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# **Annual Workshop on Formal Approaches to Slavic Linguistics**

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## ***The McMaster Meeting 2013***

edited by  
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This volume is a collection of selected papers presented at the twenty-second annual meeting of Formal Approaches to Slavic Linguistics, which took place May 3-5, 2013, at McMaster University in Hamilton, Ontario, Canada. We are delighted to have organized the 22<sup>nd</sup> meeting in Hamilton. The meeting, which was hosted by the Department of Linguistics and Languages, would not have been possible without generous financial contributions from both the department and the Faculty of Humanities at McMaster University. We were honored to be able to bring the annual meeting to our department, which has recently undergone a radical reconstruction and has become home to the new interdisciplinary undergraduate and graduate programs in Cognitive Science of Language. In addition, the meeting benefited from the generous support of the local Slavic community, which manifested itself ever so clearly in the generous contributions from Ukrainian Credit Union Limited and The W. Reymont Foundation. We also received numerous donations from local vendors: Canada Keep Exploring, Odessy Olive Oils and Vinegars, Bentford Apples, Jantzi Cheese, Ercilia's Fine Foods, Lina's European Pastries, and Starbucks. Yes, all of these sponsors kept us in good spirit with delicious food and coffee throughout the conference. Particularly, we would like to thank the owners and staff at Nostalgia Family Restaurant for helping us organize our conference dinner. We also wish to acknowledge the invaluable assistance of undergraduate and graduate students from the Cognitive Science of Language Program who assisted with many practical organizational matters as well as offers of accommodations to graduate students from other universities.

We would like to extend our deepest gratitude to our presenters and the insightful and inspiring linguistics work they brought to McMaster

University and shared with us during the three days of the conference. First of all, we would like to thank our invited speakers for their inspiring contributions, namely, Maria Gouskova, Roumyana Pancheva, and David Pesetsky. The formal program consisted of twenty-one talks and ten poster presentations. All abstracts were carefully double-blind reviewed by three individuals during the abstract submission process. The papers presented in this volume underwent an additional single-blind review process to ensure their quality and consistency. We would like to thank all parties involved for the rapid turnover and high quality of review during all stages of this process. All of this, of course, would not have been possible without our wonderful reviewers who generously contributed their time and expertise and provided us as well as the authors with invaluable feedback and suggestions for improvement. We thus extend our thanks to: Nadira Aljovic, Petr Biskup, Joanna Blaszczak, Lev Blumenfeld, Wayles Browne, Barbara Citko, Luka Crnić, Mojmír Dočekal, Jakub Dotlačil, Hana Filip, Martina Gračanin-Yuksek, Pavel Grashchenkov, Vera Gribanova, Atle Grønn, Stephanie Harves, Tania Ionin, Alexei Kochetov, Franc Marusic, Tatjana Marvin, Ora Matushansky, Krzysztof Migdalski, Gereon Müller, Andrew Nevins, Jaye Padgett, Roumyana Pancheva, David Pesetsky, Ljiljana Progovac, Eugenia Romanova, Susan Rothstein, Catherine Rudin, Pawel Rutkowski, Tobias Scheer, Radek Šimík, Roumyana Slabakova, Natalia Slioussar, Penka Stateva, Arthur Stepanov, Sandra Stjepanović, Adam Szczegielniak, Luka Szucsich, Sergei Tatevosov, Yakov Testelelets, Lída Veselovská, Jacek Witkoś, and Igor Yanovich.

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*The Editors*  
Cassandra Chapman  
Olena Kit  
Ivona Kučerová

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## **Acquisition of Russian Degree Constructions: A Corpus-Based Study<sup>\*</sup>**

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In this paper, I propose a time course of acquisition for Russian degree constructions. I empirically test the predictions against a corpus that contains data by two Russian children. The predictions are based on the parameters of cross-linguistic variation in comparison constructions (Beck et al. (2009)), Snyder's (2007) parametric approach to first language acquisition and the "standard" theory of comparison constructions (e.g. von Stechow (1984) and Beck (2011)). The paper is structured as follows: the first two sections introduce the theoretical background. Subsequently, I provide an analysis of Russian degree constructions and propose a time course of their acquisition. Finally, I present and discuss the results of my corpus study.

### **1 Degree Semantics**

In my study, I use what is often referred to as the "standard analysis" of comparison constructions advocated, for instance, by von Stechow (1984) and Heim (2001). On the technical side, I work within the general framework of the Heim & Kratzer (1998) textbook.

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<sup>\*</sup> I want to thank Prof. Tilman Berger and Nathalie Mai-Deines from the Slavic Seminar of the University of Tübingen for providing me with the longitudinal corpora. I am also grateful to the audiences of ConSOLE XXI, LUSH and FASL 22 for valuable feedback and helpful comments. This paper is based on research conducted within the scope of my Magister thesis entitled "The Semantics of Russian Degree Constructions and their Acquisition: A Corpus-Based Analysis".

The core features of the standard theory of comparisons are the following: A new semantic type,  $\langle d \rangle$ , is introduced for degrees (abstract elements of scales). The basic meaning contribution of the gradable predicate is that it relates individuals to sets of degrees. Gradable predicates are of type  $\langle d, \langle e, t \rangle \rangle$  and introduce degrees into the semantics. Comparison is not between individuals, but between degrees. The matrix and the standard clause each provide a set of degrees via abstraction over a degree variable.

A basic lexical entry for a gradable adjective can be found in (1a) or, simpler, in (1b). In (1a), ‘height’ is a measure function of type  $\langle e, d \rangle$ . Measure functions assign a unique degree to individuals. An example of a comparative where parts of the degree description have been elided is given in (2). The lexical entry for the degree morpheme is in (3). Finally, the Logical Form (LF) and the semantic composition of (2) are presented in (4a-d).

- (1) a.  $\llbracket \text{tall} \rrbracket = \lambda d: d \in D_d. \lambda x: x \in D_e. \text{HEIGHT}(x) \geq d$   
 b.  $\llbracket \text{tall} \rrbracket = \lambda d. \lambda x. x \text{ is } d\text{-tall}$
- (2) Katya is taller than Masha.
- (3)  $\llbracket \text{er}_{\text{CLAUSAL}} \rrbracket = \lambda D1_{\langle d, t \rangle}. \lambda D2_{\langle d, t \rangle}. \max(D2) > \max(D1)$
- (4) a.  $\llbracket [\text{DegP-er} [\text{than how}_1 \text{ Masha is } t_1 \text{ tall}] [2 [\text{Katya is } [\text{AP } t_2 \text{ tall}]]]] \rrbracket$   
 b.  $\llbracket [2 [\text{Katya is } [\text{AP } t_2 \text{ tall}]]] \rrbracket^g = [\lambda d. \text{Katya is } d\text{-tall}]$   
 c.  $\llbracket [\text{how}_1 \text{ Masha is } t_1 \text{ tall}] \rrbracket^g = [\lambda d'. \text{Masha is } d'\text{-tall}]$   
 d.  $\llbracket (2) \rrbracket^g = 1 \text{ iff } \max(\lambda d. \text{Katya is } d\text{-tall}) > \max(\lambda d'. \text{Masha is } d'\text{-tall})$

Quantifier Raising (QR) of the DegP in the matrix clause creates predicate abstraction over a degree variable. The comparative morpheme and the *than*-clause form a constituent at LF. The *than*-clause is a *wh*-clause with a degree gap, which is created by *wh*-movement.

The semantics of other relevant constructions like superlatives, measure phrases and degree questions are briefly illustrated in (5-7).

- (5) a. Katya is the tallest. *Superlative*  
 b.  $\llbracket C\text{-est} \rrbracket = \lambda D_{\langle d, t \rangle}. \forall D' [D' \neq D \ \& \ C(D') \rightarrow \max(D) > \max(D')]^1$

<sup>1</sup> This is a lexical entry for the superlative morpheme adopted from Heim (1999: 21), which is not uncontroversial in the semantic literature. A widespread lexical entry for the superlative is



- c. [ [ -est  $\langle d, t \rangle, t \rangle$  ] [ 1 [Katya is  $t_1$  tall] ] ] *LF*  
 d. “The maximal degree of height that Katya reaches exceeds the maximal degree of height that any other relevant person reaches.”
- (6) a. Masha is exactly 1,60m tall. *Overt Measure Phrase*  
 b. [ [DegP  $\langle \langle d, t \rangle, t \rangle$  exactly 1,60m ] [  $\langle d, t \rangle$  1 [Masha is  $t_1$  tall] ] ] *LF*  
 c. “The maximal degree of height that Masha reaches is 1,60m.”
- (7) a. How clever is Tanya? *Degree Question*  
 b. [ Q [ [DegP  $\langle d, t \rangle$  how<sub>1</sub> ] [Tanya is  $t_1$  clever] ] ] <sup>2</sup> *LF*  
 c. “For which degree d: Tanya is d-clever?”

These are the basics of the standard analysis.

## 2 More Theoretical Background

Two further theoretical components that I use in my study are parameters proposed in Beck et al. (2009), which I will henceforth refer to as B17 parameters, and Snyder’s (2007) parametric theory of language acquisition. I will now briefly present these two components before we proceed to the predictions<sup>3</sup>.

### 2.1 Parameters

The question of cross-linguistic variation in the semantics of degree constructions has recently enjoyed considerable attention from formal semanticists. One proposal for underlying generalizations is by Beck et al. (2004) and Beck et al. (2009). Beck et al. (2009) suggest three dependent parameters in variation across comparison constructions based on evidence from 17 languages. The key degree constructions for which the authors collected data can be found in examples (8)-(14).

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one that takes a relation between an individual and a degree plus an individual as its arguments and then returns a truth value:  $[[\text{-est}]] = \lambda R_{\langle d, \langle e, t \rangle \rangle}. \lambda x. \max (\lambda d. R(d)(x)) > \max (\lambda d. \exists y [y \neq x \ \& \ R(d)(y)])$  (from Beck (2011)).

<sup>2</sup> Cf. Hohaus et al. (to appear: 4-5).

<sup>3</sup> The report of the acquisition study is divided between this paper and Berezovskaya (2014). The present paper gives a more thorough picture of the special characteristics of Russian comparison constructions and a more complete overview over the corpus data than the latter. There is some overlap between the two papers concerning background discussion and the description of basic results.

- (8) Naomi is 2 cm taller than Sandra. *Difference Comparative (DiffC)*  
 (9) Naomi is taller than 1.50 m. *Comparison to Degree (CompDeg)*  
 (10) How tall is Naomi? *Degree Question (DegQ)*  
 (11) Naomi is 1.70m tall. *Measure Phrase(MP)*  
 (12) The shelf is wider than the drawer is deep. *Subcomparative (SubC)*  
 (13) \*Mary bought a more expensive book than nobody did.  
*Negative Island Effect (NegIs)*  
 (14) The draft is ten pages long. The paper is required to be exactly five  
 pages longer than that.<sup>4</sup> *Scope Interactions (Scope)*

The following cluster patterns were found with the help of the Fisher Exact test and the method described in Maslova (2003) for the 17 languages: {DiffC, CompDeg} cluster together, {Scope, NegIs} also cluster together, where applicable, {DegQ, MP, SubC} also generally behave in a parallel fashion.

Some of the core results of the study are summarized in Table 1.

Language example	CompDeg & DiffComp	Scope & NegIs	MP, DegQ & SubC
Motu	no	n.a. <sup>5</sup>	no / n.a.
Chinese, Mooré	yes	no / n.a.	no / n.a.
Russian, Guaraní,	yes	yes	no
English, German, Thaí	yes	yes	yes

**Table 1:** Selected results of the cross-linguistic study by Beck et al. (2009)

Table 1 shows which of the selected languages allow for which. The constructions are ordered in clusters: CompDeg and DiffComp are taken to be indicators of degree ontology; scope interaction between the comparative operator and a modal operator and NegIs are applied as diagnostics for degree abstraction in a language; and finally, the availability of MPs, DegQs and SubCs indicate a positive setting of the so-called Degree Phrase Parameter. The parameters are summarized in (15)-(17):

<sup>4</sup> This example goes back to Heim (2001:224).

<sup>5</sup> Note that n. a. stands for “not applicable”. This can be due to different factors: for example, the non-availability of clausal structures, which, in turn, leads to the non-availability of scope effects.

- (15) *Degree Semantics Parameter (DSP)* (Beck et al. (2009): 19).  
A language does or does not have gradable predicates (type  $\langle d, \langle e, t \rangle \rangle$ ) and related, i.e. lexical items that introduce degree arguments.
- (16) *Degree Abstraction Parameter (DAP)* (Beck, Oda & Sugisaki 2004: 325).  
A language does or does not have binding of degree variables in the syntax.
- (17) *Degree Phrase Parameter (DegPP)* (Beck et al. 2009: 24).  
The degree argument position of a gradable predicate may or may not be overtly filled.

The parameters make predictions for the (un)availability of certain degree constructions in different languages. Russian is a language with the parameter setting [+DSP, +DAP, -DegPP]. Except for the last parameter, Russian patterns well with languages such as English and German that have the parameter setting [+DSP, +DAP, +DegPP], and thus dispose of a full-fledged degree semantics. However, neither MPs nor DegQs or SubCs of the English type can be found in Russian. This is because all three constructions require an adjective to combine with a syntactic element known as a Degree Phrase (DegP). In English, the Spec,AP position is filled in overt syntax in every construction. In Russian, on the other hand, this position cannot be filled overtly thus precluding the existence of these constructions.

## 2.2 Snyder's Parametric Predictions

I will now briefly introduce the pertinent parts of Snyder's theory that illustrate the link between the B17 parameters and language acquisition. Snyder (2007:7) claims that the time course of language acquisition provides evidence for the nature of what and when the child is acquiring. For any parameter, the following predictions about language acquisition apply:

- (18) If the grammatical knowledge (including parameter setting and lexical information) required for construction A, in a given language, is **identical** to the knowledge required for construction B, then any child learning the language is predicted to acquire A and B **at the same time**.

- (19) If the grammatical knowledge (including parameter settings and lexical information) required for construction A, in a given language, is a **proper subset** of the knowledge required for construction B, then the age of acquisition for A should always be **less than or equal to** the age of acquisition for B. In other words, no child should acquire construction B significantly earlier than construction A.

The predictions in (18) and (19) can be directly applied to Beck et al.'s parameters to yield (20) and (21):

- (20) **[+DSP] before [+DAP]:** No child should acquire constructions indicative of [+DAP] before [+DSP].  
 (21) **[+DAP] before [+DegPP]:** No child should acquire constructions indicative of [+DegPP] before [+DAP]<sup>6</sup>.

These assumptions make clear predictions for the time course of acquisition.

### 3 Russian Degree Constructions and Predictions for Acquisition

In this section, I provide an analysis of the composition of the Russian *than*-constituent, of synthetic vs. analytic comparatives and evaluativity. I also link the analysis to the predictions of the time course of acquisition.

#### 3.1 Composition in the *than*-constituent

In Russian, the standard of comparison can be expressed in two ways:

- (22) Tanya byla bystree **Vani**  
       Tanya be<sub>PAST,FEM</sub> fast<sub>COMP</sub> Vanya<sub>GEN</sub>  
       ‘Tanya was faster than Vanya.’  
 (23) Tanya byla bystree **chem Vanya**  
       Tanya be<sub>PAST,FEM</sub> fast<sub>COMP</sub> what<sub>INSTR</sub> Vanya<sub>NOM</sub>  
       ‘Tanya was faster than Vanya.’

<sup>6</sup> Tiemann et al. (2012) carry out a cross-linguistic study that suggests that the DegPP might no longer be seen as dependent from DAP. This will be not problematic for the current proposal since Russian has a negative setting of the DegPP parameter and I will only need the prediction in (20).

If we look at the English translation of both (22) and (23), we do not see any differences. However, a closer look at the text in bold-face shows that, in (23), the standard *Vanya* is preceded by *chem*, a *wh*-word in the instrumental case. Pancheva (2005) treats standards of the kind in (23) as reduced clauses because the *wh*-word causes movement and because of the possibility of having an overt tensed verb, *byla* in the example. I assign the following LF to example (23):

(23')  $[[[_{\text{DegP}} \text{-ee} \langle\langle d, t \rangle, \langle\langle d, t \rangle, t \rangle\rangle] [\text{chem}_1 \text{ Vanya byl } [t_1\text{-bystryj}]]] [2 [\text{Tanya byla } [t_2\text{-bystraya}]]]]]$

In (23'), the *wh*-word, *chem*, performs a syntactic *wh*-movement out of the argument position of the adjective *bystryj*, creating a degree predicate. Note that in our LF there is no overt preposition *than* as in English. Further, we do not need to worry about whether the Spec,AP position of the AP embedded under *chem* is being filled by a trace, because it is taken care of by ellipsis. Thus, no violation of the DegPP arises.

Example (22), on the other hand, requires a different LF. In this case, the standard of comparison in the genitive case follows the gradable predicate directly. According to Pancheva (2005), the Reduced Clause Analysis is unlikely for cases like (22), because the *wh*-element is absent and because there is genitive case marking on the standard of comparison. Therefore, I apply the so-called Direct Analysis to example (22) without assuming any silent structure in the standard phrase. The LF for (22) is given in (22').

(22')  $[\text{Tanya } [\text{byla } [[\text{-er} \langle\langle d, \langle e, t \rangle \rangle, \langle e, \langle e, t \rangle \rangle \rangle] \text{bystraya}_{\langle d, \langle e, t \rangle \rangle} \text{ Vani}]]]]]$

Note that in (22'), we do not need to move anything. Rather we apply an *in situ* analysis. Importantly, this LF requires a different comparative morpheme *-er*, which I will call the  $er_{\text{GEN}}$ , illustrated in (24)<sup>7</sup>.

(24)  $[[er_{\text{GEN}}]] = \lambda \text{Adj}_{\langle\langle d, \langle e, t \rangle \rangle}. \lambda y. \lambda x. \max(\lambda d. \text{Adj}(d)(x)) > \max(\lambda d'. \text{Adj}(d')(y))$

<sup>7</sup> This *-er* corresponds to the phrasal comparative operator suggested by Kennedy (1997).

This comparative operator compares two individuals along the dimension provided by the adjective. The adjective meaning is the basic relational meaning from (1) and the meaning of the standard of the genitive is the denotation of its overt material. The tensed copular verb *byla* is taken to be semantically vacuous, which is, admittedly, a major simplification, but will not matter for my purposes. We thus get the truth conditions in (25).

$$(25) \quad \llbracket (22) \rrbracket^g = \max(\lambda d. \text{Tanya was } d\text{-fast}) > \max(\lambda d'. \text{Vanya was } d'\text{-fast})$$

This analysis has the following implications: the Russian genitive-marked comparatives should always employ the *er*<sub>GEN</sub>, which is scopally not mobile and has only limited applicability. As Beck et al. (2012) point out, such an *-er* does not allow for clausal standards. Besides, this *-er* should not allow for attributive comparatives. This is indeed the case as illustrated in the following example.

- (26) \*Katya byla            bystree    devochka   Mash  
          Katya be<sub>PAST,FEM</sub> fast<sub>COMP</sub>   girl            Masha<sub>GEN</sub>  
          *Intended*: ‘Katya was a faster girl than Masha.’

A potential problem for the hypothesis sketched above is found in Russian adverbial comparatives that are genitive-marked<sup>8</sup>:

- (27) Katya bezhit            bystree    Mash  
          Katya run<sub>PRES,3.SG</sub> fast<sub>COMP</sub>   Masha<sub>GEN</sub>  
          ‘Katya runs faster than Masha.’

Rather than rejecting the initial hypothesis that genitive-marked standards employ the immobile *er*<sub>GEN,s</sub>, I want to highlight the need for investigating the syntax and semantics of adverbial comparatives in more detail, especially with respect to the question of whether an *in situ* analysis is possible. Since I cannot tackle this problem in the scope of the present paper, I will for now assume, along with Pancheva (2005, 2010), that adverbial comparatives need a clausal *-er* and should be acquired around the same time as *chem*-clauses, and that both constructions require Degree Abstraction (abbreviated as DA).

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<sup>8</sup> I am grateful to Roumyana Pancheva (p.c.) for bringing this point to my attention.

Let us now think about the order of acquisition of genitive-marked standards vs. *chem*-clauses. General observations about the time course of the acquisition of comparison constructions for Russian on the basis of the B17 parameters in conjunction with Snyder (2007), cf. (20), are spelled out in (28):

- (28) **[+DSP] before [+DAP]:** No child should acquire constructions indicative of [+DAP] before [+DSP], specifically:
- No child acquires *chem*-clauses significantly before degree morphology.
  - No child acquires *chem*-clauses significantly before genitive-marked comparison constructions.

I predict in (28b) that the acquisition of genitive-marked comparisons should precede the acquisition of *chem*-clauses. Remember that *er*<sub>GEN</sub> does not require degree quantification; no QR takes place and everything can be interpreted *in situ*, cf. (22'). Therefore, the synthetic comparative (SynC) with a genitive-marked standard can be expected at a point when the child has acquired the [+DSP]-setting, but has not yet acquired the [+DAP]-setting. *Chem*-clauses, on the other hand, require DA and a different *-er*, namely the clausal one in (3). Only this *er*<sub>CLAUSAL</sub> can take the *chem*-clause as its first argument. Since it requires DA, the child needs to have set the DAP to positive by the time she uses *chem*-clauses.

### 3.2 Synthetic/Analytic Forms and Evaluativity

A well-known distinction in Russian (and not only in Russian) is the synthetic/analytic division. Consider examples (29) and (30):

- (29) Vanya byl sil'nee chem Petya  
 Vanya be<sub>PAST,MASC</sub> strong<sub>COMP</sub> what<sub>INSTR</sub> Petya  
 'Vanya was stronger than Petya.' *Synthetic*
- (30) Vanya byl bolee sil'nyj chem Petya<sup>9</sup>  
 Vanya be<sub>PAST,MASC</sub> more strong what<sub>INSTR</sub> Petya  
 Literally: 'Vanya was more strong than Petya.' *Analytic*

<sup>9</sup> A puzzling fact about Russian is the so-called synthetic-analytic alternation: Pancheva (2005) draws our attention to the fact that the *chem*-clause can be used with the analytic form of comparative. When the standard of comparison is genitive-marked, using the analytic form produces ungrammaticality.

In (29), the comparative morphology *-ee* is stuck onto the gradable adjective *sil'nyj* ('strong'), just like the *-er* in English is suffixed directly onto the unmarked form of the adjective. Some descriptive grammars of Russian claim that it is more common to use the comparative in its synthetic form, i.e. with the suffixes *-ee*, *-ey* as in *novee*, *novey* ('newer') and *-e* as in *vyshe*, *shire* ('higher', 'broader'), cf. Semeonoff (1962: 188-189). Although the synthetic formation of the comparative seems to be the more productive strategy, there are many adjectives that can only have the analytic form (cf. Barnetova et al. (1979: 346) and Borras (1971: 89)).

Example (30) is an instance of an analytic comparative (AnC). Here, the adjective is combined with the overt comparative operator *bolee*, which consists of the morpheme *bol-* and the comparative morphology expressed by the suffix *ee*. I take *bolee* to be an overt degree operator, which is morphologically detached from the adjective. Basically, (30) should semantically work like the LF in (23'), but instead of the discontinuous morpheme *-eel-e*, there will be the overt degree operator *bolee* in the degree head position. However, this is not the end of the story for (30). In addition to the fact that Vanya has to be stronger than Petya, both of them also need to exceed the contextually salient standard for strength in order for the sentence to be felicitous. This phenomenon has been called "norm-relatedness" by Bierwisch (1989). He used this term to refer to comparisons with a contextually-determined standard of the relevant gradable property. I will rather use the term "evaluativity" (cf. Rett (2008)).

In her dissertation, Rett (2008) examines the connection between the polarity of the adjective and evaluativity. She shows that in the English equative, negative polarity adjectives obligatorily trigger the norm-related reading, cf. (31a), whereas positive polarity ones do not, cf. (31b).

- (31) a. Gemma is as short as Judy.  
b. Tony is as tall as Pat.

In Russian, on the other hand, the equative, as well as many other degree constructions including the AnC in (30) are evaluative regardless of the polarity of the adjective.

Krasikova (2009) investigates the distribution of norm-related readings with dimensional adjectives across various degree constructions



in Russian and English. She shows that, in Russian, the lack of degree morphology on the predicate triggers evaluative readings while the comparative morpheme on a gradable predicate makes the norm-related reading disappear.

In sum, there are different factors that are responsible for whether a degree construction has the direct comparison interpretation or must be reinterpreted by referring to the contextual norm. In English, this question is partly determined by the polarity of the adjective and in Russian, the norm-related interpretation is triggered by the lack of degree morphology on the adjective. Degree constructions that involve evaluativity (+E) in Russian and those that do not do so (-E) are listed in Table 2.

CompDeg	-E
Diff Comp	-E
Synth. comp. with <i>chem-</i>	-E
Synth. comp. with genitive	-E
Positive	+E
AnC with <i>chem-</i> clause	+E
Equative	+E
Superlative	+E
Enough/too	+E

**Table 2:** Evaluativity in Russian degree constructions

I opt for the following analysis of evaluativity in Russian degree constructions: I leave the relational adjective meaning as in (1) and pursue a synthesis of the Krasikova and the Rett approaches, in that I assume the morphological constraint of Krasikova (that the lack of morphology on the gradable adjective triggers evaluativity in Russian) and use Rett’s EVAL operator, which is introduced in (32)<sup>10</sup>. Rett (2008) proposes to encode evaluativity in a morpheme called “EVAL” which can occur freely and optionally in any degree construction:

<sup>10</sup> Another interesting alternative analysis of evaluativity can be found in Hofstetter (2012). He suggests that Russian adjectives are generally born into the lexicon as non-evaluative adjectives. The analytic comparison operator is responsible for the introduction of evaluativity, whereas the synthetic *-ee/-e* doesn’t introduce evaluativity (cf. Hofstetter 2012: 30). This would mean that we need different lexical entries for the analytic and synthetic degree operators.

$$(32) \quad \llbracket \text{EVAL}_i \rrbracket = \lambda D_{\langle d, t \rangle}. \lambda d_{\langle d \rangle}. D(d) \wedge d > s_i$$

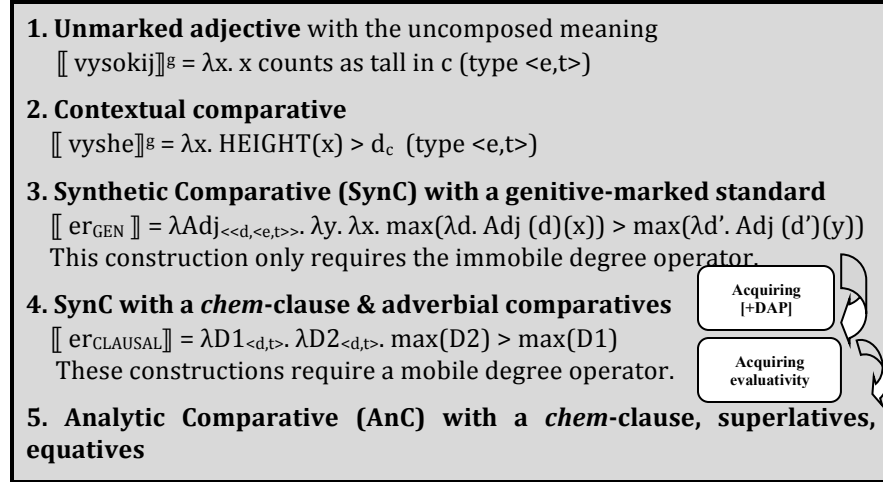
EVAL is a function from a set of degrees and a degree to a subset of those degrees, namely the ones above the standard. The variable “ $s_i$ ” is a pragmatic variable, which means that it is left unbound in the semantics. Each instance of EVAL introduces a possibly different pragmatic variable ‘ $s_i$ ’ which necessitates the indexing. Let us apply (32) to our analytic comparison example from (30). The LF is in (32), the detailed composition in (33b-e).

- (33) a.  $\llbracket [\text{DegP } \text{bolee}_{\langle \langle d, t \rangle, \langle \langle d, t \rangle, t \rangle \rangle} [\text{EVAL}_{\langle \langle d, t \rangle, \langle d, t \rangle \rangle} [\text{chem}_1 \text{ Petya byl } t_1 \text{ sil'nyj}]]] \llbracket [2 [\text{Vanya byl } [t_2 \text{ sil'nyj}]]] \rrbracket \rrbracket$   
 b.  $\llbracket [2 [\text{Vanya byl } [t_2 \text{ sil'nyj}]]] \rrbracket^g = [\lambda d. \text{Vanya was d-strong}]$   
 c.  $\llbracket [\text{chem}_1 \text{ Petya byl } t_1 \text{ sil'nyj}] \rrbracket^g = [\lambda d'. \text{Petya was d'-strong}]$   
 d.  $\llbracket [\text{EVAL } [\text{chem}_1 \text{ Petya byl } t_1 \text{ sil'nyj}]] \rrbracket^g = [\lambda d. \text{Petya was d'-strong} \wedge d > s_{\text{strong}}]$   
 e.  $\llbracket (30) \rrbracket^g = 1$  iff  $\max (\lambda d. \text{Vanya was d-strong}) > \max (\lambda d'. \text{Petya was d'-strong} \wedge d > s_{\text{strong}})$

The truth conditions, namely that Vanya’s maximal degree of strength is larger than Petya’s maximal degree of strength and that both are above the contextually salient standard of strength are borne out. It is sufficient to insert EVAL only once in the *chem*-clause, because it is entailed that if Petya is above the standard for tallness, Vanya also will be above it, since he has to be taller than Petya in order for the sentence to be true.

This approach of encoding evaluativity into our semantics has the consequence that it is understood as an extra component in the child’s grammar. Evaluativity contributes to the standard meaning by adding information about the context. It is clear that evaluative constructions not only need a comparative, superlative or equative quantifier over degrees, but also the EVAL-operator on top of it. Hence, analytic comparatives, superlatives or equatives should be acquired latest.

A possible scenario in regards to how the child could acquire EVAL is discussed in Berezovskaya (2014). I will now sum up the pattern I described in this section. I predict the following order of acquisition for Russian degree constructions:



**Figure 1:** Order of acquisition of Russian degree constructions

Figure 1 shows the following steps of acquisition: First, there will be the uncomposed meaning of the gradable adjective, which only requires the  $\langle e, t \rangle$  type lexical entry. This is followed by a contextual comparative, which still has type  $\langle e, t \rangle$  (cf. Tiemann et al. (2012) & Hohaus et al. (to appear)). At this point, the child probably has not yet learned that the meaning arises from the combination of a relational lexical entry for the adjective plus the comparative operator. In Step 3, the child acquires the genitive-marked comparatives, which are followed by *chem*-clauses. The [DAP] is set to positive, as soon as the child produces *chem*-clauses, because these require DA. In the final step, the child acquires evaluativity. In other words, all of the constructions in Step 5 should come latest in the time course of acquisition.

#### 4 Results of the Corpus Study

In this section, I present the results of my corpus study. The methodology used is described in Berezovskaya (2014).

#### 4.1 The Corpora

Max was recorded from age 2;3<sup>11</sup> until the age of 6;1. In total, 260 video recordings of approximately 60 minutes were made of him, but only parts of the recordings were put into corpus format. Unfortunately, there are many gaps in the recordings. The average number of utterances per transcript for Max is 187.6. David's Russian recordings were conducted exclusively by the child's mother. They stretch from the age of 2;10 until the age of 6;1 and there is, unfortunately, also a considerable number of gaps here. The average number of utterances per transcript for David is 443.6, which is higher than for Max. Both children were raised with Russian as their L1 (first language). It should be noted, however, that they live in Germany and were in contact with German as their L2 (second language) early in their lives.

#### 4.2 Results

4.2.1 Results for Max. The following table summarizes the results for Max. It contains the number of occurrences of the relevant construction and the age (span) in which they occur.

Construction	Occurrences	Age (span)
SynC+GEN	3	5;4-6;1
SynC+ <i>chem</i> -clause	10	5;4
Adverbial +GEN <sup>12</sup>	1	5;9
Superlatives	9	5;4-6;10
Equatives	-	-

**Table 3:** Occurrences of all degree constructions (Max)

Let us now see how the predictions fare in the light of the results in the case of Max. Contextual comparatives should come first. The first instance can be found at the age of 3;9.

<sup>11</sup> This is the notation for the age of the children. 2;3 means "two years and three months".

<sup>12</sup> This is the adverbial case with a genitive-marked standard.

- (34) \*FAT: a e'tot pomestilsja by, on men'she, [...]...  
 'This one would fit in, he is smaller, [...]...  
 \*CHI: on tozhe **men'she**.  
 'He is also **smaller**.'  
 %com: The child points to the wale.  
 \*FAT: on tozhe men'she, no e'tot kit est tol'ko plankton.  
 'He is also smaller, but this wale only eats plankton.'  
 (transcript: Max\_3\_09\_14\_r\_kod, age: 3;9)

As predicted, the contextual comparative follows the unmarked form of the adjective and precedes the SynC with a genitive-marked standard. Interestingly, contextual comparatives are the one construction that Max uses quite regularly, namely at 5;4, 5;8, 5;9, 6;1, 6;6 and also in the last transcript at 6;10.

It seems that SynC with genitive-marked standards appear simultaneously with SynC+*chem*-clauses for the very first time, namely at 5;4. However, there is a large gap (between the ages 4;6 and 5;4), i.e. I cannot conclude that the SynC+*chem*-clauses and "SynC+GEN" were really uttered simultaneously for the first time. They could have been produced in different orders during those 10 months, but we cannot know for sure due to the lack of data in this span of time. Thus, I cannot determine the age of acquisition for Max's "SynC+GEN" and his *chem*-clauses. However, the data also do not falsify the predictions.

According to the predictions, superlative constructions, since they are evaluative, should appear last, i.e. at Stage 5, from Figure 1, which seems to be the case. The fact that the superlative appears at 5;4, seemingly simultaneously with the *chem*-clauses and "SynC+GEN," is not problematic because of the gap in data between ages 4;6 and 5;4, as previously mentioned. Although the age of acquisition cannot be determined quantitatively through First of Repeated Uses (FRU, cf. Stromswold (1990)), late examples suggest that Max's superlatives solidify and are used correctly, according to the contexts in which they are uttered.

- (35) \*CHI: [...]  
 ja **samyj** **sil'nyj** v mire  
 I most<sub>MASC</sub> strong<sub>MASC</sub> in world  
 '...I am the strongest in the world.'  
 (transcript: Max\_6\_01\_09\_r\_kod, age: 6;1)

There are no equatives of the relevant type in Max's transcripts. There are only three potential candidates, which all had to be rejected due to the fact that it is not clear which meaning that the child was intending to convey in the context.

There is one case of an adverbial comparative with a genitive-marked standard at 5;9. However, it is not a very clear use of the form, because the child splits the sentence and the standard of comparison ends up being quite far from the verb. I can only say that it is a rather late use, occurring after the use of the *chem*-clause so the child might have acquired DA by this time.

4.2.2 Results for David. The following table summarizes the results for David. Note that although David's average length of utterance is higher than Max's (443.6 vs. 187.6), this did not turn out to be an advantage.

Construction	Occurrence	Age (span)
Contextual	3	2;11-5;2
SynC+GEN	1	3;6
SynC+ <i>chem</i> -clause	3	4;6-5;11
Adverbial +GEN	-	-
Superlatives	-	-
Equatives	-	-

**Table 4:** Occurrences of all degree constructions (David)

David uses plenty of lexicalized forms of comparatives, such as *dal'she* ('further' which means "continue, go on doing something"), *bol'she* (used with some kind of negative element meaning 'anymore'), or *luchshe* ('better', meaning 'rather'), but he uses very few of the genuine comparatives in which we are interested. In David's case, it is most helpful to look at the very first use of all the constructions.

The contextual comparative is the first comparative he uses, as predicted. When we look at the other comparative constructions, we only find one single instance of a genitive-marked synthetic comparative, at age 3;6.

- (36) \*INV: tjomnen'kij mal'chik?  
 'The dark boy?'  
 \*CHI: da .  
 'Yes.'  
 \*INV: ego zovut Azarija.  
 'His name is Azarija.'  
 \*CHI: net drugoj kotoryj **postarshe** menja.  
           no other<sub>MASC</sub> who<sub>MASC</sub> old<sub>COMP</sub> I<sub>GEN</sub>  
 'No, the other one who is somewhat older than me.'  
 (David\_3\_06\_r24\_kod; age 3;6)

The SynC+*chem*-clause appears three times with one occurrence at 4;6 and two occurrences at 5;11. The conclusion to draw for all the comparative constructions is that the age of acquisition cannot be determined. One solid observation that can be made is that the very first use of the *chem*-clause follows the very first (and only) use of the genitive-marked case. This result points in the direction of our hypothesis, namely that the *er*<sub>CLAUSAL</sub> needed for *chem*-clauses is harder to acquire than the *er*<sub>GEN</sub> where no abstraction takes place.

Further, David's transcripts do not contain any genuine superlatives or equatives. This absence is also telling and will be discussed in the next section.

4.2.3 Discussion of the Results. It is not possible to determine the exact age of acquisition for any of the constructions. Although Max's and David's gradable adjectives, as well as Max's contextual comparatives, his SynC +*chem* and his superlatives occur quite consistently in the corpus, the age of acquisition cannot be determined. All of the other constructions appear too rarely or do not appear at all. A serious drawback of the corpus is obviously the small number of data points for the relevant constructions. Nevertheless, the current results do not falsify my predictions. The very first occurrence of all of the investigated constructions follow the predicted order of acquisition.

A striking outcome of the present study is the fact that evaluative constructions either do not appear at all or appear late, suggesting late acquisition of evaluativity. Remember that analytic comparatives, superlatives and equatives are evaluative in Russian (cf. Table 2). In the corpus, no analytic comparatives could be found either for Max or for

However, we could easily have imagined a different pattern of acquisition: the children begin with the positive form of the adjective, which are clearly the first degree constructions in our corpus. Importantly, the positive is evaluative. Consider a possible semantics for the positive in (37):

- Example (37c) shows that the operator POS is contextually dependent, the variable “s” must be provided by the context. Thus, if the child knows from the very beginning that the positive form of the adjective is evaluative, she could just leave the evaluative component in her grammar throughout and first adopt it for all other degree constructions.

(38)  $\llbracket \text{vysokij} \rrbracket = \lambda x. x$  counts as tall in  $c$  (type  $\langle e, t \rangle$ )



The child would assume that a context variable *c* is always needed for all comparative constructions. Later, the child would realize that she has to change her positive-based semantics, since not all constructions are evaluative. If this was the case, all constructions that are not evaluative should be acquired later. However, the corpus data presented here suggest just the opposite. Under my proposal, the question that still remains is: how exactly it is possible for the children to distinguish between the positive, which is an evaluative construction and the other evaluative degree constructions, which are acquired later? What is the nature of the evaluativity of the positive as opposed to the evaluativity of, for example, the Russian superlative? An answer to this question cannot be provided within the scope of the present paper, but it is without doubt an interesting question for future research.

## 5 Conclusions

This paper combines the theory of language acquisition, cross-linguistic research on comparatives and the semantics of comparative constructions. Idiosyncrasies found in Russian comparison constructions turned out to be of major importance for the predictions about language acquisition. For instance, the genitive-marked cases had to be distinguished from *chem*-clauses due to their different semantics. I have shown that “SynC+GEN” should precede *chem*-clauses in the time course of acquisition. In contrast to synthetic cases, the evaluative analytic comparatives did not even appear in the recordings, i.e. it was correct to distinguish the synthetic and analytic forms in the acquisition process.

A clear result from this study is that most of the Russian evaluative constructions do not occur in the corpus at all. Since I showed that other degree constructions do appear during the recordings, albeit in a small number, the absence of most of the evaluative constructions is meaningful. We have seen that evaluativity contributes an additional meaning component (via the EVAL operator) making analytic comparatives, superlatives and equatives harder to acquire for the Russian child. An alternative analysis, such as Klein’s (1980) vague predicate approach would probably make the prediction that evaluative constructions should be acquired early, followed by non-evaluative ones. However, this is not what this corpus study shows, thereby providing positive evidence in favor of the degree approach to comparison

constructions. Another outcome of the study is that adverbial cases should be investigated in more detail in the semantic literature and in acquisition.

Finally, I would like to emphasize the pressing need for more longitudinal corpora of child speech. We learn a lot from a longitudinal study like the one presented in this paper, and methodologically this kind of study is certainly on the right track. It would be very interesting to test the predictions demonstrated in this paper on other, larger corpora of child speech and maybe also experimentally.

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## **Simultaneity and Anteriority Converbs and Aspectual Mismatches in Polish – An ERP Study\***

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### **1 The Issue**

In this paper, we report the results of our Event Related Potentials (ERPs) experiment in which we tested the processing of aspectual mismatches at the morphological level and at the semantic/pragmatic level in two kinds of converbial contexts in Polish: (i) simultaneous converbs (see (1a)) and (ii) anterior converbs (see (1b)). Converbial contexts in Polish constitute an ideal setting for investigating the processing of aspectual mismatches at the morphological level and at the discourse level because they impose two kinds of restrictions: (i) specific morphological selectional requirements as well as (ii) specific semantic/pragmatic constraints on temporal ordering.

- (1) a. Anna szła do pokoju pal-ąc papierosa  
Ann walk<sub>PAST.3SG.F.IMPF</sub> to room smoke<sub>.IMPF-SIM.PRT</sub><sup>1</sup> cigarette  
'Ann was walking to the room (while) smoking a cigarette.'

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<sup>1</sup> For clarity, we will separate converbial morphemes as well as perfective prefixes from the rest of the verb with a hyphen, although this is not a convention of Polish orthography.

- b. Anna we-szła                      do pokoju za-pali-wszy                      papierosa.  
 Ann <sub>PERF</sub>-walk<sub>PAST.3SG.F</sub> to room <sub>PERF</sub>-smoke-<sub>ANT.PRT</sub> cigarette  
 ‘Ann entered the room having smoked/lit a cigarette.’

