeded in four categories in each
peli **po šest' čelovek**).
sang$_{PL}$ *po* six$_{NOM}$ persons
'There were four categories in the competition (six people sang in each category).'

(from Kuznetsova 2005)

In (8a) the external argument *turistu* 'tourist' cannot appear as the complement of *po*, while in (8b) it can. Similarly, in (8c) the NP *čeloveku* 'person' cannot occur inside a distributive *po*-phrase with the unergative predicate 'sing' while in (8d) it clearly can. At least two points are worth noting here. First, the external arguments *pjat' turistov* 'five tourists' and *šest' čelovek* 'six persons' no longer appear in the dative Case. The dative in (8b), for example, would be *pjati turistam*. Second, the verb (optionally) exhibits plural agreement.[4] This plural agreement morphology suggests that the numerals in (8b) and (8d) are in fact nominative as a result of φ-feature matching with T. However, we might consider the possibility that the numerals here are in fact accusative, as argued by Franks (1995), since most numerals exhibit case syncretism in the nominative and accusative cases. That is, perhaps we should consider the possibility that *po* assigns accusative Case to numerals but dative Case to bare NPs (which would be atypical behavior for a preposition, to be sure). However, if these numerals were actually accusative, then the plural morphology on the predicate would remain a mystery, under the theoretical assumption that nominative case is valued

[4]Quantified subjects in Russian exhibit either plural or (neuter) singular agreement with their verbal predicates, as shown in (ia-b) (from Pesetsky 1982:76). Various semantic and syntactic factors contribute to the choice of singular vs. plural morphology on verbal predicates with quantified subjects such as animacy, individuation of interpretation, and the position of the subject as pre-verbal vs. post-verbal. A complete discussion of this phenomenon is beyond the scope of this paper. For comprehensive discussion of these constructions see Pereltsvaig (to appear).

(i) a. Prišlo šest' studentov. b. Šest' studentov prišli.
arrived$_{NEUT}$ six$_{NOM}$ students$_{GEN\ PL}$ six$_{NOM}$ students$_{GEN\ PL}$ arrived$_{PL}$

only when an NP agrees with T. We will therefore assume following Harves (2002, 2003) that these numerals are in fact nominative rather than accusative.[5] When these numerals enter an AGREE relationship with features of T, the verb exhibits agreeing morphology (since the verb will also AGREE with T). The plural agreement that arises in (8b) and (8d) is strong empirical evidence that the QP does AGREE with T. Therefore, although distributive *po*-phrases can and do occur with transitive and unergative predicates, they only do so when a numeral is the head of the phrase, allowing for agreement between T and the QP to take place (see Harves 2003 for a more complete discussion of this construction).

Thus far this analysis accounts for the Case value on the numeral and the agreement morphology that occurs on the predicate. However, it still remains a mystery as to why distributive *po*-phrases that lack a numeral cannot take external arguments as their complements. I return to this question in section 3 below.

2.1.2 Genitive of Negation and External Arguments. Like distributive *po*-phrases, Gen-Neg has long been used as a test for syntactic unaccusativity in Russian. However, Babby (2001:50-51) notes the following apparent counterexamples, each of which contains an unergative predicate that should be disallowed from occurring in this construction, if the diagnostic is to be taken seriously.

(9) a. Meždu brevnami ne skryvalos' **tarakanov**.
between beams NEG $\text{hide}_{\text{NEUT}}$ $\text{cockroaches}_{\text{GENPL}}$
'There were no cockroaches (hiding) among the beams.'

b. Na zabrošennom zavode upal i razbilsja Saša. (Ja tam byl.)
'Sasha fell and was badly hurt at the abandoned factory.
(I was there.)'
Tam (bol'še) ne igraet **nikakix detej**.
there (more) NEG $\text{play}_{\text{SG}}$ no $\text{children}_{\text{GENPL}}$
'There are no longer any children (seen) playing there.'

[5] Harves (2002, 2003) provides an empirical argument in favor of this analysis as well. Consider the numerals 2, 3, and 4 in Russian. In the accusative Case these numerals take the morphological genitive form *dvux, trex, četyrex* before animate NPs, while inanimate NP complements occur with the forms *dva, tri, četyre*. If *po* were to assign accusative case to numerals, we would expect (i) to be grammatical, contrary to fact.

(i) *Každyj den' po dvux turistov smotrelo fil'my.
every day *po* two-ACC tourists watched films

(ii) Každyj den' po dva turista smotrelo fil'my.
every day *po* two-NOM tourists watched films

c. Uže byli ne tol'ko kvartiry, no daže celye doma
'There were not only flats but even entire buildings...
v kotoryx ne žilo **ni odnogo čeloveka**.
in which NEG lived$_{NEUT}$ not single person$_{GENMASC}$
'in which there wasn't a single person living.'

Several points are worth noting in connection with these examples. First, as noted by Babyonyshev (to appear) and Harves (2002), these examples are only licensed in the presence of locative PP inversion in conjunction with a post-verbal subject. In other words, "unaccusative syntax" is required for Gen-Neg to occur on subjects of unergative predicates (see Babyonyshev 1996 and Harves 2002 for discussion of locative inversion and unaccusativity). Second, native informants repeatedly note that in each of the examples above, the unergative predicate is in some sense "semantically bleached" in such a way that it comes to mean something like *be* as opposed to *hide, play* or *live*. In light of both the syntactic and semantic constraints on unergative predicates under Gen-Neg above, these sentences can be ruled out as counterexamples to our unaccusativity diagnostic since these predicates have clearly been "unaccusativized." Exactly how semantic bleaching occurs and at what level of the grammar it occurs are two important questions that need to be answered if we are to completely understand Gen-Neg as a syntactic and semantic phenomenon. A complete discussion of this complex problem is well beyond the scope of this paper, and no clear answers have yet emerged, although progress towards a more explanatory account of this phenomenon is currently under investigation (see Partee and Borschev 2002, 2004 and further work in progress).

To summarize what we have seen thus far, numerous types of impersonal sentences exist in Russian. Each of them characteristically lacks a volitional external argument, an agreeing predicate, and a DP/NP in the nominative Case. I now turn to a recent theoretical proposal that attempts to account for the distribution of non-agreement in East Slavic by linking the presence of φ-incomplete T to that of φ-complete *v*.

*2.2 Unaccusativity and φ-incomplete T: Lavine and Freidin (2002)*

In their discussion of non-agreeing predicates in Slavic, Lavine and Freidin (2002) (henceforth L&F) argue convincingly for the need to separate the EPP requirement of T(ense) from both Case and agreement feature-checking in Russian, showing that non-nominative NPs undergo A-movement overtly to Spec, TP in the absence of both agreement and

nominative Case features.[6] Their analysis focuses on the "accusative unaccusative" construction, presented in (3) above, in which structural accusative Case is assigned by a transitive verb in the absence of an external argument (contra Burzio's Generalization).[7] Consider two of their examples in (10) below (L&F 2002: 258).

(10) a. Soldata ranilo pulej.
soldier$_{ACC}$ wounded$_{NEUT}$ bullet$_{INST}$
'A soldier was wounded by a bullet.'
b. Podvaly zatopilo livnem.
basements$_{ACC}$ flooded$_{NEUT}$ downpour$_{INST}$
'Basements were flooded by the downpour.'

One distinctive feature of this construction is the lack of agreement morphology on the predicate. This lack of agreement indicates that T is a defective, φ-incomplete head in the accusative unaccusative construction, following the Chomskyan (2000, 2001) definition spelled out in section 2 above. In contrast, *v* is a φ-complete head in this construction, since it values ACC Case on the direct internal NP argument.[8] This leads L&F to consider the following four logical possibilities for the φ-completeness of T and *v* in unaccusative constructions, where (11c) represents the arrangement that occurs with accusative unaccusatives:

(11) a. $T_{COMP}$ / $v_{DEF}$ c. $T_{DEF}$ / $v_{COMP}$
b. $T_{COMP}$ / $v_{COMP}$ d. *$T_{DEF}$ / $v_{DEF}$

They argue that of these four possibilities, only (11d) is not borne out, noting, "...this configuration is hopelessly deviant. Assuming that all unaccusatives select at least one internal argument, if both T and *v* are defective, this argument will not be valued for Case. The resulting uninterpretable Case-feature will cause the derivation to crash" (L&F 2002: 264).

Despite this claim, in this paper we have already seen two types of impersonal constructions that involve the combination of two defective T and *v* heads: (i) genitive of negation and (ii) distributive *po*-phrases with

[6] Evidence comes from Weak Crossover effects, anaphor binding, the position of *v*P adverbs and negation, and the (optionally) non-D-linked status of the preverbal NP. See L&F for details.

[7] It has been repeatedly shown that Burzio's Generalization cannot be a principle of the grammar. Numerous counterexamples are provided by a variety of languages, including Slavic. See Babby 1989, Harley 1995, and Lavine 2000 for further discussion.

[8] I am using L&F's definition of φ-complete *v* as ACC Case-checking *v* in order to remain consistent with their proposal and not complicate issues further. One could certainly make the argument that *v* is only φ-complete if it selects for an external argument and projects such a position syntactically, as in Harves (2002). I set this issue aside for ease of exposition here.

unaccusative predicates. That T is defective in these constructions is evident from the non-agreement that surfaces on the predicate, as shown above in (5) and (7). Moreover, the *v* we find with typical instances of intransitive unaccusative predicates, such as *upast'* 'to fall', *prijti* 'to arrive', and *rasti* 'to grow' is also clearly defective since it never values ACC Case on its single internal argument. Evidence for the combination of these two defective heads in Russian unaccusative constructions completes the range of possibilities in the paradigm in (11). Note that the combination of defective *v* and T heads is allowed to occur in Russian in precisely those contexts where an additional Case-licenser occurs in the syntax—$Neg^0$ in Gen-Neg and dative Case-assigning *po* in distributive constructions. Given that the grammar makes the four configurations in (11) available, we would expect each of them to occur in natural language, at least in those languages that allow for the existence of non-agreeing predicates. Yet, in light of the Russian facts presented above, we are now faced with a different question, namely, why are external arguments prohibited from occurring with defective T? The typology of functional heads in (11) and the relationship between *v* and T clearly do not, in themselves, offer an explanation for the licensing of non-agreement in Russian. We must therefore look for an answer to this problem by directly examining the relationship between external arguments and T.

## 3 External Arguments, T(ense) and [φ-person/participant]

Recall our theoretical assumption regarding structural Case-marking from above, following Chomsky (2000, 2001). Structural nominative Case is the morphological spellout of AGREE between a φ-complete T and the closest visible DP/NP in its c-command domain, while structural accusative Case is the morphological spellout of AGREE between a φ-complete *v* and the closest visible DP/NP.[9] When either of these functional heads probes for a full set of φ-features, it will search the derivation for the closest DP/NP in its c-command domain and copy the feature-specification from the closest argument to its head via the feature-sharing operation AGREE. Once these uninterpretable features have been checked, they can delete.

With this definition in mind, let us now return to two types of non-agreeing unaccusative predicates discussed above, i.e., those that occur in Gen-Neg and distributive *po*-phrase constructions. Unaccusative predicates are, by definition, predicates that merge a defective *v* with their internal argument(s) and may or may not occur with a φ-incomplete

[9] Where a "visible" DP/NP is one that has not already had its Case valued by another head in the syntax.

T. In light of the examples discussed above (repeated below in 12-13), we clearly need a mechanism that prohibits agentive external arguments from occurring with non-agreeing predicates in these constructions.

(12) Internal arguments and non-agreeing predicates
a. S každogo dereva upalo po gruše.
from every tree $\text{fell}_{\text{NEUT}}$ *po* $\text{pear}_{\text{DATFEM}}$
'A (different) pear fell from each tree.'
b. Otveta ne prišlo.
$\text{answer}_{\text{GENMASC}}$ NEG $\text{came}_{\text{NEUT}}$
'No answer came.'

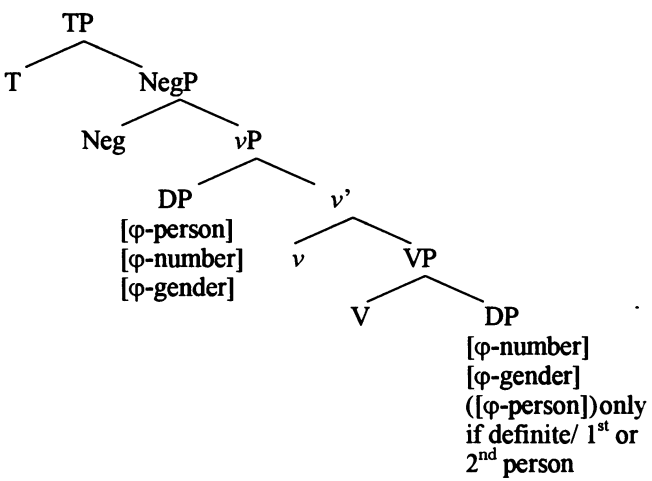
(13) *External arguments and non-agreeing predicates
a. *V každoj kvartire smejalos' po mal'čiku.
in each apartment $\text{laughed}_{\text{NEUT}}$ *po* $\text{boy}_{\text{DATMASC}}$
'A boy laughed in each apartment.'
b. *Ni odnoj devuški ne pelo.
Not single $\text{girl}_{\text{GENFEM}}$ NEG $\text{sang}_{\text{NEUT}}$
'Not a single girl sang.'

One proposal that aims to distinguish features of external arguments from those of internal arguments is that of Adger and Harbour (2005). In their discussion of the Person Case Constraint (PCC) in Kiowa, a Kiowa-Tanoan language spoken in Oklahoma, Adger and Harbour (2005) argue that external arguments that merge in the specifier of *v*P are obligatorily encoded with a semantically interpretable [participant] feature as volitional controllers of events, regardless of their status as 1st, 2nd, or 3rd person NPs (see Adger and Harbour for empirical arguments and discussion). This feature requires that the head these arguments check Case against be φ-complete with respect to this feature, which, for our purposes, is equivalent to the [*u*person] feature on T. In contrast, arguments that merge in the direct object position carry no such obligatory encoding, such that 3rd person direct objects may carry no [person] feature-specification at all. This proposal accounts not only for agreement patterns in Kiowa, a complex system where verbal predicates may agree with subjects, indirect objects, and direct objects simultaneously, but also for well-known cases of PCC effects in French, Catalan, Greek, and a number of other languages (see Anagnostopoulou 2003 for comprehensive discussion of these data).

The proposal that 3rd person as a feature differs from 1st or 2nd person is not a new or controversial idea in the morphosyntactic literature (see Benveniste 1966, Taraldsen 1995, and Kayne 1998 among others). It has frequently been argued that 3rd person is simply "no person" or an underspecified person feature (Adger and Harbour 2005 discuss both possibilities). What is new and of great theoretical interest in Adger and

Harbour's proposal is the distinction they make between obligatory and non-obligatory [person] feature-encoding on different arguments in the syntactic structure. This makes strong empirical predictions in terms of the possibilities for patterns of agreement in natural languages, should their proposal hold cross-linguistically. One prediction this proposal makes is that if the [person/participant] feature encoding is obligatorily encoded on external arguments in natural language, then external arguments must always have their Case valued by a head that bears a [*u*person/participant] feature-specification. In other words, ***external arguments must always agree with their predicates, while internal arguments need not.***[10] It appears that Russian is a language that provides strong empirical support for this proposal. Let us now consider how this proposal can account for the Russian facts above.

(14)




The structure in (14) illustrates Adger and Harbour's (2005) proposal regarding the features associated with specific positions in the syntactic derivation. Since direct internal arguments are not obligatorily encoded with a [person] feature, they may have their Case valued by a defective

[10] An anonymous reviewer asks why this analysis of external arguments does not carry over to dative Experiencers, since dative Experiencers and nominative Agents/Causers do not co-occur in a single sentence (perhaps suggesting a co-occurrence restriction on a particular position). In spite of this observation, there is a great deal of cross-linguistic evidence suggesting that Experiencers merge in a position that is different from that of Agents and Causers (see, for example, the seminal work of Belletti and Rizzi 1988). Further discussion of Experiencers and Experiencer predicates is beyond the scope of this paper, but see Adger and Harbour (2005) and Anagnostopoulou (2003) for further discussion of dative NPs within the analysis presented here, and see Cuervo (2003) for a comprehensive analysis of dative arguments that includes dative Experiencers.

head in the syntax in the absence of this feature. Let us hypothesize that both Neg and distributive *po* are defective Case-valuing heads in the syntax that never carry a [*u*person] feature-specification. In light of the fact that genitive NPs in the Gen-Neg construction are interpreted as indefinite or non-specific arguments, such a proposal appears to be on the right track. Similarly, as discussed by Kuznetsova (2005), NP objects of distributive *po* are interpreted as indefinite, non-specific NPs whose existence is never presupposed. In light of the semantic and syntactic similarities of these two constructions, a unified analysis is both desirable and appropriate here.

The syntactic distribution of both genitive Case-marked arguments under negation and dative arguments of distributive *po* can be straightforwardly accounted for if we assume that external arguments are always encoded with a [person/participant] feature, which will disallow them from having their Case valued by a defective head that lacks a [*u*person] feature specification (e.g. Neg and *po*). Furthermore, this proposal predicts that external arguments will always AGREE with their predicates and can therefore never occur with φ-incomplete T.

Returning to our typology of functional heads, we have seen evidence for the existence of constructions that merge two φ-incomplete heads, a possibility unaccounted for in L&F (the configuration in 15c). Two diagnostics for unaccusativity in Russian have shown us that φ-incomplete T can and does occur with φ-incomplete *v*.[11]

(15) a. $T^0_{\phi\text{-COMPLETE}}$, $v^0_{\phi\text{-COMPLETE}}$ --> transitive/unergative agreeing predicate
b. $T^0_{\phi\text{-COMPLETE}}$, $v^0_{\phi\text{-INCOMPLETE}}$ --> unaccusative agreeing predicate
c. $T^0_{\phi\text{-INCOMPLETE}}$, $v^0_{\phi\text{-INCOMPLETE}}$ --> unaccusative impersonal predicate
d. $T^0_{\phi\text{-INCOMPLETE}}$, $v^0_{\phi\text{-COMPLETE}}$ --> accusative unaccusative predicate

[11] In light of this possibility, one reviewer asks why we do not get examples of non-agreement with unaccusatives such as those in (ia-b).

(i) a. *Studentov$_{\text{ACC}}$ pojavilos'.$_{\text{NEUT}}$
appeared
b. *Studentov$_{\text{ACC}}$ prišlo.$_{\text{NEUT}}$
arrived

The crucial difference between these examples and those discussed above is the lack of an additional Case-licenser for the NP *Studentov* 'students.' Canonical Burzio-style unaccusatives do not merge a *v* that is capable of valuing accusative Case. Thus, the examples in (i) are not predicted to occur since there is no accusative Case-licensing head that merges in the syntactic structure (unlike cases of adversity impersonals). Non-agreement with canonical unaccusatives is only possible when an additional Case-licensing head is merged, e.g. Neg or *po*. In the absence of such a head, the only available Case-licenser for the internal argument is T, and, as noted throughout this paper, nominative Case is the value assigned when an NP AGREEs with T.

One conclusion that can be drawn from the analysis presented here is that non-agreement in Russian is always a *syntactic* property rather than a *lexical* one. If the absence of an external argument in the syntactic derivation is a necessary (but not sufficient) condition for non-agreement, then there is no need to argue for inherently non-agreeing predicates in the lexicon. This idea runs counter to the analysis of non-agreement presented by Lavine (2000) where certain cases of non-agreement are argued to be lexical. For example, Lavine (2000), following Babby (1989), argues that predicates such as *tošnit'* 'to be nauseous' enter the syntactic derivation as inherently non-agreeing due to their lexical specification. It could be argued, however, that while this predicate indeed never agrees with its single internal argument, this fact is not due to its lexical entry as inherently non-agreeing. Rather, one could argue that its lexical entry specifies only that it will always assign accusative Case to its sole internal argument. The non-agreement that occurs with this predicate is therefore simply a reflex of the fact that there is no visible (i.e., non-Case-licensed) DP/NP available for T to AGREE with once it merges in the syntactic derivation. This argument can similarly be extended to non-agreeing predicates that occur in adversity impersonal constructions (i.e., "accusative unaccusatives"). If this analysis is correct, then all cases of non-agreement in Russian can be argued to be syntactic, reducing the complexity of various entries in the lexicon. It also suggests that only one type of T is stored lexically and that it is always assigned a φ-value via feature-sharing in the syntax. That is, T enters the syntactic derivation without being specified for φ-completeness e.g. T[φ: ___]. If an available DP/NP enters an AGREE relation with T, T receives a complete φ-feature specification. If not, it receives a default (i.e., non-agreeing) value.

An analysis that reduces all cases of non-agreeing predicates to the syntax raises a number of interesting theoretical questions that clearly extend beyond the external argument constraint in Russian. If non-agreement is nothing more than default agreement, then what exactly *is* default agreement? If T carries an underspecified φ-feature specification that is uninterpretable as a syntactic feature, then why doesn't the syntactic derivation crash when no value is assigned? This suggests either that the value is assigned prior to spell-out or, alternatively, that it is not, in fact, an uninterpretable feature in the Chomskyan sense, as suggested by Sigurdsson (2004). Yet, where does this value come from? A thorough discussion of these issues clearly goes beyond the scope of this short paper and are therefore left as interesting problems for future research.

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# The 'Definite Article' *TA* in Colloquial Slovenian*

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This paper is a preliminary study of the Slovenian article-like element *ta*, typically called the 'colloquial definite article' (Toporišič 2000, Orešnik 1994, Herrity 2000), which is associated to adjectives in noun phrases. We argue that *ta* is not comparable to polydefiniteness as known from Swedish, Greek, etc., but that it is essentially comparable to the adjectival 'long form' in Serbian/Croatian/Bosnian. We analyze *ta* as the subject of a small-clause-like prenominal modifier. Section 1 gives a description of the data, Section 2 contrasts *ta* to similar elements in other languages, and Section 3 proposes a structure for constructions with *ta*.

## 1 Description of TA and the Environments it Occurs in

Although the article-like *ta* seems formally equivalent to a form of the demonstrative pronoun *ta* 'this', the two differ in various respects. The demonstrative *ta* and the article-like *ta*—in main text and word-for-word glosses henceforth designated by small-caps TA—can co-occur, (1a); the demonstrative carries stress, TA does not, (1a); the demonstrative agrees in case, gender and number, TA is invariant, (1b); the demonstrative can occur with bare nouns, TA cannot, (1c-d). Its inability to occur with bare nouns, i.e., its restriction to adjectivally modified NPs, distinguishes TA from definite articles in Germanic, Romance, Bulgarian, etc.

(1) a. tá ta zelen svinčnik
this$_{NOM}$ TA green$_{NOM}$ pencil$_{NOM}$
'this green pencil'

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b. tega ta zelenega svinčnika
this$_{GWN}$ TA green$_{GWN}$ pencil$_{GWN}$
'of this green pencil'

c. tá svinčnik
this pencil
'this pencil'

d. * ta svinčnik
TA pencil
'the pencil'

Unlike Serbian/Croatian/Bosnian (e.g. Progovac 1998, Aljović 2002) and standard Slovenian (e.g. Toporišič 2000), colloquial Slovenian does not exhibit the opposition between long and short adjectival morphology; the presence of TA can thus have no effect on the form of the adjective. Since TA is a clitic on the AP rather than an affix, other elements can intervene between TA and the adjective (Orešnik 1994), (2).

(2) ta frišn pofarban bicikl
TA freshly painted bike
'the freshly painted bike'

Given its association to the adjective, TA can be freely repeated with stacked adjectives, (3a). Also, as long as the adjectives are prenominal, their order seems freer when they occur with TA than when they occur without it, (3)-(4). Presumably as a consequence of the universal hierarchy of different types of FPs in whose specifiers APs sit—with the FP for size dominating the FP for color (Scott 2002)—the order of TA-less APs seems rigid, (4). The order of APs with TA in (3), however, seems reversible. If adjectives indeed sit in the specifiers of FPs that come in a fixed hierarchy (Cinque 1994, Scott 2002), this suggests that TA+AP sits in a different position/FP than the corresponding TA-less AP.

(3) a. tá [ ta zelen] [ ta debeu] svinčnik
this TA green TA thick pencil
'this thick green pencil'
b. tá [ ta debeu] [ ta zelen] svinčnik

(4) a. debeu zelen svinčnik
thick green pencil
'a thick green pencil'
b. *zelen debeu svinčnik

One environment TA is banned from is before some inherently definite adjectives, such as possessive and kind/classifying adjectives, (5a-b). On the other hand, TA freely combines with the inherently definite ordinals and superlatives, (5c-d). Moreover, it can apparently even occur with superlative and ordinal adverbs, (6a), though these are presumably deadjectival formations where TA attaches to the adjective which then converts into an adverb, with a structure such as [[*ta prv-*]-*ič*] (lit. [[TA

first] -time]). Further, when a TA-containing adverb is inside a complex AP, TA is preserved, and so one can get a structure with a TA+AP embedded inside another TA+AP, (6b). Finally, TA can sometimes—rather marginally—iterate inside a single AP, (7).

(5) a. *ta fotrov avto
TA dad's car
b. *ta javn delavc
TA public worker
c. ta drug/zadn pir
TA second/last beer
'the second/last beer'
d. ta najboljši komad
TA best piece
'the best song'

(6) a. [ Ta prvič] sem članek bral počasi.
TA first-time AUX article read slowly
'The first time, I read the article slowly.'
b. tá [ ta [ ta prvič] spohan] šnicl
this TA TA first-time fried steak
'this steak that has been fried for the first time'

(7) ta naj ta boljša tortica [cf. ta najboljša tortica]
TA most TA better cake TA best cake
'the best cake'

*1.1 TA on (apparent) non-adjectives*

We have said that TA occurs only on adjectives in noun phrases. Marginally, though, TA can be forced on apparently bare nouns and on non-adjective-modified nouns when the expression is used descriptively, that is, when it is used to pick out a referent from a set, when a particular referent differs from the others in the descriptive meaning of the expression, (8). Such cases require heavy emphasis on the contrastive-property-denoting element, such as the negative/positive prefix in (8a), the noun modifier in (8b), or even the (singly stressed) attributive-adjectivized PP in (9) (probably comparable to English adjectivized PPs as in *over-the-counter drug*). But while TA can help turn a PP into an attributive adjective, it is disallowed with postnominal PPs, (9b).

(8) a. ta nebencinar, ne ta ja-bencinar
TA non-gas-er not TA yes-gas-er
'the non-gas-fueled car, not the gas-fueled one'
b. ta človk človk
TA man man
'the man who is a man (e.g. not the robot dressed like a man)'

(9) a. un ta za-okol-pasu anorak
that TA for-around-belt wind-breaker
'the wind-breaker to put around the belt'

b. (* ta) anorak (* ta) za okol pasu
TA wind-breaker TA for around belt

Similarly to the adjectivizing role TA can play with respect to PPs, it can also—very marginally—allow a (deaccented) prenominal relative clause, as in (10a); otherwise, relative clauses are always postnominal, in which case TA is disallowed, (10b). Clearly, TA can only occur when the NP is somehow modified. If, despite appearances, we analyze the modifiers in (8)-(10) as APs, we preserve the intimate link between TA and the AP.

(10) a. Sreču sm *(?? ta) k-je-učiri-padu-s-kolesom fanta.
met AUX TA that-AUX-yesterday-fell-with-bike boy
'I met the boy that fell with his bike yesterday.'
b. Sreču sm (*ta) fanta, (*ta) ki je učiri padu s kolesom
met AUX TA boy TA that AUX yesterday fell with bike
'I met the boy that fell with his bike yesterday.'

*1.2 Predicative uses of TA+AP?*

TA only occurs with attributive adjectives. When it occurs on an adjective in predicative position, it stands next to a null noun, either on its own or in a partitive construction. One such case are structures with TA on predicative-looking superlatives and comparatives, (11a-b), where the latter are overtly partitive, (11b), and the former, covertly (cf. Matushansky 2004).

(11) a. Meta je ta najboljša.
Meta is TA best
'Meta is the best.'
b. Peter je ta višji od obeh bratov.
Peter is TA taller of both brothers
'Peter is the taller of the two brothers.'

In addition, TA is also available with ordinary adjectives when picking an individual from a set (e.g. *the tall one of the boys*), as in (12). The interpretation of such TA+AP in predicative position is partitive, 'the/an X one (of some relevant group)'. We claim that this construction involves a null noun with the meaning 'one'; Babby (1973) and later Bailyn (1994) made the same claim for an apparent predicative use of the Russian attributive-only 'long' form.

(12) a. Ta knjiga je ta debela.
this book is TA thick
'This book is a thick one / one of (the) thick ones.'
b. Peter je tist ta visok.
Peter is that TA tall
'Peter is that tall one [over there].'

We now present the arguments for our claim. When complex adjectives occur in attributive positions, the argument/comparison/adjunct/etc. precedes the adjective, as shown in (13), but when the same AP occurs in a predicative position, the argument/comparison/adjunct/etc. follows the adjective, as shown in (14) (cf. Larson & Marušič 2004).

(13) a. *podoben fotru fantič
similar dad boy
b. fotru podoben fantič
dad similar boy
'a boy who is like his dad'

(14) a. Peter je podoben fotru.
Peter is similar dad
'Peter is like his dad.'
b. *Peter je fotru podoben.[1]
Peter is dad similar

When TA is used with an adjective in a predicative position, the adjective has the attributive order—it precedes the argument/comparison/adjunct/etc. This suggests that the TA-modified adjective is actually an attributive adjective in a noun phrase with a null (unpronounced) N.

(15) a. *Peter je ta podobn fotru.
Peter is TA similar dad
b. Peter je ta fotru podobn.
Peter is TA dad similar
'Peter is the one who is like his dad.'

Babby (1975) devised a test to show the attributiveness of an apparent predicative use of the 'long' form in Russian, which we can apply to the Slovenian case at hand. The polite form of the 2nd person singular pronoun *vi* 'you' triggers plural agreement, but it requires a singular NP in an equative sentence ('NP is NP'), (16e). 2nd person plural, on the other hand, requires plural NPs in such sentences. The difference observed between (16c), with plural agreement on the adjective and the obligatory plural interpretation of the pronoun, and (16d), with singular agreement on the adjective and the obligatory interpretation as the singular polite form, thus suggests that TA+AP forms a noun phrase.

(16) a. Vi ste prišli.
you are came$_{PL}$ (=either SG$_{POLITE}$ or PL)
b. Vi ste še mladi.
you are still young$_{PL}$ (=either SG$_{POLITE}$ or PL)

[1] (14b) is bad with neutral intonation but can work when *fotru* is given contrastive emphasis (e.g. 'Peter is like his *dad*, not like his *mum*.').

c. Vi ste ta mladi.
you are TA $young_{PL}$ (=only PL)
d. Vi ste ta mlad.
you are TA $young_{SG}$ (=only $SG_{POLITE}$)
e. Vi ste tisti fant.
you are that $boy_{SG}$ (=only $SG_{POLITE}$)

TA+AP is therefore always part of a noun phrase, but the head of the NP can sometimes be null. This means that despite appearances, TA always modifies an attributive adjective.

Moreover, TA is also available in predicative constructions with 'nominalized' adjectives, (17), but such cases presumably also represent a combination of an attributive adjective and a null noun.

(17) a. Tile so pa ta beli / ta rdeči.
these are PTCL TA whites TA reds
'These are the Quislings/commies.'
b. Tole so njeni ta stari.
these are her TA olds
'These are her parents.'

*1.3 Other elements of the DP*

We have shown that TA only occurs with adjectives to its right. Now we turn to the elements preceding it. The most natural occurrences of TA are those where it follows a demonstrative, such as (1a), a possessive pronoun, (18a), or a possessive adjective, (18b). In all these three cases the preceding element makes the noun phrase definite, and the presence of TA actually seems obligatory. Although the definite noun phrase may in principle be pronounceable without TA, not using it sounds less natural and requires a pause (thus, not neutral intonation).

(18) a. moj *(ta) star bicikl
my TA old bike
'my old bike'
b. Brecljev *(ta) dolg komad
Brecelj's TA long piece
'Brecelj's long song'

As shown in (19), TA can also occur—thought it is not required—after numerals and quantifiers. But on the other hand, TA cannot appear on possessors, demonstratives or quantifiers.

(19) a. vse/tri (ta) bele knjige
all /three TA white books
'all /three (of the) white books'

b. vsaka (ta) bela knjiga
every TA white book
'each (of the) white book(s)'

(20) a. *ta moj / tatov avto
TA my / dad's car
b. *ta tist avto
TA that car
c. *ta en / nek / kšn / vsak avto
TA one/ some/ some/ every car
d. *ta mal / neki / več avtov
TA few/ some/ more cars

*1.4 Definitness or specificity?*

As we pointed out above, TA is often referred to as the definite article, the noun phrase containing it is often said to be definite. We have also shown that TA can occur in some inherently definite noun phrases with a demonstrative or a possessive element preceding it. In addition, TA seems to be obligatory (provided one can shut out potential interference from the standard-Slovenian system) with the inherently definite superlatives and ordinals, as in (21).

(21) a. Tole je *( ta) najglobja jama.
this AUX TA deepest cave
'This is the deepest cave.'
b. Črt je spet *( ta) prvi v gostilni.
Črt AUX again TA first in pub
'Črt is again the first one to come to the pub.'

While we have just referred to definiteness, we have stayed away from the concept of specificity. To be able to bring the definiteness–specificity distinction into the discussion, we follow Ionin *et al.* (2005) in defining the terms in the following way. If an NP is *definite*, then both the speaker and the hearer presuppose the existence of a unique individual (in the set denoted by the NP). If an NP is *specific*, then the speaker intends to refer to a unique individual in the set denoted by the NP (and considers this individual to possess some noteworthy property). According to these definitions, definiteness involves both the speaker's and the hearer's knowledge, while specificity involves only the speaker's knowledge.

Testing TA in appropriate contexts reveals that it brings in definiteness rather than specificity. TA cannot be used in [– definite] contexts, as shown in (22c-d).

(22) a. [+ definite] [+ specific]
Prinesi mi tistele ta zelene hlače.
bring$_{IMPER}$ I$_{DAT}$ those TA green pants
'Bring me those green pants.'

b. [+ definite] [– specific]
Kdorkoli je bil ta prvi v gostilni, naj tudi plača prvi.
whoever AUX was TA first in pub PTCL also pay first
'Whoever came to the pub first should also pay first.'

c. [– definite] [+ specific]
V gostilni sem srečal enega/*ta visokega prjatla,
in pub AUX met$_{1SG}$ one / TA tall friend
Vida Juga, ki ga ti ne poznaš.
Vid Jug that him you not know
'In the pub, I met a tall friend, Vid Jug, who you don't know.'

d. [– definite] [– specific]
# Hoče ta poceni igrco, ampak še ne ve, katero.
want TA cheap game but still not know which
'He wants a cheap game, but he doesn't know yet which one.'

TA is most commonly used to pick an individual from a group, pointing out its unique property in the relevant set and contrasting it with other members of the set, but the property has to be known to both the speaker and the hearer, or else TA is ungrammatical. For example, one cannot utter (23) in a context where only the speaker knows that there is a unique pair of green pants in the washroom.

(23) #A mi prneseš ta zelene hlače iz kopalnice?
Q I$_{DAT}$ bring TA green pants from washroom
'Can you please bring me the green pants from the washroom?'

However, TA does not necessarily refer to a unique item/token, it can also refer to a definite (/unique) type or class of a noun described by the AP. So for example in (24a), there is no unique/specific bottle the speaker is afraid to drink from but rather a specific *type* of bottle, namely that made of green glass. Similarly, TA does not seem to contribute specificity in (24b), where it is preceded by an indefinite determiner, suggesting that there are no two unique/specific large beers I want to drink; rather there is a particular type of beer, *a large beer*. (Note that on a type-definiteness reading of the TA NP, (22c-d) can be acceptable.)

(24) a. Ne pijem s ta zelene flaše, ker prnaša nesrečo.
not drink from TA green bottle$_{SG}$ because brings bad-luck
'I don't drink (beer) from green bottles, it brings bad luck.'

b. Dejte nama prosm dva ta velka pira.
give to-us please two TA large beers
'Bring us a couple of pints please.'

In addition to the indefinite determiner *dva* 'two' in (24b), TA can also be preceded by a number of other indefinite determiners that make the entire noun phrase indefinite, (25).

(25) a. kšn ta hitr avto = some (or other) fast car
some TA fast car
b. nek ta hitr avto = some fast car
some TA fast car
c. kerkol ta hitr avto = whichever fast car
whichever TA fast car
d. eni ta hitri avti = some fast cars
$one_{PL}$ TA fast cars
e. kr en ta hitr avto = any one fast car
any one TA fast car

It seems, then, that TA is separate from the DP's quantification. The entire noun phrase containing TA is neither necessarily definite nor necessarily specific. In addition, the actual interpretation also appears to depend on the adjective that TA precedes.

To sum up Section 1, the article-like element TA is intimately linked to the adjective, there can be several instances of it in the case of stacked adjectives, it is restricted to attributively used adjectives, and it seems to bring in (token or type) definiteness rather than specificity, though the entire NP which TA is part of can still be indefinite.

## 2 What Does TA (not) Look Like?

In this section we contrast the Slovenian definite TA with some better-known and potentially comparable phenomena in other languages.

One well-known case of adjectival definiteness is discussed by Delsing (1993) for Swedish, where the noun by itself has an affixal article, while an adjective has to be preceded by a second article, (26).

(26) a. hus-et b. det gamla hus-et
house-the the old[str] house-the
'the house' 'the old house' (Delsing 1993)

However, the Swedish facts are still different. Unlike Swedish, Slovenian has no definite article on nouns, and more importantly, while Swedish does not allow (as far as we know) the adjectival definite article with an indefinite noun, i.e., there has to be agreement in definiteness between the noun and the adjective, as in (26b), there is no such restriction in Slovenian, as we have shown in Section 1.4.

Another well-known case of an adjective-particular determiner comes from Greek, where a determiner can, but need not, reappear with

every adjective, (27). This phenomenon, which has been widely discussed, also does not seem to be directly related for the simple reason that Slovenian TA does not appear on nouns, and again, the Greek adjectival definite article cannot appear in an indefinite DP (Androutsopoulou 2001: 166). Moreover, while the otherwise obligatorily prenominal Greek adjectives can appear postnominally when preceded by the definite article, (27b-c), there is no such effect in Slovenian when TA appears in front of an adjective, (28).

(27) a. to meγalo to kokkino to vivlio
the big the red the book
'the big red book'
b. to meγalo to vivlio to kokkino
the big the book the red
c. to vivlio to meγalo to kokkino
the book the big the red (Alexiadou & Wilder 1998)

(28) a. zelene hlače
green pants
b. * hlače zelene
pants green
c. ta zelene hlače
TA green pants
d. * (*te) hlače ta zelene
these pants TA green

Similar features (no article on the noun and no article in an indefinite DP) keep Slovenian TA apart from determiners in Bulgarian and Macedonian, where the definite article of the Noun Phrase cliticizes on the first lexical word in the DP (Dimitrova-Vulchanova & Giusti 1998).

On the other hand, TA *does* seem to be parallel both in meaning and distribution to the Serbian/Croatian/Bosnian LONG form of adjectives (most clearly present in Bosnian). The LONG form is essentially just distinct morphology for adjectives, and is typically called definiteness (e.g. Progovac 1998, Rutkowski & Progovac 2005) or specificity marking (Aljović 2002, Trenkić 2004), (29).[2] Just like Slovenian TA, the S/C/B LONG form cannot appear on nouns, it can be iterated on stacked adjectives, (30), and it makes the DP neither definite nor specific, as shown by the fact that it can appear in an otherwise indefinite DP, (31).

(29) a. vrijedn-i student
diligent$_{\text{LONG}}$ student
b. vrijedan student
diligent$_{\text{SHORT}}$ student

[2] Standard Slovenian, but not colloquial Slovenian, has a comparable distinction between, traditionally, 'definite' and 'indefinite' adjectival suffixes; it is realized only in the nominative of the masculine singular declension and the accusative of the inanimate masculine singular declension. Note that though formally the same, the Croatian/Serbian/Bosnian (and standard Slovenian) LONG form and the Modern Russian LONG form are functionally very different (cf. Bailyn 1994).

(30) ono njegovo pouzdano: malo: crno: auto
that his reliable$_{LONG}$ small$_{LONG}$ black$_{LONG}$ car
'that reliable small black car of his' (Aljović 2002: 34)

(31) [in a store]
Treba mi jedan plav-i kaput.
need I$_{DAT}$ one blue$_{LONG}$ coat
'I need a blue (type of) coat.' (p.c. Tanja Milićev)

The Serbian LONG form is obligatory in three functions (Rutkowski & Progovac 2005): when the NP is definite, when the AP has the classifying function, and in vocative constructions. With respect to these uses and TA, we have already seen that TA brings in definiteness and that it can turn a qualitative adjective into a classifying (kind/type-denoting) one. We should add that TA does not appear with inherently classifying adjectives (more on this below) and that it is not really clear if it can be used, like the LONG form (as in the standard Slovenian LONG-form vocative in (32a)), in vocative constructions, (32b).

(32) a. Pametni človek, spregovori!
wise$_{LONG}$ man speak-up$_{IMPER.}$
'Speak up, wise man!'

b. *?Ta pametn človk, spregovor!
TA wise man speak-up$_{IMPER.}$
'Speak up, wise man!'

In addition, just like the LONG form, TA is used when an adjective appears alone (with a null noun), and just like classifying adjectives (which have the LONG form) (cf. Larson & Marušič 2004), TA is restricted to attributive adjectives (Section 1.2).

## 3 What and Where is TA: a Proposal

We follow Progovac (1998) in assuming that there is a DP in Slovenian (see also Aljović 2002, etc.), but go against Progovac (1998), Aljović (2002) and Rutkowski & Progovac (2005) by taking TA, the Slovenian counterpart of the Serbian LONG form, to be part of the AP rather than a head in the main N-D frame of functional projections.

A most revealing property of the TA+AP complex is its restrictive reading—the complex gets interpreted like a restrictive relative clause.

(33) ta plava žoga = 'the ball that is blue'
TA blue ball = the unique object that is both blue and a ball

This parallelism with relative clauses suggests an adjectival analysis à la Kayne (1994), Larson (1991) or Alexiadou & Wilder (1998), and we will draw some inspiration from Campos & Stavrou (2004), who proposed a

version of a relative-clause analysis for some polydefiniteness phenomena in Aromanian.

Campos & Stavrou (2004) argue that (34) is the structure of the Greek/Aromanian 'the man the good', a polydefinite construction somewhat similar to Greek. They claim that *atsel*, formally just a phonologically reduced demonstrative, in the Aromanian (35b) (contrast it with the non-reduced *atselu* in (35a)) is actually the subject of a small clause inside the DP. (36) gives the structure they propose for (35b).

(34) $[_{DP}$ the man $[_{FP}$ $[_{PREDP}$ pro $[_{PRED'}$ the $[_{AP}$ good ]]]]]

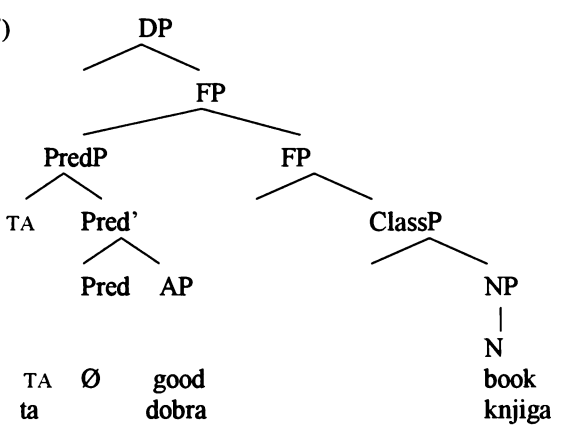
(35) a. om-lu atselu bun-lu
man-the that good-the
'that good man'

b. om-lu atsel bun-lu
man-the "that" good-the
'the good man' (Campos and Stavrou 2004:159)

(36) $[_{DP}$ *man-the* $[_{FP}$ $[_{PREDP}$ *atsel* $[_{PRED'}$ *good*$_i$*-the* $[_{AP}$ $t_i$ ]]]]]

Recall from Section 1 that, in parallel with the Aromanian *atsel / atselu*, TA could formally also be seen as an invariant and phonologically reduced, clitic version of the demonstrative pronoun *ta* 'this'. What we now take from Campos & Stavrou (2004) is just the idea that the site of the phonologically reduced demonstrative is the subject position of the small clause. We propose that the entire TA+AP complex is a reduced RC in the form of a PredP adjoined to some FP (cf. Svenonius 1994).

(37)




Having presented the structure for TA+AP with ordinary adjectives, we now look at a special case. We mentioned that TA+AP also has the interpretation of contrast, i.e. picking out an individual from a set (cf.

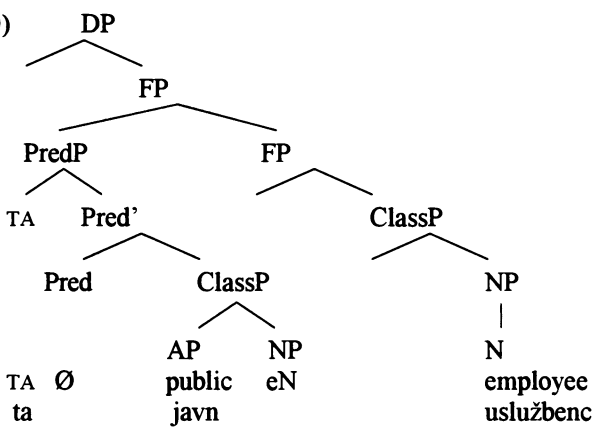
Section 1.2, (12)), which is the only interpretation available with attributive-only/non-predicative APs such as 'former', as shown in (38). *Ta bivši* in (38b) presupposes the existence of another/a current husband, and similarly, (39) presupposes the existence of another type of rescuer.

(38) a. Moj bivši mož je pjanc.
my former husband is drunkard
'My former husband is a drunkard.' [no remarriage necessary]
b. Moj ta bivši mož je pjanc
my TA former husband is drunkard
'My former husband is a drunkard' [I have a new husband]

(39) Poklical smo ta gorskega reševalca (ne ta pomorskega).
called AUX TA mountain rescuer not TA coastal
'We called the mountain rescuer (, not the coastal one).'

This contrastive interpretation is available in a predicative structure when the adjective is actually modifying a semantically empty noun like *one* (e.g. *This book is the big one*). When a classifying adjective cooccurs with TA, the structure seems to be (40).

(40)




With the two structures, (37) and (40), we can derive the observed properties. As mentioned above, attributive-only adjectives, such as the classifying As, are possible in the TA+AP complex only with the contrastive reading, while ordinary, attributive/predicative adjectives get both the contrastive reading and the definite reading. Since the TA+AP complex is a small clause, classifying adjectives are possible in a TA+AP construction only when modifying a null N; that is why they obligatorily get the contrastive reading. Attributive/predicative adjectives, on the other hand, are available in two constructions, they are either main predicates of the TA+AP small clause, or they modify a null N. When

they are the main predicate of the PredP, they get the simple definite reading, but when they modify a null N, they get the contrastive reading. Although this might not seem so obvious, we want to equate the contrastive and the classifying reading with the same structure, i.e. (40), with the AP in Spec,ClassP inside the PredP small clause.

One characteristic of our proposal is that the LONG form of definite adjectives is different from the LONG form of classifying adjectives. Colloquial Slovenian lost the 'definite' LONG form and turned it into TA+AP, but it preserved the 'classifying' LONG form.

The proposed structure is interesting also from a historical perspective. The LONG form is historically a combination of an adjectival ending and an anaphoric pronoun (Schenker 1993). In our structure, the adjectival ending would occupy the head of the small clause, Pred0, while the anaphoric pronoun would replace TA in the subject position of the small clause, Spec,PredP. Indeed, the pronominal character of part of the LONG form justifies placing the latter in the subject position of the small clause rather than in the head position, and the same reasoning applies to TA, presumably a reduced demonstrative pronoun (cf. above).

## 4 Conclusion

This paper provided a preliminary discussion of the colloquial Slovenian adjective-associated definite clitic TA, whose distribution and behavior led us to propose that TA, a phonologically reduced demonstrative, is in the subject position of a small clause, with the TA+AP complex being a reduced relative clause in the form of a PredP adjoined to some FP.

Finally, let us point out certain problems that our proposal faces. One prediction it makes is that if an adjective is predicative, it should in principle be available in the TA+AP construction, but this is not true for possessive adjectives. As (41) shows, the latter are predicative but cannot appear with TA. The ambiguity of (42) shows that possessive As do not modify a null N, but are truly predicative.

(41) Ta avto je fotrov. BUT: * TA fotrov avto
this car is father's TA father's car
'This car is father's.'

(42) Vi ste pa res očetovi/fotrovi.
you are PTCL really father's$_{PL}$
'You are really like your father.' ($SG_{POLITE}$ or PL)

Secondly, there is nothing in our structure that could explain why the LONG form appears also in vocative constructions. And finally, when an adjective such as 'cute' is used for the contrastive reading in a TA+AP complex in predicative position, the predicted structure gets somewhat

implausibly complex, with two null Ns: *This girl is* [[*TA cute* $e_N$ ] $e_N$ ]. We have to leave these problems for future work.

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# Deconstructing Index-Sensitive Relativized Minimality*

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## 1 The Problem

According to Relativized Minimality (RM), stated in Chomsky's (2000) terms, in configuration (1) α prevents β from probing γ for any active feature shared by α and γ.

(1)


This is illustrated for raising constructions in Icelandic (2): a raised DP cannot cross an experiencer DAT, as shown in (2a). If however the DP stays in its original position, the construction is fine, as in (2b).

(2) a. *Jón$_i$ virðist mér [ $t_i$ vera gáfadur ].
Jón$_{NOM}$ seem$_{3.SG}$ me$_{DAT}$ be$_{INF}$ gifted
'Jón seems to me to be gifted.'
b. Mér$_i$ virðist $t_i$ [ Jón vera gáfadur ].
me$_{DAT}$ seem$_{3.SG}$ Jón$_{NOM}$ be$_{INF}$ gifted
'Jón seems to me to be gifted.'

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This however contrasts with Italian (3): the DAT clitic experiencer does not cause a RM violation.

(3) *Gianni$_i$ mi sembra [$t_i$ essere furbo].
Gianni$_{NOM}$ me$_{DAT}$ seem$_{3.SG}$ be$_{INF}$ smart
'Gianni seems smart to me.'

We can handle this using Rizzi's original formulation of RM Rizzi (1990)), which pays attention to positions, not features as in Chomsky's formulation. Thus, as long as we assume that for A–movement only A–positions matter and, crucially, that the clitic *mi* is a head, not an A–position, no RM violation is expected. From this point of view the ungrammaticality of (4a) is unexpected. The clitic becomes an intervener if it is coindexed with the moved DP. This also holds for 1st and 2nd person, as shown in (4b).

(4) a. *Gianni$_i$ si$_i$ sembra [$t_i$ essere furbo].
Gianni SI$_{DAT}$ seem$_{3.SG}$ be$_{INF}$ smart
'Gianni seems smart to himself.'
b. *Io$_i$ mi$_i$ sembro [$t_i$ essere furbo].
I SI$_{DAT}$ seem$_{1.SG}$ be$_{INF}$ smart
'I seem smart to myself.'

To explain this, Rizzi (1986) proposes the following condition on chain formation (referred to here as *Index-sensitive Relativized Minimality* (RM$_i$)). In the configuration in (5), RM$_i$ forces the chain in (6d); all the other potential chains in (6) are excluded for $\theta$-reasons as well. If Y in (5) is not an argument (say, it is a particle with an inherently reflexive verb), it does not cause an intervention effect. If Y is an argument, in particular, if it has its own $\theta$-role, then by RM$_i$ the chain in (6d) is enforced and subsequently excluded by the $\theta$-criterion.

(5) $\ldots X_i \ldots \quad [_\alpha Y_i \ldots \quad e_i]$

(6) potential chains
a. (X), (Y), (e) → X is $\theta$-less
b. (X, Y), (e) → *e* has a $\theta$-role, but it is not an argument
c. (X), (Y, e) → X is $\theta$-less
d. (X, Y, e) → 2 $\theta$-roles in one chain

As discussed in Rizzi (1986) for Italian, the following structures present a configuration in which a DP crosses over a DAT experiencer:

psych-verbs (of the *piacere* type[1], cf. Belletti and Rizzi (1986)) in (7), raising in (8) and passive in (9). In all three configurations the DAT clitic is licit, as shown in the (a) examples, but the structures become sharply ungrammatical when the DAT clitic is coindexed with the raised DP, as shown in the (b) examples. In Rizzi's terms these structures are excluded for a $\theta$-violation: the coindexed reflexive clitic causes *an intervention effect*: it is $Y_i$ in (5).

(7) a. Mi apparisti tu.
me$_{DAT}$ appear$_{2\ SG.\ PAST}$ you$_{NOM}$
'You appeared to me.'
b. *Mi$_i$ apparvi io$_i$.
me$_{DAT}$ appear$_{1\ SG\ PAST}$ I$_{NOM}$
'I appeared to myself.'

(8) a. Gianni$_i$ mi/ti/gli sembra [t$_i$ essere furbo].
Gianni (me/you/him)$_{DAT}$ seem$_{3\ SG}$ be$_{INF}$ smart
'Gianni seems smart to me/to you/to him.'

b. *Gianni$_i$ si$_i$ sembra [t$_i$ essere furbo].
Gianni SI$_{DAT}$ seem$_{3\ SG}$ be$_{INF}$ smart
'Gianni seems smart to himself.'

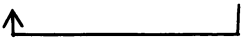
(9) a. Gianni$_i$ gli è stato presentato t$_i$.
Gianni him$_{DAT}$ COP$_{3\ SG}$ become$_{PRT}$ introduced
'Gianni was introduced to him.'
b. *(Gianni e Piero)$_i$ si$_i$ sono stati presentati t$_i$.
Gianni and Piero SI COP$_{3\ PL}$ become$_{PL}$ introduced$_{PL}$
'Gianni and Piero were introduced to each other.'

The other Romance languages show exactly the same pattern as Italian: when the DAT clitic is not coindexed with the raised DP, structures are grammatical; if the DAT clitic is coindexed with the raised DP, the result is sharply ungrammatical, as summarized in Table 1.

Two questions arise at this point, one empirical, the other conceptual. With respect to the latter one, both RM and RM$_i$ refer to an intervening element in the configuration and they differ only with respect to the nature of this intervener. In the Rizzi's original formulation, the intervener is a structural position for RM and coindexation for RM$_i$. In an ideal world, one would wish to have just one mechanism subsuming both cases of RM. On the empirical side, we note that there are Slavic

[1] I assume that psych-verbs are unaccusatives, as in (i), regardless of the word order.

(i) DP$_i$ SI$_i$ V t$_i$



languages which do not show intervention effects with reflexive clitics (as discussed in detail further below). Put together, these two facts render $RM_i$ unwelcome and undesirable. In the rest of this paper I will argue that $RM_i$ should be indeed dispensed with.

The rest of the paper is organized as follows: In the next section I present and summarize the Slavic and Romance data. Section 3 and section 4 deal with Romance and Slavic, respectively. Together they are the *deconstructing $RM_i$* core of the paper. The Romance facts will be subsumed under RM; for Slavic, on the other hand, I propose a "timing" solution involving the interaction between movement and binding and drawing on William's (2003) notion of "subjecthood relative to levels". The last section contains a brief summary.

## 2 Data summary

Romance languages are uniform in the intervention effect: psych-verbs, raising and passive are univocally excluded with reflexive clitics coindexed with the DP raised across the reflexive clitic. However, if we look at the same structures in Slavic languages, it appears that this construction is perfectly grammatical. All these configurations are shown for Czech in (10) to (12)[2].

(10) psych-verb
a. Karlovi vaděj dlouhý vlasy.
Karel$_{DAT}$ bother$_{3.PL}$ long hair$_{NOM}$
'Long hair bothers Karel.'
b. Karel$_i$ si$_i$ vadí $t_i$.
Karel$_{NOM}$ SI$_{DAT}$ bother$_{3.SG}$
'Karel bothers himself.'

(11) raising
a. Ivona$_i$ mi / Petrovi připadá [$t_i$ úžasně vtipná].
Ivona me$_{DAT}$ / Petr$_{DAT}$ seem$_{3.SG}$ [ awfully funny]
'Ivona seems to me/to Petr awfully funny.'
b. Ivona$_i$ si$_i$ připadá [$t_i$ úžasně vtipná].
Ivona SI$_{DAT}$ seem$_{3.SG}$ [ awfully funny]
'Ivona seems to herself awfully funny.'

(12) passive
(Jakub a Petr)$_i$ si$_i$ byli představeni $t_i$.
Jakub and Petr SI$_{DAT}$ COP$_{3.PL.PAST}$ introduced$_{M.PL}$
'Jakub and Petr were introduced to each other.'

[2] The Czech sentences exemplify colloquial rather than "correct" Czech.

Both the Slavic and Romance data are summarized in Table 1. *NO* means that the sentence is ungrammatical: the reflexive clitic causes an intervention effect. ✓ marks a grammatical sentence[3].

**Table 1**

| | It | Rom | Sp | Fr | Bg | Cr | Sln | Cz |
|---|---|---|---|---|---|---|---|---|
| psych verbs | NO | NO | NO | NO | ✓ | ✓ | ✓ | ✓ |
| raising | NO | NO | NO | NO | NO | ✓ | ♠ | ✓ |
| passive | NO | NO | NO | ♠ | NO | NO | ✓ | ✓ |

## 3 Romance

Two distinctions between Romance and Slavic which are potentially fatal for the configurations at hand come to mind: case and person. I will discuss each in turn, starting with case.

Reflexive clitics in Slavic languages come marked for case. Thus, next to ACC marked SE (which also figures in inchoatives, middles, se-passives, etc.) Czech (and Slovak[4]), Slovene, Croatian (but not Serbian) and Bulgarian have DAT marked SI. Most Romance languages, on the other hand, show no overt morphological case distinction between DAT and ACC. It is plausible to imagine that the intervention effect is due to case "underspecification": suppose that—for reasons which would have to be specified—the experiencer *must* be clearly marked as DAT. The way to test this idea is to take Romanian into consideration. Romanian (similarly to Slavic) has two distinct reflexive clitics: DAT *işi* and ACC *se*. Regardless, Romanian behaves like all the other Romance languages: the DAT reflexive clitic *işi* causes an intervention effect. We can thus discard case and seek the source of the intervention effect elsewhere. The second attempt will be based on the person distinction.

While in Slavic languages reflexive clitics are invariant SE/SI for all persons, all Romance languages shift from the SE clitic to the $1^{st}$ /$2^{nd}$ person clitic in reflexive contexts with a $1^{st}$ /$2^{nd}$ person subject, as shown in (13).

[3] The spade sign ♠ under French passive and Slovene raising mark independently untestable examples. SE in French cannot cooccur with an auxiliary *have*. Similarly, the raising verb in Slovene is inherently reflexive *zditi se* and two reflexive clitics cannot cooccur in this language.

[4] Czech and Slovak behave uniformly for all present purposes.

| (13) | | *Italian* | | | *Czech* | | |
|---|---|---|---|---|---|---|---|
| | 1sg. | Io | **mi** | lavo. | Já | **se** | meju. |
| | 2sg. | Tu | **ti** | lavi. | Ty | **se** | meješ. |
| | 3sg. | Lui | **si** | lava. | On | **se** | meje. |
| | 1pl. | Noi | **ci** | laviamo, | My | **se** | mejeme. |
| | 2pl. | Voi | **vi** | lavate. | Vy | **se** | mejete. |
| | 3pl. | Loro | **si** | lavano. | Oni | **se** | mejou. |

The next step is to take seriously what appears on the surface: in Romance, the reflexive clitics *are* person clitics. This means that they have person features: *mi* is 1st person, *ti* is 2nd person, etc.

Going back to Chomsky's formulation of RM in (1), the intuitive idea is that when the probe searches for a specific, 1st person goal in (14), the first element it finds is the clitic *mi* (by RM). *Mi* would then have to move to the subject position and in fact become its own antecedent. This is of course illicit. Thus, the derivation crashes. When the probe searches for 3rd person, however, as in (15), the derivation proceeds as expected, yielding (3). As pointed out to me by Željko Bošković (p.c.), in Chomsky's framework it is almost impossible to make probing sensitive to a specific person feature, in particular under Chomsky's valuation. On the other hand, Béjar and Rezac (2004) take fine-grained person specification on probes to be a core for explaining agreement patterns in ergative languages. Leaving that for further research, I would follow Béjar and Rezac's path.