### 1.1 Morphological Selectional Requirements

1.1.1 Facts. A simultaneous converb, e.g. *paląc* in (1a), meaning ‘while smoking,’ consists of a converbial morpheme *-ąc* attached to a verbal stem. An anterior converb, e.g. *zapaliwszy* in (1b), meaning ‘after having smoked/lit (a cigarette),’ consists of a converbial morpheme *-wszy* attached to a verbal stem. These two converbial morphemes impose specific selectional restrictions as to what kind of an aspectual verbal stem they can combine with: the simultaneity morpheme *-ąc* selects for an imperfective verbal stem while the anteriority morpheme *-wszy* selects for a perfective verbal stem. Given that, in Polish, every verb is morphologically marked either by perfective or imperfective aspect, adding the opposite aspectual form to a converbial morpheme than the one for which it selects results in a morphological mismatch. It should be the case that, for both kinds of converbial morphemes, this aspectual mismatch leads to the same unacceptability. However, our initial acceptability judgement tests revealed that when the simultaneity morpheme *-ąc* is combined with a perfective verbal stem, as in (2a), it leads to a stronger unacceptability than when the anteriority morpheme *-wszy* is combined with an imperfective verbal stem, as in (2b).

Moreover, we checked the frequency of occurrences of both kinds of converbs in the Polish National Corpus IPI PAN.<sup>2</sup> We found 12,990 occurrences of converbs altogether, whereby the simultaneous converbs made up 90.46% of possible occurrences (11,750 occurrences) and anterior converbs only made up 9.54% of possible occurrences (1240 occurrences). Based on these observations, we hypothesize that, in spite of the fact that the morphological mismatches presented in (2a) for simultaneous converbs and in (2b) for anterior converbs are formally analogous, they will not be processed in an analogous way in the brain.

<sup>2</sup> *Narodowy Korpus Języka Polskiego* [Eng.: National Corpus of Polish], ed. Adam Przepiórkowski, Mirosław Bańko, Rafał Górski, and Barbara Lewandowska-Tomaszczyk. Warsaw: PWN, 2012, 2<sup>nd</sup> edition, 250 M segments.

- (2) a. \* Anna szła do pokoju za-pal-ąc. papierosa  
 Ann walked<sub>IMPF</sub> to room <sub>PERF</sub>-smoke-<sub>SIM.PRT</sub> cigarette  
*Intended*: ‘Ann was walking to the room (while) having smoked/lit a cigarette.’
- b. ??Anna we-szła do pokoju paliwszy papierosa.  
 Ann <sub>PERF</sub>-walked to room smoke-<sub>IMPF-ANT.PRT</sub> cigarette  
*Lit.* ‘Ann entered the room (after) having smoked a cigarette.’

1.1.2 Hypotheses. We know from the literature that morpho-syntactic selection, which is semantically-based, should engender a P600 component. The studies reported in Münte et al. (1997), Huddleston et al. (2003), and Yamada and Neville (2007) show that morpho-syntactic violations that lead to a P600 in real language sentences do not emerge or are attenuated when used in a jabberwocky context. Bott (2010) takes this to mean that the P600 is an index of interpretation difficulty, reflecting both semantic and syntactic integration problems. Our question is whether both types of formally analogous morphological mismatches, presented in (2a) and (2b), will elicit the same ERP component (e.g. the P600 component) despite the differences in the usage frequencies of these forms. Based on the observations pointed out in section 1.1.1, the initial hypothesis that we will test in our experiment is that the morphological aspectual mismatches in simultaneous and in anterior converbs will elicit different (in quality or in quantity) ERP signatures.

## 1.2 Semantic/Pragmatic Constraints on Temporal Ordering

1.2.1 Facts. In addition to the fact that converbial morphemes impose specific morphological selectional restrictions, they also impose specific temporal orderings between main clause eventuality and converbial eventuality. Evidently, the anterior converb *zapaliwszy* (‘after having smoked/lit (a cigarette)’), in (1b), requires that main clause eventuality follows converbial eventuality, whereas the simultaneous converb *paląc* ‘while smoking a cigarette,’ in (1a), requires that there is an overlapping temporal relation between the main clause eventuality and the converbial eventuality. The perfect match for an anterior converb would be a perfective matrix verb (as in (1b)) while the perfect match for a simultaneous converb would be an imperfective matrix verb (as in (1a)). This is due to the fact that a perfective verb denotes an eventuality with clear boundaries, which, in turn, makes it possible to use a perfective

eventuality after the converbial eventuality. In contrast, an imperfective verb denotes an unbounded eventuality, which can overlap with the converbial eventuality. Given this fact, another question in which we are interested is: What happens in the brain when these ideal matches are not respected? In other words, what happens when an anterior converb is combined with an imperfective matrix verb and when a simultaneous converb is combined with a perfective matrix verb, as shown in (3a) and (3b), respectively?

- (3) a. ?\*Anna szła do pokoju za-pali-wszy  
 Ann walked-<sub>IMPF</sub> to room <sub>PERF</sub>-smoke-<sub>ANT.PRT</sub>  
 papierosa.  
 cigarette  
*Lit.:* ‘Ann was walking to the room (after) having smoked/lit a cigarette.’
- b. ?Anna we-szła do pokoju paląc papierosa.  
 Ann <sub>PERF</sub>-walked to room smoke-<sub>IMPF-SIM.PRT</sub> cigarette  
 ‘Ann entered the room while smoking a cigarette.’

1.2.2 Hypotheses. Given that in neither (3a) nor in (3b) the required temporal orderings between the main clause eventuality and the converbial eventuality are respected, one might expect that they will give rise to some implicit repair process such as, coercion. In order to “repair” (3a), the processor would need to add an initial boundary to the main clause eventuality, thus making it possible to temporally locate it after the eventuality denoted by the anterior converb. In this case, we might expect a kind of additive (precisely, inceptive) coercion that, as reported in the literature (see Bott 2010), gives rise to a working memory LAN in German. However, our initial native speaker judgment tests showed that sentences of the type presented in (3a) are unacceptable, which suggests that, in Polish, these contexts lead to a violation rather than coercion. This might be caused by the fact that, unlike in German, in Polish, all verbs are obligatorily marked for either perfective or imperfective aspect. The unacceptability of the contexts presented in (3a) results from the fact that the expected inceptive coercion is blocked by the existence of perfective aspect, which could express inception overtly. Based on this observation, our initial hypothesis is that inceptive coercion in Polish is blocked by the existence of perfective aspectual morphology and



therefore we expect to elicit an ERP effect in our experiment, which is different from the LAN found by Bott (2010) for inceptive coercion in German. Conversely, in order to repair (3b), the processor would need to include the main clause eventuality in the converbial eventuality, thus satisfying the “simultaneity” temporal relation as required by the simultaneous converb. Regarding example (3b), our initial hypothesis is that it will be more difficult to create an “inclusion” relation between the main clause and the converbial eventuality in order to satisfy the temporal ordering relation requirement imposed by the simultaneous converb, as opposed to a situation in which both main and converbial eventualities are perfectly overlapping, as in (1a). It will be interesting to see whether this expected increase in processing costs will be manifested in some specific ERP signature.

## 2 Design and Experimental Procedures

### 2.1 Design

2.1.1 Experimental Conditions. The research questions discussed in Sections 1.1 and 1.2 give rise to the following experimental design. We decided to create two sets of data, SET A and SET B, each set consisting of three conditions:<sup>3</sup>

#### SET A

##### *Condition 1: Control*

imperfective main verb + SIM converb

##### *Condition 2: Morphological mismatch*

imperfective main verb + \*SIM converb

##### *Condition 3: Semantic/pragmatic mismatch*

imperfective main verb + ANT converb

#### SET B

##### *Condition 1: Control*

perfective main verb + ANT converb

##### *Condition 2: Morphological mismatch*

perfective main verb + \*ANT converb

##### *Condition 3: Semantic/pragmatic mismatch*

perfective main verb + SIM converb

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<sup>3</sup> The examples of Set A and Set B are provided in the Appendix.

Condition 1 is a control condition since the simultaneous converb in Set A is derived from an imperfective (durative/unbounded) verb, thus obeying the selectional restrictions of the simultaneity morpheme *-qc*, and accordingly, the anterior converb in Set B is derived from a perfective (bounded) verb, thus obeying the selectional restrictions of the anteriority morpheme *-wszy*.

Condition 2 represents a morphological mismatch since, in Set A, the simultaneity morpheme *-qc* is combined with a perfective (bounded) verb hence its selectional restrictions are violated. Accordingly, in Set B, the anteriority morpheme *-wszy* is combined with a wrong imperfective verb.

Condition 3 is an instance of a semantic/pragmatic mismatch at the discourse level. In Set A, the converbial clause contains an anterior converb which requires that the main clause eventuality be temporally located after the converbial clause eventuality. In order for this to happen, the eventuality in the main clause should have an initial boundary. However, the main verb in Condition 3 (Set A) is imperfective (i.e. semantically unbounded), hence there is a mismatch. In Condition 3 in Set B, the converbial clause contains a simultaneous converb which requires that the main clause eventuality be temporally overlapping with the converbial eventuality. Ideally, an imperfective verb denoting an unbounded eventuality should be used in the main clause to guarantee the overlapping temporal relation between two events. However, in this case, the main clause eventuality is marked with perfective aspect and it is understood as being enclosed within the converbial eventuality.

For “morphological mismatch” conditions, we used a within-set comparison with the control condition. Regarding the semantic/pragmatic mismatches,” an across-set comparison was necessary. For the across-set comparison, sentences in Condition 1 in Set A and Set B served as control conditions for sentences in Condition 3 in Set B and Set A, respectively.

**2.1.2 Materials.** Three hundred stimulus items were constructed. All of them consisted of a main clause followed by a converbial clause. The structure of the main clauses was: subject, finite past tense verb followed by either an object or an adverbial. Converbial clauses consisted of the following sequence: a simultaneous or an anterior adverbial participle derived from a transitive verb, followed by a direct object and an

adverbial. (The latter was included to prevent spillover effects.) Two stimulus lists were created using these 300 test sentences. Each list contained 150 sentences (50 per Condition) and was supplemented by 150 filler stimuli. Of the filler stimuli, 75 were well-formed and plausible and 75 were ill-formed. The filler stimuli were complex sentences, i.e. similar to the test sentences. Specifically, they consisted of a finite main clause and an adverbial clause. The incorrect filler sentences mainly contained different kinds of aspectual mismatches. All the stimuli were pseudo-randomized. The critical word for our study was the converb but triggers were marked both on the critical word and on the word following the critical word.

The length of the critical words (i.e. the converbs) was controlled. This was important due to the peculiarities of Polish aspectual morphology. To be brief, in Polish, there are bare imperfectives (i.e. non-derived forms), e.g. *pisać*<sub>impf</sub> ('to write'), and secondary imperfectives, e.g. *[[podpis]<sub>perf</sub>]+ywać*<sub>impf</sub> ('to sign'). Due to the fact that secondary imperfectives contain the imperfectivizing suffix *-ywa*, they are usually longer than bare imperfectives. To control the length of the imperfective forms of the critical words, 50% of them had a bare imperfective form and the other 50% of the critical words had a secondary imperfective form.

What about perfectives in Polish? The most productive way of creating a perfective construction is by adding a prefix to a bare imperfective form, e.g. *pisać*<sub>impf</sub> ('to write') becomes *na-pisać*<sub>perf</sub> ('to finish writing'). This perfectivizing strategy makes a derived perfective form longer than its bare imperfective base. The second possibility of forming a perfective form is by using a specific (perfectivizing) semelfactive morphology, e.g. *kichać*<sub>impf</sub> ('to sneeze (several times)') becomes *kichnąć*<sub>perf</sub> ('to sneeze once'). The third strategy is to alternate a stem of the secondary imperfective form which usually contains a lexical prefix, e.g. *[[podpis]<sub>perf</sub>]+ywa-ć*<sub>impf</sub> ('to sign' (either a continuous reading or a habitual reading)) becomes *[pod-[pisać<sub>impf</sub>]]*<sub>perf</sub> ('to sign'). Using the latter two strategies to create perfective aspectual forms guarantees that the perfective members of the respective aspectual pairs are shorter or at least as long as their imperfective counterparts. To control the length of the perfective forms of the critical words, 50% of the critical words were formed by adding a prefix to a bare imperfective stem and the other 50%

of the critical words were formed by alternating a stem of the corresponding non-semelfactive or secondary imperfective form.

## 2.2 *Experimental Procedure*

2.2.1 Participants. Forty-three native speakers of Polish (29 females, mean age = 23.9, range = 18-37 years) were recruited at the University of Wrocław and received partial course credit for their participation in the experiment. All of the participants were right-handed according to the Edinburgh Handedness Inventory and had normal or corrected-to-normal vision. No participants had neurological or psychiatric disorders or reported neurological traumas.

2.2.2 Procedure. Participants were tested individually in one session. The whole experiment (including the application of electrodes) lasted for approximately 90 minutes. Following the application of the EEG electrodes, subjects were seated in front of a Samsung 22-inch LCD computer screen, approximately 1 m away. All stimuli were presented in a white courier font, size 48, on a black background using Presentation software.

The experimental session was preceded by instructions and a practice session. As part of the instructions, the participants were asked not to move or blink while a sentence was displayed. They were informed that the sentences would be presented segment by segment and that each sentence would be followed by an acceptability judgment question. The participants were instructed to provide their judgments as fast as possible. They were also instructed about which button on the Razor keyboard corresponded to which answer and which index finger they should use. To avoid the effects of lateralized readiness potential, half of the participants performed the task with the right hand, and the other half did so with the left hand.

After reading the written instructions, the participants were given a practice block with several sentences related to the experiment to familiarize each subject with the task. After the practice session, the participants received explicit feedback about any errors they made. The practice session was followed by six experimental blocks, which each containing 50 sentences. After each block, there was a break to give the subjects an opportunity to relax.

Each trial consisted of the following events: A fixation cross appeared in the center of the screen for 1000 ms, after which a stimulus sentence was presented in a word-by-word or segment-by-segment (in the case of prepositional phrases) manner. Each word or segment appeared in the center of the screen for 550 ms, followed by a short blank screen interval. The final words in a sentence appeared with a full stop. Every sentence was accompanied by an acceptability judgment question. The possible answers were: ACCEPTABLE, UN-ACCEPTABLE, I DO NOT KNOW. After 4000 ms, the next trial started automatically.

The judgment questions were used to control the level of attention. For Condition 1 (control condition) in Sets A and B, the expected answer was ACCEPTABLE. For Condition 2 (morphological mismatch condition), the expected answer was UNACCEPTABLE. For Condition 3 (pragmatic/semantic mismatch condition), the judgments were more delicate so we did not a priori assume any correct answer. Therefore, only Conditions 1 and 2 could be used to remove data from our experiment: a high number of incorrect answers would indicate that the subject was paying little or no attention during the experiment. In contrast, in Condition 3, any answer was considered possible and relevant for further analysis. In our experiment, no participant was rejected due to a high number of incorrect answers, indicating that all participants were indeed paying attention above chance.

**2.2.3 EEG Recordings.** The EEG-activity was measured with 24 Ag/AgCl-electrodes, which were attached to the scalp using the Easycap system at Fz, FCz, Cz, CPz, Pz, POz, FC1, F3, C3, P3, O1, FC5, CP5, F7, P7, FC2, F4, C4, P4, O2, FC6, CP6, F8, and P8. The ground electrode was positioned at AFz. Electrode positions were chosen according to the international 10/20 system. All signals were referenced to A1 electrode (left mastoid) and later re-referenced to the average of the left (A1) and right (A2) mastoids. Horizontal eye activity was measured by placing two electrodes two cm lateral to the right (EOGR) and the left (EOGL) canthus. Vertical eye activity was measured by placing two electrodes three cm above (EOGU) and below (EOGD) the pupil of the right eye. Electrode impedances were kept below 5 k $\Omega$ . All electrophysiological signals were digitized with a frequency of 250 Hz. A high cut-off filter of 30 Hz was used. The ERPs were filtered offline

with a 10 Hz low pass filter for the plots, but all statistical analyses were computed on non-filtered data. During visual inspection of the quality of the recorded data obtained for each participant, we decided to exclude the data of four participants due to the high number of artifacts.

### 3 Results: ANOVA via ROIs

We defined the following regions of interest (ROIs): *left-anterior* (F3, F7, FC1, FC5), *central-anterior* (C3, C4, Cz, FCz, Fz), *right anterior* (F4, F8, FC2, FC6), *left posterior* (CP5, O1, P3, P7), *central posterior* (CPz, O2, POz, Pz), *right posterior* (CP6, O2, P4, P8), and *midline* (CPz, Cz, FCz, Fz, POz, Pz). The midline ROI was not relevant for further analysis. Mean voltages for each ROI were calculated using the averages of all participants. The time windows for our analyses of the two morphological and two semantic/pragmatic (“inclusion” and “inception”) mismatches were selected based on visual inspection of average waveforms. For each chosen time window, we performed a paired *t*-test of the mean voltages in all six ROIs. Analyses were performed in a hierarchical fashion, i.e. only statistically significant interactions were resolved.<sup>4</sup>

#### 3.1 Results for Comparison 1: Condition 2/Set A (morphological violation) vs. Condition 1/Set A (control)

In Figure 1, a very strong positive-going component is present between 600 and 1000 ms following word onset in all locations with a peak at 800 ms. The effect is the strongest in the left, central and right posterior ROIs. Given the positive deflection of the reported ERP waves and their characteristic posterior distribution as well as their latency, the observed ERP pattern corresponds to the P600 component.

There was a main effect of Condition ( $F(1,18) = 29.25, p < 0.001$ ) and ROI ( $F(5,90) = 13.19, p < 0.001$ ), and an interaction was found between Condition and ROI ( $F(5, 90) = 16.39, p < 0.001$ ). The statistical analysis of the P600 effect in the time window of 600-1200 ms revealed an effect of Condition in all ROIs: In the central anterior ROI ( $t(18) =$

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<sup>4</sup> In order to avoid excessive Type I errors due to violations of sphericity, we applied the Huynh-Feldt correction, when the analysis involved factors with more than one degree of freedom in the numerator. We also applied the Greenhouse-Geisser correction.

-4.59,  $p < 0.001$ ), in the right anterior ROI ( $t(18) = -3.99$ ,  $p < 0.001$ ), in the left posterior ROI ( $t(18) = -5.81$ ,  $p < 0.001$ ), in the central posterior ROI ( $t(18) = -7.32$ ,  $p < 0.001$ ), in the right posterior ROI ( $t(18) = -6.49$ ,  $p < 0.001$ ).

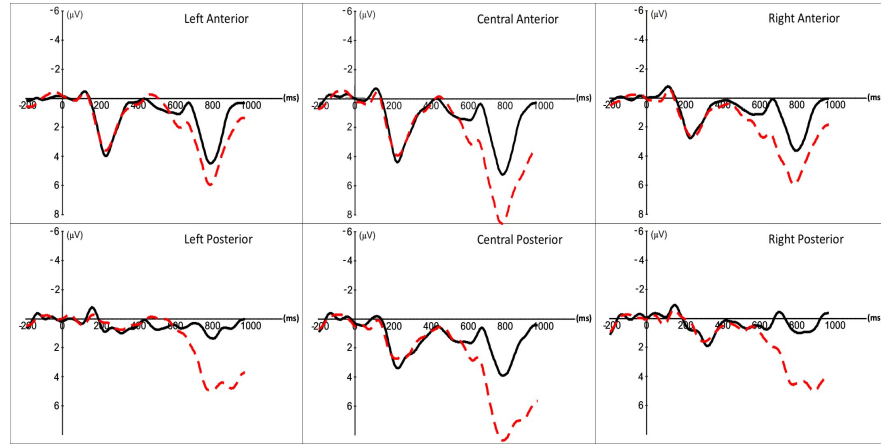


Figure 1: ERP patterns from the onset of the critical word (converb) up to 1000 ms<sup>5</sup>

### 3.2 Results for Comparison 2: Condition 2/Set B (morphological violation) vs. Condition 1/Set B (control)

In Figure 2, a positive-going component (P600) was present between 700 and 900 ms (post onset) following a word onset in central posterior and right posterior ROIs. However, it was preceded by a negative component within 300-500 ms (post onset). The negative component was the strongest in the central anterior and left anterior ROIs, though the effect was statistically significant also in the right anterior and left posterior ROIs. Given the negative deflection of the reported ERP waves peaking between 300 and 500 ms as well as their characteristic bilateral distribution, the observed ERP pattern most likely corresponds to the N400 component.

<sup>5</sup> The solid line shows the control conditions, the broken line the critical one.

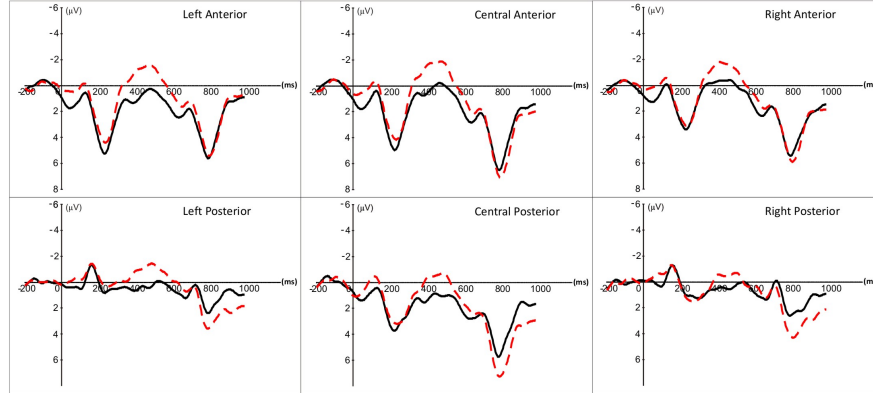


Figure 2: ERP patterns from the onset of the critical word (converb) up to 1000 ms

Regarding the time window of 300-500 ms, there was main effect of Condition ( $F(1,19) = 7.53, p < 0.05$ ) and ROI ( $F(5, 95) = 4.72, p < 0.001$ ), and an interaction between Condition and ROI ( $F(5, 95) = 3.2, p < 0.05$ ). The statistical analysis of the N400 effect in this time window revealed an effect of Condition in the following ROIs: In the left anterior ROI ( $t(19) = 3.29, p < 0.01$ ), in the central anterior ROI ( $t(19) = 2.9, p < 0.01$ ), in the right anterior ROI ( $t(19) = 2.78, p < 0.05$ ), in the left posterior ROI ( $t(19) = 2.46, p < 0.05$ ).

As for the time window of 700-900 ms, there was no effect of Condition but there was a strong effect of ROI ( $F(5, 95) = 12.28, p < 0.001$ ), and a weak effect of an interaction between Condition and ROI ( $F(5, 95) = 3.16, p < 0.05$ ). The statistical analysis of the P600 effect in this time window revealed a marginally significant effect of Condition in the central posterior ROI ( $t(19) = -1.91, p = 0.07$ ) and in the right posterior ROI ( $t(19) = -1.91, p = 0.07$ ).

### 3.3 Results for Comparison 3: Condition 3/Set A (“inception”) vs. Condition 1/Set B (control)

There was no significant effect of Condition and no significant effect of an interaction between Condition and ROI. However, a strong, significant effect of ROI was found ( $F(5, 185) = 26.0015, p < 0.001$ ). As will be pointed out in Section 3.4, we obtained statistically relevant effects for this comparison while using generalized additive modeling.



Upon visual inspection, we noticed a trend towards positivity that turned out to be most statistically significant in the left posterior ROI: at the electrode sites P7 ( $p < 0.05$ ) and P3 ( $p = 0.07$ ). In Figure 3, a positive-going component (P600-like) is present between 700 and 900 ms following word onset at the electrode site P7. Given the positive deflection of the reported ERP waves and their posterior distribution as well as their latency, the observed ERP pattern most likely corresponds to the P600 component.

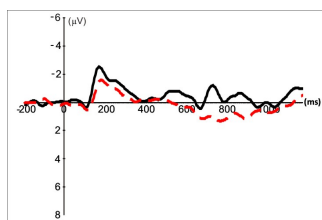


Figure 3: ERP pattern from the onset of the critical word (converb) up to 1200 ms at the electrode site P7

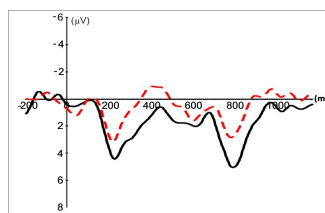


Figure 4: ERP pattern from the onset of the critical word (converb) up to 1200 ms at the electrode site Pz

### 3.4 Results for Comparison 4: Condition 3/Set B (“inclusion”) vs. Condition 1/Set A (control)

In Figure 4, a negative-going component is present between 250 and 500 ms following word onset at the electrode site Pz. Given the negative deflection of the reported ERP waves peaking between 300 and 500 ms and their (central) posterior distribution, the observed ERP pattern most likely corresponds to the N400 component. There was a significant effect of Condition ( $F(1,37) = 4.51, p < 0.05$ ) and ROI ( $F(5, 185) = 3.75, p < 0.01$ ), but there was no significant effect of an interaction between Condition and ROI. The observed negativity was the strongest in the central posterior ( $p < 0.01$ ) and left posterior ROIs ( $p < 0.05$ ) (especially at the following electrode sites: Pz ( $p < 0.01$ ), POz ( $p < 0.01$ ), P3 ( $p < 0.01$ ), CPz ( $p = 0.01$ ), less strongly at C3 ( $p < 0.05$ ), and Cz ( $p < 0.05$ )).

All the observed effects, summarized below in Table 1, were statistically confirmed in our additional analysis of the data in which we used a generalized additive modeling (GAM). This model is extensively motivated independently in Błaszczak, Jabłońska and Klimek-Jankowska (2014).

<b>Morphological mismatches</b>	<b>Results</b>
Comparison 1 <i>Condition 1/Set A vs. Condition 2/Set A</i>	P600
Comparison 2 <i>Condition 1/Set B vs. Condition 2/Set B</i>	N400 + late positivity trend (a P600-like component)
<b>Pragmatic mismatches</b>	<b>Results</b>
Comparison 3 <i>Condition 1/Set B vs. Condition 3/Set A</i> ("inception")	late positivity trend (a P600-like component)
Comparison 4 <i>Condition 1/Set A vs. Condition 3/Set B</i> ("inclusion")	negativity trend (an N400-like component)

Table 1: Summary of the ERP results

## 4 Discussion

### 4.1 *Morphological Mismatches*

Surprisingly, we obtained different ERP signatures for two apparently analogous morphological violations: \*SIM + perfective verb and \*ANT + imperfective verb.

4.1.1 Comparison 1. Why do we observe a P600 for the first morphological violation in which a simultaneity converbial morpheme is combined with the wrong aspectual stem? The P600 is traditionally taken to reflect problems with syntactic or semantic composition at the phrasal level. According to this standard view, we could assume that the P600 elicited by Condition 2 in Set A, as compared to the control condition, reflects a difficulty in semantic and syntactic integration of the two elements (the converbial morpheme and the wrong aspectual form of the verbal stem).

4.1.2 Comparison 2. This comparison concerns the apparent analogous morphological violation in Condition 2 Set B when compared to the control condition. We could propose the same explanation for the observed late positivity, which in this case reflects a difficulty in the morpho-syntactic integration of the anteriority converbial morpheme with the wrong aspectual form. How can we account for the fact that, for this combination, there is additionally an N400? This result can be

caused by the fact that anterior converbs are generally less frequent than simultaneous converbs, as pointed out in Section 1.1.1. Following Federmeier (2007), Kutas et al. (2006), Lau et al. (2008), and Barber and Kutas (2007), we are inclined to interpret the N400 component found when a morphological violation with an anterior morpheme and an imperfective stem was presented as a reflection of the increased amount of cognitive resources invested in recognizing an anteriority converb (due to its infrequency). This, in turn, results in a difficulty of retrieving the less frequent anterior converb from the lexicon. How can we explain the difference in the strength of the late positivity component in the two morphological mismatches? Recall that the morphological mismatch with simultaneous converbs elicited a very strong P600, while the late positivity found in the morphological mismatch condition in Set B was rather weak. Our initial hypothesis, supported by the results of our acceptability judgment tests, was that the contrast in the strength of P600 in two morphological conditions could be related to the fact that the ungrammatical anterior converbs are more acceptable than the ungrammatical simultaneous converbs. The observed results pattern with the findings reported in Yamada and Neville (2007), who show that morpho-syntactic violations leading to a P600 in real language sentences do not emerge or are attenuated when used in jabberwocky contexts. This may be related to the fact that it is impossible to retrieve jabberwocky words from the lexicon (see also Coch et al. 2012 for discussion about the processing of non-words as compared to real words). Following this line of reasoning, the morphological violations in anteriority converbs are judged as less fatal than violations of aspectual selectional restrictions of simultaneous converbs. The former are more difficult to retrieve from the lexicon (due to their low frequency of use) and consequently, their selectional restrictions are less transparent. If selectional restrictions of anteriority converbs are less transparent, violating these selectional restrictions makes it more difficult to determine grammaticality and thus, these sentences are not perceived as strong violations.

#### 4.2 *Pragmatic/Semantic Mismatches*

Recall from Section 3.3 and Section 3.4 that we obtained two different ERP patterns for our pragmatic/semantic mismatches. “Inception” elicited a late positivity while “inclusion” leads to a negativity trend.

4.2.1 Comparison 3. How can we account for the late positivity engendered by Condition 3/Set A as compared to Condition 1/Set B? Based on the context, the Polish sentence in Condition 3/Set A should behave like the English sentences reported by Brennan and Pylkkänen (2010), i.e. as instances of inchoative coercion, as seen in (4).

- (4) Within a few minutes, the child cherished the precious kitten.  
(*Inceptive coercion*)

The predicate, *cherish*, denotes a state. However, based on the context in (4), it is being enriched with a “begin-to-cherish” (inceptive) component in order to match the semantics of the completive adverbial, *within a few minutes*. The mechanism that enriches the interpretation is usually referred to in the literature as “coercion”. Note that not only states but also processes can undergo the process of inchoative coercion, as in (5), from de Swart (2011: 586).

- (5) John broke his leg in a car accident last year. Fortunately, it healed well, and in six months he was walking again.  
(*Inchoative reading of progressive process*)

Similarly, the Polish imperfective predicate, *szła do pokoju* (‘was walking to the room’), should be enriched with a “begin-to-go” (inceptive) component to match the requirement imposed by the anterior converb, i.e. that the eventuality in the main clause follows the eventuality in the converbial clause. This enrichment is necessary since the imperfective, *szła do pokoju* (‘was walking to the room’), denotes an ongoing process without any boundaries and thus we need to add a beginning component to be able to locate this eventuality after the converbial eventuality. In doing so, we satisfy the temporal requirements of the anterior converb. Inceptive coercion has been recently tested for psych verbs in English in a self-paced reading study and subsequent magnetoencephalography (MEG) study by Brennan and Pylkkänen’s (2010). They found a reading delay with inchoative coercion contexts and a distributed fronto-temporal effect around 300-500 ms for coercion. Further evidence was found in an ERP experiment conducted by Bott

(2010), who investigated additive coercion in German.<sup>6</sup> For this type of coercion, Bott reports a sustained working memory LAN.

Given that inceptive coercion is also an instance of additive coercion and given the finding reported by Bott (2010) for German, one might expect a similar effect in Polish. However, this is not the case. Recall that this type of pragmatic/semantic mismatch in Polish resulted in a late positivity. In order to explain this cross-linguistic difference, we should consider not only this particular experimental context but also look at how this context interacts with other properties of language-specific grammar. There is indeed one important difference between Polish and German in regards to their aspectual properties. In Polish, all verbs (with some minor exceptions) are obligatorily morphologically marked for either imperfective or perfective aspect; this is not the case in German, where aspect is not morphologically marked. Thus, the aspectual information in German is largely dependent on the lexical properties of a given verbal predicate and/or the context of use. The lack of morphological aspectual marking in German allows for more freedom in the interaction between lexical aspect and contextual information. In Polish, we predict that the interaction of lexical aspect and contextual information is more restricted by the presence of a specific morphological marking. Perfective morphemes usually resist further (contextual) modification or enrichment due to their very specific semantics (perfective predicates denote atomic (episodic) eventualities). In regard to imperfective forms, they have less specific semantics as they potentially allow for different interpretations: progressive, iterative, inceptive. Thus far, no ERP studies have been conducted investigating the properties of coercion in imperfective forms in Polish.

Regarding the interpretation of the ERP signature in the context of pragmatic/semantic mismatch in which an anteriority morpheme should trigger an inceptive coercion on the matrix imperfective verb, one might wonder why this seemingly semantic incongruity does not result in a negative ERP component (of the sort reported by Bott (2010) for additive coercion in German). Surprisingly, we obtained a late positivity, which

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<sup>6</sup> Additive coercion is defined by Bott (2010) as adding some part of an eventuality to the nucleus, for example, as in the case when a preparatory phase is added to an achievement, which results in an accomplishment. In inceptive coercion, inception is added to the nucleus of an eventuality.

was taken to indicate some morpho-syntactic violation, reanalysis or integration problems at the syntactic level in earlier ERP studies. However, more recent ERP studies have reported a P600 for semantic anomalies (see, among others, Kim and Osterhout 2005, Hagoort et al. 2009, Bornkessel-Schlesewsky et al. 2011), which makes our present finding not so surprising. Following Bornkessel-Schlesewsky et al. (2011: 148), it is possible that the positivity with a posterior scalp distribution that we report for this particular semantic/pragmatic mismatch (inceptive coercion) reflects a categorization process based on binary decision.

An N400 has been observed for semantic incongruities when there are many potential congruous continuations (as, for example, in the case of Kutas and Hillyard's (1980) example *He spread the warm bread with socks* as opposed to – for example – *butter, jam, honey*, etc.). Interestingly, when a given semantic incongruity only has one competing congruous continuation (as, for example, in *The opposite of black is nice* as opposed to *The opposite of black is white*, quoted from Bornkessel-Schlesewsky et al. (2011: 148)), a P300 is observed and it is taken to reflect the binary nature of the decision between a single congruous and a single incongruous continuation.

Following Bornkessel-Schlesewsky et al.'s (2011) proposal that a late positivity could be taken to be a delayed P300, we assume a similar interpretation for the late positivity we observed in the Polish inceptive coercion in the present study. Specifically, we take late positivity in our study to reflect a binary decision. In other words, we propose that the late positivity reflects the competition between two forms: a congruous perfective form of the matrix predicate, which would explicitly express the inception, and an incongruous imperfective form, which could potentially express the inception provided it undergoes the coercion process. Notice that if our interpretation is on the right track, it would mean that there is a specific ERP signature for a morphological blocking effect, namely a late positivity.

4.2.2 Comparison 4. How can we account for the negativity (N400) elicited by Condition 3/Set B when compared to Condition 1/Set A? Given the fact that the sentence in Condition 3/Set B is a plausible sentence, the question is: Why do we observe a negativity (an N400) with these constructions? Since the only difference between the two

contexts is the preferred simultaneity versus the less preferred inclusion, we take this to mean that the latter is more costly for the parser and this is reflected in the N400 component.

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## Appendix

### *Examples: Set A*

#### *Condition 1: Control*

- ✓ Anna szła do pokoju  
 Ann walked-<sub>IMPF</sub> to room  
 pal-ąc papierosa w pośpiechu.  
 smoke-<sub>IMPF-SIM-PRT</sub> cigarette in hurry  
 ‘Ann was walking to the room (while) smoking a cigarette in a hurry.’

#### *Condition 2: Morphological mismatch*

- \* Anna szła do pokoju  
 Ann walked-<sub>IMPF</sub> to room  
 za-pal-ąc papierosa w pośpiechu.  
<sub>PERF-SMoke-SIM-PRT</sub> cigarette in hurry  
 ‘\*Ann was walking to the room (while) having smoked/lit a cigarette in a hurry.’

#### *Condition 3: Semantic/pragmatic mismatch*

- ?\* Anna szła do pokoju  
 Ann walked-<sub>IMPF</sub> to room  
 za-pali-wszy papierosa w pośpiechu.  
<sub>PERF-smoke-ANT-PRT</sub> cigarette in hurry  
 Lit.: ‘Ann was walking to the room having smoked/lit a cigarette in a hurry.’  
 Intended: ‘Ann started walking to the room after she had smoked a cigarette in a hurry.’

### *Examples: Set B*

#### *Condition 1: Control*

- ✓ Anna we-szła do pokoju  
 Ann <sub>PERF</sub>-walked to room  
 za-pali-wszy papierosa w pośpiechu.  
<sub>PERF-smoke-ANT-PRT</sub> cigarette in hurry  
 ‘Ann entered the room (after) having smoked/lit a cigarette in a hurry.’

#### *Condition 2: Morphological mismatch*

- \* Anna we-szła do pokoju  
 Ann <sub>PERF</sub>-walked to room  
 pali-wszy papierosa w pośpiechu.  
 smoke-<sub>IMPF-ANT-PRT</sub> cigarette in hurry  
 Lit.: ‘Ann entered the room (while) having smoked a cigarette in a hurry.’

#### *Condition 3: Semantic/pragmatic mismatch*

- ? Anna we-szła do pokoju  
 Ann <sub>P</sub> <sub>ERF</sub>-walked to room  
 paląc papierosa w pośpiechu.  
 smoke-<sub>SIM-PRT</sub> cigarette in hurry  
 ‘Ann entered the room while smoking a cigarette in a hurry.’

## **More on the Edge of the Edge\***

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This paper examines phases with multiple edges, arguing that phasal edges are contextual: whether SpecXP is a phasal edge or not depends on whether X has other specifiers (Spec). Moreover, moving a Spec affects the phasal status of the remaining Specs. The starting point will be a Serbo-Croatian (SC) paradigm from Bošković (2013d), where a correlation between linear order and left-branch extraction (LBE) is established. SC allows AP LBE and subextraction; however, with demonstratives and possessors, such extraction is allowed only if the AP precedes other modifiers in the base order. Since possessors, but not demonstratives, can follow adjectives, only possessors allow such extraction (1), and only when they follow the adjective (2). However, even demonstratives allow extraction when they are moved (3).

- (1) *Crvena* je kupio Ivanova/\*ona kola.  
favorite is bought Ivan's that car  
'He bought Ivan's/that red car.'
- (2) *Na tebe* sam vidio ponosnog Savinog/\*Savinog ponosnog oca.  
of you am seen proud Savo's Savo's proud father  
'I saw Savo's father who is proud of you.'
- (3) *Ona crvena* je kupio kola.

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Bošković (2013d) uses these examples and a similar binding paradigm to argue for a contextual approach to phasal edges. In this paper, I provide additional data, also broadening the relevant anaphoric binding paradigm, which argue for this approach. I also discuss several issues that remained unresolved in Bošković (2013d) regarding multiple LBE cases like (3), including the reason for its acceptability (rather surprising, given (1)), which will involve providing a new implementation of the rescue by deletion mechanism, and discuss a number of pragmatic and semantic restrictions on the availability of multiple LBE. A digression is required first in order to introduce the relevant background regarding SC NPs and the phase system adopted here.

### 1 On the NP/DP analysis and phases

A lot of previous work has argued that SC lacks DP (Bošković 2012, Corver 1992, Despić 2011, Marelj 2008, Runić 2012, Zlatić 1997, among others). I made this claim for all article-less languages based on a number of syntactic and semantic generalizations that correlate with articles that follow if DP is absent from T(raditional)NPs of article-less languages (*TNP* is used neutrally regarding any functional structure above NP). In this system, possessors, which in every respect behave like adjectives in SC (Bošković 2005, Zlatić 1997), are treated as NP adjuncts.<sup>1</sup> One relevant argument, from Despić (2011), is provided by (5), which contrasts with (4). Given that the possessor is NP-adjoined and that SC lacks DP, the possessor c-commands out of the TNP in (5), which results in binding violations. Nothing changes with demonstratives (6), which are also treated as NP adjoined (they behave like adjectives in all respects). The same holds for adjectives (7). Examples (5)-(7) thus receive a uniform account if possessors, demonstratives, and adjectives are NP adjoined and DP is missing in SC.

- (4) a. His<sub>i</sub> latest movie really disappointed Kusturica<sub>i</sub>.  
       b. Kusturica<sub>i</sub>'s latest movie really disappointed him<sub>i</sub>.  
 (5) a. \*[<sub>NP</sub> Kusturicin<sub>i</sub> [<sub>NP</sub> najnoviji film]] ga<sub>i</sub> je zaista razočarao.  
       Kusturica's latest movie him is really disappointed

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<sup>1</sup> NP Specs are also compatible with the NP system and the account of (1)-(3) (as well as (8)-(10)) below, but in such an NP language examples like (5)-(7) should be acceptable.

- b. \*<sub>[NP Njegovi<sub>i</sub> [<sub>NP</sub> najnoviji film]] je zaista razočarao</sub>  
           his          latest          movie is really disappointed  
           Kusturicu<sub>i</sub>.  
           Kusturica
- (6) \*<sub>[NP Ovaj [<sub>NP</sub> Kusturicin<sub>i</sub> [<sub>NP</sub> najnoviji [<sub>NP</sub> film]]]] ga<sub>i</sub> je zaista</sub>  
           this          Kusturica's          latest          movie him is really  
           razočarao.  
           disappointed
- (7) \*<sub>[NP Brojni [<sub>NP</sub> Kusturicini<sub>i</sub> [<sub>NP</sub> filmovi]]] su ga<sub>i</sub> zaista</sub>  
           numerous Kusturica's          movies are him really  
           razočarali.  
           disappointed

Bošković's (2009) observation that TNP word order is freer in NP than DP languages is also relevant because the richer structure of the latter imposes restrictions on word order that are not found in NP languages, due to the lack of this structure. Thus, demonstratives and possessors must precede adjectives in English because they are located in DP, which is higher than the phrase where adjectives are located. In SC, due to the lack of DP all these elements are treated as NP adjuncts. As a result, the syntax does not impose any restrictions on their order. Chinese strongly confirms this approach. Any order of adjectives/demonstratives/possessors is allowed in Chinese, which follows if they are NP adjoined.

- (8) a. Wang-de hongse de paoche      b. hongse de Wang-de paoche  
           Wang's red sport-car
- (9) a. na-bu hongse de/Wangde paoche  
           that-CL red/Wang's sport-car  
       b. hongse de/Wangde na-bu paoche

SC and Chinese, however, differ in word order. In SC, adjectives and possessives are freely ordered, but demonstratives must come first.

- (10) a. Jovanova skupa slika      b. skupa Jovanova slika  
           John's expensive picture
- (11) a. ova skupa/Jovanova slika      b. ?\*skupa/Jovanova ova slika  
           this expensive/Jovan's picture

Possessors and adjectives are freely ordered semantically. The most plausible semantics for possessors is modificational (Partee & Borschev 1998:  $\llbracket \text{Mary's} \rrbracket = \lambda x. [R_i(\text{Mary})(x)]$ ,  $R_i$  is a free variable). Under standard assumptions that adjectives are also of type  $\langle e, t \rangle$  and that there is a rule of intersective predicate modification, the semantics does not impose any restrictions on the order of possessor/adjective composition. Further, demonstrative *that* is of type  $\langle \langle e, t \rangle, e \rangle$ . Once *that* maps a nominal to an individual, further modification by  $\langle e, t \rangle$  predicates is impossible. While the semantics allows possessors and adjectives to compose in any order, demonstratives then must be composed last, which perfectly matches the SC word order.<sup>2</sup>

Turning to a summary of the phase system, it is standardly assumed that DP is a phase. One relevant argument concerns (12) (see Bošković 2012).

(12) Only article-less languages may allow LBE examples like (13).

(13) Skupa<sub>i</sub> on voli [t<sub>i</sub> kola] (SC)

(14) \*Expensive<sub>i</sub> he loves [t<sub>i</sub> cars]

Bošković (2005) gives the following account of (14): as DP is a phase, AP must move to SpecDP. Assuming APs are NP-adjuncts and there is a ban on movement that is too short (antilocality), which requires crossing a full phrase (not just a segment), (14) is ruled out; the PIC requires movement via SpecDP, which violates antilocality ( $[_{DP} AP_i [_{D'} [_{NP} t_i] [_{NP} ]]$ ).

<sup>2</sup>See Bošković (2014) on non-restrictive APs; for semantic accounts of the Chinese/SC difference, see Bošković & Hsieh (2013), Bošković (2014), Bošković & Hsieh (in prep) (the first paper argues for a difference in the semantics of demonstratives and the latter two papers argue for a difference in the semantics of modifiers). It should be noted that, as (i), provided by K. Zanon, shows, Russian allows adjectives/possessors to precede demonstratives (Zanon notes that in most cases of this type, we may be dealing with Partee's 2006 familiar demonstratives. I leave exploring the issue and its consequences for future research.)

(i) a. A umnuju ètu lošad' potom s"eli.      b. Gosti ne zametili glupyx ètix slez.  
and smart this horse then ate      guests not notices silly those tears  
'And then they ate this smart horse.'      'The guests didn't notice those silly tears.'  
c. Mašina èta znakomaja menja besit do žuti.  
Mašina this friend me irritate to awfulness  
'This friend of Maša's irritates the loving god out of me.'

While SC lacks DP, Bošković (2014) shows NP is a phase in SC. SC disallows deep LBE.

- (15) On cijeni [NP1 [N' [ prijatelje [NP2 pametnih [NP2 studenata]]]  
       he appreciates friends smart students  
       ‘He appreciates friends of smart students.’
- (16) ?\*Pametnih<sub>i</sub> on cijeni [NP1 [N' [ prijatelje [NP2 t<sub>i</sub> [NP2 studenata]]]

An NP above an LBE-ing NP blocks LBE just like the DP. This follows if NP is a phase in SC. NP1 then blocks LBE in (16) for the same reason as the DP in (14). Also relevant is Abels’ (2003) finding that complements of phase heads are immobile. Genitive NP complements of nouns cannot move in SC, which is explained if NP is a phase in SC.<sup>3</sup>

- (17) ?\*Ovog<sub>i</sub> grada sam pronašla [NP sliku t<sub>i</sub> ]  
       this city(gen) am found picture  
       ‘Of this city I found a/the picture.’

## 2 Phasal edges

We are now ready to tackle examples with multiple edges. Example (18) shows that possessors and demonstratives block adjectival complement movement.

- (18) \*Na tebe<sub>i</sub> sam vidio [NP Jovanovog/tog [NP[ponosnog t<sub>i</sub>][NP oca]]]  
       of you am seen Jovan’s/that proud father

Recall that the highest TNP phrase is a phase (fn. 3). AP can LBE in SC since it is located at the TNP-phase edge; NP being the phase. In English, it must move to the phasal edge, SpecDP, which violates antilocality. What is important is that extraction is allowed only from the TNP phase edge. Given this, in Bošković (2013d), I note (18) can be captured if, in multiple edge configurations, only the highest edge counts as the edge for the PIC. The AP, which contains the adjectival complement, is then not located at the phase edge in (18), hence the PIC blocks movement out

<sup>3</sup> Bošković (2014) argues that the highest projection in the extended domain of N is a phase: in English, this is DP, and in SC, NP. TNP is thus a phase in both languages.

of the AP. Importantly, (18) improves if the adjective precedes the possessor. The AP is the outmost edge in (19), hence extraction out of the AP is possible.

- (19) ?Na tebe<sub>i</sub> sam vidio [<sub>NP</sub> [ponosnog t<sub>i</sub>] [<sub>NP</sub> Jovanovog [<sub>NP</sub> oca]]]

The analysis extends to simple LBE cases. Consider (20)-(21).

- (20) \* Ponosnog<sub>i</sub> sam vidio [<sub>NP</sub> tog [<sub>NP</sub> t<sub>i</sub> [<sub>NP</sub> oca]]]  
           proud       am seen       that           father  
 (21) Tog<sub>i</sub> sam vidio [<sub>NP</sub> t<sub>i</sub> [<sub>NP</sub> ponosnog [<sub>NP</sub> oca]]]

Recall that demonstratives and adjectives are both NP-adjoined in SC but adjectives adjoin below demonstratives. Since only the highest edge is the edge, *ponosnog* in (20) is not at the NP-phase edge, and hence cannot LBE. However, since *tog* is generated as the higher NP adjunct, it can move.

Possessors are different. The adjective and the possessor can be in either order in (23). Either phrase can then be the higher adjunct; hence, they both undergo LBE.

- (22)a. Omiljena<sub>i</sub> je kupio [<sub>NP</sub> t<sub>i</sub> [<sub>NP</sub> Jovanova [<sub>NP</sub> kola]]]  
           favorite   is bought       Jovan's       car  
       b. Čija<sub>i</sub> je kupio [<sub>NP</sub> t<sub>i</sub> [<sub>NP</sub> omiljena [<sub>NP</sub> kola]]]  
           whose is bought       favorite       car  
 (23)a. Omiljena Jovanova kola                   b. Jovanova omiljena kola

Examples (24)-(28) confirm the base order/extraction correlation. When adjectives can occur in either order, either can extract, as in (24)-(26). When one adjective must occur first, only that adjective can extract, as in (27)-(28). (LBE with another AP/possessor requires focusing the moved AP. Note that Bošković (2009) argues that adjective order constraints are not syntactic but semantic/prosodic; syntax allows any order and semantics/prosody filter out bad cases.)

- (24) Mladog<sub>i</sub> su angažovali [<sub>NP</sub> t<sub>i</sub> [<sub>NP</sub> brzog napadača]].  
       young are engaged                   quick striker  
 (25) ?Brzog<sub>i</sub> su angažovali [<sub>NP</sub> t<sub>i</sub> [<sub>NP</sub> mladog napadača]].

- (26) mladog brzog napadača/?brzog mladog napadača.  
 (27)a. \*Mašinskog<sub>i</sub> je otpustio [<sub>NP</sub> neozbiljnog [<sub>NP</sub> t<sub>i</sub> [<sub>NP</sub> tehničara]]].  
           mechanical is fired           not-serious           technician  
       b. ?Neozbiljnog<sub>i</sub> je otpustio [<sub>NP</sub> t<sub>i</sub> [<sub>NP</sub> mašinskog [<sub>NP</sub> tehničara]]].  
 (28) `neozbiljnog mašinskog tehničara/\*mašinskog neozbiljnog  
       tehničara

*Mašinskog* must adjoin below *neozbiljnog* (28); then, only *neozbiljnog* is at the phasal edge, hence only *neozbiljnog* can move. In contrast, either adjective can be the higher adjunct in (26), hence either adjective can LBE.

SC allows adverb extraction from APs. With multiple APs, such extraction is somewhat degraded but clearly better from the outmost edge.

- (29) \*Izuzetno<sub>i</sub> su kupili [<sub>NP</sub>[<sub>AP</sub> skup] [<sub>NP</sub>[<sub>AP</sub> t<sub>i</sub> ružičast][<sub>NP</sub>automobil]]  
           extremely are bought           expensive           pink           car  
 (30) ??Izuzetno<sub>i</sub> su kupili [<sub>NP</sub>[<sub>AP</sub> t<sub>i</sub> skup][<sub>NP</sub>[<sub>AP</sub> ružičast][<sub>NP</sub> automobil]]  
           ‘They bought an extremely expensive pink car.’

SC also allows extraction of NP adjuncts (in contrast to DP languages like English, where this is blocked by antilocality/PIC (cf. Bošković 2013b))

- (31) \*From which city<sub>i</sub> did Peter meet [<sub>NP</sub> girls t<sub>i</sub>]?  
 (32) Iz kojeg grada<sub>i</sub> je Petar sreo [djevojke t<sub>i</sub>]  
       from which city    ‘is Peter met    girls

These adjuncts and adjectives/possessors should be extractable when they cooccur, since either phrase can be the higher NP-adjunct. However, since demonstratives must be generated as the outmost adjunct, they should adjacency block extraction. This is borne out (extraction can affect available readings).

- (33)a. Pametne je upoznao studente sa beogradskog fakulteta.  
       smart is met students from Belgrade university  
       ‘He met smart students from the University of Belgrade.’



- b. Sa kojeg fakulteta je upoznao pametne studente?  
 from which university is met smart students
- (34)a. Iz kojeg tima je upoznao tvoje prijatelje?  
 from which team is met your friends
- b. Čije je upoznao prijatelje iz tog tima?  
 whose is met friends from that team
- (35)a. Ovog je on oborio studenta iz Beograda.  
 this is he failed student from Belgrade  
 'He failed this student from Belgrade.'
- b. \*Iz Beograda je on oborio ovog studenta.

An issue arises here. Suppose the PP in (18) adjoins to the NP above the demonstrative/possessor, which would not violate antilocality.

- (36) \*Na tebe<sub>i</sub> sam video [<sub>NP</sub> t<sub>i</sub> [<sub>NP</sub> Jovanovog [<sub>NP</sub>[ponosnog t<sub>i</sub>] [<sub>NP</sub>oca]]]]

This is disallowed in Chomsky (2001), where the head (here N) whose edge movement targets must probe the moving element, hence it must c-command the moving element. There is also an alternative that does not require that successive cyclic movement involves probing by a higher head.

Bošković (2013b) argues that N/A heads take only NPs as complements in SC; thus, PPs modifying N/A heads are NP/AP adjuncts. Higher NP adjunction then still violates antilocality (see Talić 2013a for an alternative where (18) is treated like (38)). However, NP complements are still an issue: adjoining to the higher NP from the A-complement in (38) does not violate antilocality.

- (37) lojalan generalu  
 loyal general.DAT (loyal to the general)
- (38) \*Generalu<sub>i</sub> sam vidio [<sub>NP</sub> tog [<sub>NP</sub> [<sub>AP</sub> lojalnog t<sub>i</sub>]] [<sub>NP</sub> vojnika]]]  
 General.DAT am seen that loyal soldier

Since As assign inherent case what is relevant is that, in contrast to the genitive, N-complements with inherent case allow deep LBE, as in (39), and can move, as in (40). In Bošković (2013b), I argue that NPs with inherent case assigning Ns have more structure: they involve a functional

projection that facilitates inherent case assignment, as in (41), which voids antilocality effects.

- (39) ?Kakvom<sub>i</sub> ga je prijetnja smrću uplašila?  
 what-kind-of him is threat death scared  
 ‘Of what kind of death did a threat scare him?’ (Bošković 2013b)
- (40) Čime<sub>i</sub> ga je [(Jovanova) prijetnja t<sub>i</sub>] uplašila?  
 what<sub>INSTR</sub> him is Jovan's threat scared  
 ‘The threat of what (by Jovan) scared him?’ (Zlatić 1997)
- (41) [<sub>NP</sub> threat [<sub>FP</sub> F [<sub>NP</sub> his [<sub>NP</sub> death

I argue the highest phrase in the extended domain of lexical heads is a phase. AP is then also a phase. In Bošković (2013a), I show that N/A heads do not license A'-Specs. As a result, A'-movement through the NP/AP edge must proceed via NP/AP-adjunction. One argument is provided by (42) (due to A. Talić). The moved phrase is inherently case-marked, which means N2 takes FP as its complement. Both NPs are phases. If the moved element could move to SpecNP2, there would be no violation in (42). However, if Ns do not license A'-Specs, movement through the NP2 edge can only proceed via NP2-adjunction. Movement to the NP1 edge then violates antilocality. Example (42) thus follows if NPs do not license A'-Specs (see Bošković 2013a for additional evidence for both NP and AP).

- (42) \* Smrću<sub>i</sub> je on video [<sub>NP1</sub> t<sub>i</sub> [<sub>NP1</sub> opise [<sub>NP2</sub> t<sub>i</sub> [<sub>NP2</sub>  
 death<sub>INSTR</sub> is he seen descriptions<sub>ACC</sub>  
 prijetnji[<sub>FP</sub>[<sub>NP3</sub> t<sub>i</sub>]]]  
 threats<sub>GEN</sub>  
 ‘He saw descriptions of threats by cruel death.’

In (38), *generalu* then needs to first adjoin to the AP, after which it adjoins to the highest NP segment; the second step violates antilocality.

- (43) \*Generalu<sub>i</sub> sam video [<sub>NP</sub> t<sub>i</sub> [<sub>NP</sub> tog [<sub>NP</sub>[<sub>AP</sub> t<sub>i</sub> [<sub>AP</sub> lojalnog  
 general.<sub>DAT</sub> am seen that loyal  
 [<sub>FP</sub> t<sub>i</sub>]] [<sub>NP</sub> vojnika]]]  
 soldier

The proposal that only the outmost edge counts as the edge has an interesting application in binding (noted by Zanon 2014 for Russian; see also Wurmbrand 2013 for an application to Agree). While SC possessors can precede or follow adjectives, reflexive possessors must precede them.

- (44) Marija je prodala svoju omiljenu knjigu.  
       Marija is sold her-anaphor favorite book  
 (45) \*Marija je prodala omiljenu svoju knjigu.

Condition A is currently stated in terms of phases (Despić 2011), where an anaphor can be bound outside its minimal phase only if it is located at its edge. Given the proposal that only the outmost edge counts as the phrasal edge, the anaphor is located at the phasal edge in (44) but not in (45).<sup>4</sup>

To sum up, in phases with multiple edges, only the outmost edge counts as the phasal edge. This fact argues for a contextual approach to phasehood since it indicates that the status of a Spec/Adjunct with respect to the PIC cannot be determined without examining its syntactic context.

### 3.1 Traces as non-edges: Object Shift

Movement can also affect the PIC status of Specs. Consider Dutch object shift, where the DO can object shift only if the IO also does so (the objects preceding ‘probably’ have object-shifted; see also Bošković 2013d for Icelandic object shift).

- (46)a. ... dat Jan **waarschijnlijk** Marie het boek geeft  
       that Jan probably Marie the book gives  
       b. ... dat Jan Marie **waarschijnlijk** het boek geeft  
       c. ... dat Jan Marie het boek **waarschijnlijk** geeft  
       d. \*... dat Jan het boek **waarschijnlijk** Marie geeft

---

<sup>4</sup> Partee’s (2006) familiar demonstratives can precede *svoju*. As discussed in Bošković (2013d), such demonstratives have very different semantics from regular demonstratives and form a constituent with the possessor, hence such cases involve only one NP-edge.

Since both objects are candidates for object shift, this may be an Attract closest effect: IO being higher than DO, DO cannot object shift across IO (46d). It is well known that traces do not count as interveners (Chomsky 1995): example (47), where the experiencer intervenes, illustrates the generalization in (48).

- (47)a. \*Gianni<sub>i</sub> sembra a Maria [<sub>t<sub>i</sub></sub> essere stanco].  
           Gianni seems to Maria to-be ill  
       b. Gianni<sub>i</sub> gli<sub>j</sub> sembra <sub>t<sub>j</sub></sub> <sub>t<sub>i</sub></sub> essere stanco  
           Gianni her seems to-be ill (Italian)  
 (48) Traces do not count as interveners for relativized minimality effects.

Since relativized minimality (RM) violations are voided if the intervener moves, no problem arises in (46c), where IO object shifts and then DO object shifts, tucking in the lower Spec (Richards 2001; ...*het boek Marie waarschijnlijk*... is ill-formed since here DO moves first and IO tucks in).

IO also must object shift for DO to wh-move although a non-wh-NP in an A-position should not interfere with wh-movement via Attract closest.

- (49)a. Wat zal Jan Marie waarschijnlijk geven?  
           what will Jan Marie probably give  
       b. ?\*Wat zal Jan waarschijnlijk Marie geven? (den Dikken 1995)

Germanic object shift has been argued to land above SpecvP. Given Zwart's (1993) account which argues that Dutch objects must move to SpecvP (this is responsible for the SOV order), I assume that objects move to SpecvP below 'probably', object shift involving movement from this position. I assume that after the first step, which places IO and DO in separate specifiers of vP, IO occupies the higher Spec (as IO is higher before the movement. DO tucks in the lower Spec). Examples (46)-(49) then follow; (49) shows that with multiple Specs of the same phase, only the higher Spec can move. The lower Spec can move once the higher Spec moves. This means that just as traces do not count as interveners for RM, they also do not count as phasal edges.

- (50)a. (49b): \*<sub>[CP ... [<sub>vP</sub> IO DO]</sub> b. (49a): <sub>[CP ... [<sub>vP</sub> IO DO]</sub>
-

Another argument that traces do not count as edges is provided by (51).

- (51) Omiljenu<sub>i</sub> je Marija prodala t<sub>i</sub> svoju knjigu.  
       favorite is Marija sold her-anaphor book  
 (52) \*Marija je prodala omiljenu svoju knjigu.

*Omiljenu* must be the outmost NP-adjunct in (51), or it could not LBE. Recall that (52) is ruled out because *svoju* is not located at the NP phase edge; hence, it cannot be bound outside of the NP phase. *Svoju* must then be at the NP phase edge in (51), which confirms that traces do not count as phasal edges.

Zanon (2014) notes that Russian quantifiers can precede such possessors. She argues that what makes this possible is QR: after QR, the anaphor is at the phasal edge in SC (53), given that traces do not count as phasal edges. She also notes that strong quantifiers, which must undergo QR, cannot follow the anaphor. Zanon argues that (54) is ruled out because, not being at the outmost edge, *svaku* cannot QR (see Zanon 2014 on indefinites, which she argues can QR but can also be interpreted in situ).

- (53) Marija je prodala svaku svoju knjigu.  
       Marija is sold each her-anaphor book  
 (54) \*Marija je prodala svoju svaku knjigu.

The adjective-*svoj* order actually improves with strong focus on the adjective, as noted by K. Zanon (p.c.), who provided the following, actually occurring example (*imanento* bears focus stress). I suggest that in such cases the adjective undergoes focus movement, either overtly (string-vacuously) or covertly, so that only a trace precedes *svoje*.

- (55) ...što paradiraju gradovima zahtijevajući neke administrativne  
       that parade cities demanding some administrative  
       privilegije, ističući svoje ljudske nemogućnosti kao  
       privileges asserting their human inabilities like  
       *imanentno svoje* pravo.  
       immanent their right

Example (57a) shows that *wh*-movement from a DP headed by a definite article is disallowed; such DPs are islands. However, when the article incorporates into the verb as in ((57b); see Uriagereka 1996 on D-incorporation), movement is possible. Bošković (2011) notes that (57b) can be treated as another case of rescue by PF deletion if with movement out of islands, the \* is placed on the head of the phrase functioning as an island, not on the island itself. The \* is then placed on  $t_i$  in (57b) (not on DP). Since  $t_i$  is actually a copy that is deleted in PF, no \* is present in the final PF representation of (57b).

- (58) \*De quén **liche-los**<sub>[DP [D' ~~los~~\* [ mejores poemas de amigo ~~de quén]]]~~</sub>

Bošković (2013c) argues that quite generally, PIC/anti-locality violations at phase XP lead to the \*-marking of the phase, which, following the above reasoning, actually leads to the \*-marking of the phasal head. Consider (59). Example (59a) is an instance of *extraordinary LBE*, which moves a P+A complex. Ordinary LBE is disallowed in this configuration (59b).

- (59)a. U veliku on uđe sobu.  
           in big he entered room  
           ‘He entered the big room.’  
       b. \*Veliku on uđe [<sub>PP</sub> u [<sub>NP</sub> t [<sub>NP</sub> sobu]]]

Bošković (2013c) gives an antilocality/PIC account of (59b) where PPs are phases. Depending on whether or not AP moves to SpecPP either antilocality or the PIC is violated. Example (59b) thus involves a locality violation.

Consider now the improvement that occurs in (59a) with P-movement. Bošković (2005) (see also references therein) provides evidence for an account where extraordinary LBE involves ordinary LBE: the P adjoins (i.e. cliticizes) to the adjective and then the LBE of the adjective carries the P.<sup>5</sup> Recall that (59b) involves a locality violation, which, similarly to Galician (57), leads to the \*-marking of the head of the PP. Since this head is turned into a copy that is deleted in PF because of P-movement, PF deletion removes the offending \*, hence the grammaticality of (59a).

Turning to (49) (the following also applies to (63)), the fact that turning an element into a trace rescues a locality violation indicates rescue by PF deletion is at work here. However, there is a problem. Example (49b) is ruled out by the PIC: it involves movement from a lower vP edge (cf. (50a)). If this would induce \*-marking on the higher edge, the improvement in (49a) could be captured. As noted above, RM violations cause \*-marking of the intervener. However, Bošković (2013d) argues that examples like (49b) are not RM but PIC violations (see also the

<sup>5</sup>There are two implementations of this analysis: P lowers to AP or AP moves to a position c-commanding P, e.g. SpecPP, after which P adjoins to it.

discussion of (68) below). Recall that this should lead to the \*-marking of the phasal head, i.e.  $\nu$ . Turning the outmost Spec into a trace then should not matter. There is, however, a way of unifying all the data discussed above. Suppose that with PIC violations at phase XP, \* is placed on the outmost edge of the phase (other than the moving phrase itself), as suggested by A. Talić (p.c.). In multiple edge cases like (49b), \* is then placed on the outmost edge. In examples like (59b) that do not involve a relevant edge, \* is placed on the head of the phase,  $P^0$ . We can then account for all the improvements that occur when we turn a trouble maker for locality into a trace in a unified manner without any undesirable effects for (49b). The analysis also captures (56) assuming that (56) involves P-movement without further LBE of the *u+svoju* complex from the PP and that anaphor licensing is done via Agree, given that rescue-by-deletion applies to Agree (Bošković 2013c; the latter assumption is unnecessary under the discussion below (58), since *svoju* is then in SpecPP)

- (56) On uđe      u svoju      sobu.  
he entered in his-anaphor room

(53), where the outmost edge is turned into a trace by LF movement (i.e. QR of *svaku*), then becomes rather interesting. Example (53) indicates that not only PF copy deletion but also LF copy deletion can rescue derivations with \*-marked elements.

Consider now numeral constructions.

- (57) Vidjela je deset svojih      prijateljica.  
seen is ten her-anaphor friends  
'She saw ten friends of hers.'

Bošković (2014) and Despić (2011) argue that numerals project a phrase (QP) on top of NP. As it is the highest TNP projection, QP is then a phase. Note that numerals in genitive-of-quantification contexts can LBE (*Deset je vidjela svojih prijateljica*). While the numeral is often assumed to be located in  $Q^0$ , this fact indicates that it should be placed in SpecQP (or else it could not undergo LBE, which is a phrasal movement), with a null Q head assigning genitive to the complement, as in Bošković (2006) and Franks (1994). As Franks (1994) shows, the genitive assigned by Q



is inherent. Given that inherent case comes with a functional projection (see (41)), Q then takes an FP complement, with the anaphor adjoined to NP.

(58) Vidjela je [<sub>QP</sub> deset [<sub>Q'</sub> Q [<sub>FP</sub> [<sub>NP</sub> svojih [<sub>NP</sub> prijateljica]]]]]

However, QR is not enough to save (58) from violating the PIC. Let us suppose that the need to undergo Agree without violating locality can drive movement (Franks & Lavine 2006, Bobaljik & Wurmbrand 2005). Assuming that anaphors need to undergo Agree, there is a need for *svojih* to move to the QP phase edge (alternatively, we may be dealing here with anaphor-movement). Once *svojih* tucks in under *deset* ‘ten’, the only higher edge will be a trace left by QR.<sup>6</sup>

### 3.2. Multiple LBE

Multiple LBE is possible: both *onu* and *staru* LBE in (63). As in Dutch, with multiple LBE, a lower Spec, which is otherwise immobile, can move if the higher Spec moves. Since traces do not count as phasal edges, *t<sub>i</sub>* in (63) does not count as being at the NP phase edge; the AP can then move.

(63) Onu<sub>i</sub> staru<sub>i</sub> prodaje t<sub>i</sub> t<sub>j</sub> kuću.  
           that old sells house  
           ‘He is selling that old house.’

Such cases must involve LBE to the same head, as shown by (64), where the LBE-ing phrases land in different phrases. Why is this? Bošković (2005) shows that LBE with multiple NP adjuncts involves focus movement (65). *Onu* then cannot move away in (66) due to the freezing effect of Op(erator) movement (Bošković 2008): once *x* undergoes Op

<sup>6</sup> Consider also (i).

(i) a. \*Ona je kupila [<sub>QP</sub> deset [<sub>Q'</sub> Q [<sub>FP</sub> [<sub>NP</sub> omiljenih [<sub>NP</sub> svojih [<sub>NP</sub> knjiga]]]]]  
           she is bought ten favorite her-anaphor books  
       b. Ona je kupila [<sub>QP</sub> deset [<sub>Q'</sub> svojih [<sub>Q'</sub> Q [<sub>FP</sub> [<sub>NP</sub> omiljenih [<sub>NP</sub> knjiga]]]]]

There is no need for *omiljenih* to move so *svojih* must be NP-adjoined in (ia). Rescue by copy deletion then cannot help in (ia) given Despić’s (2011) claim that anaphors must be licensed before being spelled out; *svojih* in (ia) is spelled out before it Agrees with its antecedent (SpecvP). There is no issue in (ib), where *svojih* can be at the QP phase edge.

movement, it is frozen to further Op-movement. *Staru* also cannot move higher as in (67); locality is violated if FocP, occupied by *onu*, is skipped (failure to undergo focus-movement to the closest focus position). If FocP is not skipped (i.e. if *staru* moves to the lower FocP (65)), there is the freezing effect and the PIC.

- (64) \*Onu ( tvrdi da) Ivan staru prodaje kuću.  
           that claims that Ivan old sells house  
           ‘(He/she claims that) Ivan is selling that old house.’
- (65) [<sub>FocP</sub> Onu<sub>i</sub> staru<sub>j</sub> prodaje [<sub>NP</sub> t<sub>i</sub> t<sub>j</sub> kuću ]]
- (66) \*<sub>[FocP</sub> Onu<sub>i</sub> tvrdi da [<sub>FocP</sub> t<sub>i</sub> staru [prodaje kuću]]]
- (67) \*Staru ( tvrdi da) Ivan onu prodaje kuću.  
           old claims that Ivan that sells house

There is an ordering restriction on multiple LBE: the Spec that is higher prior to LBE must be the first, i.e. the higher, Spec in the result of LBE.

- (68)a. Onu<sub>i</sub> staru<sub>j</sub> prodaje t<sub>i</sub> t<sub>j</sub> kuću.      b. \*Staru onu prodaje kuću.  
           that old sells house

This cannot be a simple superiority/attract closest effect since we are dealing with focus-movement, which, in contrast to multiple wh-fronting, is insensitive to superiority (Bošković 2002). In the current system, the ordering effect follows independently: the higher Spec before movement (*onu*) must move first or the PIC will be violated (only this Spec is at the phasal edge, hence only this Spec can move. The lower Spec (*staru*) cannot move independently of attract closest). After the higher Spec is vacated, the lower Spec is at the phasal edge, hence it is accessible to movement. This Spec then moves, tucking in lower SpecFocP, yielding (68a).

There is one issue here. Focalized and wh-phrases undergo focus movement in SC (Bošković 2002). However, while multiple focus movement is possible with wh-phrases, it is normally disallowed for non-wh-phrases (the judgment in (69b) holds for the multiple-focus reading).

- (69)a. [<sub>FocP</sub> Kome koga/ koga kome [<sub>Foc</sub> on predstavljaja]]?  
           who.DAT      who.ACC      he is-introducing  
           ‘Who is he introducing to whom?’

- b. \*<sub>[FocP]</sub> Petru Mariju/Mariju Petru <sub>[Foc'</sub> on predstavljaj<sub>]</sub>.  
 Peter.DAT Marija.ACC he is-introducing

Under the above analysis, (63) involves multiple focus movement of non-wh-phrases. Example (69a) shows that FocP can, in principle, host multiple phrases in SC, suggesting there is nothing wrong with that syntactically. Why then the contrast in (63)/(69b)? It seems we are dealing with a semantic effect here, where the focalized elements must have a single referent. This is the case in (63), but not in (69b). Deicticity also matters: (71) is better than (70).

- (70) ?\*Malu plavu mu pokazuje kuću.  
 small blue him.DAT is-showing house  
 'She is showing him a small blue house.'  
 (71) Onu malu plavu mu pokazuje kuću.  
 that small blue him.DAT is-showing house

Furthermore, (70) improves with pointing, which confirms the relevance of deicticity here. Further confirmation is provided by the fact that (70) is also clearly better than (72), taken as a general statement.

- (72) \*Male plave ga ne zanimaju kuće.  
 small blue him.ACC not interest house  
 'Small blue houses don't interest him.'

There are additional discourse constraints. A slight preference for a particular order of adjectives becomes even stronger with multiple LBE. The dispreferred order in (73) requires some focusing on the first adjective. Multiple LBE, which itself involves focusing, apparently requires neutral order of the fronted elements, without any additional focusing.

- (73) a. Prodaje malu žutu. kuću  
 is-selling small yellow house  
 b. ?Prodaje žutu malu kuću.  
 (74) Onu malu žutu prodaje kuću  
 that small yellow is-selling house  
 vs. ?\*Onu žutu malu prodaje kuću  
 'He is selling that small yellow house.'

Example (75) may also be ruled out by the ban on additional focusing, given that, in this case, adverbial modification focuses the AP.

- (75) ?\*Onu izuzetno staru prodaje kuću.  
           that extremely old sells house

Such cases become acceptable in a context which does not involve additional focusing on the AP: (76) is acceptable in a context where there is a man who is smart a little, a man who is very smart, and a stupid man.

- (76) Onog puno pametnog mu pokazuje čovjeka.  
           that very smart him is-showing man

Adverb subextraction is disallowed in such cases. Examples (77)-(78) could be ruled out by the ban on additional focusing; it is rather difficult to come up with an appropriate context here given the focusing requirements.

- (77) \*Onaj<sub>i</sub> izuzetno<sub>j</sub> kupuje t<sub>i</sub> [<sub>AP</sub> t<sub>j</sub> stari] automobil.  
           that extremely is-buying old car  
 (78) \*Skup<sub>i</sub> izuzetno<sub>j</sub> kupuje t<sub>i</sub> [<sub>AP</sub> t<sub>j</sub> ružičast ] automobil.  
           expensive extremely is-buying pink car

Example (77) is actually ruled out independently of discourse requirements. Talić (2013b) notes that long forms of SC adjectives disallow adverb extraction. However, the co-occurrence with a demonstrative requires the long form.

Extraordinary LBE is also possible with multiple LBE.

- (79) U onu malu je ušao sobu.  
           in that small is entered room

Example (79) can be analyzed just like basic extraordinary LBE. Adjunction of *u* to the demonstrative turns the PP head into a trace, which voids locality problems that are induced by the PP for movement of *onu*. As a result, not only the demonstrative, but also the adjective can move out of the PP without a violation.

(80) U pet velikih je ušao kuća.  
in five big is entered houses  
'He entered five big houses.'

Also worth noting is a contrast in the placement of the LBE remnant. With a single LBE, there is a preference to place the remnant in front of the verb. The reason for this is a preference to focalize the remnant, which is accomplished by placing it in front of the verb, typical focus placement in SC (the focalized phrase does not need to be V-adjacent. Some focalization can also occur in the final position; this is why *today* is added.)

- With multiple LBE, on the other hand, there is a preference to leave the remnant following the verb.

- I suggest that the reason for this is that the remnant with multiple LBE must be backgrounded; this is why it has to follow the verb. This is also the reason why it is difficult to leave adverbs like *extremely* in the remnant.

- (85) Onu tamnu prodaje (\* izuzetno) plavu kuću.  
       that dark is-selling extremely blue house

Multiple LBE thus differs from single LBE in that with the latter there is a preference for the remnant to be focalized while with the former the remnant needs to be backgrounded.

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## **Don't Scope Your Universal Quantifier over Negation!\***

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In this paper, we propose that the scope of the universal quantifier and negation in a natural language (in particular, Czech) should be analyzed as fixed, despite superficial examples against this claim. Specifically, we argue that the universal quantifier is semantically always in the scope of negation. For example, the sentence in (1) has two theoretical interpretations: either the numeral scopes over the negation and the sentence means that John saw all Jarmusch movies with the exception of two, or it means that John saw less than two Jarmusch movies (i.e. one or zero). The second reading can be formally represented as negation having wider scope over the numeral 2 (schematically:  $\neg > 2$ ). However, as Jackendoff (1972), Büring (1997) and Kadmon (2001), among others observed, if we replace the numeral with the universal quantifier, one of the readings disappears. For example, consider the example (2), where there is only one reading: John saw some but not all Jarmusch movies, i.e. negation has wide scope (schematically:  $\neg > \forall$ ). The other logically possible reading ( $\forall > \neg$ ): John did not see any of Jarmusch movies seems to be absent.

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- (1) John hasn't seen two Jarmusch movies.
- (2) John hasn't seen all Jarmusch movies.

The majority of the recent analyses explaining the lack of ambiguity in examples like (2), such as Buring (1997) and Kadmon (2001), make use of information structure mechanisms: some sort of 'wide scope for focused element' rule is applied to explain the lack of ambiguity. Our work aims to improve on this work by deriving the preference for wide scope interpretation of negation from another source; namely, from the idea of grammatical concurrence between the universal quantifier and negative noun phrases. By using the concurrence explanation, we build on the ideas of Hoekstra (1998) and Horn (1989).

## 1 Data

Our main evidence for the concurrence explanation of the lack of ambiguity between negation and the universal quantifier comes from a corpus study. The corpus we used for our study is SYN 2010, a subcorpus of the representative corpus of contemporary Czech (Czech National Corpus – CNC). We randomly chose cca 1000 negated sentences and focused on sentences with subject containing (or consisting of) universal quantifier (Czech translation of the English universal quantifier of the *all*-type is *všechn*; we left the obligatory distributive universal quantifier *každý* ('every') for future work but see Section 2 for some remarks about relationship between *every* and *all*). For each sentence, we considered further context and used the paraphrase test to establish whether the particular sentence has the  $\forall > \neg$  or the  $\neg > \forall$  reading. When we started (under the influence of information structure oriented works cited above), we considered only linearization as the factor that should influence the interpretation, but we soon discovered that there is another and much more important factor: the bare/modified status of the subject NP. Why linearization? Due to the fact that Czech is a free word order language, where the ordering of phrases is usually dictated by the information structure (see Kučerová 2012 for a recent analysis). However, we found out very quickly that the linearization plays only a marginal role in disambiguating the scope of

negation and the universal quantifier. The major decisive factor in Czech, as shown by the corpus data, is the distinction between bare universal NPs like *všichni pacienti*, 'all patients,' in (3) versus modified universal NPs like *všichni ti muži*, 'all the men,' in (4). If a negated sentence contains a bare universal subject, in the majority of cases, it is interpreted with negation taking wide scope. However, if the universally quantified subject is modified, the scope is reversed and the sentence is interpreted with the universal quantifier taking wide scope. Consider the examples in (3) and (4) and their plausible meanings.

- (3) Všichni pacienti si ale protilátky nevytvářejí.  
 All patients REFL though antibodies not-create  
 'All patients don't create antibodies though.'
- (4) Všichni ti muži nesouhlasili se Šengovou politikou někteří  
 All the men not-agree with Šeng's policy – some  
 otevřeně, jiní opatrně.  
 openly others cautiously  
 'All the men didn't agree with Šeng's policy – some of them  
 openly, the others cautiously.'

An avid reader probably noticed that, in the introduction section, we claimed that the scope of the universal quantifier and negation is fixed. In (3) and (4), however, we present examples where both scopes are possible. We will argue that the  $\forall > \neg$  scope in examples like (4) is just an illusion and even here the semantic scope of both operators is fixed to the wide scope of negation over the universal quantifier and the illusion of the opposite scope comes from a pragmatic implicature.

The corpus data are summarized in Table 1 below. The example (3) is an instantiation of the 4<sup>th</sup> column, 3<sup>th</sup> row in the table – 78 % of sentences with a preverbal universal NP subject are interpreted with the scope  $\neg > \forall$ . On the other hand, 22 % (2<sup>nd</sup> column, 3<sup>rd</sup> row) of the sentences of this type are interpreted with the opposite scope (more about this later). The reversed linearization, i.e. with the postverbal bare subject, are always interpreted with the scope  $\neg > \forall$  (100 %) and never with the opposite scope (2<sup>nd</sup> and 4<sup>th</sup> column of the last row of the table).

The example (4) exemplifies the 3<sup>rd</sup> column of the table – 87 % of the modified preverbal universal NPs are interpreted with the scope  $\forall > \neg$  and only 13 % (the last column of the same row) are interpreted with the opposite scope. As for the reversed linearization, 100% of the sentences with modified universal NPs are interpreted with the  $\forall > \neg$  scope and none with the opposite scope (3<sup>rd</sup> and last column of the last row). The table shows only a marginal impact of the information structure: a change in linearization can make the scope interpretations easier (negated bare universal NPs in postverbal positions are interpreted with the  $\neg > \forall$  scope, because at the surface structure, linear order corresponds to the logical scope of operators). However, the real decisive factor is the complexity of the universal NPs. This is graphically represented in Figure 1, which shows the interpretation of bare NPs: in 84 % cases, the bare universal NPs (linearized SV) are interpreted with the  $\neg > \forall$  scope. Figure 2 shows the interpretation of modified NPs: in 88 % of cases, the modified universal NPs (both linearizations) are interpreted with the  $\forall > \neg$  scope.

interpretation $\Rightarrow$	$\forall > \neg$ interpretation		$\neg > \forall$ interpretation	
linearization $\Downarrow$	bare NPs	modified NPs	bare NPs	modified NPs
SV order	22 %	87 %	78 %	13 %
VS order	0	100 %	100 %	0

Table 1: Summary of the corpus data

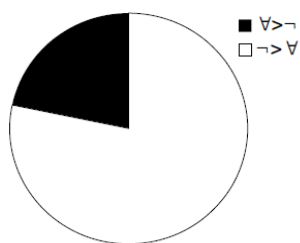


Fig. 1: Interpretation of bare NPs

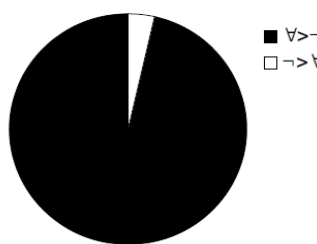


Fig. 2: Interpretation of modified NPs

This section concludes the data portion of our paper. Further sections are dedicated to theoretical explanations of the observed patterns.

## 2 Theory

Data from Czech presented in the section above demonstrated that bare universal subjects are mostly interpreted with narrow scope with respect to negation. We will use this observation as a guiding rule. Before we start with the proper theoretical part of our article, we will explain the main focus of our paper. In other words, we will delineate our theoretical claims by explaining the areas we will not investigate.

The fact that the majority of bare universal subjects are interpreted in the scope of negation even though they precede the negation in the surface linearization is quite surprising, as linear precedence usually signals hierarchical dominance. We assume that some process of syntactic reconstruction is responsible for the observed interpretation but we will remain agnostic with respect to the exact syntactic process behind the interpretation, as the main aim of our article is to describe the semantic and pragmatic side of the phenomenon.

Next, we will explain our empirical study (and its theoretical *explanation*) only with respect to the universal quantifier, ‘all’ (namely, the Czech expression *všechn* (‘all’)). We believe that many of our claims would hold also for the universal quantifier ‘every’ (the Czech expression *každý* (‘every’)). In fact, we conducted a small empirical study about *každý* (‘every’) in negated sentences and it seems that for the bare ‘every’-type of quantifier, there is a similar tendency for it to be interpreted in the scope of negation in Czech (in 2/3 of our small empirical study, we diagnosed this wide scope of negation interpretation, prototypical CNC example is sentence like *Takové šaty každý krejčí neušije* ‘Every tailor doesn’t make such a dress’). However, as it is known at least from Vendler (1957) and extensively studied by Landman (1989) and Krifka (2001) among others, *every* and *all* differ in terms of scope possibilities: *every* is obligatorily distributive (which is interpreted as the wide scope of the universal quantifier over the existential closure of the event variable in the event-based theories), it easily allows pair-list readings (which is again interpreted as wide scope behavior of the

quantifier even with respect to speech acts), while *all* can be interpreted either collectively (with narrow scope with respect to the existential closure of the event variable) or distributively; it does not allow a pair-list reading, etc. Thus, we assume that there are non-trivial scope differences between *all* and *every* in any language which distinguishes both types of universal quantifiers. Due to above assumptions, the observed tendency of the narrow scope interpretation of the bare universal quantifier of the ‘all’-type can be different from the ‘every’-type of universal quantifier for reasons which do not follow from our theoretical explanation.