(14) probe$^{1st}$ mi$^{1st}$ sembro [io$^{1st}$ essere furbo]

(15) probe$^{3rd}$ mi$^{1st}$ sembra [Gianni$^{3rd}$ essere furbo]

To make this intuitive idea work, (at least) one further point must be discussed. In this approach both the reflexive clitic SI and full DPs (like *Gianni*) must carry 3rd person features. At the same time, they must further contrast with the non-reflexive pronouns *gli/lo/la*: these must not be specified for 3rd person.

Significantly, this is precisely what Kayne (2000) proposes for Romance pronouns. In particular, he argues that to complete the line *m-* (pronoun with the root *m*) for 1st person, *t–* for 2nd person, the *s–* type pronoun, not the *l*-type (as the definite articles) should be taken for 3rd person. I leave further details to be specified in future research.

It is then the person feature of the Romance (reflexive) clitics that causes an intervention effect. From that perspective we expect that whenever the reflexive clitic is insensitive to the person feature, the

intervention effect should not arise. This is a strong claim which must be confronted with the Slavic data in Table 1. We either give up any explanation in terms of the person distinction of the reflexive clitics, or find another mechanism which would explain the variation we see in Slavic. Naturally, we choose the second option, to which we proceed in the next section.

## 4 Slavic

So far, our analysis predicts that Romance reflexive clitics will *always* cause an intervention effect, regardless of the complexity of the configuration in which they appear (psych-verbs, raising, passive). Slavic reflexive clitics, on the other hand, are predicted not to cause intervention effects at all.

This prediction is indeed born out for psych-verbs in all Slavic. For raising and passive contexts, however, we are presented with a much muddier picture. Czech and Slovene (modulo raising) are well behaved (no intervention effects[5] observed). Bulgarian shows intervention effects for both raising and passive and Croatian is well behaved for raising, but has an intervention effect with passive. Since both Bulgarian and Croatian are ill behaved, I will treat them as such for the present discussion and I will return to Croatian in section 4.6.

### *4.1 Psych-verbs vs. raising and passive*

Why are all the Slavic languages well behaved with psych-verbs, but diverge in raising and passive? The complexity of the structure is an obvious answer: while psych-verbs are simple, non-embedded structures, both raising and passive contain a lexical embedding, i. e., a small clause (SC). Importantly, the subject of the sentence in raising and passive structures is born inside the lexical embedding, as shown for raising in (16).[6]

(16) $\text{John}_i$ seems to Mary $[_{SC}\ t_i$ to be crazy$]$

This assumption might perhaps be less uncontroversial for passive, but the properties of the Czech copula and the contrast they show with

[5] I use intervention here as a useful shorthand for an ungrammatical sentence with a reflexive clitic: I still claim that no Slavic language has a true intervention effect in the Romance sense.

[6] Slavic languages do not have raising out of infinitives, cf. Lasnik (1997); however, they have raising out of adjectival SC. On the other hand, Romance has both SC and INF complements. I assume that raising out of SC is the same as raising out of INF, but consider Williams (1983).

auxiliaries used in past tenses (see Fried (1994) and in particular Toman (1980)) seem to suggest that the copula is indeed a lexical verb which embeds a small clause as complement. For one thing, while 3rd person AUX is null, 3rd person copula must be present, as shown in (17).

(17) Czech auxiliary vs. copula

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| a. | Já | *sem* | ho | zradil | d. | Já | *sem* | zrazen. |
| | I | $\text{AUX}_{1.\text{SG}}$ | him | betrayed | | I | $\text{COP}_{1.\text{SG}}$ | betrayed |
| b. | Ty | *'s* | ho | zradil | e. | Ty | *seš* | zrazen. |
| | You | $\text{AUX}_{2.\text{SG}}$ | him | betrayed | | You | $\text{COP}_{2.\text{SG}}$ | betrayed |
| c. | Karel | *Ø* | ho | zradil. | f. | Vít | *je* | zrazen. |
| | Karel | $\text{AUX}_{3.\text{SG}}$ | him | betrayed | | Vít | $\text{COP}_{3.\text{SG}}$ | betrayed |

To see why this distinction between a simple, non-embedded structure for psych-verbs, on the one hand, and small clause embedding for raising and passive, on the other, should matter, I need to lay out the requirements I posit for reflexive clitics.

(18) Reflexive clitics
- (i) A reflexive clitic must have an antecedent.
- (ii) The antecedent must be a *subject*. I follow William's (2003) idea of *subjects at different levels* in a way that will be made explicit as we proceed.
- (iii) A reflexive clitic must be bound at the level it is introduced.

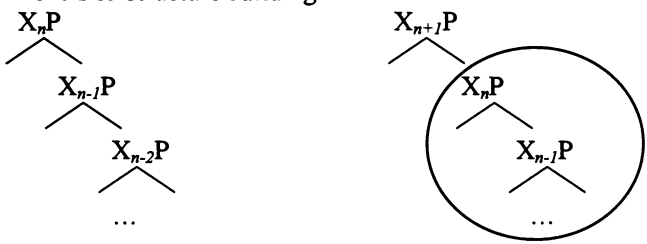
Requirements (i) and (ii) are fairly standard, modulo Williams' notion of subjecthood. However, requirement (iii) calls for more detailed explanation, to which we turn presently.

*4.2 Representation Theory: structure and the LEC*

The intuitive idea we want to pursue here is that the subject, raised from a lexical complement in passive and raising structures, arrives "too late" to bind the reflexive clitic. To express this idea in more precise terms, I follow William's Representation Theory (RT). In particular, two notions are used: structure building together with embedding and the Level Embedding Conjecture (LEC). We proceed first to the way structures are built in RT and then turn to the LEC.

Williams uses levels as blocks to structure building. For present purposes we can imagine levels as equal to phrases, XPs. Structures—trees—are built in the familiar fashion, successively from the bottom up. In this approach, one level is added on top of the previous level (this way, extension is always granted) ... $L_n \rightarrow L_{n+1} \rightarrow$ ..., as shown in the lefthand tree in (19). To build the structure further, level $X_{n+1}$ is added on top of previously built structure, yielding the righthand tree in (19).

(19) Levels & Structure building




If nothing more were said, one might imagine that this is just an unorthodox way to build usual structures. It is not, however. Every level introduces items, subject to the LEC:

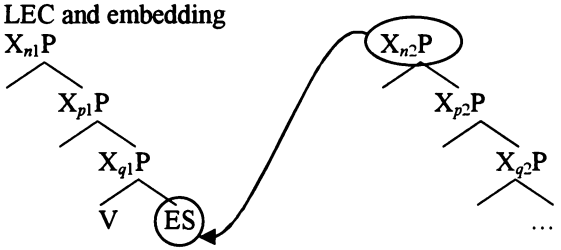
(20) Level Embedding Conjecture (LEC)
An item can be embedded exactly at the level at which it is defined, and no other.

(Williams (2003), p. 64)

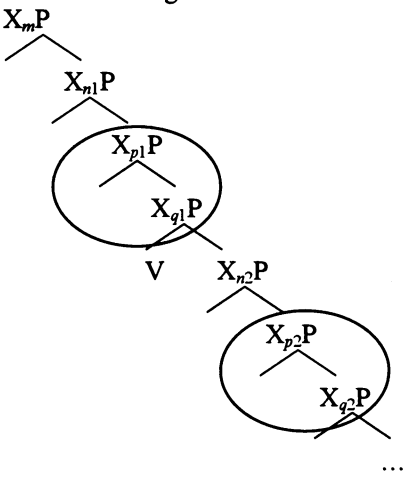
Let us look at the general illustration of the LEC in (21). Both the lefthand and righthand trees started to be built separately; the indices 1 and 2 emphasize exactly that. At the level $X_n$, suppose that the embedding of a structure size $X_n$ is defined: the LEC guarantees that this embedding could not happen earlier or later.

More concretely, suppose that the structure with index 1 is the matrix raising verb and the tree with index 2 is the small clause, as suggested in (21). *ES* stands for "embedding site", a place where the embedding is executed. By combining the trees we yield (22), as the → on the righthand side of the picture suggests. In (22), by the LEC, any item from any of the two circled parts of the tree structures is unavailable in the present representation: it is "too late" for eventual embedding from the circled areas.

(21) LEC and embedding



(22) after embedding

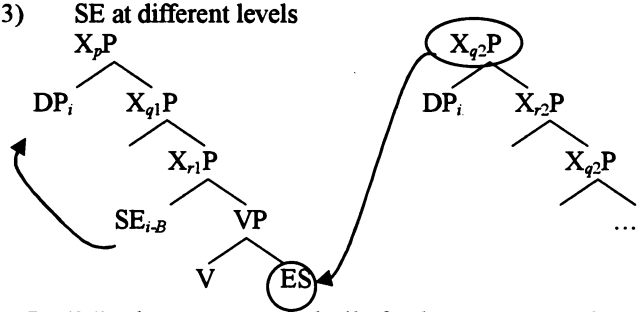



In particular, continuing with our concrete example from (21) in (22), if we add another level in the now familiar fashion on top of the level $X_n$, level $X_m$ (for instance, TP as a standardly assumed projection for subject), no items defined at level $X_p$ of $X_q$ can reach this newly introduced position, regardless whether it originates in matrix structure ($X_{p1}$ or $X_{q1}$) or embedded structure ($X_{p2}$ or $X_{q2}$). Only items introduced (defined) at the level $X_n$ are available for further structure building in the representation in (22).

At this moment the strategy we pursue here should be evident: if reflexive clitics in two different languages were to be introduced at two different levels (for example language A introduces reflexive clitics later than language B), by the general framework of RT only the later embedded (i.e, reflexive clitics in language A) would be able to be bound by an element raised from the embedding. This is illustrated in (23) and (24).

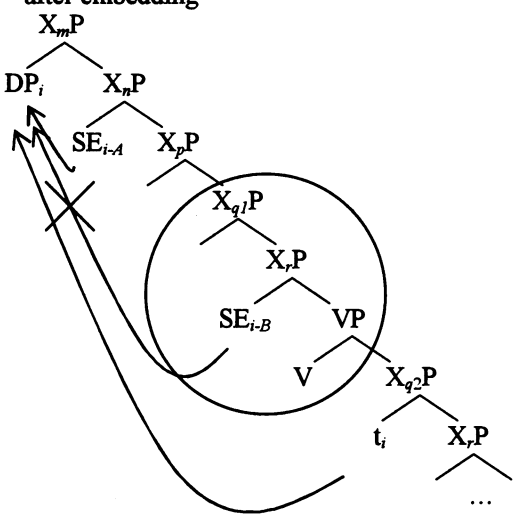
Looking at (23), at level $X_p$ embedding for a complement $X_q$ is defined *and* the reflexive clitic must be bound (by (18)). The subscript $SE_{i\text{-}B}$ is meant to suggest that we are dealing with a language B in which the reflexive clitic is introduced early. Embedding is marked in the now familiar fashion, by the arrow pointing to the embedding site ES.

(23) SE at different levels




In (24), the structure is built further up: $X_n$ and $X_m$ are added to the previously built structure. From the embedded structure, $DP_i$ is moved to subject position. Further, a clitic (for a language A) is defined at level $X_n$. Now, clearly, while the reflexive clitic at level $X_n$ can be bound by the subject raised out of the embedding, the reflexive clitic introduced earlier, at level $X_r$, is not, as indicated in (24).

(24) after embedding




The RT principles give us the leeway needed to explain intervention effects of reflexive clitics in different Slavic languages by introducing them either earlier or later in the structure. Now we have to look for evidence for positing reflexive clitics at different levels at different Slavic languages.

*4.3 Higher vs. lower clitics*

Table 2 summarizes the positions of clitics within the clitic clusters of the four Slavic languages we are dealing with here, based on Franks and King (2000), Comrie and Corbett (2002), and native speaker judgments. The Slavic clitic cluster consists of verbal clitics at the edges of the cluster and pronominal (object) clitics in the middle. Observe however that the reflexive clitics are again at the edges of the pronominal clitics: they either precede the DAT pronominal clitic or follow the GEN (ACC) pronominal clitic.

**Table 2**

| *language* | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Czech | aux | SI | SE | DAT | ACC | GEN | | je |
| Slovene | aux | SI | SE | DAT | ACC | GEN | | je |
| Croatian | aux | SI | | DAT | ACC | GEN | SE | je |
| Bulgarian | aux | SI | | DAT | ACC | | SE | e |

Should the clitics be aligned as here, in particular with the reflexive DAT clitic SI in all four languages in the same position, all four languages should behave uniformly with respect to the intervention effect. Recall however, that in Bulgarian and Croatian the DAT reflexive clitic SI causes an intervention effect. I am going to argue that both Bulgarian and Croatian are in fact languages of type B: the reflexive clitics in these languages are introduced earlier (lower) than in Czech and Slovene. These, consequently, are argued to be languages of type A, with reflexive clitics introduced later (higher). Now we turn to evidence for this claim.

Such evidence is provided by the interaction of the verbal clitics with reflexive clitics. Furthermore, I take complementary distribution of the two clitics as an indication that these two clitics compete for the same position in the structure.

Recall that the verbal clitics mark both the left (high) and right (low) edge of the Slavic clitic cluster, as shown in Table 2. Hence, we expect to observe interaction of the reflexive clitics with the low verbal clitics in languages of type B and with the high verbal clitics in languages of type A. This prediction is beautifully
"born" out. We turn first to Croatian, the low reflexive clitic language.

*4.4 Croatian*

There are three ways the verbal and pronominal clitics in Croatian interact. First and most importantly, SE and 3.sg AUX *je* usually do not cooccur, as shown in (25).

(25) a. ??Jan se je umio.
Jan $SE_{ACC}$ $AUX_{3.SG}$ wash
'Jan washed.'
b. Jan se umio.

Second, the reflexive clitics SI and SE cannot cooccur.[7] In (26), SE is a particle with an inherently reflexive verb which takes a DAT argument. This argument however cannot be the clitic SI.

(26) *Jan si se sviđa.
Jan $SI_{DAT}$ $SE_{ACC}$ $please_{3.SG}$
'Jan likes himself.'

Third, SI cannot cooccur with another DAT clitic. This contrasts with Czech. In particular, the inherently REFL verb *to sit oneself down* cannot occur with a possessive DAT clitic in Croatian (27a), but it is fine in Czech (27b).

(27) a. *On si joj je sjeo na suknju.
he $SI_{DAT}$ $her_{DAT}$ $AUX_{3.SG}$ $sat_{M.SG}$ on skirt
'He sat on her skirt.'
b. Von si jí sed' na sukýnku!
he $SI_{DAT}$ $her_{DAT}$ $sat_{M.SG}$ on skirt
'He sat on her skirt!'

To handle all three complementarities, I propose that in Croatian both reflexive clitics SI and SE originate low, competing for the position with 3.sg clitic *je*[8]. This is where both the reflexive clitics need to be bound: in other words, this is the level $X_r$ from (24). Furthermore, the DAT clitic SI needs to raise to another position to check its case. This explains two things. First, the position of the reflexive DAT SI (preceding other pronominal clitics) and second, the complementarity with other DAT clitics.

[7] This is true about all the languages under discussion, with the exception of Bulgarian and (certain) Moravian dialects.

[8] It is a fair question, what does "competition for the same position" mean and why is it JE that drops, not SE. Bošković (2001), sec.3.2, suggests that SE and JE might be competing for a particular placement in PF; even though, in syntax, JE moves higher and shows the same syntactic behavior as other (high) auxiliary clitics. Here, the complementarity of SE and JE is seen as essentially an instantiation of a blocking principle: SE lexicalizes a sub-tree properly containing a position where JE might be inserted. Since then SE lexicalizes more features than JE, this entire subtree will be mapped onto SE (whenever it can) leaving no space for JE. See Medová and Taraldsen (to appear).

*4.5 Other Slavic languages*

While in Croatian we observed interaction between clitics at the lower edge of the cluster, in Czech we find an interaction at the upper edge: reflexive clitics interact with 2.sg verbal auxiliary clitic *'s*. In particular, this reflexive clitic *precedes* the verbal auxiliary, as in (28b).[9]

(28) a. Ty si si všim!
you $AUX_{2.SG}$ $SI_{DAT}$ notice
'You noticed!'

b. Ty si-s všim!
you $SI_{DAT}$- $AUX_{2.SG}$ notice
'You noticed!'

Even though Slovene (and Slovak) do not show the same interaction with 2.sg verbal clitics, they still have both reflexive clitics preceding the pronominal clitics. In addition, they also are well behaved with respect to the intervention effects. These facts align Slovene and Slovak alongside Czech among languages with high reflexive clitics.

Similarly, although Bulgarian does not show the same interaction with low verbal clitics, it still (like Croatian) splits the reflexive clitics in the cluster: DAT SI precedes pronominal clitics, ACC SE follows. Again, like Croatian, I propose that both reflexive clitics must be bound low, low (early) enough that they are unable to be bound by a DP moved from the lexical embedding under raising verbs and passive.

This array of facts is summarized by the following table with reanalyzed positions for Slavic reflexive clitics.

**Table 3**

| Czech | aux | SI/SE | 's | DAT | ACC | GEN | | je |
|---|---|---|---|---|---|---|---|---|
| Slovene | aux | SI/SE | | DAT | ACC | GEN | | je |
| Croatian | aux | | | SI/DAT | ACC | GEN | | SE/je |
| Bulgarian | aux | | SI | DAT | ACC | | SE | e |

*4.6 Croatian again*

Recall from Table 1 that in Croatian raising with reflexive clitics is fine, only the passive is ungrammatical. This framework leaves open the possibility that the embedded complement under the raising verb might

[9] First, recall the 2nd sg. auxiliary *-s* from (17b). Second, the example in (ii) shows that it indeed is the auxiliary, not the reflexive clitic, that undergoes "contraction". Recall that the ACC reflexive clitic is SE; combined with the 2nd person auxiliary, we observe the same interaction as in (28).

(i) Ty si se ještě neumyl!
(ii) Ty se-s ještě neumyl! 'You still didn't wash!'

be so small (or, put differently, embedded early enough) that a DP raised out of it can bind even the low reflexive clitic.

(29) a. ?Ivan$_i$ si$_k$ izgleda [t$_i$ dosadan].
Ivan SI$_{DAT}$ seems$_{3.SG.PRES}$ boring$_{ADJ}$
'Ivan seems boring to himself.'
b. Ivan$_i$ si$_k$ izgleda [t$_i$ dosadno].
Ivan SI$_{DAT}$ seems$_{3.SG.PRES}$ boring$_{ADV}$
'Ivan seems boring to himself.'
c. ??/*Dječaci$_i$ su si$_i$ bili povjereni t$_i$.
boys$_{M.PL}$ AUX$_{3.PL.PRES}$ SI$_{DAT}$ were entrusted$_{M.PL}$
'The boys were entrusted one another.'

In fact, this is a welcome result: while with passive the embedded participle has to agree (in gender and number: M.pl) with the raised DP (29c), raising has two options. Next to an adjectival complement, which has to show agreement with the raised DP (in the manner the passive does), as in (29a), there also is an adverbial non-agreeing complement, shown in (29b). Note that the non-agreeing form is better: if agreement is achieved via functional structure, more of it is needed for agreeing complements than for non-agreeing. The smaller (earlier) embedding is then predicted to be reachable for the low reflexive clitics.

## 5 Conclusion

In this paper, RM$_i$ is deconstructed. It is argued that the Romance facts should be brought under the purview of standard RM and that Slavic reflexive clitics involve a timing solution involving the interaction between movement and binding. In particular, those Slavic languages which do not allow raising across DAT experiencers (Bulgarian and Croatian) are argued to have introduced the reflexive DAT clitic lower (earlier) than languages that allow crossing (Czech, Slovak and Slovene).

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# Direction of Cliticization in Macedonian*

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## 1 Introduction

This paper examines patterns of cliticization in Macedonian. Along with all other South Slavic languages, Macedonian requires that clitics occur in a specific order, which is given in (1a) and exemplified in (1b).

(1) a. *li* > Mod > Neg > $BE_{1/2}$ > DAT > ACC > $BE_3$
(cf. Franks & King 2000)

b. Po Marija *li* *ќе* *ti* *go* prati pismoto?
By Marija Q MOD $you_{DAT}$ $it_{ACC}$ $send_{3SG}$ letter-the
'Is it via Maria that s/he will send the letter to you?'
(Tomić 1996: 827)

Thus, the clitic cluster opens with the interrogative particle *li*, which is followed by the modal verb *ќе*, and a sequence of pronominal and auxiliary/copula clitics. In contrast to other South Slavic languages, in which only the 3rd person singular form of the verb 'to be' comes last in the cluster, in Macedonian both singular and plural variants appear in this position. Moreover, the 3rd person form of the verb 'be' is overtly present only in copula structures.

(2) a. *Mu* *(*e*) skinato paltoto.
$him_{DAT}$ is $torn_{PASS.PART.N.SG}$ coat-the
'His coat is torn.'

b. *Mu* *se*(**e*) skinalo paltoto.
$him_{DAT.REFL}$ is $torn_{PART.N.SG}$ coat-the
'Reportedly, his coat got torn.'
(Tomić, forthcoming)

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Patterns of cliticization in Macedonian are fairly complex and are related to the category that hosts clitics. This paper is an attempt at their explanation. It is argued that cliticization is only possible when the host is a case-assigning category. Otherwise, clitics may not occur, and weak pronouns must be selected instead.

The paper is organized as follows. It starts with an outline of clitic doubling in Section 2. Section 3 describes the positions that clitics take with respect to different hosts. A brief overview of previous scholarship is provided in Section 4. Section 5 fleshes out the details of the analysis developed in this paper.

## 2 Clitic Doubling

Macedonian requires objects to be doubled by clitics, but the environments in which the doubling occurs are different for direct and indirect objects. As exemplified in (3), direct objects are doubled when they are definite, but not when they are indefinite.

(3) *(*Go*) vidov šefot.
him$_{CL.ACC}$ saw$_{3SG}$ chief-the
'I saw the chief.'
(Tomić, forthcoming)

Indirect object clitics are doubled when they are specific. Therefore, if the same definite noun *šefot* appears as the indirect object, it is doubled only when it has a specific interpretation.

(4) a. *Mu* dadov cveќa na šefot.
him$_{CL.DAT}$ gave$_{1SG}$ flowers to chief-the
'I gave flowers to (the specific person who is) the chief.'
b. Dadov cveќa na šefot.
gave$_{1SG}$ flowers to chief-the
'I gave flowers to (whoever is) the chief.'
(Tomić, forthcoming)

Given the definiteness/specificity requirement on doubling, I will assume that only DPs can be doubled and not NPs. Moreover, following Uriagereka (1994), I suggest that clitics are D-heads.

## 3 Direction of Cliticization

Clitics in Macedonian may be proclitic or enclitic, depending on the type of host. Thus, if the host is a tensed verb, such as *raduvame* in (5), or an *l*-participle, such as *dale* in (6), the clitics must immediately precede it as proclitics. Otherwise the outputs are ungrammatical.

(5) a. (Nie) *si* *se* raduvame na vnučevo mnogu.
we REFL.DAT REFL.ACC rejoice to grandson-the much
'Our grandson is giving us a lot of pleasure.'
b. *Nie *si se* mnogu raduvame na vnučevo.
c. *Raduvame *si se* mnogu na vnučevo. (Tomić 1999)

(6) a. (Vie) včera *ste* *im* *go* dale proektot.
you$_{PL}$ yesterday are him$_{DAT}$ it$_{ACC}$ give$_{PART.PL}$ project-the
'As reported, you gave them the project yesterday.'
b. *Vie *ste im go* včera dale proektot.
c. *Dale *ste im go* včera proektot. (cf. Tomić 2000)

Clitics always encliticize on imperatives (cf. 7) and gerunds (cf. 8). They may not procliticize on these categories even if they are supported by another word to their left[1].

(7) a. Penkaloto kupuvaj *mi* *go*!
Pen-the buy$_{IMPV.2SG}$ me$_{DAT}$ it$_{ACC}$
'Buy me the pen!'
b. *Penkaloto *mi go* kupuvaj! (Franks 1998)

(8) a. Zaneseno gledajќi *go* filmot ...
enthusiastically watching it$_{ACC}$ film-the
'Enthusiastically watching the film...'
a'. *Zaneseno *go* gledajќi filmot... (Franks & King 2000: 84)

In copula constructions with non-verbal predicative XPs, such as DPs, APs (cf. 9), and passive participles (cf. 10) clitics require a phonological host to their left. However, they need not be then adjacent to any particular category, which suggests that they do not cliticize (cf. Baerman & Billings 1998). When they are preceded by a non-verbal predicative element that agrees in φ-features with an overt or covert subject, they must appear in the second position (cf. 9 and 10b). Otherwise, they may occur rather low in the structure (cf. 10a). Native speakers inform me that the phrases preceding the cluster *mu e* are not separated by pauses, which indicates that the clitics may move quite freely in the clause in this context.

[1] An anonymous reviewer remarks that clitics may also follow *ne* and precede an imperative verb. However, this is a limited pattern, found among some speakers of the Skopje dialect in colloquial speech. See Franks & King (2000: 83) for details.

(9) a. ??Si mu mil.
are $him_{DAT}$ $dear_{M.SG}$
'He likes you'
b. Mil *si mu*.
'You are dear to him'
c. Ti *si mu* na našion sin mnogu mil!
you are $him_{DAT}$ to $our\text{-}the_{PROX}$ son very $dear_{M.SG}$
'You are very dear to our son!' (Tomić 2001b: 664)

(10) a. Na Petreta (*mu e*) od strana na komisijata
to Peter $him_{DAT}$ is from side of commission-the
(*mu e*) poveḱe pati (*mu e*) rečeno da dojde.
$him_{DAT}$ is more times $him_{DAT}$is $tell_{PASS.N}$ to come
'Peter was more than once told by the commission to come.'
(cf. Franks & King 2000; Tomić 2000: 299)
b. Rečeno *mu e* poveḱe pati (**mu e*) da dojde.
$tell_{PASS.N}$ $him_{DAT}$ is more times $him_{DAT}$is to come
'He was told come more than once.'

## 4 A Note on Previous Scholarship

There have been a few attempts to capture the direction of cliticization in Macedonian in the literature. Thus, Joseph (1983) argues that proclisis occurs on finite verbs, but this forces him to stipulate that *l*-participles are finite. Moreover, in this way he makes a distinction between finite and non-finite forms of verbs, even though contemporary Macedonian does not have infinitives. Another problem is the fact that he pays no attention to cliticization with passive participles, adjectives, or nouns.

Tomić (1997) handles the variation by decomposing the clitic hosts into feature pairs [±V] and [±N], as represented in (11).

(11)

| | V | N |
|---|---|---|
| tensed verbs | + | – |
| *l*-participles | + | – |
| passive participles | + | + |
| adjectives | + | + |
| nouns | – | + |

She claims that the type of cliticization depends on the saliency of verbal properties of the host. Hence, nouns, which are described as [–V] categories, may never serve as hosts for proclitics. *L*-participles and tensed verbs have positive values for V, negative for N, so clitics may procliticize on them. Adjectives and passive participles, which are specified for [+V, +N] features, exhibit indeterminate distribution. Only some speakers accept them as potential hosts for proclitics.

Tomić's insights with respect to the relation between degree of verbal properties and cliticization are certainly correct. However, the problem is that she assumes that nouns, adjectives, and passive participles are clitic hosts. It has been shown that they are not, because clitics do not have to be adjacent to these categories.

## 5 Towards An Analysis

It has been established that clitic placement in Macedonian hinges on the type of host. Clitics must procliticize on tensed verbs and *l*-participles, and they must encliticize on imperatives and gerunds. They may not cliticize on nouns, adjectives, and passive participles. In what follows, I present a new analysis of the phenomenon. The approach is based on two assumptions:

i) Cliticization is obligatory with those hosts that are able to assign case. Since both finite verbs and *l*-participles are case assigners, they always trigger proclisis. Likewise, imperatives and gerunds are also case-assigners. However, for reasons to be explained in section 5.3, they induce enclisis.
ii) Pronominal clitics in Macedonian do not form a uniform class. They comprise weak and clitic forms, in the sense of Cardinaletti and Starke (1999). Weak forms occur with elements that are unable to assign case, such as passive participles, adjectives and nouns.

### *5.1 Proclisis with case-assigning verbs*

Following some insights of Rudin's (1997) and Tomić (2000) proposals, I submit that clitics must cliticize and check case by raising to Agreement projections. They are located above the *l*-participle or a finite verb.

(12) $[_{TP}\ [_{T}$ *ste* $[_{AgrIO}$ *mu* $[_{AgrO}$ *go* $[_{vp}\ [_{VP}$ dale proektot na Petko]]]]]]
be$_{2PL}$ him$_{DAT}$ it$_{ACC}$ give project-the to Petko

Macedonian has largely lost morphological case on nouns. However, case distinctions are retained on pronominal clitics, which are the only elements that show a full case inflection paradigm. Following Belletti's (1999) analysis of cliticization in Italian, I will assume that this means that clitics bear a strong case feature, which must be checked syntactically (via movement). The case checking occurs under the Spec-head relation, so that the clitics must move together with their associates to agreement projections. Furthermore, recall from section 2 that pronominal clitics are suggested to be D-heads.

With these assumptions in mind, let me spell out the analysis in detail. The template in (13a) presents a base structure, before the

auxiliary is introduced. In (13b) the *l*-participle *dale* raises to AgrO. The movement of the verb creates equidistance, and as a result the direct object together with the accusative clitic may move and check accusative case in Spec, AgrOP. Next, in (13c), the verb moves from AgrO to AgrIO by head movement. This creates equidistance and the indirect object DP may move to Spec, AgrIOP to check dative case. Finally, the verb moves to T (cf. 13d), but the clitics must procliticize onto the verb in T (cf. 13e) as well.

(13) a. $[_{TP}\ [_{AgrIOP}\ [_{AgrOP}\ [_{VP}\ [_{D}$ **mu** $_{DP}$ **na Petko**$]$ $[_{V}$ **dale** $[_{DP}\ [_{D}$ **go** $_{DP}$ **proektot**$]]]]]]]$

b. $[_{TP}\ [_{AgrIOP}\ [_{AgrOP}\ [_{D}$ **go** $_{DP}$ **proektot**$]_j\ [_{AgrO}$ **dale**$_i\ [_{VP}\ [_{D}$ **mu** $_{DP}$ **na Petko**$]\ [_{V}\ t_i\ [_{DP}\ t_j\ ]]]]]]]$

c. $[_{TP}\ [_{AgrIOP}\ [_{D}$ **mu** $_{DP}$ **na Petko**$]_k\ [_{AgrIO}$ **dale**$_i\ [_{AgrOP}\ [_{D}$ **go** $_{DP}$ **proektot**$]_j\ [_{AgrO}\ t_i\ [_{VP}\ t_k\ [_{V}\ t_i\ [_{DP}\ t_j\ ]]]]]]]]$

d. $[_{TP}\ [_{T}$ **dale**$_i]\ [_{AgrIOP}\ [_{D}$ **mu** $_{DP}$ **na Petko**$]_k\ [_{AgrIO}\ t_i\ [_{AgrOP}\ [_{D}$ **go** $_{DP}$ **proektot**$]_j\ [_{AgrO}\ t_i\ [_{VP}\ t_k\ [_{V}\ t_i\ [_{DP}\ t_j\ ]]]]]]]]$

e. $[_{TP}\ [_{T}$ **mu**$_m$ + **go**$_l$ + **dale**$_i]\ [_{AgrIOP}\ [_{D}\ t_m\ _{DP}$ **na Petko**$]_k\ [_{AgrIO}\ t_i\ [_{AgrOP}\ [_{D}\ t_l\ _{DP}$ **proektot**$]_j\ [_{AgrO}\ t_i\ [_{VP}\ t_k\ [_{V}\ t_i\ [_{DP}\ t_j]]]]]]]]$

Why does the proclisis on the verb happen? A number of proposals have been made in the literature. According to Belletti (1999: 550), this is due to PF considerations: Agreement projections are not strong heads; so they may not contain any material that needs a PF interpretation. Therefore, they must be emptied before Spell-Out. In Nash and Rouveret's (2002: 177) view, the proclicis on $T^0$ occurs because clitics must raise onto a "substantive" (lexical) category endowed with active φ-features. Irrespectively of the actual motivation, it has been independently claimed (cf. Bošković 2002) that unlike in Serbo-Croatian, clitics in Macedonian and Bulgarian cliticize by adjoining to a single head. The subsequent section will present more supportive arguments for this proposal, which have not been raised in the literature so far. They will follow from the fact that Macedonian observes the Person Case Constraint (PCC).

*5.2 Explaining the person case constraint*

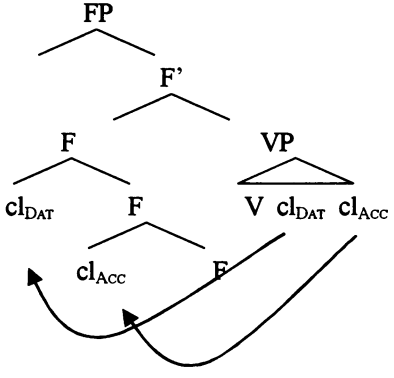
The PCC was first observed by Perlmutter (1971). It concerns a restriction in the occurrence of pronominal clitics in ditransitive constructions: if an accusative clitic co-occurs with a dative clitic, the accusative must carry the 3rd person feature. Thus, example (14a) is ill-formed, because the 3rd person dative co-occurs with the 2nd person accusative. It improves to perfection in (14b), where the non-clitic form *na niv* is used. Example (14c) is grammatical, because both clitics carry 3rd person features.

(14) a. *Jas *im* *te* preporačuvam.
I them$_{DAT}$ you$_{ACC}$ recommend$_{1\,SG.PRES}$
b. Jas *te* preporačuvam na niv.
I you$_{CL.ACC}$ recommend$_{1\,SG.PRES}$ to them$_{ACC}$
'I am recommending you to them.'
c. Jas *im* *ja* preporačuvam.
I them$_{DAT}$ her$_{ACC}$ recommend$_{1\,SG.PRES}$
'I am recommending her to them.'

The PCC has been observed in a number of unrelated languages but is not universal. Conspicuously enough, the constraint is operative in languages with verb-adjacent clitics (e.g. Bulgarian, Macedonian), but not in those with Wackernagel clitics (e.g. Czech, Slovene, Serbo-Croatian) or with weak pronouns instead of clitics (e.g. Polish, Russian; cf. Migdalski 2006 for a discussion).

Following Anagnostopoulou (1999: 287ff), I assume that the PCC is the result of incompatibility of person and number feature checking in a certain syntactic configuration, which is sketched in (15).

(15)




Suppose that the head F contains number and person features, which must be checked. The Person Case Constraint holds when a dative clitic raises first from its base position within the VP in order to check a person feature of $F^0$, whereas the accusative clitic moves second to check the remaining number feature on $F^0$, tucking in beneath the dative clitic. The derivation converges only if the accusative clitic carries just a number feature, and not a person feature, because the latter has already been checked by the dative. On the assumption that the 3rd person pronouns contain only a number feature, they are the only eligible candidates for the movement. If a non-3rd person pronominal clitic raises, then the

derivation will crash, because the person feature on the accusative will remain unchecked.

Turning to Macedonian, I take the $T^0$ in (13) to be the equivalent of Anagnostopoulou's $F^0$ in (15), which contains a person and number feature. Furthermore, I assume that clitics undergo head movement in Macedonian. This is justified by the fact that they are D-heads. In (13) the dative clitic *mu* raises first to $T^0$, in which the *l*-participle is located, in order to check a person feature there. The 3rd person accusative clitic *go* moves second and checks the remaining number feature on $T^0$.

After the clitic adjunction, the constituent in $T^0$ is specified for 3rd person and either the singular or plural number. The derivation converges if the feature specification of the subject is the same. In case it is different than the 3rd person, it is necessary to insert the 1st or the 2nd person auxiliary. I suggest that the auxiliary is left-adjoined to the complex head in $T^2$. This explains why auxiliaries in Macedonian are overt only in the 1st and the 2nd person (cf. 16).

(16) a. *Sum* *mu* *go* dal pismoto na deteto.
be$_{1SG}$ him$_{DAT}$ it$_{ACC}$ give$_{PART.M.SG}$ letter-the to child-the
'I gave the letter to the child.'

b. Jana *mu* *go* dala pismoto na deteto.
Jana him$_{DAT}$ it$_{ACC}$ give$_{PART.F.SG}$ letter-the to child-the
'Jana gave the letter to the child.'

The derivation proposed here describes compound tenses formed with the *l*-participle. However, in the case of simple tenses, formed with a finite verb such as *prodava* in (17), the derivation will be the same up to the stage represented in (13e), at which point the pronominal clitics adjoin to the verb in T. Next, there will be no need to generate an auxiliary in T, because unlike the *l*-participle, finite verbs always specify tense and person features. Therefore, they will move directly to T.

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[2] Additional support for the idea that the auxiliary and the pronominal clitics are left-adjoined to the *l*-participle and form a complex head comes from the fact that the *l*-participle always moves as a unit together with the clitics, for instance when it is raised to the left of the question particle *li*. I assume that the complex head *si+mu+gi+dal* in (ia) is left adjoined to *li*.

(i) a. *Si* *mu* *gi* dal *li* parite?
be$_{CL.2SG}$ him$_{CL.DAT}$ them $_{CL.ACC}$ give$_{PART.M.SG}$ Q money-the
'Did you give him the money?'

b. *Dal *si mu gi li* parite? (Mac, Rudin et al. 1999: 544)

(17) (Toj) prodava jabolka.
He sells apples

To summarize, this section has described the mechanism of proclisis on finite verbs and *l*-participles. In the next section I will outline enclisis, which occurs with gerunds and imperatives.

*5.3 Encliticization with imperatives and gerunds*

Recall that imperatives and gerunds are always left-adjacent to clitics in Macedonian.

(18) a. (**Mi* *ja*) daj *mi* *ja* knigata!
me$_{DAT}$ her$_{ACC}$ give$_{IMP.2SG}$ me$_{DAAT}$ her$_{ACC}$ book-the
'Give me the book!'
b. (**Mi* *ja*) davajќi *mi* *ja* knigata...
me$_{DAT}$ her$_{ACC}$ giving me$_{DAT}$ her$_{CL.ACC}$ book-the
'Giving me the book...' (Tomić 1996: 824)

These categories induce enclisis in many different languages, such as Greek, Italian, and Spanish (cf. Rivero & Terzi 1995, Rooryck 1992, Terzi 1999, Zanuttini 1997), so Macedonian is not exceptional in this respect. Just as tensed verbs and *l*-participles, gerunds and imperatives are case-assigners. However, they have severely reduced morphology. Gerunds do not show any agreement morphology at all, which makes them similar to infinitives. Imperatives exhibit an invariant specification for the 2$^{nd}$ person. Moreover, they also make a morphological distinction between the singular and the plural, as shown in (19), where plural morphology is manifested with the suffix *te*.

(19) a. čita+j
read+$_{IMPV}$+$_{2SG}$
b. čita+j+te
read+$_{IMPV}$+$_{2PL}$ (Tomić forthcoming)

There have been some attempts to capture the morphological impoverishment of gerunds and imperatives in syntactic terms. For example, Beukema and Coopmans (1989) suggest that imperatives have a [–Tense] Infl$^0$. Correspondingly, Belletti (1999: 569) proposes that if a clause contains an imperative, T$^0$ is not able to check the imperative morphology. Likewise, Terzi (1999: 94) argues that this means that V features of T$^0$ are weak and hence unable to attract verbs. Still, even if verbs in imperative clauses may not target T$^0$, there must be a way to assign imperative interpretation to them. Belletti (1999) suggests that this is done by an (Imp)erative Operator, located in the CP-area. The syntactic function of this operator is to bind an empty category that fills

the subject position in imperative sentences and to assign it a value that corresponds to [2nd person, singular/plural]. Belletti is not specific about the location of this operator. However, I would like to claim that it may be related to a functional head that is responsible for licensing negation, polarity, or in general, Illocutionary Force.

Some support for this assumption comes from Spanish, where imperatives are incompatible with negation (cf. 20a) and subjunctives or infinitives must be used in these contexts instead (cf. 20b and c).

(20) a. *No lee!
NEG read$_{IMPV.2SG}$
b. No leas!
NEG read$_{SUBJ.2SG}$
c. No leer!
NEG read$_{INF}$
'Don't read!' (Spanish, cf. Laka 1994)

Consequently, Laka (1994) proposes that imperatives are located in $\Sigma^0$, which in her system is the same projection that hosts negation. Tomić (2001), however, shows that in Macedonian negative imperatives are possible, which in her view indicates that negation and imperatives head different projections, which she terms NegP and ModP, respectively.

(21) Ne čitaj *go*!
NEG read$_{IMPER.2SG}$ it$_{ACC}$
'Don't read it!' (Mac, Tomić 2001a: 160)

I suggest that the postulation of two separate projections is unnecessary. It seems plausible that there is a single operator related to Force located in $\Sigma^0$, which attracts both negation and imperative morphology[3]. Whether both negation and imperative morphology can be spelt out simultaneously might be subject to a parametric variation.

Negation and imperatives are semantically related, because both of them are assigned under scope. Moreover, there is an additional argument for the idea of a uniform treatment of these categories, which comes from stress shift. Thus, in Macedonian stress falls on the antepenultimate syllable (cf. 22a). However, in the context of imperatives (cf. 22) and negation (cf. 23) stress is shifted rightward onto the following elements and calculated across word boundaries.

[3] In Migdalski (2006) I argue that the same projection attracts pronominal and verbal heads as well as negative and positive polarity items in Bulgarian and Serbo-Croatian. There thus seems to be evidence for a Force-related projection across Balkan Slavic.

(22) a. DOnesi!
'Bring!'
b. DoNEsi $go_{ACC}$!
'Bring it!'
c. DoneSI $mi_{DAT}$ $go_{ACC}$!
'Bring it to me!' (Baerman & Billings 1998: 20)

(23) Ne *si* *mu* *GI* dala jaBOLkata.
NEG are $him_{DAT}$ $them_{ACC}$ $give_{PART.F.SG}$ apples+the
'Reportedly, you haven't given him the apples.'
(Tomić 2001b: 649)

I propose that imperatives and negation are the only categories that are able to shift lexical stress, because only the elements that target the Σ projection are able to do that. This is not surprising in view of Cardinaletti & Starke's (1999: 225 fn 64) observation that since affirmation and negation always produce special stress patterns, $\Sigma^0$ may contain both polarity and accentuation features.

In contrast to imperatives, gerunds normally retain their fixed lexical stress when they are accompanied by enclitics.

(24) KupuVAJki $mi_{CL.DAT}$ $go_{CL.ACC}$, ...
'Buying it for me...' (cf. Franks 1998)

On the assumptions that $\Sigma^0$ contains both the Force and accentuation features, this property receives a straightforward explanation. The semantics of gerunds is not related to polarity or Illocutionary Force, which means that they are not licensed by $\Sigma^0$. The only formal property they share with imperatives is the reduced morphology. Therefore, gerunds do not target $\Sigma^0$, but a lower projection above TP I will term GerundP for convenience.

I suggest that the enclisis requirement results from the fact that T is "inactive" in imperative and gerundive clauses, so it does not attract verbs. Correspondingly, pronominal clitics, which must normally raise to a "substantive" category endowed with φ-features (cf. Nash & Rouveret 2002) may not check their φ-features against $T^0$. Instead, they are attracted directly into the closest head above $T^0$ without violating the Minimal Link Condition (Chomsky 1995): $\Sigma^0$ in the case of imperatives, and $Gerund^0$ in the case of gerunds. As an illustration, (25) presents the derivation of (22c)[4]. It shows that the pronominal clitics *mi* and *go* left-adjoin to Σ (cf. 25b). Subsequently, the verb *donesi* left-adjoins to the

[4] Since enclicis proceeds in the same way as proclisis up to the stage in (13c), I do not present the derivation in (25) from the very beginning.

clitics in Σ, and checks a Force-related imperative feature there (cf. 25c). As a result, it ends up to the left of the clitics.

(25) a. $[_{\Sigma P}\ [_{\Sigma}\ [_{AgrIOP}\ [_{DP}\ \mathbf{mi}]_k\ [_{AgrIO}\ \mathbf{donesi}_i\ [_{AgrOP}\ [_{DP}\ \mathbf{go}_j]\ [_{AgrO}\ t_i\ [_{VP}\ t_k\ [_{V}\ t_i\ [_{DP}\ t_j$ ]]]]]]]]]

b. $[_{\Sigma P}\ [_{\Sigma}\ \mathbf{mi}_k + \mathbf{go}_j + \Sigma\ [_{AgrIOP}\ t_k\ [_{AgrIO}\ \mathbf{donesi}_i\ [_{AgrOP}\ t_j\ [_{AgrO}\ t_i\ [_{VP}\ t_k\ [_{V}\ t_i$ $[_{DP}\ t_j]]]]]]]]]]

c. $[_{\Sigma P}\ [_{\Sigma}\ \mathbf{donesi}_i + \mathbf{mi}_k + \mathbf{go}_j + \Sigma]\ [_{AgrIOP}\ t_k\ [_{AgrIO}\ t_i\ [_{AgrOP}\ t_j\ [_{AgrO}\ t_i\ [_{VP}\ t_k$ $[_{V}\ t_i\ [_{DP}\ t_j]]]]]]]]$

The derivation of a clause containing a gerund will proceed in largely the same way, the only difference being that instead of $\Sigma^0$, the clitics and the verb will adjoin to Gerund$^0$.

Summarizing, the preceding sections have analyzed cliticization in the presence of case-assigning hosts. The reminder of the paper will investigate the ways pronominal forms pattern when there are no case-assigning hosts available.

*5.4 Patterns with non-case-assigning hosts*

This subsection provides arguments for the proposal that clitics in Macedonian instantiate two types of deficient elements: clitic and weak pronouns, as in Cardinaletti and Starke (1999), henceforth C&S.

C&S analyze the standard distinction between clitic and strong pronouns, and using various diagnostics they show that a theory of tripartitions is needed, with a division among clitics, weak, and strong elements. Due to space limitations, I am not able to present C&S's analysis in detail, so I just mention parts that are relevant for the account.

Both weak and strong elements are argued to occupy XP positions, while clitics are $X^0$s. Clitics move to case assigning projections to recover case. Moreover, C&S claim that, for reasons of economy, an element with the least structure possible should be realized. This is captured by the "Minimize Structure" (C& S 1999: 198) principle. It states that weak or strong forms are selected only if the realization of a clitic element is independently ruled out. This means that the realization of weak pronouns or strong pronouns should be a last resort procedure.

I submit that a similar tripartite division holds for pronominal forms in Macedonian. Morphologically, weak pronouns are the same as clitics, but they have a different distribution. Clitics must cliticize on case assigning hosts, such as tensed verbs and *l*-participles, and may appear in clause-initial positions. By contrast, weak pronouns, which appear with nouns, adjectives, and passive participles, do not pro- or encliticize. However, they require phonological support to the left, and thus may not be positioned clause-initially.

I have argued that clitics in Macedonian must move to agreement projections in order to check case. However, in the constructions with passive participles, adjectives, and nouns, there are no agreement projections available, because these categories are not case assigners. Therefore, clitics may not be selected, because they are unable to check case, and there is no case to be recovered. As a result, in line with the *Minimize Structure* principle, weak pronouns must be realized. Notice that weak pronouns always carry dative (cf. 9 and 10), which is an inherent case. This is expected, as inherent case is purely semantic, related to thematic structure, so it does not have to be checked, as it can be interpreted at LF.

Weak pronouns need phonological support to the left. However, as XP's they have more structure than clitics, so they are more independent with respect to their position in the clause. They need not occur in the second position, nor do they have to be verb adjacent (cf. 26a). They may scramble quite freely in the clause.

(26) a. Na Petreta (*mu e*) poveḱe pati (*mu e*)
to $\text{Peter}_{\text{DAT}}$ $\text{him}_{\text{DAT}}$ is more times $\text{him}_{\text{DAT}}$ is
rečeno da bide točen.
$\text{tell}_{\text{PASS.N}}$ to $\text{be}_{\text{3SG.SUBJ}}$ punctual
'Peter was told more than once to be punctual.'

b. Rečeno *mu e* da bide točen poveḱe pati. (Tomić 2000)

The weak forms only have to appear in the second position when they are preceded by predicative hosts, such as nouns, adjectives, and passive participles, which agree in φ-features with the subject, as in (9b, c) and (26b). Thus, the second position effect stems from the fact that all the weak forms raise to T, whereas the predicative hosts move to Spec, TP in order to check the φ-features of T. Consequently, there is only one element that precedes them, which is the occupant of Spec, TP. As an illustration, (27) provides a derivation of (26b)[5].

(27) $[_{TP}$ Rečeno$_t$ $[_T$ mu+e $[_{PredP}$ $t_i$ $[_{XP}$ da bide točen]

## 6 Conclusion

Summarizing, this paper has shown that cliticization in Macedonian is directly related to case assignment. Clitics may cliticize only onto the

[5] The derivation is very similar to the analysis of *l*-participle fronting in Bulgarian and Serbo-Croatian developed in Broekhuis & Migdalski (2003) and Migdalski (2005). Since the *l*-participle agrees with the subject in φ-features, it is argued that when the subject is not present, the *l*-participle may raise to Spec, TP and check the φ-features of T.

hosts that are case assigners. If there are no appropriate hosts available, weak pronouns must be selected instead of clitics.

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# Phrasal and Clausal Comparatives in Slavic

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## 1 Background

Comparatives can be descriptively divided into two types—*clausal* and *phrasal*—depending on the category of the phrase following *than*.

(1) a. Mary is taller than John is. (clausal)
b. Mary is taller than John. (phrasal)

By now, there is a consensus on the structure of clausal comparatives. They are thought to involve a CP-complement to the preposition *than*, with a *wh*-operator in Spec, CP binding a degree variable in the gradable predicate (cf. Heim 2000, a.o.), as in (2a). The gradable predicate is obligatorily elided under identity with the matrix predicate—a phenomenon known as *Comparative Deletion* (Bresnan 1973)—indicated by shading in (2b).[1] In English, the *wh*-operator itself is non-overt, resulting in the PF in (2b).

(2) a. LF: Mary is taller [$_{PP}$ than [$_{CP}$ $wh_1$ John is $d_1$-tall ]]
b. PF: Mary is taller [PP than [CP Ø John is $d_1$-tall ]]

There is no similar consensus as far as phrasal comparatives are concerned. Historically, there have been two approaches. The *reduced clause analysis* (e.g., Heim 1985, Hackl 2000, Lechner 2001) holds that phrasal comparatives always have a full clausal structure, which is masked by ellipsis. On this view, (1b) has the LF in (2a), but at PF more material is elided, as in (3), creating the illusion that the complement of *than* is a DP. This analysis is supported by the fact that ellipsis beyond Comparative Deletion is independently attested (cf. (4)).

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[1] Alternatively, the gradable predicate is *wh*-moved (Chomsky 1977, Kennedy 1999).

(3) PF:Mary is taller [PP than [CP Ø John ~~is [AP d-tall]~~ ]]

(4) a. John grew taller than I thought he would [~~VP grow [AP d-tall]~~]
b. John grew taller than I thought [~~TP he would [VP grow [AP d-tall]~~]]

The *direct analysis* (e.g., Hankamer 1973, Napoli 1983, a.o.) holds that at least some phrasal comparatives do not involve ellipsis at all; rather *than* has a DP complement, as in (5).

(5) LF and PF: Mary is taller [PP than [DP John]]

A major problem with the direct analysis is that it requires a different *-er* than the one used in clausal comparatives (as in Kennedy 1999). In clausal comparatives, the meaning of *-er* is defined in terms of having a definite description of a degree or a predicate of degrees as an argument (the denotation of *wh*1 *John is d*1-*tall*). Neither of these meanings works if *than* combines directly with an individual (*John*).

Moreover, some phrasal comparatives clearly have a clausal source. Case-matching between the post-*than* DP and a correlate in the matrix varies with the interpretation of the sentence (see (6), from Heim 1985), suggesting that the DP is not a complement of *than* but an argument in a clause, reduced by ellipsis, which matches the matrix clause in structure.

(6) Ich habe dir bessere Schlagzeuger [...] vorgestellt.
$I_{NOM}$ have $you_{DAT}$ better drummers introduced
'I have introduced better drummers to you ...'

a. als der Karlheinz
than $the_{NOM}$ Karlheinz
'... than Karlheinz has.'

b. als dem Karlheinz
than $the_{DAT}$ Karlheinz
'... than to Karlheinz.'

The conclusion is that at least some phrasal comparatives must be given a reduced clause analysis. The simplest account would extend that analysis to all phrasal comparatives. This would reduce the syntax and semantics of phrasal comparatives to that of clausal ones, achieving uniformity for all comparatives.

Nevertheless, it remains the case that for at least some phrasal comparatives the reduced clause analysis is problematic. Case-dependency on *than*, and extraction of the complement of *than* (see (7)) are among the most commonly given arguments in support of the direct analysis (Hankamer 1973, Napoli 1983). The facts in (7) are expected under the syntax in (5) but not under that of (2a).

(7) a. Mary is taller than him/*he
b. Who is John taller than?

Anaphors, NPIs, and negative concord words can also appear as the post-*than* DP licensed by an element in the matrix (Hoeksema 1983,

a.o.), suggesting that they are not in an embedded clause reduced by ellipsis. And although Heim (1985) cautions that not all of these arguments straightforwardly argue for the direct analysis, it is clear that they present a challenge for the reduced clause analysis. The challenge is not necessarily insurmountable, but until it is shown in concrete terms how the reduced clause analysis handles the problematic facts, we cannot conclude that it is the right analysis for all phrasal comparatives.

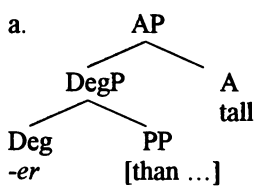
To summarize, while semantic arguments and uniformity considerations support the reduced clause analysis for all phrasal comparatives, there are syntactic arguments that challenge that account for at least some phrasal comparatives. The direct account, on the other hand, requires positing two different *–er*s. The fact that they are pronounced the same in English, in Russian (*–ee*), in Bulgarian (*po–*) and in other languages, would not be captured. The question of what is the right analysis for phrasal comparatives thus remains open.

Here, I argue for a modification of the reduced clause analysis on the basis of data from Slavic. In particular, I suggest that some phrasal comparatives are derived not from full *wh*–clauses as in (2a), but from small clauses as in (8a). For other phrasal comparatives, the direct analysis is defended, as in (8b). This non-uniform account of phrasal comparatives is shown to have empirical and conceptual advantages.

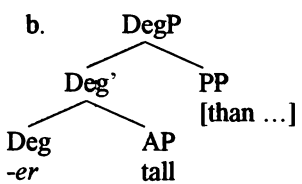
(8) a. PF and LF: Mary is taller than [$_{SC}$ John d-tall]
b. PF and LF: Mary is taller than [$_{DegP}$ 5ft]

Before I present my analysis, let me clarify what my assumptions are about the general architecture of comparatives. There have been two major approaches to the syntax-semantics of comparatives. The classical analysis (Bresnan 1973, Heim 2000, a.o.) (cf. (9a)) holds that the *than*-clause is the argument of a degree quantifier *–er*; that the DegP [*–er* [*than*-clause]] is the argument of the gradable predicate; and that the *than*-clause is discontinuous from *–er* because it is obligatorily extraposed. In contrast, the Deg-headed analysis (Abney 1987, Larson 1988, Kennedy 1999, a.o.) (cf. (9b)) holds that *-er* and the gradable predicate form a constituent to the exclusion of the *than*-clause.

(9) a.




b.




I will assume here the classical analysis, as in (9a), without justification; arguments in favor of it can be found elsewhere (e.g., Heim 2000, Bhatt

and Pancheva 2004). I will further assume that the *than*-PP is merged with *–er* late, after *–er* undergoes QR (as in Bhatt and Pancheva 2004).

## 2 Two More Arguments against the Reduced (Full) Clause Analysis

The Russian counterpart of the *than*-PP is a *wh*-expression (cf. (10a)), or is in the genitive case (cf. (10b)), (examples from Matushansky 2001).

(10) Germann byl sil'nee...
Germann$_{NOM}$ was stronger
'Germann was stronger...'

a. *čem* (byl) ego protivnik.
*what*$_{INSTR}$ was his adversary$_{NOM}$
'...than his adversary (was).'

b. *svoego protivnika*
[own adversary]$_{GEN}$
'...than his adversary.'

Example (10a) clearly involves a reduced clause, as the presence of the *wh*-element, and the possibility of having an overt tensed verb (*byl*) indicates (cf. also Bailyn (in press)). But a reduced clause analysis for (10b) is unlikely. This is not so just because of the absence of a preposition and the presence of a genitive case-marking on the DP. This pattern is familiar from other languages and, by itself, does not introduce any more complications for the reduced clause analysis than the English (7a). The relevance of this example is in the fact that it is restricted to synthetic comparatives (Matushansky 2001). Only the *wh*-variant in (10a) may appear with the analytic *bolee sil'en* lit. 'more strong', the genitive variant in (10b) being unacceptable. There is no way to state the conditions on ellipsis to account for this restriction without a stipulation.

To see this, let's suppose that both (10a) and (10b) are derived from the underlying clause in (11).[2] (10a) would involve movement of the subject out of the IP, and deleting either the whole IP (as shown in (11a)) or just the part below the tensed verb.[3] (10b) would require moving the subject out of the CP, and deleting the whole CP.[4] The underlying assumption, of course, is that ellipsis targets constituents.

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[2] The comparatives may also involve a null *than* taking (11) as a complement.

[3] There may be other ways to derive the facts of (10a). For example, if *byl* 'was' stays in V, the subject-final word order could be due to VP-topicalization, as in (i). Then either VP-deletion would apply to the fronted VP, or just Comparative Deletion would, the result being an overt *byl*. See Szczegielniak (2004) for discussion of VP-topicalization as input to one kind of ellipsis in Russian. Such an alternative analysis for (10a) would not affect the argument made here.

(i) $[_{CP}\ wh_1\ [_{IP}\ [_{VP}$ was $d_1$-strong$]_2\ [_{IP}$ his adversary $t_2]]]$

[4] Scrambling the subject beyond a fronted *wh*-word is independently attested in Russian.

(i) Ivan kogo videl?

(11) [$_{CP}$ wh$_1$ his adversary was d$_1$-strong]
a. [CP wh1 [IP ~~[$_{IP}$ t$_2$ was d$_1$-strong]~~ [DP his adversary]2]]
b. [CP [DP his adversary]2 ~~[$_{CP}$ wh$_1$ [$_{IP}$ t$_2$ was d$_1$-strong]]~~]

Since the structure of the two types of comparatives is the same under this analysis, one would have to posit two different *–ers* (*–ees* in Russian), at least as far as their PF properties are concerned.[5] So far this is not particularly problematic, as it is normally assumed that heads license ellipsis, e.g., Merchant (2001:60) posits that the presence of a special feature *E* on a given head licenses the ellipsis of the complement to that head. The problem emerges when we consider how to implement that technically. Having *E* on *–ee* would result in a synthetic comparative, i.e., the morphological merger of *–ee* with the adjective, and also CP ellipsis would be forced. The *–ee* without *E* could either be morphologically affixed on the adjective or merged with the semantically empty *bol–*, the counterpart of English *many/much* that merges with *–er* to form *more* (cf. Bresnan 1973). The problem with such an analysis is that things could easily have been different. The presence of *E* on *–ee* could have forced the use of *bol–*. Its absence could have required either one or the other of the synthetic and analytic form, but not allowed both. In other words, such an account of the link between the analytic/synthetic alternation and ellipsis is not explanatory. The same facts obtain in Hungarian (Wunderlich 2001), so an idiosyncrasy may not be invoked for Russian.

Another set of facts is similarly inconsistent with the reduced clause analysis. In measure phrase comparatives in Russian, only the genitive option is attested, the *wh*-operator being unacceptable.

(12) 'Ivan measures in height more than 2m.'
a. ☹[6] Ivan rostom bol'še, *čem* dva metra
Ivan in-height more what two meters
b. Ivan rostom bol'še *dvux metrov*
Ivan in-height more [two meters]$_{GEN}$

The same facts obtain in Bulgarian and Polish. To maintain the reduced clause analysis one would have to argue that the *wh*-operator must obligatorily be deleted here (together with any verb and tense). There is no plausible reason why this should be so. The issue did not arise in

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Ivan whom saw
'Who did Ivan see?'

[5] The syntactic configuration itself behind the synthetic and analytic form is assumed to be the same, as is also done in Matushansky (2001), Embick (2005).
[6] Probably grammatical – the grammar doesn't exclude it – yet strongly unacceptable.

English because the *wh*-operator is null to begin with, so its absence from measure phrase comparatives could not be immediately detected.

The above two sets of facts—the link between the analytic/synthetic distinction and the type of complement to *–er*, and the unacceptability of *wh*-operators in measure phrase comparatives—are novel arguments against the reduced clause analysis, as far as I know. I will take them seriously and will argue that we should explore an alternative.

## 3 The Proposal

My proposal starts with the thesis in (13). I do not defend this thesis here (see Pancheva 2005); I use it to justify two structures for comparatives.

(13) *Than* is a partitive preposition in the domain of degrees, corresponding to *of* in the domain of individuals.

A consequence of (13) is that like *of, than* can appear in two partitive structures. Consider the *of*-partitives in (14). (14a) is what I will call a *referential partitive*, as the complement of *of* is a referring expression (*the water*, of type $<e>$). I will call (14b) a *predicative partitive* (it is also known as a pseudo-partitive in the literature), since the complement of *of* here is a predicative expression (*water*, of type $<e,t>$)[7].

(14) a. some *of* [DP the water]
b. a glass *of* [NP water]

Under the thesis in (13), we expect to find two structures under *than* as well, a referential partititive (of type $<d>$) and a predicative partitive (of type $<d,t>$). Clausal comparatives would fall under the first structure. The *wh*-clause has been recognized as a free relative of degrees (Izvorski 1995, Donati 1997, Heim 2000) and free relatives are interpreted as definite descriptions (Partee 1987, Jacobson 1995, Rullmann 1995). So, the complement of *than* in clausal comparatives is a definite description of degrees, of type $<d>$. In other words, (15) exactly parallels (14a).

(15) *than* [$_{CP}$ $wh_1$ John is $d_1$-tall ] → LF: *than* [$_{CP}$ $\iota d_1$ John is $d_1$-tall ]

Phrasal comparatives that clearly have a clausal source, i.e., reduced clausal comparatives (e.g., the German (6)) also are of this type, a case of referential partitives. However, phrasal comparatives like the Russian (10b) and (12b), are proposed to fall under the second—predicative partitive—strategy. Specifically, the *than*-PP in these comparatives has the structure in (16a), with *than* taking a small clause complement with an anaphoric predicate. Recall that I assume here that the *than*-PP is

[7] The container phrase in (14b) can also take a referential partitive, *a glass of the water*, but the quantifier in (14a) cannot appear with a predicative partitive: **some of water.*

merged to *–er* not in-situ but at *–er*'s scope position, following Bhatt and Pancheva (2005). In other words, *–er* alone undergoes QR, leaving a degree variable behind in the matrix predicate, as in (16b). At LF, that predicate (*$d_1$-tall*) is copied from the main clause into the small clause complement of *than*, as in (16b). Since the *than*-PP is not merged to the in-situ *–er*, no antecedent containment obtains.

(16) a. *than* [$_{SC}$ John Δ]
b. LF: [$_{IP}$ [$_{IP}$ Mary is $d_1$-tall] [$_{DegP}$ *-er*$_1$ [$_{PP}$ *than* [$_{SC}$ John d-tall]]]]

The small clause predicate in the *than*-PP now contains a degree variable, therefore it is interpreted as a predicate of degrees, of type $<d,t>$. In other words, the *than*-PP in (16b) is parallel to (14b).

Recall the facts of case-licensing by *than*, extraction of the post-*than* phrase (cf. (7)), the licensing of anaphors, NPIs, etc.—the facts that were problematic for the reduced clause analysis. Under the proposal here these facts follow, with *than* acting like an ECM-preposition (see (17)).

(17) a. With [$_{SC}$ him absent] ...
b. Who$_1$ do you consider [$_{SC}$ $t_1$ smart]?

Measure phrase comparatives do not involve *wh*-operators and ellipsis, nor copying from the main clause—they are interpreted directly. (18) is the structure of measure phrase comparatives at PF and LF. Since measure phrases are ambiguous between a definite degree (of type $<d>$), and a predicate (of type $<d,t>$) (Schwarzschild 2002, 2004), (18) can involve either the referential or the predicative partitive strategy.

(18) Mary is taller than [$_{DegP}$ 5ft] / more than [$_{DegP}$ 5ft] tall.

In sum, the analysis of comparatives advocated here is not uniform—there are three distinct syntactic complements of *than* – a *wh*-clause, a small clause, a measure DegP—supporting two distinct interpretations—a definite description or a predicate of degrees. This non-uniformity is of the same type as that of partitives. The grammar allows for a partitive preposition to have either a referring or a predicative phrase as a complement. The same principle accounts for comparative *than*. So, a different kind of unification is achieved—between partitives of degrees and partitives of individuals.

Both referential and predicative comparative structures are found in Slavic comparatives. Russian *čem–* and genitive– comparatives involve the referential and the predicative partitive strategy, respectively. The counterpart of *than* is a null preposition.

(19) 'Anna is taller than Ivan.'
a. Anna vyše čem Ivan. (referential)
Anna taller wh$_{INSTR}$ Ivan

b. Anna vyše Ivana. (predicative)
Anna taller $\text{Ivan}_{\text{GEN}}$

Polish *niż*– and *jak*– comparatives involve the referential strategy, and *od*–comparatives the predicative strategy. *Niż* is a preposition, the counterpart of *than*.[8] *Od* is too. To the extent that *jak*– comparatives are acceptable, they are exactly parallel to Russian *čem* comparatives and involve a null preposition taking a *wh*-clause complement.

(20) 'Anna is taller than Agnieszka.'
a. Anna jest wyższa *niż* Agnieszka. (referential)
Anna is taller than $\text{Agnieszka}_{\text{NOM}}$
b. %Anna jest wyższa *jak* Agnieszka.[9] (referential)
Anna is taller wh- $\text{Agnieszka}_{\text{NOM}}$
c. Anna jest wyższa *od* Agnieszki. (predicative)
Anna is taller from $\text{Agnieszka}_{\text{GEN}}$

Serbo-Croatian *nego*– and *od*– comparatives involve the referential and predicative partitive strategy, respectively. Both *nego* and *od* are prepositions, the counterpart of the Polish *niż* and *od*.

(21) 'Anna is taller than Tania.'
a. Ana je viša *nego* Tanja (referential)
Ana is taller than $\text{Tanja}_{\text{NOM}}$
b. Ana je viša *od* Tanje (predicative)
Ana is taller from $\text{Tanja}_{\text{GEN}}$

Bulgarian *ot* is like English *than* and it covers both partitive strategies. Since there is no overt case marking on full DPs, structures like (22a) are ambiguous between a reduced full-clause comparative (a referential partitive) and a reduced small-clause comparative (a predicative partitive). Case–dependency, as in (22b) is indicative of the predicative strategy.

(22) 'Anna is taller than Ivan/him.'

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[8] Interestingly, there have been claims that *than* incorporates a negative element historically, and perhaps the same can be said about Polish *niż* and Serbo-Croatian *nego*, though this remains a speculation.

[9] One of my four Polish consultants accepted *jak* in all comparatives; two judged some sentences as ? or *, but fully accepted others, e.g. (i), and the fourth did not accept any comparative with *jak*.

(i) a. Co może być lepszego *jak* dobra książka.
what can be better wh good book
'Is there anything better than a good book?'
b. Ania kupiła więcej książek *jak* Tania.
Ania bought more books wh Tania
'Ania bought more books than Tania.'

a. Anna e po-visoka *ot* Ivan (referential or predicative)
Anna is *-er-* tall from Ivan
b. Anna e po- visoka *ot* nego (predicative)
Anna is *-er-*tall from $him_{Acc}$

In support of my claim that *nego* in Serbo-Croatian and *niż* in Polish are prepositions selecting a *wh*-clause (whether reduced by ellipsis or not), consider the fact that they allow overt clausal material in their complements, including a *wh*-operator (to the extent it is acceptable for some of the Polish speakers).

(23) a. Marija je viša *nego* (što je) $Petar_{Nom}$
Maria is taller than what is
'Maria is taller than Peter is.'
b. Jan waży więcej *niż* (%ile) $Piotr_{Nom}$ waży.
Ian weighs more than wh- weighs
'Ian weighs more than Peter does.'

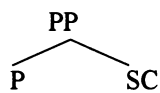
The other comparative preposition in these languages—*od*—only takes small clauses as complements, never *wh*-clauses.

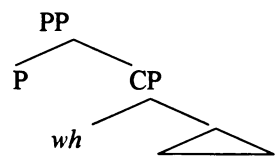
(24) a. *Marija je viša *od* (što) je Petar
Maria is taller from what is Peter
'Maria is taller than Peter is.'
b. *Jan waży więcej *od* (ile/jak) $Piotr_{Nom}$ waży
Ian weighs more from wh- weighs
'Ian weighs more than Peter does.'

And since Bulgarian *ot* is compatible with both types of complements, referential and predicative, clausal material, including an overt *wh*-operator, may appear overtly.

(25) Marija e po- visoka *ot* (-kolkoto e) Ivan.
Maria is *-er-*tall from (-how-much is) Ivan
'Maria is taller than Ivan is.'

In sum, putting measure phrase comparatives aside for the time being, the two structures for the *than*-PP in Slavic are as in (26). (26a) is the narrow syntax/PF of predicative partitive comparatives, (26b) is the structure for referential partitive comparatives, whether reduced or not.

(26) a. 


b. 

| | | | | |
|---|---|---|---|---|
| Ø | $DP_{GEN}$ | (Russian) | Ø *čem* | (Russian) |
| *od* | $DP_{GEN}$ | (Polish) | *niż* (%*ile*), %Ø *jak* | (Polish) |
| *od* | $DP_{GEN}$ | (Serbo-Croatian) | *nego* (*što*) | (Serbo-Croatian) |
| *ot* | $DP_{ACC}$ | (Bulgarian) | *ot* (*kolkoto*) | (Bulgarian) |

## 4 A Semantic Role for *than*?

The standard view in the semantic literature is that *than* is semantically vacuous (e.g., Heim 1985, 2000, Kennedy 1999, 2001, Lechner 2001, Hackl 2000, Schwarzschild and Wilkinson 2002). Only von Stechow (1984) and Rullmann (1995) attribute to *than* a semantic role, in constructing a definite description of a degree. However, that role has since been attributed to the *wh*-operator itself, in the free relative clause analysis of the complement of *than*. This leaves *than* with no meaning contribution. But if *than* is vacuous, and its *wh*-complement is a free relative, of type <*d*>, the meaning of the PP will also be of type <*d*>. This is problematic under the structure in (9a) that we are assuming. It means that the quantifier *–er* must be of type <d, <dt,t>> (its first argument the *than*-PP, its second argument the clause to which the DegP adjoins after QR), see (27a). This logical type makes *–er* not parallel to quantifiers over individuals, which are <et, <et,t>>, see (27b).

(27) a. *-er* [than XP] λd [Mary is d-tall] *-er:* <d, <dt,t>>
b. *every* [girl] λx [x smokes] *every:* <et, <et,t>>

For this reason, the meaning of *–er* is commonly given as in (28)[10], making it parallel to that of quantifiers over individuals. But this denies that the complement of *than* is a definite description.

(28) [[*-er*]] = λPλQ ∃d [d> *max*(P) and Q(d)] *-er* : <dt, <dt,t>>

A way out is to argue that the free relative analysis is wrong, after all. If the *wh*-expression is simply interpreted as a predicate of degrees, and if *than* is semantically vacuous, *–er* will be of the desired type in (28). But Bulgarian (and Polish) equatives provide a strong argument against such a possibility. Consider (29), where there is no preposition introducing the degree clause, and no overt degree quantifier either, but the degree clause is the same as the one in comparatives.

(29) Ivan e visok *kolkoto* e Maria.
Ivan is tall how-much is Maria

[10] Other proposals about the semantics of *–er* also make it of type <dt,<dt,t>>:

(i) a. [[*-er*]] = λPλQ [*max*(Q) > *max*(P)]
b. [[*-er*]] = λPλQ∃d [¬P(d) & Q(d)]
c. [[*-er*]] = λPλQ∃ [Q(d) & ∀d'[P(d') → d > d']]

'Ivan is as tall as Maria is.'

To claim that the degree clause is a predicate of degrees is to assume that there is a null quantifier in (29). But this is problematic for at least two reasons. The English equative in (30) is felicitous in the given context, because of the presence of the quantifier *as*. The Bulgarian putative equatives *Ivan e visok*, however, only has an absolute reading, i.e., *Ivan is tall*, and is thus not appropriate in such a context.

(30) To go on this ride you have to be at least 5 ft tall. Mary was allowed to go and John is as tall, so he should be allowed too.

The second piece of evidence against the idea of a null quantifier in (29) is that factor phrases (see (31)) are impossible in (32a), and are OK only in correlatives (cf. (32b)).

(31) John is twice *as* tall as Mary is

(32) 'Ivan is twice as tall as Maria is.'

| | | | | | | |
|---|---|---|---|---|---|---|
| a. Ivan | e | (*dva pâti) | visok | *kolkoto* | e | Maria |
| Ivan | is | two times | tall | how-much | is | Maria |
| b. Ivan | e | dva pâti | *tolkova* visok | *kolkoto* | e | Maria |
| Ivan | is | two times | that tall | how-much | is | Maria |

But if there is no null quantifier in (29) to take the degree clause as its argument, the degree clause must be the argument of the adjective. In that case, it cannot be a predicate, and must denote a definite description of degrees. Thus, it is not possible to reject the free relative analysis of the degree clause. The problem persists.

*4.1 Than as a referential partitive preposition*

Adopting the thesis in (13) allows for a resolution. As a referential partitive preposition, *than* takes a definite description as a complement, and returns a predicate of degrees. This is also what *of* does in referential partitives, as in (14a): it takes a definite description of an individual (*the water*), and returns a predicate of individuals, which is a suitable argument for *every* (Ladusaw 1982, de Hoop 1998, Schwarzschild 2002). The meaning of referential partitive *than* will then be as in (34), parallel to that of referential partitive *of*.

(33) a. [*of* ref-prt [DPdef]]

b. $[\![ \textit{of} \text{ ref-prt} ]\!] = \lambda x1 \lambda x2$ [x2 is part of x1] *of*: <e,et>

(34) $[\![ \textit{than}_1 ]\!] = \lambda d_1 \lambda d_2$ [$d_2$ is part of $d_1$] *than*:<d,dt>

How does the interpretation of a comparative come about with this meaning of *than*? For one, it requires an interval-based semantics for degrees, rather than a point-based semantics (as in Kennedy 2001,

Schwarzschild and Wilkinson 2002). This is so, because if the *wh*-complement of *than* denotes a point on a scale, e.g., 6ft, it cannot compose with a partitive preposition—no part of a point may be taken. This is an independent argument in support of an interval-based semantics for comparatives.

Now back to the question of how meaning is calculated. The *wh*-clause denotes a definite description of an interval. The semantic role of the partitive preposition *than* is to take a part of this interval, which yields a set of intervals, i.e., a predicative expression.

There are a number of parallels between *than* and partitive *of*. Hoeksema (1984) observes that upstairs determiners in partitives are never transitive, i.e., determiners that have to have a complement (e.g., *the, a, every, no*), but determiners that may appear without a complement (e.g., *some, all, most*), as seen in (35)-(36). The same is true for *–er*—the degree clause may be missing (as seen in (37)).

(35) a. {*the /*a /*every /*no} of the girls
b. {*The /*A /*Every /*No} arrived

(36) a. {some /each /none / three } of the girls
b. {Some /Each /None /Three} arrived.

(37) John is taller.

Moreover, *than* in Bulgarian is the same preposition as the one used in referential partitives (cf. (38)). The same is true for other languages.

(38) a. Marija e po-visoka *ot*-kolkoto e Ivan.
Maria is *-er*-tall *from*-how-much is Ivan
'Maria is taller than Ivan is.'
b. {njakoi / dve / povečeto} *ot* momičetata
some two most from the-girls
'some of the girls/ two of the girls'

Of course, while underspecification is possible, as in Bulgarian, it is not necessary. In English, the partitive prepositions are different at PF—*than* and *of*. The same is true for Russian, Polish and Serbo-Croatian.

(39) 'some of the girls'

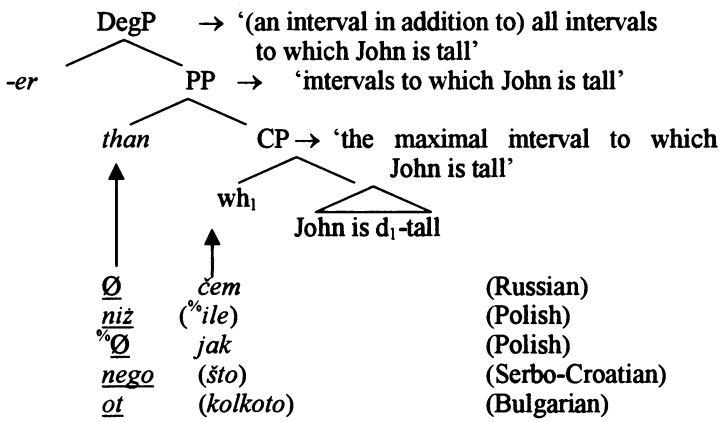
| | | | | |
|---|---|---|---|---|
| a. | nekotorye | *iz* | devoček | (Russian) |
| | some | from | $\text{girls}_{\text{GEN}}$ | |
| b. | niektóre | *z* | dziewczyn | (Polish) |
| | some | from | $\text{girls}_{\text{GEN}}$ | |
| c. | neke | *od* | devojaka | (Serbo-Croatian) |
| | some | from | $\text{girls}_{\text{GGEN}}$ | |

(40)

| $P_{part}$ is spelled-out as: | in the syntactic structure: |
|---|---|
| *of, iz, z, od* | $[_{QP}$ Q $[_{PP}$ $P_{part}$ $XP_{<e>}]]$ |
| *than, Ø, niż, nego* | $[_{DegP}$ *-er* $[_{PP}$ $P_{part}$ $XP_{<d>}]]$ |

The proposals about the structure and interpretation of referential partitive complements of *than* are summarized in (41).

(41)




(41) underlies clausal comparatives, and those phrasal comparatives that have a full clausal source. As expected, any constituent can appear as a remnant in the *than*-phrase, when the partitive prepositions are used.

(42) 'Ania is happier today than yesterday.' (Polish)
a. Ania jest weselsza dzisiaj *niż* wczoraj.
Ania is happier today than yesterday
b. %Ania jest weselsza dzisaj *jak* wczoraj.
Ania is happier today wh- yesterday

(43) Ana je (još) gladnija *nego* juče (Serbo-Croatian)
Ana is (even) hungrier than yesterday
'Anna is (even) hungrier than yesterday'

There is no case dependency between the preposition and the remnant DP.[11] Exactly like the case in German in (6) above, case-matching with a constituent in the matrix clause correlates with the interpretation.

[11] In Bulgarian **ot* toj 'from $he_{-NOM}$' is not acceptable, likely because of the existence of the other partitive *ot nego* 'from $him_{-ACC}$'. Also, case may be licensed across a *wh*-operator *otkolkoto nego* 'from how-much $him_{-ACC}$', which remains mysterious.

(44) a. Ja qlubljuq Ivana bol'še *čem* Boris. (Russian)
I love Ivan$_{ACC}$ more wh- Boris$_{NOM}$
'I love Ivan more than Boris does.'
b. Ja lublju Ivana bol'še *čem* Borisa.
I love Ivan$_{ACC}$ more wh- Boris$_{ACC}$
'I love Ivan more than I love Boris.'

(45) a. Lubię Jana bardziej *niż* Ania. (Polish)
like$_{1SG}$ Jan$_{ACC}$ more than Ania$_{NOM}$
'I like Jan more than Ania does.'
b. Lubię Jana bardziej *niż* Anię.
like$_{-1SG}$ Jan$_{ACC}$ more than Ania$_{ACC}$
'I like Jan more than I like Ania.'

(46) a. Volim Petra više *nego* Ivan. (Serbo-Croatian)
love$_{1SG}$ Peter$_{ACC}$ more than Ivan$_{NOM}$
'I love Peter more than Ivan does.'
b. Volim Petra više *nego* Ivana.
love$_{1SG}$ Peter$_{ACC}$ more than Ivan$_{-ACC}$
'I love Peter more than I love Ivan.'

*4.2 Than as a predicative partitive preposition*

The parallels between *than* and partitive *of* extend further. In predicative partitives weak NPs are complements to *of*, as in (14b) (cf. Selkirk 1977, Borschev and Partee 2004, a.o.) It is clear that *of* here performs a function similar to that of classifiers. *Of* takes a description of a substance as a complement (e.g., *water*) and returns a description of parts of the substance (parts of *water*), which is further modified and quantified over by the upstairs container phrase (e.g., *a glass*).

(47) a. [*of* pred-prt [NP]]
b. [[*of* pred-prt]] = $\lambda P_{<e,t>} \lambda x$ [x is part of P] *of*: <et,et>

Parallel to the meaning in (47), we posit a meaning for predicative partitive *than* as in (48). This *than* will take a set of degrees as a complement and return a part of it, i.e., a set of degrees.

(48) [[ $than_2$ ]] = $\lambda P_{<d,t>} \lambda d$ [d is part of P] *than*: <dt,dt>

Support for this proposal comes from underspecification in Russian. The realization of predicative partitives is the same in the domain of individuals and of degrees. Similar facts obtain in Finnish.

(49) a. Anna vyše Ivana. (Russian)
Anna taller Ivan$_{GEN}$
'Anna is taller than Ivan'

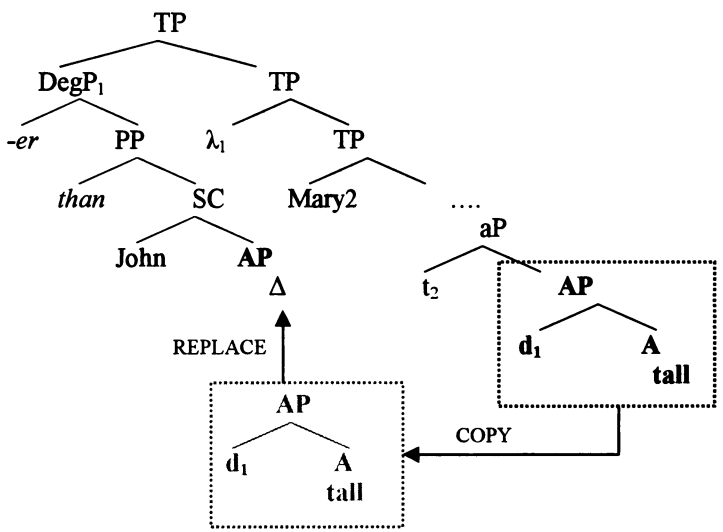
b. tri {litra vody / gruppy devoček}
3 liters water$_{GEN}$ groups girls$_{GEN}$
'3 liters of water' / '3 groups of girls'

As we discussed earlier, underspecification is not a necessity, so the fact that in English, Polish, Serbo-Croatian and Bulgarian the predicative partitive strategy is distinct in the domain of individuals and of degrees, should not be taken as undermining the proposal.

(50) '3 groups of girls'
a. trzy grupy dziewczyn (Polish)
3 groups girls$_{GEN}$
b. tri grupe devojaka (Serbo-Croatian)
3 groups girls$_{GEN}$
c. tri grupi momičeta (Bulgarian)
3 groups girls

Let us turn now to the mechanism of LF-copying that supplies the predicative partitive *than* with an argument of the right type. *–er* QRs, merges with the *than*-PP, and then the DegP merges at the root node (observing the Extension Condition). AP from the matrix is then copied into the small clause complement of *than*, as in (51).

(51)

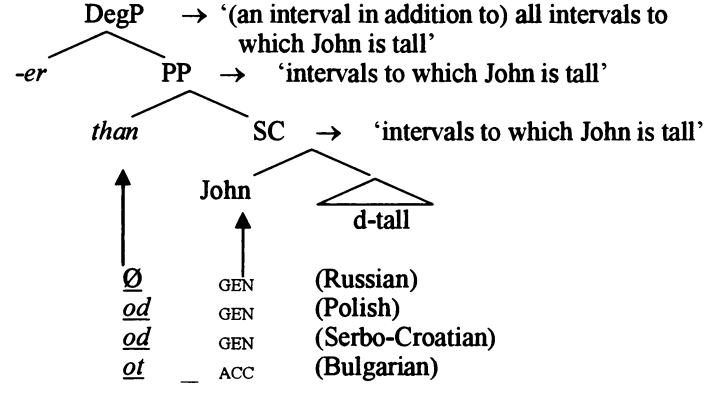



Note that in (51) the AP contains a trace of the QR-ed DegP, which is interpreted as a variable of type <*d*>. The subject trace is outside of the copied structure. When the copied AP recovers the content of the predicate in the *than*-PP, the small clause is interpreted as a predicate of

degrees, exactly what is needed as a complement to the predicative partitive preposition, see (52). (53) illustrates the predicative partitive comparative in Slavic.

(52) a. $[_A$ tall]: $\lambda d\, \lambda x$ (x is tall to d)
b. $[_{AP}$ $d_1$-tall]: $\lambda x$ (x is tall to d)
c. $[_{SC}$ John $d_1$-tall]: $\lambda d$ (John is tall to d)

(53)




In predicative partitive comparatives, the DP is case dependent on the preposition, as one would expect, as the small clause is transparent for case-licensing from a selecting head.[12] Moreover, the genitive DP can get different correlates from the matrix clause, resulting in ambiguities. Compare the sentences below with (44)-(46).

(54) a. Ja lublju Ivana bol'še Borisa. (Russian)
I love $Ivan_{ACC}$ more $Boris_{GEN}$
'I love Ivan more than {Boris does/I love Boris}.'
b. Lubię Jana bardziej od Agnieszki. (Polish)
$like_{1SG}$ $Jan_{ACC}$ more from $Agnieszka_{GEN}$
'I like Jan more than {Agnieszka does /I like Agnieszka}.'
c. Volim Petra više od Tanje. (Serbo-Croatian)
$love_{1SG}$ $Peter_{ACC}$ more from $Tanja_{GEN}$
'I love Peter more than {Tanja does/I love Tanja}.'
d. Običam Ivan poveče ot neja. (Bulgarian)
$love_{1SG}$ Ivan more from $her_{ACC}$
'I love Ivan more than {she does/I love her}.'

[12] For Russian, I am assuming that the preposition is null, and is licensing genitive case. Alternatively, *–er* itself may be implicated (see Bailyn (in press) for arguments that a quantificational head licenses genitive case in general).

The ambiguity of the above sentences arises in the following way. Taking (54a) as an example, the structure underlying both readings is as in (55a)=(56a). The genitive DP has an anaphor as its sister, whose content needs to be recovered by copying an antecedent. Depending on what expression is copied, one or the other reading arises. The meaning where the correlate of the genitive DP is the subject of the matrix is derived as in (55). The matrix VP is copied into the small clause. The VP has the meaning $\lambda x \lambda d_1$ *x love Ivan* $d_1$*-much*. It is predicated of the genitive DP, and the DP thus saturates the external argument of *love*. Because the VP contains a degree variable, the small clause is interpreted as a predicate of degrees, i.e., $\lambda d_1$ *Boris love Ivan* $d_1$*-much*.

(55) a. [IP I [VP love Ivan d1-much]] *-er*1 [SC Boris Δ]
b. [IP I [VP love Ivan d1-much]] *-er*1 [Boris [VP love Ivan d1-much]]

The second reading of (54a) is derived as in (56). The initial structure is the same as the one underlying the first reading (see (56a)= (55a)). *Ivan*, the direct object of the matrix verb and the correlate of the genitive DP in this reading, is topicalized in the matrix clause. Its sister IP is then copied into the small clause. This IP is a predicate with the meaning $\lambda x \lambda d_1$ *I love x* $d_1$*-much*. The IP is predicated of the genitive DP, and the DP saturates the internal argument of *love*. As a result, the small clause is interpreted as the predicate of degrees $\lambda d_1$ *I love Boris* $d_1$*-much*.

(56) a. [IP I [VP love Ivan d1-much]] *-er*1 [SC Boris Δ]
b. [IP Ivan2 [IP I love t2 d1-much]] *-er*1 [Boris [IP I love t2 d1-much]]

The above illustration shows that arguments of the gradable predicate can be readily interpreted in the *than*-phrase. What about adverbials? We saw that temporal adverbials are acceptable in phrasal referential partitives ((42), (43)). Predicative partitives, however, do not allow adverbials in the *than*-phrase, in at least some of the languages.[13]

(57) a. *Ania jest weselsza dzisiaj *od* wczoraj. (Polish)
Ania is happier today from yesterday
'Ania is happier today than yesterday.'
b. *Ana je (još) gladnija *od* juče (Serbo-Croatian)
Ana is (even) hungrier than yesterday
'Ana is even hungrier than yesterday.'

[13] A reviewer offers (i) from Russian, where an adverbial is acceptable. The reviewer also notes that other temporal adverbials are not acceptable, e.g., ***prošlogodnego*** 'last year$_{ADJ.GEN}$', nor are place adverbials, e.g., ***moskovskogo*** 'Moscow$_{ADJ.GEN}$'.

(i) Maša segodnja veselee včerašnego.
Masha today jollier yesterday$_{ADJ.GEN}$
'Masha is jollier today than yesterday.'

Presumably, a structure as in (58) would yield the required meaning for (57a). The structure is interpretable, so the ungrammaticality of (57a) is likely due to a syntactic reason: case-resistance on the part of *yesterday*, or a problem with the topicalization of the adverb. Clearly, more work is needed here, especially in light of the cross-linguistic facts.

(58) [today2 [A. is d1-happy t2]] *-er*1 *than* [yesterday [A. is d1-happy t2]]

Finally, let us return to the Russian analytic/synthetic alternation and the distribution of the two types of comparatives. Recall that what we are now calling predicative partitives can occur only in synthetic comparatives, whereas the referential partitives are acceptable in both analytic and synthetic comparatives (cf. example (10) and the surrounding discussion). The present proposal captures the split in the right way. The referential partitive is not restricted in its distribution as its structure is that of a full clause with no content to be recovered; the only issue is how much of the structure is to be left unpronounced. The predicative partitive, on the other hand, is derived through copying from the matrix. I will assume that the insertion of *bol–* is a last resort PF process (cf. also Matushansky 2001, Embick 2005), checking a feature on *many/much* when the adjective itself does not do so through head-movement. But now, if *d-much-tall* is copied into the small clause at LF, *much* will have an unchecked feature, resulting in ungrammaticality.

## 5 Measure Phrase Comparatives

Under the reduced clause analysis of phrasal comparatives that is usually assumed in the semantics literature, measure phrase comparatives too are clausal remnants (cf. Hackl 2000). In other words, they have the structure in (59), where (59b) is the result of QR of the DegP.

(59) a. Mary is [*-er* than [$_{CP}$ wh$_1$ 5ft ~~is d$_1$-much~~]] tall
b. [*-er* [$\lambda$d$_1$ (5ft is d$_1$-much)]] $\lambda$d$_2$ Mary is d$_2$-tall.

However, the *wh*-operator is not acceptable in measure phrase comparatives in Slavic. We already saw this in (12) from Russian. The same facts obtain in the other Slavic languages under discussion here.

(60) 'Ivan is taller than 2m.' (Bulgarian)

| | | | | |
|---|---|---|---|---|
| a.☹ | Ivan e | po-visok | ot-*kolkoto* | 2m. |
| | Ivan is | *-er*-tall | from-how-much | 2m |
| b. | Ivan e | po-visok | ot | 2m. |
| | Ivan is | *-er*-tall | from | 2m |

(61) 'Ivan is taller than 2m.' (Serbo-Croatian)

a.☹ Ivan je viši nego *što* 2 metra
Ivan is taller than what 2 meters

b. ??Ivan je viši nego 2 metra
Ivan is taller than 2 meters

c. Ivan je viši *od* 2 metra
Ivan istaller from 2 m

(62) 'Ania is taller than 5 feet' (Polish)

a. Ania jestwyższa niż 5 stop.
Ania is taller than 5 feet

b.☹ Ania jestwyższa niż *ile* 5 stop.
Ania is taller than wh- 5 feet

c.☹ Ania jest wyższa *jak* 5 stop.
Ania is taller wh- 5 feet

d. * Ania jest wyższa od 5 stop.
Ania is taller from 5 feet

The obligatory absence of *wh*-operators in Slavic is most naturally explained if the full clausal structure is never used for them. But this also does not mean that they have to employ the strategy of LF copying of material from the matrix clause. Because of the inherent semantics of measure phrases, they can be given a direct analysis.

Schwarzschild (2004) points out that we use measure phrases such as *5 feet* in two ways: as a name of a point on a scale, similarly to *5 o'clock* in the temporal domain), or as a predicate of scale intervals, similarly to *5 hours* in the temporal domain. The former, of type $\langle d \rangle$, when directly selected by the referential partitive preposition *than*, will yield the right interpretation (cf. (63a)). The latter, of type $\langle d,t \rangle$, when directly selected by the predicative partitive preposition, will also yield the right interpretation (cf. (63b)).

(63) a. *max* ($\lambda$d (d $\leq$ '5ft'))
b. $\lambda$d (d $\leq$ '5ft')

We also note that there is cross-linguistic variation in Slavic in the grammar of measure phrases. Apparently, measure phrases in Russian and Serbo-Croatian are treated as predicates of degrees (cf. (63b)), whereas in Polish they are treated as definite descriptions of degrees (cf. (63a)), at least as far as comparatives are concerned. In Bulgarian we cannot tell, as the two partitive prepositions have the same form. In Russian, the explanation for this fact is probably due to the obligatoriness of the *wh*-operator in referential partitives. Since a clausal structure is precluded for measure phrases in comparatives, the only option for measure phrases in Russian is to be used in the predicative partitive structure. The situation in Serbo-Croatian and Polish, though, is

surprising, in particular because *nego* and *niż* have so far exhibited the same syntactic and semantic behavior. Similarly for the two *od* prepositions in these languages, which presumably even originate from the same historical source. I do not have an explanation of the cross-linguistic variation at this point.

## 6 Summary

The structures of comparatives in Slavic that I argued for in this paper are summarized in the table below:

| Russian | Polish | Serbo-Croatian | Bulgarian |
|---|---|---|---|
| $\underline{\emptyset}$ [$_{CP}$ *čem*...] | *niż* [$_{CP}$ (°*ile*)...]<br>°$\underline{\emptyset}$ [$_{CP}$ *jak* ... ] | *nego* [$_{CP}$ (*što*)..] | *ot* [$_{CP}$ (*kolkoto*)..] |
| $\underline{\emptyset}$ [$_{SC}$ $DP_{GEN}$ Δ] | *od* [$_{SC}$ $DP_{GEN}$ Δ] | *od* [$_{SC}$ $DP_{GEN}$ Δ] | *ot* [$_{SC}$ $DP_{ACC}$ Δ] |

The most important consequences of this proposal are as follows. (i) A novel argument is given in favor of the classical architecture of comparatives, as the relation between *–er* and the *than*-expression is shown to be parallel to that between a quantifier and its partitive first argument. (ii) A novel argument is offered for change to an interval-based semantics for degree predicates, from the more standardly assumed point-based one. And finally, (iii) a novel argument is provided about grammatical parallels between the domains of degrees and individuals, suggesting uniformity of certain core mechanisms of grammar.

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# Uninflected VPs, Deverbal Nouns and Aspectual Architecture of Russian

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## 1 Introduction

In this paper, we take up Hana Filip's insights cited in (1a-b):

(1) a. The same principle of aspectual composition [as in English] also applies in Slavic imperfective sentences [...], with simple (underived) imperfective verbs that take measured and quantified Incremental Theme arguments. (Filip 2005b:263)
b. The semantics of a prefix is clearly set apart from the aspectual semantics of a whole prefixed verb. The perfective semantics of a prefixed verb does not enter into the computation of the meaning of a bare (Incremental) Theme argument at the level at which it is composed with the prefix and the verb stem. (Filip 2005c:140)

In what follows, we will provide independent support for (1a-b) by taking into account meaning and distribution of deverbal nouns in *nije/tije*. Our main observation is that nouns differ from fully inflected clauses in Russian with respect to the aspectual compostion. Clauses containing prefixed perfective verbs like *napisat'* 'write' are obligatorily telic and impose restrictions on the interpretation of the internal incremental argument. In contrast, corresponding nouns like *napisanie* 'writing' are not necessarily telic, and the range of interpretations of their incremental arguments is not restricted. For nouns, aspectual composition works in the same way as in English, exactly as Filip claims in (1a).

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By hypothesis, complex event nominals in terms of Grimshaw (1990) contain at least the same VPs as fully inflected clauses (Kratzer (1996), Fu, Roeper, and Borer (2001), Alexiadou (2001, 2004), but possess less functional structure above the VP. In this way, nominalizations provide us with an opportunity to see the properties of VPs at early stages of syntactic derivation, when (at least some of) the functional structure is not yet there. As a result, in deverbal nominals semantic characteristics of uninflected VPs are more transparently visible.[1] This is the reason why looking at deverbal nouns will be our strategy of discerning properties of uninflected VPs and showing that peculiarities of 'Slavic aspect' (discussed at least since Forsyth (1970)) emerge at later stages of syntactic derivation, when the aspectual information comes into play, as (1b) suggests.

The rest of the paper is organized as follows. In section 2, we compare aspectual characteristics of deverbal nouns in Russian with those of fully inflected clauses. In sections 3.1-3.2, we motivate our semantic analysis of prefixed vs. non-prefixed transitive incremental stems in Russian. In particular, we suggest that the former but not the latter contain the result state in their semantic representations. In section 3.3, we develop our analysis of VPs and *v*Ps that are embedded under nominal projections and show how the aspectual composition works at this level. Main findings of this study and a few proposals about later stages of syntactic derivation are summarized in the Conclusion.

## 2 Aspectual composition

### *2.1 Verbs*

It is commonly known that aspectual composition in Russian (and other Slavic languages) and English (and other Germanic, Romance and many other languages) is radically different.

The aspectual composition in English (see Verkuyl 1972, 1993, 1999, Krifka 1989, 1992, 1998, Filip 1999, among many others) is illustrated by sentences like *John wrote the letters in two hours/??for two hours* and *John wrote letters for two hours/*in two hours.* In such sentences, the quantization status of a verbal predicate is determined by that of the incremental argument, with the quantized Incremental Theme yielding a quantized verbal predicate, as in *wrote the letters*, and cumulative Incremental Theme resulting in cumulative verbal predicate, as in *wrote letters*.[2]

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[1] Essentially, examining constructions that lack some of the clausal functional structure is a strategy Kratzer (2003) offers for treating Zucchi's (1999) problem of indirect access.

[2] In what follows, we adopt standard definitions of quantization (QUA) and cumulativity (CUM) (Krifka 1989, 1992, 1998):

(i) $\text{CUM}(P) \leftrightarrow \forall x, y\,[P(x) \wedge P(y) \rightarrow P(x \oplus y)] \wedge \exists x,y[P(x) \wedge P(y) \wedge \neg x=y]$

In contrast with English, in Russian properties of incremental arguments do not affect telicity and quantization of a verbal predicate. Rather, verbs determine reference properties of the Incremental Theme (see Filip (1993/1999) and subsequent work, Verkuyl (1999), and references therein). In (2), the prefixed verb produces a verbal predicate which is obligatorily quantized (telic), as tests on co-occurrence with adverbials *dva časa* 'for two hours' in (2b) and *za dva časa* 'in two hours' in (2a) show.

(2) a. Vasja *na-pisa-l* pis'm-a (za dva čas-a).
Vasja $_{PRF}$write$_{PST:M}$ letter$_{ACC:PL}$ in two$_{ACC}$ hour$_{GEN}$
1. *'Vasja wrote letters.'
2. 'Vasja wrote (all) the letters (in two hours).'
b. *Vasja *na-pisa-l* pis'm-a dva čas-a.
Vasja $_{PRF}$write$_{PST:M}$ letter$_{ACC:PL}$ two$_{ACC}$ hour$_{GEN}$

Besides, the prefixed perfective verb enforces the *unique maximal interpretation* of the undetermined plural and mass Incremental Themes (the term is coined by Hana Filip, see Filip (2005a)). Thus, in (2a) *pis'ma* 'letters' involves a contextually specified quantity of letters, and the sentence indicates that all of them have been actually written.

The non-prefixed counterpart of *napisal* in (2) does not exhibit these peculiarities:

(3) Vasja *pisa-l* pis'm-a (dva čas-a).
Vasja *write$_{PST:M}$* letter$_{ACC:PL}$ two$_{ACC}$ hour$_{GEN}$
1.'Vasja was writing/wrote letters (for two hours).'
2. 'Vasja was writing/wrote the letters.'

(3) shows that non-prefixed verbs do not require telicity, nor produce obligatorily the unique maximal interpretation. The natural generalization about prefixed verbs like *napisat'* in (2) follows:

(4) Prefixed incremental verbs like *napisat'* in (2) enforce the unique maximal interpretation of the Incremental Theme and quantization of the complex event predicate.

However, semantic properties of deverbal nouns presented in the next section suggest that this generalization should me modified significantly.

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(ii) QUA(P) $\leftrightarrow \forall x, y\ [\ P(x) \wedge P(y) \rightarrow \neg y<x]$

Krifka (1998:207-208) indicates that whereas the quantization necessarily implies telicity, the opposite does not hold. This difference is not significant for the below discussion, and terms 'telic' and 'quantized' will be used as synonyms. A strictly incremental relation between ordinary individuals and events must satisfy mapping to subobjects, mapping to subevents, uniqueness of objects, uniqueness of events (e.g., Krifka 1998: 211–213).

*2.2 Nouns*

Consider (5), in which the same prefixed verbal stem as in (2) is embedded under the nominal morphology:

(5) a. *Na-pisa-n-i-e* pisem zanja-l-o dva čas-a.
*PRF*write$_{N\,MN\text{-}NO\text{-}NO\,M}$ letters$_{GEN}$ take$_{PST\text{-}N}$ two hour$_{GEN}$
'Writing*all the* letters took two hours.'

In (5a), where the DP *napisanie pisem* is a subject of *zanimat' dva časa* 'take, occupy two hours', it is interpreted exactly as in the finite clause in (2a): the event predicate 'write (all the) letters' is quantized/telic, and the DP *pisem* 'letters' acquires the unique maximal interpretation. Now consider the non-elicited example (5b), where the DP *napisanie pisem* comes as a complement of the verb *zanimat'sja* 'be occupied, engaged'.

(5) b. Ja celyj den' ne vyxodi-l iz
I whole day not come.out$_{PST}$ from
dom-a, zanima-ja-s' *na-pisa-n-i-em* pisem.
House$_{GEN}$ occupy$_{CONV\text{-}REFL}$ *PRF*write$_{NMN\text{-}NO\text{-}INSTR}$ letters$_{GEN}$
{Context. Sorry for not visiting you yesterday.} 'I did not leave home for the whole day, engaged in writing letters'

Given the context, (5b), unlike (5a), does not indicate that there was a specific quantity of letters to be written. Rather, (5b) describes the Agent's activity that lasted for the whole day long. Furthermore, the DP 'letters' in (5b) does have the unique maximal interpretation: continuing (5b) with a statement like *a zavtra prodolžu pisat'* 'and I will go on writing tomorrow', which implies that some letters are still to be written, does not result in a contradiction. In this respect, (5b) contrasts sharply with a corresponding fully inflected clause: the sentence **Vasja napisal pis'ma, a zavtra prodolžit pisat'* 'Vasja wrote all the letters, and tomorrow he will continue writing' is definitely incoherent (cf. Filip 2005c:127). It should be noted as well that the referent of the DP pisem in (5b) is first introduced into the discourse, thus being indefinite.

Crucially, the event predicate denoted by *napisanie pisem* fails to be quantized in (5b). If, given the context, *napisanie pisem* can apply to some event *e*, it can also apply to proper parts of this event down to its atomic parts: if the Agent's activity that lasted for the whole day can be described as *napisanie pisem*, smaller portions of this activity are *napisanie pisem*, too.

(5a-b) suggest that, depending on the context, *napisanie pisem* can have both quantized and non-quantized interpretations. Crucially, as (2b) shows, the latter option is not available for fully inflected clauses. We see, therefore, that the same verbal predicate containing the same prefixed verbal stem shows radically different behavior when realized in

clausal and nominal environments: deverbal nouns like *napisanie* do not show restrictions characteristic of corresponding inflected clauses.

Moreover, prefixed nouns show the same range of possibilities as to the telicity/quantization and the range of interpretations of the Incremental Theme as non-prefixed ones. Replacing the prefixed deverbal noun *napisanie* in (5a-b) with its non-prefixed counterpart *pisanie* (6) does not result in ungrammaticality, or change truth-conditions of these sentences.

(6) a. *Pisa-n-i-e* pisem zanja-l-o dva časa.
*Write*$_{NMN\text{-}NO\text{-}NOM}$ letters$_{GEN}$ take$_{PST\text{-}N}$ two hours
'Writing *(all the)* letters took two hours.'

b. Ja celyj den' ne vyxodil iz doma,
I whole day not come.out$_{PST}$ from house$_{GEN}$
zanima-ja-s' *pisa-n-i-em* pisem.
Occupy$_{CONV\text{-}REFL}$ *write*$_{NMN\text{-}NO\text{-}INSTR}$ letters$_{GEN}$
'I did not leave home for the whole day, engaged in writing letters'

Therefore, for deverbal nouns all logically possible combinations of prefixed / non-prefixed stems and quantized (unique maximal)/cumulative Incremental Themes are attested: both stems can go with both types of the incremental argument. In inflected clauses, one possibility, namely, the prefixed stem combined with a non-quantized Incremental Theme, is ruled out.

If nominalization facts are taken seriously, a descriptive generalization follows: given that deverbal nouns based on prefixed and non-prefixed stems do not contrast as to their telicity and properties of the Incremental Theme, prefixed stems by themselves cannot be responsible for compositional effects observed in fully inflected clauses in (2a-b). If prefixed stems had induced telicity/quantization, there would have been no way for nouns to escape from being the same as corresponding finite clauses. Therefore, we have two problems to solve. First, we are to discern the difference between prefixed and non-prefixed stems and to determine their semantic representations. Secondly, we have to develop a semantic analysis of VPs and *v*Ps, the basic verbal projections, from which properties of deverbal nouns naturally follow. In the next sections we try to accomplish these tasks.

## 3 Deverbal nouns vs. inflected clauses

### *3.1 Prefixed vs. non-prefixed stems*

In the literature, a few formal proposals accounting for the difference between prefixed and non-prefixed stems like *napisa-* and *pisa-* 'write' are found. Thus, Piñon (2001) and Paslawska and von Stechow (2003) suggest that prefixed and non-prefixed transitive stems differ in their logical type.

Paslawska and von Stechow (2003) establish that prefixed stems take an individual as its internal argument (i.e., are of the type <e, <s,t>>), while non-prefixed stems are property-incorporating (i.e., are of the type <<e,t><s,t>>). Piñon (2001), in contrast, proposes for Polish that non-prefixed stems combine with ordinary individuals, while prefixed stems take generalized quantifiers, with a few additional semantic requirements. Ultimately, these approaches aim at capturing the fact that *in inflected clauses*, prefixed verbs cannot combine with undetermined plural and mass internal arguments without inducing the unique maximal interpretation. But, as nominalization facts discussed in the previous section suggest, this is not generally the case.

In this study, we explore another strategy of discerning differences between prefixed and non-prefixed stems like *pisa–* and *napisa–*. We suggest that they do indeed differ in their logical type, but not in what they require from the internal argument (and, possibly, other individual arguments), but in whether they have a state argument: prefixed stems do have such an argument in their semantic representation (together with the event argument), whereas non-prefixed stems do not.

Evidence for this claim comes from a few observations. First, adjectival passives based on prefixed stems refer to a result state of an event (see Schoorlemmer 1995, Paslawska and von Stechow 2003 and references therein), but those based on non-prefixed stems do not. Consider (7):

(7) Pis'mo *na*-pisa-n-o || *pisa-n-o.
letter $_{PRF}$write$_{NMN:PART-N}$ || write$_{NMN:PART-N}$
{Context: The speaker holds a letter just written} 'The letter is written {so we can send it now}.'

If prefixed stems involve a relation between events and (result) states, we can account for (7) in a principled way: the stative reading is derived by binding the event argument existentially, thus externalizing the state argument. The resulting property of states, then, will be a denotation of the prefixed passive participle *napisano* used in the adjectival passive in (7).[3] Assuming that non-prefixed stems lack the state argument accounts naturally for inappropriateness of the passive participle *pisano* in (7): the state cannot be externalized, since there is no state argument to begin with.[4]

[3] Essentially, this is what Paslawska and von Stechow (2003), relying on Kratzer (2000), propose about the adjectival passive in Russian: they assume that Kratzer's Stativizer λRλs∃e.R(s)(e) applies to the denotation of VP, which is a two-place relation between events and states, to create a property of states.

[4] This does not mean, of course, that non-prefixed passive participles cannot occur in adjectival passives, cf. famous *Pisano v Bessarabii* 'written in Bessarabia' from Puškin's *Eugene Onegin* or *Pis'mo k indusu pisano mnoju* lit., 'The letter to the Hindu (has been) written by me'(Leo Tolstoy. *Dva pis'ma k Gandi* 'Two letters to Gandhi') (We are

Secondly, if prefixed stems possess the result state specified in their semantic representation, we can expect to find cases when that state is accessible for various semantic operations, such as adverbial modification or negation, independently of the eventive component. For non-prefixed stems this option should be excluded in principle, since they do not have a state argument.

(8) shows that this prediction is borne out for prefixed and non-prefixed verbs under the scope of negation:

(8) a. Vasja ne *vs*-paxa-l pole.
Vasja not $_{PRF}$plow$_{PST:M}$ field$_{ACC}$
'Vasja did not plow a/the field.'
→ 1. There was no plowing activity.
→ 2. The field has not been plowed to completion.

b. Vasja ne *paxa-l* pole
Vasja not *plow*$_{PST:M}$ field$_{ACC}$
'Vasja did not plow a/the field.'
→ 1. There was no plowing activity.
→ 2.*The field has not been plowed to completion.

(8a) is ambiguous in a way (8b) is not. Both sentences can mean that the field has not been affected by plowing at all. However, (8a) has a second interpretation in which only the result state falls under the scope of negation: under this interpretation, the sentence is true iff it is not the case that the whole field attains the state of being plowed, despite the fact that some plowing activity has been performed. This latter interpretation is not available for (8b), as expected.[5]

A similar pattern is found if we examine the distribution of the restitutive reading of the adverb *opjat'* 'again' combined with prefixed and non-prefixed verbs (for the restitutive vs. repetitive readings see Dowty (1979), von Stechow (1996), Tenny (2000), among others). Compare the distribution of *opjat'* 'again' in combination with prefixed and non-prefixed verbs:

(9) Vasja opjat' vs-kopa-l ogorod.
Vasja again $_{PRF}$dig$_{PST:M}$ garden$_{ACC}$

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grateful to the anonymous reviewer for drawing our attention to the latter example). But arguably, in such configurations the adjectival passive does not describe a state at all: it either identifies Bessarabia as a place where the writing event occurs, or the speaker as the agent of such an event.

[5] The anonymous reviewer has suggested that sentences like (8b), similarly to (8b) "implicate that the field was not completely plowed, and hence either no plowing activity took place or some plowing took place without reaching any result". However, we did not find a single native speaker who confirms this judgement: all judge the second interpretation in (10b) inappropriate.

a. Repetitive reading: '(Vasja dug the ground in the garden before, and) he did it again.'
b. Restitutive reading: '(The ground in the garden was dug before, and) Vasja did it again.'

(10) Vasja opjat' kopa-l ogorod.
Vasja again $dig_{PST:M}$ $garden_{ACC}$
a. Repetitive reading: '(Vasja had been digging the ground in the garden before, and) he was digging again.'
b. ??Restitutive reading: '(Somebody had been digging the ground in the garden before, and) Vasja was digging again.'

In (9), the prefixed verb *vskopat'* 'PRF-dig' has both repetitive and restitutive readings (although some speakers suggest that in the null context, the former is better). At the same time, the non-prefixed verb *kopat'* 'dig' is definitely odd under the scope of restitutive *opjat'*. Again, if we assume that the restitutive reading obtains when only the result state falls under the scope of 'again', the difference between (9) and (10) is naturally explained, since non-prefixed stems, by hypothesis, do not involve the result state at all.

*3.2 Simplex vs. complex event templates*

The above observations point towards analyzing prefixed stems like *napisa–*, *vspaxa–* and *vskopa–* as involving two components, an event and a result state of that event, while non-prefixed stems like *pisa–*, *paxa–*, and *kopa–* —as only specifying the eventive component[6]. In other words, we propose that prefixed and non-prefixed stems differ as to the event template they are associated with. More specifically, for non-prefixed and prefixed stems we assume event templates represented in (11a) and (11b) respectively:[7]

(11) a. $\lambda x \lambda e$ [V'(e) $\wedge$Theme(x)(e)] <e, <s, t>>
b. $\lambda x \lambda s \lambda e$ [V'(e) $\wedge$ Theme(x)(e) $\wedge$cause(s)(e) $\wedge Res_V$ (s) $\wedge$ Arg(x)(s)] <e, <s, <s, t>>>

[6] There is a growing body of evidence that prefixes form a heterogeneous class as to their semantic and syntactic properties (see Filip 1993/99, 2000 and elsewhere for the extensive data and discussion). Our proposal does not concern superlexical, or external prefixes (Svenonius 2003, 2004, Ramchand 2004, DiSciullo and Slabakova 2005).

[7] Following Davidson 1967, Parsons 1990, and many others, we assume that natural language predicates denote properties of events. We assume neo-Davidsonian association of arguments with verbs via thematic roles. We take a logical representation with the basic types t (truth values), e (entities), s (states, events), and i (intervals of times); "x" ranges over entities, "e" over eventualities, both events proper and states, "s" over states, "t" over intervals of time, "P" over one-place predicates of any type (e.g., <e, t>, <s, t>), "R" over two-place predicates (e.g. <e, <s, t>> or <s, <s, t>>).

Essentially, (11a) is an activity event template for transitive verbs, while (11b) is an accomplishment template; they differ in their logical type (<e, <s, <s, t>>>vs. <e, <s, t>>). We do not claim, of course, that templates in (11) do duty for all instances of non-prefixed and prefixed stems. Since our concern in this study is aspectual composition, we are dealing with transitive stems that denote incremental relations between events and internalarguments, since it is exactly this class of stems that exhibit compositional effects exemplified in (2). (11a-b), therefore, aim at capturing differences between prefixed and non-prefixed transitive incremental stems like *pisa-/napisa-*'write', *čita-/pročita-*'read', *kopa-/vskopa-*'dig', *paxa-/vspaxa-*'plough', etc. Semantic representation of non-prefixed/prefixed pairs that belong to other lexical classes (e.g. intransitive manner of motion verbs like *ply-/priply-* 'swim', inchoatives with superlexical prefixes like *smejat'sja/zasmejat'sja*, transitive verbs that do not involve the Incremental Theme like *česa–/počesa–* 'scratch', etc.) is a question that we do not address in this paper. It should be also noted that analyzing prefixed stems like *napisa–* as based on the accomplishment event template in (11b) does not imply that any accomplishment verbs in Russian must be prefixed (in fact, we can easily find non-prefixed stems that should arguably receive an accomplishment analysis, e.g. *ranit'* 'wound').

The decompositional approach to accomplishments on which (11b) is based is found in the literature at least since Dowty (1979). Under this approach, accomplishments are decomposed into two sub-events—the process subevent performed by the external argument, normally (but not always) the Agent, and change of state of the internal argument induced by this process. Various versions of decompositional analysis are found in Rappaport, Hovav, and Levin (1998) and elsewhere, Kratzer (2000), Pylkkänen (2002), Ramchand (2003), Rothstein (2004), among many others. In (11b), we assume the representation similar to that of Kratzer (2000, 2004) and Paslawska and von Stechow (2003), whereby the accomplishment template consists of an activity and a resultstate connected by Cause with no Become[8]. We also assume Kratzer's (1996) view that Agents are introduced syntactically. The content of both V' and

[8] The anonymous reviewer has pointed out that in the literature, one can easily find arguments against a causative analysis of accomplishments. While we agree that this analysis is not theoretically unproblematic, developing an alternative theory of accomplishments goes far beyond the scope of this paper. For us, what is crucial is not causation, but the presence or absence of the result state in the lexical semantic representation. Nothing in the subsequent discussion relies on the causative relation between events and states in (11b), and that is the main reason for adopting the accomplishment event template in its present form, leaving issues of causation for future examination.

$Res_V$ is determined by the lexical meaning of the verb, with the Theme argument of V' being identical to a single argument of a $Res_V$[9].

In (12), lexical entries for a non-prefixed stem *pisa-* and the prefixed one *napisa-* are exemplified.

(12) a. *pisa-* 'write': λxλe [write(e) ∧Theme(x)(e)]
b. *na-pisa-*'write, write up':λxλsλe [write(e) ∧Theme(x)(e) ∧ cause(s)(e) ∧written(s) ∧ Arg (x)(s)].

The prefixed stem in (12b) possesses, in addition to the internal argument and event argument, a state argument associated with the resultant state attained by the Theme argument.[10] Representations in (12) suggest that lexical prefixes are *lexical $V^0$ modifiers*, as in Filip (1997, 1999, 2003, 2005c). We do not try to give a compositional semantics for the prefix *na-*, since we believe that lexical prefixes of this type combine with roots non-compositionally; otherwise we would expect that "cause(s)(e) ∧written(s) ∧Arg (x)(s)" part of (12b) comes with the prefix. But whereas the very presence of a result state in the semantic representation seems to be determined by the prefix, its descriptive content comes from the verbal stem. The fact that the accomplishment stem *napisa–* involves a state of being written cannon be a part of the meaning of a prefix, since we do not find this meaning component in other prefixed stems with *na–*, e.g. in *napolni–* 'fill' (in fact, *napolni–* involves a result state of being full). This suggests that the descriptive content of the result state is to be determined at the level of individual lexical entries and cannot be derived from the semantics of the prefix.

Now that we have established the analysis in terms of activity vs. accomplishment event templates, a few comments on the notion of accomplishment are due. The term "accomplishment" is many–way ambiguous in the current literature on aspect and event structure. In

[9]The analysis in (11a-b) makes one further prediction about the distribution of prefixed and non-prefixed stems like *napisa-* and *pisa-*. As Rappaport Hovav, Levin 1998 and elsewhere show, transitive verbs associated with the complex event structure consisting of two sub-events differ from those with the simplex event structure in that the latter can occur in the syntax without the direct object, cf. $^{OK}$*John swept* vs. **John broke*. This contrast, they claim, is due to the Argument-Per-Subevent Condition which requires there be at least one argument XP in the syntax per su-bevent in the event structure. Since *break*, but not *sweep* is lexically associated with the complex event structure, the given contrast receives an explanation. Therefore, if stems like *pisa-* and *napisa-* differ in that the former denotes a simplex, and the latter a complex event structure, we can predict that they contrast as to the obligatoriness of the direct object. This prediction is borne out: the prefixed verb is ungrammatical without the direct object, while its non-prefixed counterpart is readily available, cf. $^{OK}$*Kogda ja pri-še-l,Vasja pisa-l* 'When I came, Vasja was writing' and **Kogda ja pri-še-l,Vasjana-pisa-l* 'When I came, Vasja wrote'.

[10] Here we ignore for simplicity a widely recognized problemof creation verbs, namely, that the object denoted by the Theme argument only exists completely at the end of the event. See, e.g., Zucchi (1999), von Stechow (2002), and the literature therein.

particular, it is frequently used to refer to *theaspectual class* consisting of verbal predicates that denote events having duration and a natural endpoint. Under this reading, accomplishment verbs are telic verbs. In this study, however, similarly to Rappaport Hovav and Levin (1998), Rothstein 2004 and many others, the term "accomplishment" is taken to refer to complex event structures like that in (11b). Furthermore, telicity and event structure have to be separated (Rappaport Hovav and Levin 1998 and elsewhere, Ramchand 2003, 2004): specifying the result state in the lexical representation of a verbal stem does not guarantee telicity; nor, the other way round, absence of the result state entails atelicity. Both accomplishment and activity event structures can yield telic/quantized and atelic/non-quantized event predicates. In the next section, we will show this more explicitly.

*3.3 Deriving VPs and vPs*

In this section, we will provide a compositional analysis of uninflected *v*Ps in Russian that areembedded under nominal projections yielding deverbal nouns like *pisanie* and *napisanie* in (5)–(6). Assuming that *napisanie pisem* (5) and *pisanie pisem* (6) are analysed as in (13a-b) (see Pazelskaya, Tatevosov (2004) for justification and further discussion), for both of them we have to derive telic and atelic interpretations and show that these interpretations are fully compatible with the analysis of prefixed and non-prefixed stems introduced above.