Let us summarize our caveats: we will focus only on the semantic and pragmatic side of the behavior of Czech universal quantifier of ‘all’-type. As we observed above in the data section, in its bare occurrence, this quantifier tends to be interpreted in the scope of negation. Let us formulate it in the form of the hypothesis in (5), which simply states the observed data pattern. Next, we will describe empirical coverage of the hypothesis and its theoretical motivations. Finally, we will discuss some empirical apparent counterexamples.

- (5) Universal quantifier (of the ‘all’- $\forall$  type) in Slavic languages is always interpreted under the scope of negation ( $\neg > \forall$ ).

We explicitly limit our hypothesis to Slavic languages because, as far as we know, a similar pattern is also observed in other Slavic languages. However, as our reviewer correctly pointed, English behaves differently, thus both of the sentences in (6) and (7), courtesy of our anonymous reviewer, seem to allow wide scope of the bare universal quantifier over negation. In (6), the wide scope of the universal quantifier is witnessed by a non-contradictory continuation with a sentence such as, *Paul almost certainly did*, which would make no sense in a situation where the speaker claims that he doubts that it is not the case that everyone came. In (7), the non-contradictory reading is only possible if the relative scope of universal quantifier, numeral NP and negation in the last sentence is: *every boy > more than one teacher >  $\neg$* .

- (6) I doubt that everyone didn’t show up. Paul almost certainly did.

- (7) Although every boy likes at least two of his teachers, it's also true that every boy doesn't like more than one of his teachers.

There are two possible reasons why (6) and (7) behave differently than the majority of the Czech sentences with universal quantifiers. Either the scopal behavior of *all* and *every* differ (in crude terms: *every* tends to scope wider than *all*, maybe because of its inherent distributivity) or Czech and English differ with respect to their scopal taking expressions. According to both authors of the present article, the translations of (6) and (7) into Czech sound very odd with both flavors of the universal quantifier (*every* and *all*). Consequently, we believe that the right answer would be more in the cross-linguistic difference between Czech and English rather than the distributive universal quantifier analysis. However, following such a proposal would need a proper study of its own, thus we explicitly restrict our claims to Slavic languages and leave proper cross-linguistic study for future work.

### 2.1 Bare universal subjects

Example (5) provides us with a way to sum up the empirical findings we discussed. However, why should a natural language rule like (5) exist at all? We take (5) to be a consequence of a competition process in natural language grammar. Specifically, for Czech, we assume that *ceteris paribus* the logical scope  $\forall > \neg$  is never realized by the universal quantifier and negated verb, as there is a more economical way to materialize such a meaning.

To linguistically formalize the previous intuition about a 'more economical way,' we follow the original work of Grice (1975) and Horn (1972), where along the literal semantic meaning of a sentence, there is a calculated implicature strengthening; (usually) the meaning of the original sentence. We again follow the original global view of implicatures, according to which the meaning of the entire sentence is calculated first and then pragmatic calculation takes place (for the purposes of our article, we do not need to take a stance with respect to local or global theories of implicatures but see Guerts 2009, Sauerland 2004 and Russell 2006 for recent globalist implementations of the

original Gricean programme). To demonstrate the reasoning using a textbook example, consider a three-point scale for natural numbers, as in:

- (8) one  $\ll$  two  $\ll$  three

The literal meaning of a sentence like (9a) is (9b) which reads as: there is such a plurality  $X$ , which has the cardinality of greater or equal to 2 and this cardinality of students  $X$  has a property of sleeping. Example (9b) would be true in a lot of models, some of them having three, four, five or generally  $\geq 2$  sleeping students. However, we would not usually intuitively accept (9a) as appropriate in such models. In Grice's (1975) explanation, this is the case because hearers strengthen the literal meaning of sentences according to calculated implicatures.

- (9) a. Two students slept.  
b.  $\exists X[|X| \geq 2 \wedge *STUDENT(X) \wedge *SLEEP(X)]$

The implicature for (9a) is based on the alternative set of meanings generated using the scale in (8). The alternative set for (9a) is in (10):

- (10)  $\langle \exists X[|X| \geq 2 \wedge *STUDENT(X) \wedge *SLEEP(X)] \rangle^{ALT} =$   
 $\{ \exists X[|X| \geq 3 \wedge *STUDENT(X) \wedge *SLEEP(X)],$   
 $\exists X[|X| \geq 2 \wedge *STUDENT(X) \wedge *SLEEP(X)],$   
 $\exists X[|X| \geq 1 \wedge *STUDENT(X) \wedge *SLEEP(X)] \}$

By uttering (9a), the speaker signals that all the alternatives in (10) that are stronger than (9b) are false (Grice's Maxim of Quality). In the three-point scale, there is one such alternative, which contains the cardinality information  $|X| \geq 3$ . We can formalize the Gricean reasoning by conjoining (9b) with the negation of the stronger alternative, resulting in (11). Example (11) would be true in such models where exactly two students sleep, thus we arrive at the intuitive understanding of (9a) via concatenation of a literal meaning and its implicature.

- (11)  $\exists X[|X| \geq 2 \wedge *STUDENT(X) \wedge *SLEEP(X)] \wedge$   
 $\neg \exists X[|X| \geq 3 \wedge *STUDENT(X) \wedge *SLEEP(X)]$



In our case of the universal quantifiers in negated sentences, we assume that universal quantifiers induce alternatives as well. Our reasoning conforms to the general paradigm of frameworks describing concurrence in grammar, such as Horn (1989), Hoeksema (1998), Percus (2006) and Reinhart (2006). We postulate that, for universal quantifiers, there is Horn's scale, where the universal quantifier is the weaker element and the stronger element is the existential quantifier. The scale is represented in (HS). The scale is reversed against positive scale (Horn's positive scale for quantifiers is  $\langle \textit{some}, \textit{all} \rangle$ ), because we deal only with negated sentences and in downward entailing environments, Horn's scale reverses. The scale reversal is demonstrated in (12), where the logically stronger element is the existential quantifier, unlike in (13), where the logically stronger element is the universal quantifier (upward entailing environment). Due to the fact that Czech is a negative concord language, the existential quantifier is expressed with n-words (*nikdo* 'nobody', *žádný* 'no') in negated sentences.

(HS) Horn's scale for Czech determiners in downward entailing environments:

*všechno* 'all'  $\ll$  *nikdo/žádný* 'nobody/no'

(12) All students didn't sleep.

- a. *Implicature*: It's not case that some students didn't sleep = Some students slept.

(13) Some students slept.

- a. *Implicature*: It's not case that all students slept.

Let us apply the reasoning to a sentence like (14): we follow the introduced Gricean way of explanation for the interpretation of (14). A hearer who comprehends (14) considers the speaker to be cooperative and assumes that he had good reasons to not use the logically stronger n-word as the subject of the sentence. If the speaker did not use the n-word, it should be the case that he believes that the alternative meaning of (14) is false.

- (14) Všichni pacienti si ale protilátky nevytvářejí.  
 All patients REFL though antidotes not-create  
 ‘All patients don't create antidotes though.’

Formally: the Czech sentence (14) is ambiguous: it either has the literal meaning where the universal quantifier scopes over negation, i.e. (15a), or it has the literal meaning where the negation scopes over the universal quantifier, i.e. (15b). In both cases, the (HS) generates just one alternative meaning, i.e. (15c): it is not the case that there are patients who create antidotes. The scope of negation is necessarily over the existential quantifier (the meaning of n-words is always non-specific). We strengthen the meaning of both literal scopes and arrive at (15a') and (15b'), respectively. The logical double negation is cancelled and we receive two possible strengthened meanings for (14). In the case of (15a'), i.e. the wide scope of the universal quantifier over negation, we claim that there is a contradiction: the literal meaning says that no patient creates antidotes and the strengthened meaning claims that there are patients creating antidotes. In the case of (15b'), i.e. the wide scope of negation, we have coherent literal and strengthened meaning: it says that not all patients create antidotes and the implicature claims that some patients create antidotes.

- (15)a.  $\forall x[\text{PATIENT}(x) \rightarrow \neg \text{CREATE\_ANTIDOTES}(x)]$   
 b.  $\neg \forall x[\text{PATIENT}(x) \rightarrow \text{CREATE\_ANTIDOTES}(x)]$   
 c. alternative of (15a) and (15b):  $\neg \exists x[\text{PATIENT}(x) \wedge \text{CREATE\_ANTIDOTES}(x)]$   
 a'.  $\forall x[\text{PATIENT}(x) \rightarrow \neg \text{CREATE\_ANTIDOTES}(x)]$   
 $\wedge \neg \neg \exists x[\text{PATIENT}(x) \wedge \text{CREATE\_ANTIDOTES}(x)]$   
 $= \forall x[\text{PATIENT}(x) \rightarrow \neg \text{CREATE\_ANTIDOTES}(x)] \wedge \exists x[\text{PATIENT}(x) \wedge \text{CREATE\_ANTIDOTES}(x)]$   
 b'.  $\neg \forall x[\text{PATIENT}(x) \rightarrow \text{CREATE\_ANTIDOTES}(x)]$   
 $\wedge \neg \neg \exists x[\text{PATIENT}(x) \wedge \text{CREATE\_ANTIDOTES}(x)]$   
 $= \neg \forall x[\text{PATIENT}(x) \rightarrow \text{CREATE\_ANTIDOTES}(x)] \wedge \exists x[\text{PATIENT}(x) \wedge \text{CREATE\_ANTIDOTES}(x)]$

As was formally demonstrated in the previous paragraph, the wide scope reading of the universal quantifier leads to a contradiction of the literal meaning with the implicature of the sentence. It would be attractive to blame this contradiction of the literal meaning with the implicature to be the reason of unacceptability of the wide scope interpretation of the universal quantifier with respect to negation. However, this contradiction of both meanings would only be the true cause of unacceptability in case of the contradiction of an implicature with a literal meaning was responsible for unacceptability in general. In fact, this does not seem to be the case: implicatures are by definition cancelable, thus their contradiction with the literal meaning leads only to the cancelation of the implicature. Observe (16), where the implicature of the subject NP is that it is not the case that all of the students were sleeping. However, the assertion of the sentence adds the proposition with a logical form  $\exists x[\text{STUDENT}(x) \wedge \text{SLEEP}(x)] \wedge \forall x[\text{STUDENT}(x) \rightarrow \text{SLEEP}(x)]$  to the context, erasing the implicature.

(16) Some of the students, in fact all of them, were sleeping.

If the contradiction of literal and strengthened meaning is not the source of the tendency for the wide scope interpretation of negation over bare universal quantifier, then what in the neo-Gricean inventory of tools can help us to account for this interpretation? We think that the right explanation comes from the fact that the implicature in (15c) would be unambiguously expressed with a sentence (17). Thus, a speaker who utters (14) must know that (17) is false as the implicature of both scopes in (15a) and (15b) is that (17) is false. Due to the fact that the speaker is sure about falsity of (17), he used a more complex (at least in terms of potential ambiguity of (14)) sentence like (14). If the speaker knows that (17) is false, the only consistent reading of (14) is the wide scope interpretation of negation over universal quantifier, formally (15b).

(17) Žádní pacienti si ale protilátky nevytvářejí.  
 No patients REFL though antidotes not-create  
 'No patients create antidotes though.'

In other words, saying (17) would be certainly easier than saying (14) in a context verifying (17). If the speaker has chosen (14) instead of (17), he believed (17) to be false and if (17) is false, then the only reading of (14) is (15b). This chain of reasoning is the formal explanation of (5). We claim that the preference for the bare universal quantifier to be interpreted in the scope of negation (recall that 84 % of such sentences were interpreted with the scope  $\neg > \forall$ ) is the result of enriching the literal meaning of such sentences with implicatures and the fact that, in the natural language, there is a sentence which would unambiguously express the implicature of negated sentences with the universal quantifier. This interaction leads to the preference of the wide scope interpretation of negation.

The majority of sentences with bare universal subjects (from our CNC research) are understood in the way conforming to (HS) but 13 % of the cases we observed had the  $\forall > \neg$  interpretation. Consider the following examples in (18) and (19). They represent the rest of the cases. Why is Horn's scale not activated for them? In both sentences, we find the verbs *nedutat* 'keep silent' and *nesnášet* 'hate,' which are apparently just negated verbs. The positive form of such verbs either does not exist in contemporary Czech (*\*dutat*) or it has a different lexical meaning than the apparently negated verb. In fact, *snášet* actually means 'to tolerate something,' while *nesnášet* can be translated only as 'hate,' thus the negative prefix in this verb looks like a reflex of lexical negation more than propositional negation. Further, if the verbs are not truly negated, then Horn's scale in (HS) is not activated and such sentences are predicted to be ambiguous.

- (18) Pokračoval tak tiše, že všichni ani nedutali.  
 continued\_he so quietly that all not\_even neg-  
 whispered\_they  
 'He continued so quietly that all of them keep silent.'
- (19) Všechny dominantní ženy nesnáší ostatní dominantní ženy.  
 all dominant women neg-stand other dominant women  
 'All dominant women hate all other dominant women.'

Given this approach, we can explain all cases of bare universal subjects: they either conform to (HS) or, in rare cases, they do not conform to (HS). However, in the latter case, their behavior follows from the lack of competence; as positive (just apparently negative) and negative sentences cannot be in competence (recall that Horn postulates different scales for positive and negative version of quantifiers).

### 2.2 *Modified universal subjects*

Let us repeat the prototypical example of a modified universal NP in (10). Sentences of this type are interpreted with the scope  $\forall > \neg$  in the majority of cases (88 %). How can we explain this observation using Horn's scale in (HS)? The straightforward answer should be that the Horn's scale in (HS) is not activated in examples like (20). We believe that this answer is correct. Horn's scale can be activated only if the competing sentences differentiate only in the quantificational status of the alternative determiners (existential quantifier for negative NPs, which is equivalent to the universal quantifier and reversed scope of negation, as we used in the formulas; and the universal quantifier for universal NPs. On the other hand, if the universal quantifier combines with other elements in modified NPs, giving rise to a meaning inexpressible by the negative NP, the concurrence (formalized as Horn's scale) does not occur.

- (20) Všichni ti muži nesouhlasili se Šengovou politikou – někteří  
 All the men not-agree with Šeng's policy – some  
 otevřeně, jiní opatrně.  
 openly others cautiously  
 'All the men didn't agree with Šeng's policy – some of them  
 openly, the others cautiously.'

Let us consider the sentences in (21) and (22). The contrast shows that the universal quantifier can modify specific expressions (pronouns in this case) but the negative operator is unable to do so. Dočekal (2009) calls this property of Czech negative NPs their extreme unspecificity. Generally, universal NPs in Czech can be specific but negative NPs are never specific.

- (21) My všichni jsme přišli.  
 we all AUX came  
 ‘We all came.’
- (22) \*Žádní my /\*my žádní jsme nepřišli.  
 no we /we no AUX neg-came  
 ‘\*No we came.’

We believe that this inability of Czech negative NPs to express the specific meaning is the reason for the narrow scope interpretation of negation in the case of modified universal NPs. We claim that the majority of occurrences of modified universal NPs are specific. Consider the prototypical example (4) and we will discuss more data later. Our assumption with respect to modified universal subjects is the following: because modified universal subjects express a meaning (specific in most cases) which is unavailable (modulo the force of the alternative quantifiers) for the negative noun phrases, Horn’s scale for them is not active. However, this explanation still does not explain why the modified universal NPs are interpreted with the  $\forall > \neg$  scope; if Horn’s scale is suspended, the ambiguity would be expected. We account for this fact in the next section.

### 2.3 Homogeneity of specific universal NPs

We have shown the reasons for suspension of Horn’s scale in the case of specific universal subjects. Next, we will explore the details of semantics and pragmatics for such sentences. We will use ideas about interpretation of specific NPs, which have been previously proposed independently. Within the literature on the interpretation of specific NPs in the scope of negation, an idea appeared going back to at least Löbner (2000) and Beck (2001). This idea explains surprising tendency of the definite NPs to apparently scope over negation. This tendency is illustrated in the following example (23). Consider a situation where the students are individuals *a*, *b*, *c*, then the denotation of the specific NP *the students* is the supremum of the set of students, namely the plurality  $a \sqcup b \sqcup c$ . The wide scope of negation over the specific NP would then be predicted to be true in a situation where one of the students came and other two did not. However, a sentence like (23) does not seem to be acceptable in

such a situation. Moreover, it seems that speakers are reluctant to assess truth conditions of (23) in mixed case scenarios like the one we discussed. This reluctance points to a presupposition failure source of the unacceptability of sentences like (23) in such situations.

(23) The students didn't come.

Beck (2001) discusses other similar cases like (24) and (25) where the specific NPs seem to scope over negation even if an ambiguity would be expected. Example (24) seems to be true only in a situation where neither of the women knows any of the men and (25) seems to be true only if all the children are totally awake. Example (25) represents an interesting case, as here the negation uncontroversially scopes over the whole clause where the specific NP appears.

(24) The women don't know the men.

- a.  $\forall x[x \in \text{WOMEN} \rightarrow \forall y [y \in \text{MEN} \rightarrow \neg \text{KNOW}(x,y)]]$
- b.  $*\neg \forall x[x \in \text{WOMEN} \rightarrow \forall y [y \in \text{MEN} \rightarrow \text{KNOW}(x,y)]]$

(25) It's not the case that the children are asleep.

- a.  $\forall x[x \in \text{CHILDREN} \rightarrow \neg \text{SLEEP}(x)]$
- b.  $*\neg \forall x[x \in \text{CHILDREN} \rightarrow \text{SLEEP}(x)]$

The reluctance of speakers to assess truth conditions of sentences like (24) in mixed scenarios and the fact that the effect persists even in cases like (25), where the surface scope of both operators is beyond any manipulation by syntactic or semantic processes, lead Beck (2001) to describe this wide scope interpretation of specific NPs as a pragmatic phenomenon. She formulates it as a presupposition, namely homogeneity presupposition in (26). Example (26) says that if some property P is ascribed to a plurality A (which has to be specific), then each atom in the plurality A either has the property P (affirmative sentences) or each atom in the plurality lacks the property P (negative sentences). Mixed cases lead to the failure of the homogeneity presupposition and consequently to a lack of truth conditions. Beck's presupposition of homogeneity is illustrated in form of a semi-lattice in Figure 3.

- (26)  $*P(A) =$   
 a. 1 iff  $\forall x[x \in A \rightarrow P(x)]$  and  
 b. 0 iff  $\forall x[x \in A \rightarrow \neg P(x)]$

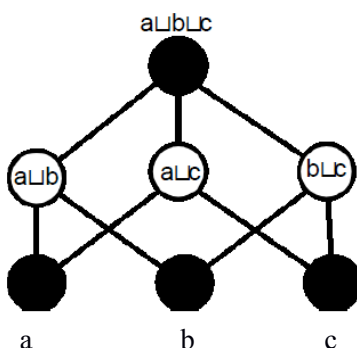


Figure 3: Homogeneity presupposition

Our data with modified universal subjects provide additional evidence for Beck's claims. The most common types of modifications that we found out were either modification by the demonstrative *ten* 'this' like in (27) or modification by the relative clause like in (28). Both types of modification change the interpretation of the NP to specific; the demonstrative by its inherent lexical semantics and the relative clause, as in (28), by restricting the quantification over a pre-established or contextually inferable set.

- (27) Všechny ty škody nemohly mít jiný účel...  
 all the damages neg-could have other purpose  
 'The purpose of all the damages was nothing else...'  
 (28) Pokud ovšem všechno, co jste prohlásila, není lež.  
 if but all that AUX claimed neg-is lie  
 'If all, what you told us, isn't a lie.'

In both types of situations, Horn's scale is not active, as the specific interpretation of universal NPs does not compete with the negative NPs. Moreover, the specific interpretation of NPs leads to the homogeneity



presupposition, which results in the apparent wide scope of the universal quantifier over negation.

The above analysis empirically supports Kadmon's (1990, 2001) framework for the interpretation of definite NPs as requiring both maximality, which, in our case of modified universal NPs, comes from the semantics of universal quantifier and familiarity in the sense of Heim (1982). Kadmon uses ingredients from both formal semantics traditions in order to dealing with definite NPs: the maximality tradition of Russell/Sharvy and familiarity notion of Heim. Her examples like (29) show that specific NPs such as pronouns *it* and *they* require familiarity, which is fulfilled by the linguistic context, but maximality as well, since none of the sentences would be appropriate in a situation where Leif owns 10 indistinguishable chairs.

- (29)a. Leif has a chair. It's not so comfortable, though.  
 b. Leif has four chairs. They are not so comfortable, though.

Our examples of modified universal NPs seem to point in the same direction: an NP starts to be specific if it is maximal but familiar as well. If it is only maximal, it behaves scopally just the other way round than if it is maximal and familiar.

#### 2.4 Predictions

As has become clear in the previous sections, our thinking builds on various previous approaches to specificity and concurrence in the literature. Whether or not our particular analysis is completely right, it has some consequences outside the domain of the interpretation of universal quantifiers and negation, which we will discuss in the present section.

Our first prediction comes from the logical equivalence of the universal quantifier with the logical conjunction  $\wedge$ .  $\forall$  and  $\wedge$  are logically equivalent in finite domains, so predicate logic formula like  $P(a) \wedge P(b) \wedge P(c)$  expresses the same truth conditions as formula  $\forall x[P(x)]$  (in the universe with three individuals  $a, b, c$ ). This logical equivalence leads us to the expectation that conjoined NPs should behave in some aspects similarly to universal NPs.

This prediction is borne out in Czech, as the conjunction of two specific NPs is interpreted only with the wide scope of the conjunction over negation. Consider sentence (30), *The Darkness* and *The Grandmother* are Czech books. Example (30) is true only in a scenario where both books were not read (30a) and undefined or false in an intermediate scenario where one of the books was read and the other was not; in terms of propositional logic, the scope of negation over the conjunction (30b). This behavior parallels the patterns of specific modified universal NPs. Recall that they have to be interpreted as scoping over negation.

- (30) Petr nepřečetl *Temno* a *Babičku*.  
 Petr neg-read *Darkness* and *Grandmother*  
 ‘Petr didn’t read *The Darkness* and *The Grandmother*.’
- a.  $\neg p \wedge \neg q$   
 b.  $*\neg (p \wedge q) = \neg p \vee \neg q$

Moreover, the conjunction of two indefinite NPs like the numeral NPs in (31) allows both scopes and does not prefer any of the scope possibilities; (31a) and (31b) are both appropriate formalizations for the meaning of (31) in informal terms (*Jirásek* and *Němcová* are Czech fiction authors.). Example (31) is true either if Petr did not read any of five books from both authors or in a situation where he read two of *Jirasek’s* books but not three *Nemcova’s* books or in the opposite situation where he read *Nemcova’s* books but not *Jirasek’s* books. This behavior of Czech specific/non-specific NPs is in line with the cross-linguistic research conducted by Szabolcsi & Haddican (2004). An open question is why in a case like (31) we do not observe any preference for the wide scope interpretation of negation, i.e. behavior which would be parallel to the bare universal NPs). We leave the reasons for this discrepancy for future work.

- (31) Petr nepřečetl dvě knížky od Jirásky a tři knížky od Němcové.  
 Petr neg-read two books by Jirasek and three books by Němcová  
 'Petr didn't read two books by Jirasek and three books by Němcová.'
- a.  $\neg p \wedge \neg q$   
 b.  $\neg (p \wedge q) = \neg p \vee \neg q$

The last prediction arising from our thinking is the following: if the disambiguation of scope between negation and universal quantifier comes from pragmatic sources like competition and homogeneity presupposition, then there is little or zero space for any sort of information structure accounts of such facts. This theoretical conclusion is verified by the Czech data. As was shown already in the data section, information structure is not the decisive factor for such disambiguation. This conforms to analyses like Kadmon & Roberts (1986) and Kadmon (2001), where it is claimed that information structure interpretative effects are purely contextual in the sense of creating sets of more or less likely contexts but the effects do not really disambiguate relative scope of operators. Even if we believe that our data and thinking show that this approach is right, we have to leave a proper comparison of our account with works like Büring (1997) for future work.<sup>1</sup>

### 3. Summary

We have argued that the scope of the universal quantifier, representing universal NPs in a natural language, Czech is always under the scope of negation. All of the apparent counterexamples to this hypothesis were explained as illusions of scope. Bare universal NPs scope under negation uncontroversially in most cases. Modified universal NPs seem to have

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<sup>1</sup> An anonymous reviewer suggested to us that we should check the predictions of our thinking for modified universal objects in sentences like *John didn't talk to all the boys*. If our reasoning is valid, we should expect a similar homogeneity interpretation in Czech as we observed for modified universal subjects. We have to postpone the verification of this interesting prediction for future work as we lack reliable empirical data in this area.

the opposite scope but we have shown that this is just consequence of a homogeneity presupposition connected to specific interpretation of NPs (definite and universal). Our thinking made several predictions, which were discussed in the Section 2.4.

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## **Agreement with the First Conjunct: Beyond Unaccusativity\***

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In this paper, I show that while agreement with the first conjunct in Russian is sensitive to the VP-internal versus VP-external position of an argument (Babyonyshev's (1996)), its effects are not limited to the sister of V<sup>0</sup> position (unaccusativity diagnostic in its 'classic' sense) and, as such, can reveal a VP-internal distribution of an argument regardless of the verb type (intransitive or transitive).

### **1 Introduction**

It has been argued in the literature that First Conjunct Agreement (FCA) works as an effective unaccusativity diagnostic in Russian: agreement with the first member of a conjoined subject in a postverbal position is possible for unaccusative verbs, but not for unergative and transitive predicates (Babyonyshev (1996), Harves (2002)).

- (1) Na stole stojali/stoljala/ \*stojal pepel'nica i pustoj stakan  
on table stood<sub>PL/Fem Sgl / \*MascSgl</sub> ashtray and empty glass  
'There was an ashtray and an empty glass on the table.'  
(Babyonyshev, 1996: 75, 97)

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\* I would like to thank Jonathan Bobaljik, Željko Bošković, Andrea Calabrese, Neda Todorovic, as well as the audience of FASL 22 for their helpful comments and discussions on earlier versions of this paper. All mistakes are mine.

- (2) Ob etom često govorjat/\*govorit Andrej i Kolja  
 About this often talk<sub>pl/\*Sgl</sub> Andrej and Kolja  
 ‘Andrej and Kolja often talk about it.’
- (3) Stihi pišut/\* pišet Svetlov i Danilov  
 poems write<sub>pl/\*Sgl</sub> Svetlov and Danilov  
 ‘Svetlov and Danilov write poems.’

The data, however, appears to be more complex than it might seem at first sight. The value of this diagnostic raises serious questions as soon as one observes that FCA can be found with conjoined subjects of unergative and transitive verbs when certain restrictions on the choice of conjoined NPs are met (see more discussion below), as is shown in (4)-(6) below.

- (4) Na večere pela/peli odna izvestnaja pevitca i ee  
 at party sang-<sub>Sg/Pl</sub> one famous singer and her  
 protégé  
 protégé  
 ‘One famous actress and her protégé were singing at the party.’
- (5) Na večere ?igrali/igral magnitofon i radio  
 in party played-<sub>?Pl/Sgl</sub> player and radio  
 ‘A tape player and a radio were playing at the party.’
- (6) Bilety ?prodavali/prodaval avtomat i kassa  
 Tickets sold-<sub>?PL/Sgl</sub> machine and cashier’s desk  
 ‘The machine and the cashier’s desk sold the tickets.’

In this section, I will show that the agreement with the first conjunct is not sensitive to the unaccusativity of the verb *per se*, contrary to what was originally proposed in Babyonyshev (1996). Instead, agreement with the first conjunct appears to be sensitive to the properties of the conjoined subjects. In particular, these properties include: (i) animacy (as part of thematic interpretation requirement); (ii) definiteness/specificity of the conjoined NPs; and (iii) (pragmatic) symmetry of the conjoined members<sup>1</sup>. I show that while (i) and (ii) are relevant for the VP-

<sup>1</sup> The original observation on the relevance of animacy for first conjunct agreement dates back to Corbett (1983). In his corpus study, he identifies two controller factors for agreement with conjoined noun phrases in Russian: precedence and animacy.

internal/VP-external distinction, they detect more general effects of the VP-internal/VP-external distribution of arguments, which includes but is not limited to the sister of  $V^0$  position, and, as such, they constitute only a *partial* overlap with a verb's unaccusativity.

## 2 Types of Conjoined NPs and Agreement

The need for reconsidering the original generalization about the conditions for FCA in Russian becomes quite apparent once one looks at a more extended data set. Below, I consider the original data in minimal pairs that control for animacy, referentiality (non-specific/indefinite interpretation) and the pragmatic symmetry between the conjuncts. Thus, in (7a) below, FCA is allowed when the conjoined NPs are inanimate and non-referential (indefinite), but FCA is not permitted with the same verb if the conjoined NPs are proper names (referential) (see (7b), or animate NPs in a (pragmatically) symmetrical conjoined structure (7c) versus (7d). The contrast between (7c) and (7d) shows that conjoined animate NPs may participate in FCA, but only when they are in a pragmatic asymmetric relation, where the first NP is more salient than the second<sup>2</sup>. Similar data observations pertain to unergative verbs, as is shown in (8) below: animate conjoined NPs do not allow FCA if they are referential (see (8a)). If animate, conjoined NPs are required to be in a pragmatic asymmetry relation (8b) and receive indefinite/non-specific interpretation. Inanimate, conjoined NPs can allow FCA more freely: as is shown in (8c) and (9b), both unergative and transitive conjoined subjects permit the possibility of singular verb agreement<sup>3</sup>.

<sup>2</sup> The term 'contextual saliency' will not be formalized here. It refers to an empirical observation (not noted or stated in any way in previous sources, to my knowledge) that the possibility of FCA with animate NPs is dependent on the symmetry between the NPs in terms of the contextual/world knowledge factors. For example, while a conjunction of the form 'a man and a woman' is symmetrical and does not permit FCA, a mere change of the second conjunct to a NP that is less salient contextually (thus, 'a man and a little boy', 'a pilot and his assistant' etc.) makes agreement with the first conjunct possible.

- (i) v komnatu \*vošel/vošli mužčina i ženščina  
     into room entered-\*Sg/Pl man and woman
- (ii) v komnatu vošla/vošli ženščina i malen'kij malčik  
     into room entered-Sg/Pl woman and little boy

<sup>3</sup> Technically, the very possibility of FCA with transitive verbs excludes the unaccusative analysis of FCA (contra Babyonyshev (1996)). However, Babyonyshev



- (7)a. Na stole stojali/ stoljala/ \*stojal pepel'nica i pustoj stakan  
on table stood<sub>PL/FemSgl</sub>/\*MascSgl ashtray and empty glass  
'There was an ashtray and an empty glass on the table.'
- b. Na ulice stojali/\*stojala Daša i Maša  
in street stood<sub>PL/\*Fem Sgl</sub> Daša and Maša  
'Dasha and Masha were outside.'
- c. Na ulice stojali/\*stojala devuška i paren'  
in street stood<sub>PL/\*Fem Sgl</sub> girl and (young) man  
'A girl and a young man were outside.'
- d. Na ulice stojali/stojala molodaya devuška i malenkij  
in street stood<sub>PL/Fem Sgl</sub> young girl and little  
mal'čik  
boy  
'A young girl and a little boy were outside.'
- (Babyonyshev, 1996: 75, 97)
- (8)a. Ob etom často pisali/\* pisal Andrej i Kolja  
about this often wrote<sub>PL /\*MascSgl</sub> Andrej and Kolja  
'Andrej and Kolja often wrote about this.'
- b. Ob etom često pisali/ pisala redactor gazety i ee  
about this often wrote<sub>PL/FemSgl</sub> editor<sub>Fem</sub> and her  
assistant  
assistant  
'The newspaper editor and her assistant often write about it.'
- c. Ob etom često pisali/ pisala mestnaja gazeta  
about this often wrote<sub>PL/FemSgl</sub> local newspaper<sub>Fem</sub>  
i internet  
and internet  
'The local newspaper and internet often wrote about it.'

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(also in my analysis here) undertakes the analysis where Locative Inversion and FCA are parallel phenomena. Transitive verbs are ungrammatical in Locative Inversion. Thus, by assumption, FCA with transitive verbs should be either impossible or involve a different structural configuration (along the lines of the analysis proposed here).

- (9)a. Stihy pišut/\*pišet Svetlov i Danilov  
 poems write<sub>Pl/\*Sgl</sub> Svetlov and Danilov  
 ‘Svetlov and Danilov write poems.’
- b. Otčety pišut/pišet buhgalterija i otdel  
 reports write<sub>Pl/Sgl</sub> accounting-office and human  
 kadrov  
 resources  
 ‘Accounting office and human resources write reports.’

There exists, however, an important asymmetry between transitive and intransitive conjoined subjects with respect to agreement. Unlike intransitive verbs, animate conjoined subjects of transitive verbs can never allow FCA: referentiality and symmetry of the conjunction does not improve the acceptability of singular verb agreement here.

- (10) Bilety prodavali/\*prodavala molodaja ženščina i  
 tickets sold<sub>Pl/\*SglFem</sub> young woman and  
 malen’kij mal’čik  
 little boy  
 ‘A young woman and a little boy were selling the tickets.’
- (11) Bilety prodavali/??prodavala neizvestnaja ženščina i ee  
 tickets sold<sub>Pl/??SglFem</sub> unknown woman and her  
 pomoščnitsa  
 helper  
 ‘Some unknown woman and her helper were selling the tickets.’

Below, it is shown that agreement with the first conjunct is impossible if one or both of the asymmetrically conjoined NPs are referential.

- (12) V katastrofe \*razbilsja/razbilis’ Petrov i ego  
 in plane-crash died.\*<sub>Sg/Pl</sub> Petrov and his  
 pomoščnik  
 assistant  
 ‘Petrov and his assistant died in a plane crash.’

- (13) V katastrofe \*razbilsja/razbilis' glavnyj pilot Petrov i  
in plane crash died.\*Sg/Pl main pilot Petrov and  
ego pomoščnik Sidorov  
his assistant Sidorov  
'The main pilot Petrov and his assistant Sidorov died in a plane  
crash.'

Thus, it appears that a number of factors that can enable/preclude agreement with the first conjunct have been left unnoticed/unexplained in the original sources. Below, I will show that all of the factors listed above (animacy, referentiality of NPs, pragmatic asymmetry and Dir/LocPP) either directly or indirectly require a VP-internal position for the subject. Thus, under closer scrutiny, the phenomenon of FCA will be argued to only partially reflect a verb's unaccusativity in the traditional sense.

### 3 Locative Inversion as a Key to FCA

A line of contrast, similar to the one described with respect to the FCA data above, is characteristic of the postverbal subjects in locative inversion, as well as inversion structures in general. In parallel to the observations in (4) and (5) above with regards to FCA, one of the major problems with analyzing LI a test of unaccusativity in Russian is its acceptability with unergative verbs<sup>4</sup>.

- (14)a. Na večere pela odna izvestnaja aktrisa  
at party<sub>LOC</sub> sang one famous actress  
'One famous actress sang at the party.'  
b. Na levoj dorožke bežit sportsmen iz Rossii  
on left lane<sub>LOC</sub> runs athlete from Russia  
'An athlete from Russia is running on the left lane.'

Locative Inversion subjects, just like ConjP members in FCA constructions, are required to be indefinite/non-specific, and thus reveal

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<sup>4</sup> See Pesetsky (1982), Harves (2002) for a discussion of variable behavior verbs in Russian. See Levin and Rappaport (1995), among others, for similar observations in languages other than Russian.

the so-called ‘definiteness effect’ (Enç (1991), Diesing (1992), among others). The relevant Russian data is demonstrated below: animate subjects are acceptable only if the indefinite interpretation of the NP is facilitated (see (15)); inanimate subjects do not require overt modification for definite/indefinite disambiguation, but, nevertheless, are not acceptable in LI when referential/definite<sup>5,6</sup>.

- (15)a. ??Na večere pela Valja  
           at party sang Valja  
           ‘Valja sang at the party.’  
       b. ??Na večere pela devuška  
           at party sang girl  
           ‘A girl sang at the party.’  
       c. Na večere pela odna izvestnaja aktrisa  
           at party sang one famous actress  
           ‘One famous actress sang at the party.’
- (16)a. Na večere igralo radio  
           at party played radio  
           ‘There was radio playing at the party.’  
       b. ??Na večere igralo radio ‘Ekho Moskvj’  
           at party played radio ‘Ekho of Moscow’  
           ‘Radio ‘Ekho Moskvj’ was playing at the party.’

Another parallel between LI and FCA is revealed by manner adverbials. While manner modification is typically grammatical with unergative

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<sup>5</sup> Note that I assume, following Babyonyshev (1996), that not every instance of PP V NP order involves a Locative Inversion structure. Locative Inversion is characterized by a discourse neutral interpretation, with the postverbal subject being indefinite and the verb being imperfective (see Glushan (2013)). While the surface order PP V NP can be available with definite postverbal subjects, as such, they require a contrastive focus interpretation and, by assumption, do not involve the structure proposed here for Locative Inversion. (i) Na večere pela VALJA  
                   at the party sang VALJA  
                   ‘It was Valja (not Irina, or Petja) who sang at the party.’

<sup>6</sup> I will not be addressing the generalization that singular bare animate NPs resist an indefinite interpretation in Russian (see Chierchia (1998) on cross-linguistic typology with respect to defaults in definiteness and a semantic account of the differences). I leave this topic for future research.

predicates, it is disallowed when the same verbs occur with LI or FCA configuration<sup>7</sup>.

- (17)a. Na večere pela odna izvestnaja aktrisa  
 at party sang one famous actress  
 b. ??Na večere gromko/s udovolstviem pela odna  
 at party loudly with pleasure sang one  
 izvestnaja aktrisa  
 famous actress  
 ‘One famous actress sang loudly/with pleasure at the party’
- (18) a. Na večere peli/ pela odna zvestnaja aktrisa i ee  
 at party sang<sub>Pl/FemSg</sub> one famous actress and her  
 protégé  
 protégé  
 b. ??Na večere gromko/s udovolstviem pela/peli odna  
 at party loudly/ with pleasure sang<sub>Pl/FemSg</sub> one  
 izvestnaja aktrisa i ee protégé  
 famous actress and her protégé

I will argue that this parallelism between Locative inversion and FCA is not accidental. Agreement with a single NP in Locative Inversion proceeds in the same structural configuration as the agreement with the first conjunct.

### 3.1 *Perspective Structure: on the basis of Gen of Neg*

In my account of the unaccusative behavior of unergative subjects with LI and FCA in Russian, I will appeal to the notion of the *Perspective Structure* proposed on the basis of Gen of Neg subjects in Partee and Borschev (2004) and Partee et al. (2011). Building in part on Babby’s (1980, 2001) analyses, Partee and Borschev (2004) develop an account of Gen of Neg subjects in terms of Perspective Structure. They identify three components that constitute the notion of Perspective Structure: LOCation, THING, and VBE. These components are not assumed to be thematic roles of the ‘be’ verb, but participants of the situation (Partee

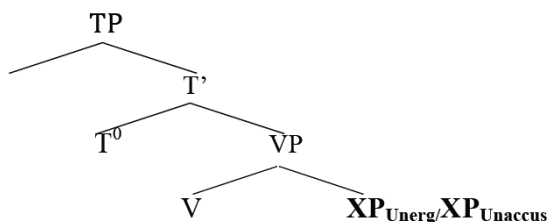
<sup>7</sup>A number of recent accounts, e.g. Ernst (2002), provide evidence that adverbial modification is independent of syntax, and should be accounted for in terms of semantic selection.



### 3.2 Locative Inversion as a shift in Perspective Structure

Following the insights of the analysis of Gen of Neg in Partee and Borschev (2004) and Partee et al. (2011), I argue that subjects of unergative predicates can reveal unaccusative properties on the basis of the Perspective Structure (contextual/speaker's emphasis). The choice of the Perspective Structure corresponds to a distinct argument structure. In particular, in a situation when the Perspectival Center is set on LOC(ation) (see (21)), the corresponding argument structure is missing a vP layer. In the absence of vP, subjects of unergative verbs are base generated VP-internally, in the sister to  $V^0$  position, i.e. in the same position as subjects of unaccusative verbs<sup>9</sup>.

(22) BE (THING, LOC): 'existential' sentence frame

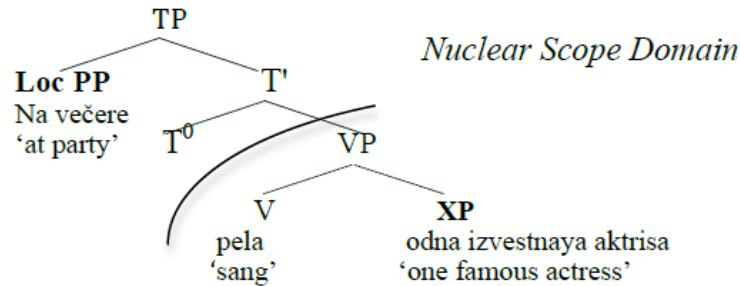


The alternative structure (corresponding to the 'predicative' sentence frame in (21)) is the traditional argument structure with base generated monadic subjects in Spec-vP or sister to V. I propose that a Locative Inversion structure corresponds to an existential structure frame with the LOCation component being obligatorily overt<sup>10</sup>. Locative Inversion is compatible only with the structure in (22), giving rise to the structure disambiguation effect (see 23) below.

<sup>9</sup> In Glushan and Calabrese (2013), on the basis of Italian data, we also explore the possibility that subjects of unergative verbs are right adjoined to VP in an Existential Perspective structure. The difference between the two possibilities of the analysis can be shown in Italian but not in Russian.