(13) a. [... [$_{NP}$ -i- [$_{NominalP}$ -n- [$_{vP}$AGENT[$_{VP}$ napisa- pisem ] ] ] ] ]
b. [... [$_{NP}$ -i- [$_{NominalP}$ -n- [$_{vP}$AGENT [$_{VP}$ pisa- pisem ] ] ] ] ]

*3.3.1 Verbs and their complements*

While prefixed and non-prefixed stems are analyzed as in (12) above, for plural NPs we assume semantic representation in (14):

(14) [$_{NP}$ pis'ma]: λy.letters(y) AXIOM: CUM(λy.letters(y))

Since issues of nominal plurality are irrelevant for our present purposes, we do not provide a compositional analysis of plurals, assuming simply that NPs like *pis'ma* denote cumulative predicates that have sums of ordinary individuals in their extensions (see Link 1983 and much subsequent work).

NPs of the predicative type <e,t> can be shifted into one of the appropriate argumental types by type-shifting operators heading the DP. We assume that type-shifters apply freely to the denotation of NPs only subject to general constraints on type-shifting (see, e.g., Dayal 2004). The result of their application to NPs are DPs that denote individuals (ofthe type *e*) or generalized quantifiers (of the type <<e, <s, t>>, <s,

t>>). In what follows, we make use of two type shifters represented in (15):

(15) Type-shifting operators (cf. Filip 2005c; Dayal 2004):
a. ∃: λPλRλe∃x [P(x) ∧R(x)(e)] (<<e, t>, <<e, <s, t>>, <s, t>>>)
b. σ: λPσx.P(x) (<<e,t>, e>)
σx.Px is the maximal element in the extension of P (Link 1983).

By functional application, combining operators in (15) with the NP denotations in (14) results in (16a-b):

(16) [$_{DP}$ SHIFT [$_{NP}$ *pis'ma*]], where SHIFT is a type-shifting operator
a. λRλe∃y[letters(y)∧ R(y)(e)] (∃-letters, for short)
b. σy.letters(y) (σ-letters, for short)

In (16a), the DP (referred to below as ∃–letters) denotes a generalized quantifier, a function from two-place relations between individuals and events to one-place event predicates. The DP in (16b) denotes a maximal individual in the extension of the predicate *pis'ma* 'letters'.

For the moment, we have four pieces of the VP-internal material available: two instances of the V head represented in (12a-b), and two possible DP complements of this head in (16a-b). This gives us four possibilities listed in (17):

(17) a. [$_{VP}$ pisa- [$_{DP}$ σ-pis'ma]]
b. [$_{VP}$ pisa- [$_{DP}$∃-pis'ma]]
c. [$_{VP}$ napisa- [$_{DP}$ σ-pis'ma]]
d. [$_{VP}$ napisa- [$_{DP}$ ∃-pis'ma]]

In Section 1, we observed that prefixed and non-prefixed deverbal nouns allow for two interpretations each (see (5a-b) for prefixed and (6a-b) for non-prefixed stems). We argue that these interpretations can essentially be reduced to structures in (17), and thus accounted for. Let us now explore these possibilities in more detail.

*3.3.2 Quantized event predicates*

First, consider prefixed and non-prefixed stems combined with σ-letters (of the type *e*). The DP provides a suitable argument for the verb, so by functional application, the following denotation of the VP in (17a) obtains:

(18) [$_{VP}$ pis- [$_{DP}$ σ-pis'ma ]]: λe[write(e) ∧Theme(σy.letters(y))(e)]

(18) denotes a property of events in which the maximal individual σy.letters(y) participates as the Theme in the writing event.

In the same way, the prefixed verb takes the Theme in (19), corresponding to (17c):

(19) $[_{VP}$ na-pis- $[_{DP}$ σ-pis'ma ]]:
λsλe[write(e) ∧Theme(σy.letters(y))(e) ∧cause(s)(e) ∧
written(s) ∧Arg(σy.letters(y))(s)]

Unlike in (18), in (19) saturating the internal argument produces a relation between events and states, not a property of events.

Following Alexiadou (2001), we assume that the *v* head can be present in nominalizations but is 'deficient' in that it cannot host the argument DP in its Spec and cannot assign the accusative case. However, it contributes to the eventive interpretation of the *v*P and can be detected by various diagnostics cited in the literature (Alexiadou 2001, Alexiadou 2004, van Hout and Roeper 1998, Fu et al. 2001), e.g. by agent-oriented adverbials or purpose adjuncts, as in *(na)pisanie pisem s cel'ju dobit'sja podderžki* 'writing (the) letters in order to gain the support'

We implement this by representing the semantic content of *v* as a property of events in (20):

(20) ||v|| = λe∃x[Agent(x)(e)]

With Kratzer (1996), we assume that Agents are always introduced conjunctively, by Event Identification[11]. Thus, the event predicate denoted by the VP in (18) combines with the Agent in (20) to yield a new event predicate such that an event *e* satisfies this predicate iff *e* is a writing event in which the maximal individual from the denotation of 'letters' is involved as a Theme, and there is an individual that stands in the Agent relation to *e*:

(21) $[_{vP}$ Agent $[_{VP}$ pis- $[_{DP}$ σ-pis'ma ]]]:
λe∃x[Agent(x)(e) ∧write(e) ∧Theme(σy.letters(y))(e)]

In a similar way, the Event Identification introduces Agents when the VP complement of *v* is of the type <s, <s,t>>, as in (19) above:

(22) $[_{vP}$ Agent $[_{VP}$ na-pis- $[_{DP}$ σ-pis'ma]]]:
λsλe∃x [Agent(x)(e) ∧write(e) ∧Theme(σy.letters(y))(e)
∧cause(s)(e) ∧written(s) ∧Arg(σy.letters(y))(s)]

We see that the logical type of these VPs is preserved—<s,t> for non-prefixed stems, and <s, <s,t>> for prefixed stems. As a result, *v*Ps embedded as complements of the Nominal head *-n/t-* (see (13)), are of the same type as corresponding VPs, with both event and state arguments of the prefixed stem still active.

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[11]For ||v|| in (20) to be able to combine with the denotation of VP, we assume two versions of the Event Identification (EI) (see Kratzer (1996) for the original formulation):

(i) EI for <s,t>-type VPs: $f_{<s,t>}g_{<s,t>} \rightarrow h_{<s,t>}$: λe[f(e)∧g(e)]
(ii) EI for <s, <s,t>>-type VPs: $f_{<s,t>}g_{<s,<s,t>>} \rightarrow h_{<s,<s,t>>}$: λsλe[f(e) ∧g(s)(e)]

Given that deverbal nouns based on prefixed stems can only have eventive, but not stative interpretation (neither *napisanie*, nor *pisanie* can refer to a state of being written), we conclude that the eventizer in (23) (Paslawska and von Stechow 2003) applies obligatorily to the denotation of vPs of the type <s, <s,t>>.[12] For (22), this yields (24):

(23) || EVENT || = λRλe∃s [R(s)(e)]

(24) EVENT[$_{vP}$ Agent [$_{VP}$ na-pis- [$_{DP}$σ-pis'ma ]]]:
λe∃s∃x [Agent(x)(e) ∧write(e) ∧Theme(σy.letters(y))(e)
∧cause(s)(e) ∧written(s) ∧ Arg(σy.letters(y))(s)]<s, t>

(24) denotes a set of writing events in which the maximal individual consisting of all the contextually relevant letters is involved as a Theme and enters the result state of being written, and in which there is an Agent.

Compare event predicates in the denotation of non-prefixed and prefixed vPs in (21) and (24). Despite all differences, (21) and (24) are fundamentally similar in that both are quantized. Due to incrementality of the Theme relation, in (21) no proper part of the event in which the maximal individual is written is an event in which the same individual is written, hence no proper part of an event from the denotation of this predicate falls under the denotation of this predicate. Exactly for the same reason, the event predicate in (24) is quantized, too.

By assumption, event predicates in (21) and (24) are exactly what NPs *pisanie pisem* and *napisanie pisem* in (5a) and (6a) denote. If so, we have an explanation for how their telic/quantized interpretations emerge.[13]

In the next section, we discuss two other options in (17), namely (17b) and (17d), in which the DP ∃-letters of the generalized quantifier type <<e, <s,t>>, <s,t>> creates non-quantized event predicates.

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[12] Paslawska and von Stechow (2003) treat EVENT as an adjunct to a constituent that denotes relations between events and states (to a VP, in their system). Alternatively, it can be thought of as a head of the special functional projection involved in derivation of deverbal nouns. Yet another option is that the eventizer is a part of the denotation of the N head (the *-i-* morpheme) itself. We leave this question for further study.

[13] One further issue, not addressed in the present paper, is that deverbal nouns like *napisanie*, when take singular countable arguments (e.g. *napisanie pis'ma* 'writing a letter') allow for the atelic interpretation, too. As the anonymous reviewer pointed out, this is problematic, since event predicates with singular countable Incremental Themes are necessarily quantized. However, this problem exists independently from nominalization facts discussed in the present paper. Tatevosov (2003) shows that Filip's (2000 and elsewhere) analysis of the delimitative verbs faces the same complication: the delimitative prefix *po-* can be freely combined with quantized predicates like *pisat' pis'mo* 'write a/the letter' (cf. *popisal pis'mo* 'wrote a/the letter for a while'), while it is predicted that it can only take homogeneous predicates as its arguments. As a tentative solution, Tatevosov (2003) proposes a shift in the denotation of a nominal predicate that allows it to refer to parts of entities in its original extension, with the resulting predicate being cumulative. The same solution, we believe, can be adopted for *napisanie pis'ma* as well.

*3.3.3 Non-quantized event predicates*

Derivation of VPs and vPs involving ∃-letters as the internal argument (see (17b) and (17d) above) proceeds in a similar way as that with σ-letters, namely, by introducing the Agent, existentially bound, via Event Identification, and by applying the Eventizer to the prefixed *v*Ps. This gives us representations in (25):

(25) a. [$_{vP}$ Agent [$_{VP}$ pis- [$_{DP}$∃-pis'ına ]]]
b. EVENT[$_{vP}$ Agent [$_{VP}$ napis- [$_{DP}$ ∃-pis'ma ]]]

Unlike in cases with σ-letters, however, the DP containing ∃-letters cannot be interpreted in situ, since it is of a generalized quantifier type, not of the individual type *e*. As a result, it has to raise at LF and find a relation between individuals and events to apply to. Raising leaves a trace, a variable of the type *e*, and creates a λ-abstract on that variable, as usual. (26), in particular, shows the LF which obtains if the generalized quantifier adjoins to the *v*P in which a non-prefixed VP is a complement:

(26) ∃-pis'ma $\lambda_1$[$_{vP}$ Agent [$_{VP}$ pis- [$_{DP}$t$_1$ ]]]:
λe∃y[letters(y) ∧∃x[Agent(x)(e) ∧write(e) ∧ Theme(y)(e)]]

A writing event *e* falls under the denotation of the event predicate in (26), iff there is an individual *y* such that letters(y) and *y* stands in the Theme relation to the event, and there is an individual that stands to the Agent relation to the event. Obviously, the predicate in (26) fails to be quantized (given that letters is divisible and the Theme relation is incremental), since if *e* is an event in which letters are written, *e'*, a proper part of *e*, is also an event in which (a smaller portion of) letters are written.

Finally, a possible semantic representation of the event predicate that obtains if ∃-letters occurs as a complement of a prefixed stem is given in (27). Here again, movement of the complement DP in (25b) leaves a trace of the type *e*and creates a λ-abstract of the type <e, <s, t>>:

(27) ∃-pis'ma $\lambda_1$ [EVENT [$_{vP}$ Agent [$_{VP}$ na-pis- [$_{DP}$t$_1$ ]]]]:
λe∃y [letters(y) ∧∃s∃x [Agent(x)(e) ∧ write(e) ∧Theme(y)(e)
∧cause(s)(e) ∧written(s) ∧ Arg(y)(s)]]

The crucial observation about the predicate in (27) is that it fails to be quantized, too, despite the fact that the result state is specified in it explicitly. Given that, by assumption, λy.letters(y) is not quantized, but cumulative, and the Theme relation is incremental, if *e* is an event in which some letters *y* have been affected by writing and entered a result state of being written, then *e'*, *e'* < *e*, is an event in which some letters *y'* (a proper part of *y*) have been affected by writing and entered a result state of being written as well. Therefore, both *e* and *e'* fall under the denotation of event predicate in (27), hence this predicate fails to be quantized.

Since, by hypothesis, event predicates in (26)-(27) represent the meaning of NPs *napisanie ∃-pisem* and *pisanie ∃-pisem* in (5b) and (6b), atelicity of both prefixed and non-prefixed deverbal nouns observed in section 2 is consistently accounted for.

## 4 Concluding Remarks

Evidence from aspectual composition in deverbal nouns discussed so far confirms Hana Filip's (2005a, b and elsewhere) generalizations and analysis (see quotations in Section 1). One of the main claims that Filip has been making in her recent work is that there is a crucial distinction between aspectless stems like *napisa–* and perfective verbs like *napisat'* with respect to their contribution to the semantics of a sentence. It is perfectitivy which is responsible for the obligatory telicity and the unique maximal interpretation, as Filip (2005c) shows.

Deverbal nouns provide independent support for this analysis. Since nominals like *pisanie pisem* and *napisanie pisem* only contain a part of clausal functional structure, they provide us with the direct access to the properties of vPs/VPs. We found that both non-prefixed stems like *pisa–* and prefixed stems like *napisa-* can be combined with any DPs, yielding four possibilities listed in (17a-c) and represented in (21), (24), (26), and (27). At the *v*P level, therefore, aspectual composition in Russian works in the same way as in 'non-aspectual languages' like English, exactly as Filip claims. Nouns are formed from *v*Ps based on aspectless stems, while verbs cannot escape from being combined with an aspectual operator, which comes into play later, when the aspectual head Asp is merged above the *v*P. The perfective operator sitting in Asp filters out the non-telic event predicate with ∃-letters in (27), but does not affect the telic event predicate with σ-letters in (24), thus enforcing telicity and the unique maximal interpretation of the Incremental Theme (see Pazelskaya and Tatevosov (2004) for an articulated proposal). In other words, components of meaning of what is traditionally conceived of as "the perfective verbs" are distributed between different heads, with perfectivity being separated from the meaning of the prefixed stem and located in the Asp head. Deverbal nouns are formed when perfectivity is not yet there, and that is the reason why they are different from fully inflected clauses.

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# Passing by Cardinals: In support of Head Movement in Nominals*

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The goal of this paper is to show that head movement should not be dispensed with or placed solely at PF (contra Boeckx and Stjepanović 2001, Chomsky 2001, Mahajan 2003; pro Lechner 2005).[1] To do so, I compare the so-called "approximative inversion" in Russian (1a) and postnominal cardinals in Hebrew, such as *rabim* 'many' in (2a), and argue that both of these constructions—featuring a marked noun-cardinal order—are derived by head movement, rather than (remnant) phrasal movement.[2] Furthermore, I propose that the two constructions involve two distinct subtypes of head movement triggered by different types of Probes.

(1) a. kardinalov desjat'
cardinals ten
'approximately ten cardinals'

b. desjat' kardinalov
ten cardinals
'ten cardinals'

(2) a. xašmanim rab-im
cardinals$_{M.PL}$ many$_{M.PL}$
'many cardinals'

b. {harbe/xamišim} xašmanim
{many/fifty} cardinals$_{M.PL}$
'many/five cardinals'

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[1] Note that Mahajan's (2003) proposal is on the wrong track, as it is incompatible with the existence of Russian (and numerous other Slavic and non-Slavic languages, including Lithuanian, Finnish, and Chinese, to name just a few), which are article-less yet VO.

[2] The term "cardinal" is used in this paper to refer to expressions of cardinality, whether precise (e.g., *desjat'/desjatok* 'ten') or vague (e.g., *mnogo* 'many'); the term "vague cardinals" is sometimes used for the second kind of item. Remnant phrasal movement refers to movement of a phrasal (i.e., XP) constituent from which phrasal movement has already extracted a part (e.g., remnant VP movement refers to the movement of VP from which argument DPs have been extracted).

## 1 Evidence for Head Movement

Both of these constructions have been analyzed as instances of head movement (HM; Franks 1995, Billings and Yadroff 1996 for Russian; Ritter 1987, Borer 1996, *inter alia* for Hebrew) and more recently as instances of (remnant) phrasal movement (PhM; Stepanov 2001 for Russian; Sichel 2002, 2003, Shlonsky 2004, Borer 2004: 223 for Hebrew). In this paper, I reverse this trend and argue in favor of the HM approach over the PhM approach. For reasons of space, I will largely ignore the question of theoretical elegance in this paper (but see Pereltsvaig to appear); instead, I will show that the HM approach provides better empirical coverage than does the PhM approach. In this section, I provide three arguments in support of the HM approach involving PP complements of the noun, adjectives and cardinals, respectively.

### *1.1 Stranding of PP complements of N*

According to the PhM approach, NP-internal material—such as complements of the noun—should be moved together with the N° and hence precede the cardinal. In contrast, the HM approach predicts that the PP complement will be stranded after the cardinal, as the head moves on its own. It is the prediction of the HM approach that is borne out, as shown for Russian and Hebrew in (3) and (4) respectively; similar Russian data are mentioned in Mel'čuk (1985).

(3) a. pobed desjat' [$_{PP}$ nad vragom]
victories ten over enemy$_{INSTR}$
'approximately ten victories over the enemy'
b. *pobed [$_{PP}$ nad vragom] desjat'
victories over enemy$_{INSTR}$ ten

(4) a. nicxonot rabim [$_{PP}$ ?al ha-'oyev]
victories many on $_{DEF}$-enemy
'many victories over the enemy'
b. *nicxonot [$_{PP}$ ?al ha-'oyev] rabim
victories on $_{DEF}$-enemy many

Note that in these examples the PP cannot be analyzed as a modifier merged outside the lexical projection of the noun because it corresponds to an accusative direct object of the corresponding verbs (see Pereltsvaig to appear for evidence from binding that confirms that the PP cannot be a high modifier):

(5) a. pobedit' vraga
to-defeat enemy$_{ACC}$
'to beat the enemy'

b. lenaceax 'et ha-'oyev
to-defeat $_{ACC}$ $_{DEF}$-enemy
'to beat the enemy'

Thus, the distribution of PP complements of the noun indicates that the HM approach is on the right track.[3]

*1.2 "Heavy" vs. "Light" adjectives*

Following Sadler and Arnold (1994), I distinguish between "heavy" (i.e., phrasal) and "light" (i.e., analyzable as heads) adjectives. Under the HM approach it is the light adjectives that are expected to be visible to the movement, whereas under the PhM approach no difference between heavy and light adjectives is expected. As shown below, both Russian and Hebrew exhibit a split between light and heavy adjectives, such that only the former are visible to the movement, whereas the latter are stranded. This provides a second argument in favor of the HM approach.

In Russian, light adjectives block approximative inversion, as illustrated in (6) below (see also Billings and Yadroff (1996)).[4]

(6) (*dovol'nyx) lingvistov desjat' (*dovol'nyx)
(satisfied) linguists ten (satisfied)
'approximately ten satisfied linguists'

In contrast, heavy adjectives do not block approximative inversion and are stranded instead:

(7) lingvistov **desjat'** [$_{AP}$ dovol'nyx svoimi vystuplenijami]
linguists ten satisfied self's$_{INSTR}$ talks$_{INSTR}$
'approximately ten linguists satisfied with their own talks'

Thus, approximative inversion is blocked by intervening heads (i.e., light adjectives) but not by intervening Specs (i.e., heavy adjectives), indicating again that the HM approach is on the right track.[5]

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[3] As shown in (i), construct state complements in Hebrew precede rather than follow the cardinal, suggesting a derivation by PhM of the bracketed constituent over the cardinal (cf. Shlonsky 2004: 1505). However, see Pereltsvaig (to appear) for evidence showing that the construct state complement is not always a sister of the N°, as assumed by Shlonsky (2004). For an alternative analysis of constructs, deriving them at PF rather than in syntax, which is compatible with the HM analysis proposed here, see Siloni (2003).

(i) a. [lehaqot roq-en-rol] rabot
groups$_{CS}$ rock-n-roll many
'many rock-n-roll groups'

b. *lehaqot rabot roq-en-rol
groups$_{CS}$ many rock-n-roll

[4] Some speakers (including myself) allow for a stranded light adjective if it is interpreted contrastively. I assume that contrastive interpretation involves additional functional structure which makes these adjectives heavy in the relevant sense.

Similarly, in Hebrew only light adjectives are visible to the inversion around cardinals; however, unlike in Russian, Hebrew light adjectives do not block the inversion but rather invert together with the noun, which results in that the order of postnominal adjectives and cardinals in Hebrew which is the reverse of the order of the corresponding pre-nominal elements in languages like English, as illustrated in (8).

(8) a. psalim gvohim yafim rabim
sculptures tall beautiful many
'many beautiful tall sculptures' (cf. Borer 2004: 195, 229)
b. *psalim rabim yafim gvohim
sculptures many beautiful tall

In contrast, heavy adjectives are stranded after the cardinal and do not appear in the mirror order:[6]

(9) a. *psalim [gvohim yaxasit la-'axerim] **rabim**
sculptures tall relative to$_{DEF}$-others many
intended: 'many tall sculptures relative to the others'
b. psalim **rabim** [gvohim yaxasit la-'axerim]
sculptures many tall relative to$_{DEF}$-others
'many tall sculptures relative to the others'

(10) a. ha-psalim **ha-rabim** [ha-yoter gvohim mi-david
$_{DEF}$-sculptures $_{DEF}$-many $_{DEF}$-more tall from-David
šel mikelandželo]
of Michelangelo
'the many sculptures taller than "David" by Michelangelo'
b. *ha-psalim [ha-yoter gvohim mi-david
$_{DEF}$-sculptures $_{DEF}$-more tall from-David
šel mikelandželo] **ha-rabim**
of Michelangelo $_{DEF}$-many

Note that the post-cardinal position of heavy adjectives in the above examples cannot be analyzed as a result of a rightward PF movement (akin to Heavy NP Shift) because heavy adjectives do not appear at the

[5] I assume that adjectives are hosted by a dedicated functional projection and that heavy and light adjectives do not appear in the same structural position; specifically, I take light adjectives to be heads and heavy adjectives to be merged in Spec positions. See Pereltsvaig (to appear) for evidence in support of these assumptions.

[6] These examples involve heavy adjectives that are not reduced relatives, as indicated by the lack of the "emphatic state marker" *ha-* in (9) and the attachment of *ha-* to the comparative *yoter* 'more' rather than directly to the adjective in (10). Adjectival reduced relatives are likewise stranded but may involve a different structure. For more details, see Doron and Reintges (2005).

right edge of the noun phrase; for example, they cannot follow a possessor (see Doron and Reintges 2005):

(11) *xavera šel Dani [gvoha yaxasit le-gil-a]
girlfriend of Danny tall relative to-age-her
intended: 'Danny's girlfriend who is tall relative to her age'

Since light adjectives but not heavy adjectives in Hebrew appear in the mirror order, I conclude that it is a result of HM rather than PhM (contra Shlonsky 2004; cf. Sichel 2002: 302, who reached a similar conclusion). To recapitulate, the differing behavior of light and heavy adjectives both in Russian and in Hebrew suggests that the HM approach is correct. The difference between the two languages with respect to light adjectives (which block the inversion in Russian but move along with the noun in Hebrew) will be accounted for by my analysis proposed in section 2 below.

*1.3 Interaction with cardinals*

The predictions of the two approaches with respect to cardinals are similar to those with respect to adjectives: under the HM approach cardinals are expected to be visible to the movement (i.e., block it or move together with the noun) only if they are heads; in contrast, under the PhM approach, cardinals should block movement only if they are specifiers. As shown below, it is again the prediction of the HM approach that is borne out.

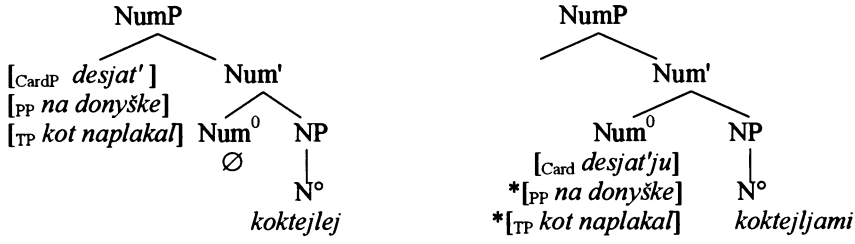
As suggested in Bailyn (2004), cardinals in Russian may be merged either as heads or as specifiers, and as I will show below, only head cardinals are visible to the approximative inversion (i.e., block it).

Bailyn (2004) noted that idiomatic (and in fact other phrasal) cardinals can appear only if the nominal occurs in a structural case position, for instance the accusative object of *vypit'* 'drink up' in (12a), but not if the nominal occurs in an oblique case position, such as the genitive complement of the preposition *ot* 'from' in (12b).

(12) a. Bond vypil {na donyške / kot naplakal} koktejlej.
Bond drank-up {on bottom / cat $_{CUM}$-cried } cocktails$_{GEN}$
'Bond drank up just a few cocktails.'
b. *Bond napilsja {na donyške / kot naplakal } koktejljami.
Bond got-drunk {on bottom / cat $_{CUM}$-cried} cocktails$_{INSTR}$
intended: 'Bond got drunk from just a few cocktails.'

Bailyn's conclusion regarding these examples is as follows: in (12a) a phrasal cardinal is possible, hence the cardinal must be merged in the specifier position, whereas in (12b) a phrasal cardinal is impossible, hence the cardinal here must be merged in the head position:

(13) a. structural case position b. oblique case position




Assuming that Bailyn's analysis is correct, we can explain the distribution of the approximative inversion (noted but not explained in Franks 1995: 167): it is possible only if the nominal occurs in a structural case position, but not if it occurs in an oblique case position:

(14) a. Džejms Bond vypil rjumok desjat' vodki.
James Bond drank-up glasses$_{GEN}$ ten vodka$_{GEN}$
'James Bond drank up about ten glasses of vodka.'
b. *Džejms Bond napilsja rjumkami desjat'ju vodki.
James Bond got-drunk glasses$_{INSTR}$ ten$_{INSTR}$ vodka$_{GEN}$
intended: 'James Bond got drunk from about ten glasses of vodka.'

Under the HM approach, the ungrammaticality of (14b) can be explained as follows: since the nominal occurs in an oblique case position (i.e., the genitive complement of the preposition *ot* 'from'), the cardinal *desjati* 'ten$_{GEN}$' is merged in Num$^0$ (see (13b) above) and thus blocks head movement, which is the approximative inversion. In contrast, (14a) is grammatical because the cardinal *desjat'* 'ten' here is merged in Spec-NumP and hence does not block the inversion. Under the PhM approach to approximative inversion, the contrast in (14) receives no explanation.[7]

Consider Hebrew now. As shown in (8) above, postnominal cardinals in Hebrew occur in the mirror order with respect to light adjectives: postnominal cardinals follow rather than precede the adjectives. Furthermore, postnominal cardinals appear in the mirror order with respect to demonstratives as well:

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[7] This predicts that the following sentence with the idiomatic cardinal should be grammatical. Although its status is marginal, it appears to be a semantic/pragmatic problem: *kot naplakal* 'cat cried' already denotes a vague quantity which cannot be approximated, just as with *mnogo* 'much':

(i) a. ? Bond vypil vodki {kot naplakal / mnogo}.
Bond drank vodka$_{GEN}$ cat $_{CUM}$-cried / much
'Bond drank {a little / much} vodka.'

(15) N-A-Card-Dem
xašmanim qatoliyim **rabim** 'ele
cardinals Catholic many these
'these many Catholic cardinals'

Therefore, I conclude that postnominal cardinals in Hebrew pattern with light and not with heavy adjectives and are thus merged as heads rather than as specifiers (contra Borer 2004: 226).

Note, however, that postnominal cardinals cannot be fully assimilated to adjectives, because unlike the latter, postnominal cardinals (i) are in complementary distribution with prenominal cardinals, as shown in (16), and (ii) cannot modify a complement of a "container noun", as shown in (17) (or of a "Grocerese Numeral"; cf. Borer 2004: 248-249, 254).

(16) a. *me'a xašmanim rabim b. *harbe xašmanim rabim
hundred cardinals many many cardinals many

(17) a. šney qufsa'ot (*{harbe / šlošim}) zeytim (*rabim)
two$_{CS}$ boxes many thirty olives many
intended: 'two boxes of {many/thirty} olives'
b. šney qufsa'ot zeytim yerukim
two$_{CS}$ boxes olives green
'two boxes of green olives'

As is the case with adjectives, both in Russian and in Hebrew cardinals merged as heads are visible to the inversion: in Russian they block it, whereas in Hebrew they move together with the noun (or noun plus adjective(s) complex). In contrast, cardinals merged in the specifier position—as is the case with nominals in a structural case position in Russian—do not block the inversion. This provides a third argument in favor of the HM approach and against the PhM approach.

*1.4 Summary of similarities and differences between the languages*

To summarize the findings so far, both the approximative inversion in Russian and the inversion that creates postnominal placement of certain cardinals in Hebrew strands the PP complements of the noun and heavy adjectives. In contrast, light adjectives and cardinals merged as a head are visible to the inversion in both cases: in Russian they block it, whereas in Hebrew they move together with the noun.

There are two additional differences between the two languages. First, in Russian the inversion creates a semantic effect (hence the term *approximative* inversion), whereas in Hebrew postnominal cardinals mean the same thing as their prenominal counterparts:

(18) xašmanim rab-im = harbe xašmanim
cardinals$_{M.PL}$ many$_{M.PL}$ many cardinals$_{M.PL}$
both: 'many cardinals'

Second, the two languages impose distinct sets of restrictions on the choice of the cardinal (hence the lack of clear minimal pairs): in Russian for semantic reasons (cf. fn. 6) approximative inversion is limited to cardinal numerals; in contrast, in Hebrew only certain "vague cardinals" (namely those that are lexically specified for (in)definiteness) can appear postnominally. In the next section, I propose an analysis that accounts for all these facts.

## 2 Analysis

The core of my proposal is that the differences between the Russian approximative inversion and the Hebrew inversion around postnominal cardinals reduce to the differences in the nature of the Probe: in Russian the Probe is a higher (phonologically null) head, whereas in Hebrew it is the cardinal itself. In what follows, I consider each language one at a time and show how this proposal explains the findings discussed above.

### *2.1 Russian*

I propose that the Russian approximative inversion is triggered by an LF-interpretable feature I call [+NONCOMMITTAL], which is responsible for the semantic effect of the inversion in Russian. Here, I am following Mel'čuk (1985: 157) in proposing that approximative inversion expresses the speaker's uncertainty about (or non-committal to, or distancing from) the cardinality involved. Consider the following situation: Masha is going to a colleague's birthday party and is asked how old that colleague is. Since she doesn't know him very well, she is guessing his age from his looks, etc. In this situation, Masha's reply can use the approximative inversion in (19a), but not any other approximative strategy, such as using *priblizitel'no* 'approximately' or an interval:

(19) a. Let tridcat'. b. # Priblizitel'no tridcat' (let). c. #30-35 let.
years thirty approximately thirty years 30-35 years
'Approximately thirty years.'

This is so because Masha is not rounding the number of years up or down, but rather expresses her uncertainty about the colleague's age (which is an integer in this situation, not a fraction). The constructions in (19b-c) can be used when speaking of someone who is a few months older than 29 or just short of 31, but not on the person's 30$^{th}$ birthday.

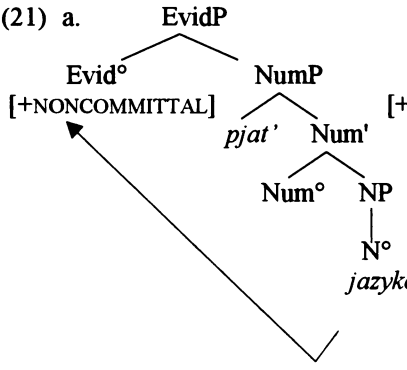
The [+NONCOMMITTAL] feature is merged in the head of the EvidP (Evidential Phrase). This projection is similar to the EvidP found in

clausal structures (cf. Cinque 1999, Aikhenvald 2004, *inter alia*).[8] In Russian, Evid° selects (and takes scope over) exclusively a NumP (and cannot select an NP); hence, cardinal nouns, such as *desjatok* 'ten', do not allow approximative inversion (compare with (14a)):

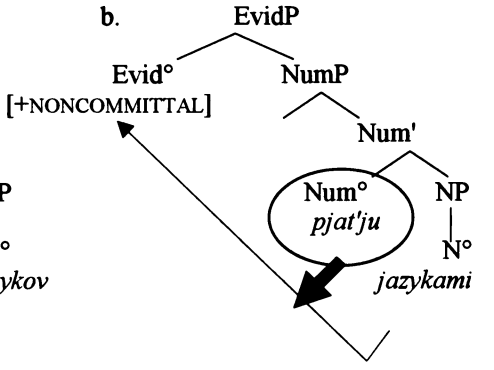
(20) *Džejms Bond vypil rjumok desjatok vodki.
James Bond drank-up glasses$_{GEN}$ ten(noun) vodka$_{GEN}$
'James Bond drank up about five glasses of vodka.'

As with other LF-interpretable features, this feature must be identified by some phonologically overt material (and movement of the numeral itself would be string-vacuous and is hence ruled out in this construction). Given that the cardinal itself is not the Probe, when merged as a head, it will block the movement (the same applies to a light adjective). On the other hand, a cardinal merged as a specifier does not block movement. This is schematized below:

(21) a.




b.




As an alternative to approximative inversion, which identifies EvidP through Move, the identification can also happen through Merge of evidential particles, such as *jakoby* 'allegedly' (as in the following example from the National Corpus of Russian online; http://www.ruscorpora.ru/index.html):[9]

[8] A similar attempt to transplant clausal Evidential/Epistemic categories into nominals is found in Rooryck (2001: 164) and Doetjes and Rooryck (2003).

[9] Unlike the English *allegedly*, the Russian *jakoby* is not an adverb and does not have a corresponding adjective. English too appears to have evidential markers in nominals, such as *like* and *about*, as in the following examples:

(i) a. And then [**like** ten minutes] later he was like 'ok so do you want to break up with me... (http://www.livejournal.com/users/noy)

b. He spends [**about** ten minutes per hour] daydreaming. The rest of the time he spends attending to Mrs. Smith's instructions and constantly performs activities at [**about** a fifty percent rate of success].

(22) Oficial'no zdes' [jakoby 83 tysjači inostrannyx rabočix],
officially here allegedly thousand foreign workers
no èksperty MVD dajut sovsem
but experts Ministry-of-Internal-Affairs give completely
druguju ocenku: bol'še milliona čelovek.
different estimate more million people.
'Officially, there are allegedly 83 thousand foreign workers here, but experts from the Ministry of Internal Affairs give a completely different estimate: more than a million people.'

The same particle serves also as an evidential marker in clauses (in the following example, from the same source, it takes scope over the whole embedded clause placing the responsibility for the truth of the proposition with the agent of the matrix clause):

(23) Žurnal *Ogonëk* soobščaet potrjasënnym čitateljam čto
magazine "Ogonek" informs stunned readers that
srednevekovye rycari **jakoby** oxotilis' na dinozavrov.
medieval knights allegedly hunted on dinosaurs
'*Ogonek* informs its stunned readers that allegedly medieval knights hunted dinosaurs.'

*2.2 Hebrew*

In contrast to the proposal outlined in the previous subsection, in Hebrew the inversion around cardinals is triggered by a feature on the cardinal itself, the [±DEFINITE] feature. Following Wintner (2000) and Shlonsky (2004: 1492, fn. 30), I take this feature to encode morphological and not semantic definiteness, expressed by the marker *ha-* (I assume that the latter is computed in LF, only in part based on morphological definiteness). This analysis of *ha-* assimilates definiteness to other morphological agreement features, such as gender and number, and thus allows for an elegant account of the polydefiniteness phenomenon (for alternative accounts see Sichel 2002, 2003):

(24) **ha**-par-ot ***(ha-)**xum-ot ***(ha-)**rab-ot ***(ha-)**'elu
DEF-cow-F PL DEF-brown-F PL DEF-many-F PL DEF-those
'those abovementioned many brown cows'

Furthermore, the analysis of the definiteness marker *ha-* that distinguishes between morphological and semantic definiteness accounts for the instances of mismatch, where a morphologically definite nominal is not interpreted as semantically definite (or even referential), as in (25a)

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(http://education.calumet.purdue.edu/vockell/cai/Cai1%20/cai1quiz.htm)

from Danon (2002: 53), or a morphologically indefinite nominal is interpreted as semantically definite, as in (25b), from Shlomo Artzi "Vals be-xameš u-šlošim". Finally, sometimes the definiteness marker *ha-* is optional and appears to make no semantic contribution at all, as with the generic subject in (25c) from Wintner (2000: 30).

(25) a. baqbuq ha-yain
bottle DEF-wine
'the bottle of wine'

b. 'ota mexonit (*ha-) mešumešet
that-same car DEF- used
'that (same) used car'

c. (ha-)ʔišun maziq la-briyut
DEF-smoking harms toDEF-health
'Smoking is harmful for the health.'

Yet, definiteness in Hebrew is unlike other morphological agreement features (i.e., gender and number) in that it requires a more local configuration, that is head-adjunction, hence triggering head movement (this property of morphological definiteness in Hebrew is comparable to the presence of an EPP-feature). As a result, there is no definiteness agreement with predicates and predicatively used modifiers (such as reduced relatives), even though number and gender agreement is found in these constructions:

(26) a. (ha-)meraglim (*ha-)'axlu ʔugot.
DEF- spiesM.PL DEF- atePL pies
'(The) spies ate pies.'

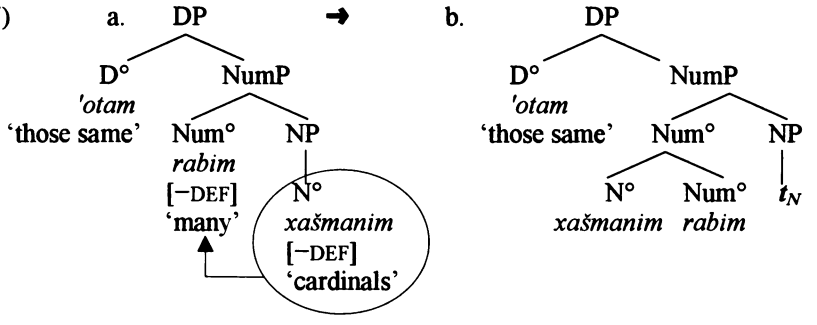
b. (ha-)meraglim (*ha-)hem (*ha-)'amicim.
DEF- spiesM.PL DEF- themM.PL DEF- braveM.PL
'(The) spies are brave.'

c. meraglim *(ha-)megalim 'et ha-sodot šelanu
spiesM.PL DEF- divulgingM.PL ACC DEF-secrets ours
'spies who divulge our secrets'

Since it is the feature of the cardinal (or a light adjective, or a demonstrative) that serves as a Probe and hence triggers the inversion (and the resulting mirror order), cardinal heads are not really intervening and therefore do not block the inversion, but move with the noun instead. This is schematized below for the Hebrew *'otam xašmanim rabim* 'those same many cardinals' (note that this phrase is semantically but not morphologically definite; hence the morphological definiteness feature is valued minus; head movement applies regardless of whether the feature is valued minus or plus):[10]

[10] I assume that head movement necessarily results in left-adjunction (cf. Kayne 1994).

(27)




My proposal that the noun and the cardinal form a complex head is further supported by the fact that parentheticals cannot be inserted between them, even for the speakers who are most liberal with respect to parenthetical placement (I thank Eytan Zweig, p.c., for bringing this fact to my attention).

Further support for the proposal that implicates the morphological definiteness feature in this inversion comes from the strongest correlation between postnominal position and agreement in definiteness: all postnominal (non-phrasal) elements—including demonstratives, vague cardinals, ordinal numerals, *'exad* 'one' in Standard Hebrew, and adjectives—*must* agree in definiteness, whereas prenominal elements—including demonstratives, cardinal numerals 2+, *'exad* 'one' in "Grocerese Hebrew", and vague cardinals, such as *rabim* 'many'—*never* agree in definiteness. A correlation between position and agreement has been noted by both Borer (2004) and Shlonsky (2004); however, both of them looked at agreement in general and noted that postnominal elements must agree, whereas with prenominal elements "fairly arbitrary variation is manifested" (Shlonsky 2004: 1493). Thus, the correlation observed by Borer and Shlonsky is not as strong as the one I identify in this paper because they took into account gender and number agreement as well (and both pre- and postnominal elements may but do not always show agreement in gender and number). Hence, if morphological definiteness is teased apart, a much stronger claim about the correlation of position and agreement can be made. Below, I illustrate this correlation with the three most striking contrasts.

First, consider demonstratives, such as *ze* 'this/that$_M$'. In Standard Hebrew such demonstratives appear postnominally and always agree in definiteness: either both the demonstrative and the noun are marked as definite, or neither (note that the marker *ha-* here appears to make no semantic contribution, cf. (25) above).

(28) a. ha-yeled ha-ze
DEF-boy DEF -this
'this boy'
b. yeled ze
boy this
'this boy'
c. *ha-yeled ze
DEF -boy this
d. *yeled ha-ze
boy DEF-this

On the other hand, in higher registers of Hebrew such demonstratives occur prenominally and do not agree in definiteness:

(29) a. ze ha-yeled
this DEF-boy
'this boy' [from "Ma Avarex"]
b. *ha-ze ha-yeled
DEF -this DEF-boy
c. *ze yeled
this boy

Second, consider cardinal vs. ordinal numerals. Cardinal numerals (2+) occur prenominally and never agree in definiteness (cf. Borer 2004: 197). Specifically, in higher registers of Hebrew the noun but not the numeral bears the *ha*-marker, whereas in colloquial Hebrew the numeral but not the noun does so; see (30a-b).[11] In contrast, ordinal numerals occur postnominally and always agree in definiteness (as well as number and gender). Furthermore, there is no special form for ordinal numerals 11th and above, so cardinal numerals are used instead, in which case they occur postnominally and agree in definiteness; see (30c).

(30) a. ra'iti 'et (*ha-)xamiša-ʔasar ha-sratim be-rešimat-ex.
saw1SG ACC DEF- fifteen DEF-films in-list-2.SG.F
'I saw the fifteen films on your list.'
b. ra'iti ta- xameš-ʔesre (*ha-)sratim be-rešima šelax.
saw1SG ACC+DEF- fifteen DEF- films in-list of-2.SG.F
'I already saw the fifteen films on your list.'
c. «be-ʔeyzor ha-sakana» hu ha-seret *(ha-)xameš-ʔesre
in-area DEF-danger COP DEF-film DEF- fifteen
be-sidrat Džejms Bond.
in-seriesCS James Bond
'«The Living Daylights» is the fifteenth film in the James Bond series.'

Finally, consider vague cardinals: *harbe* 'many' appears prenominally and does not agree in definiteness (nor gender or number), whereas *rabim* 'many' appears postnominally and does agree in definiteness (as well as gender and number).

(31) a. harbe xašman-im qatoliy-im
many cardinals-M.PL Catholic-M.PL
'many Catholic cardinals'

[11] *Ta-* in (30b) is the fusion of *'et*, the accusative case marker, and *ha-*, the definiteness marker.

b. ha- xašman-im ha-qatoliy-im ***(ha-)rab-im**
DEF-cardinals-M.PL DEF-Catholic-M.PL DEF-many-M.PL
'the many Catholic cardinals'

## 3 Conclusions

In this paper, I have proposed a head-movement-based analysis of both the approximative inversion in Russian and the inversion around definiteness-marked cardinals in Hebrew. I have argued that the HM approach to these constructions is preferable to the PhM approach. Furthermore, I have reduced the differences between the two languages with respect to the placement of light adjectives and the interaction with head-cardinals to the nature of the Probe: in Russian the HM around cardinals is triggered by a feature on a higher Evidential head; therefore, an intervening cardinal in a head position blocks the movement. In Hebrew, the HM around cardinals is triggered by a feature on the cardinal itself; therefore, an overt cardinal in a head position does not block the movement, but rather moves along with the noun.

Unfortunately, space limitations preclude a more detailed consideration of phrasal movement alternatives, such as the roll-up phrasal movement analysis proposed in Shlonsky (2004) or the DP-external-preposition analysis proposed for the similar construction in Icelandic by Vangsnes (2001). Here, I will note only that these phrasal-movement-based analyses fail to account for the stranding of the noun's PP complements (see section 1.1 above), the mirror order of light (but not heavy) adjectives and the correlation between postnominal position and definiteness agreement in Hebrew, and the case marking facts in Russian, unless a number of unwarranted stipulations about phrase structure, thematic relations, and movement are made. The reader is referred to Pereltsvaig (to appear) for a more comprehensive critique of these approaches.

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# Toward a Theory of the Grammatical Use of Lexical Information*

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We take the lexicon to consist of the set of formatives available to the syntax. More specifically, as hierarchical syntactic structures are recursively assembled by the Merger (or insertion) of meaningful formal objects into syntactic structure, the lexicon constitutes the universe of available objects.

Each such object, which we will call a *lexeme*, is associated with a set of properties in various domains. These properties include *inter alia* truth-conditional meaning (establishing the reference) and information required to pronounce the lexeme in its eventual grammatical context. Information of the latter type includes that of a purely phonological nature (e.g., phonemic segments) and, functioning more indirectly, morphological information which must be taken into account in order that the phonological shape of a lexeme be completely determined.[1] For example, to derive the Russian equivalents of the English sentences *The cats are on the mat* or *I see the cats*, the syntax needs to access a lexeme associated with a) semantic information denoting the species *felis catus*, b) the phonological representation for the stem {kot-}, and c) a certain amount of morphological information, including the following:

- a value for number (singular or plural), freely chosen;
- a value for grammatical case (from a fixed inventory available in the language), as assigned by syntactic context;
- a value for declension class, inherent to the stem, which selects the function mapping number and case onto the correct desinence (giving *koty* in the former example, *kotov* in the latter); and

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[1] On some views of morphology (e.g., Distributed Morphology), the lexical insertion of 'pieces' (bundles of formal information paired with bundles of meaning information) can take place at a later stage of the syntactic derivation. We do not mean to rule this out in principle.

- a value for animacy, inherent to the stem, which can affect the spell-out of the accusative case.

But while these lexical properties have been discussed in terms of their effect on the object they are associated with in the lexicon, the effect of some lexical properties may be spread across word boundaries, in a way mediated by syntactic structure, so as to affect the phonological form of another lexeme. Familiar examples in the Slavic languages include *Concord*, whereby lexical properties for case, number, gender, and animacy are spread from a noun to its attributives, and *Predicate Agreement*, which spreads features for person, number, and gender from subject nominal phrase to an associated verbal predicate. We call lexical features affecting the spell-out of their host lexeme *morphological*; features whose phonological effects entail feature spread from a host lexeme to a receptor are *morphosyntactic*. These feature classes are not mutually exclusive, as a feature can have effects in both domains. A third category, that of *syntactic features*, affects the derivation above the level of the word, without morphological expression. An example would be a feature for syntactic category (e.g., distinguishing a noun from a verb), if such features exist, or the *EPP feature*, associated with a functional category and requiring that its Specifier position be filled, thereby engendering movement (displacement).[2]

The aggregate of these three kinds of lexical properties can be termed grammatical, or *formal,* features. The present paper is a contribution toward exploring the structure and function of formal features in grammar, with a focus on morphosyntactic features. In particular, we ask how morphosyntactic features are valued, how they are spelled out, and how they relate to other forms of lexical information. Basing our discussion on material from Slavic, we will argue that Concord and Predicate Agreement should be unified. There are *prima facie* reasons not to do so, both conceptual/theoretical and empirical. We will address these issues and argue that an elaborated theory of lexical information makes such a unification desirable. In the process, however, the nature and role of lexical features will differ from that assigned to them in the theory we took as our point of departure.

This paper is organized as follows. Section 1 offers a sketch of the role of formal features in the Minimalist Program (see, for example, Chomsky 2000, 2001, 2002, 2004a, 2004b, 2005). It is important for our discussion to understand the essential role of such features in this theory, as they regulate the operation *Agree* responsible for structural case assignment and movement. In section 2 a Minimalist analysis of numeral

[2]The term "EPP" has become opaque and merely descriptive; more or less the same function is now attributed to an 'edge feature' (Chomsky 2004b).

phrases in Slavic proposed in earlier work by the present author (Rappaport 2002, 2003) is summarized, highlighting some aspects of the analysis which stand in some dissonance to the assumptions outlined in section 1. The next two sections proceed to make specific proposals in the direction of resolving this dissonance. Section 3 adopts and develops the idea (Frampton and Gutmann 2000, 2006) that Agree is actually a process of *feature sharing*, rather than one of copying feature values. Section 4 proposes a further articulation of lexical features, distinguishing formal features from what we will call *referential features*. In our view, referential features find their primary *raison d'être* in the lexicon by serving to value formal features when those values are predictable from lexical meaning. We will then show that formal features are used to implement both Concord and Predicate Agreement, but the role of referential features in valuing formal features can be leveraged to distinguish what is traditionally called "semantic agreement" from "formal" or "grammatical" agreement. We will offer an account of why the clause-level process of Predicate Agreement often exhibits greater semantic transparency than does the more local process of Concord (cf. the Agreement Hierarchy of Corbett 1979, 1983). The conclusions of the paper are summarized in section 5.

## 1 The Role of Formal Features in the Minimalist Program

The heart of the computational system underlying the linguistic faculty is the *narrow syntax*, a single cycle in which hierarchical syntactic structure is recursively assembled by the operation *Merge* and the core processes of syntactic feature copying, structural case assignment, and movement are implemented by the operation *Agree*. Moreover, during the course of this cycle, portions of structure are passed (by the operation *Transfer*) to the external systems of speech production/perception (the Sensorimotor System) and cognitive representation (the Conceptual-Intensional System) through the intermediation of Phonological Form (PF) and Logical Form (LF), respectively.

In the Minimalist Program, the core syntactic processes are driven by the need for features to acquire values during the derivation. Features, which should be understood as lexical information of a particular form, consist of a *type* and a *value*. A feature delivered to an interface level must be meaningful ("interpretable") to the system on the other side of the interface. A feature without a value is by definition uninterpretable at any interface.

A valued feature may be interpretable at one interface, but not at the other. A feature defining tongue body height for the proper pronunciation of a vocalic segment is interpretable to the Sensorimotor System, not to the Conceptual-Intensional System. A feature specifying referential defi-

niteness is meaningful to the latter, not to the former. The narrow syntax must not only deliver interpretable features to the interfaces, but also ensure that ONLY interpretable features are so delivered. Recalling the discussion in the introduction to this paper, the morphological feature of declension class and the morphosyntactic feature of structural case are PF-interpretable, but LF-uninterpretable, as is purely phonological information. Number, gender, animacy, and person can certainly be PF-interpretable; they may be LF-interpretable as well. It is necessary, then, to devise a way of determining which features are PF-interpretable and/or LF-interpretable.

A basic principle of Chomsky's approach is that all and only LF-interpretable features have values on Merge (Chomsky 2001: 5). PF-interpretable features are included among lexical features because they are required to derive a legible PF representation. Rather than stipulating by list which lexical features are LF-interpretable and which not, the distinction is directly derivable from valuedness. The appropriate definitions are given in (1); it is important to understand that any reference to a feature should be taken to refer to a token of that feature, not a type (for example, a particular instance of the number feature in context, not the number feature generalized across all contexts), since features of the same type can be valued in one context, and unvalued in another.

(1) a. A feature must have a value in order to be interpretable.
b. A feature is LF-interpretable if and only if it is valued when its host lexeme is Merged.
c. A feature unvalued on Merge is potentially PF-interpretable. In order to be PF-interpretable, it must acquire a value during the course of the derivation.

Consider some examples. In Russian, the noun *kot* 'cat' is associated in the lexicon and Merged in syntactic structure with the valued features [gender: masculine], [animacy: +], [number: singular], and [person: third]; as a noun, it will also be associated with a case feature, but case can be unvalued in the lexicon ([case: ]), to be valued in syntactic structure. It follows from (1), then, that the first four features are LF-interpretable and that the last is LF-uninterpretable, but potentially PF-interpretable. The derivation cannot converge until the case feature acquires a value in the narrow syntax, because this information will be necessary for PF to deliver a representation legible at the Sensorimotor interface. Conversely, in order to agree with its subject, a predicate is associated on Merge with unvalued features, to be valued during the course of the derivation. In *kot spit* 'the cat is sleeping', the predicate, more precisely, the category T(ense), is associated with the features [gender: ], [number: ], and [person: ], because the predicate cannot be

spelled out (in all tenses) unless these features are valued. Thus, because these features are unvalued on T when it is Merged, these features are LF-uninterpretable on T (unlike on N), but potentially PF-interpretable.

The valuation of uninterpretable features is implemented by the operation *Agree*. It is important for our purposes to attempt a clear definition of this operation; we summarize some of its properties in (2), based on Chomsky 2001:

(2) a. Features consist of a *type* and, optionally, a *value*. For example:
- Valued feature: [case: nominative]
- Unvalued feature: [case: ]

b. A syntactic object is active if it contains an unvalued feature

c. Two features on different syntactic objects match if they contain the same type, regardless of their value

d. Two syntactic objects α and β undergo the operation Agree iff:
β is in the search space of α (is c-commanded by α and is appropriately local); α is called the probe, and β – the goal.
α and β contain at least one pair of matching features
Both α and β are active

e. On the application of Agree, any unvalued matching features on either category are assigned the value of its counterpart.

Beyond the core definition stated in (2) we need to elaborate on three points. All will be important to the ensuing discussion.

First, this operation invokes movement ("displacement", internal Merge) if the probe has the EPP feature, which encodes the necessity for a filled Spec position. T has this feature; *v**, the functional category associated with transitive verb phrases, does optionally. No movement occurs without Agree, and Agree cannot apply without reference to lexical features.

Second, it is important to distinguish two mechanisms of case agreement: *structural* and *inherent* case. Structural (or "configurational") case is assigned as follows: a lexeme with an unvalued case feature is inserted into syntactic structure, and it is valued in the syntax by Agree, independently of any lexical properties. It follows from (1b) that structural case is LF-uninterpretable. Inherent (or "lexical") case is implemented differently. Lexemes are selected for Merge because their case feature is assigned a particular value in the lexicon. The operation Agree is not involved. It follows from (1b) that inherent case is LF-interpretable.

When the case feature of a nominal is valued, that nominal becomes inactive and cannot undergo further movement.[3] A nominal Merged without a value for case, on the other hand, may move more than once until its case feature is valued. This approach assumes that when the category T serves as probe for a nominal goal which will become the clausal subject, the nominal is assigned Nominative case; when category *v** serves as the probe for a nominal which will become the clausal direct object, the nominal is assigned the Accusative case. These facts do not fall out directly from the properties summarized in (2), and must be stipulated either as part of the definition of Agree or of the corresponding categories T and *v*.

Finally, a probe is *φ-incomplete* if it is not associated with the full suite of φ-features (in Russian, they are person, number, and gender). An example is the "defective Tense category" of Raising and Exceptional Case Marking constructions, which is taken to have only a person feature. Defective T does not value features in the goal, such as case (Chomsky 2001). As a consequence, the subject of nonfinite clauses (whose T does not express agreement with the subject) is free to be valued by a higher probe which assigns case to it and possibly causes it to move. An example is given in (3a), with structure (3b) (underlining indicates the original copy of nominals which move):

(3) a. Johns seems to be intelligent
b. John T seem [John $T_{DEF}$ be [John intelligent]

$T_{DEF}$ and the lowest instance of *John* are active and Agree, and *John* raises (assuming $T_{DEF}$ has the EPP feature). But due to the defective nature of $T_{DEF}$, the case feature on *John* is not valued, and *John* remains active. The noun is thus free to Agree with the higher, finite T, which invokes further movement.

## 2 A Minimalist Analysis of Numeral Phrases in Slavic: Problems and Questions

This section begins by summarizing an analysis of numeral phrases in Russian and Polish developed in earlier work (Rappaport 2002, 2003). We then turn to addressing certain questions this analysis raises for the theory sketched in section 1.

[3]More precisely, a nominal with valued case cannot undergo "A-movement", or movement to an argument position. It can undergo "A'-movement", or movement to a non-argument position, as in the fronting of an interrogative form. The present discussion is limited to A-movement.

The basic problem in numeral phrases of most Slavic languages can be succintly stated using the terminology of Babby 1985, 1986, 1987: *heterogeneous* morphosyntax is observed in direct case positions, but *homogeneous* morphosyntax is observed in oblique case positions. Contrast, for example:

(4) a. V fil'me vystupaet pjat' izvestnyx aktërov.
in film appear$_{3RDSG}$ five well-known$_{GENPL}$ actors$_{GENPL}$
'Five well-known actors appear in the film.'

b. V fil'me ona vystupaet s pjat'ju izvestnymi
in film she appears$_{3RDSG}$ with five$_{INSTR}$ well-known$_{INSTRPL}$
aktërami.
actors$_{INSTRPL}$
'She appears in the film with five well-known actors.'

In (4a), the morphology of the constituents of the numeral phrase suggests that the numeral is the head: it appears to bear the case dictated by the clausal syntax (the accusative, homophonous in this declension class with the nominative) and assigns the genitive to a governed complement. On this interpretation, the morphosyntax of 'five well-known actors' in this position is analogous to that of 'a group of well-known actors'. In (4b), on the other hand, it is the quantified noun which takes the case dictated by the clausal syntax (the instrumental), and the numeral agrees with it; here the Russian equivalent of 'five' has the morphosyntax of an attributive modifier. This paradox is well-known and has engendered an extensive literature.

The solution we proposed assumes the following. First, in all numeral phrase constructions, the noun is the head of the phrase and the numeral is its modifier. Second, all Russian nouns have a case feature which can be valued or unvalued in the lexicon; recall that while structural case is assigned to unvalued lexical features, inherent case results from the selection of a noun with a valued case feature. Nouns also have features for person, number, gender, and animacy, valued in the lexicon, which we will designate by the commonly-used term *φ-features* ("phi" to suggest "formal"). Adjectives have case and φ-features, all of which must be unvalued in the lexicon; these features are valued under agreement with their head by Concord. The thrust of the proposal is that numerals have a case feature which may be valued or unvalued (as do nouns), but φ-features which must be unvalued (like adjectives). To summarize:

| (5) | Lexically-valued φ-features? | Lexically-valued case? |
|---|---|---|
| Noun | Yes | Optional |
| Numeral | No | Optional |
| Adjective | No | No |

In a direct case position, as in (4a), heterogeneous morphosyntax results from a noun with unvalued case and a numeral with [case: Quantitative]. The operation Agree applies to copy that case feature onto the noun (and any agreeing modifiers). A morphological rule spells out the Quantitative case on nouns and adjectives as syncretic with the Genitive; it gives the familiar citation form for the numeral, traditionally considered to be the Nominative. In an oblique case position, as in (4b), homogeneous morphosyntax results from a noun with valued case and a numeral with unvalued case. The operation Agree applies to the Numeral just as to any agreeing modifier.

There are a total of six other logical possibilities. A suite of syntactic principles and morphological factors conspire to block legible interface representations under these scenarios (see the cited papers for details).

Now we are in a position to turn to aspects of this analysis which do not lie completely at peace with the theory outlined in section 1.

First, the analysis does not conform to the typology of case assignment which requires that inherent (interpretable) case is selected and structural (uninterpretable) case is valued by Agree. Presumably the Quantitative case assigned by a numeral is interpretable; it is inherent in that it is governed (assigned by a particular lexeme). And yet in direct positions it is valued by Agree, rather than being selected.

The case typology as stated presupposes an independent notion of what information is interpretable at LF, that we can reliably distinguish interpretable and uninterpretable features in terms of their content. We submit that this is not the case, that short of circularity, there is no coherent sense of interpretability that imbues this typology with any empirically verifiable content (see Legate 2002 for more discussion). The fact that the Russian preposition *bez* 'without', for example, governs the Genitive case is an instance of inherent case; but is the Genitive case in this context actually interpretable to the Conceptual-Intensional System in anything like the sense that number is? The Russian word *kniga* 'book' is associated in the lexicon with the φ-feature [gender: feminine]; in what sense is this an LF-interpretable feature? It seems a dubious enterprise to seek interpretive function for these features, and therefore it is impossible to correlate such a function with being valued in the lexicon. A lexically specified feature MAY plausibly be interpretable (e.g., number), but it is difficult to maintain that it MUST be.

Whether a feature is lexically valued or not should be treated as an empirical matter, determined by what PF needs to know to deliver a legible representation to the Sensorimotor system. Consider as an example the Russian word *xolostjak* 'bachelor', denoting an unmarried man; the property of being unmarried is not relevant to the grammar, but its masculine gender is. Consequently, gender is a formal (in this case, morphosyntactic) feature, but unmarriedness is not. The gender feature is

lexically valued for a noun but not, say, an adjective, because the distributional facts show that the gender value of the adjective is dependent upon the noun, and not vice versa. In contrast, the gender of an inanimate noun or the declension class of a noun has no referential content and it is not LF-interpretable, but it has to be lexically valued, because PF needs access to it. There is no justification for imposing the requirement that only LF-interpretable features can value potentially PF-interpretable features (1c).