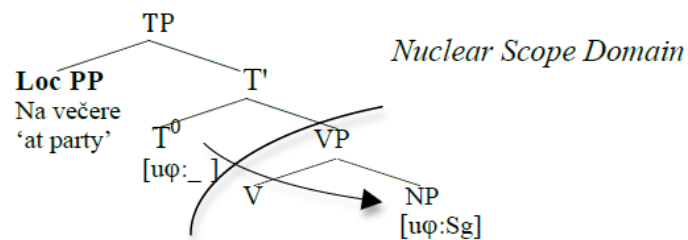
<sup>10</sup> See Glushan (2013) and Calabrese, Maling and Glushan (in prep) for discussion and reasoning behind postulating a distinct syntactic status of a LocPP in an existential and a predicative structure, respectfully.

## (23) Locative Inversion



The indefiniteness/non-specificity restriction on postverbal subjects in Russian LI follows from Diesing's (1992) Mapping Hypothesis: while indefinite/non-specific XPs are mapped to the Nuclear Scope domain (VP-internal), definite/specific XPs are mapped onto the Restrictive Clause domain (VP-external). The subject NPs are in their base generated positions at LF when they occur in Locative Inversion and thus are required to be indefinite/non-specific. In (24), I demonstrate the mechanism of agreement with a single NP in a LI. For my analysis, I adopt the mechanism of Agree, which is viewed as a process of feature valuation (Chomsky (2000, 2001) among others). The closest goal to  $T^0$  is a subject NP bearing a  $[u\phi:Sg]$  feature. The goal NP  $[u\phi:Sg]$  values number features of  $T^0$  resulting in Sg verb agreement.

## (24) Locative Inversion



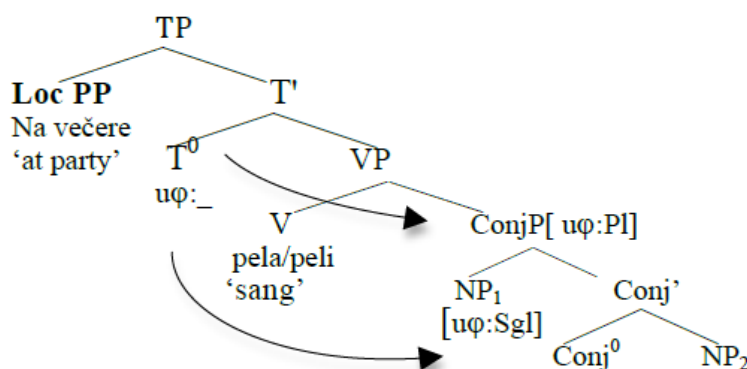
## 3.3 FCA as a shift in Perspective Structure

A similar structure can be applied to account for the possibility of first conjunct agreement in post-verbal position. Following existing proposals



(Johannessen (1998) and Zoerner (1995)), I will assume an asymmetrical structure of the conjunction, whereby the first member of the conjunction c-commands the second member<sup>11</sup>. Following van Koppen (2005, 2008), I assume that NP1 and ConjP are equidistant to T<sup>0</sup>. Similarly to prior analyses of FCA (Marušič et al. (2007), Bošković (2008), among others), I assume that ConjP computes the number features of its conjuncts, thus bearing a plural number feature: [uφ:Pl], while NP1/2 bear a singular number feature [uF:Sg]. In an inversion configuration, when T<sup>0</sup> c-commands a ConjP subject, either the feature of the ConjP [uφ:Pl] or the higher conjunct [uφ:Sg] can value the features of T<sup>0</sup>. Thus, both verb agreement options result from a morpho-syntactic Agree relation, in a way directly parallel to agreement with a single NP in a Locative Inversion (see (25) below).

(25) *First Conjunct Agreement* (unergative/unaccusative)



An explanation analogous to the one proposed in the previous section for LI extends to the observation with respect to the special characteristics of NPs with which first conjunct agreement can occur. Agreement with the first conjunct is limited to indefinite, inanimate or non-

<sup>11</sup> Alternative analyses of the conjunction are also suggested in Munn (1993), among others, where the second member of the conjunction is adjoined to the first member of the conjunction (see also Aoun et al. (1994) for an argument in favor of a phrasal analysis of the conjunction).

referential/indefinite animate argument NPs since only this type of NPs can occur in the VP-internal domain generally. Postverbal subjects of unergative verbs can occur in a VP-internal position, provided that the Perspectival Center is set on the LOCation argument ('existential' structure frame); the verb is 'bleached' to an existential verb. This change is reflected in syntax by an absence of the vP layer and the subject is in the sister to V<sup>0</sup> position. It is worth noting that agreement with the first conjunct is impossible regardless of animacy, referentiality or symmetry of the conjunction if the conjoined subjects occur preverbally<sup>12</sup>.

- (26)a. Petja i Vanja igrali/\*igral na večere  
 Petja and Vanja played<sub>PL/\*Sgl</sub> at party  
 'Petja and Vanja played at the party.'
- b. Flejst i skripač igrali/\*igral na večere  
 flutist and violinist played<sub>PL/\*Sgl-Masc</sub> at party  
 'A flutist and a violinist played at the party.'
- c. Odnajzvestnaja pianistka i ee protégé  
 one famous pianist and her protégé  
 \*igrala/\*igral/igrali na večere  
 played.<sub>\*SgFem/\*Sg-Masc/Pl</sub> at party  
 'One famous pianist and her protégé played at the party.'
- d. Magnitofon i radio igrali/\*igralo/igral na večere  
 player-Masc and radio-Neut played<sub>PL/\*Sgl-Neut/\*Sg-Masc</sub> at party  
 'A tape player and a radio were playing at the party.'
- (27)a. Kolja i Vanja utonuli/\*utonul v prudu  
 Kolja and Vanja drowned<sub>PL/\*Sgl</sub> in pond  
 'Kolja and Vanja drowned in the pond.'
- b. Avtomobil i povozka utonuli/\*utonula/\*utonul v prudu  
 car-Masc and cart-Fem sank<sub>PL/\*Sgl-Fem/\*Sgl-Masc</sub> in pond  
 'A car and a cart sank in the pond.'

<sup>12</sup>As is discussed in Bošković (2009), Last Conjunct Agreement (LCA) for number/gender is possible in a clause initial position in languages like Serbo-Croatian (SC) and Slovenian (see also Marušič, Nevins and Saksida (2007)). In Russian, the absence of gender features in plural NPs does not allow us to see a direct parallel to these languages.

- (28)a. Petja i Vasja prodavali/\*prodaval bilety  
 Petja and Vasja sold<sub>pl/\*Sgl</sub> tickets  
 ‘Petja and Vasja were selling tickets.’
- b. Avtomat i kassa prodavali/\*prodavala/prodaval  
 machine-Masc and cashier-Fem sold<sub>pl/\*Sgl-Fem/\*Sgl-Masc</sub>  
 bilety  
 tickets  
 ‘The machine and the cashier’s desk were selling the tickets.’

The obligatory nature of the plural agreement option is explained here by movement of these ConjP subjects to the Spec-TP position, where  $\text{u}\phi$ :plural feature of ConjP gets checked via a Spec-Head mechanism (Chomsky (1993, 1995)).

#### 4. FCA: Transitive subjects

One more piece of data that still requires an explanation is the partially parallel behavior of transitive verbs with respect to FCA agreement. Recall that there appears to be an animacy restriction with subjects of transitive verbs: only inanimate subjects allow FCA, while animate, conjoined subjects require plural verb agreement in all cases. The data pattern is repeated in (29) below.

- (29)a. Bilety prodavali/\*prodaval Petja i Vasja  
 tickets sold<sub>pl/\*Sgl</sub> Petja and Vasja  
 ‘Petja and Vanja were selling (the) tickets.’
- b. Bilety ?prodavali/prodaval avtomat i kassa  
 tickets sold<sub>?PL/Sgl</sub> machine and cashier’s desk  
 ‘The machine and the cashier were selling the tickets.’

I argue that the parallelism to the intransitive verb pattern here is only apparent. The first important empirical difference concerns examples with animate subjects, such as (29a). Recall that, for intransitive verbs, such examples improve when indefinite/non-specific NPs are used, instead of proper names. In contrast, transitive verbs with animate, conjoined subjects can never allow FCA regardless of referentiality and the symmetry of the conjoined NPs (the data is repeated in (30-31) below).

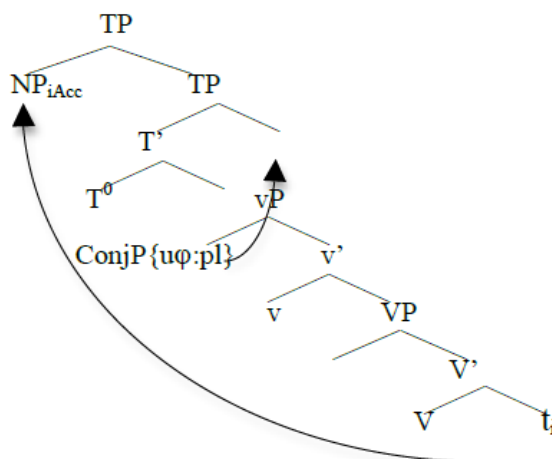
- (30) Bilety prodavali/\*prodavala molodaja ženščina i malčik  
 tickets sold<sub>Pl/\*SglFem</sub> young woman and boy  
 ‘A young woman and a little boy were selling the tickets.’
- (31) Bilety prodavali/\*prodavala kakaja-to ženščina i  
 tickets sold<sub>Pl/\*SglFem</sub> some woman and  
 devočka  
 little-girl  
 ‘Some woman and a little girl were selling the tickets.’

Since animate, conjoined subjects of transitive verbs are exempt from the definiteness effect observed for subjects of intransitive verbs, and on the basis of further evidence with regards to the position of the verb and the postverbal subject in these constructions, I argue that the structure for these inverted order transitive constructions is distinct from the one proposed for intransitive predicates in Locative Inversion above. The structure is different from Locative Inversion in that it has a uniform argument structure frame and a distinct position of the postverbal subject.

#### 4.1 *Postverbal Subject Paradox*

There exist several views as to the general position of the verb in Russian (Schoorlemmer (1995), Babyonyshev (1996), Bailyn (2004)), as well as the corresponding position of the postverbal subject. While King (1994) and Schoorlemmer (1995) argue that Russian is a verb raising language in the sense of Pollock (1989), contrary evidence is provided in Bailyn (2004), Babyonyshev (1996) and Brown (1999). In Glushan (2013), I provide evidence that, in transitive constructions with postverbal subjects, the position of verb and the position of the subject create a paradox: while the verb precedes the subject on the surface, it behaves as if it is lower than the subject in the structure. One possibility to derive this effect (see Stjepanović (2003) for Serbo-Croatian and Saccón (1993) for Italian) is to assume a structure as in (32) where the object NP moves to a TP-adjoined position, while the subject subsequently moves to Spec-TP, a Spec position on the right. The obligatory plural agreement on the verb in this case is contingent on movement to the Spec-TP position and results from a Spec-Head agreement mechanism. In such a structure, the verb does not need to raise to a higher position in order to precede a (VP-external) subject situated high in the structure.

(32)



#### 4.2 Inanimate Conjoined Subjects: Analysis of the FCA pattern

In the next step of my analysis, I am returning to inanimate, conjoined subjects of transitive verbs where, as I have observed above, agreement with first conjunct is possible (see (29) above). In general, inanimate subjects of transitive verbs (regular NPs as well as ConjPs) have been observed to have a special nature in various sources both in Russian as well as other languages (see Folli and Harley (2007) and references therein). An intriguing discussion of animacy effects in Italian, Greek and Russian is offered in Folli and Harley (2008:197). According to Folli and Harley (2008), whether an XP denoting an inanimate entity can or cannot be a felicitous subject of a transitive verb depends on whether it can or cannot be an appropriate Causer. The Russian data Folli and Harley (2008) discuss is the observation that the perfective/imperfective form of the verb matters for making an inanimate subject a felicitous transitive subject in Russian. As is shown in (33) below, while an inanimate NP is freely acceptable as a subject of an imperfective verb, additional restrictions apply if the verb is perfective.<sup>13</sup> No restriction of this kind exists for animate subjects.

<sup>13</sup> Folli and Harley (2008) use the sign # for subject DPs that cannot be licensed in a subject position due to incompatibility between teleological capability of the subject and

- (33)a. Litsenzija pozvoljala imet' sobaku  
 licence permit<sub>Imp</sub> to have dog  
 'The license allowed us to have a dog.'  
 b. #Litsenzija pozvolila imet' sobaku  
 licence permits<sub>Perf</sub> to have dog
- (34)a. Hozjain pozvoljal nam imet' sobaku  
 landlord permit<sub>Imp</sub> us to have dog  
 'The landlord allowed us to have a dog.'  
 b. Hozjain pozvolil nam imet' sobaku  
 landlord permit<sub>Perf</sub> us to have dog
- (Folli and Harley, 2008)

Interestingly, similarly to the observations by Folli and Harley (2008), inanimate conjoined subjects of transitive verbs allow FCA only in the imperfective verb form. Changing the verb into perfective blocks the option for Sg agreement.

- (35)a. Imet' sobaku ?pozvoljali/ pozvoljala licenzija i  
 to-have dog permitted<sub>Imp</sub> ?PL/Imperf Sgl license and  
 spravka  
 note  
 'The license and an official note allowed (us) to have a dog.'  
 b. Imet' sobaku ?pozvolili/\*pozvolila licenzija i spravka  
 to-have dog ?permitted<sub>Perf</sub> ?PL/Perf\*Sgl license and note

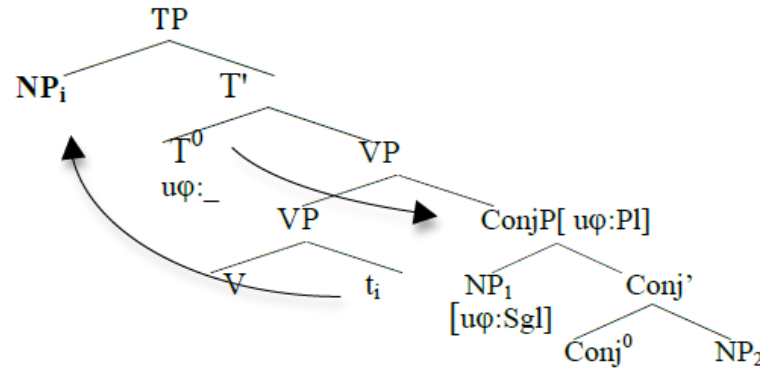
I argue that the FCA with inanimate subjects of transitive verbs is possible due to the availability of an optional low position for inanimate, transitive subjects. This low position becomes available by virtue of the possibility of the 'existential' perspective structure frame underlying imperfective transitive verbs when they are combined with inanimate subjects. In the absence of the vP-layer, the subject XP is adjoined to VP, and is interpreted in this structural configuration (Hale and Keyser (1993)).<sup>14</sup>

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argument structure of the verb they combine with. The sign # does not directly correspond to a \* notation. The examples are grammatical, but their interpretation is odd in the sense that an animate reading of an inanimate DP subjects is required.

<sup>14</sup> See Glushan and Calabrese (2013) for more details along this line of analysis.

(36)



## 5. Conclusion

In this paper, I have shown empirically that FCA is not sensitive to the unaccusativity of the verb per se, but that it is sensitive to the properties of the conjoined subjects. In particular, the properties of the conjoined subjects that play a role in the possibility of agreement with the first conjunct are: (i) animacy (in terms of thematic interpretation); (ii) referentiality (definiteness) of the NPs; and (iii) context prominence of the conjoined members. While (i) and (ii) were shown to be the prerequisites for a VP-internal position of the conjoined subject, these factors only partially overlap with the sister to V<sup>0</sup> position of the subject. The conclusion that I reach is that FCA is an example of a *partial* unaccusativity diagnostic: it detects all VP-internal arguments including those that are not in the sister to V<sup>0</sup> position (e.g. transitive subjects) and thus, should not be viewed as a ‘classic’ unaccusative diagnostic.

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## The Role of Prosody in the Linearization of Clitics: Evidence from Bulgarian and Macedonian\*

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### 1 Introduction

Macedonian and Bulgarian are genetically related Eastern South Slavic languages and geographically related members of the *Balkan Sprachbund*. Yet, Macedonian and Bulgarian exhibit drastically different patterns of clitic placement. While verb-adjacent clitics in both languages may either precede or follow the verb, only Macedonian clitics can appear in an initial position:<sup>1</sup>

- (1) a.   dade           mu       ja  
         (s)he.gave   3.SG.M.DAT 3.SG.F.ACC  
         ‘(s)he gave it to him’           (Bulgarian: ok, Macedonian: \*)
- b.   mu           ja       dade  
         3.SG.M.DAT   3.SG.F.ACC (s)he.gave  
         ‘(s)he gave it to him’           (Bulgarian: \*, Macedonian: ok)

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<sup>1</sup> Clitics are glossed as combinations of person (1, 2, 3), number, gender (when applicable), and case. Abbreviations: ACC – accusative, DAT – dative, F – feminine, IMP – imperative, M – masculine, PRESP – present participle, Q – question particle, REFL – reflexive, SG – singular. Transliteration standard: ISO 9 (1968).

The traditional explanation of this contrast relies on a constraint against initial clitics, which happens to be present in Bulgarian but absent in Macedonian (see e.g. Franks 2008, p. 102, and references therein). Different implementations of this constraint exist but, according to this general approach, the basic parametric difference between the two languages is the directly observable (in)tolerance of host initial clitics.

Here, I ask whether the difference in clitic placement between Bulgarian and Macedonian correlates with any other properties of these languages. If so, such correlations should allow for an elaboration of the traditional analysis. This elaboration will attain a higher degree of explanatory adequacy by relating systematic differences between Bulgarian and Macedonian in a theoretical way. I pursue such an analysis, demonstrating that the difference in clitic placement is predictable from independently observable differences in the prosodic behavior of clitics in the two languages. This result has the desirable theoretical consequence that it eliminates the need for a language specific constraint, which prohibits clitics from the initial position within some prosodic constituent. My proposal is based on the idea that only clitics that are attached high in the prosodic hierarchy can potentially interact with constraints on prosodic well-formedness that make reference to prosodic constituents which are high in the hierarchy (e.g. the utterance). Since Macedonian clitics are adjoined below the Prosodic Word level but Bulgarian clitics are adjoined higher, only the latter are linearized in non-canonical positions. Bulgarian clitics appear in non-canonical positions as a response to the requirements of a prosodic constraint which prohibits phonologically deficient elements at the left edge of the utterance.

The approach to the linearization of clitics in Bulgarian and Macedonian that I pursue here bears on a number of theoretical issues concerning the syntax-phonology interface. First, indirect-reference theories of the interface posit a prosodic level of representation as a mediator between syntax and phonology. A question of central importance in this context is how prosody interacts with other components of the interface; in particular, linearization. The present findings suggest, in agreement with much previous literature, that prosodically deficient elements (clitics) are linearized in non-canonical positions to avoid prosodically deviant structures. Another question then concerns what structures qualify as deviant, or equivalently, what is the nature of constraints on prosodic well-formedness? The present

investigation leads to the conclusion that, at least in this case, constraints on prosodic well-formedness are subject to a certain kind of visibility restriction, such that they may target specific prosodic constituents to the exclusion of others, which remain “invisible” to them.

This paper is organized as follows. Section 2 provides an overview of the central contrast in clitic placement between Bulgarian and Macedonian. The analysis of this contrast is outlined in Section 3, and various details and consequences of the analysis are discussed in Section 4. Finally, Section 5 summarizes the proposal and concludes with some of the questions that it raises.

## 2 The Contrast in Clitic Placement

It is well known that while Macedonian pronominal and auxiliary clitics appear in initial positions, their Bulgarian counterparts never do so. Instead, the Bulgarian clitics exhibit variable placement that is sensitive to the prosodic context. This section recapitulates the relevant empirical details.

### 2.1 *Macedonian Clitics*

Verbal clitics in Macedonian immediately precede their host if it is tensed:<sup>2</sup>

- (2) a. kučeto ja kasa mačkata  
       the.dog 3.SG.F.ACC bites the.cat  
       ‘the dog bites the cat’
- b. \*kučeto kasa ja mačkata (Friedman 2001, p. 37)
- (3) a. neizinata stara majka ti go dala  
       her old mother 2.SG.DAT 3.SG.M.ACC given  
       ‘her old mother has given it to you’
- b. \*neizinata stara majka dala ti go (Tomić 1996, p. 830)

In the absence of topicalized or focused constituents in the left periphery of the clause and when subjects are dropped, the clitics occupy the initial position in the clause and the clitic-host order is preserved:

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2 For present purposes, tensed hosts include lexical verbs that bear tense morphology and *-l* participles (Joseph 1983).



## 2.2 *Bulgarian Clitics*

Verbal clitics in Bulgarian immediately precede their host by default:<sup>3</sup>

- (9) a. Petko vinagi mi go dava  
       Petko always 1.SG.DAT 3.SG.M.ACC gives  
       ‘Petko always gives it to me’  
       b. \*Petko vinagi dava mi go

This default behavior, however, is disrupted in cases where the clitic-host order would leave the clitics in the initial position. For example, if the subject in (9a) is right-dislocated and there is no other material to the left of the verb, the clitics must appear immediately to the right of their host, the verb:

- (10)a. dade mi go Petko  
        gave 1.SG.DAT 3.SG.M.ACC Petko  
        ‘Petko gave it to me’  
        b. \*mi go dade Petko

In contrast with Macedonian, the tenseness of the host does not affect clitic placement in Bulgarian. For example, clitics must follow an imperative verb if it is leftmost within the clause, as in (11a). However, they will precede the verb if there is a clause-initial adverbial present, as in (11c) (cf. Section 2.1 and examples (6-8) in particular).<sup>4</sup>

- (11) a. daj mi ja knjigata  
        give-IMP 1.SG.DAT 3.SG.F.ACC the.book  
        ‘give me the book’  
        b. \*mi ja daj knjigata

3 They do not occupy the second position in the clause under any definition of “second,” since, as long as they remain verb-adjacent, they can be arbitrarily distant from the left edge of the clause, as (9a) shows.

4 In Macedonian, on the other hand, clitics remain postverbal in the presence of additional preverbal material (example (20b) from Franks 2009, p. 206):

(i) utre kupuvaj go penkaloto  
     tomorrow buy.IMP 3.SG.N.ACC the.pen  
     ‘buy the pen tomorrow’

- c. bǎrzo mi ja daj knigata  
 quickly 1.SG.DAT 3.SG.F.ACC give.IMP the.book  
 ‘give me the book quickly’

Other non-tensed hosts, such as participles and non-verbal predicates, behave similarly.<sup>5</sup> The conclusion then is that while syntax might be a necessary determinant of the position of the Bulgarian clitic cluster, it is not sufficient. The process of linearization of clitics in this language must, in addition, make reference to prosodic context (cf. Bošković 2001).

### 3 Prosodically Driven Clitic Placement

My treatment of clitic placement in Bulgarian and Macedonian, as well as the contrasts between them, relies on the intuition that postverbal clitic placement in Bulgarian results from an interaction between the phonological properties of clitics and principles of prosodic well-formedness, defined over prosodic constituents. Preverbal clitic placement is, thus, avoided when it yields prosodic deviance, with a prosodically deficient element pronounced in a position reserved for prosodically strong elements.

The analysis is developed on the assumption that prosodic structures are organized hierarchically in constituents, based on, but not isomorphic to, syntactic constituents (Selkirk 1995, among others).<sup>6</sup>

- (12) Prosodic constituents above the level of the Foot  
 a. ι: Intonational Phrase  
 b. φ: Phonological Phrase  
 c. ω: Prosodic Word

Next, I adopt a purely phonological conception of clitics and define them as phonological forms (realizing morphosyntactic elements) that are

5 Adverbial participles (e.g. *četejki knigata* ‘reading the book,’ also referred to as gerunds or verbal adverbs) constitute a possible exception, as they invariably precede the clitics that they host.

6 I follow Ito and Mester (2012) in assuming an impoverished inventory of prosodic constituents, in which the Utterance is replaced by the *maximal* Intonational Phrase. For present purposes, nothing hinges on this choice.

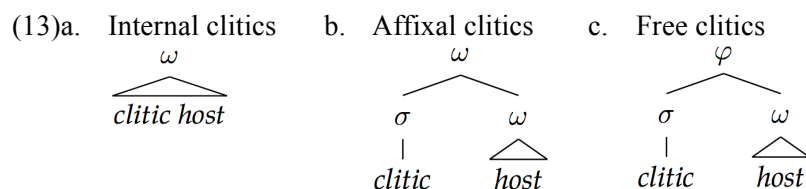


deficient in prosodic structure at the level of the Prosodic Word (see Anderson 2011 for a similar view). In other words, a clitic is a phonological string "whose segmental content may be organized into syllables and possibly feet but which is not lexically assigned the status of a P[rosodic]Word" (Anderson 2011, p. 2004)."

With these two central assumptions in place, the main ingredients of the analysis are as follows. First, Macedonian clitics are adjoined below the Prosodic Word level, while Bulgarian clitics are adjoined higher (see Section 3.1). Second, a STRONG START constraint prohibits prosodically deficient material from appearing at the left edges of certain prosodic constituents (see Section 3.2). The immediate consequence of these conjectures is that only clitics adjoined above the Prosodic Word level, as in Bulgarian, can potentially violate STRONG START. In other words, clitics in Bulgarian appear postverbally in order to avoid prosodic deviance.

### 3.1 *The Prosodic Organization of Clitics*

The first main component of the analysis concerns the prosodic structures in which clitics in Bulgarian and Macedonian participate. Work on the prosodic typology of function words has established that clitics may adjoin at different prosodic levels (see e.g. Selkirk 1995 and Ito and Mester 2009):



Internal clitics are parsed inside the Prosodic Word defined by their host. Affixal clitics, on the other hand, attach outside of the minimal Prosodic Word that immediately contains the host; however, they are still dominated by a Prosodic Word, giving rise to a recursive Prosodic Word structure. Finally, free clitics are immediately dominated by the next higher prosodic constituent, the Phonological Phrase, and are completely external to the Prosodic Word of the host.

The working hypothesis here, which will be motivated at length in Section 4, is that the clitics in Macedonian are internal and/or affixal (cf. Zec 2005, Section 3 on Serbian, and Peperkamp 1997 and Anderson 2011 on Neapolitan and Lucanian; see also Rudin et al. 1999). On the other hand, clitics in Bulgarian are free (cf. Zec 2005, Section 2 on Serbian, Peperkamp 1997 and Anderson 2011 on Standard Italian; Selkirk 1995, p. 198 on English; see also Rudin et al. 1999).

### 3.2 *STRONG START*

The second component of the analysis has to do with the cross-linguistic tendency for edges of prosodic constituents that are relatively high on the Prosodic Hierarchy to be positions of prosodic strength, so that no weak elements are ever found there (see e.g. Selkirk 2010). This is certainly true in Bulgarian, where, informally, the left edge of maximal Intonational Phrases (i.e. Utterances; see fn. 5) does not tolerate material that is not parsed inside a Prosodic Word. Following recent work on other languages (Selkirk 2010, Elfner 2011, Bennett et al. to appear), I hypothesize that the following formal constraint (14) is behind such effects in Bulgarian:

#### (14) *STRONG START*

The leftmost constituent of a maximal Intonational Phrase should not be a prosodically deficient element (i.e. such an element must be parsed inside a Prosodic Word).

The effects of *STRONG START* in Bulgarian amount to the requirement that the left edge of a maximal Intonational Phrase must coincide with the left edge of a Prosodic Word. Section 4.2 provides evidence that the relevant prosodic domain is, in fact, the maximal Intonational Phrase.

A constraint similar to *STRONG START* can be assumed to be active at the right edge of Phonological Phrases in English and to account for the examples in (15) (Selkirk 1995, p. 200).<sup>7</sup> In this position, only the phonologically strong form of a function word is allowed:

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<sup>7</sup> Werle (2009) discusses a potential example of Utterance non-finality in Serbian (p. 343ff.), citing data from Browne 1975 (p. 120). However, the effect is not exactly the mirror image of what is observed in Bulgarian because Serbian clitics are, in fact, able to appear Utterance-finally if there is no viable alternative way to linearize the structure.

- (15)a. I don't know whether Ray is [ɪz], \*[z]  
 b. I can eat more than Sarah can [kæn], \*[kən], \*[kn]

Likewise, a version of STRONG START has been argued to be active at the left edge of Phonological Phrases in Irish (Elfner 2011 and Bennett et al. to appear). Weak pronouns in Irish are not tolerated in this position, and the language exhibits at least two ways of avoiding potentially deviant prosodic structures: postposing, as in (16a), or in-situ strengthening, as in (16b) (examples (2) and (5c) from Bennett et al. to appear).

- (16)a. Fuair sé — óna dheartháir an lá cheana é.  
 got he from-his brother the other day it  
 'He got it from his brother the other day.'  
 b. Thóg siad í ar bord.  
 raised they her on board  
 'They lifted her on board.'

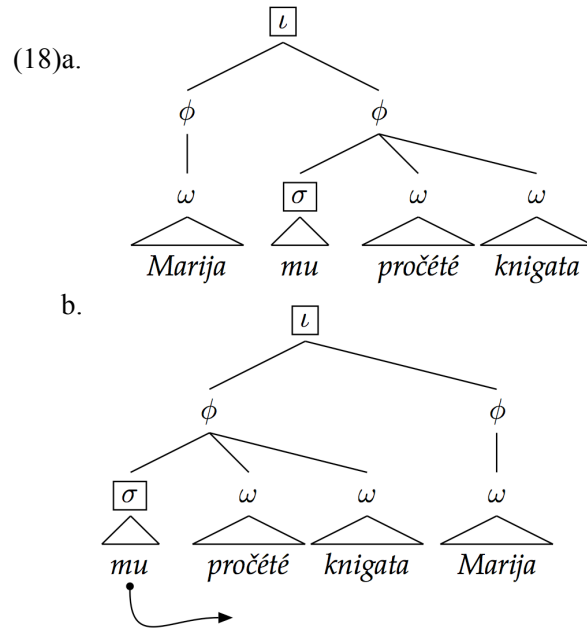
As far as Bulgarian is concerned, the same strategies of avoiding STRONG START violations should be, in principle, available. However, strengthening the clitic, as in English and Irish, which amounts to the clitic being parsed as a Prosodic Word, or at least a foot, is not attested in Bulgarian: the language does not allow promotion of clitics to independent Prosodic Words. Instead, it exhibits variable clitic placement, whereby clitics are linearized in non-canonical positions, as in Irish (cf. (16a)), to avoid a violation of the prosodic constraint. Thus, the canonically preverbal clitic in (17a), with the prosodic structure in (18a), appears after the verb when the subject is right-dislocated, as shown in (17b) and (18b):<sup>8</sup>

- (17)a. Marija mu pročete knjigata  
 Maria 3.SG.M.DAT read the.book  
 'Maria read the book to him'  
 b. — pročete mu knjigata Marija  
 read 3.SG.M.DAT the.book Maria

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<sup>8</sup> This account is not intended to be interpreted as necessarily involving literal rightward movement of the clitic. It is, in fact, consistent with a number of different implementations of linearization (including copy pronunciation, prosodic inversion, OT competition, etc.).

c. \* mu      pročete knjigata    Marija  
                  3.SG.M.DAT    read    the.book    Maria



### 3.3 Summary

Given the prosodic structures posited in Section 3.1 and the conjecture from Section 3.2 that STRONG START does not tolerate clitics at the left edge of maximal Intonational Phrases, only the Bulgarian clitics are expected to potentially violate STRONG START. This is the case because they are adjoined above the Prosodic Word level and are immediately dominated by a Phonological Phrase, while Macedonian clitics, being inside Prosodic Words, are, in a sense, invisible to this version of STRONG START.

#### 4 Analytical consequences

The account outlined above explains the clitic placement patterns in Bulgarian and Macedonian in terms of differences in prosodic structure, coupled with the effects of STRONG START. The prosodic behavior of clitics in the two languages and some aspects of STRONG START are further elaborated and motivated in Sections 4.1 and 4.2, respectively. A notable characteristic of this account is that it shifts the burden of explaining the contrast in clitic placement between Bulgarian and Macedonian to the distinct attachment sites of the clitics in each language. As a result, this account leaves open the possibility that STRONG START is actually active in Macedonian as well. Preliminary evidence that this is the case is discussed in Section 4.3.

##### 4.1 *Motivating the Prosodic Attachment Sites of Clitics*

It was hypothesized in Section 3.1 that Macedonian clitics are parsed inside Prosodic Words (i.e. they are immediately dominated by Prosodic Words), while Bulgarian clitics are immediately dominated by Phonological Phrases. To determine which of these structures is instantiated in each case, I survey phonological phenomena that occur at the edges of Prosodic Words or across their boundaries (Booij 1987, Revithiadou 2008, Anderson 2005, p. 40ff).

4.1.1 Macedonian. Clitics in Macedonian participate in phonological processes that apply within Prosodic Words. First, they interact with stress assignment. Macedonian has regular antepenultimate stress and initial stress in mono- or disyllabic words. For the present purposes, what is relevant is that postverbal clitics affect stress placement, shifting it to the antepenultimate syllable (as has been reported to be the case in Indonesian, Latin, and Modern Greek):

- (19)a. doneSI<sup>9</sup>  
           bring.IMP  
           ‘bring’

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9 Capital letters mark stressed syllables.

- b. doNEsi      go  
      bring-IMP      3.SG.M.ACC  
      ‘bring it’
- c. doneSI      mi      go  
      bring-IMP      1.SG.DAT      3.SG.M.ACC  
      ‘bring it to me’

Preverbal clitics also interact with stress placement, albeit in a more limited set of contexts. For example, they are included in the three-mora stress window and can carry stress themselves in the context of sentential negation and *wh*-questions:<sup>10</sup>

- (20)a. ne GO      vide  
      not 3.SG.M.ACC (s)he.saw  
      ‘(s)he didn’t see him’
- b. zošto mu      GO      dade  
      why 3.SG.M.DAT 3.SG.M.ACC gave  
      ‘why did you give it to him’

On the other hand, preverbal clitics that do not occur in these special contexts do not affect the position of stress, which remains on the verb:

- (21)a. go      VIdē  
      3.SG.M.ACC (s)he.saw  
      ‘(s)he saw him’
- b. mu      go      DAde  
      3.SG.M.DAT 3.SG.M.ACC gave  
      ‘(s)he gave it to him’

However, there is independent evidence that preverbal clitics are generally parsed inside Prosodic Words. A phenomenon that diagnoses this behavior is a type of vowel deletion: preverbal clitics of the form CV

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<sup>10</sup> An anonymous reviewer raises the question of why sentential negation and *wh*-questions affect stress placement in Macedonian in this way. Various aspects of this question have attracted attention in the literature (see e.g. Rudin et al. 1999, Tomić 1996) but the issue is beyond the scope of this paper. One possibility is that the sentential negation marker and *wh*-words are characterized by prosodic requirements of their own, which determine the kind of prosodic structures in which these elements can appear.

lose their vowel, V, when followed by a vowel-initial stem (Vidoeski 2005, p. 21):<sup>11</sup>

- (22)a. go ostai → [gostai] ‘(s)he left it’<sup>12</sup>  
 b. se utepa → [sutepa] ‘(s)he hurt herself/himself’  
 c. k’e igram → [k’igram] ‘I’ll play’  
 d. ne izleze → [nizleze] ‘didn’t come out’

Vowel deletion of this kind is a widespread phenomenon in the Western dialects of Macedonian (Vidoeski 2005). It affects not only clitics but also other unaccented (lexical) words which form an “accentual unit” with the vowel-initial word they immediately precede.

To capture these patterns, I assume that the domain of stress assignment in Macedonian is the *minimal* Prosodic Word, while the domain of morphophonemic alternations like vowel deletion of the kind described above is the *maximal* Prosodic Word. Then, pre- and postverbal clitics that affect stress placement must be parsed internal to the minimal Prosodic Word, as in (23a). On the other hand, preverbal clitics that do not affect stress, illustrated in (21) above, but do participate in vowel deletion must be part of a recursive Prosodic Word structure, as in (23b).



These structures result from the interaction between the prosodic deficiency of clitics, which is lexically specified (Zec 2005), and constraints on prosodic structuring, which must allow recursive Prosodic Words in Macedonian.

4.1.2 Bulgarian. Clitics in Bulgarian do not participate in phonological processes that apply within Prosodic Words. To begin, stress in

<sup>11</sup> VV sequences are not generally illegal in the language across word boundaries, indicating that the V-deletion phenomenon in (22) does only apply within Prosodic Words.

<sup>12</sup> Square brackets do not imply IPA transcription.

Bulgarian is lexical and some morphemes can affect stress placement within a word. In the following example, the suffixal definiteness marker attracts the stem-initial stress:

- (24)a. hubost → [HUbost] ‘beauty’  
 b. hubost+ta<sub>DEF</sub> → [hubostTA] ‘the beauty’

On the other hand, neither pre- nor postverbal clitics affect the position of stress in this way (as has been reported to be the case in Italian, Spanish and Ancient Greek):

- (25)a. doneSI  
 bring-IMP  
 ‘bring’  
 b. bǎrzo go doneSI  
 quickly 3.SG.M.ACC bring-IMP  
 ‘bring it quickly’  
 c. doneSI mi go  
 bring-IMP 1.SG.DAT 3.SG.M.ACC  
 ‘bring it to me’

Voicing alternations also indicate that Bulgarian clitics are parsed outside of Prosodic Words. Some morphemes, such as the suffixal definiteness marker and the plural suffix, bleed regular word-final devoicing in certain contexts:

- (26)a. mǎž → [mǎš] ‘man’  
 b. mǎž+a<sub>DEF</sub> → [mǎža] ‘the man’  
 c. mǎž+e<sub>PLURAL</sub> → [mǎže] ‘men’

Clitics do not bleed word-final devoicing in this manner. Consider, for instance, the clitic copula *e*, which happens to be segmentally identical to the plural suffix above, and the third-person feminine dative/possessive clitic *i*:

- (27)a. mǎž+e<sub>COPULA</sub> → [mǎše] ‘it’s a man’  
 b. mǎž+i+e<sub>COPULA</sub> → [mǎšie] ‘he is her husband’



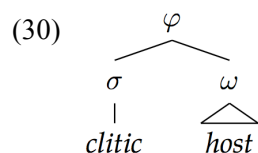
Finally, some morphemes interact with liquid/ă metathesis, another process limited to the domain of Prosodic Words, which occurs with certain roots:

- (28)a. grăb → [grăp] ‘back’  
 b. grăb+a<sub>DEF</sub> → [gărba] ‘the back’  
 c. grăb+ove<sub>PLURAL</sub> → [gărbove] ‘backs’

Clitics, however, do not trigger liquid/ă metathesis in the same environments:

- (29)a. grăb+e<sub>COPULA</sub> → [grăpe] ‘it's a back’  
 b. grăb+i → [grăpi] ‘her back’

Assuming that the domain of stress assignment and morphophonemic alternations like word-final devoicing and liquid/ă metathesis is the Prosodic Word, clitics in Bulgarian must attach above the level of the Prosodic Word and be immediately dominated by a Phonological Phrase:



The participation of Macedonian clitics in Prosodic Word-level processes and the lack of participation of their Bulgarian counterparts in such processes follow from the prosodic attachment sites of the clitics in each language. The difference in their attachment sites, established in this section, plays a central role in the linearization of clitics and correlates with (in)tolerance of initial clitics.

There are at least two potential sources of this difference. One possibility is that it is rooted in a syntactic difference between the structures in which clitics participate in Bulgarian and Macedonian. If this is the case, the principles that map syntactic structures to prosodic structures in each language may output distinct prosodic parses because they encounter distinct syntactic structures as input. Another possibility is that the difference in clitic attachment sites stems from a difference in the mapping principles themselves, while the underlying syntax remains

more or less the same in both languages. In this case, the relevant difference might be that only Macedonian requires Phonological Phrases to be exhaustively parsed into Prosodic Words. This would have the effect that no Phonological Phrase could directly dominate a clitic, a state of affairs that is the norm in Bulgarian.

While I do not pursue many of the intriguing related questions here, preliminary evidence for the former approach may come from differences that have been postulated in the syntax of cliticization in Bulgarian and Macedonian. In particular, there is ample evidence that Bulgarian clitics behave like nominal phrases in a number of ways (Harizanov, to appear) while Macedonian clitics pattern with agreement markers (Franks 2009; see also Rudin 1997 for relevant discussion).

#### 4.2 *The relevance of STRONG START and its domain of application*

An attempt to model the effects of STRONG START in Bulgarian without reference to a prosodic well-formedness constraint might instead rely on lexically encoded information about the clitics themselves. For instance, it could be suggested that clitic placement in Bulgarian is a matter of prosodic subcategorization, i.e. the clitics are lexically specified as enclitics and, consequently, they need a host to their left and cannot appear clause-initially. Here, I argue that this cannot be the case, following a great deal of previous work on the issue (Bošković 2001, Franks and Bošković 2001, Pancheva 2005, Franks 2008, Harizanov 2011, among others).

First, assuming that elements like *i* ‘and,’ *no* ‘but,’ and *če* ‘that’ in Bulgarian are unsuitable hosts for clitics, it is notable that clitics appear preverbally in the presence of any of these unstressed elements.<sup>13</sup>

- (31) ... *i* / *no* / *če* *mi go dade Petko včera*  
           and/ but / that <sub>1.SG.DAT 3.SG.M.ACC</sub> gave Petko yesterday  
           ‘... and/but/that Petko gave it to me yesterday’

If the clitics were specified as enclitics, they would invert with the verb in (31), since they cannot find a suitable host to lean on to their left.

<sup>13</sup> At least some of these elements can appear in isolation and, in such cases, they are presumably parsed as Prosodic Words (see Franks 2008, p. 99 and fn. 17 for relevant discussion). However, this does not affect the argument here because, in (31), these elements are unstressed and, therefore, do not qualify as suitable clitic hosts.

Configurations like these demonstrate that Bulgarian clitics do not have a preference for the direction of their phonological attachment and can be either proclitic or enclitic, as long as they remain verb-adjacent.<sup>14</sup>

Second, the clitics in Bulgarian can immediately follow Intonational Phrase boundaries, signaled by commas below and introduced by parentheticals and certain types of adjuncts (see also Bošković 2001, p. 218, fn. 37; Pancheva 2005, p. 114, fn. 7; Franks 2008, p. 99ff.):

- (32)a. Portiera            na cirka,        sășto armenec,  
           the.gatekeeper at the.circus also an.armenian  
           go            pita: ...  
           3.SG.M.ACC asked  
           'the circus gatekeeper, (who was) an Armenian too, asked him'
- b. Pritesnena, go        popitah dali        tova ne krie  
           worried        3.SG.M.ACC I.asked whether this not hides  
           njakakăv risk  
           some risk  
           'Worried, I asked him whether this didn't hide any risk'

In these examples, if the clitics required a phonological host to their left, they would not be able to appear right after an Intonational Phrase boundary and would invert with the verb. Both of the patterns just discussed are predicted if clitic placement in Bulgarian is, instead, driven by a constraint against clitics in initial position, such as STRONG START.

In addition to demonstrating the irrelevance of prosodic subcategorization to the linearization of clitics in Bulgarian, the data in (32) show that the relevant domain of clitic non-initiality is the *maximal* Intonational Phrase (i.e. the Utterance; see fn. 5). This follows from the assumption that the boundary at the right edge of the parentheticals and adjuncts in (32) marks the left edge of an Intonational Phrase that

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14 If the inability of elements like *i* 'and,' *no* 'but,' and *če* 'that' to host clitics is analytically related to their own cliticness, the question arises as to why they can appear initially. The difference between them and the clitics that cannot appear initially might be lexical: for instance, they could be specified as internal to Prosodic Words so that they do not interact with STRONG START (like Macedonian clitics). Further interesting questions, which I leave open, arise about the interaction of the two types of clitics in Bulgarian. On a related question about the interaction between clitic placement and coordination, see Franks and Bošković 2001.

16 Linearizing *li* within the Prosodic Word that contains the pronominal clitic and the verb (*\*Go li vide?*) would satisfy STRONG START but is excluded by whatever principles ensure that Prosodic Words are atomic with respect to linearization and that force initial clitics to invert with the Prosodic Word to their right.

17 It is of course possible to analyze the inability of *li* to appear initially in terms of its lexical specification as an enclitic (cf. the discussion in Section 4.2). However, such an approach requires additional stipulations and multiplies the types of clitics that need to be posited in the language. On the other hand, the analysis outlined here only relies on general prosodic principles and ties the behavior of *li* to its prosodic attachment site, which would be accidental under the lexical specification approach.

also connects clitic placement analytically to an independently observable fact of the prosodic organization of each language.

Central to the characterization of STRONG START is the assumption that it is restricted so that it interacts with clitics but cannot “see” inside Prosodic Words. If the constraint is universally restricted in this way, the analysis predicts that the clitics in a language that can be reliably shown to have this version of STRONG START may not be subject to variable placement (or any other way of sidestepping the otherwise ensuing prosodic deviance, like strengthening) if they participate in Prosodic Word-level phonological processes; they simply would not be visible to the constraint. If, instead, there is cross-linguistic variation with respect to the domains that are visible to STRONG START, the question arises as to whether there is some language in which the constraint imposes requirements on prosodic structure below the Prosodic Word level. For instance, are iambs ever prohibited from appearing at the left edge of Phonological Phrases? A more general related question is whether we might find any interactions between Prosodic Word-level phonological processes and prosodic constituents that are “too high” on the prosodic hierarchy (e.g. Utterance-final devoicing; see Nespor and Vogel 1986 for relevant discussion). Answers to these questions will undoubtedly bring us closer to a deeper understanding of the role of prosody in the mapping from syntax to phonology and of the syntax-phonology interface, in general.

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## **Multidominance and Feature Transmission in Relative Clauses with Split Antecedents\***

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In this paper, I propose an account of restrictive relative clauses with split antecedents within the Multidominance (MD) approach. The arguments presented in this paper support the Head External analysis of restrictive relatives. Their properties, in particular, plurality, are accounted for through the mechanism of feature transmission. The relative pronoun is treated as a minimal pronoun that enters the derivation without  $\phi$ -features and bears an intrinsic feature [sum]. The former are acquired as a result of multiple Agree(ment). The latter is responsible for licensing collective predicates within the shared relative.

### **1 Outline of the problem**

Right Node Raising (RNR) of restrictive Relative Clauses (RC) with split antecedents, exemplified in (1), has been a long-standing problem in syntactic theory.

- (1) Mary met a man and John met a woman who knew each other well.

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As Perlmutter and Ross (1970) noted, (1) cannot be derived by rightward Across the Board (ATB) movement of the RC out of the two conjuncts, because the verb within the RC bears plural morphology. Moreover, the RC includes the reciprocal ‘each other’ that requires a plural antecedent. An ellipsis account is also ruled out. Example (1) cannot be derived by ellipsis of the RC in the first conjunct because, in this case, ellipsis would apply to the ungrammatical source (2).

- (2) Mary met a man ~~who knew each other well~~ and John met a woman who knew each other well.

On Gazdar’s (1981) account, the RC in (1) is base generated outside of the coordinate structure. However, as correctly pointed out in Zhang (2010:155), on the base generation analysis, the RC and at least one of its antecedents are never adjacent; therefore, this analysis is untenable.<sup>1</sup>

The flipside of the problem is the derivation of a restrictive RC with split antecedents. Thus, it seems as though this kind of relative is a puzzle for any of the existing theories of RCs.

Restrictive RCs with split antecedents are also available in Russian. The sentence in (3) parallels the English construction in (1). The relative pronoun *kotoryje* (‘which’) and the finite verb within the RC have plural agreement.<sup>2</sup>

- (3) ?Oleg vstretil ženščinu, a Igor’ vstretil mužčinu,  
 Oleg met woman<sub>SG.F.ACC</sub> but Igor met man<sub>SG.M.ACC</sub>  
 kotoryje xorošo znali drug-druga.  
 which.<sub>PL.NOM</sub> well knew<sub>PL.PST</sub> each other  
 ‘Oleg met a woman, and Igor met a man, who knew each other well.’

In (4), the RNRed RC includes the collective predicate *smešyvajutsja* ‘mix together’ that requires a plural subject.

<sup>1</sup> See also Jackendoff (1977: 191) who makes the same point regarding the base generation analysis of the restrictive PP modifiers with split antecedents.

<sup>2</sup> In Russian compound sentences that do not presuppose contradiction or comparison, the conjunction *a* ‘but’ can be used as an equivalent of *i*.

- (4) Ja prines kislotu a on prines ščeloč kotorye  
 I brought acid<sub>SG</sub> but he brought alkali<sub>SG</sub> which<sub>PL</sub>  
 smešyvajutsja i proizvodjat sil'nuju redakciju.  
 mix.sja<sub>PL.PRES</sub> and produce<sub>PL.PRES</sub> strong reaction  
 'I brought acid, and he brought alkali that mix together and  
 produce a strong reaction.'

Restrictive relatives in Russian can be introduced by the complementizer *čto* 'that.' *That*-relatives allow for split antecedents:

- (5) a. ?Ja znaju studenta, a Maša znaet prepodavatelja  
 I know student but Masha knows lecturer  
 čto vzjalis' za sovmesnyj proekt.  
 that undertake.<sub>PL.PST</sub> for joint project  
 'I know a student and Masha knows a lecturer that undertook a  
 joint project.'
- b. Maša našla zapisku a Ivan našel pis'mo čto  
 Masha found note but Ivan found letter that  
 byli napisany odnim i tem že počerkom.  
 be.<sub>PL.PST</sub> written.<sub>PL</sub> one and that part. handwriting  
 'Masha found a note and Ivan found a letter that were written in  
 the same handwriting.'

In this paper I propose an account of the RNRed restrictive RCs in Russian and in English that is couched within the Multidominance (MD) approach to structure building (Citko (2005, 2011b), Gracanin-Yuksek (2007), Wilder (2008), Bachrach and Katzir (2009)). I argue that the restrictive modifier is adjoined in parallel to two head NPs. Following Kratzer (2009), I assume that the relative pronoun is a minimal pronoun that is born unspecified for  $\phi$ -features. Moreover, I assume that the minimal pronoun obligatorily bears an intrinsic feature [sum]. Its  $\phi$ -features are transmitted to the pronoun from the head NPs under multiple Agree and comprise a complex feature set whose realization is subject to the relevant morphological rules in a particular language. I argue that [sum] creates the plural individual responsible for the licensing of collective predicates within the shared relative.

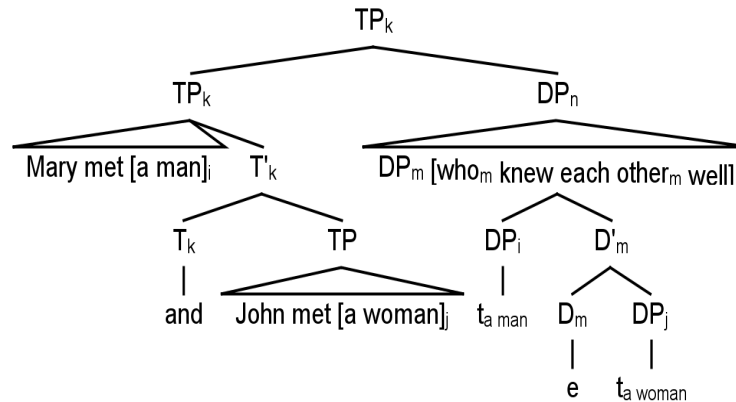
The structure of the paper is as follows: Section 2 critically overviews the available analysis of RCs with split antecedents in Zhang (2010) and

shows its shortcomings. In Section 3, I propose an alternative MD derivation and a model of feature transmission and multiple feature realization in the shared relatives. Section 4 concludes the paper.

## 2 A recent analysis of RCs with split antecedents: Zhang (2010)

Zhang (2010) proposes a syntactic analysis of RCs with split antecedents. The proposal combines two components: a. formation of a coordinate complex; and b. sideward movement of the DPs from the coordinate complex to the parallel matrix clauses.<sup>3</sup> Under Zhang's theory, (6) has the structure (6).

- (6) a. Mary met a man and John met a woman who knew each other well.  
b.



The derivation of (6a) proceeds as follows: In the first step, two DPs, *a man* and *a woman*, conjoin and form a coordinate complex with a null D.<sup>4</sup> In the second step, both conjunct DPs are remerged via sideward movement with the selecting verbs, *met* and *met*, each in a new working space. Then, two TPs, *Mary met a man* and *John met a woman*, are constructed and conjoined. In the old working space, the RC *who knew*

<sup>3</sup> On sideward movement see Nunes (2001, 2004), and Hornstein (2001).

<sup>4</sup> Zhang (2010) does not provide an explanation as to why the coordinator must be null.

*each other well* is formed and adjoined to the coordinate complex from which the DPs vacated. In the final step, the coordinate complex that hosts the RC adjoins to the root TP.

According to Zhang, the main virtue of the proposed derivation is that it resolves the problem of the split antecedents required for licensing of the reciprocal within the shared RC in (6). The coordinate complex provides such an antecedent.

However, Zhang's derivation also has flaws. First, the postulated advantage of the coordinate complex comes at a cost of semantic deviancy. It has been repeatedly noted in the literature (Partee (1975), Jackendoff (1977), Suñer (2001)) that the semantics of the restrictive modifier favors the structure [D [NP modifier]] and not the structure [D NP [modifier]]. Suñer (2001), for instance, argues that the NP modified by the RC functions as a restrictor of the determiner/quantifier. Sentence (7) does not imply sentence (7). It has the logical representation of (7).

- (7) a. *All* students who went on that fieldtrip got sick.  
 b. All students got sick.  
 c. All [student(x) & went-on-fieldtrip(x)] got-sick(x)

Alexiadou et al. (2000:14) make the same point regarding RCs with split antecedents.

Secondly, according to Zhang's derivation, the coordinate complex that includes the relative clause is situated above the conjoined TPs and is never a part of any of the matrix conjuncts. However, evidence from Condition C points against such derivation. The matrix pronominal subject in (8) cannot refer to the name inside the RC:

- (8) a. \*She met a man and he<sub>i</sub> met a woman [who know John<sub>i</sub>].  
 b. \*She<sub>i</sub> met a man and he met a woman [who know Mary<sub>i</sub>].

Further evidence for the low position of the restrictive relative comes from the distribution of Negative Polarity Items (NPIs). NPIs can only be licensed when they are in the scope of negation or a downward-entailing quantifier. Zhang's derivation predicts that an NPI within the RC is ungrammatical if the licenser is in the matrix clause. I test this prediction using Russian data.

Russian *-libo* words (*kto-libo* ('anybody'), *kakoj-libo* ('any'), *kuda-libo* ('anywhere'), etc.) are NPIs. Their distribution differs from the distribution of 'any' in English. Russian *-libo* words are only licensed by a distant negation (Partee (2005)). The examples in (9) show that *-libo* is licensed neither in a positive context (9) nor by a negation in the same clause (9), but is grammatical in an embedded clause when the negation is in the matrix clause (9) and (9d).

- (9) a. \*Ivan zakončil kakoj-*libo* proekt.  
 Ivan completed any project  
 \*'Ivan completed any project.'
- b. \*Ivan ne zakončil kakoj-*libo* proekt.  
 Ivan NEG completed any project  
 'Ivan didn't complete any project.'
- c. Ja ne dumaju što Ivan zakončil kakoj-*libo* proekt.  
 I NEG think that Ivan completed any project  
 'I don't think that Ivan had completed any project.'
- d. Gazeta ne pečatala statej kotorye kritikovali  
 newspaper NEG published articles which criticized  
 kogo-*libo* iz pravitel'stva.  
 anybody from government  
 'The newspaper didn't publish articles that criticized anybody  
 from the government.'

The distribution of the Russian *-libo* words is useful for determining the position of RCs with split antecedents. The prediction of the low structural position of the shared RC is that a *-libo* word embedded in an RC is grammatical only when the conjuncts are negated. This prediction is borne out, as shown by (10).

- (10) a. Ja ne vstrečala studenta, a Ivan ne vstrečal  
 I NEG met student but Ivan NEG met  
 profesora kotorye vmeste zakončili kakoj-*libo*  
 professor which.PL together completed.PL.PST any  
 proekt.  
 project  
 'I haven't met a student and Ivan hasn't met a professor who  
 completed any project together.'

- b. \*Ja vstretila studenta, a Ivan vstretil profesora  
 I met student but Ivan met professor  
 kotorye vmeste zakončili kakoj-libo proekt.  
 which.PL together completed.PL.PST any project  
 ‘I met a student and Ivan met a professor who completed any project together.’
- c. \*Ja vstretila studenta, a Ivan vstretil profesora  
 I met student but Ivan met professor  
 kotorye vmeste ne zakončili kakoj-libo proekt.  
 which.PL together NEG completed.PL.PST any project  
 ‘I met a student and Ivan met a professor who did not complete any project together.’

The minimal pair in (11) shows the same point for English.

- (11) a. I never met a syntactician and I never met a semanticist who have *anything* positive to say about each other’s work.  
 b. \*I met a syntactician and I met a semanticist who have *anything* positive to say about each other’s work.

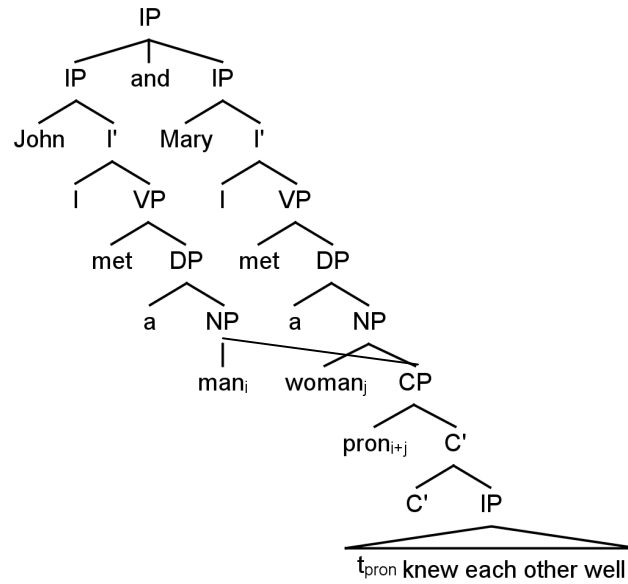
To conclude, this section reviewed the proposal in Zhang (2010) and highlighted its problems. The inclusion of the determiners in the coordinate complex is at odds with the semantics of the RC that scopes below the determiner. According to Zhang’s derivation, the RC is never a part of the matrix clauses; therefore, this derivation cannot explain the Condition C effects and the grammaticality of NPIs within the RC.

### 3 The Multidominance derivation

This section proposes an alternative derivation for RCs with split antecedents that avoids the problems of Zhang’s account. At the heart of the proposal is the idea of Multidominance that was developed most prominently in Citko (2005, 2011a, 2011b), Gracanin-Yuksek (2007) and Wilder (2008), among others. In the spirit of these proposals, I argue that the relative modifier is adjoined to two head NPs in a parallel fashion. The structure of (12) is (12).

- (12) a. John met a man and Mary met a woman who knew each other well.

b.



Parallel merge reflects the interpretation of the restrictive relative as denoting a property shared by both head NPs. As shown in (12), the RC is adjoined to two head NPs and below the determiners. Such a structure conforms to the semantics of the restrictive RC where the determiners quantify over the head NP and the modifier. The low position of the RC explains Condition C effects and the licensing of NPIs discussed in Section 2.

Structure (12) also shows that the head nouns originate outside of the RC. The proposal assumes the Head External analysis of RCs. I provide some reasoning for this assumption in Section 3.1.

The question addressed in Section 3.2 is the nature of the relative pronoun and its feature specification. I assume that the relative pronoun is a minimal pronoun in the sense of Kratzer (2009). It is born unspecified for  $\phi$ -features and acquires the  $\phi$ -features that it lacks in the course of the derivation. Section 3.3 proposes a mechanism that allows for feature transmission. Following the ideas in Zeijlstra (2012), I argue



that the relative pronoun (the probe) enters multiple Agree relations with the head nouns (the goals) and shares  $\phi$ -features with each NP. The morphological realization of a complex  $\phi$ -set that is formed on the relative pronoun is in accordance with the morphological rules of a specific language. Moreover, developing the ideas in Kratzer (2009), I propose that a relative pronoun with split antecedents is obligatorily specified with the feature [sum] that is responsible for the plurality within the relative clause. The explanation of the role of [sum] in the shared relative is the topic of Section 3.4.

### 3.1 Competing theories of the RC

In this section, I digress to discuss three competing approaches to the derivation of RCs: the Head External, the Head Raising and the Matching approach. I show that RCs with split antecedents can be best analyzed if we adopt the Head External analysis.

The traditional analysis of RCs is the Head External (HE) analysis (Chomsky (1977) and Borsley (1997)). This analysis proposes that the head noun is generated outside of the relative clause and is not linked to any position within the RC by syntactic movement. According to the HE analysis, the RC is a CP adjoined to the head NP, which is introduced by the determiner. Inside the relative clause, there is A'-movement of the relative pronoun, which can be null, to the edge of the CP. The relation between the relative operator and the head noun is established via predication. Structure (13) represents the HE analysis.

(13) the [article]<sub>i</sub> [<sub>CP</sub> [Op<sub>i</sub>/which<sub>i</sub>]<sub>1</sub> Sue reviewed t<sub>1</sub>]

The Head Raising (HR) analysis advocated in Vergnaud (1974), Kayne (1994), Bianchi (1995, 2002), Bhatt (2002), among others, is not homogeneous. However, the different versions of the analysis all share the proposal that the antecedent NP (or sometimes the DP with a null D) originates inside the relative CP, which is a complement of the determiner:

(14) ... the [<sub>CP</sub> [article<sub>2</sub> which/Op t<sub>2</sub>]<sub>1</sub> Sue reviewed t<sub>1</sub>]

The most prominent argument for the HR analysis is the appearance of reconstruction effects observed in RCs. For example, it can explain variable binding in (15).

- (15) The relative of his<sub>j</sub> that everybody<sub>j</sub> likes lives far away.

Another example is the Condition A effect in (16), where the reflexive within the head NP is bound by the subject of the RC.

- (16) The picture of himself<sub>j</sub> that John<sub>j</sub> likes most is on the front page today.

However, the HR analysis cannot explain an RC with split antecedents. To do so, one would need to assume that the antecedents are generated within the RC as a conjoined DP phrase. After raising, the DPs split and are distributed between the conjuncts. Alexiadou et al. (2000:14) reject this kind of derivation. This derivation is problematic for many reasons. As pointed out in Section 2, generation of the antecedent DPs within the RC is at odds with the semantics of the restrictive relatives. Moreover, a dislocated phrase becomes an island, therefore extraction of the antecedents out of the raised conjoined DP phrase violates the derived island constraint (Ross (1967)).

Finally, the Matching analysis is shown in (17) from Sauerland (2003).

- (17) ...the [<sub>NP</sub> [book]<sub>i</sub>] [<sub>CP</sub> [Op/which ~~book~~]<sub>i</sub> John likes \_\_\_\_]]

Under this analysis, the head NP originates outside of the RC. An identical NP is also a part of the operator phrase within the RC. The operator phrase forms an A'-chain with its trace within the vP. In the final step of the derivation, the NP inside the operator phrase is deleted under identity with the head noun.

The Matching analysis can explain the obligatory anti-reconstruction effects in the RC. Sometimes the relative head must be interpreted in the matrix clause. I use Russian data to show this effect.

*Obligatory non-reconstruction for Condition A*

- (18) Ivan uslyšal istoriju o sebe ktoruju Maša mne  
 Ivan<sub>i</sub> heard story about self<sub>i/\*j</sub> which Masha<sub>j</sub> me  
 raskazala.  
 told  
 ‘Ivan heard a story about himself which Masha told me.’

*Obligatory non-reconstruction for Condition C*

- (19) ...Mašin<sub>j</sub> drug ktorogo ta priglasila  
 Masha<sub>.POSES</sub> friend<sub>.SG.M</sub> which<sub>.SG.M</sub> that<sub>.DEMONSTR.SG.F</sub> invited  
 ‘Masha’s friend who she invited’

Obligatory reconstruction or obligatory non-reconstruction cannot argue either for or against any theory of RC. As pointed out earlier in this section, the HR analysis has problems in accounting for RCs with split antecedents. The Matching analysis employs NP-ellipsis. Generally, NP-ellipsis is optional; therefore, it is difficult for the Matching analysis to explain why it occurs obligatorily in the RC. Moreover, in a RC with split antecedents, the target of ellipsis must be the coordinated DPs whose antecedents are distributed among the conjuncts. This pattern of ellipsis is not found elsewhere. Thus, it follows that RCs with split antecedents can only be derived if we adopt the HE analysis.

### 3.2 The nature of the relative pronoun and feature transmission

This section discusses the nature of the relative pronoun with split antecedents and focuses on the question of its feature specification.

The conjecture in the previous section was that the head nouns are never a part of the operator phrase within the shared RC and therefore cannot share  $\phi$ -features with it under concord. How then does the pronoun acquire the  $\phi$ -features of its antecedents? I rely on the analyses found in Heim and Kratzer (1998), Rullmann (2002, 2004), and especially Kratzer (2009) who propose that the relative pronoun is of a special kind: it is a part of the complex system of *minimal pronouns* that also includes referential and bound pronouns as well as PRO. In Kratzer's theory, the minimal pronoun originates as a numerical index and is unspecified for  $\phi$ -features. It acquires the relevant features as a result of feature

transmission from a local functional head that carries a  $\lambda$ -operator and not directly from the antecedent as it is argued in Heim and Kratzer (1998) and Heim (2008).<sup>5</sup> In the present analysis, I adopt the latter option of feature transmission, although, as it becomes clear in Section 3.3, the choice between the two is not crucial for my analysis. I also depart from Kratzer in assuming that the relative pronoun is born with the [wh] feature instead of acquiring this feature from the relative C-head.

What is the mechanism that allows for feature transmission in the shared relative construction? A restrictive RC is interpreted as denoting a property of the noun it modifies. In the semantic literature, it is argued that this interpretation is achieved via movement of the pronoun to the edge of its clause and application of  $\lambda$ -abstraction that converts the propositional CP into a derived predicate that predicates of the head noun. Feature sharing between the head noun and the relative CP is a natural consequence of the relation of predication. The only difference for the RC with split antecedents is that, in the latter, the derived predicate is predicated of two nouns. This, in turn, follows from the MD derivation.

The relation of predication generally involves Agree(ment). This seems obvious when the relation of predication corresponds to a syntactic configuration where the subject occupies the specifier position of a predicate head. It is less obvious how Agree works when the derived predicate is an adjunct of the NPs, as in structure (12). It is therefore essential to address the agreement pattern in the shared relatives.

### 3.3 Multiple agreement and feature realization

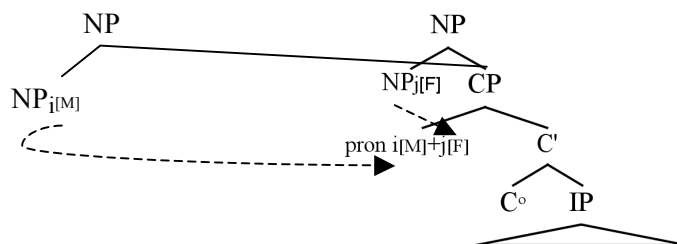
Following the ideas in Zeijlstra (2012), and also in Bhatt and Walkow (2013), I argue that in shared relatives, the relative pronoun establishes multiple Agree relations with the matrix NPs that result in multiple feature transmission. I take the following ideas from Zeijlstra (2012) as a guideline: a. Reverse Agree (upward probing) is allowed; b. Multiple Agreement is allowed (one probe-multiple goals). By applying these ideas to RCs with split antecedents, we obtain the following picture. When the RC adjoins in parallel to two head NPs, the minimal pronoun

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<sup>5</sup> Alternatively, feature transmission can be viewed as feature sharing (Pesetsky and Torrego (2001).)

at the edge of the RC is still in need of  $\phi$ -features because there is no source of  $\phi$ -features within the RC. The pronoun's position at the edge of the CP, which is a phase, allows it to avoid spell-out and be visible to further syntactic computation. Defective  $\phi$ -set on the pronoun forces it to probe upwards in search of a  $\phi$ -features carrier. Due to the parallel adjunction, the two head NPs, each with a complete  $\phi$ -set, asymmetrically c-command the pronoun and are equally accessible to establish an Agree relation with it. Parallel Agree relations are established between the pronoun and the head nouns and, as a result, the features of the NPs are passed over to the pronoun simultaneously. Multiple transmission of the feature [gender] is schematized in the partial structure (20). I leave feature [person] outside of the present discussion, and the feature [number] is addressed in Section 3.4.

(20)



In principle, feature transmission to the pronoun can proceed indirectly via the relative C-head. In this case, the relative C° established the probe-goal relations with the head nouns whose features are copied onto the C° and subsequently passed over to the pronoun. This route of feature transmission is designed for the theory where only functional heads can transmit features to the minimal pronoun (Kratzer (2009)). A theory that does not abide by this restriction (Heim (2008)) favors the direct route.

How are multiple [gender]-features realized? In Russian and English, plural pronouns and plural predicates are not distinguished for gender and person; therefore, these languages do not reveal the consequences of multiple [gender] transmission. However, morphological realization of multiple [gender] is visible on the RC's internal predicates in Hebrew.

The morphological realization of [gender] on the finite verb depends on the gender of the conjoined subjects. The pattern is shown in (21).<sup>6</sup>

- (21) a. NP<sub>SG.F</sub> and NP<sub>SG.F</sub> V<sub>PL.F</sub>  
 b. NP<sub>SG.M</sub> and NP<sub>SG.M</sub> V<sub>PL.M</sub>  
 c. NP<sub>SG.F</sub> and NP<sub>SG.M</sub> V<sub>PL.M</sub>  
 d. NP<sub>SG.M</sub> and NP<sub>SG.F</sub> V<sub>PL.M</sub>

Hebrew allows for RCs with split antecedents. Example (22) shows that [gender] features that are transmitted from multiple antecedents onto the null relative pronoun are realized on the embedded predicate according to pattern (21).

- (22) a. ani pagaSti et ha-student ve dani pagaS  
 I met ACC the-student.<sub>SG.M</sub> and Dani met  
 et ha-more Se *ovdim* bejaxad.  
 ACC the-teacher.<sub>SG.M</sub> that work.<sub>PL.M.PRES</sub> together  
 'I met the student and Dani met the teacher who work together.'  
 b. ani pagaSti et ha-studentit ve dani pagaS  
 I met ACC the-student.<sub>SG.F</sub> and Dani met  
 et ha-mora Se *ovdot* bejaxad.  
 ACC the-teacher.<sub>SG.F</sub> that work.<sub>PL.F.PRES</sub> together  
 'I met the student and Dani met the teacher who work together.'  
 c. ?ani pagaSti et ha-student ve dani pagaS  
 I met ACC the-student.<sub>SG.M</sub> and Dani met  
 et ha-mora Se *ovdim* bejaxad.  
 ACC the-teacher.<sub>SG.F</sub> that work.<sub>PL.M.PRES</sub> together  
 'I met the student and Dani met the teacher who work together.'  
 d. \*ani pagaSti et ha-student ve dani pagaS  
 I met ACC the-student.<sub>SG.M</sub> and Dani met  
 et ha-mora Se *ovdot* bejaxad.  
 ACC the-teacher.<sub>SG.F</sub> that work.<sub>PL.F.PRES</sub> together  
 'I met the student and Dani met the teacher who work together.'

<sup>6</sup> Nominal and adjectival plural predicates are marked for gender similarly to verbal predicates.

To summarize, in languages where [gender] is manifested on the plural predicate, morphological realization of multiple [gender] is visible. It appears as a single morphological token that is selected in accordance with the morphological insertion rules that operate in the language.

### 3.4 Feature [sum] and syntactic plurality

In Kratzer's theory, minimal pronouns can be born with the feature [sum] whose function is to combine individual features within a single feature set. Due to the fact that multiple  $\phi$ -features are obligatorily transmitted to the shared pronoun, the presence of [sum] on the pronoun is essential.

Importantly, the feature [sum] should be distinguished from the feature [number]. The distinction between [sum] and [number] is semantic: the former, but not the latter, can license a collective predicate. It is well known that some nouns (e.g. *scissors*) are grammatically plural, but semantically singular. Such NPs occur with plural verbs, but cannot occur with collective predicates. Example (23) shows that transmission of the [number] feature from the head NP *scissors* to the relative pronoun that lacks the [sum] feature is insufficient for licensing the collective predicate and items like 'each' and 'both.' The symbol  $\emptyset$  is used for the minimal pronoun that is phonologically unrealized.

- (23) a. ....the scissors [ $\emptyset_{[PL]}$  that *are* on the shelf]  
 b. \*...the scissors [ $\emptyset_{[PL]}$  that *met*] (meaning two parts of the scissors)  
 c. \*The scissors each was blade-like.  
 d. \*The scissors were both shaped like a snake.

The feature [sum] on the shared pronoun indicates that the pronoun is associated with two antecedents whose features are combined on the pronoun. The pronoun specified with the [sum] feature is semantically and grammatically plural.

In the non-shared RCs, on the other hand, plurality can be a result of the feature [group].<sup>7</sup> An illustration is drawn from Russian, a language which has a kind of restrictive RC that is introduced by the pronoun *kakoj* 'what':

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<sup>7</sup> See Kratzer (2009: 224) for the discussion of the feature [group].

- (24) S ulicy donosilsja šum kakoj byvaet  
 from street be.heard.sja.<sub>PST</sub> noise.<sub>SG.M</sub> what.<sub>SG.M</sub> be.<sub>SG.PRES</sub>  
 tol'ko dnëm.  
 only daytime  
 'From the street arrived noise (of the kind) that happens only at  
 daytime.'

The Russian *kakoj*-relative is used when the property of the head NP is defined by comparing this NP with other objects of the same kind. Notably, if the property expressed in the RC is typical of all objects of the same kind, the relative pronoun can be plural:

- (25) Eë pronzitel'nyj rezkij golos kakie byvajut tol'ko  
 her piercing sharp voice.<sub>SG.M</sub> what.<sub>PL</sub> be.<sub>PL.PRES</sub> only  
 na juže ...  
 on south  
 'her piercing sharp voice of the kind that is only found in the  
 South'

(25) shows that plurality within the RC cannot be the result of the transmission of the [number] feature from the head noun, which is singular, and must independently originate inside the RC. The source of the plurality in (25) is the pronominal feature [group]. It triggers insertion of the [plural] feature on the pronoun, disregarding the value of the individual [number] feature that is transmitted to the pronoun from its antecedent.

To sum up, in shared relatives, the relative pronoun is obligatorily born with the feature [sum] that generates plurality and allows licensing of collective predicates. In non-shared relatives, on the other hand, plurality is achieved due to the presence of the feature [group]. The agreement morphology on the verb within the shared RC is always plural, disregarding the individual [number] features of the antecedents. Grammatical plurality does not coincide with semantic plurality (see e.g. (23)). Moreover, as argued in Ritter (1993), grammatical [number] is not included in the  $\phi$ -set of the DP and hosts a separate projection above the NP. I hypothesize that transmission of individual [number] features to the shared relative always yields [plural] due to the summing operation

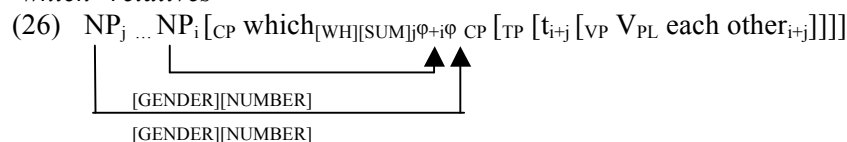


that occurs in the number projection within the DP. The presence of [plural] in the structure of the minimal pronoun in turn triggers plural agreement on the verb.<sup>8</sup>

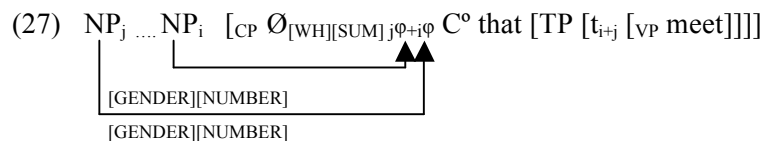
### 3.5 Putting things together

Combining the HE analysis of the RC with the idea that the relative pronoun is a minimal pronoun that is born with the features [sum] and [wh], we obtain the following structures for restrictive relatives with split antecedents:

*'which'-relatives*



*'that'-relatives*



As shown in (26) and (27), the minimal pronoun with the intrinsic features [wh] and [sum] acquires the features [gender] and [number] by transmission from each of the head nouns. The minimal pronoun in the shared RC bears an index of each head NP and refers to both of them.

## 4 Conclusions

This paper proposed an account for RNRed restrictive RCs with split antecedents. I argued for a MD derivation whereby the relative clause is adjoined in parallel to two head NPs. I hope to have shown that the shared restrictive relative is better analyzed within the Head External

<sup>8</sup> More research is needed for me to propose a fine-grained analysis of the interaction of the features [sum], [group] and [number], both in shared and in no-shared relatives. I leave this for further research.

analysis of RCs. The relative pronoun was treated as a minimal pronoun that acquires its  $\phi$ -features from two head nouns due to the mechanism of feature transmission. The MD structure forces the pronoun to enter Agree relations with two  $\phi$ -feature carriers in parallel. Multiple transmission of [gender] is not visible in Russian where plural pronouns and plural predicates are not specified for gender. It is visible in Hebrew where multiple [gender] is resolved according to the morphological rules of the language. Resolution of the multiple [number] necessarily yields [plural] which explains plural morphology on the embedded predicate. Licensing of the collective predicate, the reciprocal 'each other' and plural modifiers within the shared RC, was argued to be a consequence of the intrinsic feature [sum] on the relative pronoun.

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## **Again on *why*. But why?\***

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This paper deals with the Polish *wh*-word *dlaczego* ('why') and examines its structural properties in embedded non-finite environments. It is argued that *why* possesses two different readings corresponding to two different syntactic positions: the reason meaning of *why* externally merges on the right edge of the expanded CP, namely in [Spec-ReasonP] and then moves to a higher position in order to check some formal features, whereas the purpose meaning of *why* is base-generated in [Spec-vP] and internally merges in a higher FP below NegP. Arguments for these two distinct positions come from sensitivity to negation, agentivity restrictions and multiple *wh*-questions.

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### 1 Embedded Non-Finite Questions

As Sabel (2005: 96, 2006: 249) points out, languages differ with respect whether they allow *wh*-movement to [Spec-CP] in infinitives. If they do (such as in English and Russian), they also have the option of filling the C-system of this infinitive with a base-generated overt element. If a language has a defective infinitival C-system (such as in German and Mainland Scandinavian languages) and the movement does not take place, the option of base-generation of an overt element should be ruled out. English and Polish belong to the first group of languages allowing *wh*-movement to [Spec-CP] in embedded non-finite questions (henceforth ENQs)<sup>1</sup>:

- (1) a. I know [CP [Spec,CP what to do with all those forks]].  
       b. Wiem, [CP [Spec,CP co kupić]]  
           know<sub>1SG</sub> what buy<sub>INF</sub>  
           ‘I know what to buy.’

Notice, however, that Polish and English differ in one main respect that cannot be captured by Sabel’s generalization: while English ENQs cannot be introduced by *why*<sup>2</sup> (see Bhatt 2006: 107, Huddleston & Pullum 2002: 872, Quirk et al. 1985: 839, Shlonsky & Soare 2011: 653, among many others), their Polish counterparts can:

- (2) a. \*She wonders [why to study].

<sup>1</sup> The following abbreviations are used in this paper: 1/2/3 – 1st/2nd/3rd person, ACC – accusative, COND – conditional mood, DAT – dative, INF – infinitive, *l*-PTCP – *l*-participle (inflected for number and gender), M – masculine, NEG – negation, PL – plural, REFL – reflexive, SG – singular, VIR – virile. The Polish data has been extracted mainly from the National Corpus of Polish abbreviated here as NKJP (<http://www.nkjp.pl>).

<sup>2</sup> Cross-linguistically, it is not surprising that *why* differs from other *wh*-operators. Kiss (1988: 249), for example, observes that, in Hungarian, all *wh*-phrases other than *miért* (‘why’) occupy a preverbal identification focus position. Buell (2011), in turn, illustrates that Zulu *ngani* (‘why’), in contrast to other *wh*-phrases, is base-generated in the CP domain.

- b. Wielu kierowców zastanawia się,  
 many drivers wonder  
 [dlaczego zmieniać ogumienie].  
 why change<sub>INF</sub> tires  
 ‘Many drivers wonder why they should change tires.’<sup>3</sup>  
 (NKJP, *Gazeta Poznańska*, 23/3/2006)

A similar situation also holds for other Slavic languages:

- c. *Czech* (Radek Šimík, p.c.)  
 Lidé se ptali, [proč čekat až do půlnoci]  
 people REFL ask why wait<sub>INF</sub> until midnight  
 ‘People were asking why they should wait until midnight.’  
 d. *Russian* (Olga Steriopol, p.c.)  
 Многие студенты не понимали, [зачем делат’ это задание]  
 many students NEG understood why do<sub>INF</sub> this task  
 ‘Many students didn’t understand why they should do this task.’

In what follows, I will examine (2b) in more detail and show that *dlaczego* in Polish ENQs possesses two readings (a reason and a purpose reading), which are related to two different syntactic positions. In Section 2, I will briefly outline previous accounts devoted to *why* and its distinct merge positions with respect to other *wh*-operators. As it turns out, none of these approaches can fully account for the Polish facts, indicating that a new, unified account is needed. Section 3 presents a new analysis of *why* supporting den Dikken’s (2009) and Šimík’s (2011) view that *wh*-words does not always occupy [Spec-CP] or [Spec-FP] in the extended CP domain. It also shows how the analysis successfully predicts the range of data discussed. Section 4 sheds new light on an old problem: sluicing. Finally, Section 5 concludes the paper.

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<sup>3</sup> Interestingly, (2b) not only has two different readings with respect to the interpretation of the *wh*-word *dlaczego*, as I will show below, but it can also be interpreted both episodically (*Many drivers are wondering why they should change the tires*) and habitually (*Many drivers wonder why they should change tires*). Due to lack of space, I will not be able to dwell upon the latter dimension, but for more details and their syntactic differences, see Barrie (2007).

## 2 Previous Accounts

As I pointed out in the previous section, Polish ENQs, in contrast to the English ones, can be introduced by the *wh*-word, *why*. At first glance, one could assume, following Collins (1991), that *why* in Polish does not differ from other *wh*-phrases in being endowed with features triggering its movement to the same position, i.e., to [Spec-Wh]<sup>4</sup>. As I will illustrate below, however, such an assumption fails not only to explain available readings of *dlaczego* in Polish, but also to explain their distinct syntactic behaviors. Before I elaborate on my own account, two alternative approaches deserve to be presented.

### 2.1 Rizzi (2001)

To my knowledge, Rizzi (2001) is one of the first researchers to explicitly highlight the heterogeneous behavior of *perché* ('why') in Italian. Firstly, in contrast to other canonical *wh*-phrases that require I-to-C movement, *perché* does not require the finite verb to move as high as C (all Italian examples are taken from Rizzi 2001):

- (3) a. \*Dove Gianni [IP è [VP andato]]? *where*  
           where Gianni be<sub>3SG</sub> gone  
           'Where Gianni went?'