Recall from our previous discussion that it must be stipulated somehow that T and $v^*$ assign structural case on Agree, and further that these categories assign distinct cases (Nominative and Accusative, respectively). This feature assignment has been treated in a way completely distinct from the normal valuation of LF-uninterpetable features. A more straightforward way to implement structural case assignment would be to assign the corresponding valued case features to T and $v^*$, respectively, so that these features are copied by Agree from these probes to an appropriate goal, just as other valued features assign values to unvalued counterparts. This approach, however, is ruled out on principle and excluded by (1): the case feature on T and $v^*$ is neither LF-interpretable nor (potentially) PF-interpretable. Dispensing with the notion of LF-interpretability makes it possible to implement this more direct approach.

Second, the numeral phrase analysis sketched above explictly treats homogeneous agreement, implemented by Agree, as an instantiation of Concord, analogous to the agreement of attributives with their head. What appears to be heterogeneous agreement is also argued to be the result of the phrase-internal Agreement of a noun with a quantifier modifier. That is, the operation Agree applies between the numeral and nominal in all instances. The difference between homogeneous and heterogeneous agreement lies in the direction of value copying: heterogeneous morphosyntax results from copying a feature value from probe to goal (downward), while homogeneous morphosyntax results from copying a feature from goal to probe (upward). This distinction is of no significance: the definition of Agree given in (2) reveals no sensitivity to the direction of copying. On our analysis the direction of feature valuation is derivative of the distinction, located in the lexicon, between whether it is the numeral or noun which has a valued case feature. While case assignment by feature copying (in either direction) has not (to my knowledge) been implemented in practice, it is permitted by definition (2) and there is no reason not to exploit this possibility, if empirical considerations justify it.

Third, as is explicit in our treatment of homogeneous morphosyntax, this analysis of Slavic numeral phrases unifies Concord and Predicate Agreement, such that they utilize the same features and operations. This

is in conflict with Chomsky 2004b, where we find the explicit stipulation that a probe must be a head and it can only apply to a complement of that head.[4] We propose dispensing with this requirement and permitting Agree to implement Concord. This seems to be a simplification of the theory, to be preferred in the absence of compelling evidence to the contrary.

This move, however, entails a problem. Agree would necessarily apply to a modifier/head pair before the head has case; how could case, assigned later, be transmitted to both? When a case feature is assigned by T or *v** to either, the case recipient head is rendered inactive and Agree would no longer be possible between the modifer and its head. Moreover, the application of Agree within the complement of T or *v** at that point in the derivation would violate strict cyclicity. A solution is required and we will propose one in section 3 which makes the unification possible, as well as offering other benefits.

Finally, there is considerable evidence that Predicate Agreement in Slavic is expressed only in the presence of a Nominative case subject. Example (6) illustrates the typical case of a predicate agreeing with a Nominative case subject:

(6) Mal'čiki sideli vozle okna.
Boys$_{\text{NOMPL}}$ sat$_{\text{PL}}$ by window
'Boys were sitting by the window.'

But when the subject takes a quantitative form different from the Nominative, there is no predicate agreement. (7a,b) illustrate quantified nominal subjects represented by prepositional phrases, the distributive *po* (adapted from Kuznetsova 2004) and approximative *okolo*, respectively; (7c) represents an approximative inversion construction, while (7d) is a standard nominal quantified by a numeral:

(7) a. Po mal'čiku sidelo vozle každogo okna
DIST boy$_{\text{DETSG}}$ sat$_{\text{3RDSGNEUT}}$ by every window
'One boy sat by each window.'
b. Okolo pjati mal'čikov sidelo vozle okna.
APPROX five$_{\text{GEN}}$ boys$_{\text{GENPL}}$ sat$_{\text{3RDSGNEUT}}$ by window
'About five boys sat by the window.'
c. Mal'čikov pjat' sidelo vozle okna.
boys$_{\text{GENPL}}$ five sat$_{\text{3RDSGNEUT}}$ by window
'About five boys sat by the window.'

[4]In fact the restriction is even narrower: a probe must be the head of a phase (*v** or C). The justification entails restricting search space and computational memory, but it isn't clear how relaxing the restriction in the way we suggest burdens mental computations.

d. Pjat' mal'čikov sidelo vozle okna.
five $boys_{GENPL}$ $sat_{3RDSGNEUT}$ by window
'Five boys sat by the window.'

In such cases, the neuter singular form is a default, utilized, for example, in purely impersonal clauses. This correlation is encoded in the definition of Agree. If this operation applies, the φ features of the predicate are valued by the subject and the subject is assigned the Nominative case. If the operation does not apply, then neither of these events occurs. One cannot apply without the other.

In contrast to this pattern, Predicate Agreement is possible with a numeral phrase in subject position even if the latter is not (according to our analysis) in the Nominative case:

(8) Pjat' založnikov uže vydvinuli iski o kompensacii
five $hostages_{GENPL}$ already $filed_{PL}$ lawsuits for compensation
'Five hostages have already filed lawsuits for compensation.'
... (newsru.com)

It is conceivable that the quantifier is the head of the subject phrase, that it stands in the Nominative case and is associated with the φ-feature [number: plural]. But we have argued in the cited work that the head of this phrase is the noun (e.g., *založniki* 'hostages' in (8)) and that it is in an oblique case because it is in the scope of a case-assigning quantifier (numerals assign the Quantitative case, just as distributive *po* assigns the Dative). In any event, either system has to address the possibility of alternate predicate forms:

(9) V komnatu vošlo/vošli pjat' čelovek.
into room $entered_{NEUTSG/PL}$ five $people_{GENPL}$
'Into the room entered five people.'

This matter will be taken up in section 4.

## 3 Agreement as Feature Sharing

We have opted in our analysis of numeral phrases to unify Concord and Predicate Agreement by proposing that both be implemented by the operation Agree. As noted in the previous section, this leads to a technical problem which needs to be solved: how can the case feature of a modifier be valued by the modified noun if the noun has not yet been assigned case at the time Agree applies between them?

Frampton and Gutmann (2000, 2006) discuss the problems inherent in two constructions in which a structural case assigner must Agree with

more than one goal. The first involves English expletive constructions such as (10a), with structure (10b):

(10) a. There were children in the room.
b. EXPL T be [children in the room]

They follow Chomsky 2000 in assuming that the lexical representation for EXPL includes an unvalued person feature, intended to ensure that EXPL can Agree with T and satisfy the latter's EPP requirement. T, in turn, has to agree with both the expletive subject (in order to value the latter's person feature) and with the expletive's associate *children* (in order to value the latter's case feature). If T Agrees first with *children*, the values of the φ-features associated with *children* will be copied onto T, so that the latter category will be rendered inactive. Say instead that T Agrees first with EXPL. Unlike a nominal, EXPL has no valued φ-features to pass on to T. The φ-features on T are only valued when T turns next to Agree with *children*. The [person: ] feature on EXPL, then, is never valued.[5]

A similar problem arises in a more arcane example discussed in Frampton and Gutmann 2000: Exceptional Case Marking (ECM) constructions in Icelandic with a participle (expressing case) in the lower clause. Consider (11a) (Andrews 1982:445), with the structure given in (11b):[6]

(11) a. Þeir telja hana (vera) sagða (vera) vinsæla.
they$_{NOM}$ believe her$_{ACC}$ (to-be) said$_{ACC}$ (to-be) popular$_{ACC}$
'They believe her to be said to be popular.'
b. they $T_{PRES}$ – [they [$v$* [believe [her$_{ACC}$ $T_{DEF}$ be $Prt_{ACC}$ say [her $T_{DEF}$ be popular]]]]]

Prt hosts the participial form of the verb 'to say', replacing $v$* and thereby making the verb intransitive. Like an attributive, Prt has unvalued gender and number features, but no person feature. Again, a case assigner, here, $v$*, must Agree with both *her* and Prt and assign case to them. Once $v$* Agrees with 'her', the closer and more accessible of the two, $v$* is rendered inactive and there is no source of the Accusative for

[5]Chomsky's resolution of this paradox is that in such cases Agree applies to both EXPL and its associated simultaneously (Chomsky 2004b). This is a powerful device which can have the effect of averting intervention constraints. While we prefer the feature sharing approach, the unification of Concord and Predicate Agreement to be pursued here could probably be achieved under this assumption as well.

[6] Like Frampton and Gutmann, we ignore the case marking of the predicate adjective at the end of the sentence, which complicates the computation but does not change the argument.

the participle. If somehow *v* * first agreed with the farther element, Prt, the situation would be analogous to the English expletive construction: *v** would not yet have values for gender and number to pass on to Prt.

Frampton and Gutmann 2000 proposes that Agree does not copy feature values, but causes the probe and goal to share a single feature, whether valued or not. This idea has its analogue in the operation of "structure sharing" from Functional Unification Grammar (Kay 1984, Karttunen and Kay 1985) and has been incorporated in much work on Head-Driven Phrase Structure Grammar; see now also Pesetsky and Torrego 2004, from a self-avowed minimalist perspective. Feature sharing has the flavor of Autosegmental Phonology, as though syntactic features exist on a plane different from that of the categories themselves, with association lines linking the two planes. In the English expletive case (10), regardless of the order in which T Agrees with its two goals, *there* and *children*, the three formatives end up sharing a single person feature, with *children* supplying the value. In the Icelandic Exceptional Case Marking participle construction (11), the case features of *her* and Prt are shared even when neither has a value; at the next cycle, *v** assigns the value for that feature, which is morphologically realized on both.

Now we can apply feature sharing to Concord. Recall that the problem with using Agree for basic Concord is that when the attributive Agrees with the Noun, the latter does not have a case value; when the latter eventually receives a case value from *v**, the Noun and *v** will be rendered inactive; how will the case value be transmitted to the adjective?[7]

(12) a. ja [čital [interesnuju knigu]]
I read interesting book.
'I read an interesting book.'
b. [ja *v* *[φ: ] [V-čitaj- [interesn-[φ: ; case:] knig-[φ:φ; case: ]]]

The answer is provided by feature sharing. Agree applies within the direct object nominal phrase, coalescing the φ-features and case features of the adjective and head noun. Since the φ-features of the noun are valued, they are available on the adjective for eventual spell-out. As the nominal phrase is assembled, Agree applies each time an adjunct is added. The shared case feature remains unvalued and the categories active until the cycle headed by *v**, which values the feature as Accusative, a value automatically associated with all the linked categories. In this regard a numeral behaves syntactically just like any

[7]In the following example, [φ: ] is an abbreviation for the full suite of φ-features unvalued, while [φ:φ] denotes these same features valued. We suppress here the feature [person], which adjectives do not bear.

(other) modifier. On this approach, a probe need not be the head of the phrase Agree applies to, pace Chomsky's assumption.

## 4 A Theory of Formal Versus Referential Features

The discussion at the end of section 2 led to the expectation that numeral phrase subjects would invoke the default neuter singular agreement, since a) we assume the quantified noun is the head of the subject phrase, and b) it does not stand in the Nominative case. And yet plural predicate agreement is not only possible, but greatly preferred under various conditions. Indeed current trends point to the expansion of this form. Compare the following examples (from a *Google* search):

(13) SŠA proigrali Evrope, za kotoruju vystupalo
USA lost-to Europe for whom played$_{3RDSGNEUT}$
pjat' novičkov.
five new-comers$_{GENPL}$
'The USA (team) lost to Europe, for whom five newcomers were playing.'

(14) V to vremja v ètoj komande vystupali
at that time on this team played$_{PL}$
pjat' igrokov$_{GENPL}$ iz byvšego SSSR
five players from former USSR
'At that time five players from the former USSR played on this team.'

While the two sentences have analogous numeral phrase subjects, the predicate takes the default neuter singular form in one, and the agreeing plural form in the other. An explanation needs to be provided for both agreement patterns.

The plural predicate form in (14) represents what has traditionally been called "semantic agreement," which stands in opposition to what grammatical principles dictate to be the "formal agreement" of (13). Moreover, Corbett (1979, 1983) has demonstrated the existence of an agreement hierarchy, given in (15); he notes that "[f]or any controller that permits alternative agreement forms, as we move rightwards along the Agreement Hierarchy, the likelihood of semantic agreement will increase monotonically" (Corbett 1983:10):

(15) attributive - predicate - relative pronoun - personal pronoun

We wish to demonstrate that the contrast between (13) and (14) is a special case of a larger phenomenon, and that what we have to say about the problem at hand has consequences well beyond. To do this, we discuss two well-documented areas of agreement mismatch, instances in

which Concord and Predicate Agreement reflect differing values for gender or number. While the attributive:predicate link is only one in the chain (15), it is where the effect is most pronounced.

Agreement mismatch is not uncommon in Slavic. Perhaps most discussed is the use of masculine nouns to denote females. Per Corbett's Agreement Hierarchy, Concord with such nouns can exhibit grammatical gender, but Predicate Agreement exhibits semantic gender:

(16) Naš vrač prišla.
Our$_{SGMASC}$ doctor$_{SGMASC}$ arrived$_{SGFEM}$
'Our doctor arrived.'

Pereltsvaig 2006 cites the converse case: a feminine noun denoting a male:

(17) Filippinskaja kinozvezda ... zajavil, čto ...'
Filipino$_{SGFEM}$ movie-star$_{SGFEM}$ announced$_{SGMASC}$ that
'The Filipino movie star ... announced that ...'

The plural in Polish distinguishes personal and non-personal subgenders within the masculine. Emotive epithets for males can be treated as non-personal for Concord, but the fact that the referent is a male human reappears in the predicate (Corbett 1983: 21-2):

(18) Te łajdaki
'Those$_{PLMASC.NON-PERS}$ scoundrels$_{PLMASC.NON-PERS}$
mówili nieładnie.
were talking$_{PLMASC.PERS}$ crudely.'
'Those scoundrels were talking crudely.'

And numerous honorific forms in Polish and Russian, discussed by Corbett (1983: 23-5), exhibit semantic agreement in the predicate, but some other gender for Concord, determined by the derivation of the honorific form. For example, the noun *blagorodie* 'honor, lordship' combines with a possessive pronoun to form an honorific pronoun. This is illustrated in (19), with examples from the Russian National Corpus (RNK). In (19a), the second person possessive pronoun exhibits formal agreement with the neuter noun *blagorodie*; in (19b), the predicate form exhibits semantic agreement:

(19) a. Vaše blagorodie, èto ne ego nož našli.
your$_{SGNEUT}$ honor$_{SGNEUT}$ it not his knife (they)-found
'Your honor, it wasn't his knife that they found.'
b. Xotja ego blagorodie ešče prikaza otxodit' ne daval ...
although his honor$_{SGNEUT}$ still order leave not gave$_{SGMASC}$
'Although his honor has not yet given the order to leave ...'

It has been widely noted that Bosnian-Croatian-Serbian (BCS, also called Serbo-Croatian) boasts words which differ in both gender and number for the purposes of Concord and Predicate Agreement.[8] For example, the singular word *dete* 'child' is neuter; instead of a standard plural form, plurality is expressed by the collective noun *deca*, grammatically singular and feminine in gender, as reflected in Concord. And yet a predicate agreeing with *deca* takes the neuter plural form. Similarly, the collective nouns *unučad* 'grandchildren', *dugmad* 'buttons', *telad* 'calves' function as feminine singular for Concord, but neuter plural for Predicate Agreement (examples from Wechsler and Zlatić 2003):

(20) a. Ta dobra deca su
these$_{SGFEM}$ good$_{SGFEM}$ children$_{SGFEM}$ have$_{3RDPL}$
došla /dolaze
arrived$_{PLNEUT}$/ are arriving$_{3RDPL}$
'These good children have arrived/are arriving.'

b. Moja plava dugmad su nestala
my$_{SGFEM}$ blue$_{SGFEM}$ buttons$_{SGFEM}$ have$_{3RDPL}$ disappeared$_{PLNEUT}$
'My blue buttons have disappeared.'

c. Moja unučad lepo uče
my$_{SGFEM}$ grandchildren$_{SGFEM}$ well studying$_{3RDPL}$
'My grandchildren are studying well.'

Other collective plurals (*gospoda* 'gentleman' and *braća* 'brothers') are feminine singular for the purposes of Concord, but masculine plural for the purposes of Predicate Agreement.

These examples are presented here in order to show that the numeral phrase constructions we have been considering can be shown to be analogous in their behavior to a wider range of data, all of which exemplify Corbett's Agreement Hierarchy (15). That is, the predicates in (21) represent semantic agreement, while the predicates in (22) represent *formal agreement* (including default agreement, if that is what formal principles dictate); (21a) is to (22a) as (21b) is to (22b) (the last two both understood as denoting a woman doctor):

[8]It is a well-known difference between American and British English that the latter exhibits semantic agreement in number in a predicate applying to a collective noun, while admitting the indefinite article characteristic of singular nouns:
(i) A band are enjoying themselves. (Wechsler and Zlatić 2003: 76)
See Sauerland and Elbourne 2002 for discussion and a different approach to such facts.

(21) *Semantic agreement:*

a. V fil'me igrali pjat' aktërov.
in film played$_{3RDPL}$ five actors$_{GENPL}$
'Five actors played in the film.'

b. V komnatu vošla vrač.
into room entered$_{SGFEM}$ doctor$_{SGMASC}$
'A doctor entered the room.'

(22) *Formal agreement:*

a. V fil'me igralo pjat' aktërov.
in film played$_{SGNEUT}$ five actors$_{GENPL}$
'Five actors played in the film.'

b. V komnatu vošel vrač.
into room entered$_{SGMASC}$ doctor$_{SGMASC}$
'A doctor entered the room.'

Such cases of mismatch between Concord and Predicate Agreement might suggest that it is a mistake to unify these two processes by using the same operation Agree to implement them. We argue that it is not. When alternate forms are observed in Predicate Agreement, one (formal agreement) corresponds to Concord in feature values and thus presents no problem; we need to provide an account for the other form, semantic agreement. To do so, we need to elaborate on what feature sets are available to the syntactic processes of Concord and Predicate Agreement.

Consider a lexeme denoting an inanimate object, such as *karandaš* 'pencil'. Its declension class (call it 'I') and gender (masculine) are equally arbitrary and must be lexically specified; in this respect these features are parallel, even as their effect differs (the former is morphological, the latter is morphosyntactic).[9] Number is a *facultative* category, not inherent to the lexeme's form or meaning, and both morphological and morphosyntactic in effect. So the lexicon would associate the stem *karandaš-* with the features [declension class: I; gender: masculine; number: ], with an appropriate mechanism identifying the last to be valued by the speaker at will, much as the lexeme itself is selected.

The animacy feature in Russian is also a formal feature, with both morphological and morphosyntactic consequences. However, its value is more predictable than is the gender of inanimate nouns. To treat the animacy feature value of *karandaš* 'pencil' as arbitrary in the same way that its declension class and gender are would be to miss an obvious

[9]We err on the side of redundancy here, for in fact we would follow Halle 1990 in assuming that the default situation is for declension class to be assigned in the lexicon by rule from gender, with exceptions lexically specified and impervious to the application of the rule. It would be a digression to develop this here.

generalization of the language: the default is for grammatical animacy of a lexeme to correspond to the animacy of its referent. We assume, then, that the semantic representation of the word, that information which is LF-interpretable and irrelevant to PF-interpretation, includes *referential* features which are accessible in the lexicon to the formal features, but independent of them.[10] In the absence of better terms, we call the referential feature *r-animacy* and its formal counterpart—*f-animacy*. The value of f-animacy need not be specified in the lexicon as an inherent property of the stem; a redundancy rule can assign it in accordance with the value of the r-animacy feature. By postulating two sets of features, we gain generality, not lose it. Referential features are simply distilled parameters of lexical meaning. As such, they come "for free." And they are justified at the lexical level by the need to identify predictable values of the formal features.

The gender of animate nouns in Russian is more predictable than that of inanimate nouns. It is in fact analogous to the status of animacy itself in typically being predictable from the meaning of the lexeme. It is clear that the default is for grammatical gender to be correlated with the sex reference: a word necessarily denoting an animate male, *brat* 'brother' or *xolostjak* 'bachelor', for example, is in the overwhelming majority of cases of masculine grammatical gender. To treat the grammatical gender of such words as arbitrary in the same way that the gender of *karandaš* is would again miss an obvious generalization of the language. We assume lexical redundancy rules which value the formal gender feature on the basis of the referential feature set: [r-animacy: +; sex: male] entails [gender: masculine] and [r-animacy: +; sex: female] entails [gender: feminine].

There are Russian words denoting animate beings whose referential meaning is noncommital with respect to sex and whose gender conforms to the generalization of mirroring sex by gender. Such words treat the referential feature [sex: ] as facultative. Once that referential feature is valued by speaker choice, the lexical rule valuing the formal feature [gender: ] to conform would apply. Such words, called 'common gender' in the Russian grammatical tradition, would seem to be a logical default,

[10]Wechsler and Zlatić 2003 develops a Head-Driven Phrase Structure Grammar (HPSG) approach to BCS. They distinguish two sets of features: Concord for NP-internal modifiers and Index for predicate agreement. There is a default constraint identifying the two, but lexical specifications can override it. Despite the difference in framework, their analysis has influenced the approach developed here. We attempt to provide a more explanatory and integrated account of the relation between the two sets of features, rather than establishing by fiat that different feature sets control different syntactic processes. Pereltsvaig 2006 makes a differentiation more like that in the text; we will return to her analysis in passing below.

but in fact they are few (the paradigmatic Russian example is *sirota* 'orphan'). In the same way, number entails a facultative referential feature [cardinality: ] and a formal feature [number: ]. The former is facultative, and the latter is assigned to conform to the former. The situation with number is more common than that with gender; i.e., it is typical of nouns to leave their cardinality feature inherently unvalued, to be assigned by speaker choice, while it is rare for nouns to leave their sex feature unvalued.

We need a mechanism to account for the numerous instances in which the formal features of a lexeme are not determined by referential features. In these instances the distinction of the two sets of features is essential. Consider first words such as the masculine *vrač* 'doctor' or the feminine *kinozvezda* 'film star', both discussed above. The referential feature [sex: ] in both cases is facultative, but their genders are fixed. It is sufficient to say simply that the formal feature [gender: ] of these two words, masculine and feminine, respectively, is lexically specified as an inherent property of the stem. The lexical redundancy rule we propose is what Halle 1990 calls a *Structure Building* rule, which functions only to value unvalued features. The property that a redundancy rule has no effect on a feature already valued is the mechanism for identifying exceptions to the rule. In the realm of animacy, contemporary Polish is particularly rich in such exceptions: games, dances, and units of currency, among other semantic classes, are regularly treated as animate in that the Accusative is syncretic with the Genitive case, not the Nominative (e.g., *skradziono laptopa* 'There was stolen a laptop$_{ACC=GEN}$'). In Ukrainian, the words for a motorcycle and a letter, for example, are anomalously assigned the animacy feature. Similarly, while a referential feature for [cardinality] would serve to value the formal feature [number: ], collective nouns (e.g., BCS *deca* 'children' discussed above) would lexically specify the number feature as singular, a value which the redundancy rule applying to the referential feature for cardinality could not change. Conversely, Polish abounds in place names which are plural, without semantic differentiation from singular place names; e.g., the city *Katowice*. Again, this noun has a referential feature identifying singular cardinality, but the associated formal feature is [number: plural].

We have, then, proposed a fair amount of structure and process within the lexicon, before a lexeme is even Merged in syntactic structure. Lexemes are associated with formal features; some are inherently valued, while others are valued by lexical redundancy rule. We leave open the question of the LF-interpretability of formal features; in our view, it is not important. Lexemes are also associated with referential features. Some are facultative (e.g., cardinality); others are distilled, as it were, from the semantic definition of the lexeme (by definition, LF-interpretable), so as to be accessible to lexical processes which value formal

features when those values are predictable. Redundancy rules in the lexicon apply optionally. If the corresponding formal feature is inherently valued, then the rule cannot alter that value and essentially does not apply. If the corresponding formal feature is not inherently valued, that the redundancy rule is still in principle optional, but if it fails to apply, the derivation will crash because the resulting unvalued features will not be interpretable to PF.

When a lexeme is inserted in syntactic structure, only the formal features are visible to the operation Agree. Consequently, Concord implemented by Agree spreads default values for formal features which mirror corresponding referential feature values, or any inherent feature values expressing lexical idiosyncracies which override the redundancy rules. An adjective modifying the Russian word *vrač* 'doctor' denoting a woman takes the masculine form, since this noun is inherently associated with masculine gender. An adjective modifying the Russian word *kinozvezda* 'film star' denoting a man takes the feminine form, because this noun is inherently associated with feminine gender. Similarly, an adjective modifying the BCS words *deca* 'children' and *braća* 'brothers' take feminine singular modifiers, an adjective modifying the emotive Polish nominal form *łajdaki* 'scoundrels' denoting men takes its form as though the referent were not masculine personal, an adjective modifying the honorific *blagorodie* 'lordship' denoting a man takes the neuter form, etc. etc., because in each case the default rules correlating gender with sex and number with cardinality are blocked by inherently specified values, and in such a case it is the inherent value which is passed on by Agree.

Now let us turn to Predicate Agreement. We will assume here that nominal phrases in Russian are associated with a Determiner, a functional head which takes as its complement a phrase consisting of the nominal head and its satellites: its complements and modifiers.[11] If Predicate Agreement were determined by N, rather than D, then there would be no difference between it and Concord: the two processes would refer to the same set of formal features. But T will Agree with the closer category D and be rendered inactive; D's complement, including N, will be inaccessible. Therefore, the features for Predicate Agreement will

[11]The DP hypothesis as it applies to Slavic is a controversial issue. See, for example, Rappaport 2006 for a survey with a summary of the range of views with references. The present paper only assumes that nominal phrases in subject position are included in DPs. Rappaport 2001 provides evidence from extraction in Polish in support of the view that only nominal phrases in argument positions most be included in DPs (Longobardi 1994). In contrast, Pereltsvaig 2006 argues that a nominal phrase in any position can be included in a DP or not.

have to be hosted by D, not N, and in this distinction will lie the contrast with Concord.

Consider the patterns we have observed in Russian. When formal features must be inherently specified because referential features do not predict them (e.g., the gender of an inanimate noun like *karandaš* 'pencil'), there is no difference between Concord and Predicate Agreement. When formal features are unspecified as inherent features but valued in the lexicon by redundancy rule to correspond to the appropriate referential features (e.g., the gender and animacy of *brat* 'brother', the number of a typical count noun, the gender of a common gender noun), there is likewise no such difference. The issue arises when referential features predict a particular value of a corresponding formal feature, but that feature is inherently specified and thus overrides the redundancy rule. It is as though in such cases Predicate Agreement refers to the referential features, while Concord refers to the formal features. The result is one link in Corbett's Agreement hierarchy. How can this result be implemented?

We will assume that the formal morphosyntactic and referential features associated with N are shared by the functional category D, as is the lexical process whereby referential features may value formal features.[12,13] To the extent that formal features are determined by the corresponding referential features, the formal features of D are filled in without complication before Merger. To take the example of Russian *brat* 'brother', D acquires the valued formal features [animacy: +; gender: masculine; number: singular], as well as bearing an unvalued

[12]Morphological features associated with the nominal lexeme (e.g., declension class) are irrelevant to the form of D and not part of its lexical representation. The referential features of the two categories must match. We assume that a failure to match will invoke derivation crash in Logical Form as a result of a contradiction. Chomsky 2004b suggests that the category T inherits its features from the functional category C above it, and that the purpose of the functional categories $v^*$ and D is to create verbs and nouns, respectively, from otherwise unspecified lexical items. The case could be made that this inheritance relationship establishes the feature matching between D and N that we observe here, although details would have to be worked out.

[13]Pereltsvaig 2006 develops an analysis of nominal phrases in Russian (and other languages) which has influenced our analysis, along with Wechsler and Zlatić 2003. However, there are important differences of both detail, conception, and empirical coverage. We cannot pursue a detailed comparison of approaches here, limiting ourselves to two observations. First, Pereltsvaig assumes two sets of features (her φ-features, more like our referential features, and grammatical features, more like our formal features), such that one governs Concord and the other Predicate Agreement, without explanation or explication of the interdependencies between the two. Second, she sees 'small nominals' (nominal phrases without a D) as bearing unvalued φ-features. This reflects a very different notion of feature; for us, a derivation would crash if such features were never valued.

case feature. Agree applies between D and N, and the case features are marked as shared, to be valued by a clause-level operation of Agree yet to be invoked. In the case of a word for which the formal features are underdetermined by the referential features (e.g., *karandaš* 'pencil'), D is Merged with formal features [animacy: -; number: singular; gender: ; case: ]. The gender feature on D is valued by the application of Agree between goal D and probe N, invoking feature sharing for any matching features. These include the gender feature, which has the value "masculine" on the N, and the case feature, which has no value (yet) on either D or N.

We now consider the trickier case, represented by, say, *vrač* 'doctor' in reference to a woman. Inherent features (in this case, gender) are shared with N, but not necessarily with D. In our paradigm presented earlier, inherent masculine gender is not conveyed to D in (21b); the result is semantic agreement. In (22b), the inherent masculine gender of the noun is conveyed to D, and thence to the predicate, to give formal agreement. Let us consider the two cases in turn.

In the case of semantic agreement, it will be necessary for D to bear values for formal features as determined by the reundancy rules. This follows automatically from the assumption that D has the same features and redundancy rules that N does, without access to any inherently-specified feature values associated with a particular nominal lexeme. D is merged with the default gender value "feminine" assigned in the lexicon on the basis of the referential feature [sex: feminine], and this is the value that Predicate Agreement sees: D is closer to T and when the two undergo Agree, T is rendered inactive and N becomes effectively inaccessible. The architecture of the grammar, then, not only permits mismatch between Concord and Predicate Agreement, but predicts it. There is no mismatch for an inanimate word like *karandaš* because there is no redundancy rule to assign a gender value to D. Agree applies between D and N to invoke feature sharing, so that the inherently-specified value associated with the corresponding lexeme is shared by D as well. This system applies to numeral phrase subjects as well, permitting the unexpected semantic agreement in (14)

We now turn to formal agreement in the case of our paradigmatic example *vrač*. It is the unmarked assumption that an operation is optional. We invoked this property of the redundancy rules in the case of N; in that instance, a convergent derivation was possible if the relevant formal feature was inherently valued. If a redundancy rule does not apply to D, leaving a corresponding formal feature without a value, there is again an option for valuing that feature, although a different one. If the [gender] feature on D is not valued to match (in our example) [sex: female], the former feature can be valued when Agree applies between D and N. Just as [gender: masculine] is shared with D for *karandaš*, so

would it be for *vrač*. In the case of a numeral phrase subject, whatever the mechanism is which assigns the default values of third person, singular number, and neuter gender to D in the absence of a Nominative case subject (as in (13)), it is blocked by the previous application of redundancy rules valuing these features, but is free to apply when such rules exercise their option not to apply.

## 5 Conclusions

The primary claim of this paper has been that Concord and Predicate agreement be unified as contextual variants of the operation Agree. To make this work, we adopted feature sharing as a way of simulating derivational memory and resolving apparent ordering paradoxes. We have also argued that differentiating among formal features according to their LF-interpretability is not a useful concept: the criteria for it are ill-defined. The real operative principle that we take from Minimalism is the contrast of valued and unvalued features: operations are driven by the need to assign values to unvalued features and render them legible at PF. Both morphological and morphosyntactic features need to be valued in order for them to acquire phonological form (be "spelled out"). Which features are inherently valued is an empirical matter, not to be resolved by fiat, including appeals to an unreliable notion of LF-interpretability.

An account was proposed here for the traditional distinction between formal and semantic agreement. This distinction appears in two contrasts: Concord versus Predicate Agreement (per Corbett's Agreement Hierarchy) and variant morphological forms of the Predicate for a numeral phrase subject. The account presupposes an independently-motivated distinction between formal and referential features in lexical representations. Only formal features, by definition, are accessible to syntactic operations. Referential features are present in the lexicon by necessity, associated with the reference of the host lexeme, and do not constitute stipulated artifacts. To some extent formal features can be predicted from the referential features of the host lexeme. Part of the task of developing an explicit formal grammar is determining and stating the predictability that exists in the form of redundancy rules. The values of formal features which are not predictable from referential features must be stated in the lexicon as inherent properties, constituting lexical idiosyncracies. This same mechanism of inherent specification is leveraged to account for exceptions: valuations which contradict a reundancy rule cannot be overridden.

The functional category D and its associated lexical category N parallel systems of formal and referential features. The logic of locality entails that Concord accesses the formal features of N, while Predicate Agreement accesses the formal features of D. The categories D and N

share the same redundancy rules, but only N can exhibit inherent values for formal features. It follows that when the redundancy rules give a value contradicted by the inherent specification of the lexeme, Predicate Agreement will reflect the output of the redundancy rule, while Concord will reflect the inherent values. In short, the clause level process of Predicate Agreement "sees" D, while the DP-internal process of Concord "sees" N.

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# Stress in Russian Compound Nouns: Head Dominance or Root Control?*

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Russian allows only one main stress prominence per word. This paper examines how stress is assigned when two nouns combine to form a compound noun. The resulting compound has only one stress, which leads to the question: how is the apparent competition between the two stresses of the constituent words resolved?

Two recent theoretical accounts of stress assignment in Russian nouns are examined to see what predictions each makes for this case. Problems with both are discussed. A proposal is made that stress is assigned in these compounds based on the privileged status of the morphological head of the compound.

## 1 Russian Facts

Every noun in Russian contains at a minimum a root and inflectional affix (which may be null). A noun may also have a derivational affix, which is typically between the root and the inflectional affix. Stress in Russian words can fall on roots, derivational affixes, or inflectional affixes, as shown in (1).

| | | |
|---|---|---|
| (1) | a. Root | górod-u |
| | | city-DAT (MascSg) |
| | b. Derivational Affix | gorl-ást-a |
| | | throat-AFFIX-NOM (FemSg) |
| | | 'loud-mouthed woman' |
| | c. Inflectional Affix | borod-ámi |
| | | beard-INST (Pl) |

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There are both fixed and mobile stress patterns found in Russian nouns. A mobile stress pattern means the stress occurs on different syllables depending on the inflected form. Some examples are shown in Table 1.

**Table 1.** Fixed and mobile stress patterns in Russian non-compound nouns

| | Fixed | | Mobile | |
|---|---|---|---|---|
| NomSg | moróz-Ø | stól-Ø | dyr-á | skovorod-á |
| AccSg | moróz-Ø | stól-Ø | dyr-ú | skovorod-ú |
| DatSg | moróz-u | stol-ú | dyr-é | skovorod-é |
| NomPl | moróz-y | stol-ý | dýr-y | skóvorod-y |
| InstPl | moróz-ami | stol-ámi | dýr-ami | skovorod-ámi |
| | 'frost' | 'table' | 'hole' | 'frying pan' |

Russian compound nouns, like all other nouns, have only one main stress prominence. Therefore, when two nouns combine—each of which has its own stress when pronounced as an independent word—only one surfaces. The other is lost. The generalization for compounds is that the stress of the second constituent is the one that surfaces: the stress of the compound surfaces in the same place on the second constituent as when that constituent is pronounced as a stand-alone, non-compound word.

(2) *kinó + zvezdá → kinozvezdá*

'film' 'star' 'movie star'

However, this simple generalization poses a problem for some recent theoretical accounts of stress assignment in Russian.

## 2 Recent Accounts

Any theoretical account of how stress is assigned in non-compound nouns should also make the correct predictions about how stress is assigned in compound nouns. The relevant aspects of two recent accounts—Root-Controlled Accent (RCA) of Alderete 2001 (hereafter Alderete) and Head Dominance (HD) of Revithiadou 1999 (hereafter Revithiadou)—are summarized below. There are two components to each account: what each believes to be the default, unmarked prosodic stress pattern of Russian nouns (they differ) and how the specific faithfulness constraints that each posit with regard to lexical accent (LA) result in the non-default patterns.

There is a good amount of commonality between the two accounts. Both differentiate between lexical accent and stress. Paraphrasing Alderete, *accent* is the property of a morpheme that encodes its likelyhood to surface with a suprasegmental feature, e.g., *stress*. Both assume that some Russian words have lexical accent, which is realized in output

as stress, and that lexical accents can be associated with any type of morpheme (roots, derivational affixes, inflectional affixes). Not every word has lexical accent, and Russian has prosodic markedness constraints that determine the placement of stress in the absence of lexical accent. Both assume that there are faithfulness constraints that refer to lexical accent, e.g., MAX(LA), DEP(LA), *FLOP(LA). Both look to morphology as an influence on stress assignment, albeit with different ideas as to what the critical morphology is. Both hold that morphological factors supercede prosodic markedness constraints in Russian. Both use non-compound nouns as the main data for testing their theories.

The pertinent aspects of each account are summarized below. The predictions of each account are then tested against the compound-noun data. Both make some incorrect predictions for the data. The causes of these errors are discussed, and an alternative is proposed.

*2.1 Root-controlled accent*

According to Alderete, the default stress in Russian nouns—that is, stress assignment determined by prosodic markedness constraints in the absence of any lexical accent—is that the stress should fall as close as possible to the syllable immediately following the stem. Any word not conforming to this default has lexical accent.

Alderete posits that lexical accent in a word root precludes realization of stress elsewhere in the word. The critical morphological categories for this theory are roots, stems (roots + derivational affixes), and inflectional affixes. According to Alderete, there are three levels of constraints, all independently rankable, that enforce faithfulness to lexical accent. One refers to lexical accent on roots, another refers to lexical accent on stems, and a third refers to any lexical accent, e.g., $\text{MAX(LA)}_{\text{root}}$, $\text{MAX(LA)}_{\text{stem}}$, MAX(LA). Root-Controlled Accent describes languages where constraints that specifically enforce faithfulness to lexical accent on roots dominate faithfulness to lexical accent elsewhere. This can be represented by the metaconstraints $\text{PROS-FAITH}_{\text{root}}$ >> $\text{PROS-FAITH}_{\text{LA}}$. Alderete considers Russian such a language.

In summary, the default stress (i.e., no lexical accents) is as close as possible to the first syllable after the stem; lexical accent on the stem has priority over the default, but lexical accent on the root has priority over everything. In all examples that follow pertaining to Alderete, roots are enclosed in parentheses and stems are enclosed in curly brackets. Table 2 summarizes Alderete's account of stress assignment (the level referring to lexical accent associated with the stem is left out as it does not have bearing on the question to be addressed here).

**Table 2.** Russian Stress Assignment—Alderete

| | | | | |
|---|---|---|---|---|
| Default | As close as possible to the first syllable after the stem | /{(borod)} + -ami/<br><br>*no LA* | → | /borodámi/<br>'beard'<br>InstPl |
| but | LA anywhere has priority over default | /{(čast') + íc} + a/<br><br>*-íc- has LA* | → | /častíca/<br>'particle'<br>NomFemSg |
| and | LA on root has priority over everything | /{(rák)}+ -í/<br><br>*both have LA* | → | /ráki/<br>'crab'<br>NomMascPl |

*2.2 Head dominance*

Unlike Alderete, Revithiadou assumes that the default pattern in Russian is to have leftmost stress. Therefore, words where this is not the case have lexical accent.

The central idea of Head Dominance is that lexical accent sponsored by the morphological head of the word always surfaces as stress, having priority over the default and any lexical accents associated with morphemes that are not the head. The critical morphology in this theory is only whether or not the morpheme with a lexical accent is the head of the word. Revithiadou follows Selkirk (1982) and Zwicky (1985), though contra Di Sciullo and Williams (1987), in defining the head thus:

> the element that carries information about its combination with other elements and [...] determines the category of the construction, its class and gender, constitutes the 'head of the word'. (p. 175)

Consequently, according to Revithiadou, both roots and derivational affixes can be morphological heads, but inflectional affixes cannot. According to this theory, there are constraints that specifically enforce faithfulness to lexical accent associated with morphological heads. Head Dominance refers to languages with grammars where these constraints dominate faithfulness constraints that refer to any lexical accent: HEADFAITH(LA) >> FAITH(LA). Revithiadou considers Russian such a language.

Summarizing Table 3, the default stress pattern is to have leftmost stress. Lexical accent anywhere in the word has priority over the default and lexical accent on the morphological head has priority over everything. In all examples that follow pertaining to Revithiadou, heads are bolded.

**Table 3.** Russian Stress Assignment—Revithiadou

| Default | Leftmost | /**gorod**/ | → | [górod] |
|---|---|---|---|---|
| but | Lexical accent anywhere has priority over default | /**borod** + á/<br><br>*-á has LA* | → | /borodá/<br>'beard'<br>NomFemSg |
| and | Lexical accent on the morphological head has priority over everything | /górl + **ást** + á/<br><br>*all have LA* | → | /gorlásta/<br>'loud-mouthed woman'<br>NomFemSg |

## 3 Russian Compound Nouns

Russian has extensive compounding. The present paper examines only those compounds formed by subordination as described by Townsend (1975), following Molinsky (1973). That is, compound nouns to be examined are those that comprise two nouns, each of which surfaces in the compound as it surfaces when pronounced alone (with the exception of the inflectional ending of the first constituent, which is always lost). An example of this type of compound is shown in (3) below:

(3) /betón/ + /mešálka/ → [betonomešálka][1]

'concrete' + 'mixer' 'concrete mixer'

There are several other productive classes of compound nouns, including those where the first constituent is abbreviated as shown in (4a) and those where one or both of the constituents are formed from other grammatical categories. Also excluded are compounds formed by coordination (per Townsend 1975), i.e., the orthographic concatenation of two independent elements, each of which bears its own stress (and therefore not relevant to the question at hand) and declines independently, as shown in (4b). These arguably remain two phonological words.

(4) a. /profes'ionál'nyj/ + /sojúz/ → [profsojúz]
'professional' + 'union' 'labor union'

b. /pilá/ + /rýba/ → [pilá-rýba]
'saw' + 'fish' 'sawfish'

[1] Russian regularly inserts a "thematic" vowel between the constituents in compounds like these (Townsend 1975). This phenomenon does not seem to have any influence on the issues at hand in this paper.

These classes will not be examined here[2] so as to isolate influencing morphological factors as much as possible.

There is general agreement (Molinski 1973, Di Sciullo and Williams 1987, Cinque 1993) that in the subordinated compounds studied here the second constituent of the compound is the head.

## 4 Predictions and Analysis

These accounts make predictions about where stress should surface in Russian noun+noun compounds. Both predict that when only one of the roots has lexical accent, it should surface as stress in the compound, since, according to both, lexical accent always takes precedence over the default patterns due to FAITH(LA). They make different predictions as to what will happen when there is no lexical accent, with Alderete predicting stress as close as possible to the first syllable after the stem, and Revithiadou predicting leftmost stress. In the case where both roots have lexical accent, the accounts again make different predictions: Alderete predicts that the second root should get the accent, since the constraints behind Root-Controlled Accent both have no mechanism for giving one root priority over the other. It is therefore not RCA itself that predicts the output, but the default pattern. For Revithiadou, there is a means to decide between the two: the second constituent is the head of the compound, and therefore HEADFAITH(LA) prefers the retention second of the accent on the second root. The predictions and results of both are summarized in Table 4 below.[3]

Clearly, these accounts are inadequate, as they only make the correct predictions in half of the cases. Both accounts do fine when the second root is accented, but have problems when it is not.

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2 Of course, any analysis of stress assignment in Russian noun compounding should accommodate these classes as well.

[3] Since Alderete and Revithiadou have different assumptions about what the default stress patterns are in Russian, they each have to make different assumptions about whether a given word contains lexical accent. For example, Revithiadou would not consider that a word like *górod* 'city' with leftmost stress had lexical accent, whereas Alderete would. Therefore, in the examples cited in this table, words are chosen for each based on the assumptions each makes. As a result, it is not possible to use the same word for some combinations across accounts.

**Table 4.** Predictions and results of Alderete and Revithiadou for Russian noun + noun compounds

| | Alderete | Revithiadou |
|---|---|---|
| root+root | Default predicts: First syllable after the stem, or as close as possible<br>*/{(kozl+borod)+nik}/*<br>'goat' 'beard'<br>Predicts: kozloborodník<br>Actual: kozloboródnik<br>a flowering plant<br>**Wrong** | Default predicts: Leftmost stress<br><br>*no data*<br><br>probably wrong |
| root+róot | FAITH(LA) predicts: As lexically accented on second root<br>*/{(golov+tjáp)}/*<br>'head' 'hack'<br>Predicts: golovotjáp<br>Actual: golovotjáp<br>'bungler'<br>**Correct** | FAITH(LA) predicts: As lexically accented on second root<br>*/golov+**tjáp**/*<br>Predicts: golovotjáp<br>Actual: golovotjáp<br><br>**Correct** |
| róot+root | FAITH(LA) predicts: As lexically accented on first root<br>*/{(kinó+zvezd)}+a/*<br>'film' 'star'<br>Predicts: kinózvezda<br>Actual: kinozvezdá<br>'movie star'<br>**Wrong** | FAITH(LA) predicts: As lexically accented on first root<br>*/kinó+**gorod**/*<br>'film' 'city'<br>Predicts: kinógorod<br>Actual: kinogórod<br>'movie city'<br>**Wrong** |
| róot+róot | Default predicts: As lexically accented on second root<br>*/{(betón+mešálk)}+a/*<br>Predicts: betonomešálka<br>Actual: betonomešálka<br>**Correct** | Head Dominance predicts: As lexically accented on second root<br>*/betón+**mešálk**+á/*<br>Predicts: betonomešálka<br>Actual: betonomešálka<br>**Correct** |

The default stress assignment for compounds with two unaccented roots causes problems for both accounts, though with a different reason for each. Alderete's full account of Russian includes a detailed look at the influence of different types of dominant and recessive affixes. The

difficulty with the example *kozloboródnik* '(a type of flowering plant)' may be due to additional factors introduced by the suffix *-nik*. For Revithiadou, it is hard to state conclusively how her analysis fares in this case, since most words in Russian are fixed-stress. There are not that many full-noun + full-noun subordinated compounds compared to other forms, so I was not able to find any examples of this type. (The root *kozl-* 'goat' used in the Alderete example always has end stress when inflected, and therefore it cannot be unaccented in Revithiadou's terms.) In any event, there seem to be no examples of noun compounds of any kind where the first root receives stress. It therefore seems likely that this prediction would be wrong in this case. Given the difficulties with finding appropriate data, and the strongly divergent approaches of these two accounts, the present analysis will focus on the other case where both accounts predict incorrect results.

Both accounts make an incorrect prediction for the same reason with compounds where only the first root has lexical accent. They assume that lexical accent should take priority over the default prosodic markedness constraints, but in fact the stress always falls on the second, unaccented constituent of the compound, or on the inflectional ending.

There must be something else that overrides the putative privileged status of that lexical accent in these compounds. Revithiadou posits a constraint HEADSTRESS, which states that stress must fall on the morphological head of the word, regardless of any lexical accents. She describes languages that have this constraint ranked very high as "head-stressed". Such languages include Tahltan, Hua, Thompson Salish, Chukchee, Kobon, and Yupik. Comrie 1993 also notes that Haruai never puts phrase stress on a head. While this is the opposite effect of the languages cited above, it does show that morphological headedness influences stress in a variety of languages.

Revithiadou maintains that Russian has a sub-grammar (per Inkelas and Orgun 1995) with HEADSTRESS highly ranked for nouns of a certain mobile-stress pattern (e.g., *dyrá/dýru* 'hole'), and posits this as evidence that Russian may be becoming a head-stressed language. Since the second constituent is the head of the compound, it could be that Russian has a similar sub-grammar for compound nouns with HEADSTRESS highly ranked. This would predict the correct result in the case where only the first constituent had lexical accent, as shown in Tableau A. This should have no effect on the cases where the second constituent has lexical accent, as compliance with HEADFAITH(LA) here guarantees compliance with HEADSTRESS.

**Tableau A.**

| /kinó+gorod / | HEAD STRESS | HEAD FAITH(LA) | *FLOP | EDGEMOST LEFT |
|---|---|---|---|---|
| kinógorod | *! | | | |
| kínogorod | *! | | *! | |
| ⇨kinogórod | | * | * | ** |
| kinogoród | | * | * | ***! |

However, compounds with stress on the inflectional ending, e.g., *kinozvezdá* 'movie star', pose a problem with this solution. The inflectional ending cannot be considered the head, and having it bear stress violates HEADSTRESS.

**Tableau B.**

| /kinó+zvozd+á/ | HEAD STRESS | HEAD FAITH(LA) |
|---|---|---|
| kinózvezda | *! | |
| kínozvezda | *! | |
| 💣 kinozvózda | | * |
| ☹kinozvezdá | *! | |

Therefore it cannot be then that a highly ranked HEADSTRESS is the correct solution either.

## 5 Proposed Account

The initial question posed was how the apparent competition between stress on two words is resolved when those two words are combined to form a compound. The data above show that the question is not so much about resolving any competition, as the case of two accented roots shows. Instead, the question is what mechanism ensures that it is only and always the stress of the second constituent of the compound that is preserved when it becomes part of a compound.

Benua (1997) proposes that "the identity relation triggered by morphological derivation holds between the derived word and an output base". These identity relations are enforced by output-output faithfulness constraints. These constraints penalize changes to a derived output form when part of that derived form exists as an independent output form. Most anchoring output-output constraints (e.g., McCarthy 2000) only refer to prosodic constituents or morphological segments. What seems to be the case in Russian is that there is a constraint that enforces an identity relation, with reference to stress, between the morphological head of a

compound and its stand-alone base output form. The theory of output-output faithfulness is extended here with the following constraint:

(5) OO-FAITH[CMPDMPHHEAD, BASE, STRESS]
(hereafter OO-HEADFAITH(STRESS))
CMPDMPHHEAD is the part of the compound output that corresponds to BASE, which is a stand-alone output form. These are the two forms that have the identity relation. STRESS is the feature of the corresponding forms that is being preserved.

The morphological head of a compound must have the same stress as the head's corresponding base output.

This constraint is posited to rank higher than the prosodic markedness and the faithfulness constraints that refer to lexical accent, both those that refer to morphology, e.g., HEADFAITH(LA), and those that do not, e.g., MAX(LA). For these compounds, any underlying lexical accents are not really a factor; what matters is faithfulness between the surface forms (here with regard to stress) of the two elements in the correspondence relationship.

Since it only comes into effect when compounds are formed, this constraint does not interfere with other constraint interaction in the non-compounds, as shown in Tableau C1. No sub-grammar is necessary. This constraint preserves the generalizations that motivate HEADSTRESS, but without the problems that arise when the inflectional ending is stressed. The incorrect prediction of HEADSTRESS in Tableau B is corrected by the addition of OO-HEADFAITH(STRESS), and shown in Tableaux C1 and C2.

In fact, this solution is not dependent on either Revithiadou or Alderete being the correct account of stress in non-compounds. Since it is invoked only when the base form is involved in a further morphological derivation like compound formation, it does not impact on the constraints that determine the stress assignment of the base itself.

**Tableau C1.**

| /zvezd+á/ | OO-HEAD FAITH(LA) | HEAD FAITH(LA) | FAITH(LA) |
|---|---|---|---|
| ⇨ **zvezdá** | | | |
| **zvózda** | | | *! |

**Tableau C2.**

| >> | /kinó+**zvezd**+á/ | OO-HEAD FAITH(LA) | HEAD FAITH(LA) | FAITH(LA) |
|---|---|---|---|---|
| | ⇨**kinozvezdá** | | * | * |
| | **kinozvózda** | *! | * | ** |
| | **kinózvezda** | *! | * | * |
| | **kínozvezda** | *! | ** | ** |

One question that arises with this constraint and the Russian data is whether the active identity relationship is determined by the morphological head, as proposed here, rather than being a purely phonological correspondence. Two facts provide some support for the idea that the constraint is morphologically driven. First, the first constituent never bears stress even when it is an output base (majority of cases):

(6) *kinozvezdá* 'movie star' despite *kinó* 'movies'
*betonomešálka* 'concrete mixer' despite *betón* 'concrete'

If the criterion were solely based on identifying a phonological base form in the compound, how would the grammar be able to decide always to choose the second constituent over the first?

Second, it is sometimes the case that the first constituent has no possible correspondence with another output base because there is no output form that matches what appears in the compound:

(7) *kozloboródnik* but **[kozl]*, **[kozlo]*
*l'dotéxnika* 'ice technology' but **[lʲd]*, **[lʲdo]*

Given these facts, some mechanism would have to be introduced in order to guarantee that it is always the second constituent that establishes the identity relationship with the output base. Since in Russian the morphological head of the compound is always in the position that establishes the correspondence relationship, it is not possible to completely separate the position from the fact that this constituent is the head. Given Revithiadou's theory of influence of the morphological head in nouns and the evidence of morphological influence on prosody in other languages, this proposal does seem to have grounding.

## 6 Conclusion

The second constituent in Russian noun+noun compounds plays the critical role in determining stress by virtue of being the morphological head of the word. Lexical accent does not affect stress assignment at the level of the compound as a whole. There is evidence that output-output

correspondence is the active influence in determining stress in these compounds, specifically, a constraint that stipulates that the morphological head of a compound must have the same stress as the head's corresponding base output.

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# Early Root Nonfinites and the Acquisition of Finiteness in Child Grammar: Evidence from Early Child Slovenian

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## 1 Introduction

This paper deals with one of the ongoing questions in the field of early syntactic development, namely, the acquisition of *finiteness* and the *agreement paradigms*. In this study, I address the following three questions regarding the acquisition of Slovenian verb morphosyntax: (i) How and when are subject–verb agreement and tense acquired by young Slovenian children?; (ii) Is there empirical evidence suggesting that functional categories are present in early Slovenian grammar; and if so, to what extent?; (iii) What is the status and what are the properties of early root nonfinites, i.e., root infinitives, bare verb stems, and bare participles, which seem to represent some of the most common morpho-syntactic constructions in early child systems? I also address the fourth question that falls out from the first three, namely, (iv) What is the initial clause structure of early Child Slovenian?

The paper brings forth theoretical and empirical insights into the syntax of child verb morphology and the clause structure of early grammar, based on natural production data from very early Slovenian.[1]

The paper is organized as follows. First, I briefly review the two opposing accounts regarding the acquisition of functional categories within the generative framework that I assume. Section 2 sketches the morphosyntactic properties of Adult Slovenian that are relevant for our discussion. The subsequent three sections introduce the empirical evidence regarding the syntax of verb morphology of Child Slovenian: Section 3 reviews the knowledge of young Slovenian children's subject–verb agreement, showing that the children's finite verbs appear

[1] The language reported here seems to be a very attractive system from a morphosyntactic point of view since it exhibits extremely rich verb morphology, with Asp(ect) expressed on verb stems, T(ense), Agr(eement), and Asp expressed on verb affixes, as well as an extremely flexible word order with second-position Wackernagel clitics. The grammatical system of Slovenian is a three-gender, three-number, and three-person morphological system, giving rise to two types of agreement, i.e., subject–(finite) verb and subject–past participle agreement (on both active and passive participles).

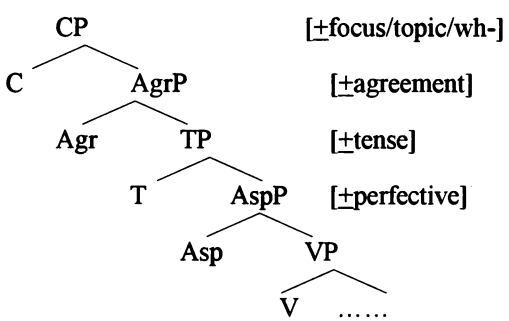
correctly–inflected for T/Agr from the earliest utterances on; Section 4 provides evidence against a prefunctional stage in early grammar on the basis of constructions with finite verbs in the Present Tense; Section 5 introduces young children's nonfinite verb forms, showing that in the process of language development Slovenian children go neither through a bare stem nor a root infinitive stage; Section 6 concludes the paper, outlaying some open questions and further directions in the study of Child Slovenian morphosyntax and child verb morphosyntax in general.

## 2 The Acquisition of Finiteness and Agreement Paradigms: Previous Hypotheseand Findings

The acquisition of finiteness has been associated with the V(erb) movement parameter and hence the emergence of functional projections, such as T, Agr, C(complementizer). Under the term 'finiteness' we understand the morphosyntactic elements that either directly express person (e.g., main lexical Vs, copulas, auxiliary Vs in periphrastic (compositional) tenses, and modal Vs, all inflected for person/number) or are related to these elements (e.g., subject clitics, reflexive clitics). The acquisition of finiteness is, of course, directly related to the relation *Agree* between the SUBJ(ect) and the predicate, and as such, the child language acquisition literature has focused on the acquisition of agreement paradigms as well.

For Slovenian, I will assume the following feature–based phrase structure representation, where the V and Asp represent the lexical layer, and all the heads above them represent the functional layer, split into the Infl(ectional) and C layers (Montrul 2004):[2]

(1)




[2] I am leaving aside the discussion on the presence or absence of the two standardly assumed Infl-related projections, i.e., TP and AgrP. In the present paradigm in the syntactic theory (e.g., Chomsky 1995), TP is being used for both representations though most acquisition studies still use the syntactic representation with the split Infl. See Guasti and Rizzi (2000) for the proposal why both projections are needed on the basis of the acquisition data.

Two main hypotheses dominate the field in terms of the acquisition of functional categories, namely a maturational account and a Full Continuity account. According to the former, children's early utterances are pure instantiations of lexical categories (Radford 1990, 1995; Varlokosta, Vainikka and Rohrbacher 1998) and functional categories only emerge in the final ('functional') stage at around 25 months of age.[3] Radford (1990, 1995) puts forth such a hypothesis on the basis of the English-speaking children's non-adult utterances with T/Agr-less Vs (Bare Verbs; BVs), which seem to be extremely common in early English between the ages of 1.5 and 3. These constructions have been known as R(oot) I(nfinitives) (Rizzi 1993/4), i.e., infinitives used in matrix (root) finite contexts (but see Hoekstra & Hyams 1998 why in English these should be analyzed as BVs rather than RIs).

Several subsequent studies on other early Germanic languages (German, Icelandic, Swedish) and early French found strikingly similar results, namely young children's earliest utterances seemed to lack T/Agr markers (and other finiteness-related elements such as auxiliary Vs (Wexler 1998) or copula Vs (Becker 2000).[4]

The opposing view about the acquisition of functional categories in child grammars sates that most (if not all) functional categories are in place very early in the grammatical system, and are, in fact, innately given by UG (Hyams 2002; 2003; Guasti 1993/4; Poeppel and Wexler 1993; see Guasti 2002 and Montrul 2004 for detailed reviews). Most of these studies have looked at Romance (null subject) languages with rich agreement paradigms, such as Italian, Catalan and Spanish. Assuming the Full Continuity approach they have shown that early language grammars not only exhibit the Infl–system, but also the C–system. According to these studies, the differences between adult and child languages result from different morphosyntactic specifications of functional projections (Hyams 2003: 8).[5]

[3] This hypothesis argues that the initial stage in language development is pregrammatical in nature, i.e., the utterances at this stage consist of single words that have not yet been categorized syntactically (as Ns, Vs, etc.). In other words, according to this hypothesis, there is no true syntactic structure in earliest utterances.

[4] However, it turned out that these are *optional* rather than *entirely missing* (see Guasti 2002 for an extensive review of these proposals). Furthermore, it was found that while *omission* of T/Agr seems to be extremely common in child languages cross-linguistically, *commission* (where the T and/or Agr are supplied in incorrect contexts) is hardly attested (see Deen 2002; Hyams 2003).

[5] There is a third, mixed approach to the acquisition of functional categories that falls between the first two. Sometimes dubbed as the Weak Continuity Hypothesis, it holds that though children may have access to the full set of functional categories and operations that govern functional categories from the onset of the acquisition process, they may not make use of them in their representations right away (e.g., children who have not heard Cs yet do not have a CP representation in their grammars (Vainikka 1993/4)).

Ever since the mid 1980s, researchers have shown that children acquiring null subject languages with rich morphology know the SUBJ–V agreement facts. Hyams (1986) showed that Italian children have productive agreement, showing very few errors. However, her study reported the use of mainly singular V forms. Guasti (1993/4), further showed that Italian children do not make systematic errors at all (she reports 1% of errors on all finite forms for two children and 3% errors for another child) and that later acquisition of plural agreement confirms a developmental trend manifested in other early languages.[6] In sum, as Hyams' (2003) study shows, subject–verb agreement errors never raise above 4%.

I will show below that Slovenian children exhibit (near)-perfect knowledge of subject-verb agreement in the case of finite Vs and that neither the theories proposing a piecemeal acquisition of functional categories nor those assuming some partial knowledge of functional projections can well explain the data coming from the earliest utterances.

As a slight digression, let us briefly sketch the morphosyntactic properties of Adult Slovenian that are relevant for the present discussion.

## 3 The Syntax of Verb Morphology in Adult Slovenian

Slovenian has only one synthetic tense, namely the Present Tense. Other tenses, i.e., the Past Tense, the Future Tense, and the old-fashioned Pluperfect are all compositional/periphrastic, composed of the auxiliary verb *biti* 'to be' and the active past participle. However, when compared to Germanic and Romance languages, the verb paradigms for the Slovenian Present Tense are much more complex. The productive Present Tense suffixes carry both the T and Agr features that cannot be teased apart morphologically (portmanteau morphemes). Verbs are inflected according to the schema in (2), adapted from Toporišič (2000):

(2) $[\text{Root} + \text{Thematic Vowel}]_{\text{stem}}$ + suffix (Tense/Person/Number)

The morphosyntactic system comprises of three persons (1, 2, 3), three genders (MASC, FEM, NEUT), and three numbers (SG, DU, PL), but since gender has no (separate) morphological instantiation in the Present Tense conjugation, each verb in the paradigm has nine cells, as the following paradigm for the verb *igrati* 'to play' in Table (1) shows:

**Table 1.** Conjugation of *igrati* ('to play') in the Present Tense

[6] Valian (1990) reports that there is a general delay of plurality in child grammars crosslinguistically. Hence, Guasti (1993/4) argues that the lack of plural affixes in early Italian is a more general manifestation of the lack of plurality, rather than evidence that child grammars lack verbal inflection.

| | SG | DU | PL |
|---|---|---|---|
| **1** | **igram** | **igrava** | **igramo** |
| **2** | **igraš** | **igrata** | **igrate** |
| **3** | **igra∅** | **igrata** | **igrajo** |

Additionally, the Present Tense paradigm exhibits complex morpho-phonology with several phonological changes in the verb stem. According to traditional descriptive grammars, there are five classes of verbs regarding the stem's morphophonological changes, summarized in Table 2 below, with a representative example V listed in each class and conjugated in all three persons in the SG (adapted from Toporišič 2000):

**Table 2.** V paradigms for all five V classes in the Present Tense

| **Class Conj (SG)** | **-am Vs** *igrati* ('to play') | **-im Vs** *narediti* ('to make/do') | **-jem Vs** *piti* ('to drink') | **-em Vs** *pasti* ('to fall') | **-m Vs** *hoteti* ('to want') |
|---|---|---|---|---|---|
| **1** | igram | naredim | pijem | padem | hočem |
| **2** | igraš | narediš | piješ | padeš | hočeš |
| **3** | igra | naredi | pije | pade | hoče |

BE is the only AUX(iliary) that is used in the formation of compositional tenses. It inflects for present in the Past Tense and for future in the Future Tense. Both the present and the future forms of AUXBE are clitics and have no full counterparts, but may be stressed for emphasis or contrast. AUXBE has two non–finite forms, the infinitive (*biti*) and the Past Participle (the *–l* participle) (*bil*), which inflects for number and gender. AUXBE agrees with the SUBJ in person and number, and with the Participle in number and gender. AUXBE c-celects the Active *–l* Participle of lexical verbs (to form compound tenses) and the *–n/–t* Passive Participle of lexical verbs to form passive constructions. (3) and (4) below show constructions with the Active Past Participles that will be relevant for our discussion on Bare Participles later on:[7]

(3) Peter je kupil avto.
Peter$_{\text{NOM}}$ be$_{\text{3SG PRES}}$ bought$_{\text{SG MASC PERF}}$ car$_{\text{SGACC}}$
'Peter has bought/bought a car'

(4) Peter bo kupil avto.

[7] Slovenian is a typical null-subject language with Wackernagel second position (P2) clitics, exhibiting a common Slavic pattern of (Past) Part(iciple) fronting with a phonologically empty SUBJ(ect) (*Part + SUBJpro + AUXBE (+...)*.

Peter$_{NOM}$ be$_{3SG\ FUT}$ bought$_{SG\ MASC\ PERF}$ car$_{SG\ ACC}$
'Peter will buy a new car'

## 4 The Subject-Verb Agreement in Early Child Slovenian

### *4.1 Data, method, and analysis*

The data are longitudinal natural production data, obtained from recording children during play at a daycare center in Ljubljana, Slovenia. The method used to collect the data differs from most studies reported in the acquisition literature since as many as 17 children originally participated in the study. To refute Radford's Prefunctional Grammar Hypothesis (or even the Weak Continuity Hypothesis), we analyzed the data from children younger than 25 months only at the end of the recording; hence, we excluded the two oldest children in the group.[8]

We calculated MLU for each child. It fell between 1;2 and 1;10 in the beginning of the recording (average across all children: 1;7) and between 1;6 and 2;1 at the end of the recording (average across all children: 1;10). The average MLU across all subjects based on the entire recording period was calculated to be 1;94.[9]

Kranjc (1999), as reported in Rus and Chandra (2005), provides very little information in terms of the acquisition of morphosyntax. Her grammatical analysis section, which contains only a few pages, concentrates mainly on word classes and the division between lexical and functional vocabulary items in the data. She reports that there was a total of 6,086 words in Part A (which is the part analyzed here), of which 1,480 (=24.3%) are nouns and 1,466 (=24%) are verbs. The rest of the word classes are represented as follows: 1,453 (=23.8%) interjections, 740 (=12.1%) pronouns, 523 (=8.7%) adverbs, 89 (=1.4%) adjectives, 80 (=1.3%) quantifiers and only a few cases (less than 1%) of complementizers, prepositions, and conjunctions. The following two tables show the breakdown of all the utterance types (sentence types, C-types) analyzed in this study:[10]

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[8] The examiner (Kranjc 1999, reported in Rus and Chandra 2005) recorded children on a weekly basis from 10/09/1992 to 01/14/1993. Most of the times she let children talk among themselves while playing, but sometimes she interacted with them. In the data, her utterances are transcribed as well. The transcription also contains utterances of the daycare center teacher who would sometimes play with the children while they were being recorded. As customary in the acquisition literature, all direct and immediate repetitions after the teacher, the examiner, or the child herself were excluded in the count.

[9] We see that these children are at a very early stage of development, with their MLU being generally lower than 2;0. Hence, our data will be rather limited in terms of morphosyntactic complexity, though, as we will see below, the acquisition of finiteness is more than evident already at such an early age.

[10] Table 3 shows the breakdown of all C-types in the count, including imperative sentences, while Table 4 shows the C-types excluding the imperatives. It has been

**Table 3.** A breakdown of all C-types in the data

| Sentence Type | Imperatives | Past Participles | Finite Vs | Other |
|---|---|---|---|---|
| **Total #** | 679 | 197 | 187 | 142 |
| **%** | 56.4 | 16.3 | 15.5 | 11.8 |

**Table 4.** C-types analyzed for the present study

| Sentence Type | Past Participles | Finite Vs | Other |
|---|---|---|---|
| **Total #** | 197 | 187 | 142 |
| **%** | 37.4 | 35.5 | 27.1 |

*4.2 The knowledge of subject-verb agreement in the present tense*

Let us first examine the suppliance of agreement on the Present Tense verbs and the characteristics of the earliest affixes used by the children. By examining Table 5 below, we quickly see an extremely high number of correctly–inflected verbs in the Present:

**Table 5.** Agreement suppliance in finite Vs

| Total # Vs | **187** |
|---|---|
| **Agr correct** | 174 (=93.05%) |

Though compared to the rate of correct SUBJ–V agreement suppliance in most previous studies (cf. our discussion above, based on Hyams 2003), 93% correct may seem a bit low. However, the agreement error facts tell us otherwise, namely almost 70% of the errors in the data are accounted for by the use of 3SG form instead of 1SG form in the cases where the child is referring to herself. This, however, has never been analyzed as an error in the acquisition literature since caretakers often address their children in 3rd person (Guasti 1993/4; Hyams 2003; p.c.). Table 6 shows the three types of agreement errors, of which two (i.e., the use of a bare stem and a wrong agreement marker) are considered 'real' errors. Once we exclude 'the 3SG (='I')' environments from the count, we get the agreement facts as shown in Table 7:[11]

customary to discard imperatives in the count in the studies on finiteness since imperatives are believed to be deficient, tenseless clauses (Guasti 1993/4; Salustri & Hyams 2003). However, syntactic literature on Adult Slovenian has always argued that imperatives are full–fledged finite clauses (see Rus 2005 for one analysis and for a review of the existing studies; see also Rus & Chandra in press for imperatives in Child Slovenian).

[11] There were three cases in the data where the children left out a complete verb, producing only the subject and the object. We excluded these cases in the count, too. Having included these, there would have been 190 environments with finite Vs, with 7

**Table 6.** Agreement errors

| Agr Error | # (%) |
|---|---|
| **bare stem** | 1 (7.7%) |
| **wrong AGR** | 3 (23.1%) |
| **3GS (='I')** | 9 (69.2) |

**Table 7.** 'Real' agreement errors

| Total # Vs | **187** |
|---|---|
| **Agr correct** | 183 (=97.9%) |

As we see from Table 7, the subject–verb agreement percent correct now increases to almost 98%, which is in line with most other studies on subject–verb agreement:[12]

Finite verbs show a great variety of constructions, as seen in the following examples from the data, with finite verbs in italics:

(5) a. Kapljice *padajo.* (Lenart, 1;9)
drop$_{\text{PL NOM}}$ fall$_{\text{3PL PRES}}$
'The raindrops are falling'

b. Katja *vozi* Katko. (Lenart, 1;9)
Katja$_{\text{NOM}}$ drive$_{\text{3SG PRES}}$ Katka$_{\text{SG ACC}}$
'Katja is driving Katka'

c. Tuki kuža *lula.* (Katja, 1;10)
here doggie$_{\text{SG NOM}}$ pee$_{\text{3SG PRES}}$
'It is here where the doggie pees/is peeing'

d. Ne *gre* dol. (Lenart, 1;9)
not go$_{\text{3SG PRES}}$ down
'It does not go down' (= 'It won't go down.')

e. Bakica, kaj *delaš*? (Vesna, 1;7)
grannie$_{\text{SG NOM}}$ what do$_{\text{2SG PRES}}$
'Grannie, what are you doing?'

f. Torbice *nima.* (Vesna, 1;7)
bag$_{\text{SG GEN}}$ not have$_{\text{3SG PRES}}$
'S/he doesn't have a bag'

g. *Vrti* se (Kaja, 1;5)
roll$_{\text{3SG PRES}}$ REFL
'It's rolling/going around'

Slovenian children seem to acquire the verb paradigm very early. However, DU forms as well as 1PL and 2PL forms are not found in the data, with 3SG being the most frequent. This conforms to the previous findings in the field, namely that the singular inflection is the most common and that plural inflections appear later than singular in the

---

Vs being incorrectly inflected for T/Agr (1 bare stem, 3 forms with wrong T/Agr marker, and 3 omissions, which all included the V *imeti*, 'to have').

[12] Note also that the children reported here are a few months younger than most of those reported in Hyams (2003).

course of language development. We found only one case of 3PL with finite verbs.[13] Table 8 below shows a breakdown of the inflections found in finite verb constructions regarding the person:

**Table 8.** Attested verb forms in finite verbs in the present tense

| | SG | DU | PL |
|---|---|---|---|
| **1** | 10 | N/A | N/A |
| **2** | 4 | N/A | N/A |
| **3** | 168 | N/A | 1 |

## 5 Prefunctional Stage in Early Slovenian? Evidence from Finite Verbs

The researchers who have argued that there is a prefunctional stage in language development would put forth the following premises about early grammatical systems:

(6) (i) There are no functional projections (e.g., T, Agr) in early systems, but only lexical projections and T/Agr morphology is not productive at all.

(ii) T/Agr-related elements such as modals and reflexive clitics are not present/productive.

(iii) Since there is no left periphery in the earliest systems, there are no C-related elements (e.g., complementizers, *wh-* elements) or processes involving the left periphery (e.g., topicalization, focalizations) in early grammars.

[13] However, 3PL appears quite frequently with COPBE, so it is probably not true that crosslinguistically early verbs will generally appear in the SG only. Also, DU forms might not be found in the data simply because there might not be any DU contexts. From the transcript alone, it is hard to determine whether the child is addressing one or two interlocutors. The children reported here most often refer to themselves (1SG), address their speaker (2SG), or talk about the third person/object (either present or absent) (3SG). Interestingly, the high suppliance rate of 3SG forms may suggest that it is this form that is analogous to a R(oot) I(nfinitive) form, which is what has been claimed for Child Spanish (Davidiak and Grinstead 2004), where the 3SG form in the present tense paradigm for *–ar* and *–er* verbs bears no phonological tense or agreement marker, but merely a thematic vowel (same as in Slovenian). However, children acquiring Spanish sometimes make an error by producing a 3SG form in 1SG and 2SG contexts with overt personal pronouns, suggesting that it might be the case that 2SG is some RI version of an early root nonfinite. In Child Slovenian, this never occurs, though sometimes it is not obvious from the context whether the child is referring to herself or her interlocutor, especially since overt subjects are hardly ever attested. Generally, 3SG correctly appears in 3SG context, though we need more data to confirm this.

The examples in (5) above seem to refute these premises in (6).[14] Not only do they all show perfect SUBJ–V agreement, some of them also show focalized adverbials in pre-SUBJ position (presumably located in the C-domain), sentential negation, *wh*-movement, object topicalization (movement of the object across the V), and the presence of the reflexive clitic '*se*'. We see that the T/Agr markers are present from the onset of the acquisition process.

But how about the subject use? As the following table shows, the subjects are extremely rare:

**Table 9.** The subject use in finite verbs

| | Null SUBJ | Overt SUBJ |
|---|---|---|
| **Finite Vs** | 153 (81.8%) | 34 (18.2%) |
| **Agr errors** | 12 ("real": 3) | 1 |

The findings in Table 10 suggest that young Slovenian children are indeed very sensitive to their linguistic environment and start using null subjects from the earliest stages on. The subjects used in this earliest stage are also correctly inflected for the Nominative Case.[15] The use of subjects has been associated with the knowledge of agreement (Wexler 1994, 1998). Hence, it has been sometimes assumed that while overt

[14] There is, however, a difference between 'presence' and 'productivity' in language acquisition and sometimes these are not teased apart sufficiently. I agree with those who argue that the mere presence of a certain linguistic expression does not entail that the child has acquired it and knows it (for it may be simply rote-learned), but I believe that the facts on T/Agr suppliance in the current study show that T/Agr markers in Child Slovenian are not only present, but also productive in the sense that they appear on a large number of verbs and with very diverse types of verbs (e.g., transitive, unaccusatives, etc.). The strongest support for productivity would, of course, come from the knowledge of inflection on novel verbs. Unfortunately we have no data on this. The lack of certain forms (e.g., DU and PL forms) is, I believe, merely an unfortunate consequence of the nature of the data, and by looking at the variety and complexity of the constructions it would be hard to believe that these utterances are rote-learned. This might be less apparent in the cases of modals, reflexives and *wh*'s since these elements very rare in the data, but again, there might be very few contexts that require them after all. Note also that even when the few recorded morphosyntactic errors appear, they are never those of commission, but rather omission, as found in many other child languages.

[15] We found no errors for Case in subject D(eterminer) P(hrase)s. In the generative paradigm, the knowledge of the Nom(inative) case in pre-verbal position has generally been taken to be evidence for the existence of TP/AgrP, following generative syntactic literature which assumes that Nom is checked in the functional layer above the VP after the V has moved to the Inflection (T/Agr) (Wexler 1994, 1998). Though this may be a piece of evidence for the existence of TP/AgrP, it may well be that Nom is simply a default case and simply spelled out in the derivation.

subjects would be used (more) with correctly inflected Vs, null subjects would be used (more) with uninflected (bare) Vs.[16]

In the model that we assume, the following three pieces of evidence count as evidence for functional projections higher than the VP (AspP), with the first two representing the strongest evidence for our argument:

(7) (i) The presence of correct T/Agr markers on the verbs.
(ii) The presence of focalized/topicalized object DPs.
(iii) The presence of wh-questions.
(iv) The presence of reflexive clitics in constructions with reflexive verbs.[17]

## 6 Root Nonfinites in Early Child Slovenian: Bare Verb Stems, Root Infinitives, and Bare Participles

When looking at nonfinite verbal forms that appear in the contexts of *finite* verbs in our data, we get the following facts:

**Table 10.** Root nonfinites in early Child Slovenian

| | # finite V utterances: 187 |
|---|---|
| **BVs** | 1 (0.5%) |
| **INFs** | 9 (4.8%) |

We found only one case of a BV, *kak* 'to do a poop'. This might be a phonologically reduced finite verb or simply noise in the data. We also found 9 infinitives, but interestingly, all of them were found in the contexts where the finite V that was entirely omitted by the child required a nonfinite complement ((8)a.) or after the omitted preposition that required the infinitive ((8)b.). In both cases we are dealing with some elision, but note that both contexts *require* infinitival complementation. Hence, these infinitives cannot be categorized as RIs at all:[18]

(8) a. Pit. (Katja, 1;10)

[16] This is hard to test in our case for two reasons. First, the premise concerning subject use and agreement has been found in non null-subject languages where subjects are obligatory, and second, uninflected Vs in a language like Slovenian are hardly attested. In Child Slovenian the few agreement errors showed up mainly in utterances with null subjects, as seen in the Table in (14) in the text.

[17] We will see below that we get the same morphosyntactic facts in constructions involving bare past participles, another piece of evidence for the presence of functional material in early Slovenian.

[18] Children cross-linguistically often omit prepositions, using only DP complements (Radford 1990, 1995 among others). Kranjc (1999) reports the same acquisition fact for Slovenian children.

drink.$_{INF}$
'I want to/must drink' (saying it to a caretaker)
cf. the adult form:
a'. Hočem pit.
want$_{1\,SG\,PRES}$ drink$_{INF}$
b. ADULT: Zakaj pa ima ključ?
why part have.$_{3SG\,PRES}$ key$_{ACC.}$
'Why does he have the key?'
CHILD: *Zap(r)et.* (Lenart, 1;9)
close$_{INF}$
cf. the adult form:
b'. Za zapret
for close.$_{INF}$ (for closing; lit. 'for to close')

Rus & Chandra (2005) studied the (Bare) Participles (BPs) in the same corpus. Recall from above that BPs represents almost 40% of early verbs. A few examples of these constructions found in our data are given below in (9):

(9) a. Tukele sk(r)ila pikapolonica. (Lenart, 1;9)
here hidden$_{SGFEM\,PERF}$ ladybug$_{SG\,NOM}$
'The ladybug has hidden/hid here'
b. Zajček kukuc naredu. (Vesna, 1;7)
little rabbit$_{NOM}$ peek-a-boo$_{ACC}$ made$_{SG\,MASC\,PERF}$
'The bunny has made/made a peek-a-boo'
c. Kaj (na)redu? (Tomaž, 1;9)
What made$_{SGMASCPERF}$
'What has he done/did he do?'

Rus & Chandra (2005) showed that the following premises were true for Slovenian BPs (SBPs):

(10) (a) SBPs are extremely frequent (around 40% across all children).
(b) SBPs almost always occur without AUXBE (roughly, 98% of them).
(c) SBPs generally appear without the SUBJ (roughly, in 93% of the cases).
(d) The SUBJs in constructions with SBPs appear not only preverbally but also postverbally around 30% of the time, which is a non-adult use.
(e) SBPs usually appear without reflexive clitics.The findings in (10) above show striking similarities with other root nonfinites, particularly RIs. In fact, Varlokosta et al. (1998) argue that BPs (in Child Greek) are instantiations of RIs on the basis of the facts given in (10). However, they also argue that the premises in (7) above hold true for BPs. I believe that Rus & Chandra (2005) showed convincingly that this is *not* the case. On the basis of examples such as the ones in (9) above and similar other examples from the data, I argue that SBPs offer an additional piece of

evidence that young Slovenian children know verb morphology and possess the inventory of functional material as early as we can test them since SBPs show:

(11) (a) a variety of structures,
(b) productive participle morphology with 96% correct Agr on the participles (subject–participle agreement),
(c) the presence of Nominative subjects,
(d) the presence of dislocated objects (i.e., objects in pre-participle position),
(e) compatibility with wh-phrases.[19]

## 7 Conclusion and Future Directions

The presence of T/Agr suffixes on the Vs, (Nominative) subjects in pre-verbal position, the use of reflexive clitics, yes/no as well as *wh*-questions, and topicalized/focalized DPs in the left periphery have all been taken in the field to be evidence for functional projections in both adult and child grammatical systems. Slovenian children seem to have all of these.

Furthermore, we saw that Slovenian children do not go through a BV or an RI stage, nor do they produce any other early root nonfinite verb in finite contexts. A few infinitives appear in the data, but these are correctly used as nonfinite complements to finite Vs or prepositions.

In sum, Slovenian children seem to be sensitive to morphosyntactic and semantic properties of the target language from the earliest utterances on. They seem to be faithful to the subject setting, word order (e.g., second position clitics), and Nominative subject case marking. They also distinguish between finite and nonfinite verbs, as seen in the knowledge of finite verb inflections and nonfinite complementation.

However, though children seem to be extremely fast and efficient language learners and conform to the target system extremely early, some of the data on early Slovenian (and early syntax in general) are still very puzzling when evaluated cross-linguistically. First, the lack of RIs (and BVs) in null subject grammatical systems with complex verb morphology such as Slovenian is still poorly understood. The existing formal tools from syntactic theories are (still) inadequate to categorize the interplay between rich morphology and early root nonfinites. Hence, I believe that the field needs to move on to look at the interplay between

[19] For details about agreement facts, the use of subjects, reflexive clitics, and wh-phrases in SBPs, see Rus & Chandra (2005), who claim that BPs are full clauses with a missing AUXBE. This claim was made not only on the basis of the morphosyntactic facts but also the semantic ones since SBPs do not show the typical RI-like irrealis meaning, aspectually denoting both perfective and imperfective meaning and temporally both past as well as future events (for details, see Rus & Chandra 2005).

morphology and semantics, rather than merely between morphology and syntax (see also Hyams 2002, 2003). Second, while there has been quite a lot of an interest in early RIs, very little has been done in the area of other early root nonfinites. Only a few studies have reported early BPs, for example, but their status and use are still not well-understood. What is more, current formalisms on the acquisition of finiteness (e.g., the omission/underspecification theories or the phrase structure truncation theories) cannot adequately explain the emergence and use of all these forms. Thus, the existing accounts should aim at extending their technologies and predictions to other early root nonfinites.

Last but not least, I would like to add a conceptual observation regarding the entire research program concerning the acquisition of early verb morphosyntax. We know that children are extremely sensitive to morphosyntactic and semantic properties of the target language from the earliest stage on and we know that we do find empirical differences among child systems in terms of early finite and nonfinite forms. Hence, (a) we either have not been able to pinpoint the right (biological) mechanism responsible for these differences, or (b) there might be some learning/statistical mechanism(s) at stake which divide child grammars into RI languages vs. non-RI languages (or even more narrowly into BV languages vs. RI languages vs. BP languages). Since UG-based accounts rest on internally-driven approaches rather than externally-driven ones, factors such as frequency, consistency, and saliency in the input have been largely ignored, or have not been incorporated into the theory. I believe that the field needs to move beyond this static approach and also start looking at the findings of corpus linguistics which may provide some answers to the frequency and use of early root nonfinites and specific finite forms in child corpora. This is not to say that a child is an input-matcher and cannot project beyond her experience, which is what a constructionist approach would claim, for example, but corpus linguistics (analyzing mother-child, child-child, as well as adult-directed corpora) might give us some new insights into why children initially seem to prefer certain (polyfunctional?) verb forms (e.g., progressive *-ing* in English, perfective *-i* in Greek, imperative forms, and/or participial *–l* in Slovenian) and to what extent these early forms are conditioned by the input (if at all). Hence, more research into early verb morphology is needed, particularly of other morphologically complex languages, by combining the tools of generative linguistic theory and corpus linguistics.

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# Gender Transparency Facilitates Noun Selection in Russian

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## 1 Introduction

Grammatical gender has pervasive effects on sentence processing in highly inflected languages. In Russian, it determines noun declension class, adjective, pronominal, and participle agreement, as well as past-tense verb forms. As shown by Corbett (1991), languages differ not only with respect to how many gender categories they have, but also in the extent to which semantic and morphophonological features of nouns correlate with category membership. Russian has three genders, masculine, feminine and neuter. Gender is highly transparent for at least 90% of nouns, with noun endings in the nominative case predictive of gender categorization. Most Russian masculine nouns tend to end in consonants, feminine nouns in *–a* or its allomorphs, and neuter nouns in *–o* or its allomorphs. In addition, there is a class of nouns ending in affricates (e.g., *myš'* 'mouse$_{FEM}$', *šalaš* 'hut$_{MASC}$') or palatalized consonants (e.g., *mebel'* 'furniture$_{FEM}$', *korabl'* 'ship$_{MASC}$'), which does not contain any morphophonological features providing cues to gender category membership. Based on estimates from the 200 most frequent Russian nouns (Zasorina 1977), these non-transparent nouns comprise about 10% of noun types.[1] In the present experiment, we examine whether morpho-

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[1] Different frequency counts for Russian provide varying estimates for non-transparent nouns. For example, in the Uppsala Corpus of modern Russian texts (Lönngren 1993),

phonologically non-transparent gender marking affects noun selection in native adult sentence comprehension. To this end, we utilize a feature of Russian that permits the separation of gender marked modifiers and nouns, thus allowing us to study the time course of gender access.

In colloquial spoken Russian, a verb or other material may intervene between an adjective and the NP it modifies, and to some extent, a preposition and its NP complement. This flexibility is possible because of the availability of case, gender, and number agreement on both the adjective and the noun which enables the NP to cohere in spite of the intervening material. For example, in (1) the split NP *gorjačego čaju* 'hot tea' is the direct object of the verb *xočeš* 'want$_{2SG}$'. The adjective *gorjačego* 'hot$_{FEM.SG.ACC}$' agrees with the noun it modifies *čaju* 'tea$_{FEM.SG.ACC}$' but is not adjacent to it. Following Sekerina (1999), we refer to this phenomenon as *Split Scrambling*. The Russian split scrambling construction is used to convey contrastiveness, and is paired with distinct prosodic marking, with contrastive accent on either the split–constituent adjective or noun.

(1) Gorjačego xočeš' čaju?
hot$_{FEM.SG.ACC}$ want$_{2SG}$ tea$_{FEM.SG.ACC}$
'Do you want hot tea?'

The present experiment extends the work of Sekerina (2003) who examined the processing of the Russian split scrambling construction in adult native speakers. Sekerina (2003) recorded eye movements to measure the time course of incremental selection of nouns. Participants were shown displays containing four objects, with two objects of the same color, but of different genders (for example, orange *sveča* 'candle$_{FEM}$' and orange *orex* 'nut$_{MASC}$'). They heard two types of Russian sentences, contrasting canonical word order (2) and split scrambling constructions (3). Each sentence contained a transparent feminine or masculine noun, and a color adjective serving as the disambiguating cue to the noun referent.

(2) Oranževuju sveču položite v paket.
Orange$_{FEM.SG.ACC}$ candle$_{FEM.SG.ACC}$ put$_{IMP}$ in bag

(3) Oranževuju položite sveču v paket.
Orange$_{FEM.SG.ACC}$ put$_{IMP}$ candle$_{FEM.SG.ACC}$ in bag
'Put the orange candle in the bag.'

Sekerina's (2003) main finding was that, when presented with the split scrambling construction (as in 3), adults initiated eye movements to

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the list of the 1082 most frequent words of Russian contains only 4.2% non-transparent nouns.

the target noun immediately after processing the gender disambiguating adjective, that is, prior to the onset of the noun. This result supported the hypothesis that the referential and pragmatic implications of noncanonical structures are computed as soon as they are detected.

This study, however, did not include non-transparent nouns in the materials, so it was not possible to examine whether the morphophonological features of nouns affect the time course of noun selection in Russian. The issue of morphophonological transparency in gender processing has been addressed in L1 and L2 acquisition studies, and in adult language processing studies but has generally been ignored in on-line comprehension studies with native adult speakers. We now briefly summarize the relevant literature.

Recent acquisition studies have emphasized the role of transparent morphophonological features in gender learning. In L1 acquisition, Gvozdev (1961) reported that his son made gender and case-marking errors primarily with exceptional non-transparent feminine nouns. In a gender–agreement elicitation paradigm, Ševa, Kempe, Brooks, Mironova, Pershukova and Fedorova (submitted) presented 24 Russian–speaking 2- to 4-year-olds with pictures of animals, and asked them to describe the animals using a specific adjective (e.g., *xorošij/xorošaja*) after being introduced to their names (e.g., *Èto myš—myš' xorošaja* 'This is a $\text{mouse}_{\text{FEM}}$—the $\text{mouse}_{\text{FEM}}$ is $\text{good}_{\text{FEM}}$'). These children showed a high rate of overgeneralizing masculine forms of adjectives when presented with feminine non-transparent nouns (54% errors with *myš'*, 62% with *rys'* '$\text{lynx}_{\text{FEM}}$'). In L2 acquisition, Brooks, Braine, Catalano, Brody and Sudhalter (1993) used an artificial language to demonstrate the difficulty of acquiring gender categories in the absence of correlated morphophonological features. Importantly, they observed that both adults and children made considerably more errors with exceptional non-transparent nouns than with transparent ones. Kempe and Brooks (2001) examined Russian gender acquisition in adult L2 speakers using a task that required adults to produce gender agreement on color adjectives (for example, *krasnaja skripka* '$\text{red}_{\text{FEM}}$ $\text{violin}_{\text{FEM}}$' *želtyj domik* '$\text{yellow}_{\text{MASC}}$ $\text{house}_{\text{MASC.DIM}}$'). They found that gender learning was facilitated through the use of diminutives which regularized the morphological forms of the non-transparent nouns (*krovat'* '$\text{bed}_{\text{FEM}}$' becomes *krovatka* '$\text{bed}_{\text{FEM.DIM}}$', with the *-a* ending characteristic of feminine nouns in nominative case), and additionally increased noun ending similarity within each gender category (that is, all of the feminine nouns ended in *-ka,* all of the masculine nouns ended in *-ik*/*-ok*). Taraban and Kempe (1999) required adult native and L2 speakers of Russian to select past-tense verb forms that had to agree in gender with either a transparent or non-transparent noun. Consistent with the L1 and L2 acquisition studies summarized above, L2 speakers showed better

performance (shorter RTs and fewer errors) for sentences containing transparent nouns over non-transparent ones. In contrast, no effects of noun transparency were observed for adult native speakers.

The central question in sentence processing with respect to gender is how and when grammatical gender on a modifier that precedes a noun can influence identification of that noun. This phenomenon is referred to as *gender priming* in the literature on word recognition and lexical access. Gender priming has been studied extensively using the gender-matching/mismatching paradigm where the preceding modifier, article, or adjective is either congruent or incongruent in gender with the upcoming noun. It can manifest itself as two different effects: gender inhibition and gender facilitation. Faster identification of the noun in the gender–matching context in comparison to some gender–neutral baseline is referred to as *gender facilitation* while slower identification is described as *gender inhibition*. Strong and consistent inhibition effects have been reported for most studied languages, such as Russian, Serbo-Croatian, Dutch, and German, using a variety of tasks in both the visual and auditory modalities (see discussion in *Journal of Psycholinguistic Research 1999*, 28(5), Special Issue: Processing of Grammatical Gender, Part I). Gender facilitation effects when found, however, are weak and often inconsistent from language to language, from task to task, and even from experiment to experiment utilizing the same language with the same task.

Gender transparency adds another dimension to the inhibition/facilitation issue. A number of studies have shown that the morphophonological transparency of gender marking increases the speed and accuracy of word repetition (Bates, Devescovi, Pizzamiglio, D' Amico, and Hernandez 1995), gender decision (Taft and Meunier 1998, Gollan and Frost 2001, Andonova, D'Amico, Devescovi and Bates 2004), and anaphor resolution (Cacciari, Carreiras and Cionini 1997) in native speakers. Gollan and Frost (2001) had participants perform grammaticality judgments by detecting gender agreement errors between the noun and the modifying adjective in Hebrew. Hebrew gender agreement errors were more easily detected if the noun–adjective pair contained a transparently gender–marked noun in comparison to a non-transparent one. In contrast, gender–marking transparency exerted no effect on the processing of grammatical noun–adjective pairs. Gollan and Frost argued that morphophonological transparency of gender marking surfaces only as an inhibition effect when participants detect errors in ungrammatical structures (e.g., feminine noun modified by a masculine adjective) but does not facilitate noun selection in grammatical ones (e.g., feminine noun—feminine adjective). Thus, it has been difficult to obtain evidence of facilitation for gender congruent information in adult native speakers.

Note that the majority of studies have relied extensively on a gender–matching/mismatching paradigm in which half of the time the pre-

ceding modifier, article or adjective, is incongruent in gender with the incoming noun. Participants, thus, have to perform under rather artificial experimental conditions, namely, processing words that are incongruent in gender. A situation where the preceding adjective is masculine and the subsequent noun is feminine is rare, if not impossible, in normal language processing. It is also possible, that potential transparency effects may have gone undetected in studies using fairly artificial tasks like grammatical judgments, cued shadowing, or verb agreement choice. These tasks may not necessarily lend themselves to uncover fine-grained and rapidly changing components of gender priming during language comprehension. An ecologically more valid method is to study noun selection in natural comprehension situations using eye movements. The head-mounted eye–tracking technique (Tanenhaus, Spivey-Knowlton, Eberhard and Sedivy 1995) allows us to overcome the artifacts of the behavioral methods and gender–matching/mismatching and to capitalize on moment-by-moment sensitiveness of eye movements. The present study investigates in detail the role of gender in general, and the effects of gender transparency in particular, on noun selection in a natural setting of spoken language comprehension in a visual context.

Eye–tracking studies in French (Dahan, Swingley, Tanenhaus and Magnuson 2000) have shown that if the preceding context of a noun contains reliable gender cues like gender–marked determiners, it can considerably facilitate identification of spoken words by eliminating gender–incongruent lexical competitors from the cohort of activated lexical candidates early on in the process. The question addressed here is whether the morphophonological form of a noun exerts an influence during on-line language processing in the mature system of adult speakers in the form of increased processing costs for non-transparent nouns.

## 2 Russian Eye-Tracking Experiment

This experiment extends the work of Sekerina (2003) using the Russian split scrambling construction to explore the time course of gender access in Russian noun selection. Following presentation of a gender-marked adjective, we explore differences between processing of non-transparent versus transparent nouns. In particular, we evaluate whether non-transparent nouns incur processing costs relative to transparent nouns, due to increased competition from alternative nouns.

### *2.1 Participants*

Thirty-two adult native speakers of Russian (four men, 28 women) with normal, or corrected-to-normal, vision and hearing were recruited at St. Petersburg State University in Russia. Participants were tested individually and paid for participation.

*2.2 Materials and design*

Participants were seated in front of a vertical plastic board comprising a three-by-three grid. In the center was a fixation cross, and each remaining cell depicted a b/w line drawing of a container (for example, bag, suitcase, barrel). 'Object' pictures were colorized versions of b/w line drawings of common objects (Cycowicz, Friedman, Rothstein and Snodgrass 1997), scaled to fit a 2.5"x 2.5" square, cut out and laminated. At the start of each trial, four object pictures were placed in cells of the grid. (This effectively covered four of eight containers.) As the 'objects' were positioned, the experimenter named each of them (we call this the 'preamble'). Then the computer provided a recorded spoken instruction for the participant to move an object to a designated container (we call this the 'instruction').

In each trial there were two objects of the same color (that is, target and competitor, one masculine, one feminine) and two distractor objects of different colors (one masculine, one feminine). Two example displays are shown: In Figure 1A, the target–competitor pair consists of nouns with transparent gender marking, i.e., a feminine noun ending with *-a* (*sveča* 'candle$_{FEM}$' ) and a masculine noun ending with a nonpalatalized consonant (*orex* 'nut$_{MASC}$'), and two distractors (a green chest$_{MASC}$ and a pink spoon$_{FEM}$). In Figure 1B, the target-competitor pair exhibits non-transparent gender marking, with both feminine and masculine nouns ending in palatalized consonants (*krovat'* 'bed$_{FEM}$' and *korabl'* 'ship$_{MASC}$') and two distractors (a pink plane$_{MASC}$ and a brown leg$_{FEM}$).

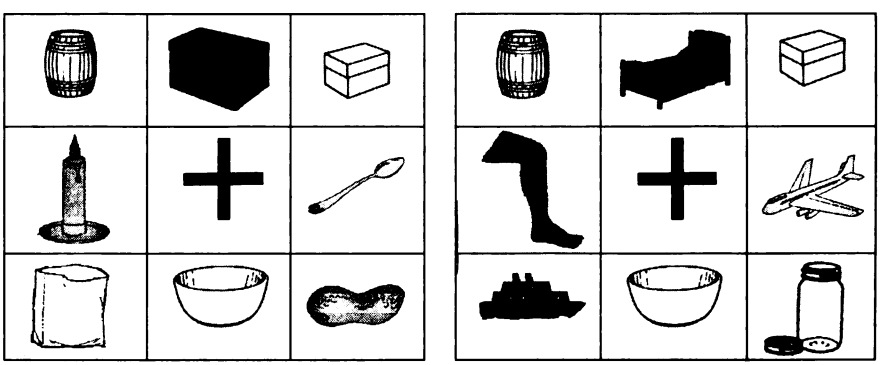

**Figure 1**. The two types of display used in the experiment.
A. The gender transparent scene B. The gender non-transparent scene

In total, there were 16 unique test sets of objects (eight transparent, eight non-transparent) which were rotated across word form and gender conditions, and eight filler sets.

The split scrambling construction was used in all experimental and filler instructions. Recall that the split construction carries additional contrastive interpretation manifested by a prosodic accent on either the adjective or the noun. In the present study, the contrastive accent was always on the adjective. The presence of two object pictures of the same color (two orange ones in Fig. 1A and two blue ones in Fig. 1B) created a pragmatically acceptable situation of contrast and warranted the use of this construction. Integration of the adjective and the noun in comprehension proceeds smoothly due to the unambiguous agreement markers on both words. Use of the split construction increased the distance between the adjective and the noun, permitting our investigation of the effect of a disambiguating gender cue (the adjective ending) on selection of the target noun, prior to its appearance in speech.

Three main factors were crossed in a 2 (gender–marking transparency) x 2 (gender) x 2 (word form) design. First, half of the trials involved transparent target and competitor nouns (see example (3) repeated from above), and half involved non-transparent nouns, as in (4). Second, the gender of the target noun (masculine or feminine) was varied such that the masculine noun was the target in half of the trials and the feminine noun in the other half.

(3) Oranževuju položite sveču v paket.
Orange$_{\text{FEM.SG.ACC}}$ put$_{\text{2SG}}$ candle$_{\text{FEM.SG.ACC}}$ in bag
'Put the orange candle in the bag.'

(4) Sinjuju položite krovat' v bočku.
blue $_{\text{FEM.SG.ACC}}$ put$_{\text{2SG}}$ bed $_{\text{FEM.SG.ACC}}$ in barrel
'Put the blue bed in the barrel.'

Finally, to examine whether the derivational form of the noun would affect noun selection, we manipulated the word forms of nouns using the Russian diminutive derivation in the preambles. In half of the trials, the nouns referring to the objects were introduced in their canonical simplex form (*sveča* 'candle$_{\text{FEM}}$', *krovat'* 'bed$_{\text{FEM}}$', *orex* 'nut$_{\text{MASC}}$', *korabl'* 'ship$_{\text{MASC}}$'), and in the other half in diminutive form (*svečka* 'candle$_{\text{FEM.DIM}}$', *krovatka* 'bed$_{\text{FEM.DIM}}$', *orešek* 'nut$_{\text{MASC.DIM}}$', *korablik* 'ship$_{\text{MASC.DIM}}$'). That is, in the preambles, all four object pictures were named using one of the two morphological forms, either all simplex or all diminutive. This manipulation of the word form of the nouns was included in the design to examine whether any processing costs associated with non-transparent nouns would be eliminated when the nouns occurred as diminutives, because diminutive suffixes (*-ik/-ok*$_{\text{MASC}}$ or-*ka*$_{\text{FEM}}$) provide transparent endings for non-transparent simplex nouns.

The spoken instructions presented along with the pictures consisted of the preamble followed by an instruction sentence with a split adjetive–

noun phrase and the verb *položite* 'put' in it. An experimental item for a non-transparent noun pair (see Fig. 1B above) in the simplex form is illustrated in (5):

(5) a. Èto krovat'. 'This is a $bed_{FEM}$'.
Èto noga. 'This is a $leg_{FEM}$'.
Èto samolët. 'This is a $plane_{MASC}$'.
Èto korabl'. 'This is a $ship_{MASC}$'

b. Posmotrite na krest.
Look at the cross.

c. Sinjuju položite krovat' v bočku.
$Blue_{FEM}$ put $bed_{FEM}$ in barrel

d. Teper' rozovyj samolët položite poverx krovat'.
now pink $plane_{MASC}$ put on top of bed

e. A teper' koričnevuju nogu položite v korobku,
And now brown $leg_{FEM}$ put in box
posle togo kak peredvinete sinij korabl' pod samolet.
after moving blue $ship_{MASC}$ under the plane
'Look at the cross.
Put the blue bed in the barrel.
Now put the pink plane on top of the bed.
And now put the brown foot in the box after moving the blue ship under the plane.'

Ten different color adjectives were used repeatedly (red, light blue, dark blue, yellow, green, pink, orange, lilac, gray, and brown). All adjectives had grammatical gender unambiguously encoded by their endings: *-yj* (inanimate masculine), *-ogo* (animate masculine), and *-uju* (feminine). Phonologically, these endings are quite distinct (cf. Akhutina *et al.* 1999) providing listeners with a strong cue with respect to the gender of the upcoming noun. The instructions were recorded by a female native speaker of Russian in a soundproof booth, in a mono mode sampling at 22,050 Hz. The durations of the three regions, the adjective, the noun, and the verb were measured. The mean duration of the adjectives was 535 ms, the nouns 512 ms, and the verb *položite* 'put' 490 ms. Note also that the nouns in the diminutive form always had an additional suffix in them and thus were 64 ms longer on average than the nouns in the simplex form, 544 ms vs. 480 ms.

The entire experiment consisted of 26 trials, with 16 experimental trials, eight fillers and two practice items. Filler displays were identical to the experimental trials because they always included a pair of nouns of the same color, but of different gender. They, however, always contained nouns with transparent gender marking. Filler instructions never occurred in the split-word order construction, and the pair of nouns of the same color was never used in the first instruction for the filler trials.

*2.3 Procedure and data treatment*

Participants were tested individually in a single session of approximately 30 minutes. Their eye movements were recorded by a portable version of the ISCAN ETL-500 head–mounted eye-tracking system. The system consisted of the PC eye–tracking computer with the incorporated scene and eye monitor and a separate small digital VCR. The portable size and weight of the two units made it possible to physically take the system to St.-Petersburg to conduct the experiment with Russian participants in a natural monolingual language environment.

Participants were seated at an arm's length from the display board. Their eye movements were sampled at a rate of 30 frames per second, and were recorded on a digital SONY DSR-30 video tape-recorder. Auditory stimuli were played to the participant through the speakers of the eye–tracking computer connected to a separate speech–controlling laptop computer and were recorded simultaneously with eye movements. Prior to the experiment each participant underwent a short calibration procedure.

At the start of each trial the experimenter would position the four pictures in their designated positions on the board using photographs of the board as a script. All four object pictures were named in the preamble. During this preparation time participants were free to scan the display. Each trial consisted of a preamble and three instructions (see example (5) above). First, each picture was introduced in one of the two morphological forms, simplex or diminutive (5a). Then the participants were instructed to look at the central fixation cross (5b). The first experimental instruction (5c) was followed by two distractor instructions to move other pictures (5d-e). Participants were asked to listen to the instructions and perform the required actions as quickly as possible. The experimental instructions were very easy in comparison to the complex distractor instructions: the participants' accuracy was almost perfect, with two errors in the entire experiment.

Eye movements were analyzed from the videotape records using the digital SONY DSR-30 VCR with frame-by-frame control and synchronized video and audio input. They were coded manually for each trial in 33-ms time resolution from the onset of the color adjective in the experimental instruction (e.g., *sinjuju* 'blue$_{FEM}$' in (5c)) until the participant touched the object picture to be moved. The onsets of the three critical words were noted, the adjective, the verb *položite* 'put', and the noun. Eight fixation categories were coded: the cross, the target (e.g., blue bed), the different-gender color competitor (e.g., blue ship), two distractors (e.g., brown leg and pink plane), the goal container (e.g., barrel), the

other containers, looks in between pictures, and track loss.[2]

In order to compare the percentages of fixations to the two pictures of interest, i.e., the target–competitor pair, two time regions were defined. Region 1 corresponded to the phase during which the gender disambiguating information was presented. Region 2 corresponded to the phase during which the effects of the gender disambiguating information were observable in eye movements.

Region 1 was the adjective (with the duration of the ten color adjectives extending on average 535 ms from instruction onset), along with an additional 165 ms (from the verb) required for programming of eye movements in response to the gender disambiguating information on the adjective. Region 1 thus comprised the first 700 ms of the spoken instruction. Region 2 extended over the next 700 ms, and included the remainder of the verb and the noun (i.e., 700-1400 ms from the onset of the spoken instructions). We did not analyze the tail of the instructions (i.e., from 1400 ms on) that stated to which container to move the target (e.g., in the barrel) because the processing of the adjective–noun constituent was already completed at this point.

Two types of data were analyzed: coarse-grain averaged fixations to the target and competitor nouns, and fine-grained eye movement patterns for each of the two regions of interest.

*2.4 Results*

Table 1 summarizes the percentages of fixations to the target and the competitor nouns in the two regions of interest, as a function of gender–marking transparency. It is not surprising that in Region 1 there were relatively few looks to the target and competitor nouns: At this point, the participants were still fixating the cross. There was no difference in percentages of fixations as a function of gender–marking transparency because the gender disambiguating information at the end of the adjective was not available until the entire adjective was heard, e.g., making it impossible to identify the target at the beginning of *oranžev*... 'orange'.

[2] The looks to the cross account for most of the eye movements in the beginning of the trial. Once they are taken out of the analysis, the looks at the target and competitor account for 55.3% of eye movement data. The remaining 44.7% fixations are distributed among the two distractors (12.3%), the goal container (3.4%), other containers (16.2%), looks in between pictures (2.6%), and track loss (10.4%). These fixation data will not be included in the analyses presented below.

**Table 1.** Percentages of fixations to the target and competitor nouns in Region 1 (adjective/verb) and Region 2 (verb/noun).

| | Region 1<br>0-700 ms | Region 2<br>700-1400 ms |
|---|---|---|
| Target | | |
| Transparent | 6.2 | 26.3 |
| Non-Transparent | 5.5 | 24.2 |
| Competitor | | |
| Transparent | 6.6 | 11.3 |
| Non-Transparent | 6.4 | 15.7 |

Region 2 (the end of the verb and the noun) is the crucial time window to evaluate gender access. During the last 100 ms of Region 1 and the first 100 ms of Region 2, the grammatical gender information encoded on the adjective ending became available to the listeners, and they took full advantage of it. That is, replicating Sekerina (2003), we found that the participants started fixating the target substantially more than the competitor as soon as the gender disambiguating information became available. Grammatical gender information alone was sufficient for referential identification of the target noun even before its lexical identity was revealed (i.e., by presentation of the noun in the instruction) towards end of Region 2.

The fine-grained analysis of eye movements is presented in Figure 2.

Separate ANOVAs were used to examine fixations to the target and to the competitor within each region. For the subject–based analyses (F1), 2 (noun transparency) x 2 (gender) x 2 (word form) within–subjects ANOVAs were conducted. For the item–based analyses (F2), mixed ANOVAs were conducted with transparency manipulated between–items. For the analyses of looks to the target (see Figure 2, top panel), there were no significant effects of any factor, and no interactions in either Region for either subject– or item–based analyses. Participants' looks to the target increased in Region 2 at comparable rates for transparent and non-transparent nouns. Thus, there was no detectable facilitation of noun selection due to gender–marking transparency.

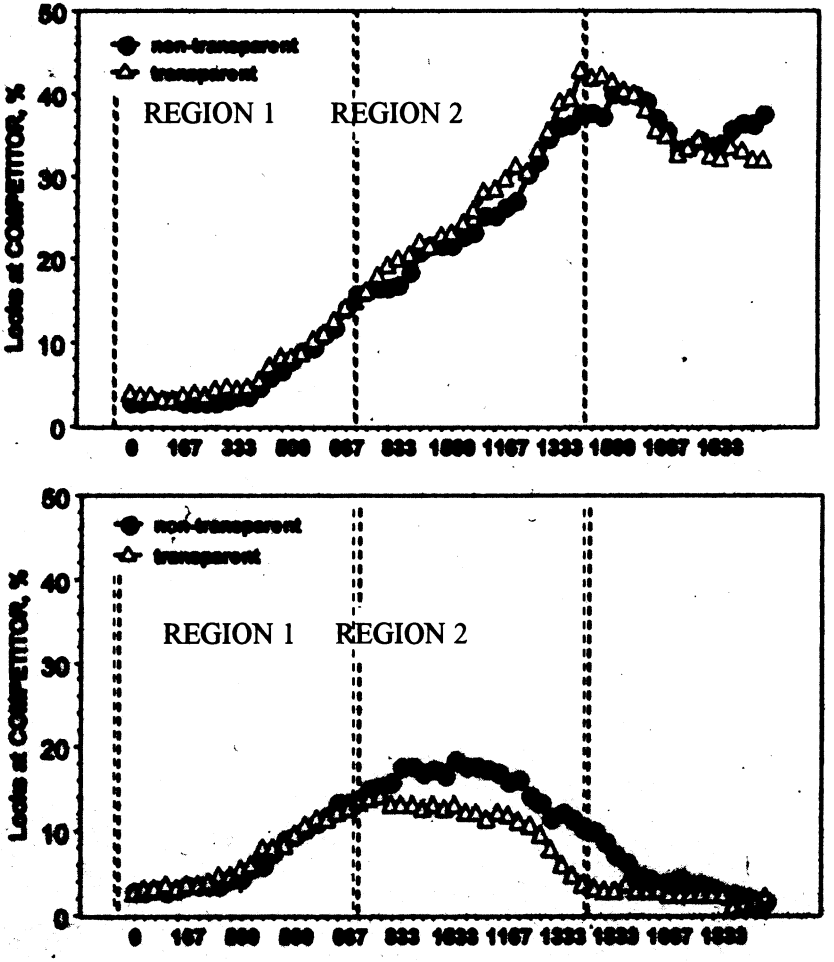


**Figure 2.** Percentages of fixations to the target noun (top panel) and the color competitor (bottom panel) over two regions of interest, as a function of gender–marking transparency.

A different picture, however, emerged when we examined looks to the competitor (see Figure 2, bottom panel). For Region 1, there was only a weak initial effect of gender that was only reliable in the subject–based analysis, $F1(1,31)=7.0$, $p < 0.05$, $F2(1,14)=3.1$, $p = 0.10$. For trials in which the target was masculine, there were initially more looks to the feminine competitor, than vice versa (feminine target, masculine competitor). More importantly, in Region 2, there was a significant effect of

noun transparency, $F1(1,31)=5.1$, $p < 0.05$, $F2(1,14)=4.6$, $p < 0.05$, such that there were more looks to the competitor for trials involving non-transparent nouns. In Region 2, there were no effects of gender or word form, and no interactions. Thus, whether the nouns were presented in diminutive or simplex form did not impact on the results in any way.

Finally, for each region, we directly compared frequencies of looks to the target with looks to the competitor. In Region 1, there were no significant effects. In contrast, in Region 2, there were significantly more looks to the target than the competitor, $F1(1,31)=16.7$, $p < 0.001$, $F2(1,14)= 29.06$, $p < 0.001$. Importantly, there was also an interaction between noun transparency and the frequency of looks to the target versus the competitor that was significant in the subject–based analysis, $F1(1,31)=4.8$, $p < 0.05$, $F2(1,14)=2.7$, $p = 0.12$. This interaction was due to a larger difference in looks to the target versus the competitor for transparent nouns in comparison to non-transparent ones (see Table 1 for means). Lastly, the interaction between noun gender and the frequency of looks to the target versus the competitor was significant in the subject–based analysis, $F1(1,31)=4.6$, $p < 0.05$, $F2(1,14)=1.7$, $p = 0.22$. Participants tended to show larger differences in frequencies of looks to the target versus the competitor for sentences containing feminine nouns.

## 3 General Discussion

This experiment examined the time course of gender access in the Russian split scrambling construction with the specific goal of exploring whether morphophonologically non-transparent gender marking affects noun selection in adult Russian speakers. Capturing effects of gender–marking transparency in adult native speakers has proven to be elusive in language processing in contrast to L1 and L2 acquisition studies. Replicating Sekerina (2003), we observed incremental effects of gender marked adjective endings on noun selection, that is, participants initiated eye movements to the target immediately after hearing the adjective, and prior to the occurrence of the noun. Moreover, we found an increased number of looks to the competitor when the nouns were non-transparently gender marked. This effect of noun transparency on competitor activation was not eliminated when the nouns were introduced as diminutives, which, in Russian, regularize morphophonological gender marking. That is, the forms of the nouns in the preambles (that is, whether participants heard *krovat'* 'bed$_{\text{FEM}}$' or *krovatka* 'bed$_{\text{FEM.DIM}}$') did not affect referential selection in the main instruction in any way.

As described in the introduction, it has been difficult to demonstrate facilitation of processing by transparent gender marking in gender–matching/mismatching studies utilizing a variety of tasks such as cued shadowing or grammaticality judgment. In comparing our results to the

literature, one has to consider what eye movement measures should be conceptualized as reflecting gender facilitation. Here we examined both looks to the target and looks to the competitor as dependent measures. Consistent with the literature, we did not observe any measurable difference between transparent and non-transparent nouns in fixations to the target, in amount or in their time course. However, when we examined the amount of competition between the target and competitor (i.e., the two nouns of different gender, but of the same color) greater competition occurred for non-transparent nouns than for transparent ones. Thus, noun selection for transparent nouns appears to have been facilitated in the sense that there was less competition from nouns of the other gender.

An important issue to be addressed in future work is why non-transparent gender marking affected processing only with respect to competitor activation, and not with respect to the target. An additional question is whether even stronger effects of gender-marking transparency will be observed in children, and in L2 speakers of Russian, with the effects extending to fixations to targets as well as competitors. Given the existing evidence that language learners are more reliant on morphophonological cues to gender categories than adult native speakers, we expect both children and adult L2 speakers to incur greater processing costs for non-transparent nouns than those observed in the present experiment.

In the larger context of language acquisition research, an important question is how learners come to assign non-transparent nouns to their respective grammatical categories. One possibility is that learners might acquire these exceptional nouns by focusing on narrow form–based features such as word final codas. Examination of the distribution of word final consonants among non-transparent masculine and feminine nouns indicates a largely non-random pattern, such that certain codas (e.g., *-b'*) are associated overwhelmingly with feminine nouns (with only one masculine exception *golub'* 'pigeon'), whereas others (e.g., *-šč*) are associated with masculine nouns (with only a few feminine exceptions, such as *pomošč'* 'help'). In addition, there are a number of suffixes that are unambiguously associated with feminine (e.g., *-ost'*) or masculine gender categories (e.g., *-tel'*, *-ar'*). If learners are sensitive to these sorts of statistical regularities among word endings, this would greatly facilitate their learning of gender categories as there seem to be only a couple of truly ambiguous subclasses with equal numbers of masculine and feminine nouns in them (the *-l'*, *-n'*, and *-s'* subclasses).

In sum, our on-line results establish that priming of noun referents can be influenced not only by grammatical gender information available in the context preceding such an expression (for example, the gender marking on adjectives) but also by morphophonological characteristics of noun referents themselves. Importantly, as previous behavioral studies were inconclusive with respect to the gender facilitation effect in adult

native speakers, our results show that a functionally equivalent gender facilitation effect can be successfully captured when gender priming is evaluated with the eye–tracking paradigm. Because eye–tracking methods allow for a more direct assessment of the contribution of various sources of information that dynamically constrain language comprehension in a moment-by-moment fashion, they are more successful than traditional behavioral methods in uncovering such subtle and short-lived effects as gender facilitation in noun selection.

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# Can We Reconcile Syntactic Theory and Language Acquisition? Testing Theoretical Approaches to Cliticization in Croatian against Acquisition Data*

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## 1 Introduction

This paper investigates the acquisition of cliticization in Croatian. It evaluates existing theories of adult cliticization in comparison to child data, and shows that theories based on universal principles and early parameters can better account for very early acquisition of clitics. I focus here only on constructions found in child language that may be a problem for the cliticization analyses I review.

The paper is organized as follows: First, I give an overview of the clitic system in Croatian and make some general observations about their acquisition in the Principles and Parameters framework. Second, I review several theoretical approaches to adult cliticization in Croatian, focusing only on the latest analyses. Third, I summarize some of my own findings on child clitic acquisition using data from three Croatian children. Finally, I discuss the implications of the theoretical analyses of adult language for cliticization in child language.

Croatian clitics are Second Position Clitics (they need to have a host, a syntactic constituent between them and a preceding intonational boundary):

(1) Daj **mi** knjigu.
Give$_{2.SG.IMP}$ I$_{DAT}$ book$_{ACC}$
'Give me the book.'

*__Mi__ daj knjigu.
*Daj knjigu __mi__.

Croatian clitics are pronominals, anaphors, auxiliaries and an interrogative particle. This paper deals primarily with pronominals and

* I would like to thank Acrisio Pires, participants of the FASL conference as well as anonymous reviewer for their valuable comments. However, all the errors are solely mine.

anaphors. In addition, Croatian has very rich overt morphology[1] and a very rich pronominal clitic system as shown in Table 1.

**Table 1.** Pronominal system of Croatian

| | Genitive | Dative | Accusative | translation |
|---|---|---|---|---|
| **Pronominal** | me (mene[2]) | mi (meni) | me (mene) | I |
| | te (tebe) | ti (tebi) | te (tebe) | you |
| | ga (njega) | mu (njemu) | ga (njega) | he |
| | je (nje) | joj (njoj) | ju (nju) | she |
| | nas (nás) | nam (nama) | nas (nás) | we |
| | vas (nás) | vam (vama) | vas (vás) | you |
| | ih (njih) | im (njima) | ih (njih) | they |
| **Anaphor[3]** | se (sebe) | si (sebi) | se (sebe) | -self |

I adopt the Principles and Parameters Theory (Chomsky 1995), and the Continuity Hypothesis (Poeppel and Wexler, 1993) for language acquisition. In other words, I assume that children are born with certain Universal Principles of natural language and during the course of acquisition they set language specific parameters triggered by the linguistic input they hear. In addition, I assume that all the principles are available to the child from birth contrary to the Maturational Hypothesis (Borer and Wexler, 1987), which suggests child development of Universal Principles in stages.

Wexler (1998:25) proposes that there is Very Early Parameter-setting (VEPS) at the earliest observable stage (around 18 months, the time when children cross-linguistically move to the two-word stage) with a possibility of having parameters set even before this stage. Under "Early Parameters" Wexler lists basic parameters of verb movement (V to I, or V to I to C), which involve word order, verb raising, verb-second and null subjects. I will focus on this approach to early parameters when I discus the child data.

## 2 Analyses of Adult Cliticization in Croatian

Over the past 30 years, cliticization in Croatian (and Serbian) has been a point of interest to many linguists and produced many different approaches to it. I will concentrate on the three latest analyses: Franks

[1] Croatian inflects for case (nouns, pronouns and adjectives), gender (adjectives, 3rd person pronouns and past participles), number (nouns, pronouns, adjectives and verbs), person (pronouns and verbs) and tense (verbs).
[2] Full/stressed forms are in parentheses.
[3] Same form for all persons and for singular/plural

(1998, 1999) and Progovac (1998, 2005), which are based on similar principles assuming that clitics are parasitic on Verb-Second, and Bošković's (2001) Pronounce-a-copy analysis. The reason for choosing these is that they all adopt the Minimalist framework and they take into the account some of the latest developments in syntax.

Bošković (2001) attempts to explain the positioning of clitics in Croatian by means of a "pronounce-a-copy" analysis. The analysis suggests that any copy of an element produced in the course of the derivation can be pronounced, but the highest copy, which serves as a default, is normally pronounced. An exception is when the pronunciation of the lower copy would be necessary for the derivation to converge and be grammatical. In that case the highest copy (the head of the chain) is deleted and the lower copy is pronounced. Bošković suggests that this may be the case with Croatian clitics, given that a PF requirement forces them not to be in the initial position.

Bošković assumes Croatian clitics move as high as the agreement projection $Agr_OP$. Because clitics are non-branching, they are taken to be ambiguous between a head and a phrase (Chomsky 1995) and can be in Spec $Agr_OP$ or in the $Agr_O$ head. For Bošković, a pronominal clitic is then ambiguous and can undergo a combination of head and phrasal movement[4].