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<sup>4</sup> Collins (1991) assumes that *why* in English moves to [Spec-CP] from a lower position that, in turn, can either be associated with IP or VP. In order to highlight the contrast between *why* and *how come*, he provides the following minimal pair (p. 37, examples 12 and 13):

- (i) a. ?*I don't know why to leave.*  
       b. \*\**I don't know how come to leave.*

As Collins (1991: 37; fn. 9) admits himself, however, (ia) appears to be marginal and he does not provide any explanation as to why this should be the case. Roumyana Pancheva (p.c.) pointed out to me that the oddness of English ENQs embedded under *why* may be weakened by introducing a negative operator in the embedded clause. This prediction seems to be borne out by the following internet examples:

- (ii) a. *I wonder why not to create a few small documents.*  
       b. *DES fits that category and I hope you know why not to use it.*  
       c. *You could consider why not compose your ideal solo.*

Note, however, that I was not able to find any appropriate corpus examples underpinning this view. Furthermore, most native speakers of American English to whom I talked still found the examples illustrated in (ii) marginal and some of them even classified them as 'very bad' or 'weird.' I leave this issue for further research.



- b. Dove [CP è [IP Gianni [VP andato]]]? *where*  
 where be<sub>3SG</sub> Gianni gone  
 'Where went Gianni?'
- c. Perché Gianni [IP è [VP venuto]]? *why*  
 why Gianni be<sub>3SG</sub> left  
 'Why Gianni has left?'

Secondly, whereas classical *wh*-words cannot co-occur with focus phrases, *perché* can do so. Rizzi (2001) points out that the word order is fixed, however, indicating that *perché* always has to precede focused elements:

- (4) a. \*A chi QUESTO hanno detto (non qualcos' altro)?  
 to whom THIS have<sub>3PL</sub> said not something else  
 'To whom THIS they said (not something else)?'
- b. Perché QUESTO avremmo dovuto dirgli, non qualcos' altro?  
 why THIS have<sub>1PL.COND</sub> should said.him not something else  
 'Why THIS we should have said to him, not something else?'

The differences outlined above suggest that there is a distinct position for *perché* in the left periphery. This is how Rizzi (2001) proceeds. Elaborating on his previous work (Rizzi 1997), Rizzi proposes the following cartography of the left periphery (5), where *Int* is a functional projection in which *perché* is merged:

- (5) Force (Top\*) Int (Top\*) Foc (Top\*) Wh IP

The syntactic separation of *why* from other *wh*-words and its higher merge position neatly account for the non-availability of focused elements preceded by other *wh*-phrases, in addition to some other cross-linguistic consequences. The proposed structure convincingly accounts for why English ENQs cannot be introduced by *why*:

"If *why* is merged high (at IntP) and infinitival clauses contain only the lower (right) portion of the expanded CP, then this explains why *why* is not licit in infinitival clauses - there is no position for it" (Barrie 2007: 273).

On the other hand, if *why* is supposed to be base-generated in Spec-IntP and ENQs are in principle not equipped with IntP, then ENQs introduced by *why* in Slavic languages (cf. 2b-d) are unexpected. One possible solution could be that *dlaczego*, like other canonical *wh*-phrases in Polish, but unlike those in English, moves to [Spec-FocP] (cf. Bošković 2002 and Lubańska 2005 for cross-linguistic evidence showing that *wh*-movement is focus-driven). If this analysis is on the right track, other focus phrases following *dlaczego* should be disallowed. As (6) shows, this prediction is not borne out, however:

- (6) Wiesz, dlaczego TO mamy jej powiedzieć?  
 know<sub>2SG</sub> why THIS have<sub>1PL</sub> her<sub>DAT</sub> say<sub>INF</sub>  
 'Do you know why we should say THIS to her?'

Further, [Spec-WhP] would not be a better target position either. Since there is no position for focus elements, (6) should be ruled out<sup>5</sup>. Given

<sup>5</sup> Another problem is related to multiple *wh*-questions. If one assumes that, in West-Germanic languages exhibiting V-T-C movement, the first *wh*-phrase internally merges in [Spec-FocP], the finite matrix verb moves as a verbal head to one of the functional projections in the expanded CP domain, and the subject is associated with [Spec-TP], then there is no position for *why* in CP. In other words, if *why* is merged in IntP, i.e. higher than other *wh*-words, (i) is unexpected:

- (i) [Spec,FocP *Wer* [<sub>X</sub> *ist* [<sub>TP</sub> *warum* [<sub>VP</sub> *gekommen*]]]]?  
 who is why come  
 'Who came for what reason?'  
 (Stepanov & Tsai 2008: 591; ex. 5)

Even if we assume, following Haider (2009), that German has neither vP nor TP, this problem still holds for Dutch:

- (ii) [Spec,FocP *Wat* [<sub>X</sub> *heb* [<sub>Spec,TP</sub> *je* *waarom* [<sub>VP</sub> *gedaan?*]]]]  
 what have<sub>2SG</sub> you why done  
 'For what reason did you do it?'  
 (Tonjes Veenstra, pers. comm.)

One possible solution would be to adopt the account advocated by Shlonsky & Soare (2011) and argue that *waarom* in (ii) stays in situ, in a functional projection in the left periphery; or, to be more precise, in [Spec-ReasonP] (see Section 2.2.). The first *wh*-phrase, *wat*, would then internally merge in [Spec-FocP] and the subject would occupy [Spec-TopP], requiring that the matrix verb raises as high as the Fin head position. This is also the way S&S (2011: 658; ex. 18a,b) deal with multiple *wh*-questions in Romanian:

- (iii) [Spec,FocP/WhP *Cine* [<sub>Spec,ReasonP</sub> *de ce* [<sub>FinP</sub> [<sub>Fin</sub><sup>0</sup> *a* [<sub>VP</sub> *plecat*]]]]]?  
 who why has left  
 'Who left and why'  
 (iv) \**De ce cine a plecat?*

that neither WhP nor FocP can attract *dlaczego*, the only remaining option goes back to Rizzi's (2001) IntP. This is the idea that I am going to pursue in this paper. However, even if this turns out to be the correct direction to take, one more problem arises. Recall that example (2a), repeated here as (7) for convenience, exhibits two different readings:

- (7)      Wielu kierowców zastanawia się,  
              many drivers    wonder  
              [<sub>ENQ</sub> dlaczego zmieniać ogumienie].  
                                  why            change<sub>INF</sub> tires  
              a. 'Many drivers wonder what is the reason for changing tires.'  
              b. 'Many drivers wonder what is the purpose of changing tires.'

*Dlaczego* can be both interpreted as a reason *wh*-phrase and as a purpose *wh*-phrase<sup>6</sup>. Now, it remains unclear how to cope with the ambivalent

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I thank Wayles Browne who drew my attention to this problem.

<sup>6</sup> According to Stepanov & Tsai (2008: 591; fn. 3), there are different strategies in distinguishing between reason and purpose *wh*-phrases: "In Latvian, the two varieties of *why* are distinguished with accentuation: *par kû* 'why' vs. *par kû* 'for what'. As İlhan Cagrı (p.c.) points out to us, Turkish distinguishes the two varieties of *why* morphologically, i.e., *neden* (= *ne* 'what' + *den* 'ablative case') vs. *niçin* (= *ne* 'what' + *için* 'for'). Russian and Polish lexicalize the distinction." Although Polish possesses two different *wh*-phrases, *dlaczego* ('for what reason') and *po co* ('for what purpose'), *dlaczego* can also be used in these two different ways. I have no explanation for why this is the case. Furthermore, it is interesting to stress that *czego*, an abbreviated use of *dlaczego*, mainly employed in colloquial Polish, displays only the reason reading:

- (i)      *Wielu kierowców zastanawia się*  
              many drivers    wonder  
              *czego zmieniać ogumienie*  
                                  why    change<sub>INF</sub> tires<sub>ACC</sub>  
              a. 'Many drivers wonder what is the reason for changing tires.'  
              b. \*'Many drivers wonder what is the purpose of changing tires.'

In addition to *czego*, in colloquial Polish the *wh*-phrase *co* ('what') can be employed as *why*:

- (ii)      *Co się gapisz?!*  
              what REFL stare2SG  
              'Why are you starring at (me)?!'

Remarkably, this use of *co* is barred from ENQs:

- (iii)      \**Wielu kierowców zastanawia się*  
              many drivers    wonder  
              *co zmieniać ogumienie*  
              what change<sub>INF</sub> tires<sub>ACC</sub>

behavior of *dlaczego* in (7) when it should occupy a single syntactic position. For the time being, I assume that *dlaczego* moves to (and is not base-generated in) the [Spec-IntP] position from a lower position within the CP field, iff *dlaczego* has a reason interpretation. Its base-generation position, in turn, is associated with the functional projection, ReasonP, which was introduced by Shlonsky & Soare (2011) and on which I will elaborate in more detail in the next subsection.

## 2.2 Shlonsky & Soare (2011)

Another more elaborated cartographic approach to *wh*-phrases was proposed by Shlonsky & Soare (2011) (= S&S) who mainly claim that “*why* (and its synonyms in some other languages) is externally merged as specifier of a dedicated functional projection – labeled *ReasonP* – configured above negation and adverbials” (p. 653):

- (8) ForceP IntP TopP FocP WhP ReasonP TP NegP

The base-generation position of *why* in [Spec-ReasonP] on the right edge of the left periphery, i.e. below Rizzi’s (2001) IntP but above NegP, provides striking explanatory power for different *wh*-configurations. Primarily, it still makes the prediction that ENQs in English cannot be introduced by *why*: since canonical *wh*-phrases interact with Wh<sup>0</sup>, whilst *why* interacts with Int<sup>0</sup>, *why* is not capable of satisfying the featural requirements of Wh<sup>0</sup>. Thus, Barrie’s (2007) explanation remains valid. What Rizzi (2001) and S&S (2011) have in common is that in both analyses, *why* is merged in the CP domain. The only difference pertains to the base-generation position of *why*. In Rizzi’s (2001) view, *perché* ought to be base-generated in [Spec-IntP], while S&S (2011) place *why* lower, in [Spec-ReasonP] from where it can move to [Spec,IntP]. This movement is what happens in finite root questions, like in (9a):

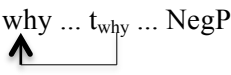
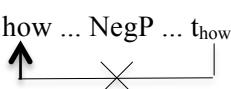
- (9) *Why did you ask her to resign?* (S&S 2011: 655; ex. 12)  
 a. short construal: What is the reason x, such that for x, you asked her to resign? e.g.: *Because I didn't want to just tell her.*

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It remains to be investigated in more detail to what extent *czego* and *co* differ from *dlaczego*. I thank Radek Šimik who brought my attention to this issue.

- b. long construal: What is the reason *x*, such that you asked her to resign for that particular reason *x*? e.g.: *I asked her to resign because of her health, not because of her intelligence ...*

Depending on the target position of *why*, the question in (9) can be interpreted in two different ways. Without violating Rizzi's (2006) *Criterial Freezing* (= a phrase meeting a criterion is frozen in place) and in order to obtain either construal interpretation, S&S (2011) introduce ReasonP. In (9), if the speaker is asking the addressee for the reason why he is saying something (= short construal), *why* moves within CP, i.e. from [Spec-ReasonP] to [Spec-IntP] and it never crosses a CP boundary. It leaves a trace in its base position, determining the lower scope interpretation. On the other hand, if the speaker is asking the addressee the reason why she resigned (= long construal), *why* moves from a lower position in the embedded clause, crosses a CP boundary and ends up being merged in [Spec-WhP] or in [Spec-FocP] (building on Rizzi's 2001 assumptions). Such an extension of the left periphery also illustrates that *why*, unlike other *wh*-phrases, is not sensitive to negation (Examples (10a-b) are taken from S&S 2011: 656-7; ex. 14-15):

- (10) a. *Why didn't Geraldine fix her bike?*      *why ... t<sub>why</sub> ... NegP*  
  
 b. *\*How didn't Geraldine fix her bike?*      *how ... NegP ... t<sub>how</sub>*  



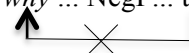
Note, however, that the cartography proposed in (8) does not capture all the facts and it runs into problems as soon as Polish *dlaczego* is taken into account. More specifically, if *dlaczego* in (7) is analyzed as a purpose *wh*-word, it must be below NegP (whether it is in its base-generation or criterial position). The reason for such a lower position is that the purposive reading of *dlaczego* disappears when negation is embedded. The reason reading, in turn, remains<sup>7</sup>:

<sup>7</sup> Andreas Haida (p.c.) pointed out to me that a parallel behavior can be observed in German, a language prohibiting ENQs in general, in embedded finite clauses:

- (i) *Warum hast du die Reifen nicht gewechselt?*  
 why have<sub>2SG</sub> you the tires NEG changed  
 'Why did you not change the tires?'

- (7') Wielu kierowców zastanawia się,  
 many drivers wonder  
 [ENQ *dlaczego* nie zmieniać ogumienia].  
 why NEG change<sub>INF</sub> tires  
 a. 'Many drivers wonder what is the reason of not changing the  
 tires (in their cars).'  
 b. \*'Many drivers wonder what is the purpose of not changing the  
 tires (in their cars).'

This contrast illustrates that purpose *dlaczego* does not scope over negation, whereas its reason counterpart does (irrespective of whether it is in its base-generation or target position):

- (11) a. reason *dlaczego*:  $\text{why} \dots t_{\text{why}} \dots \text{NegP}$   
  
 b. purpose *dlaczego*:  $\text{why} \dots \text{NegP} \dots t_{\text{why}}$   


This asymmetry also holds in construals in which *dlaczego* is extracted out of an infinitival clause. Again, if the negation does not intervene, both readings are available:

- (12) *Dlaczego kierowcy chcą zmieniać ogumienie?*  
 why drivers want change<sub>INF</sub> tires  
 'Why do drivers want to change tires?'  
 reason *dlaczego*: + /purpose *dlaczego*: +

If the negation comes into play, the purpose reading of *why* disappears<sup>8</sup>:

- (12') *Dlaczego kierowcy nie chcą zmieniać ogumienia?*  
 why drivers NEG want change<sub>INF</sub> tires

- 
- (ii) ??*Wozu* hast du die Reifen nicht gewechselt?  
 for what purpose have<sub>2SG</sub> you the tires NEG changed

Whereas *warum*, an inherent reason *wh*-phrase, and a negation operator can co-occur without any problems, *wozu* ('for what purpose') appears much more restricted.

<sup>8</sup> I would like to thank one of the anonymous abstract reviewers for drawing my attention to this contrast. For a more detailed account of *wh*-extraction out of different types of complement clauses in Polish see Witkoś (1995).

'Why do drivers not want to change tires?'  
 reason *dlaczego*: + / purpose *dlaczego*: -

In (12'), *nie* occurs in the main clause. However, nothing changes if it appears on the embedded verb. The purpose reading of *dlaczego* is also absent:

(12'') *Dlaczego kierowcy chcą nie zmieniać ogumienia?*  
 why drivers want NEG change<sub>INF</sub> tires  
 'Why do drivers want to not change tires?'  
 reason *dlaczego*: + / purpose *dlaczego*: -

An anonymous reviewer raises the question of how *dlaczego* behaves in Main Clause Infinitives with an expletive negation:

(13) *Dlaczego jej nie odwiedzić?*  
 why her NEG visit<sub>INF</sub>  
 'Why not to visit her?'

If negation operators disambiguate the reading of *dlaczego*, it is expected that only a reason interpretation should be available. Again, since *dlaczego* in (13) cannot be replaced by *po co*, a genuinely purposive *wh*-word, this prediction is borne out:


(13') \**Po co jej nie odwiedzić?*

This contrasts support the proposal that reason *why* merges above NegP. In next section, I will show the exact syntactic positions of *dlaczego* in (7), and provide more evidence underpinning their different base-generation positions.

### 3 Towards a Unifying Account

Based on what we have seen so far, I argue that Polish ENQs introduced by the *wh*-operator *dlaczego* exhibit the two following patterns:

(14) a. reason-*why*:  
 [IntP *dlaczego* [XP [ReasonP ~~*dlaczego*~~ [TP [NegP]]]]]



b. purpose-*why*:

[TP [NegP [FP *dlaczego* [vP ~~*dlaczego*~~ [VP]]]]]



If *dlaczego* is interpreted as a reason *wh*-word, it externally merges on the right edge of the left periphery; to be more precise, in S&S's (2011) [Spec-ReasonP] and then it moves to Rizzi's (2001) [Spec-IntP]<sup>9</sup>. ENQs are thus CPs spliced at IntP. It also means that reason *why* moves only within CP. On the other hand, if *dlaczego* is analyzed as a purpose *wh*-word, it externally merges within the VP domain and moves to a higher position (abbreviated in (14b) as FP) below NegP, indicating that purpose ENQs in Polish are *vPs*<sup>10</sup> (cf. Kratzer 1996 for the notional character of subjects and their position in syntax). As it has been illustrated above, the negation in Polish ENQs disambiguates the reading of *dlaczego* to the extent that the purpose reading. In what follows, I will provide more evidence supporting the view that *dlaczego* ENQs must be *vPs*.

### 3.1. Agentivity restrictions

In order to determine syntactic positions of *začëm* ('for which purpose') and *počemu* ('for which reason') in Russian, Stepanov & Tsai (2008: 619ff.) examine their occurrences with different verb classes that do not require agentive subjects. As it turns out, whereas *počemu* is compatible with unaccusative verbs, experiencer verbs, unergative sentient verbs,

<sup>9</sup> This view also patterns with the one presented in Ko (2005) who elaborately shows that *why* externally merges in the CP domain in *wh*-in-situ languages (Japanese and Korean) as well.

<sup>10</sup> Tsai (2008) makes similar observations with respect to different *whys* in Chinese and Squliq Atayal (a Formosan language). He states that reason *wh*-words are sentential operators placed in the left periphery, while purpose *wh*-words are analyzed as *vP*-modifiers. Starke (2001: 29-36) shows that English *wh*-phrases can be ambiguous too. As for *why*, he distinguishes between a motivation and a cause interpretation and claims that the cause *why* cannot move at all and is base-generated in the left periphery of the clause. The availability of two different *whys* in English appears evident in (i) (taken from Starke 2001: 30; ex. 75):

- (i) A: *Sissy woke up early in order to see the sunrise because she needed some comforting*  
 B: *Why did she wake up early?*  
 - *In order to see the sunrise.*  
 - *Because she needed some comforting.*



weather verbs and passive constructions, *začem* is not permitted in any of these environments. Now, if *dlaczego* in Polish is ambiguous between a reason and a purpose interpretation, its purpose reading, like Russian *začem*, is expected to be barred from non-agentive contexts. This prediction is indeed borne out (where reason *why* = *why*<sup>R</sup> and purpose *why* = *why*<sup>P</sup>):

- (15) Unaccusative verbs (*spadać* - 'fall'):  
*Dlaczego ta książka spadła na podłogę?*  
*why*<sup>R</sup>/*\*why*<sup>P</sup> this book fell on floor  
 'Why did this book fall on the floor?'  
 (16) Experiencer verbs (*kochać* - 'love'):  
*Dlaczego Joanna kocha tak książki?*  
*why*<sup>R</sup>/*\*why*<sup>P</sup> Joanna loves so books  
 'Why does Joanna love books so much?'  
 (17) Unergative sentient verb (*popłakać się* - 'cry'):  
*Dlaczego Krzysiu się popłakał?*<sup>11</sup>  
*why*<sup>R</sup>/*\*why*<sup>P</sup> Krzysiu cried<sub>3SG</sub>  
 'Why did Krzysiu cry?'  
 (18) Weather verbs (*ściemniać się* - 'get dark'):  
*Dlaczego się ściemnia?*  
*why*<sup>R</sup>/*\*why*<sup>P</sup> gets dark  
 'Why is it getting dark?'

<sup>11</sup> Andreas Haida (p.c.) pointed out to me that it is possible in German to get a purpose reading with *weinen* ('cry') and the *wh*-phrase *wozu* ('for what purpose'):

- (i) A: *Wozu hat das Kind geweint?*  
 for what purpose has the child cried  
 'Why did the child cry?'  
 B: *Um einen Lutscher zu bekommen.*  
 in order a sucker to get<sub>INF</sub>  
 'In order to get a sucker.'

Notice that (17) in Polish can also be answered this way:

- A: *Dlaczego Krzysiu się popłkał?*  
 B: *Aby dostać lizaka.*  
 in order get<sub>INF</sub> sucker<sub>ACC</sub>

At the present moment, I have no explanation for why this reading appears appropriate here.

(19) Passive:

*Dlaczego Krzysiu został rozstrzelany?*  
 why<sup>R</sup>/\*why<sup>P</sup> Krzysiu was shot  
 'Why was Krzysiu shot dead?'

The examples given in (15-19) provide strong evidence that purpose *dlaczego* ought to be associated with *vP*.

### 3.2. Multiple *wh*-questions

Another indirect argument illustrating a lower position of purpose *dlaczego* comes from multiple *wh*-questions. Lubańska (2005) claims that all *wh*-phrases in Polish multiple *wh*-questions adjoin to IP. In turn, Citko (1998) proposes the functional projection (Op)erator Phrase, that is located directly below CP and can trigger a *wh*-movement. According to the Citko's account, the first *wh*-phrase moves to [Spec-CP] while the remaining *wh*-phrases move to [Spec-OpP] to check the Op features. What both approaches have in common is that the second and each subsequent *wh*-word must be located below CP:

(20) *Kto do kogo po co dzwonił?*  
 who to whom for what purpose called  
 'Who called whom and why?'

For the time being, we put the target position of the first *wh*-word aside. Now, keeping in mind the fact that reason *dlaczego* is associated only with CP, whereas its purpose counterpart is much lower in the structure (whether it is in its base-generation or target position), we should be able to disambiguate the readings by replacing *po co* in (20) with *dlaczego*:

(20') *Kto do kogo dlaczego dzwonił?*  
 who to whom ?why<sup>R</sup>/why<sup>P</sup> called

As expected, it is very difficult to obtain an appropriate reason interpretation. Even if we go further and replace *dlaczego* by the lexical phrase *z jakiego powodu* ('for which reason'), it still has a strong purpose reading:

(21) *Kto do kogo z jakiego powodu dzwonił?*  
 who to whom for which reason called  
 'Who called whom and what was the ?reason/purpose for/of it?'

The data presented above strongly suggest that *dlaczego* in Polish occupies two distinct syntactic positions<sup>12</sup>. If purpose *dlaczego* in fact merges very low in the structure, its position entails some theoretical consequences on which I will dwell in next section.

#### 4 Theoretical Consequences: Sluicing

According to Merchant (2001) sluicing is a syntactic phenomenon that is triggered by an ellipsis feature (E-feature) on a  $C^0$  head. Its presence in English, for instance, is linked to uninterpretable strong [+wh, +Q] features, due the fact that sluicing is generally restricted only to interrogative CP-complements (but see also van Craenenbroeck & Lipták 2006 for a special kind of sluicing in Hungarian relative clauses). In other words, only complements of the  $C^0$  head equipped with the feature set [+wh, +Q] can be elided. Now, based on what we can infer from previous sections, sluicing should be able to disambiguate between two readings of *dlaczego* in Polish ENQs. If the elided material is only associated with the CP, a purpose reading of *dlaczego* is expected not to occur. Note, however, that this is not the case:

- (22) Wielu kierowców zastanawia się,  
       many drivers      wonder  
       jak zmieniać ogumienie i      dlaczego ~~zmieniać~~ ogumienie  
       how change<sub>INF</sub> tires      and why      change<sub>INF</sub> tires  
       'Many drivers wonder how to change the tires and what the  
       reason for this is/and what the purpose of this is.'

Unexpectedly, both the reason as well as the purpose interpretations are available in (22), indicating that sluicing must be extended to

<sup>12</sup> If *dlaczego* can merge in two distinct positions, it should be possible to get two *whys* in one sentence. Note, however, that this is not the case:

(i) \**Kto dlaczego i dlaczego dzwonił?*  
       who why      and why      called

Remarkably, the second *why*-operator can be replaced by *po co* ('for what purpose'):

(ii) *Kto dlaczego i po co dzwonił?*

It also works with the first *why*-word:

(iii) *Kto po co i dlaczego dzwonił?*

At this moment, I have no explanation for this constraint. I thank Małgorzata Szajbel-Keck who drew my attention to this problem.

interrogative *vP*-complements as well<sup>13</sup>. The main evidence for this proposal comes from the fact that the purpose reading of *dlaczego* can be replaced by its lexical counterpart *po co* ('for what purpose'):

- (22') Wielu kierowców zastanawia się,  
 many drivers wonder  
 jak zmieniać ogumienie i po co.  
 how change<sub>INF</sub> tires and for what purpose  
 'Many drivers wonder how to change the tires and what the  
 purpose of this is/\*and what the reason for this is.'

This is also in agreement with Šimík (2011: 204-212) who elaborately shows that modal existential *wh*-constructions<sup>14</sup> exhibiting short *wh*-movement and being the size of a *vP* can also be elided. As a result, sluicing also applies in environments in which a *wh*-word is not necessarily in a relationship with the interrogative *C*<sup>0</sup> head, contrary to Merchant (2001).

## 5 Conclusions

In this paper, I have demonstrated that embedded infinitival questions in Polish can be headed by the *wh*-phrase, *dlaczego* ('why'). To my knowledge, this construction, probably due to its absence in the English infinitival system, has so far gone unnoticed in the literature on embedded non-finite questions. I have argued that *dlaczego* displays two distinct readings (reason versus purpose), corresponding to two different

<sup>13</sup> An anonymous reviewer points out that both reason and purpose *whys* move from different positions to [Spec-CP] in overt syntax, suggesting that there is no difference between them in sluicing. As the data presented above indicate, the purpose *dlaczego* cannot move as high as [Spec-CP], however. The sensitivity to negation and agentivity restrictions that are associated with the T and *v* layers, respectively, prevent it from moving so high. The reviewer emphasizes that there would be a difference if one *dlaczego* always moved to [Spec-CP] and the other *dlaczego* only to [Spec-*vP*]. So far, I could not find any evidence supporting the view that purpose *why* moves to [Spec-CP]. Quite the opposite, it is banned in C environments.

<sup>14</sup> According to Šimík (2011), modal existential *wh*-constructions cannot be entertained as ENQs, nor as one of their subtypes. They function rather as special type of an A-bar construction, i.e. a syntactic tree containing an operator-variable dependency (for a detailed explanation see chap. 3 in Šimík 2011).

syntactic positions. Whereas reason *why* is solely associated with the CP domain, its purpose counterpart appears to be strongly connected to the VP domain and its movement to a higher position does not cross NegP. In this connection, the question arises as to why Polish *dlaczego* exhibits the two readings even though it also lexicalizes this semantic distinction: *dlaczego* (reason) versus *po co* (purpose). It would also be interesting to see to what extent purpose *dlaczego* and its lexical counterpart *po co* ('for what purpose') differ from each other. I leave this issue for further research.

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## Appendix

Here, I provide more corpus examples showing that ENQs introduced by *dlaczego* in Polish are not a peripheral matter of the Polish infinitival system. As it turns out, they are compatible with different class of clause-embedding predicates.

- (1) Verbs of retaining knowledge (*wiedzieć* - 'know'):  
*Oni wiedzieli [ENQ dlaczego wiać]*  
 they know<sub>L-PTCP.VIR</sub> why scram<sub>INF</sub>  
 'The knew why they should scram.'
- (2) Inquisitive verbs (*pytać* - 'ask'):  
*Pytasz [ENQ dlaczego odrzucać jedną a nie drugą]*  
 ask<sub>2SG</sub> why reject<sub>INF</sub> one and not other  
 'Are you asking (me) why we should reject the first (theory) and not the other one?'
- (3) Cogitation verbs (*rozumieć* - 'understand'):  
*Nie rozumiem [ENQ dlaczego usuwać]*  
 NEG understand<sub>1SG</sub> why delete<sub>INF</sub>  
 'I don't understand why I should delete (it).'

## **Phonetic Variability in Russian Palatalization\***

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Modern Slavic languages exhibit a full range of effects connected with palatalization: the full loss of contrast versus the partial loss of contrast depending on the environment versus the retention of contrast. Thus, Slavic languages provide a full picture for the study of palatalization retention and loss. We believe that we can understand the history of palatalization in Slavic better if we understand the phonetics of palatalization in a particular language; in our case, Russian, which exhibits the fullest range of palatalization contrast in the Slavic language family.

### **1 The loss and Retention of Palatalization in Slavic**

The table in (1), adapted from Carlton (1991), shows the reflexes of the Proto-Slavic palatalized segments in modern Slavic languages. It is notable that only Russian kept the Proto-Slavic palatalization contrast fully, while other Slavic languages lost it to some extent. In Table (1), “+” means that the palatalization contrast is still present in all environments, “-” shows that the contrast is absent or phonologically irrelevant, and “±” indicates restricted presence of contrast: only before

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\* We are grateful to Louis Goldstein for the discussion of our results. All errors and misinterpretations are of course our own.



vowels. The presence of a consonant that is different from the one in Proto-Slavic in a language cell shows that while the contrast is still present in the language, the originally palatalized consonant has a reflex that has a different phonetic (and, in many cases, phonological) instantiation.<sup>1</sup> For instance, while Russian fully preserves the distinction between palatalized and non-palatalized labials (v vs. v<sup>j</sup>, p vs. p<sup>j</sup>, m vs. m<sup>j</sup>), Ukrainian, Czech and Slovak lost the contrast, and Belarusian, Polish, Upper and Lower Sorbian (Lusatian), and Bulgarian keep the distinction only in the prevocalic environment, merging the palatalized and non-palatalized reflexes of Proto-Slavic consonants preconsonantly and word-finally.

- (1) The reflexes of the Proto-Slavic palatalized consonants in modern Slavic languages<sup>2</sup>

PSl	R	Ukr	Br	P	UL	LL	Slk	Cz	Blg
v <sup>j</sup>	+	–	±	±	±	±	–	–	±
p <sup>j</sup>	+	–	±	±	±	±	–	–	±
b <sup>j</sup>	+	–	±	±	±	±	–	–	±
m <sup>j</sup>	+	–	±	±	±	±	–	–	±
d <sup>j</sup>	+	+	dz <sup>j</sup>	dʒ	dʒ <sup>j</sup>	ʒ <sup>j</sup>	+	+	±
t <sup>j</sup>	+	+	ts <sup>j</sup>	tʃ	tʃ <sup>j</sup>	ʃ <sup>j</sup>	+	+	±
s <sup>j</sup>	+	+	+	+	–	–	–	–	±
z <sup>j</sup>	+	+	+	+	–	–	–	–	±
n <sup>j</sup>	+	+	+	+	+	+	+	+	±
l <sup>j</sup>	+	+	+	+	+	+	+	–	±
r <sup>j</sup>	+	±	–	ʒ	±	+	–	ř	±

The question that needs to be answered is why the situation represented in (1) holds in Slavic. Why is it so difficult to maintain the palatalization contrast? If palatalization is a phonetically uniform characteristic of consonants, why do the reflexes of the Proto-Slavic

<sup>1</sup> We mostly use the IPA in the paper except for Figure 1, where we provide the IPA equivalents to the symbols used.

<sup>2</sup> PSl = Proto-Slavic; R = Russian; Ukr = Ukrainian; Br = Belarusian; P = Polish; UL = Upper Lusatian; LL = Lower Lusatian; Slk = Slovak; Cz = Czech; Blg = Bulgarian.

palatalized consonants vary so greatly from language to language, depending on the nature of the consonant?

In this paper, we only consider three palatalized coronals,  $n^j$ ,  $z^j$ , and  $r^j$ , all of which have been preserved in Russian and lost to various degrees in other languages, as follows from Table (1). Out of these three coronals,  $n^j$  is the most stable consonant (note that it is present everywhere in Slavic with the exception of Slovene, not shown in (1), where palatalized sonorants resolved sequentially as  $*n^j > nj$ ),  $z^j$  disappeared in many languages, and  $r^j$  either disappeared or underwent various changes almost everywhere but in Russian.

The forms in (2) and (3) exemplify the historical development of the aforementioned segments. The examples in (2) show that the contrast between the palatalized and non-palatalized apical nasals is preserved in Czech, Serbian, Polish, Ukrainian, and, of course, in Russian. Note that, in Czech, the Proto-Slavic palatalized  $n^j$  is preserved, while front jers<sup>3</sup> do not palatalize the  $n$ . The same situation holds for Serbian. In other languages (illustrated in (2) for Polish, Ukrainian, and Russian), palatalized coronal nasals are sometimes reflexes of the Proto-Slavic palatalized segments and sometimes come from the palatalization by front jers.

(2) *Reflexes of Proto-Slavic  $*n$  and  $*n^j$*

a. Czech

Peŋ<sup>4</sup> <  $*pm^j$  'stump'

den <  $*dm$  'day'

sen <  $*søn$  'dream'

b. BCS

konj <  $*kon^j$  <  $*konj$  'horse'

dan 'day'

san 'dream'

<sup>3</sup> Jers are high short vowels that either disappeared or merged with full vowels depending on their position in a word.

<sup>4</sup> While Carlton (1991) shows that the contrast between palatalized and non-palatalized coronal nasals is preserved in Czech, the phonetic realization of the  $*n^j$  is a palatal nasal [ɲ].

- c. Polish
  - dzień ‘day’
  - sen ‘sleep’
- d. Ukrainian
  - dʲenʲ ‘day’
  - son ‘dream’
- e. Russian
  - dʲenʲ ‘day’
  - pʲenʲ ‘stump’
  - konʲ ‘horse’
  - son ‘dream’

For the palatalized  $z^j$ , the situation is different. In most languages, it merged with the plain  $z$  (as in the Czech example in (3a)). Ukrainian shows only a partial retention of palatalization: even though it is shown as the full preservation of contrast in (1), the mid [e] does not palatalize the preceding  $z$ , while high vowels do, as shown in (3b). Russian fully preserves the contrast, as in (3c).

- (3) *Reflexes of Proto-Slavic  $z^j$*
- a. Czech
    - na noze ‘on the leg’
  - b. Ukrainian
    - zemlʲa < \*zemlʲa ‘land’
    - knʲazʲ < \*kunęzi ‘prince’
  - c. Russian
    - zʲemlʲa ‘land’
    - knʲazʲ ‘prince’

The palatalization of the Proto-Slavic palatalized trill is affected to a different degree in almost all Slavic languages, as exemplified in (4) and (5) on the basis of Kavitskaya et al. (2009). The examples in (4) show that, in Belarusian,  $r$  underwent depalatalization in most dialects in the period from the 12<sup>th</sup> to the 14<sup>th</sup> century, but was subsequently analogically restored in some areas, with a considerable amount of hypercorrection, as in (4b) (Wexler 1977).

(4) *Belarusian r/r<sup>j</sup> merger*

a.	senitebra	‘September-gen.sg’	(1440s; cf. R s <sup>j</sup> ent <sup>j</sup> abr <sup>j</sup> a)
	Branisku	placename	(1480; cf. R Br <sup>j</sup> ansk)
	t <sup>j</sup> etirox	‘four-gen’	(1533; cf. R t <sup>j</sup> etir <sup>j</sup> ox)
b.	Belarusian	pre-B	Mod. Russian
	r <sup>j</sup> at	radu	rad ‘glad’
	r <sup>j</sup> ak	raku	rak ‘crawfish’

In West Slavic, the loss of palatalization of the trill went through fricativization. In Czech, \*r<sup>j</sup> underwent spirantization, resulting in a trilled fricative ř, as is shown by the comparison in (5).

(5)	Czech	Russian	
	řada	r <sup>j</sup> ad	‘row’
	řeka	r <sup>j</sup> eka	‘river’
	paři:	par <sup>j</sup> it	‘steams’

Finally, in Polish, the change went one step further, through the de-trilling of the ř, resulting in the fricative ʒ, as in ʒ and ‘row, line, rank’ (cf. Russian r<sup>j</sup>at).

## 2 Palatalization in Russian

As was noted in Section 1, Russian is the only Slavic language that maintains the palatalization contrast for most consonants while other Slavic languages lost the contrast to some extent. The Russian consonantal inventory is shown in (6) on the basis of Timberlake (2004).<sup>5</sup>

<sup>5</sup> Palatalization in velars is marginally contrastive in Russian. [j<sup>j</sup>ː] is not a palatalized counterpart of [j], and merits its own story, which is outside of the scope of this paper. [t<sup>j</sup>] is an unpaired “soft” segment that patterns phonologically with palatalized segments, and [ʒ] is an unpaired “hard” consonant that patterns with non-palatalized segments.

(6)

	Labial	Apical	(Alveo-)palatal	Velar
Voiceless stop	p p <sup>j</sup>	t t <sup>j</sup>		k (k <sup>j</sup> )
Voiced stop	b b <sup>j</sup>	d d <sup>j</sup>		g (g <sup>j</sup> )
Voiceless affricate		ts	tʃ <sup>j</sup>	
Voiceless fricative	f f <sup>j</sup>	s s <sup>j</sup>	ʃ ʃ <sup>j</sup>	x (x <sup>j</sup> )
Voiced fricative	v v <sup>j</sup>	z z <sup>j</sup>	ʒ	
Glide			j	
Nasal	m m <sup>j</sup>	n n <sup>j</sup>		
Lateral		l l <sup>j</sup>		
Trill		r r <sup>j</sup>		

In this paper, we address the phonetic properties of three pairs of apical consonants that contrast palatalization in Russian; specifically, voiced fricatives, nasals, and rhotics.

### 2.1 The data

For the experiment, we recorded articulatory and acoustic data for an array of palatalized/non-palatalized pairs as pronounced by 6 speakers of standard Russian, 3 females and 3 males. The speakers were recorded directly onto a Macintosh computer under quiet conditions, using Mobile M-Audio preamplifier and Rode NTG-2 shotgun microphone. The data were recorded into the Praat Program (copyright 1992-2009 by Boersma and Weenink), in .wav format with a sampling rate of 44 kHz, 16 bit quantization. The participants were monolingual in Russian until at least the age of 20, and now show various levels of fluency in English.

In this paper, we will only be looking at z/z<sup>j</sup> and n/n<sup>j</sup> pairs. The data on r/r<sup>j</sup> comes from our previous work on the historical development of palatalized trills and on the phonetic instantiation of palatalization in the Russian trill (Kavitskaya et al. 2009, Iskarous and Kavitskaya 2010).

A total of 288 tokens of words that contrasted z/z<sup>j</sup> and n/n<sup>j</sup> were recorded (6 speakers x 4 consonants (z, z<sup>j</sup>, n, n<sup>j</sup>) x 4 repetitions x 3 environments (word-initial, word-medial, and word-final)). In this paper, we present the analysis of palatalized and non-palatalized segments in onsets only (both word-initial and word-medial; 192 repetitions; 6

speakers x 4 consonants x 4 repetitions x 2 environments).<sup>6</sup> The consonant in question was always in a stressed syllable. The vocalic environment was a following stressed [a] for word-initial onsets and a preceding unstressed [a] and a following stressed [a] for intervocalic onsets. We used real words when it was possible. The tokens are exemplified in (7).

(7) a. *Example tokens of z/zʲ*

зама	[zamə]	‘substitute-gen.sg’
зяма	[zʲamə]	name

коза	[kaza]	‘female goat’
разя	[razʲa]	‘striking’

b. *Example tokens for n/nʲ*

нам	[nam]	‘to us’
ням	[nʲam]	‘yum’

она	[ana]	‘she’
коня	[kanʲa]	‘horse-gen.sg.’

## 2.2 The Method

There is an extensive literature on phonetic correlates of palatalization that shows that palatalization manifests itself in the vocalic transitions, having a raised F2 of non-front vowels as one of its major correlates along with slightly raised higher formants (Jakobson et al. 1963). This was also noted for Russian by Jones and Ward (1969), Fant (1970), Halle (1959/1971), Bondarko (1977), Bolla (1981), Kochetov (2006), among others (see also Purcell 1979, Padgett 2001 on CV transitions in the /i/ context).

While there is little doubt that a raised F2 is a major phonetic correlate of palatalization in Russian, vocalic transitions are affected by palatalization uniformly for all speakers in all consonants. Figure 1 shows examples of the spectra of the first 25 ms of the formant transitions for n/nʲ (nY in the figure) and z/zʲ (zY in the figure). It can be

<sup>6</sup> Codas show a different behavior from onsets, which lends support to the historical data on depalatalization and needs to be addressed in a separate paper.

seen, as pointed out by the double arrows, that for both contrasts, F2 in the non-palatalized consonant is lower than F2 of the palatalized consonant. Therefore our data support earlier findings on the effect of palatalization on formant transitions. We see that for the consonants studied, the formant transitions differentiate the palatalized from the non-palatalized consonants.

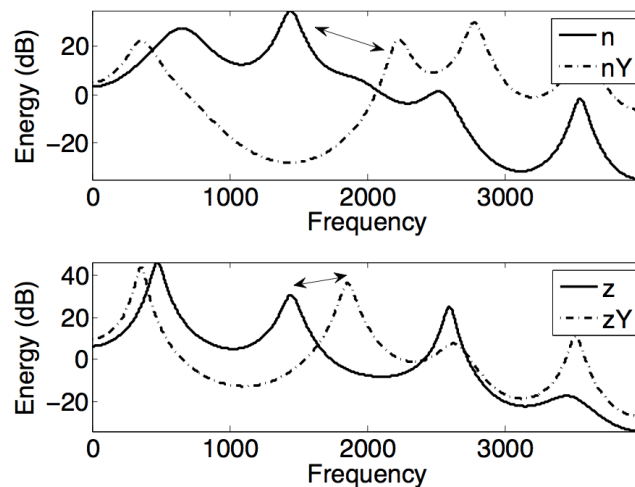


Figure 1

If palatalization in the transitions was sufficient for distinguishing palatalized segments from non-palatalized ones, we would predict that all Slavic languages should maintain palatalization in the same way. As we saw in the previous section, this is not the case, and we should look for an explanation elsewhere. As was shown by Kavitskaya (2006) in a gating experiment, palatalization is distinguishable by listeners very early in the consonant and, at times, more reliably than robust characteristics, such as place or manner of articulation. We thus analyzed the amount of the acoustic energy in the consonant itself, comparing non-palatalized and palatalized consonants; in particular, [n] versus [nʲ] and [z] versus [zʲ]. The spectra were computed via Multitaper analysis, a technique that optimally solves the bias/variants dilemma in spectrum estimation (Iskarous et al. 2011). The spectrum was taken at the

durational midpoint of the fricative and in the middle of the nasal murmur.