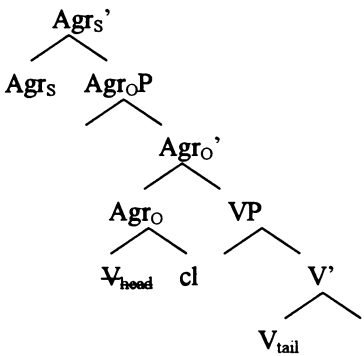
A clitic's PF requirement is to merge with any phonologically strong word that is right adjoined to an intonational phrase boundary (or the left edge of an embedded clause). If there is no such word, the derivation will crash at PF. To avoid the crash, Bošković offers at least two possible analyses based on the same "pronounce-a-copy" principle. In both analyses the verb moves to $Agr_O$. The clitics can be in $Agr_O$ in one analysis and in Spec of $Agr_OP$ in the other analysis (which will not be taken in consideration to avoid the contradiction from Footnote 4).

The only analysis by Bošković discussed in detail in this paper suggests optionality in pronouncing the copy (a chain head or tail) of **a verb**. In sentence (2) with a representation in (3), the tail of a verb chain (that is, the lowest copy of the verb) would be pronounced as there is already phonological material in front of the clitic. By pronouncing the head copy of the verb, the PF (second position) requirement for the clitic would be violated and the derivation would crash. To avoid that, the tail copy of the verb (in its base position in the VP) has to be the one chosen to be pronounced, as shown in (3).

(2) [$_{AgroP}$ Ona ~~voli~~ **ga** [$_{vP}$voli.]]
she$_{NOM}$ ~~love$_{3.SG.PRES}$~~ he$_{ACC}$ love$_{3.SG.PRES}$
'She loves him.'

[4] Notice that this contradicts the Chain Uniformity Principle (Chomsky, 1995) that requires the chain to involve only one type of movement (i.e. either head or phrasal movement but not both in the same chain). Bošković does not seem to discuss this problem.

(3)




In (4) below, on the other hand, the head of the verb chain has to be pronounced as there is no other phonological material to allow satisfaction of the clitic second position requirement.

(4) [$_{AgroP}$ Voli **ga**. [$_{vP}$ ~~voli~~]]
love$_{3.SG.PRES}$ he$_{ACC}$ ~~love$_{3.SG.PRES}$~~
'(S/he) loves him.'

A possible problem for acquisition, discussed later, is the low position of the clitic in the structure of the clause in Bošković's analysis.[5]

Franks' (1998, 1999) and Progovac (1998, 2005) analyses suggest clitic movement to be parasitic on verb movement (following a parallelism between second position clitics and verb-second). The difference between the two approaches is in the height of the verb—while for Franks the verb does not move higher than Agr$_O$ and clitic moves on it own to the highest verbal projection, Progovac suggests movement of the clitic to the highest verbal projection, in adjunction to a copy of the verb. Both authors, however, appeal to additional requirements to yield the XP-cl-V vs. V-cl orders. Franks bases his analysis on a strong-weak distinction of Formal Features (FF) and Lexico-Categorial Features (LCF). Depending on the strength of the LCFs of the verb the verb moves or not to a higher position. In Croatian the LCFs of the verb are strong and they stay low but their FFs move up and on their way incorporate to the clitic FFs. The clitic gets pronounced in the highest verbal position but the verb gets pronounced where the LCFs are (which is lower). This yields cases such as (2). In the case where the verb is pronounced above the clitic, as in (5), Franks suggests pronunciation of the lower copy of a clitic as in (6). The clitic here is pronounced in a copy position below the position of the verb's LCFs. Franks does not specify the exact position of clitic in this case.

[5] In addition, the fact that the child needs to determine the two possible positions for the verb and decide which copy needs to be deleted may be a problem as well. That problem would arise for Progovac and Franks as well, therefore I will leave it aside.

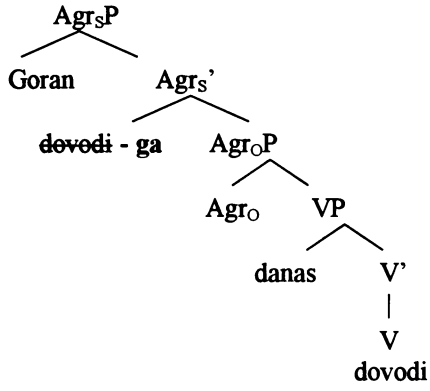
(5) Voli **ga**.
love$_{3.SG.PRES}$ he$_{ACC}$
'S/he loves him.'

(6) ~~**ga**~~ voli **ga**.
~~he$_{Acc}$~~ love$_{3.SG.PRES}$ he$_{ACC}$
'(S/he) loves him.'

Progovac considers the Copy theory (Chomsky 1995 and Merchant 2000) for optional pronunciation of copies other than the highest (ultimate) copy of a verb. Croatian clitics, as unstressed items, need to "lean" on a host that is not always the same. Progovac suggests that it is just an illusion. For her, the special characteristic of clitics is that they can lean on a silent copy of a verb. The verb moves through the functional projection where clitics are generated. On its way, the verb picks up the clitic(s) and continues to its ultimate landing site. Clitics (one by one) right-adjoin to the verb and travel with it to the highest landing projection for the verb. The verb in Croatian has the option of being pronounced in the position of any of its copies. Given that the clitics are attached to the verb at its ultimate landing site, they get pronounced there while the verb may get pronounced elsewhere, as in the case of the utterance in (7) with the derivation in (8). This leaves the clitics attached to a silent copy of the verb and the verb-clitic word order appears altered. While clitics look like they are leaning on any of the possible constituents on their left they actually lean (syntactically) on the silent copy of a verb, whereas phonologically they lean on the preceding overt element (the subject DP).

(7) Goran **ga** danas dovodi.
Goran$_{NOM}$ he$_{ACC}$ today bring$_{3SG.PRES}$
'Goran is bringing him today.'

(8)




The clitic has to be pronounced in a position where it is adjoined to the head of the verb chain.[6]

Progovac's prediction here is that clitics are like verbal suffixes, and can be pronounced only when adjoined to either silent (7) or overt copies (9) of the moved verb:

(9) Dovodi **ga** danas.
bring$_{3SG.\ PRES}$ he$_{ACC}$ today
'(He) is bringing him today.'

For Progovac, pronouncing the highest copy of the verb in the chain (when clitic needs support to its left) is a Last Resort operation (the clitic cannot motivate movement of other elements but it can affect pronunciation of the already existing copy of the verb). The verb is the only element that can be used as a Last Resort option as the clitic is already attached to the verb. This stipulation of a verb as the only element whose copies can be selected for pronunciation to satisfy the clitic PF requirement is also found in Bošković' and in Franks' analyses.[7]

## 3 Hypothesis

From what I have said and shown so far including the Very Early Parameter Setting and the analyses reviewed above, we can expect that an analysis that strongly relies on verb movement will be the favored one. It will give a basis for the early and fast acquisition of clitics. From this it follows that all three analyses above may be good candidates to account for child clitic acquisition. Nevertheless, some issues that I

[6] Progovac suggests that pronouncing the copy of the clitic in the head of the movement chain is a default option expressed as a Principle of Recoverability of Movement (Progovac 2005, following Franks 1998). The motivation for this is unclear, though, especially considering that this does not apply to the head of the verb chain in (7).

[7] Franks' and possibly Progovac's additional stipulation is that by default the lowest copy of a verb (the copy where LCFs are, for Franks) is pronounced.

hinted at in the previous section may suggest Bošković's analysis to be less adequate (because of the low position of the clitic' final position) and Progovac's analysis the most adequate one if we are to accept the silent copy of a verb as a mechanism driving the clitic movement.

## 4 Acquisition data

*4.1 Subjects*

The data consist of longitudinal, naturalistic recordings of two girls and one boy. The transcripts are taken from the CHILDES database (Kovačević 2003, MacWhinney 2000), with permission by the authors. All three children are monolingual speakers of Croatian. The transcripts taken into consideration for this research are from age 1;7.15 to 2;9.17. The three children were recorded on average every 12 days over the period of about a year. The total number of children utterances analyzed was 28807. The average use of clitics is 4.8 clitics per 100 utterances.

*4.2 Coding and scoring*

Coding and scoring of the transcription files from the CHILDES database were done by the researcher.

Every pronominal and reflexive clitic found in the transcript was coded for different values. The data scoring had two possibilities: Correct (if the clitic was correctly used in the context - correct position and correct form) and Incorrect (if the form or the position of the clitic in the context were incorrect or if the clitic was missing in a context where adults would use it.)

Several constructions that were repeated a number of times in each session by the children and by the caregivers were not scored. I defined them as *frozen forms*. Repetitions of the caregiver's utterances, singing, reciting, as well as story telling utterances learned by heart were not included. (For details see Stiasny 2003).

*4.3 Results*

Table 2 shows the percentage (and the number) of clitics in the data for each child. Note that the amount of data differs among the children and this is reflected in the amount of clitics per child.

**Table 2.** Distribution of clitics by clitic type per child

| Child | Reflexive | Pronominal | Total |
|---|---|---|---|
| A | 49% (126) | 51% (130) | 256 |
| M | 56% (273 ) | 44% (213) | 484 |
| V | 47% (237) | 53% (262) | 499 |
| Total | 51% (636) | 49% (605) | 1241 |

All three children are very similar in the emergence and initial production of clitics. The first clitics appear around age 1;6 but their use is scattered and rare. Between 1;10 and 2;0 children start using clitics regularly. The data suggest a short period of time of "observable acquisition" – from the time the first clitics appear to the time they are incorporated in the speech in almost an adult manner. I will suggest that there is an "invisible acquisition period" where the child is setting the parameters relevant for cliticization (which would fall under Wexler's "very early parameter setting"). This is supported by the fact that, because the nature of the clitic is dependent on a host, clitics cannot appear in utterances before child reaches the two-word stage.

During the time of regular use, the error rate is in average 11%. The error rate is very low from early on, despite all the restrictions and variations the clitic system exhibits. Regarding, for instance, different clitic forms and their co-existence with stressed forms that have a different distribution (see Table 3), there is no error consistently repeated by any of the three children, individually or as a group.[8] Clitic forms, clitic hosts and constructions in which the clitics are found are in most respects adult-like. From here forward I will focus on the constructions in which clitics are found in child language.

Table 3 gives an overview of the constructions in which the clitics are found—the leftmost column corresponds to each of the hosts found in the data (the first position element) with their total rates on the rightmost column, and the top row represents the constituents following the clitic (third position element) with their total rate on the bottom row. Each percentage corresponds to a combination of clitic hosts (left column) and words following the clitic (top row). For the discussion that will follow the constituents following the clitic will play a role as well.

[8] The omission of clitics in contexts where adults would use them is rare as well.

**Table 3.** Constructions with clitics/clitic clusters

| HOST/ FIRST | THIRD | | | | | | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Þ | V | Aux | Subj | Obj | PP | Adv | Other | predicate | | |
| nothing | 0 | 14 | 0 | 4 | 2 | 1 | 1 | 1 | 0 | **23** | **2%** |
| Verb | 176 | 1 | 3 | 37 | 27 | 16 | 19 | 4 | 1 | **284** | **23%** |
| Aux | 26 | 95 | 2 | 22 | 9 | 5 | 23 | 3 | 0 | **185** | **15%** |
| subject | 21 | 142 | 10 | 2 | 3 | 1 | 25 | 0 | 2 | **206** | **17%** |
| object | 0 | 6 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | **10** | **<1%** |
| PP | 1 | 7 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **9** | **<1%** |
| Comp | 5 | 57 | 5 | 18 | 2 | 1 | 8 | 1 | 0 | **97** | **8%** |
| adverb | 31 | 102 | 11 | 26 | 9 | 0 | 9 | 4 | 1 | **193** | **16%** |
| Wh | 14 | 51 | 2 | 52 | 8 | 0 | 11 | 1 | 0 | **139** | **11%** |
| other | 8 | 12 | 1 | 2 | 3 | 0 | 3 | 2 | 1 | **32** | **3%** |
| TO | 2 | 10 | 0 | 8 | 0 | 1 | 3 | 2 | 22 | **48** | **4%** |
| Total | **286** | **496** | **35** | **174** | **63** | **25** | **103** | **18** | **27** | **1226** | |
| | **23%** | **41%** | **3%** | **14%** | **5%** | **2%** | **8%** | **2%** | **2%** | | 100% |

I briefly discuss Table 3 and the constructions with clitics found in child language. "Nothing" as a host (third row) means two things: one, it can be an error where a child used a clitic in the first position; or, two, it can be dialectal variation – clitic first is allowed in some dialects of Croatian (children studied here were exposed to this kind of variation).

"Other" as a host includes negation (*ne*), conjunctions (*i* 'and', *još* 'still', *pa* 'than'), numbers and the particle *evo* 'here (you) go'. Eventive *to,* which Progovac discusses in her 1999 paper was scored separately as a host. A full object NP as well as PPs are very rare as hosts, therefore I will not have anything to say about those constructions. Complementizers, on the other hand, are frequent hosts and they give support for full-fledged acquisition of syntactic structure by young children (following Poeppel and Wexler 1993).

A construction that deserves a note is the one with an adverb as a host for a clitic. All the adverbials used by children in the data are verbal adverbs: temporal (*sad* 'now', *onda* 'then'), manner adverbs (*brzo* 'quickly') and locatives (*tu* 'here', *tamo* 'there').

Turning to the constituents that follow the clitic, the first column ("nothing") shows that clitics appear in two-word utterances in about 23% of the clitic structures (some of them are actually not finished utterances). This tells us that even at the beginning of the two-word-stage the clitics are not in the first position. Constructions of the type "verb/auxiliary + clitic + **subject**" may need to be considered more

closely as they suggest an important alternation in syntactic structure. Other constructions, with objects, PPs, adverbs, auxiliary/verbs following the clitic will be discussed below.

Clitic-verb/auxiliary adjacency (i.e., clitic attached to the left or right of a verb or auxiliary) occurs in about 74% of all clitic constructions. In addition, constructions with clusters including an auxiliary clitic, and in which there is clitic-verb adjacency, make an 13% of the clitic constructions. The total percentage of constructions with clitics overtly attached to a verb or auxiliary is 87%. This gives support for the analyses of adult cliticization based on verb adjacency. There is still 13% of cases that need to be explained but note that the analyses reviewed above do not require clitics to be attached to an **overt** copy of a verb, in other words, clitics can be attached to a covert copy of a verb and explain the remaining 13% of the data. I leave further investigation of this question for future work.

## 5 Implications of the Three Syntactic Approaches for the Investigation of Children Data

There are two constructions found in the children's data that I will discuss in this paper because they may be problematic for one or more of the three theories:

1. Host + clitic followed by a subject, especially when the host is a verb or an auxiliary and
2. Non-sentential adverb + clitic + another constituent, especially when that constituent is a verb, an auxiliary or a subject.

### *5.1 Host + clitic followed by a subject*

Table 4's grey areas show possibly problematic constructions in which the subject follows the pair formed by a verb, auxiliary, adverb or object and the clitic. These constructions make 8% of all constructions with clitics in the data. They are present in child production from an early age (1;10). (10) is one of these constructions, showing the structure (Neg) + V + cl + subject.

(10) Ne[9] čuje **me** mama.
Neg. hear$_{3SG.\ PRES}$ I$_{DAT}$ mom$_{NOM}$
'Mom doesn't hear me.'

For two of the adult cliticization analyses (Progovac and Franks) example (10) and structures alike require an additional step in the derivation. The two authors suggest that verb pronunciation in the position before the clitic (V-cl order) is a last resort option. In (10), the last resort option could be avoided by overt subject raising to Agr$_S$P.

[9] In Croatian, nothing can be inserted between negation and the verb when the verb is finite, therefore, Neg+V counts as one intonational unit for clitic purposes.

However, the subject does not raise to $Agr_SP$ in cases of focus (Stjepanović, 1999), or for other pragmatic or discourse reasons, therefore last resort applies.

**Table 4** Distribution of host in "host + clitic(s) + subject" constructions

| Child | HOST | | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | # | V | Aux[10] | Subj | Obj | Comp | Adv | Wh | other | to | |
| **A** | 0 | 8 | 10 | 0 | 2 | 6 | 3 | 18 | 0 | 1 | **48** |
| **M** | 0 | 11 | 6 | 1 | 1 | 5 | 16 | 20 | 1 | 4 | **65** |
| **V** | 4 | 18 | 6 | 1 | 0 | 7 | 7 | 14 | 1 | 3 | **61** |
| Total | 4 | 37 | 22 | 2 | 3 | 18 | 26 | 52 | 2 | 8 | **174** |
| | **2%** | **21%** | **13%** | **1%** | **2%** | **10%** | **15%** | **30%** | **1%** | **5%** | (14%)[11] |

Bošković does not run into this problem with structures of the type (10); however for him all the other constructions (i.e., structures with an overt element other than a verb preceding the clitic) require pronunciation of the verb in its base position. If last resort is at play in (10), as proposed by Franks and by Progovac, it suggests that children at this early age are aware of discourse and pragmatic conditions that influence the pronunciation of elements in alternative positions. Example (11) shows that children produce sentences with raised overt subjects as well.

(11) Mi **ćemo se** igrati.
we$_{NOM}$ Aux$_{1PL}$ REFL play$_{INF}$
'We will play.'

To account for cases like (10) above with a verb preceding subject and 0 below with an auxiliary preceding the subject we need to stipulate several additional mechanisms depending on the adopted analysis.

(12) Bu[de] **mi** mama skuhala.
will$_{3SG}$ I$_{DAT}$ mom$_{NOM}$ cook$_{PPFEMSG}$
'My mom will cook (it) for me.'

The structure in (11) would be the case of last resort for Bošković, as the verb is pronounced in its base position. However, for the subject to stay low, as in 0, Bošković needs to appeal to focus, which requires the focused subject to stay low (in its base position, similarly to the lexical verb).

The structures in (10) would also require additional mechanisms of a similar type in Franks' and Progovac's analyses. These would require the subject to stay in its base position (or to have the tail of its chain

[10] Non-clitic auxiliary or modal

[11] Percentage refers to the percentage of all clitic constructions produced by all three children.

pronounced) while the clitic moves up in adjunction to the verb or the auxiliary.

In the structure in 0 both the verb (participle) and the subject stay low in the derivation (probably in their base position) but the clitic moves upward. This raises the question of what triggers the clitic movement upward (above $Agr_OP$) to the position where the auxiliary is, without any help from a verb. Progovac suggests that the clitic moves with the auxiliary, Bošković suggests auxiliary movement as well but not clitic movement. However, this and other examples above suggest children's very early awareness of focus and possibly other discourse condition determining variation in the position of subjects. In structures of the types discussed above the overt subject has the option of raising to its final position ($Agr_SP$) both for children and for adults, except in the case of focused subjects, which need to stay in their base position.

The availability of options may not be a problem for adult language but for child language it may pose a problem. We would need to claim that children have acquired or at least are able to use the two alternatives based also on discourse/pragmatic cues, besides syntactic and phonological ones. This is exactly what we find in the cases above.

Let us now consider cases where an adverb serves as a host (12) as I discuss below.

*5.2 Non-sentential adverb in front of clitic + another constituent*

The second complex construction is of the type shown in (12) – adverb + cl + constituent. There are 16% of clitic constructions of this type shown in Table 5.

(12) Sad **se** ona sunča.
now REFL $she_{NOM}$ $sunbath_{3SGPRES}$
'She is sunbathing now.'

**Table 5.** Distribution of the constituents following construction "adverb + clitic(s) + third constituent"

| CHILD | THIRD CONSTITUENT | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | nothing | verb | aux | subject | object | Adverb | other | |
| **Antonija** | 3 | 18 | 6 | 2 | 1 | 1 | 1 | **32** |
| **Marina** | 11 | 46 | 4 | 14 | 11 | 1 | 2 | **90** |
| **Vjeran** | 14 | 31 | 4 | 4 | 2 | 4 | 2 | **61** |
| Total | 28 | 95 | 14 | 20 | 14 | 6 | 16 | **193** |
| | **15%** | **49%** | **7%** | **10%** | **7%** | **3%** | **8%** | (16%) |

Temporal adverbs, or any other modal or spatial adverb found in children data are generated in the *v*P shell. Following the framework of the analyses reviewed above they can only be topicalized, in order to function as clitic hosts. Again, topicalization is a very plausible option as a solution for this in adult language; however this may still be a problem

for child language, especially when we find in children data an option with the adverb in third position and the verb following it as in (13).

(13) I[12] Ante se isto vozi.
and $\text{Ante}_{\text{NOM}}$ REFL also $\text{ride}_{\text{3SGPRES}}$
'And Ante rides as well.'

The variation in the word order is obvious here and the three analyses of adult cliticization presented above would have to assume that the child has knowledge of the conditions determining optionality. For Bošković the optionality is in the overt realization of the verb (or the clitic, depending on the analysis one adopts), given that the verb always moves to $\text{Agr}_{\text{O}}$. For Progovac the optionality is in the pronunciation of a copy of the verb to which the clitic was attached, with both moving upward. The latter is also the case for Franks, who relies on the strength of the verbal LCFs. The case of subject below the clitic were discussed in the previous section and the auxiliary follows verb pattern.

In this paper I touched upon a couple of important issues regarding clitic acquisition data as a source of evaluation of analyses of cliticization. I have shown here that some structures found in adult as well as in child data require one to assume the existence of extra-syntactic (i.e., focus, discourse) mechanisms determining the full range of cliticization cases in child language. The data presented here clearly indicate that Croatian children have acquired focus and apply it consistently in combination with mechanisms such as verb movement and the clitic second position requirement in order to account for the full range of clitic placement possibilities.

Of the three syntactic analyses above, although none may be perfect, Progovac's and Franks' to some extent are better in explaining both child and adult data for at least two reasons:

1. They rely on verb movement which would explain early and seemingly effortless acquisition by children (this is also the case in Boskovic's analysis) and

2. They are compatible with other principles of the grammar such as Copy Theory of Movement and the Chain Uniformity Constraint.

However, the largest problem for Bošković is the height of the clitic in relation to the verb forcing the verb or other elements to be pronounced in position lower than $\text{Agr}_{\text{O}}$ in V-Cl cases.

## 6 Conclusion

Any analysis of adult language needs to be tested against children data to confirm its validity (explanatory adequacy). If Wexler's Very Early Parameter Setting hypothesis is on the right track, we can assume that

[12] Conjunction *i* 'and' and most of the other stressless conjunctions are not possible hosts for clitic.

verb movement is acquired very early. Therefore, the theories that base clitic movement on verb movement are on the right track in this respect. However, this paper also suggested that an analysis that is able to describe the processes involved in adult language may only be suitable to explain the structures produced by children if it assumes complex knowledge of pragmatic and discourse conditions by the child at a very early age.

In the case of clitic placement we see almost adult like variation in the types of constructions children produce from age 2 but we need independent evidence that they have already acquired all complex adult mechanisms taken to be responsible for placement of clitics in different theories of cliticization. I believe that the examples I discusses in this paper give support for child's knowledge and use of discourse/pragmatic conditions determining at least topicalization and focus.

Children's adult-like behavior concerning the types of clitic constructions produced at a very early age suggests their attention at least to different conditions determining word order variation in the syntax. The cases presented above require pronunciation not just of different copies of the verb or clitic (as suggested by the different authors) but possibly of the subject (example (10) and 0) and adverb as well (example (13)).

In sum, I conclude that the movement of clitics connected to verb movement is on the right track but other aspects determining variation in clitic placement are at play as well at a very early age. To what extent extra-syntactic mechanisms are at play to determine such variation deserves further investigation.

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# The Categorial Status of Quantifiers in Bulgarian: Evidence for DP over QP*

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## 1. Introduction

In the past decade many attempts have been made to either unify or distinguish between what Abney (1987) calls "non-substantive" categories in the top functional layer of the DP (e.g., determiners, demonstratives, numerals, and quantifiers). This paper is concerned with the categorial status of what was formerly referred to as "determiners" in Bulgarian. We argue that in Bulgarian (i) quantifiers are not determiners and are divided into three major classes (much in line with Giusti 1997), (ii) demonstratives are determiners generated in their own functional projection (DemP) and (iii) the quantifier projection is between DP and NP.

Bowers (1991) defends the unified approach and distinguishes between two groups of collective determiners in English—weak and strong. The former category is licensed in his NmP. The latter are generated in DP and include quantifiers, possessives, and determiners. On the opposite end, Giusti (1997) works on Romance and splits the uniform category into three: articles are heads of DP; demonstratives are inserted into the lower Spec,AgrP and further moved to Spec,DP; quantifiers are divided into two categories—Q proper, which heads the QP projection and selects for the DP, and quantitative adjectives (including numerals), which she puts in the specifier of a lower AgrP.

Arnaudova (1995) proposes an analysis of Bulgarian DP where she argues for the numeral *edin* 'one' as an overt realization of the indefinite article, i.e., as a member of the determiner category. She also unifies the analysis of quantifiers (including the universal quantifier) and adjectives

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in Bulgarian proposing that both categories are heads of lower XPs, subject to movement to $D^0$. Dimitrova-Vulchanova and Giusti (henceforth D-V & G) (1996) are in line with Giusti's (1997) analysis of quantifiers in Romance and distinguish between Q proper and quantifiers of the numeral type in Bulgarian. The former (the universal quantifier *vsički* 'all') takes scope over the whole DP (thus, is generated above DP and heads its own functional projection); the latter are merged in a lower functional projection NumP (i.e., cardinals are generated in head of NumP, while existential quantifiers such as *mnogo* 'many' are generated in Spec,NumP).

In recent proposals for Romance and Balkan languages we also see the demonstratives generated in a low(er) functional projection (Brugè 2002, Giusti 2002, Longobardi 2001, Bernstein 2001). This way, Brugè accounts for the Romance data where the demonstrative can appear either prenominally without an overt determiner or postnominally in an obligatorily definite environment. In both cases, she argues, the demonstrative brings about the referential properties of the noun phrase which are incompatible with the [–ref] properties of the determiner projection. In addition, Giusti (2002) argues that the so proposed lower insertion point for demonstratives helps us distinguish between syntactic last resort operations, such as article insertion, and insertion of semantic content, such as referential properties.

This said, I will argue here that quantifiers are not determiners and that there is a lack of uniformity in the category as we know it. There are (i) quantifiers proper which are merged in the QP projection, (ii) quantifiers of the numeral type which are inserted in NumP, and (iii) modifying quantifiers which always function as modifiers and thus are generated in the highest specifier position within the extended NP. This third group of quantifiers blocks the projection of a DP. I will also argue that the demonstratives are not generated in a lower functional projection, but in their own projection DemP which immediately dominates DP and shares with it the [±ref, ±def] features of the head. This will let me show that QP is a projection below DP.

## 2 The Categorial Status of Quantifiers

### *2.1 Quantifiers are not determiners*

At first glance, quantifiers in Bulgarian appear to be part of the cumulative determiner category, since they seem to compete for the same node with the definite article (1).

(1) vsjaka(*ta)/ njakoja(*ta)/ nikoja(*ta) kniga
each(*the)/ some(*the)/ none(*the) book
'each/some/no book'

However, there are several challenges to this initial hypothesis. First, as Giusti (2002) points out, articles, unlike quantifiers, are morpho-phonologically dependent on another element in the NP. In a number of languages (Romanian, Albanian, Norwegian, Bulgarian) they are suffixed to another element in the DP. Even in languages in which the articles are free morphemes, they cannot appear without an overt sister projection, i.e., they do not allow N–drop. Quantifiers do not pose such restrictions (2).

(2) a. *I bought the __.
b. I bought this __.

Second, as (3) shows, there is a group of quantifiers in Bulgarian that co-occur with the enclitic definite article.

(3) vsički(te) / mnogo(to) / dve(te) / njakolko(to) knigi
all(the) / many(the) / two(the) / several(the) books
'all (the)/(the) many/(the) two/(the) several books'

Third, possessive clitics in Bulgarian can only occur in definite environments (D-v & G 1999a, b, Franks 1998, Embick and Noyer 2001, Tasseva-Kurktchieva 2004); thus we can use the dative clitics as a test for a [+def, +ref] DP. Possessed NPs are allowed only with the second group of quantifiers and only if the definite article is present (4).[1]

(4) a. Četox *vsjaka / *njakoja / *nikoja mu kniga.
I.read each / some / none his book
'I read each/some/none (of) his books.'
b. Četox vsički-te/mnogo-to/ dve-te / njakolko-to mu knigi
I.read all$_{DEF}$ / many$_{DEF}$ / two$_{DEF}$ / several$_{DEF}$ his books
'I read all/many/two/several (of) his books.'
c. Četox *vsički / *mnogo /*dve / *njakolko mu knigi
I.read all / many/ two / several his books
'I read all/many/two/several (of) his books.'

[1] A possible objection to the claim that the quantifiers in (1) do not co-occur with the dative clitic is the existence of sentences like (i).

(i) Četox mu vsjaka kniga.
I.read his every book
'I read each of his books.', also, irrelevantly, 'I read each book to him.'

Under the relevant reading the dative clitic *mu* 'his' has raised out of an indefinite DP. Steven Franks (p.c.) points out that this raises a very interesting question—why is it that possessor raising can only occur out of indefinite but not definite quantified DPs. This topic goes beyond the scope of this paper and I will leave it open for future research.

Only the nominals in (4c) appear to be definite and the definiteness is due to the article itself and not the quantifier per se. We can conclude that quantifiers are not determiners.

*2.2 Two major syntactic classes of quantifiers*

The co-occurrence of quantifiers with definite articles or possessive clitics gives us some evidence to posit a distinction between two groups of quantifiers in Bulgarian. Below we see some more syntactic support for this. The quantifiers in (1) are inflected for gender and number (5), while those in (3) have a fixed morpho-phonological form which can only modify a plural head noun (6).[2] Thus, the modifying Qs in (1) have a closer relation to the head noun than the Q proper/numerals in (3).

(5) a. vsjaka / njakoja / nikoja žena
each$_{FSG}$/ some$_{FSG}$ / none$_{FSG}$ woman$_{FSG}$
b. vseki / njakoj / nikoj mâž
each$_{MSG}$ / some$_{MSG}$ / none$_{MSG}$ man$_{MSG}$
c. vsjako / njakoe / nikoe dete
each$_{NSG}$ / some$_{NSG}$/ none$_{NSG}$ child$_{NSG}$
d. vseki / njakoi / nikoi oči
each$_{PL}$ / some$_{PL}$/ none$_{PL}$ eyes$_{PL}$

(6) vsički(te) / mnogo(to) / njakolko(to) knigi /*kniga
all$_{(DEF)}$ / many$_{(DEF)}$ / several$_{(DEF)}$ books$_{FPL}$/ book$_{FSG}$

In addition, the quantifiers from (1) (henceforth MODIFYING QUANTIFIERS) do not allow extraction (7) while those in (3) (hereafter Q PROPER) do. Note that extraction, where allowed, happens out of a QP (8a), and is blocked to outside the extended DP, as signaled by the definite article on the quantifier in (8b). As expected under standard analyses of extraction, a DP with an overtly filled definite projection blocks extraction. The generalization here is that modifying quantifiers are generated very low in the DP structure, possibly on a par with modifying adjectives which also block extraction (8a). Q proper, on the other hand, have a higher

[2] There are two exceptions to this generalization—the cardinal numerals which can be inflected for gender ('one' can also be inflected for number), and the universal quantifier *vsički* 'all', which can be inflected for both gender and number, but only if it modifies a mass noun. We can dismiss the former exception as numerals are at least a special type of quantifiers, if not a separate syntactic category. The latter is not a problem for the posited distinction either. The universal quantifier can change its morphological form based on the gender and number of the mass noun it modifies only if this noun is a SINGULARIA TANTUM and only in definite environments:

(i) vsička*(ta) voda / vsički*(jat) oriz / vsičko*(to) mljako
all$_{(DEF)}$ water / all$_{(DEF)}$ rice / all$_{(DEF)}$ milk

generation position as evident in the fact that they allow extraction of the whole NP.

(7) *[Kniga za vojnata]$_1$ (ne) četox [vsjaka/njakoja/nikoja $t_1$].
book about war$_{DEF}$ (not) I.read each / some / none
'Book about the war I didn't read each/some/none.'

(8) a. [[Knigi za vojnata]$_1$ četox [mnogo/njakolko/dve/*novi $t_1$]].
books about war$_{DEF}$ I.read many/ several/ two/ new
'Books about the war, I read many/several/two/new.'
b. *[Knigi za vojnata]$_1$ četox [mnogoto/njakolkoto/dvete /novite $t_1$].
books about war$_{DEF}$ I.read many$_{DEF}$ /several$_{DEF}$ /two$_{DEF}$ /new$_{DEF}$
'Books about the war, I read many/several/two.'

Modifying quantifiers cannot co-occur with demonstratives either, but Q proper can, as evident in (9). This again supports the generalization that the modifying quantifiers from (1) block the projection of an extended DP while the Q proper from (3) do not.

(9) a. *tazi vsjaka/ njakoja / nikoja kniga
this every / some / none book
'this every/some/no book'
b. tezi vsički(te)/ mnogo/njakolko/dve knigi
those all$_{(DEF)}$ / many /several / two books
'all those/those many/those several/those two books'

Based on these differences in syntactic distribution we can conclude that quantifiers in Bulgarian are not determiners and that we are dealing with two major types of quantifiers—Q proper and modifying quantifiers. Modifying quantifiers cannot co-occur with definite determiners, demonstratives or the possessive clitics. Similar to modifying adjectives, they can change their morphological form depending on the gender and number of the head noun and they disallow extraction of the NP. Thus, we can conclude that modifying Qs are not only generated lower than the DP node, but also prevent the projection of a full DP.

A question remains as to how low in the structure the modifying Qs are generated. Unlike modifying adjectives, which may or may not obey the hierarchy proposed in Cinque (1994) (compare (10a) and (10b)), or the Q proper, which may be dominated by other DP material (9b), modifying quantifiers are obligatorily in first position in the noun phrase (compare (10c) with (10a) and (10b)).

(10) a. vsjaka negova nova kniga
each his new book
b. vsjaka nova negova kniga
each new his book

c. *negova(ta) vsjaka nova kniga
his$_{(DEF)}$ each new book

I take the position that only motivated syntactic structures are generated and propose that the modifying type Qs are low quantifiers merged in the highest specifier of the extended noun phrase, namely Spec*n*P, where they maintain their close relation to the head noun. On the other hand, modifying Qs surface in impoverished DPs which lack the top functional layer. This is shown by their inability to co-occur with determiners or demonstratives and the fact that they disallow movement of the NP to the left periphery.

The generalizations so far about Q proper are that they can co-occur with definite determiners, demonstratives, or possessive clitics; they have a unique morphological form, and allow extraction within the extended DP but not outside a definite DP. In other words, they are merged in a separate functional projection.

*2.3. The universal quantifier*

While the syntactic differences between the two major types of quantifiers are clear, this is not the case within the Q proper class. In this section I will show that the universal quantifier is syntactically in a class of its own.

D-v & G (1996) propose that one of the tests for the syntactic status of quantifiers is whether or not they can take a partitive construction as a complement. Based on Giusti (1991), and working with the assumption that QP dominates DP, they propose that English *all* in (11a) selects for a definite DP, while *many* selects for a partitive DP headed by a null head (11b). Both *all* and *many* are generated in the head of the top functional projection, namely QP.

(11) a. [$_{QP}$ all [$_{DP}$ the [$_{NP}$ children]]] (D-V & G's (16a and b))
b. [$_{QP}$ many [$_{DP}$ ∅ [$_{NP}$ children]]]

If we put Bulgarian quantifiers to the test, there are two generalizations we can make. First, all but the existential quantifier can head a partitive construction (cf. (12)). Second, partitive constructions are possible in indefinite contexts only (compare (12) and (13)).

(12) vsjaka/ njakoja / dve / njakolko/ mnogo/ *vsički(te) ot knigite
each / some / two / several / many / all of books$_{DEF}$

(13) *dvete /*njakolkoto /*nikolkoto/*mnogoto ot knigite
two$_{DEF}$ / several$_{DEF}$ / none$_{DEF}$ / many$_{DEF}$ of books$_{DEF}$

Since *vsički* 'all' cannot take a complement (i.e., head a projection), I suggest that the universal quantifier is a maximal projection merged in a

specifier position while the rest of the quantifiers are (or can be) merged as heads of functional projections.[3] If the hypothesis is correct, we should find more syntactic distinctions. This, in fact is the case.

Giusti (1995, 1997, 2002), D-V & G (1996), and Brugè (2002) all suggest that demonstratives are merged in or at least move to SpecDP. In (9) we saw that Q proper can appear in demonstrative constructions; in (14) I show that only the existential quantifier can precede the demonstrative in those constructions. Note that the definiteness of the whole noun phrase is irrelevant.

(14) a. vsički(te) tezi knigi
all(DEF) those books
b. *mnogo(to)/*njakolko(to)/*dve(te) tezi knigi
many(DEF) / several(DEF)/ two(DEF) those books

For now I will work with the assumption that the demonstrative is a functional category projecting a DemP, which crucially depends on the [+ref] properties of the DP. If the assumption is correct, the behavior of the universal Q will be expected only if it is syntactically different from the rest of the Q proper. In my analysis *vsički* is merged in SpecQP and later (optionally) moved to SpecDP for feature checking purposes. It can be further moved to SpecDemP, thus rendering the example in (14). The rest of the Q proper are merged in $Q^0$ and the numeral type quantifiers are generated in $Num^0$. The only reason for them to move is if they are generated with the definite article. In this case, they move to $D^0$ for feature checking purposes.

I suggested in Section 2.2 that Q proper allow extraction. While this is true, the universal quantifier poses more restrictions than the rest of the group. It only allows for extraction of a full definite DP and only with a resumptive pronoun in the trace (15).

(15) a. Knigi za vojnata dve/mnogo/ njakolko/ *vsički četox.
books about war$_{DEF}$ two/many/ several/ *all I.read
'Books about the war two/many/several/all I read.'

[3] A reviewer asks why both the universal Q (argued here to be a maximal projection in SpecQP) and some of the other Q proper (argued here to be heads) can take modifiers of their own as in (i).

(i) počti vsički(te) / tvârde mnogo(to)/sâvsem novi(te) knigi
almost all(DEF) / too many(DEF)/absolutely new(DEF) books

I will suggest here that in both cases we do not observe true modification, rather adjunction. *Almost*, *too*, and *absolutely* in (i) above take scope over the Q only and can never take scope over the noun. Also in all three cases, if the DP is definite, the article can only attach to the Q, on a par with adjunction to a modifying adjective.

b. Knigite za vojnata dvete/ mnogoto/ njakolkoto/vsičkite
books$_{DEF}$ about war$_{DEF}$ two$_{DEF}$ / many$_{DEF}$ / several$_{DEF}$ /all$_{DEF}$
gi četox.
them I.read
'I read two/many/several/all books about the war.'

The universal quantifier is also the only one from the Q proper type that disallows movement of a lower modifier of the noun to SpecDP (16). This is predicted by our analysis, as the lower modifier *novi* 'new' starts as a maximal projection in SpecNP and is subject to A–movement to SpecDP. The universal quantifier is generated in SpecQP and blocks this movement, while the rest, being in head positions allow for it.

(16) a. dve(te) / njakolko(to)/ mnogo(to)/ vsički(te) novi knigi
two($_{DEF}$) / several($_{DEF}$)/ many($_{DEF}$)/ all($_{DEF}$) new books
b. novite dve / njakolko/?mnogo/ *vsički knigi
new$_{DEF}$ two / several/ many/ all books

*2.4 NumP vs. QP*

There is an additional restriction which separates the larger class of quantifiers into Q proper and numeral type quantifiers. Bulgarian has a form of the masculine plural morpheme which appears on the head noun only if it is part of a DP quantified by a numeral (17). The count plural form is only allowed with cardinals and *njakolko* 'several' while the regular plural is only allowed with *vsički* 'all', *mnogo* 'many', and *nikolko* 'none' (18).

(17) a. krasivi/ golemi stolove
beautiful/big chairs($_{REG.\ PL}$)
b. dva (krasivi / golemi) stola
two (beautiful/ big) chairs($_{COUNT.\ PL}$)

(18) a. dva / njakolko / *nikolko/ *mnogo/ *vsički stola
two / several / *none / *many/ *all chairs($_{COUNT.\ PL}$)
b. *dva / *njakolko / nikolko / mnogo/ vsički stolove
*two / *several / none / many / all chairs($_{REG.\ PL}$)

We conclude that cardinals and *njakolko* 'several' are inserted in a separate functional projection, namely NumP. The rest of Q proper are generated in QP—the universal quantifier in SpecQP, and 'many' and 'none' in its head position. We note also that there is a further restriction against the overt presence of both Num and Q heads, while there is no such restriction against the coexistence of overt SpecQP and Num$^0$ (19). I will leave the reason for this restriction open for further research.

(19) a. *[$_{QP}$ mnogo [ $_{NumP}$ petnaiset/njakolko [$_{NP}$ stola/stolove]]]
many fifteen / several chairs($_{COUNT.\ PL}$)/($_{REG.\ PL}$)

b. [$_{QP}$ vsički [$_{QP}$ ∅ [$_{NumP}$ petnaiset/ njakolko [$_{NP}$ stola]]]]
all fifteen / several chairs($_{COUNT\ PL}$)

*2.5 A final note*

To summarize the proposal so far, we have suggested that (i) quantifiers are not determiners and (ii) there are three distinct types of quantifiers in Bulgarian—Q proper, numeral type quantifiers, and modifying quantifiers. Members of the former group are the universal quantifier, generated in SpecQP, and *nikolko* 'none' and *mnogo* 'many', generated in $Q^0$. Numeral type Qs (the cardinals and *njakolko* 'several') are generated in $Num^0$. The modifying Qs are generated in Spec*n*P. They are small NPs and block the projection of an extended DP (20).

(20) [$_{QP}$ vsički [$_{QP}$ ∅ [$_{NP}$ knigi]]]
[$_{QP}$ nikolko/mnogo [$_{NP}$ knigi]]
[$_{NumP}$ dve/njakolko [$_{NP}$ knigi]]
[$_{nP}$ vsjaka/njakoja [$_{nP}$ ∅ [$_{NP}$ kniga]]]

Franks and Pereltsvaig (2004) and Pereltsvaig (2005) suggest that small NPs are non-referential in the sense that they disallow an individuated reading of the NP. As they point out, one of the expected consequences is that small NPs and not full DPs are selected as arguments of verbs with cumulative aspectual prefixes. In (21) we see a tripartite distinction due to a difference in the degree of cumulativity of the aspectual prefixes. Crucially, in (21a) we see that the modifying Qs can never serve as complement of a verb with an aspectual prefix. (21b) shows that Q proper can be selected by a verb with an aspectual prefix. The difference in the grammaticality between (21b) and (21c) comes from a different degree of cumulativity of the prefixes. While *na-* has an existential cumulative meaning, *iz-* is a universal cumulative prefix. Thus, the former is compatible with existential quantifiers while the latter is compatible with the universal quantifier only. On the other hand, if both prefixes share the cumulative denotation with the modifying quantifiers in (21b-c), then the ungrammaticality of (21a) should derive from a syntactic restriction. As suggested by Franks and Pereltsvaig (2004), the syntactic restriction is the projection of a small NP, rather then a full DP.

(21) a. Ivan kupi/*nakupi/*izkupi vsjaka/njakoja kniga po istorija.
Ivan bought each / some book on history
'Ivan bought each/some history book.'
b. Ivan kupi/nakupi/izkupi vsički knigi po istorija.
Ivan bought all books on history
'Ivan bought all history books.'

c. Ivan kupi/nakupi/*izkupi njakolko/mnogo/pet knigi po istorija.
Ivan bought some / many / five books on history
'Ivan bought some/many/five history books.'

## 3 Demonstratives

*3.1 Demonstratives* are *determiners in Bulgarian*

So far I have only assumed that demonstratives in Bulgarian are in $Dem^0$ at least by Spell out. At a first glance, demonstratives appear to be the same syntactic category as determiners. Demonstratives, as well as determiners, make NPs definite (22).

(22) a. Tova momče kupi xljab.
this boy bought bread
b. Momčeto kupi xljab.
$boy_{DEF}$ bought bread
'The/this boy bought bread.'

This claim is further supported by the fact that demonstratives, as well as determiners, can license a possessive clitic as in (23). The latter has been shown in a series of papers to only occur in definite environments (cf. D-V & G 1999b, Arnaudova 1995, Tasseva-Kurktchieva 2004).

(23) a. tova mi momče
this my boy
b. momčeto mi
$boy_{DEF}$ my
'my boy'

Further evidence for the syntactic status of demonstratives comes from their ability to co-occur with the definite article. As (24) shows, the two categories do not compete for the same position.

(24) tova goljamoto mi momče
this $big_{DEF}$ my boy

*3.2 Demonstratives are* not *generated in a low(er) FP.*

Recent proposals by Brugè (2002) and Giusti (2002) support claims that the demonstratives are not determiners and that they are generated in a specifier position in the extended NP and later move to SpecDP. Brugè (2002) and Giusti (2002) work on Romance and show that prenominal demonstratives can only occur in indefinite DPs while postnominal demonstratives merely require a definite context (25). For Brugè this is evidence that demonstratives are generated in SpecAgrP where they can (but need not) be selected for by the overt head of DP.

(25) a. băiatul acesta (frumos) (Romanian, from Brugè 2002)
boy$_{DEF}$ this (nice)
b. acest (frumos) băiat
this (nice) boy
c. frumosul (*acesta) băiat
nice$_{DEF}$ (*this) boy
'this nice boy'

Giusti (2002) discusses Spanish, where the demonstrative is to the right of the whole definite DP, as shown in (26). She suggests that the only viable account of the data is to assume that the demonstrative is a maximal element generated in the lowest functional projection. It is further moved by LF to a higher functional specifier to let its interpretive [±deictic] features percolate onto the noun phrase that contains it.

(26) El chico alto este/ese vive cerca de casa.
the boy tall this lives near the house
'This/that tall boy lives near my home.'

Much on the same track, Arnaudova (1998) argues for a lower generation of demonstratives in Bulgarian. She points to the examples in (27), where the demonstrative appears to be a complement of DP. She accounts for the data in (27c) by moving the demonstrative from the specifier of the lower FP to SpecDP and moving the adjective from head of AP to $D^0$.

(27) a. cjaloto tova čakane
whole$_{DEF}$ this waiting
b. *tova cjalo čakane
this whole waitmg
c. tova cjaloto čakane
this whole$_{DEF}$ waiting
'all this waiting'

I would like to propose here that Bulgarian in fact does not in fact provide evidence for a low(er) generation of demonstratives. In (28) we see that (i) the demonstrative cannot always appear between the DP and NP projections (compare also (27a) and (28a)) and (ii) there is no syntactic restriction, rather a semantic one upon the insertion of the demonstrative (compare (27b-c) and (28b)).

(28) a. Visokoto (*tova) momče živee nablizo.
tall$_{DEF}$ (*this) boy lives nearby
b. Tova visoko(to) momče živee nablizo.
this tall$_{(DEF)}$ boy lives nearby
'This/that tall boy lives nearby.'

*3.3 Demonstratives are* not *indefinite in Bulgarian.*
A major point in the argument for lower generation of the demonstrative is the incompatibility of semantic features between definite articles and demonstratives. Ionin (2003) shows that English demonstratives, just like the indefinite article, can be non-definite and either referential or non-referential. Bulgarian demonstratives show different semantic properties. Unlike indefinite DPs, they are always referential. Compare the indefinite DPs in (29) with the demonstrative DPs in (30). An indefinite DP can be either nonreferential (29a) or referential (29b) but the only possible reading of the demonstrative DPs in (30) is the [+def, +ref] one.

(29) a. [(Edin) student]$_{*+REF/-REF}$ v klasa po sintaksis prepisva na izpita.
(one) student in class in syntax cheated on exam
'A student in the syntax class cheated on the xam.'

b. [(Edin) student]$_{+REF/*-REF}$ v klasa po sintaksis kojto ima doktorat
(one) student in class in syntax who has Ph.D.
po astrofizika prepisva na izpita.
in astrophysics cheated on exam
'A student in the syntax class who has a Ph.D. in astophisics cheated on the exam.'

(30) a. [Tozi student]$_{+REF/*-REF}$ v klasa po sintaksis prepisva na izpita.
this student in class in syntax cheated on exam
'This student in the syntax class cheated on the exam.'

b. [Tozi student]$_{+REF/*-REF}$ v klasa po sintaksis kojto ima doktorat
this student in class in syntax who has Ph.D.
po astrofizika prepisva na izpita.
in astrophysics cheated on exam
'A student in the syntax class who has a Ph.D. in astophisics cheated on the exam.'

The demonstratives, as shown above, are not a semantic match for an indefinite DP as they always bring about a referential reading. This also provides a neat explanation of the ungrammaticality of examples such as (9a). If demonstratives are [+ref] they cannot select for small (unindividuated) DPs.

## 4 Putting It All Together

I have shown here that demonstratives are definite determiners of a special kind in Bulgarian. They bring about the definiteness of the whole DP and license a possessive clitic. They can co-occur with the definite article either preceding or following it and serve as its reinforcer. However, demonstratives are a dependent type of determiner as their licensing crucially relies on their sharing the [+def/+ref] features of the

definite article. I have also argued against the low(er) generation of the demonstrative.

In the present analysis I assume that in Bulgarian the adjectives start as maximal projections within SpecNP and move to SpecDP for feature checking purposes, that movement within DP is A-movement,[4] and that projections are only generated if needed. In such a framework the generation position of the demonstrative is in head of DemP, where it selects for DP as its complement, crucially sharing the definiteness and referential features of the DP.

In Section 2 I proposed that the universal quantifier *vsički* 'all' is generated as a maximal projection in SpecQP. From this position it can move to SpecDP if it is generated with the definite article and requires feature checking. As suggested by an anonymous reviewer, there is a slight difference in intonation and interpretation between (31a) and (31b). The former represents the default choice while in the latter case the Q is focused, thus moved across the demonstrative from SpecDP to SpecDemP.

(31) a. $[_{DemP}$ tezi $[_{DP}$ vsičkite$_1$ $[_{DP}$ ∅ $[_{QP}$ $t_1$ $[_{QP}$ ∅ $[_{NP}$ novi $[_{NP}$ knigi]]]]]]]
those all$_{DEF}$ new books

b. $[_{DemP}$ vsičkite$_1$ $[_{DemP}$ tezi $[_{DP}$ $t_1$ $[_{DP}$ ∅ $[_{QP}$ $t_1$ $[_{QP}$ ∅$[_{NP}$ novi $[_{NP}$ knigi]]]]]]]]
all$_{DEF}$ those new books

'all those new books'

I also proposed that the rest of Q proper, namely *mnogo* 'many' and *nikolko* 'none', are generated in the head of the QP projection. If a definite article is also generated, then the quantifier moves to $D^0$. In such configuration the suffixed definite article can check its features against $D^0$ (32). The fact that the quantifier can only appear after the demonstrative (recall (9b)) is also expected under the current analysis, since the demonstrative occupies $Dem^0$ and thus precedes the Q proper.

(32) $[_{DP}$ mnogoto$_1$/nikolkoto$_1$ $[_{QP}$ $t_1$ $[_{NP}$ novi $[_{NP}$ knigi]]]]]
many$_{DEF}$ /none$_{DEF}$ new books

'the many new books'

The numeral type quantifiers—the cardinals and *njakolko* 'several'—were proposed to be generated in the head of the lower NumP projection. From there they can only move to a higher head position ($D^0$) for feature

[4] See for further discussion Tasseva-Kurktchieva (2005) and, for a different view, Arnaudova (1995) and D-V & G (1998). Note also that the analysis I assume goes against the one in Abney (1987) and Bošković (2005), who both predict that adjectives in a language with definite articles select the noun as a complement. For further discussion see Pereltsvaig (2005, in press).

checking purposes. However, as they are heads, they cannot cross over the demonstrative in $Dem^0$.

(33) [$_{DP}$ njakolkoto$_1$/pette$_1$ [$_{NumP}$ t$_1$ [$_{NP}$ novi [$_{N^0}$ knigi]]]]]
several$_{DEF}$/ five$_{DEF}$ new books
'the several/five new books'

Finally, the modifying quantifiers *vseki* 'each/every' and *njakoj* 'some' are generated as modifiers of the head noun in Spec*n*P. Their lexical conceptual structure is incompatible with the [+def, +ref] features of a DP head as they can never be referential; thus, they block the projection of an extended DP (an analysis much in line with Franks and Pereltsvaig (2004) and Pereltsvaig (2005, in press).

(34) [$_{nP}$ vsjaka/njakoja [$_{nP}$ ∅ [$_{NP}$ nova [$_{N^0}$ kniga]]]
every/ some new book
'every/some new book'

In conclusion, I have argued in this paper that Bulgarian provides evidence that we cannot treat all quantifiers as members of the same syntactic category, much less as members of a "uniform" class. I have shown that the demonstrative in Bulgarian is a determiner material of a different kind, generated in its own functional projection DemP and not in the specifier of a low(er) functional projection. This leads to the conclusion that quantifiers in Bulgarian are generated below DP and that the linear order of the functional projections is as in (35).

(35) [DemP [DP [QP [NumP [*n*P [NP]]]]]].

I have proposed that Bulgarian shows syntactic evidence for three major classes of quantifiers—Q proper, numerals, and modifying quantifiers. The lexical conceptual structure of the Q proper and numeral classes is compatible with a DP projection, while that of the modifying quantifiers is incompatible; the latter thus block the projection of the extended DP.

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# Russian Predicate Clefts as S-Topic Constructions*

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Syntactically, Russian predicate clefts (RPCs) have been shown to be instances of VP-preposing (Abels, 2001). The present paper is devoted to exploring the semantics, pragmatics and discourse function of RPCs. RPCs have the surprising property of being associated with adversative clauses of the opposite polarity. This distributional fact is the main puzzle that this paper addresses. It is argued that the association of RPCs with adversative clauses is due to the fact that RPCs are S-Topic constructions in Büring's (1997) sense of the term S-Topic[1]. S-Topics have a special discourse strategy associated with them; this strategy consists of implicating the relevance of a set of questions that are sisters to the question dominating the sentence containing the S-Topic. Phonologically, an S-Topic is marked by an accent that is different from the focus accent. In order to make the case for analyzing RPCs as S-Topic constructions, their intonational and discourse properties will be explored in detail.

The paper is organized as follows. In section 1, contexts in which RPCs are used and their association with adversative clauses are discussed. Section 2 is concerned with the intonational properties of RPCs. In section 3, Büring's theory of S-Topics is introduced and a case is made for analyzing RPCs as S-Topic constructions. A compositional analysis of RPCs is provided. In section 4, it is argued that the association of RPCs with adversative clauses of the opposite polarity is due to the fact that RPCs have discourse function of implicating the relevance of a particular question that is sister to the question dominating the predicate cleft and the overt or implicit adversative clause provides an answer to this question. It is shown that the opposite polarity pattern is

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[1] It needs to be noted here that Büring (1997) uses the term S-Topics (or sentential topics) and Büring (2000) uses the term "contrastive topics" in reference to the same phenomenon.

due to the fact that the use of an RPC gives rise to a relevance-based pragmatic scale. In the concessive clause, a lower value on the scale is affirmed; in the adversative clause, a higher value on the scale is denied, hence the crossed polarity pattern. In section 5, the analysis is summarized.

## 1 The Data

The concessive clause in (1b), 'as far as reading it, he reads it', is an example of an RPC.

(1) a: Is he reading the book?
b: Čitat' -to eë on čitaet, no ne ponimaet.
$\text{read}_{\text{INF}}$ TO $\text{it}_{\text{FEM.ACC}}$ he reads but not understands
'As far as reading it, he reads it, but he does not understand it.'

The speaker of (1b) uses the RPC construction in order to indicate that some other topic[2] than the one addressed by the predicate cleft is more relevant in the given context. The more relevant topic of whether or not the referent of 'he' understands what he is reading is addressed in the adversative clause.

(2) a: Is she keeping in touch?
b: Ona pišet, no zvonit' ne zvonit.
she writes but $\text{call}_{\text{INF}}$ not calls
'She writes but, as far as calling, she does not call.'

In (2b), the cleft occurs in the adversative clause; the more relevant topic is her not calling. The topic addressed by the RPC is always contrasted with some other topic; the speaker uses the RPC to indicate which topic is the most relevant one in the given discourse situation.

In the default case, the cleft is associated with an overt adversative clause. As it will be argued below, in certain contexts, the content of the adversative clause may be conveyed through an implicature. Concerning the role of the topic particle *to*, it needs to be noted that its presence is never obligatory; *to* may encliticize to the preposed verb to mark it as discourse-old in the sense of having been evoked in the prior discourse, as in (1b).

### *1.1 Contexts of use*

RPCs, being instances of preposing constructions, cannot be uttered out of the blue. The predicate cleft in (3) below cannot be uttered in response to a question like, "what's new?"

[2] The term "topic" is not used in the technical sense in section 1.

(3) Begat'-to ona begala, a v magazin ne xodila.
run$_{INF}$ TO she ran but in store$_{MASC\ ACC}$ not went
'As far as running, she ran, but she didn't go to the store.'

(3) can be uttered in response to either of the following questions.

(4) Did she go to the store ?

(5) Did she run?

(6) Has she done everything she planned to?

The verb that is fronted in the predicate cleft may but need not be given. (3) is a felicitous answer to the question in (6) if both interlocutors know that running and going to the store are on her "to do" list. In Ward and Birner's (2001) terms, (3) may be felicitously uttered in response to either of the questions in (4-6) if 'running' and 'going to the store' are in poset relation as alternate members of the inferred poset "her 'to do' list ."

Next, consider the dialogue in (7) in a context where swimming is not something the referent of 'she' is wont to do.

(7) a. What did she do today?
b. # Plavat' ona plavala, no v magazin ne xodila.
swim$_{INF}$ she swam but in store$_{MASC.ACC}$ not went
'As far as swimming, she swam but she didn't go to the store.'

Preposing the verb for "to swim" is infelicitous in this context because swimming is not a member of the inferred poset "activities she is likely to engage in." If the predicate cleft construction is not used, the response is felicitous, as (7c) demonstrates.

c. Ona plavala, no v magazin ne xodila.
she swam but in store$_{MASC.ACC}$ not went
'She went swimming but she did not go to the store.'

*1.2 The association of RPCs with adversative clauses*

The RPC is either associated with an overt adversative clause or the content of the adversative clause is conveyed through an implicature.

(8) Speaker A:
a. What did she do today?
Speaker B:
b. #Guljat' ona guljala.
walk$_{INF}$ she walked
'As far as going for a walk, she went for a walk.'

Even if A and B know that going for a walk is on the list of activities she is likely to engage in, B's response is infelicitous. In contrast to VP-

fronting constructions of the topicalization variety, the predicate cleft in (8b) can not be used to affirm an open proposition, "she did / did not go for a walk.[3] The RPC has discourse function of indicating that some other topic is more relevant in the given context. An RPC may be used without an adversative clause *if the interlocutors share enough information for the hearer to be able to compute the speaker's implicature that otherwise would have been overtly expressed in the adversative clause.*

Whenever a predicate cleft occurs on its own, there is a strong implicature to the effect that there is an issue that the speaker views as more relevant than the one addressed in the monoclausal predicate cleft construction.

(9) a. Did they move to their new office?
b. Pereexat'-to oni pereexali.
move$_{INF}$ TO they moved
'As far as moving, they moved.'
Possible Implicature: but they haven't renovated it.

The implicature that the predicate cleft gives rise to is a conversational implicature, as will be discussed in more detail below.

## 2 Intonation Facts

In this section, it will be demonstrated that a particular intonational contour is associated with RPCs, which will be instrumental in accounting for the association of RPCs with adversative clauses.

(10) a. Who bought the tomatoes?
b. # Kupit' pomidory ona kupila, no salat ne sdelala.
buy$_{INF}$ tomatoes$_{ACC}$ she bought but salad not made$_{PERF}$
'She bought the tomatoes but she hasn't made a salad.'

In (10b), the NP 'she' receives focus because of its status as new information. The only felicitous pronunciation of (10b) is the one where the main pitch accent falls on 'bought', as in (11b).

(11) a. Did she buy tomatoes?
b. Kupit' pomidory ona kupila, no salat ne sdelala.
buy$_{INF}$ tomatoes$_{ACC}$ she bought but salad not make$_{PERF}$
'She bought the tomatoes but she hasn't made a salad.'

[3] One of the discourse functions of English VP-preposing constructions is affirming a speaker's belief in an open proposition that is salient in the previous discourse (Ward, 1990).

(i) Mary said she would go to Boston, and go to Boston she did.

Next, consider the intonation pattern associated with RPCs.

(12) a. Does he know her address?
b. Znat' on ego ne znaet, no poiskat' možet.
know$_{INF}$ he it$_{MASC.ACC}$ not knows but search$_{PERF.INF}$ can
'He doesn't know it but he can look for it.'

The preposed verb 'know' receives a LH* accent; the in-situ tensed verb 'know' also receives a LH* accent, which is the main pitch accent of the sentence. The verb 'can' in the adversative clause receives a L* accent.

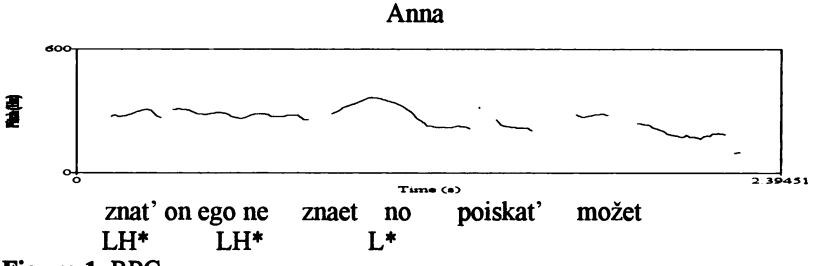



**Figure 1.** RPC

A variety of RPCs was recorded, and this particular intonation pattern obtained in all of them. It was found that there is a special tune associated with RPCs: a LH* accent on the fronted infinitival verb, followed by a high plateau, followed by a LH* accent on the in-situ tensed verb, followed by a high plateau, followed by a L* accent on the focused phrase in the adversative clause.

The LH* accent on the preposed verb is due to the fact that a preposed phrase always receives a LH* accent in Russian. A variety of constructions where a phrase was preposed were recorded and the preposed phrase was invariably marked by a LH* accent.

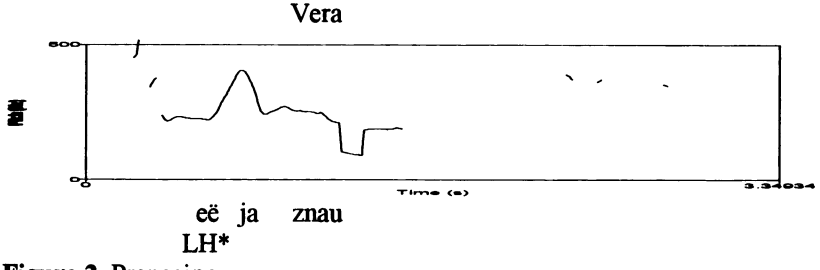



**Figure 2.** Preposing

(13) a. Do you know her?
b. $[Eë]_T$ ja $[znaju.]_F$
$her_{Acc}$ I know
'Her I know.'

The intonation contour associated with the RPC and the association of RPCs with adversative clauses will be accounted for by demonstrating that these properties follow from the fact that RPCs are S-Topic constructions in Büring's (1997) sense of the term.

## 3 Büring's Theory of S-Topics and the S-Topic Discourse Strategy

Büring (1997) introduces the notion of S-Topics to account for the coherence of discourses where one of the interlocutors provides a partial or even a seemingly unrelated answer to his addressee's question.

(14) Speaker A:
a. What book would Fritz buy?
Speaker B:
b. Well, I would buy *The Hotel New Hampshire*. (Büring 1997:66).
L*H

The L*H accent on the "I" in B's response is obligatory in order for it to be a felicitous response to A's question. On the face of it, the Focus value of the answer does not match the meaning of the question. While the question in (14) denotes a set of propositions of the type, "Fritz would buy Y," the focus value of the answer is, "I would buy Y." The dialogue in (14) is coherent because B's response is appropriate with respect to the Discourse-topic that is defined as a set of propositions that are informative with respect to the Common Ground. Propositions of the type, "X would buy Y," are informative with respect to the Common Ground. In, "X would buy Y," the topic as well as the focus introduces a set of alternatives. The Topic value of (14b) can be represented as a set of questions that obligatorily includes the original question, "What book would Fritz buy ?" Questions in the topic value are formed by replacing the S-Topic with an alternative and questioning the focus of the original sentence containing the S-Topic, as in (15).

(15) {What book would I buy?, What book would Fritz buy?,
What book would Mary buy?...} (Büring 1997:66-67).

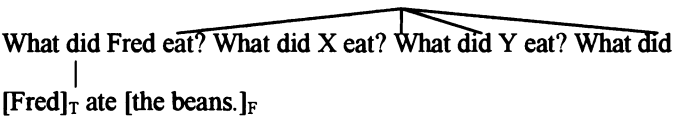
In order for the utterance of a sentence containing an S-Topic to be felicitous, one of the answers to one of the questions in the topic value needs to be under discussion. In (14), the question, "What book would Fritz buy?" is under discussion prior to the utterance of the sentence containing the S-topic. This ensures that the sentence containing the S-

Topic is informative with respect to the Common Ground. The use of an S-Topic is felicitous only if at least one of the alternatives to it is under discussion.

The use of an S-Topic indicates the following discourse strategy. In the discourse tree (d-tree) framework used in Büring (2000), the use of a sentence containing an S-Topic implicates the existence of a set of questions that are sisters to the question immediately dominating the sentence containing the S-topic.

(16) a: What did Fred eat ?
b: $[\text{Fred}]_T$ ate the $[\text{beans.}]_F$
L*H

(17)




The use of the sentence in (16b) indicates a discourse strategy in the sense of implicating the relevance of questions that are sisters to the question immediately dominating the sentence, "Fred ate the beans." The generalized conversational implicature associated with the use of (16b) is that other people ate other foods (Büring 2000:4-7).

*3.1 RPCs as S-topic constructions*

In this section, it will be argued that RPCs are S-Topic constructions in Büring's (1997, 2000) sense of the term. The following conditions need to be fulfilled in order for a construction to be classified as an S-Topic construction.

**1)** Phonologically, an S-Topic is obligatorily marked by a topic accent, and this accent must be different from the focus accent.

As discussed in section 2, in the RPC, the in-situ tensed verb is obligatorily marked by a LH* accent that is distinct from the focus accent.

**2)** The use of a sentence containing an S-Topic is associated with a strategy of implicating that a set of questions that are sisters to the question immediately dominating the sentence containing the S-Topic is relevant. This is precisely the strategy that the use of an RPC indicates.

(18) Emu xotelos' blesnut' i obratitsja k dame na eë rodnom jazyke. Čitat'-to po-bolgarski on čital – kirillica ! – i daže pri ètom koe-čto ponimal, no ustnaja živaja reč' nikak ne poddavalas' ponimaniu: taratorjat.
'He wanted to impress the lady by speaking to her in her native language. As far as reading Bulgarian, he could read it – they used the Cyrillic

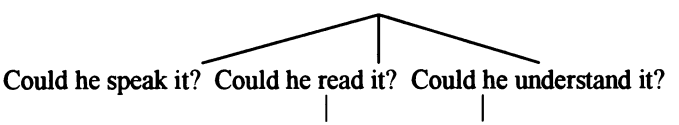
alphabet! -- and he even understood some of what he was reading, but the spoken language he couldn't understand – they were speaking too fast'. (Mamedov, Milkin, The Sea Stories. 2003).

In (18), the underlined predicate cleft cannot occur without being followed by an adversative clause, as (19) illustrates.

(19) Emu xotelos' blesnut' i obratitsja k dame na eë rodnom jazyke.
#Čitat'-to po-bolgarski on čital – kirillica ! – i daže pri ètom koe-čto ponimal.

The use of the RPC in (18) implicates that a question different from the one addressed by the RPC is the most relevant one in the given discourse, namely, the protagonist's command of spoken Bulgarian. As the discourse tree in (20) illustrates, this question is addressed in the adversative clause and is sister to the question immediately dominating the predicate cleft.

(20) How good was his Bulgarian?




as far as reading Bulgarian, he could read it... but the spoken language he couldn't understand...

**3)** In order for the use of a sentence containing an S-Topic to be felicitous, one of the questions that is sister to the question immediately dominating the sentence containing the S-Topic needs to be under discussion. The use of an S-Topic is possible only if at least one of the alternatives to it is under discussion. In (18), the question, "Could he speak Bulgarian?" is under discussion prior to the utterance of the cleft because in the discourse preceding the cleft it is mentioned that the protagonist wanted to speak to the lady in Bulgarian.

*3.2 RPCs as S-topic constructions: A formal account*

First, it needs to be determined what phrase in the RPC can be analyzed as an S-topic. Both the preposed infinitival verb and its in situ tensed copy are marked by the LH* topic accent. As demonstrated, topicalized phrases are marked by LH* in Russian. If the preposed verb alone were construed as an S-topic, it would be puzzling why its in situ tensed copy obligatorily bears the LH* topic accent as well. The in situ tensed verb has the status of being given, thus its being marked with the LH* topic accent must convey some additional meaning. This meaning is that of

being an S-topic; the tensed verb in situ will be analyzed as an S-topic in Büring's sense of the term.

In Büring's framework, the S-topic introduces a set of alternatives. In the case of RPCs, the verb in situ is an S-Topic that introduces a set of alternatives. Crucially, the adversative clause associated with the cleft is a member of this set. This is due to the fact that the use of a predicate cleft is associated with a strategy of implicating that a set of questions that are sisters to the question immediately dominating the cleft is relevant; the adversative clause is an answer to one of these questions.

Consider how this would work on the following constructed example.

(21) Čitat' Maša čitaet, no ne ponimaet.
read$_{INF}$ Masha read but not understand
'As far as reading, Masha reads but she does not understand what she is reading.'

(22) As far as reading, Masha [reads]$_T$ but she does not [understand]$_F$

The focus on the verb "understand" introduces a set of alternatives. The focus value of (22) is given in (23).

(23) {read Masha read but not understand, read Masha read but not write...}

The Topic value of (22) is a set of such sets with alternatives to the S-Topic. Consider Büring's interpretation rule (37) in the Appendix for deriving the topic value of a sentence in which one phrase is topic-marked and another one is focus-marked. By rule (37), the topic value of (22) is as in (24):

(24) {{read Masha read but not understand, read Masha read but not write...}, {sing Masha sing but not understand, sing Masha sing but not write...}}

Consider Büring's (1997) interpretation rule for deriving the topic value of a sentence given in (38) in the Appendix. By the rule in (38), the topic value of (22) is as follows.

$[[22]]^t = \lambda P.\ \exists H\ [H \in ALT\ (read') \ \&\ H(Masha) \ \&\ P = \lambda p.\ \exists Q\ [Q \in ALT\ (understand') \ \&\ H \in ALT\ (understand') \ \&\ p = \neg Q\ (Masha)]]$

*3.3 The compositional analysis of RPCs*

Abels' (2001) syntactic analysis of RPCs will be adopted here. Abels (2001) argues for the movement analyses of RPCs, with both copies of the verb being phonetically realized.

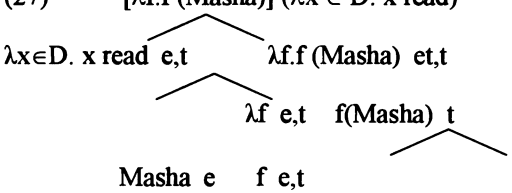
(25) [$_{CP}$... [$_{XP}$ [$_{VP}$...$V_{inf}$...]...[*-to*...[$_{IP}$...$V_{fin}$...]]] (Abels, 2001, p. 10).

Next, consider a constructed RPC in (26) and its semantic derivation in (27) below.

(26) Čitat' Maša čitaet.
read$_{INF}$ Masha reads
'As far as reading, Masha reads.'

In my semantic analysis, I am ignoring the difference between the infinitival verb and the tensed verb. In (27) below, first, the function f that is a trace of the moved VP combines with the NP "Masha."
Then lambda abstraction over f takes place. After that, the infinitival verb is combined with the product of the lambda abstraction, which results in the RPC meaning on top of the tree.

(27) [λf.f (Masha)] (λx ∈ D. x read)




The truth conditions of the sentence in (26) are as in (28).

(28) [λf.f (Masha)] (λx ∈ D. x read) = 1 iff Masha reads.

In the tree in (27), I provided a compositional analysis of the RPC in which the verb "read" is used intransitively. It needs to be noted here that my analysis would have to be elaborated to account for RPCs with transitive verbs in which the direct object may either be preposed as part of the preposed VP or, alternatively, is scrambled out of the VP, with the VP being subsequently preposed.

## 4 Why RPCs are Associated with Adversative Clauses

As demonstrated, RPCs have discourse function of S-Topics -- the use of an RPC indicates a strategy that consists of implicating the relevance of a set of questions that are sisters to the question immediately dominating the RPC. In addition, the speaker of an RPC indicates the following sub-strategy. This sub-strategy consists of indicating which specific question among the set of questions that are sisters to the question immediately dominating the RPC is relevant in the given discourse. As previously argued, the adversative clause can be implicated rather than overt if the following condition holds.

*The interlocutors share enough information for the hearer to be able to compute the speaker's implicature that otherwise would have been overtly expressed in the adversative clause.*

When contextual information is not sufficient for the addressee to infer from the context the question whose relevance is implicated by the use of an RPC, the speaker uses an overt adversative clause that provides an answer to this question. When the addressee is able to infer the question and the answer to it from the context, the content of the adversative clause providing the answer may be expressed through a conversational implicature.

*4.1 The crossed polarity pattern and pragmatic scales*

Whenever an RPC is followed by an overt adversative clause, the polarity of the adversative clause is the opposite of that of the cleft (e.g., (1), (2), (18)).

The following constructed examples demonstrate that violating the crossed polarity pattern requirement leads to deviance.

(29) a. Did she buy tomatoes?
b. *Kupit' pomidory ona kupila, a ogurcy u neë byli.
buy$_{INF}$ tomatoes$_{ACC}$ she bought but cucumbers$_{ACC}$ at her were
'She bought the tomatoes but the cucumbers she already had.'
c. Kupit' pomidory ona kupila, a ogurcy ne kupila.
buy$_{INF}$ tomatoes$_{ACC}$ she bought but cucumbers$_{ACC}$ not bought
'She bought the tomatoes but the cucumbers she didn't buy.'

The contrast between (29b) and (29c) demonstrates that the reason why the RPC in (29b) is deviant is that the crossed polarity pattern requirement is violated.

Next, consider an RPC where both the clause containing the cleft and the adversative clause have negative polarity.

(30) a. Has she answered the email?
b. *Otvetit' ona ne otvetila, no u neë ne bylo vremeni.
answer$_{INF}$ she not answered but at her not was time
'She didn't answer the email but she didn't have time.'

If a predicate cleft is not followed by an overt adversative clause, it gives rise to an implicature of the opposite polarity, as (31) illustrates.

(31) Context: A and B know that Mary is not sure if she should write to John or not.
Speaker A:
a. Did Mary write John a letter?

Speaker B:
b. Napisat'-to pis'mo ona napisala.
write$_{INF}$ TO letter she wrote
'As far as writing the letter, she wrote it.'
Implicature: the speaker does not know if Mary sent the letter.

I would like to adopt Lee's (2002) insight that the use of CT (or S-topic, in Büring's terms) gives rise to a scale, as a result of which the polarity of the proposition that is implicated is opposed to that of the proposition given rise to by the clause containing the S-topic. According to Lee (2002), the use of a CT gives rise to a Horn scale. However, I will demonstrate that the scale that the use of an RPC gives rise to is not a Horn scale, but, rather, a relevance-based pragmatic scale. A constructed example in (32) illustrates that the use of an RPC gives rise to a pragmatic scale; "loving French" does not entail "knowing French."

(32) Context: A and B are trying to decide if Miss Clark or Mary would be a better French tutor for their son. A knows nothing about either of the two candidates, and B knows that Miss Clark has a degree in French but doesn't like French and that Mary loves French but is incompetent.

Speaker A:
a. Would Miss Clark be a good tutor?
Speaker B:
b. Znat' francuskij ona znaet, no ne lubit.
know$_{INF}$ French she know but not love
'As far as knowing French, she knows it, but she doesn't like it.'

The pragmatic scale relevant for (32) is as in (33):

(33) <love French, know French>

The question under discussion (QUD)[4] that the RPC in (32b) addresses is, "Would Miss Clark be a good tutor?" If speaker B were to follow up his utterance with, "I think that she would make a good tutor," he would sound contradictory. A natural continuation of (32b) is, "So I don't think she would make a good tutor." This is evidence to the effect that B's response conveys a negative answer to the QUD—"no, Miss Clark wouldn't be a good tutor." The concessive and adversative clauses of B's reply in (32) constitute two parts of his answer to the QUD. The concessive clause containing the cleft provides an inconclusive answer to

[4] In the pragmatic literature, the term QUD is often used in reference to different phenomena. In the present paper, I am using the term QUD in reference to the either explicit or implicit question that is the most salient one during a given stage in the conversational exchange. Büring (2000) uses the term "question under discussion" in reference to the same phenomenon.

the QUD. It is the adversative clause that implicates the negative answer to the QUD that speaker B wishes to convey. These intuitions about the exchange in (32) are reflected in the scale in (33). "Love French" is stronger than "know French" on the pragmatic scale based on *relevance to the QUD*.

While both items on the scale are relevant to answering the QUD, only the fact that the higher item that does not hold provides the conclusive negative answer to the QUD, which makes it more relevant or more informative with respect to the QUD than the weaker item is. Thus the scale in (33) is based on the degree of relevance in the given context in the sense of relevance to the QUD.

Next, consider the dialogue in (34) that takes place in the same context as the one in (32).

(34) a. Would Mary be a good tutor?
b. Lubit' francuskij ona lubit, no počti ne znaet
love$_{INF}$ French she love but almost not knows
'As far as liking French, she likes it, but she hardly knows it.'

As in (32), in (34), B's response may not be felicitously followed up with, "I think that she would make a good tutor." B's response conveys a negative answer to the QUD, "Would Mary be a good tutor ?" The exchange in (34) gives rise to the following scale.

(35) <know French, love French>

"Know French" is ranked higher than "love French" because the concessive clause in which the value "love French" is affirmed does not answer the QUD conclusively. In other words, "know French" is ranked higher because its denial provides a conclusive answer to the QUD that speaker B wishes to convey.

To summarize, RPCs are associated with clauses of the opposite polarity for the following reason. The use of an RPC introduces a pragmatic scale, and the concessive clause affirms a lower value on the scale, while the adversative clause denies that a higher value holds. This observation is formalized in (36).

(36) The proposition given rise to by the RPC containing an S-topic predicate P is contrasted with an either overt or implicit adversative proposition "'but' ¬ Q" for positive clefts and "'but' Q" for negative clefts, with predicate Q being stronger than P on the relevance-based pragmatic scale that the RPC gives rise to.

## 5 Conclusion

The main puzzle that was addressed here was the association of RPCs with adversative clauses of the opposite polarity. It was argued that the

association of RPCs with adversative clauses was due to the fact that, in addition to giving rise to the strategy of implicating the relevance of questions that are sisters to the question directly dominating the sentence containing the cleft, the speaker of an RPC indicates an additional sub-strategy. This sub-strategy consists of indicating which specific question among the set of questions that are sisters to the question immediately dominating the RPC is relevant in the given discourse. Typically, an RPC is associated with an overt adversative clause; alternatively, the content of the adversative clause may be implicated if the following condition holds. *The interlocutors share enough information for the hearer to be able to compute the speaker's implicature that otherwise would have been overtly expressed in the adversative clause.*

When the speaker and the addressee do not share sufficient contextual information for the addressee to infer the relevant new question from the context, the speaker uses an overt adversative clause that provides an answer to this question. When the addressee is able to infer the question and the answer to it from the context, the content of the adversative clause providing the answer may be expressed through a PCI. As far as the opposed polarity pattern is concerned, it was argued that it arises because the use of an RPC gives rise to a pragmatic relevance-based scale. The concessive clause affirms a lower value on this scale and the higher value is denied in the adversative clause.

Next, consider how RPCs fit into the category of VP-fronting constructions cross-linguistically. VP-fronting constructions have been attested in a wide variety of languages, including Haitian Creole, Yiddish, Swedish, Norwegian, Catalan, Brazilian Portuguese, Hebrew and Russian. VP-fronting constructions in a given language may have a specialized discourse function of affirming or denying an open proposition that is present in the prior discourse (see Kallgren & Prince (1989) on VP-fronting constructions in Swedish). The distinguishing characteristic of predicate clefts (PCs) attested in Haitian Creole and Korean is that these are obligatorily associated with a contrastive interpretation (Larson & Lefebvre 1991 and Lee 2000). In Haitian Creole PCs, the clefted predicate is understood as contrasting with some other verb that may be implicit in the discourse. In Korean PCs, an adversative 'but' clause typically follows the cleft; alternatively, its meaning may be conveyed through an implicature (Lee 2002). In Hebrew, the constructions in question can have either a non-contrastive or a contrastive interpretation. In the contrastive cases, the proposition expressed by the clause containing the fronted verb is typically construed as a concessive admission and a contrastive proposition is either implied or overtly expressed by a 'but' clause (Landau, 2004). While there is no one-to-one correspondence between a given construction and its discourse function in a given language, languages vary in the degree to which the discourse

function(s) of a given construction is (are) fixed. In the case of RPCs, it was shown that these are S-Topic constructions that have the limited discourse function of indicating which question is the most relevant one in the given discourse.

## Appendix

Topic semantic value:

(37) $[[\text{HANS}_T \text{ IS COMING}_F]]^t = \{\{Ch, Lh\}, \{Cf, Lf\}, \{Cm, Lm\}\}$
(L = is leaving)

The topic value of (37) may be represented as follows using λ-notation:

(38) $[[37]]^t = \lambda P.\ \exists x\ [x \in ALT\ (hans)\ \&\ P = \lambda p.\ \exists Q\ [Q \in ALT\ (is\text{-}coming)\ \&\ p=Q(x)]]$ (based on Büring 1997, pp. 78-79).

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# Subjects of Different Heights*

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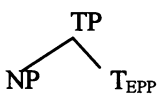
The EPP feature began life as an annotation on other features—'feature strength'—in work of the 90's. If Tense was strong, then it forced movement to SpecTP; so understood, (1) is an appropriate notation: EPP is an annotation on Tense.

(1)




But in work of the 00's, the EPP feature took on a life of its own, in that it could be satisfied independent of the satisfaction of the feature annotated; for example, in the analysis of existential sentences in Chomsky 2001, the dissociated EPP feature is satisfied by *there,* whereas the Tense feature itself is satisfied by its relation to the 'associate', as diagrammed in (2a). In such an analysis, the EPP feature has a behavior not tied to the behavior of its supposed host feature, and so the notation in (2a) is at least misleading:

(2) a. There $T_{EPP}$ is a man ...

b. There T is a man ....

In Williams (1994, forthcoming) I argue that the syntactic relations of existential sentences is that given in (2b), rather than (2a). Specifically, the expletive is the thematic subject of the associate, and the associate itself is a predicative nominal. So "there is a man" has the same thematic structure as "John is a man." If this conclusion is correct, then there is no argument from this construction type for an EPP dissociated from the feature it controls—T relates to the expletive both with regard

* Thanks to Len Babby, Julia Belopolsky, Elena Chernishenko, and James Lavine for extensive discussion, to Andrew Nevins and Celine Rodrigues for helpful email correspondence; and to the audience at FASL14 for valuable reaction.

to the business of T (Nominative case assignment) and to the requirements of the EPP; and the relation to the associate is only indirect, via the subject-predicate relation between the expletive and the associate. So, the EPP can be seen to control how the T feature is satisfied, and cannot be satisfied on its own.

But in Lavine (2000), Bailyn (2004), and Babyonyshev (1996) there is a different, powerful argument for the dissociation of the EPP from the Tense feature. Lavine and Bailyn in particular argue that in a range of impersonal and other constructions, that the appearance of non-agreeing non-nominative NPs in preverbal position is evidence of EPP dissociation:

(3) a. "Bad Health" verbs
[$_{?P}$ Borisa [$_{vP}$ tošnilo]]
Boris$_{ACC}$ feels-nauseous
b. Adversity Impersonals
[$_{?P}$ Rabočego [$_{vP}$ ubilo oskolkom plity]]
worker$_{ACC}$ killed shard concrete$_{INST}$
c. Dative-Nominative verbs
[$_{?P}$ Saše nravitsja Boris]
Sasha$_{DAT}$ likes Boris$_{NOM}$
d. Nominative-Accusative Inversions
[$_{?P}$ ètu knigu čitaet Boris]
this book$_{ACC}$ reads Boris$_{NOM}$

In each of these, Lavine (2000) and Bailyn (2004) argue that the preverbal NP satisfies the EPP feature of T by moving to the Spec of TP, whereas the postverbal Nominative satisfies T itself (in (3c-d)).

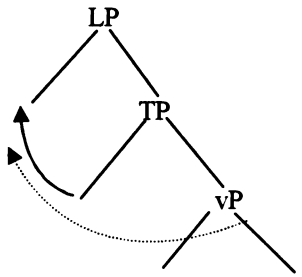
Following a suggestion in Williams (2003), I will argue instead that there is a projection above T, which I have called "Logical Phrase" ("LP") which hosts the non-agreeing subjects:

(4) [$_{LP}$ Rabočego [$_{TP}$ [$_{vP}$ ubilo t oskolkom plity]]] (3b)

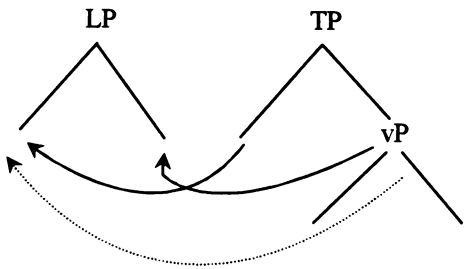
In Russian, LP has the EPP property, and TP does not; in English, the reverse holds.

I will consider two implementations of the idea. In the more standard implementation, LP is simply a functional projection above TP (5a). But I will also consider an implementation in the spirit of "Representation Theory" (Williams (2003). In RT different levels of clause structure are independent little trees, with "early" trees (e.g. Theta Structure) mapped into "later" trees (Case Structure, Topic Structure, etc.) as isomorphically as possible (5b). For most of the considerations here either implementation will do, but for an argument based on Control, and for an analysis of the "Nom-Acc" inversion case in (3d) above, the RT implementation has an advantage.

(5) a. Standard Theory




b. Representation Theory




In both these representations the solid lines represent the canonical mappings, and the dotted lines the noncanonical.

The account offered here differs in empirical detail and in conception from other accounts of the EPP in Russian. In Bailyn (2004), and in Lavine (2000) (see also Lavine and Freidin (2002)), as already mentioned, T and EPP are separately satisfiable features of TP, and the preverbal NPs in (3a-d) map to SpecTP, and so both are different from the present account. Bailyn differs from Lavine in including the Nom-Acc inversion cases (3d) under the EPP regime, and in this I follow Bailyn. For both Bailyn and Lavine, SpecTP is an A-position. Babyonyshev (1996), following Branigan (1992), suggests that the T and EPP belong to two separate nodes, T (an A-position) and above it, $\pi$ (an A-bar position); the preverbal NPs in (3a-d) map to Spec$\pi$P. The account offered here is different in that the EPP property is not a feature with its own projection, but is rather a geometric requirement of potentially any level. Futhermore, The SpecLP is, in the spirit of RT, rather mid-way between an A-position and an A-bar position. One of the distinctive features of RT is that it parameterizes the A/A' distinction by Functional Structure, with an A, A', A''... $A^n$ series of possibilities. The higher the target of movement, the more "$A^n$-like" the movement is. $A^i$ movements reconstruct for all $A^j$ relations for $j<i$; for other differences see Williams (2003) chapter 3.

## 1 A/A-bar Status of SpecLP

Bailyn (2004), Lavine (2000), and Lavine and Freidin (2002) argue that the non-agreeing subjects are in an A-position, which they reason to be

SpecTP. I will presume the correctness of my hypothesis and refer to the position of these subjects as "SpecLP". Bailyn differs from Lavine in including the Inversion cases (3d) in the list of such cases. The arguments presented are based on Binding Theory—if the SpecLP is filled by an A-movement, then that position should act like a basic, underived position for the purposes of the Binding Theory. The results of checking the relevant set of cases is quite mixed. For Weak Crossover and for Condition C, it appears that SpecLP is an A-position; but for conditions A and B, it is hard to draw conclusions, as the examples that are supposed to be grammatical are doubtful.

Examples in (6) show that SpecLP does act like an A position:

(6) WCO, Adversity Impersonal

a. [Každymnovym sapogom]$_i$ natiraet nogu ego$_i$ nositelja
every new boot$_{INST}$ rubs [foot$_{ACC}$ of-its wearer] $t_{INSTR}$

Pure Inversion

b. [Každuju devočku]$_k$ ljubit ee$_k$ sobaka $t_k$
every girl$_{ACC}$ loves her dog$_{NOM}$ $t$
'Every girl is loved by her dog.' (Lavine and Freidin, Bailyn)

c. *[Každuju devočku]$_k$ ee$_k$ sobaka $t_k$ ljubit
every girl$_{ACC}$ her dog$_{NOM}$ loves $t$
'Every girl is loved by her dog.' (Bailyn)

In (6a), the filling of SpecLP does not create a weak crossover violation, suggesting that it is an A-position. (6b) shows the same thing for the Inversion cases. (6c) shows that fronting the direct object over the subject does create a weak crossover violation, suggesting that the accusative in (6c) occupies an A-bar position different from, and higher than, SpecLP, compared to the accusative in (6b), which occupies SpecLP, an A-position. From this we conclude, as Bailyn does, that the inversion structure is not simply the result of generalized scrambling, for generalized scrambling would presumably give (6b) and (6c) the same status.

Examples in (7) show the same thing but using condition C:

(7) BT-C, Possessor Inversion

a. Znakomye Ivana$_i$ žili u nego$_i$
friends$_{NOM}$ of-Ivan lived at him
'Friends of Ivan$_i$'s lived at his$_i$ house.'

b *U nego$_i$ žili znakomye Ivana$_i$. (Bailyn)
at him lived friends$_{NOM}$ of-Ivan's
'At his$_i$ house lived friends of Ivan$_i$'s.'

(7a) is a base structure, and (7b) is an inversion structure; the latter form does show Condition C effects, suggesting that the preverbal position is

an A-position.

So both WCO and Condition C agree on the status of the non-agreeing subject position. But Conditions A and B are less clear. (8) shows examples relevant to Condition A:

(8) BT-A:
a *Svoi podčinennye volnujut Ivana (Inversion)
[self's subordinates]$_{NOM}$ worry Ivan$_{ACC}$
'Self's subordinates worry Ivan.'
b. ?Ivana volnujut svoi podčinennye (Inversion)
Ivan$_{ACC}$ worry [ self's subordinates]$_{NOM}$
'Ivan is worried by his subordinates.' (Bailyn)

(8a) is a base structure, and is expectedly ungrammatical. But the inverted structure is only somewhat better, by Bailyn's report. Likewise, for condition B:

(9) BT-B:
a. *Ivan$_i$ ljubit ego$_i$ druzej.
Ivan$_{NOM}$ loves [ his friends]$_{ACC}$
'Ivan$_i$ loves his friends$_i$.'
b. ??Ego$_i$ druzej ljubit Ivan$_i$ (inversion)
[his friends]$_{ACC}$ loves Ivan$_{NOM}$
'His$_i$ friends are loved by Ivan$_i$.'
c. *Ego$_i$ druzej, my xotim, čtoby Ivan$_i$ poljubil
[his friends]$_{ACC}$ we want that Ivan$_{NOM}$ loved
'is$_i$ friends, we want Ivan$_i$ to love.' (Bailyn)

Again (9a) is the base order, expectedly ungrammatical (assuming a slight difference from English, where such examples are grammatical). Again, the inverted structure is only somewhat better, making it hard to draw conclusions about the nature of SpecLP. Importantly, the topicalization structure in (9c) is fully as bad as (9a); this at least shows that the topicalization structure is unambiguously an A-bar position, leaving the inverted subject in (9b) in an indeterminate status.

I think the mixed results might have to do with the basis of the binding theory, and the A/A' distinction itself. In Williams (2003) I suggested that the A/A-bar position needs to be parameterized (A, A', A''', etc), and functional structure provided the set of parameters. One feature of the A/A' distinction is that A-bar movements (e.g. WH-movement) reconstruct for A-relations (e.g. reflexive binding); this same relation holds also for the parameterized distinction.

Given that there is a scale of A/A'-ness, it is no longer correct to ask whether a given rule or position is an A or A' rule or position; rather, one must ask, which level of structure is the rule associated with. Saying, for

example, that Reflexive binding is a rule of type "vP" on the A/A'/A"/... scale is the same as saying that it applies in the structure vP, which is then mapped to a TP structure, etc., and since WH applies later than vP structure, WH will appear to "reconstruct" for Reflexive binding. In fact, reflexives themselves are a mixed bag across languages, having different locality conditions; this is modeled by assigning them to different RT levels (Williams 2003, ch. 4).

Assuming a range of values for the A/A' distinction, there is no longer any necessity for the binding theory to apply all at one level. And in fact I think that the mixed results obtained by applying the familiar tests to SpecLP probably reflect this. We might imagine, for example, that the assignment of binding theory rules to functional levels, at least for Russian, was something like the following:

(10) Generalized A/A':

| ThetaP ← | SpecvP ← | SpecTP ← | SpecLP ← | SpecCP |
|---|---|---|---|---|
| | A | B | WCO, C | |

That is, WCO and Condion C take SpecLP subjects as basic and underived, but A and B only take SpecvP and SpecTP subjects, respectively, as basic and underived. Such an assignment is fully consistent with the A-like character of SpecLP shown by WCO and Condition C tests. And the funny results for A and B could well be due to the fact that Condition A in Russian really requires an antecedent in SpecvP, but that Specs of later structures simply get worse and worse as antecedents. In the impersonal cases, the SpecLP subject is not a SpecTP or SpecvP subject, and so gives a degraded result, but an antecedent that is not a "subject" until SpecCP (as in the the topicalization case (9c)) gives a completely unacceptable result.

## 2 Properties of LP

We may now state in a preliminary way the properties of LP and TP.

1. LP is smaller than CP:

(11) a. Ja sprosil, počemu ego ubilo oskolkom plity
I asked why $he_{ACC}$ killed $shard_{INST}$ of-concrete
b. Ja sprosil, začem ètu knigu čitaet Boris
I asked why this $book_{ACC}$ read $Boris_{NOM}$

The examples (11) show that the position occupied by non-agreeing subjects is lower than CP, since CP structure is not excluded by their presence.

2. LP, like TP, can have the EPP property. We will suppose that in

Russian LP has it and TP not, and the reverse in English. The EPP is a geometrical property of structures, roughly:

(12) for head H, is [H ...] allowed apart from [XP [H...]]?

3. LP is intermediate between TP and CP with respect to the A/A' distinction.

4. General XP can fill SpecLP; we know this from the possessor inversion structures:

(13) U nas rodilas' dočka
at us was-born $\text{daughter}_{\text{NOM}}$ (Bailyn)

5. LP is a Verb-second structure (6b vs c).

## 3 Properties of TP

The properties of TP are somewhat simplified, due to the existence of LP.

1. Since LP is the position in which non-agreeing subjects appear, TP can host exclusively agreeing subjects. In fact, TP must be restricted to agreeing subjects, to keep non-agreeing subjects from moving there.

2. TP need not be restricted to NPs. It is sometimes concluded from examples like (14a-b) that TP must admit other categories than NP:

(14) Locus of Nominative case, subject-agreement
Is TP restricted to NPs?
a. Down the hill was rolling the ball
b. *Was down the hill rolling the ball?
c. Down the hill and over the dale was/*were rolling the ball.
d. In the basement was an umbrella stand
e. In the basement was a good place to hide.
f. *Was in the basement an umbrella stand?
g. Was in the basement a good place to hide?
h. *In the basements were good places to hide
i. In the basement and in the septic tank were good places to hide
j. In the basement and in the septic tank were good
k. Down the hill were rolling the balls

In the present model this is a correct conclusion, but wrong reasoning. The preverbal PP in such cases is non-agreeing, as (14c) shows. Furthermore, such PPs cannot undergo Subject-Auxiliary Inversion.

On the other hand, PP subjects like (14e) are truly in SpecTP.

Actually (14e) is ambiguous. On one reading, it says of "in the basement" that it is a good place to hide; on the other, it says that in the basement there is a good place to hide; in only the first reading is the PP in SpecTP. Only in the first reading is there a "thematic predication" relation between the preverbal XP and the VP itself. Only on that reading is Subject Auxiliary Inversion grammatical, as the grammaticality and unambiguity of (14g) shows. On the "thematic predication" reading, even agreement holds. Of course the agreement cannot be registered on the NP in the PP, since the NP is not the head of the PP (14h), but if the subject is coordinated PPs, the plural agreement holds. The agreement in (14i) is with the subject, not the postcopular NP, as (j) shows, where the agreement still holds, but there is no postcopular NP. Finally, when the preverbal XP is not agreeing, agreement holds between the VP and the postverbal NP; we presume that the postverbal NP is in SpecTP, as SpecTP is obligatorily filled in English, and that Verb Movement from T to L has taken place.

The conclusions we may draw from this are manifold:

(15) a. Neither SpecLP nor SpecTP is restricted to NPs
b. Agreement is obligatory for SpecTP
c. Only the thematic* subject of vP can target SpecTP[1]
d. Both TP and LP have the form XP V ...
e. NP is not the head of PP.

We assume that for a given language, either SpecTP or SpecLP can have the EPP property; so, under the analyses given so far, we need the following assignments for English, Russian, and Icelandic (discussion to follow):

(16) Variation:
a. Russian TP: -EPP
b. Russian LP: +EPP
c. English TP: +EPP
d. English LP: ?
e. Icelandic TP: +EPP
f. Icelandic LP: -EPP

## 4 Control

An argument for the conclusions in (15) and (16) can be derived from the behavior of Control in Russian. The argument depends on a feature of the Representation model (Williams (2003)), which I called "The Level

[1] This means that passive and raising target SpecvP first, a conclusion I have long thought reasonable independently.

Embedding Conjecture" (LEC). According to that hypothesis, sentential embedding can be embedding of any level of functional structure (i.e. VP, vP, TP, LP, CP), and the embedding takes place at the (first) level at which the relevant functional structure is defined. So, for example, TP complements are embedded at the TP level, and so are embedded earlier than CP complements, since CP complements are "larger" and therefore "later."

If we assume that obligatory argument control (OC) (that is, control of the subject of a verb's complement clause by another argument of the verb) takes place by, for example, the TP level (or possibly earlier), then we predict that the controlled clause itself can only be of size TP, and not, in particular, LP or CP; under such an assumption, (17a) is the structure of the OC construction. The construction itself is assembled at the TP level, as indicated in (17).

(17) a. I want [PRO to leave]$_{TP}$
b. TP: [I want ]$_{TP}$, [PRO to leave]$_{TP}$, → [I want [PRO to leave]$_{TP}$ ]$_{TP}$
c. I wonder [$_{CP}$ who [PRO to talk to]]
d. I wonder [$_{CP}$ who [PRO to give oneself up to]]
e. *I want [$_{TP}$ to give oneself up to]]
f. I bought a book [OP$_i$[to read t$_i$ ]] (adjunct)
g. i. *I want [OP$_i$[PRO to talk to t$_i$ ]] (argumental control)
ii. *I want [who Bill talked to]

These assumptions predict limits on the occurrence of OC; in particular, they predict that OC will be impossible in the presence of overt CP material in the controlled clause. (17c) is a potential case, but as is well known, the subject of an infinitival question is assigned "arbitrary" control, as shown in the contrast between (17d) and (17e). The reason for this restriction is that the infinitival question is not embeddable until the CP level, by which time it is too late for OC.

The LEC also predicts that there cannot be "CP-mediated" OC; that is, there cannot be cases of argument OC in which a PRO-like element is moved to CP and controlled in that position by an argument of the embedding verb. The examples in (17g) are attempts to construct such cases in English, and they are ungrammatical. Of course in particular cases the failure can be ascribed to the properties of particular verbs (e.g. *want* does not take a CP complement), but the prediction is really about the complete absence of such cases. Their absence is all the more striking in light of the existence of CP-mediated control for adjunct modification (17f). If the mechanism is present anyway as (17f) shows it is, then why is it not used for OC? LEC says why.

Nevins (p.c.) has brought to my attention the fact that Brazilian Portuguese has OC clauses with complementizers. At first glance these look like counterexamples to the LEC prediction, but a closer look shows

them not to be:

(18) a. O Joao esqueceu [que PRO comeu ]
the John forgot that ate
'John forgot that he ate.'
b. Que que o Joao esqueceu [ que PRO comeu *t* ]
what COMP the John forgot that ate
'What was it that John forgot that he ate.'
c. *O Joao esqueceu [ o que comeu]
the John forgot the what ate
'John forgot what he ate.'
d. O Joao esqueceu [ quando comeu]
the John forgot when ate
'John forgot when he ate.' (examples from Rodrigues (2004))

(18a) illustrates finite control with a complementizer, suggesting that OC occurs with CP structure, contrary to the predictions of LEC. I will suggest instead that *que* here is not a C, but something comparable to infinitival *to* in English, and so the embedded clause is not a CP. (18b) shows that WH-extraction from the embedded clause is grammatical, but WH movement to the beginning of the clause is ungrammatical. This is expected, if the controlled clause is a "small clause" entirely lacking CP structure, as the LEC requires. But (18d), which has an adjunct WH word at the head of the OC clause, draws that into doubt again, suggesting that CP structure can be present in OC clauses, at least when the WH word is an adjunct.

However, there is an important difference between (18c) and (18d): in (18d), movement is not necessary to generate the structure, whereas for (18c), movement is necessary. If CP structure is necessary for WH movement, we could imagine then that CP is present in (18e), but not in (18d). The adjunct in (18d) is actually a prefix operator, not evidence of WH movement. Convincing evidence for this view comes from the fact that in cases where movement is necessarily involved, as when it is long-distance, the result is ungrammatical even if the WH word is an adjunct:

(19) *[O Joao$_i$ esqueceu [ quando [ $e_{i/*j}$ disse que [a Maria saiu *t* ]]]]
the Joao forgot when said that the Maria left
'Joao forgot when he said that Mary left.' (Rodrigues, p.c.)

In this example, the adjunct modifies the embedded verb, entailing actual movement, entailing CP structure; the LEC then correctly predicts that OC is ungrammatical for such a case.

The difference between (19) and (18d) is paralleled by the following difference between English tensed adjuncts and "small clause" adjuncts:

(20) a. John left when [he said [he would *t*]]

b. John left when [saying he would]

(20a) is ambiguous, between a reading where the *when* comes from the complement of *said,* and another in which it comes from the matrix of the adjunct. (20b) has only the latter reading; the reason is that gerunds lack CP structure and therefore do not support movement. For (20b), *when* must be an operator prefixed to the gerund, rather than evidence of full CP structure. he intricate predictions that the LEC makes about Portuguese, in particular the difference between (19) and (18d), provide strong evidence of the power of the LEC in this domain.

Russian has OC, as well as "arbitrary" control for infinitival questions, just like English:

(21) a. Ja xoču čitat' ètu knigu.
'I want to read this book.'
b. Ja sprosil, kogda čitat' ètu knigu.
'I asked when to read this book.'

However, impersonal 'subjects' cannot be the target of OC:

(22) a. *Ja ne xoču tošnit'.
'I don't want to feel nauseous.'
b. *Ja ne xoču ubit' oskolkom plity.
I NEG want to-kill $\text{shard}_{\text{INST}}$ of-concrete
'I don't want to be killed with a shard of concrete.'
c. *Saša xočet nravit'sja deti.
$\text{Sasha}_{\text{NOM}}$ wants to-like $\text{children}_{\text{NOM}}$
'Sasha wants to like the children.'
d. ??Deti xotjat Saše nravit'sja. (Pereltsvaig, p.c.)
$\text{children}_{\text{NOM}}$ want $\text{Sasha}_{\text{DAT}}$ to-like

These limitations on control follow from the LEC, as already applied to English and Portuguese. There are several ways to state the generalization, but they all come down to the fact that the LEC says that OC clauses cannot be bigger than TP; since the impersonal subjects are in LP (larger than TP), they are not available at the time that OC applies. OC clauses could well be smaller still (vP, for example), but I will assume TP for the following discussion. Since TP is the locus of agreement, one way to state the generalization is that only agreeing subjects can be the target of control. Another possible way to state the generalization is to say that only "thematic" subject of vP (SpecvP) can be the target of control; given that the "thematic" subject of vP[2] always maps to SpecTP, the result will be the same.

[2] This assumes that in raising and passive structures that the raised NP passes through SpecvP, an assumption independently attractive.

A telling "exception" to the above generalization occurs with the Dative-Nominative constructions; although control of the Dative, which is normally mapped to SpecLP, is blocked, control of what appears to be the Nominative Theme object is allowed:

(23) Deti xotjat nravit'sja Saše.
children$_{NOM}$ want to-like Sasha$_{DAT}$
'The children want Sasha to like them.'

But this is in line with the generalization as stated; the Nominative Theme object enters into agreement with T, and is therefore plausibly mapped to SpecTP, at least as an option. In that position, it can be targeted by OC control.

When we ask what other reason there could be for the failure of control in the impersonal cases, obvious answers fail us:

(24) Menja perestalo tošnit'.
'I stopped feeling nauseous.' (Babby 2004)
b. I want [PRO to seem to be there].
c. Ona poprosila ego samomu peredat' pis'mo.
she asked him$_{ACC}$ [PRO$_{DAT}$ himself$_{DAT}$ to-give letter$_{ACC}$]
'She asked him to pass the letter himself.' (Babby 2004)

(24a) shows that the impersonal verbs do have infinitive forms, so that cannot be the answer, even for the subset of cases for which it would be possible. (24b) shows that control does not require that the controlled element be a thematic argument of the matrix verb of the controlled clause; so, although several of the impersonal cases would fall under such a requirement, that cannot be the answer. And finally, Babby (2004) has given extensive arguments that the subject of infinitives bears case (Dative, to be specific), so the answer cannot be that arguments associated with case are immune to OC. In the light of these failures, the LEC becomes an attractive solution.

Control in Icelandic works very differently. Icelandic has non-agreeing non-nominative subjects as well, but these subjects can be targeted by OC.

(25) a. Mer syndist alfur.
me$_{DAT}$ thought-saw elf$_{NOM}$ (Andrews 1982: 465)
b. Hanna virthist vanta peninga.
her$_{ACC}$ seems to-lack money$_{ACC}$ (Andrews 1982: 465)
c. Eg$_i$ vonast til ath PRO$_i$ vanta ekki efni i ritgerthina
I hope to-lack not material for the-thesis
(Andrews 1982: 465)

(25a) shows that *syndist* takes a non-Nominative non-agreeing subject,

and Nominative object. (25b) is an example of an Accusative non-agreeing subject. In (25c), the Accusative subject argument is controlled in an OC context.

To square this with the different behavior of Russian SpecLP subjects, we must suppose that these subjects occupy SpecTP (at the highest); then the control facts are expected. The two obvious questions are, first, how can we implement this distinction, and second, is the distinction between Russian and Icelandic arbitrary.

The implementation will be to specify that SpecTP must be filled in Icelandic, unlike Russian; that is, in Icelandic, TP has the EPP property. SpecTP will always be filled with the thematic subject of vP, where that designation includes the external argument of transitive and unergative verbs, and arguments derived by raising, etc., through the SpecvP position.

This difference reflects a difference between Russian and Icelandic impersonals: in Icelandic, the impersonal subject is always the designated thematic subject of vP, whereas in Russian, it is drawn from a broader class of elements; this reflects the difference between vP/TP and LP. The difference is the same difference we saw in English between "In the basement is a good place to hide" and "Down the hill rolled the ball".

The failure of agreement with the relevant class of Icelandic subjects must be due to a different cause from the failure of Russian impersonal subjects. In Russian, agreement fails because the relevant element never occupies SpecTP. In Icelandic, by hypothesis, the non-agreeing subjects do occupy SpecTP.

Andrews (1982) showed that the "quirky" subjects in Icelandic had not only their own case[3], but also a "structural" case; the evidence was that the quirky subjects could only occupy positions where structural case is assigned. We might thus imagine that the quirky subjects are complex, having an outer layer of structural case, and an internal layer of quirky case. If this is so, then the explanation is that the head relation is necessarily interrupted at this juncture, and no agreement can be transmitted to the head.

(26) a. $[_{TP}$ [Hanna]$_{ACC}$ $]_{NOM}$ T ... ]
b. [[grandstand]$_N$ ]$_V$ + -ed *--> grandstood
c. *In the basements were good places to hide
d. ?[$[_{TP}$ [Hanna]$_{ACC}$ og [Oskar]$_{ACC}$ $]_{NOM}$ $T_{PL}$ ... ]

In (26a), however, T relates to the Nominative, it has no access to the internal accusative NP, because of the broken head relation. It is

[3] Williams (1994) reinterpreted Andrews (1982) grammatical relations account for an account in terms of theta roles and case; here, I use the reinterpreted version.

equivalent to the well known case of denominal verbs—the past tense has no access to the verb "stand" inside the noun "grandstand", because of the broken head relation. Most relevantly, it is parallel to the already discussed lack of agreement with PP subjects in English. In fact, I would expect, on these grounds, that coordinated non-agreeing NPs in Icelandic would register plural agreement, just as was found with the English PP subject cases, as sketched in (26d); the question mark on (26d) means I do not know whether such cases are grammatical.

A potential problem arises in the case of raising; we have seen that impersonal subjects in Russian cannot be controlled, but they do appear to raise, as (27a) shows:

(27) a. Menja perestalo tošnit' (Babby 2004)
$I_{ACC}$ stopped to-feel-nauseous
'I stopped feeling nauseous.'
b. [$_{LP}$ Menja [$_{TP}$ perestalo [$_{LP}$ *t* tošnit' *t*]]]
c. [$_{LP}$ Menja [$_{TP}$ perestalo [$_{vP}$ tošnit' *t*]]]

If *perestalo* is treated as a raising verb taking a sentential complement, then it is hard to avoid the conclusion that that complement is at least the size LP, as indicated in (27b); however, there is no reason to think that the complement of raising verbs is any bigger than the complement to OC verbs; for example, both exclude CP structure, in that there are no raising verbs taking indirect question complements. But there is another view of these constructions—the modal view. Modals differ from raising verbs in not taking a new sentence structure as complement; rather, modals are spell-outs of functional elements in a single functional structure, as indicated in (27c). I have chosen TP as the point at which the modal is spelled out, but arbitrarily; in fact, L is a more intriguing possibility. The principal issue here is whether there should be these two different ways to instantiate raising elements, modal and raising, a delicate but important issue well beyond the scope of this paper.

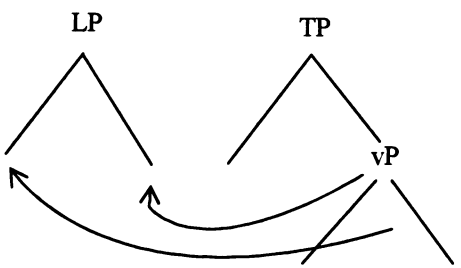
## 5 Mismapping to LP

I have ignored so far the issue of "Normal Focus". Babyonyshev (1996) and Lavine (2000) in fact used the notion of Normal Focus to delimit the evidence relevant to establishing the behavior of the EPP. They reasoned that because the Nom-Acc inversion cases did not show Normal Focus, but rather Narrow Focus, that they were not relevant to the mechanism which implements the EPP. As a consequence, in their view, the Nom-Acc inversion case was not analyzed as involving EPP, but the conclusion was arbitrary, as there was no theory of why the EPP should yield only Normal Focus structures, only a methodology. Bailyn (2004) included Acc-Nom Inversion among the cases in which EPP motivated

movement was implicated, largely ignoring Focus issues. His demonstration, already discussed, that "Acc V Nom" structures are systematically like the impersonal constructs with respect to WCO and Condition C, whereas "Acc Nom V" structures are systematically like WH-movement-derived structures, is the single indication that Acc V Nom is EPP-driven. Given this conclusion, which we will follow here, the question then becomes, what is the relation between the EPP and Focus?

Representation Theory has a built-in answer. Generally one functional level maps to the next, isomorphically, as illustrated by the solid arrows in (5b). But non-isomorphic mapping, or *mismapping*, as illustrated in (28), is possible as well. However, one mismapping must be compensated by achieving a true mapping elsewhere in the derivation; that is, there must be some *compensation* for a mismapping.

(28)




In Williams (2003, ch. 2) the relation between scrambling and focus is detailed in this light. Scrambling is a mismapping between one level and another, and scrambling is tolerated because it gives rise to representations that are true maps of Focus Structure. The same type of analysis can be applied to the impersonal constructions.

The syntactic given is that SpecLP must be filled. In the "normal" case, the filling is done isomorphically:

(29) $[_{XP}\ L'\ ]_{LP} \leftsquigarrow [_{XP}\ T'\ ]_{TP} \leftsquigarrow [_{XP}\ v'\ ]_{vP}$

The subject (XP) corresponds across the three levels, as do the successive constituents L', T', and v'. But in the case of the impersonals and the Acc-Nom Inversions, some kind of mismapping has taken place. In the case of the impersonals, there is no constituent in SpecvP that is mapped across all the levels; rather, something must be moved out of vP in order to fill the obligatory position in SpecLP:

(30) $[_{XP}\ L'\ ]_{LP} \leftsquigarrow [\ [...XP...]_{T}]_{TP} \leftsquigarrow [\ [...XP...]_{v}]_{vP}$

The "least distorting" mismapping must be used. Or at least, if a more distorting mismapping than is necessary is used, there must be some

compensation for that.

We face here the familiar problem of defining a "distance" based economy. I do not have a precise proposal, but will give some guidelines for developing one. At a minimum, we need to distinguish the Acc-Nom Inversion from the impersonal constructions. The Acc-Nom Inversion construction strongly has a narrow focusing commitment:

(31) a. Boris čital ètu knigu
Boris$_{NOM}$ read this book$_{ACC}$
b. Ètu knigu čital **Boris**
This book$_{ACC}$ read Boris$_{NOM}$
1. answer to: Who read the book?
2. not answer to: What happened?
c. [$_{vP}$Boris [$_{v'}$ čital ètu knigu]]
d. [$_{LP}$ XP L']

(31a) can be used in a presuppositionless environment, such as an answer to "What happened?". (31b), on the other hand, can only be used in a context which calls for narrow focus on *Boris*. This is the central fact to explain. We assume that both (31a) and (31b) have a vP (and perhaps TP) structure that looks like (31c). In both cases, (31c) is mapped to (31d). The obvious isomorphic map takes *Boris* to XP and v' to L'; that is how (31a) is derived. Since the map is isomorphic, it is free, and in particular, no special focus is entailed. In the case of (31b), on the other hand, a phrase internal to vP is mapped to XP, obviously not an isomorphic map, so there must be compensation. In this case, the compensation is that the mismap permits an isomorphic map to a Focus structure:

(32) Focus Structure: [XP ... [... FocusP]]

The characteristic of canonical focus is that it occupies final position. So, mismapping (31a) to (31d) in such a way as to give (31b), permits an isomorphic map between (31b) and (32), and so the mismap ((31a) to (31b)) is compensated by a true map ((31b) to (32)), otherwise unavailable.

This kind of analysis permits us to keep the Acc-Nom Inversion cases under the rubric of the EPP. The special narrow focusing properties of the construction arise from the mismapping involved.

Now we return to the impersonal cases. Consider as representative the adversity impersonal; we assume that both (33a) and (33b) below have vP as in (33c) and are mapped to LP (33d)

(33) a. Rabočego ubilo oskolkom plity.
worker$_{ACC}$ killed shard$_{INST}$ of-concrete
1. answer to: What happened?

b. Oskolkom plity ubilo rabočego.
shard$_{INST}$ of-concrete$_{Inst}$ killed worker$_{ACC}$
1. answer to: Who did the shard of concrete kill?
2. ?answer to: What happened?[4]
c. [$_{vP}$ [$_{v'}$ ubilo rabočego oskolkom plity]]
d. [$_{LP}$ XP L']

In this case, both (33a) and (33b) are mismaps—neither has a constituent that correspond to the XP in (33d). The question then becomes, which is the least mismap, so to speak. The fact of the matter is, moving the Accusative to SpecLP is the least mismap, as shown by the fact that broad focus is thereby obtained; mapping the Instrumental yields special focus. So the result we want is that the Accusative is "closer" to SpecLP than the Instrumental. For the definition of "closer" a range of possibilities are available, and I will not choose among them; for example, the Accusative and the Instrumental could be in the kind of cascade structure of Pesetsky (1995), in which the Accusative c-commands the Instrumental, and is therefore closer in a hierarchical sense to SpecLP. Or some other scheme. Using c-command works for the Acc-Nom inversion case—the SpecvP in (31c) obviously c-commands the direct object, and so is the closest to SpecLP. We in fact would like to get a finer result: the Acc-Nom Inversion is perceived as much stronger in its exaggeration of Narrow focus—native speakers disagree about whether (33b) forces narrow focus or not, but there is no such disagreement on (31b). It would be nice if this followed from the greater degree of distortion of the structure. But that must await a more concrete characterization of mismapping.

Of particular interest are the Dative-Nominative impersonals:

(34) a. Saše ne nravitsja Boris.
Sasha$_{DAT}$ NEG likes Boris$_{NOM}$
1. answer to: Do you foresee any problems with our group trip?
b. Boris$_{NOM}$ ne nravitsja **Saše$_{DAT}$**
1. not answer to: Do you foresee any problems with our group trip?
2. answer to: Who likes Boris?

c. Saše podaril Boris **ètu knigu**.
Sasha$_{DAT}$ gave Boris$_{NOM}$ this book$_{ACC}$
1. not answer to: What happened?
d. 1. [$_{VP}$ nravitsja NOM DAT] (DAT->SpecLP canonical)
2. [$_{vP}$ NOM [$_{VP}$ podaril ACC DAT]] (DAT->SpecLP noncanonical)

[4] (33b) should not be allowed to be the answer to (33b-2), but some native speakers report that it can be.

The Focus-neutral order is (34a), with Dative in SpecLP. We must conclude from this that the Dative is "closer" to SpecLP than the Nominative; why the Dative should be closer (as the Accusative was in the adversity impersonal) is again a question we can only Spec-L-ate about. Importantly, Dative movement to SpecLP is *not* the unmarked possibility in an ordinary di-transitive, as (34c) shows—the presence of *Boris* in SpecvP, c-commanding everything in VP—trumps all other possibilities (34d).

Recall though that only the Nominative of Dative Experiencer verbs can be controlled (23), the Dative cannot. One form of the generalization about control that I defended in the previous section is that only an agreeing argument can be controlled:

(35) a. *Saša xočet nravit'sja deti.
Sasha$_{NOM}$ wants to-like children$_{NOM}$
b. Deti xotjat nravit'sja Saše.
children$_{NOM}$ want to-like Sasha$_{DAT}$
'The children want to be liked by Sasha.'

We have then the following situation: Dative experiencer verbs have two VP internal arguments—a (potentially) Nominative and a Dative. In an LP structure, the Dative is closest to SpecLP, and moves there to satisfy the EPP of LP. But in a TP structure (we assume that OC infinitives are no larger than TP) only the Nominative can move to SpecTP, and if it does so, it can be controlled there.

This presents a puzzle for economy of the type called "Local". In the present scheme, we cannot assume that TP (always) has the EPP feature. If it did, then it would always attract the Nominative direct object, and then that argument would always then be the argument to be moved in the unmarked case to SpecLP, for it would occupy the same position as the Nominative subject of ordinary transitives, which, as the Acc-Nom Inversion cases show, is the unmarked filler of SpecLP.

(36) a. $[_{LP}\ [_{TP}\ [_{vP}\ [v\ NP_{Nom}\ ]\ NP_{dat}\ ]]]$ (base)
b. $[_{LP}\ NP_{dat}\ [_{TP}\ [_{vP}\ [v\ NP_{Nom}\ ]\ t\ ]]]$ (canonical map to LP *of dative*)
c. $[_{LP}\ NP_{Nom}\ [_{TP}\ (t)\ [_{vP}\ [v\ ]\ NP_{dat}\ ]]]$ (Noncanonical map to LP of Nom object)
d. want $[_{TP}$ NP $[_{vP}\ [v\ t\ ]\ NP_{dat}\ ]]$ (no map to LP; *only* map to TP)

Another way to look at the problem is derivationally: at the TP level in any derivation, if the Nominative direct object *can* move to SpecTP, then why does it not have to? And if it does, why does it not always block the movement of the Dative to SpecLP in derivations that include LP? If the situation is like I have described it, the decision about what the "best" derivation will be cannot be made in a local way—whether to fill TP will depend on whether that TP is embedded in an LP or not. Of

course, this non-locality can be encoded with features; for example, "TP has the EPP feature only when it is not embedded under LP", but this does not remove the non-locality of the calculation, it only implements it, perhaps not in the most revealing way.

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