### 2.3 Results and Discussion

2.3.1  $z$  vs.  $z^j$ . The initial analysis of the acoustic results for all the subjects showed a surprising picture: there was no significant difference between  $z$  and  $z^j$  with respect to the amount of the acoustic energy. This would indicate that these two fricatives are not contrastive in Russian, which is contrary to fact (cf., for instance, the first two examples in (7) that constitute a minimal pair).

The question was resolved by looking at the spectra of  $[z]$  and  $[z^j]$  subject-by-subject, which showed that the phonetic instantiation of palatalization of  $[z^j]$  was subject-specific.

Figure 2 illustrates this result. The figure shows the average energy in each frequency band for both  $[z]$  (black) and  $[z^j]$  (gray), for each subject. The panels in Figure 2 show that each subject has their own pattern of the phonetic instantiation of the  $[z^j]$ : the differences between  $z$  and  $z^j$  are apparent in different frequency bands for different subjects. For instance, for S1, the differentiation is at the lower end of the frequency spectrum, whereas for S6, the differentiation is more at the higher end.

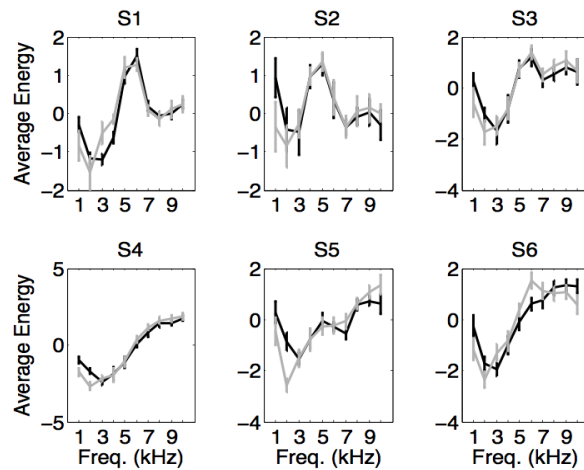


Figure 2:  $z$  vs.  $z^j$



2.3.2  $n$  vs.  $n^j$ . Figure 3 shows the average energy in each frequency band for both  $[n]$  (black) and  $[n^j]$  (gray), for each subject. In contrast to Figure 2, Figure 3 shows that all subjects, except S2, differentiate the nasal from the palatalized nasal in the lower end of the spectrum, at around 3 kHz.

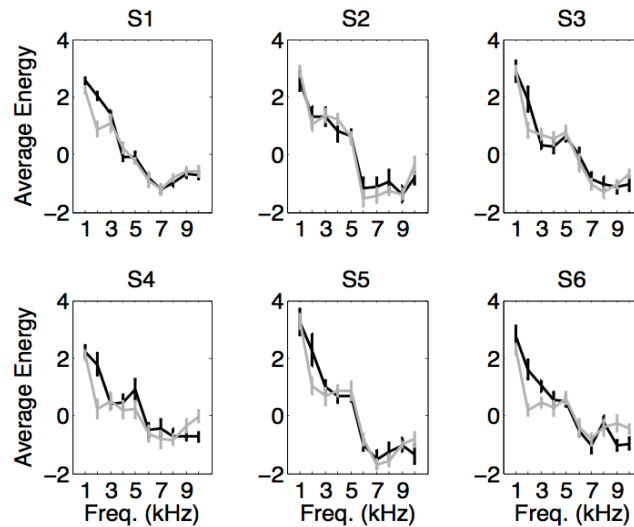


Figure 3:  $n$  vs.  $n^j$

2.3.3  $r$  vs.  $r^j$ . It was noticed more than a century ago that it is difficult to maintain both trilling and palatalization (Brok 1910, Shevelov 1979, McGowan 1992, Ladefoged & Maddieson 1996). Coronal trills require the tongue dorsum to be low and somewhat back, while palatalization requires it to be high and front (Hall 2000, Kochetov 2002, Ladefoged & Maddieson 1996, Zygis 2004).

In our previous work (Kavitskaya et al. 2009), we ran an acoustic analysis looking at the trilling characteristics of  $[r]$  and  $[r^j]$ . The acoustic data were collected from 9 subjects (5 male, 4 female). There were 264 tokens in different environments: word-initial, word-medial (intervocalic), pre-consonantal, word-final.

- (8) Example tokens for r/r<sup>j</sup>
- |       |         |            |       |                       |             |
|-------|---------|------------|-------|-----------------------|-------------|
| рад   | [rat]   | ‘glad-3sg’ | ряд   | [r <sup>j</sup> at]   | ‘row’       |
| парад | [parat] | ‘parade’   | парят | [par <sup>j</sup> at] | ‘they soar’ |
| пар   | [par]   | ‘steam’    | парь  | [par <sup>j</sup> ]   | ‘steam-IMP’ |

Number of taps were measured for [r] and [r<sup>j</sup>] to determine the amount of trilling. This was accomplished by the manual inspection of spectrograms.

The results show that the Russian non-palatalized r is realized with more taps (more trilling) than the palatalized r<sup>j</sup>. Both r and r<sup>j</sup> are realized with more taps (more trilling) in non-intervocalic environments than in intervocalic ones. The results also indicate that r<sup>j</sup> can be realized as a trill with 2 taps: thus, it is not a discrete situation of nonpalatalized-trilled r versus palatalized-non-trilled r<sup>j</sup>, but the gradient presence of trilling in the environments that are more and less optimal for it. The articulatory data from an ultrasound experiment reported in the same paper support the acoustic results.

Later work (Iskarous and Kavitskaya 2010) also showed that Russian palatalized [r<sup>j</sup>] is highly variable. There is a phonetic tendency for the [r<sup>j</sup>] to be fricated word-finally and preconsonantly and to be more palatalized at the end of the [r<sup>j</sup>] than at the beginning of the sound.

### 3 The Proposed Account

Our results show that while the z/z<sup>j</sup> contrast is maintained, acoustically, palatalization of the voiced coronal fricative is realized in several different ways (this is evident in various parts of the spectra) and is subject-dependent. Thus, the palatalized fricative z<sup>j</sup> is not a particularly stable segment, even in Russian. If it was realized in a similar way across Slavic languages (which we assume here), the loss of this contrast is expected.

The data from previous work on the palatalization of the trill points to a similar generalization. The realization of the palatalized trilled r<sup>j</sup> is not only subject-dependent, but also highly depends on the environment (which is also the case for the z<sup>j</sup>). The phonetic instantiation of r<sup>j</sup> in Russian is mirrored by the historical development of the palatalized trill in Slavic languages. While depalatalization, fricativization and sequentiality resolve the conflict of palatalization and trilling in some

Slavic languages by the elimination of contrast, in Russian, they play a role of stabilization and thus assist in contrast maintenance.

On the other hand, the  $n/n^j$  contrast is maintained and phonetically instantiated with the same strategy for all subjects. This shows that  $n^j$  is a stable segment in Russian, and, not coincidentally,  $n^j$  is the most stable palatalized segment in Slavic.

## 5 Conclusions

We conclude that our results bear on the historical development of palatalization in Slavic: the gradation of the presence of palatalization in different segments in Russian corresponds to the loss of palatalization in the same segments in the history of Slavic.

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## Genitive Case and Aspect in Russian<sup>1</sup>

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### 1. Introduction to the Issue

It is well known that in Russian, some perfective verbs allow genitive/accusative case alternation on their mass and plural direct object nominal arguments (1a) whereas imperfective verbs do not, and combine felicitously only with accusative complements (1b) (Jakobson 1936, Paducheva 1998, Kiparsky 1998).

- (1) a. on vypil<sub>PRF</sub> čaj<sub>ACC</sub> /čaj-**a**<sub>GEN</sub>  
          ‘He drank the tea/ some (of the) tea.’  
      b. on pil<sub>IMPF</sub> čaj<sub>ACC</sub> / \*čaj-**a**<sub>GEN</sub>  
          ‘He was drinking (the) tea/some (of the) tea.’

As further shown in (2-3), morphologically genitive NPs under the scope of perfective verbs in affirmative propositions have a salient quantity/partitive interpretation (Franks 1995). These NPs are therefore analyzed as partitive constructions, and the non-compatibility illustrated in (1) is commonly referred to as the imperfective aspect-partitive case non-compatibility (Paducheva 1998).

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- (2) a. miša vypil čaj-a, no ostalos' ešče nemnogo  
 misha drink PRF PAST tea GEN but there is some more left  
 'Misha drank a little bit of /some of the tea, but there is some more left.'
- b. miša vypil čaj, ?? no ostalos' ešče nemnogo  
 misha drink PRF PAST tea ACC MASS but there is some more left  
 'Misha drank the tea, but there is some more left.'
- (3) kot otvedal parn-oj baranin-y i prosto ošalel  
 cat try PRF PAST fresh GEN lamb GEN and simply go crazy  
 'The cat tried some/a little fresh lamb and went crazy.'

One possible explanation of the phenomenon in (1) is to assume that there is a conflict between imperfectivity and partitivity and to try to identify which properties of the two clash (e.g. Paducheva 1998)<sup>2</sup>. In this paper, I argue that the problem calls for a different treatment. I assume, following Kagan (2005) and Borschev et al. (2008), that genitive morphology indicates that an NP is interpreted as a predicate at type <e,t> and not as an argument of type e. There is then no reason to expect genitive case in a verb argument position, independent of the aspectual properties of the verb, and the question we should ask about (1) is: *Why is genitive case allowed in (1a)?* (and not *why is it not allowed in (1b)?*)

Taking this question as a starting point, I shall show the following: (i) Genitive partitive arguments are not true partitive constructions but pseudo-partitives (Selkirk 1977); (ii) Pseudo-partitive genitives are measure predicates as in *three liters of milk* (Landman 2004, Filip 2005, Rothstein 2009, Partee and Borschev 2012); (iii) Genitive Partitive NPs, like other genitive NPs, are predicates (Borschev and Partee 2004, Kagan 2005, Borschev et al. 2008) and, hence, they are not expected to appear in a verb argument position anyway. Nonetheless, type-shifting of the verb can license a genitive complement in certain circumstances, as argued in Borschev et al. (2008) and Partee (2008). To account for the central problem illustrated in (1), we need to explain why perfective

<sup>2</sup> I review previous work, including Paducheva's (2008) semantic-oriented analysis and Franks & Dziwirek's (1993) and Franks' (1995) syntax-based analysis in Khizman (2011).

verbs shift to accept predicative arguments whereas imperfective verbs do not; (iv) Building on Filip (2005) and Filip and Rothstein (2006), I propose that partitive genitive NPs are licensed by explicit or implicit measure operators incorporated into the meaning of perfective verbs.

## 2. Partitive Genitive in the Light of the Property Type Hypothesis: An Alternative Look at the Problem

### 2.1 *The Property Type Hypothesis for Russian Genitives*

Genitive/accusative case alternation in a direct object position is licensed in three cases. One of them is the accusative/partitive genitive alternation on direct objects of perfective verbs, as we have already shown in (1). The two other well-known cases are illustrated in (4) and (5) from Borschev et al. (2008) and Partee (2010). In (4), a genitive object alternates with accusative under the scope of negation (genitive of negation), in (5) under the scope of intensional verb (intensional genitive).

- (4) a. oni      ne postroili      gostinic-**y**  
       they    not build PRF PAST hotel GEN  
       ‘They didn’t build a hotel.’ (non-specific)
- b. oni      ne postroili      gostinic-**u**  
       they    not build PRF PAST hotel ACC  
       ‘They didn’t build the hotel.’ (a ‘definite’ ‘planned’ one).’
- (5) a. petja ždal                  avtobus-**a**  
       petja wait IMPF PAST bus GEN  
       ‘Petja was waiting for a bus.’
- b. petja    ždal                  (svoj)    avtobus  
       petja    wait IMPF PAST (his)    bus ACC  
       ‘Petja was waiting for the (his) bus.’

The partitive genitive differs from the other two types of genitive objects in a number of respects (Kagan 2009). Only the partitive has a quantity interpretation and is restricted to mass or plural NPs (6). Only the partitive genitive is restricted to perfective verbs (4-6), or putting it differently, genitive objects receive a partitive interpretation only under the scope of perfective verbs.



- Verbs cannot combine directly with genitive objects, since the former denote functions which require e-type arguments. Applying to an  $\langle e, t \rangle$  type genitive arguments results in a type mismatch (Borschev et al. 2008, Filip 2005). Nonetheless, in certain circumstances verbs can shift their meaning to accept  $\langle e, t \rangle$  type input (predicative arguments).

This matter has been widely discussed in the literature and a number of type-shifting mechanisms have been proposed (Partee 1986, Farkas and de Swart 2003, Chung and Ladusaw 2003, Carlson 2003a,b)<sup>3</sup>.

## 2.2 Back to the Partitive Genitive

The property-type hypothesis for genitives brings crucial insights on the partitive-genitive phenomenon, in particular, on the kind of questions we should ask about it.

Given the property-type hypothesis, partitive genitives are predicates like other genitive objects. For a verb to combine with a genitive predicate requires complex type-shifting, whereas combining with an accusative e-type NP is straightforward. There is thus no reason to expect a genitive NP to appear in a verb argument position if an alternating accusative NP is available. Therefore, the imperfective-partitive non-compatibility is predicted, whereas the perfective-partitive compatibility is puzzling and must be accounted for. We thus turn the problem upside down and instead of asking why imperfective cannot license partitive genitive, we ask why perfective verbs can.

To sum up, given that partitive genitives are predicates, we need to explain: (i) How is a quantity interpretation assigned to genitive NPs? (ii) What properties of perfective verbs allow them to shift to accept  $\langle e, t \rangle$  type genitive predicates? and (iii) Why don't imperfective verbs have these properties?

## 3. Partitive Genitives NPs are Pseudo Partitive Measure Predicates

Even though labeled as partitive, morphologically genitive objects of perfective verbs do not necessarily have a true 'partial' interpretation like true partitive constructions such as *three of the boys* or *a piece of the cake* do. They simply express quantity like pseudo-partitive constructions such as *a piece of cake* or simple cardinals like *three boys* (cf. Jackendoff 1977, Selkirk 1977, Kopetjevskaja-Tamm 2001) (8).

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<sup>3</sup> See also Filip's (2005) discussion of Carlson's model and its application to some instances of Russian genitives.

- (8)      on kupil                      čaj-**a**  
           he bought PRF PAST        tea GEN MASS  
           ‘He bought **some tea.**’ (not ‘some of the tea’)

More specifically, partitive genitives have three possible readings:

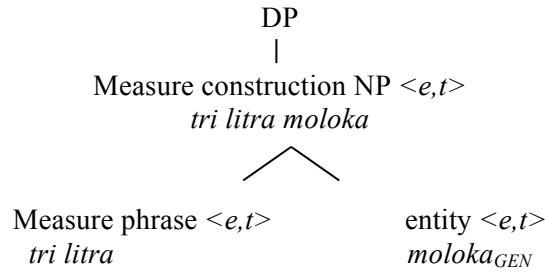
i) *indefinite amount of x* (9), ii) *a small amount of x* (10), and iii) *a large amount of x* (11).

- (9)      pasha s-varil              kartošk-**i**  
           pasha cook PRF PAST    potato GEN MASS  
           ‘Pasha cooked some potatoes.’
- (10)     kot      **po**<sub>DM</sub>-pil              molok-**a**  
           cat      drink PRF PAST    milk GEN MASS  
           ‘The cat drank a little bit of milk.’
- (11)a.    maša      **na**<sub>CM</sub>-varila      šče**j**  
           masha      cook PRF PAST    cabbage soup GEN MASS  
           ‘Masha cooked a lot of cabbage soup.’
- b.    on **pere**-el              mjas-**a**  
               he eat PRF PAST        meat GEN MASS  
               ‘He ate too much meat.’

Filip (2005a) provides a detailed analysis of partitive genitive NPs under the scope of the cumulative *na*- and delimitative *po*- prefixed verbs as in (10) and (11a), and claims that these NPs have the structure of measure predicates such as *tri litra moloka* (‘three liters of milk’) on Landman’s (2004) analysis.

Partee and Borschev (2012), following Landman (2004) and Rothstein (2009), analyze *tri litra moloka* as a measure predicate of type  $\langle e, t \rangle$ , which is formed by combining a measure phrase *tri litra* of type  $\langle e, t \rangle$  and *moloka*, a genitive predicate of type  $\langle e, t \rangle$ , via intersective modification (Figure 1). The resulting predicate is interpreted roughly as denoting milk to the quantity of three liters (12). Notice that the nominal part of such constructions is restricted to mass or plural NPs (13) (Rothstein 2011).

**Figure 1.** The syntactic and semantic structure of a measure construction, *three liters of milk*.



- (12) THREE LITERS OF MILK=  
 $\lambda x. \text{MILK}(x) \wedge \text{THREE LITERS}(x)$
- (13) dva kilogramma muki/ jablok/  
 two kilos flour<sub>GEN.MASS.SG</sub>/apple<sub>GEN.COUNT.PL</sub>/  
 \*jabloka  
 apple<sub>GEN.COUNT.SG</sub>  
 'two kilos of flour/apples/apple.'

Filip suggests that the partitive genitive *moloka* ('a little/ a lot of milk') in *popil/napilsja moloka* ('drank a little/a lot of milk') has the same structure with the only difference being that the measure content contributed by an explicit measure phrase *tri litra* is assigned by the measure function induced by a verbal prefix (*po-* or *na-*). The *po-* prefix denotes a measure function which measures a small quantity of an entity and *na-* induces a measure function which measures a large quantity. Thus, the measure interpretation of *moloka* in *popil/napilsja moloka* as in (14)<sup>4</sup>. Crucially, such an analysis captures the restriction of partitive genitive objects of *na-* and *po-* verbs to mass and plural NPs.

- (14)  $\llbracket (po-) \text{MILK} \rrbracket = \lambda x. \text{MILK}(x) \wedge \text{a small amount}(x)$   
 $\llbracket (na-) \text{MILK} \rrbracket = \lambda x. \text{MILK}(x) \wedge \text{a large amount}(x)$

<sup>4</sup> This is a simplified representation of Filip's (2005) analysis.

Filip's analysis relates to two particular cases of partitive genitive objects. I propose to extend the analysis and treat all instances of the partitive genitive as measure constructions, since the similarities between partitive genitives and explicit measure predicates such as *tri litra moloka* hold across the board. In particular, partitive genitive objects express quantity and are restricted to mass and plural nouns not only when they appear under the scope of *na-* and *po-* prefixed verbs, but also under the scope of verbs with other prefixes (15) and even in the absence of such, i.e. with root perfectives (16).

- (15) *vy-pil čaja<sub>GEN</sub>* 'drank some/a little tea'  
*pri-nes vody<sub>GEN</sub>* 'brought some/a little water'  
*pere-el mjas<sub>GEN</sub>* 'ate too much meat'
- (16) *kupil čaja<sub>GEN</sub>* 'bought some/a little tea'  
*dal deneg<sub>GEN</sub>* 'gave some money'

In the next section, I will show how the measure mechanisms are represented in the semantics of perfective verbs. This will explain why perfective verbs can assign the partitive interpretation to their genitive complements and why imperfective verbs cannot.

#### 4. Perfectivity and Measure

##### 4.1 Background on the Russian Aspect

The Russian grammar systematically distinguishes between morphologically imperfective and perfective verbs (Comrie 1976, Zaliznjak and Shmelev 2000). Imperfective verbs are root verbs (*varit* 'to cook'), *pit* 'to drink'). Perfective verbs are typically formed from root imperfectives via prefixation (*varit* - *svarit* 'to cook'), *pit* - *vypit* 'to drink'). There is a small class of underived/root perfective verbs (*dat* 'to give'), *kupit* 'to buy'). Some imperfective verbs are derived from perfective verbs (*vy-pit* <sub>PRF</sub> - *vy-pivat* <sub>IMPF</sub> 'to drink')) (Filip 1999, Mehlig 2008). Such imperfectives are called secondary imperfectives (Filip 1999, 2005). The latter are beyond the scope of this paper and any claims I make here apply to root imperfectives only.

The morphological imperfective/perfective distinction has a semantic realization. Morphologically perfective verbs are telic predicates denoting complete total events (Filip 1999) or maximal events (Filip and

Rothstein 2006, Filip 2008), as in (17a), whereas morphologically imperfective verbs may denote partial events (Filip 1999) or events which are not necessarily maximal (Filip and Rothstein 2006, Filip 2008), as in (17b).

- (17)a. kot poymal            myš,    # no tak i ne    poymal  
          cat caught <sub>PRF PAST</sub> mouse   but hasn't   caught  
          'The/a cat caught a/the mouse, but didn't succeed to catch it.'
- b. kot lovil                myš,    no tak i ne    poymal  
          cat caught <sub>IMPF PAST</sub> mouse but   hasn't   caught  
          'The/a cat was hunting a mouse, but didn't succeed to catch it.'

Perfective verbs impose a maximality requirement on their arguments (Krifka 1992). Consequently, their mass and plural arguments must have a maximal interpretation, and therefore a definite interpretation (18a). Imperfective verbs do not impose a maximality requirement on their arguments. Mass and plural arguments of imperfective verbs may have either a definite or an indefinite interpretation (18b) (Krifka 1992, Filip 1999, Filip and Rothstein 2006, Filip 2008).

- (18)a. kot vypil                moloko  
          cat drink <sub>PRF PAST</sub> milk<sub>ACC</sub>  
          'The/a cat has drunk/drank the milk.'
- b. kot pil                        moloko  
          cat drink <sub>IMPF PAST</sub> milk<sub>ACC</sub>  
          'He was drinking/drank/used to drink (the) milk.'

#### 4.2 Perfectivity as Maximalization

Filip and Rothstein (2006) propose that the telicity of the morphologically perfective verbs is derived via a maximalization operation on events. In particular, the maximalization operator  $MAX_E$  applies to a set of stages of events and picks out a stage which counts as the maximal event. Events must be maximal with respect to some dimension and cannot be measured directly (cf. Krifka 1989). There must be an ordering criterion which orders the stages of an event on a scale according to which a maximal event is identified. Sets of maximal events are telic. Crucially, telicity in Russian is derived at the level of V

denotation ( $\text{MAX}_E$  applies at the level of V), and the verbal prefix plays an important role in licensing the maximalization operation.

#### 4.2.1 Derived Perfectives

Filip and Rothstein (2006), following Filip (2005), argue that in derived (prefixed) perfectives, an ordering criterion is provided by measure prefixes which induce an extensive measure function on objects in different domains or dimensions (individuals, eventualities, time, space, etc.) and provides a value in accordance with which the maximal event is identified<sup>5</sup> (19).

$$(19) \quad \text{PREFIX}_{\mu} \rightarrow \lambda x. \mu(x) = n \wedge R(n, C) \\ n \text{ stands in a relation } R \ ( >, <, \leq, \geq, =) \text{ to a standard } C$$

For example, the prefix *po-* measures a small quantity of objects in different domains. In *popil moloka<sub>GEN</sub>* ('drank a little milk'), the measure function measures the volume/extent of milk ( $n \leq C$ ) and, hence, a stage of the event at which a small quantity of milk is drunk is considered to be the maximal event. In *po-prygal* ('jumped for a short time'), the measure function applies to a temporal domain and the contextually relevant stage of the event of jumping which has lasted for a contextually relevant short period of time counts as the maximal event.

This approach is further developed in Kagan (2010, 2011, 2012) who argues for a unified semantics of verbal prefixes on which the latter function as scalar measure operators on different domains. In Kagan's model, the measure function defined by Filip is interpreted in a degree/scalar framework: the prefix applies to two degrees on a scale and puts them into a numerical relation (20).

$$(20) \quad \lambda P \lambda d_s \lambda d \lambda x \lambda e. [P(d)(x)(e) \wedge R(d, d_s)] \\ \text{(Kagan 2011:163)}$$

<sup>5</sup> This representation is a simplified version of Filip's formula. As shown in (i), the original definition includes the notion of a maximally separated entity (following Krifka (1997) and an additional contextual variable *c*.

(i)  $\text{PREFIX MS} \{ \{ \lambda x [ \mu_c(x) = n_c ] \} \wedge R(n_c, C_c) \}$

Kagan shows how the semantics of *po-* and *na-* provided by Filip can be represented within the definition in (20). She further extends the model to analyze a variety of prefixes which include *pod-* ('under'), *do-* ('up to'), *nedo-* and *pere-* of excess ('too much'). Here is one illustrative example. *Pere-* in (21) operates on the scale of volume associated with a predicate *mjasa* ('meat') and indicates "...a degree obtained by an argument is **higher** than the functional standard ..., [t]he maximal degree that is reached in the course of the event is too high to be compatible with situation requirements" (Kagan 2011:172).

- (21)    on **pere-el**                    mjas-a  
           he *pere-eat* PAST PRF    meat GEN  
           'He ate too much meat.'

#### 4.2.2 Underived (Root) Perfectives

Filip and Rothstein do not show explicitly how the measure function is represented in root perfectives such as *dat'*<sub>PRF</sub> ('to give') or *kupit'*<sub>PRF</sub> ('to buy'). Nevertheless, it follows from the theory that such a measure function must be available. One possibility is that the measure function is lexical. The root perfectives which allow partitive genitive complements are achievements and accomplishments, and are thus inherently telic or quantized (Rothstein 2008), and it is plausible that an inherently quantized predicate imposes a measure on its theme argument. Working out the details of this is beyond the scope of this paper.

#### 4.3 From Perfectivity to Partitivity

Filip and Rothstein's account explains how the aspectual properties of a governing verb correlate with the measure effects of partitive genitive objects. Perfective predicates have measure operations as part of their structure. Imperfective verbs do not. Thus, perfective verbs can assign a measure interpretation to their objects, whereas imperfectives cannot.

Filip (2005), Filip and Rothstein (2006) and Kagan (2010, 2011, 2012) are mainly interested in understanding how prefixation works. I extend their approaches to explain the interpretation and distribution of partitive genitives. I will suggest that partitive genitives are licensed by the measure operators expressed in the prefix or provided by the event predicate itself and show that this correctly predicts the distribution of genitive.



### 5. How is Partitive Genitive Licensed?

We have argued that partitive genitives are measure predicates and explained how the measure interpretation is assigned. The rest of the paper will discuss the two remaining questions: *How do perfective verbs shift to accept  $\langle e, t \rangle$  arguments* and *Why can't imperfective verbs shift?*

#### 5.1 How do Perfective Verbs Shift?

Borschev et al. (2008) argue that different verbs can have different shifting strategies and mention a partitive/quantity shift as one of those strategies.

I propose that such a shift is facilitated by a measure operation associated with perfective verbs. As Landman (2004), Rothstein (2009), Partee and Borschev (2012) show, measure expressions are predicate modifiers. If a verb includes a measure expression as part of its meaning, it is plausible that the measure expression triggers the shift in verb type from  $\langle e, \langle e, t \rangle \rangle$  to  $\langle \langle e, t \rangle, \langle e, t \rangle \rangle$ , so that it will have a predicate to combine with. Thus, instead of taking an argument of type  $e$  as its direct object, it takes a predicate which can combine with the measure phrase. Adopting Filip's (2005) definition of the measure operation in (19), I propose the type-shifting operation in (22-23). A transitive verb starts off as a predicate which requires an  $e$ -type accusative argument (22). The measure operation included in the structure of the verb allows it to shift to (23) and combine with an  $\langle e, t \rangle$  type genitive object.

$$(22) \quad V_{\text{PRF}} = \lambda x \lambda e. V(e) \wedge \text{Th}(e) = x$$

$$(23) \quad V_{\text{PRF}} = \lambda P \lambda e. \exists x [V(e) \wedge \text{Th}(e) = x \wedge P(x) \wedge \mu(x) = n \wedge R(n, C)]$$

For example, a measure function expressed in the *pere-* of excess (24)<sup>6</sup> (Section. 4.2.1) attaches to a root imperfective such as *lil* ('poured') (25) in two stages, as in (26).

$$(24) \quad \text{PERE} = \lambda x. \mu(x) = n \wedge n > C$$

$$(25) \quad \text{LIL} = \lambda x \lambda e. \text{LIL}(e) \wedge \text{Th}(e) = x$$

<sup>6</sup> I interpret Kagan's (2011) definition in Filip's (2005) framework. The representation is simplified.

$$\begin{aligned}
 (26) \quad & \text{PERELIL} = \text{PERE}(\text{LIL}) = \\
 & \lambda x \lambda e. \text{LIL}(e) \wedge \text{Th}(e) = x \wedge \mu(x) = n \wedge n > C \quad \Rightarrow \\
 & \lambda P \lambda e. \exists x [\text{LIL}(e) \wedge \text{Th}(e) = x \wedge P(x) \wedge \mu(x) = n \wedge n > C]
 \end{aligned}$$

A shifted *pere-lil* now applies directly to the genitive *uksusa<sub>Gen</sub>* ('vinegar') and assigns to it a measure interpretation ('too much vinegar') (27).

$$\begin{aligned}
 (27) \quad & [[\text{PERELIL}]] = \lambda P \lambda e. \exists x [\text{LIL}(e) \wedge \text{Th}(e) = x \wedge P(x) \wedge \\
 & \mu(x) = n \wedge n > C] \\
 & [[\text{UKSUSA}]] = \lambda x. \text{UKSUS}(x) \\
 & [[\text{PERELIL}]]([\text{UKSUSA}]) = \\
 & \lambda P \lambda e. \exists x [\text{LIL}(e) \wedge \text{Th}(e) = x \wedge P(x) \wedge \mu(x) = n \wedge \\
 & n > C] (\lambda x. \text{UKSUS}(x)) = \\
 & \lambda e. \exists x [\text{LIL}(e) \wedge \text{Th}(e) = x \wedge \text{UKSUS}(x) \wedge \mu(x) = n \wedge n > C]
 \end{aligned}$$

If *pere-lil* combines with an accusative argument, the measure function then applies to a different domain or scale, spatial as in (28a) or a scale of degrees associated with a predicate (28b). The accusative object does not then receive a measure interpretation.

- (28)a. *pere-lit' uksus<sub>ACC</sub>* 'to pour (the) vinegar from ... into...'  
 b. *pere-sušit' mjaso<sub>ACC</sub>* 'to over-dry (the) meat'

The shift operation presented above explains why perfective verbs systematically assign a measure interpretation to their genitive themes as well as their restriction to mass and plural nouns. The presented analysis shows that the type-shifting associated with genitive is a lexically motivated operation triggered by the lexical semantics of a verb rather than a semantic rule of incorporation. I now show that it also predicts correctly the distribution of genitives with perfectives.

Firstly, if the type-shifting is licensed by the measure operators, perfectivity alone should not be enough to license such arguments. The prediction is borne out. Not all perfective verbs license genitives (29), and the same perfective verb may or may not license genitive depending on the prefix (30).

- (29)    *sneg*    **za**-sypal            *dorog-i/*            \**dorog*  
           snow   *za*-scatter<sub>PRF PAST</sub>   roads<sub>ACC/</sub>            roads<sub>GEN</sub>  
           ‘Snow covered (the) roads.’
- (30)a.   on **vy**-pil                    *vod-u/*            *vod-y*  
           he *vy*-drink<sub>PRF PAST</sub>   water<sub>ACC/</sub>    water<sub>GEN</sub>  
           ‘He drank the water/some water.’
- b.   on **do**-pil                    *vodu/*            \**vody*  
           he *do*-drink<sub>PRF PAST</sub>   water<sub>ACC/</sub>    water<sub>GEN</sub>  
           ‘He drank up the water/some water.’

Secondly, the felicity or infelicity of the genitive in a specific object position will be determined systematically by the properties of the measure operation associated with the prefix used:

- i.    If a prefix measures the direct object on one of its uses, it will obligatorily require genitive on those uses. The *na*- prefix on the ‘a lot of x’ use and *pere*- of excess on the ‘too much x’ use obligatorily require genitive case on their incremental themes (31).

- (31) a.   *maša*   **na**-varila            *supa/*            \**sup*  
           masha *na*-cook<sub>PRF PAST</sub>   soup<sub>GEN/</sub> soup<sub>ACC</sub>  
           ‘Masha cooked a lot of soup.’
- b.   *maša*   **pere**<sub>EX</sub>-ela            *supa/*            \**sup*  
           masha *pere*-eat<sub>PRF PASR</sub>   soup<sub>GEN/</sub>    soup<sub>ACC</sub>  
           ‘Masha ate too much soup.’

- ii.    Some prefixes may denote functions incompatible with <e,t> arguments. Such prefixes should not license genitive. For example, *do*- which makes reference to maximal entities (cf. Filip 2008, Kagan 2010, 2012) requires that the V take a maximal direct object and thus it does not license genitive (32).

- (32) \* *kot*   **do**-pil                    *molok-a*  
           cat   *do*-drink<sub>PRF PAST</sub>   milk<sub>GEN</sub>  
           ‘The cat has drunk up the milk.’

- iii.    Prefixes whose measure functions do not measure the direct object, but apply to a different domain will not license genitive. As shown

in (33a), *pere-* of excess on the ‘too much x’ use measures the amount of the object and licenses genitive, whereas *pere-* of iteration operates on the domain of eventualities and does not license genitive (33b).

- (33)a. on **pere**<sub>EX-el</sub> mjas-a  
 he *pere*-eat<sub>PRF PAST</sub> meat<sub>GEN</sub>  
 ‘He ate too much meat.’  
 b. \*on **pere**<sub>IT-čital</sub> knjig  
 he *pere*-read<sub>PRF PAST</sub> books<sub>GEN</sub>  
 ‘He read (the) books again.’

The observations in (i)-(iii) support the proposal that I put forward here. There are still two theoretical issues which need to be investigated.

Firstly, we need to show how some prefixes which do not seem to measure a direct object such as *pri-*, as in *pri-vez meda*<sub>GEN</sub> (‘brought some honey’), license genitive. The *pri-* prefix is interpreted as ‘to’ and describes spatial characteristics of movement (e.g. *pri-šel* (*pri*-went) ‘came to’ as opposed to *oto-šel* (*oto*-went) ‘went away from’)<sup>7</sup>. Nonetheless, the contrast between *pri-* and *pro-* (‘through’) in (34), on the other hand, shows that *pri-* can license genitive. It is not clear how the non-incremental theme is measured. A possible solution could be to assume that some prefixes can operate on more than one domain simultaneously. However, a detailed analysis of spatial prefixes is beyond the scope of the paper.

- (34)a. moj papa **pri**-vez med-a  
 moj father *pri*-carry<sub>PRF PAST</sub> honey<sub>GEN</sub>  
 ‘My father brought some honey.’  
 b. \* moj papa **pro**-vez med-a (čerez granicu)  
 my father *pro*-carry<sub>PRF PAST</sub> honey<sub>GEN</sub> (through border)  
 ‘My father carried some honey through the border.’

Secondly, as mentioned, some root perfectives can also license genitives (e.g. *dat*’ (‘give’), *kupit*’ (‘buy’)). It is not clear how the presented

<sup>7</sup> The prefix *pri-* can have other readings as well. For example, the attenuative interpretation as in *pri-glušit*’ *radio* (‘to turn the radio down a bit’) (Filip 2005: 11).

analysis applies in such cases. One possibility is that the shift is triggered by the implicit measure operators lexicalized in the event structure as was suggested above (Section 4.2.2). Little is known about the structure of this small class of verbs and, therefore, this issue is a subject for further exploration.

### 5.2 *Why don't Imperfective Verbs Allow Partitive Genitives?*

Imperfective verbs do not allow the partitive genitive interpretation because imperfective predicates do not have a measure component. If an imperfective verb took a genitive predicate, denoting a property, the interpretation would be simply indefinite (Van Geenhoven 1998). However, the indefinite interpretation is already available with the accusative direct object of an imperfective (see Section 4.1). On the widely held assumption that type-shifting must either be triggered by a type mismatch or justified because it allows a previously unavailable interpretation, the shift to a partitive interpretation of the genitive with imperfectives should not be allowed.

### 5.3 *Genitive of Negation as a Potential Support*

If the hypothesis suggested in Section 5.2 is correct, we predict that imperfectives should allow a genitive argument when the conditions licensing type-shifting are met. Genitive objects under negation support the hypothesis. Partee (2008), following Levinson (2005 a,b, 2006 a,b), shows that the shift is licensed under negation since the use of genitive under negation results in strengthening.

I illustrate this as follows<sup>8</sup>. Under negation, a proposition with a property denoting object (35a) will entail the corresponding proposition with a definite object (35b). Thus the first proposition will be semantically stronger and more informative than the second one.

- (35)a. on ne nosit                      obručal'n-ogo    kol'c-a  
       he not wear IMPF PRS      wedding GEN      ring GEN  
       'He doesn't wear anything which has a property of being a  
       wedding ring'

---

<sup>8</sup> Strictly speaking Partee (2008) shows this for a partitive reading. We treat the genitive here as an indefinite rather than as a partitive, but since the pattern of entailments is the same, it does not make a difference.

- b. on ne nosit obručal'n-oje kol'c-o  
 he not wear IMPF wedding ACC ring ACC  
 'He doesn't wear his/the wedding ring.'

As Partee shows, the same pattern cannot hold in the absence of the negation operator, i.e. in affirmative sentences. The sentence in (36a) could not entail (36b), i.e. (36a) could not have a stronger interpretation than (36b).

- (36)a. \*On nosit obručal'n-ogo kol'c-a  
 he wear IMPF PRS wedding GEN ring GEN  
 'He wears a wedding ring.'
- b. On nosit obručal'n-oje kol'c-o  
 he wear IMPF wedding ACC ring ACC  
 'He wears a/the wedding ring.'

The analysis of the partitive presented here together with Partee's (2008) analysis of the genitive of negation open up an interesting direction towards a unified analysis of genitive objects. The analyses show that genitive is licensed only if its use is semantically meaningful. In the genitive of negation, this is shown in terms of the strengthening effects and in the partitive genitive, this is shown via the measure interpretation assigned to a genitive object.

## 6. Concluding Remarks and Remaining Issues

The paper investigates the interpretation and distribution of partitive genitive objects. Building on previous work on the semantics of genitives and perfectives, I have argued that partitive genitives are licensed by the measure mechanisms included in the structure of perfective predicates. These measure operations trigger a verb to shift to accept an <e,t> type NP and assign a measure interpretation to it. Imperfective verbs do not have a measure component and cannot assign a measure interpretation to their themes. In the absence of a measure interpretation, type-shifting is semantically vacuous and thus not licensed.

Such an account is consistent with Partee's (2008) analysis of genitive of negation. Partee shows that genitive is licensed in environments in which its use creates a stronger interpretation than accusative. I extend

that to partitive genitive and show that genitive is licensed when its use results into a measure interpretation which cannot be derived with the accusative. This puts partitive genitive in line with other genitive objects. Furthermore, it opens up an interesting direction towards a unified analysis of the genitive phenomena.

The present work makes a significant advance in understanding of how partitive genitive works. Numerous issues still need to be investigated. These include: (i) How measure mechanisms are represented in the semantics of root perfectives; (ii) How this extends to explain the distribution of partitive genitive with secondary imperfective verbs; and (iii) How spatial prefixes contribute to licensing non-incremental genitive complements.

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## Polish Numerals are Semi-Lexical Adjectives and Nouns\*

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Slavic numerals have been an enigma for linguists for a long time, inviting questions as to the category of the numeral, the headedness of the numeral-noun construction, and the nature of case assignment (e.g. Corbett 1978, Franks 1994, Babby 1987, etc.). The present study looks at these issues from the perspective of Polish and proposes a solution that draws on the interaction of Agree with the feature composition and structure of the numerals.

### 1 Polish numeral data

#### 1.1 External agreement and case assignment

Verbs agree with their subjects in gender, number, and person in Polish:

- (1) Ptaki                    spały.<sup>1,2</sup>  
     Bird<sub>M,PL,NOM</sub> slept<sub>3,NV,PL</sub>  
     ‘Birds slept.’

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<sup>1</sup> In the plural, verbal agreement takes two forms, virile (V) and non-virile (NV). Virile agreement occurs with nouns that are masculine and human. Non-virile agreement occurs with all other nouns (feminine, neuter, masculine non-human).

<sup>2</sup> Abbreviations: M(asculine), F(eminine), N(euter), V(irile), NV (Non-Virile), SG (Singular), PL(ural), NOM(inative), ACC(usative), GEN(itive), LOC(ative), DAT(ive), INST(rumental), PART(icle)

When a (non-virile)<sup>3</sup> noun is modified by the numerals 1, 2, 3, or 4, this verbal agreement is maintained.

- (2) a. Jeden ptak spał.  
 One<sub>M.SG.NOM</sub> bird<sub>M.SG.NOM</sub> slept<sub>3.M.SG</sub>  
 'One bird slept.'  
 b. Dwa / trzy / cztery ptaki spały.  
 Two<sub>M.NOM</sub> / three<sub>NOM</sub> / four<sub>NOM</sub> bird<sub>M.PL.NOM</sub> slept<sub>3.NV.PL</sub>  
 'Two / three / four birds slept.'

However, with certain numerals, in particular, the simplex numerals 5-10, 11-19, 20, ..., 100,<sup>4</sup> introducing a numeral appears to interrupt the verbal agreement: regardless of the gender of the (non-virile) noun, the verb is marked as neuter singular and the noun is obligatorily genitive plural.

- (3) Pięć ptaków spało.  
 Five bird<sub>M.PL.GEN</sub> slept<sub>3.N.SG</sub>  
 'Five birds slept.'

The patterns described above are particular to numerals modifying nouns of non-virile genders (masculine animate or inanimate, feminine, neuter). If we consider numeral modification of virile nouns (nouns of masculine gender which refer to humans, such as *wujek* ('uncle') or *chłopiec* ('boy'))<sup>5</sup>, a different pattern ensues. In particular, both the numeral and noun surface as genitive with the verb in neuter singular.

The numeral 1 lacks this pattern with virile nouns. When modifying subjects, it always surfaces as nominative accompanied by full verbal agreement.

<sup>3</sup> Non-virile = masculine inanimate, masculine animate, feminine, neuter

<sup>4</sup> Also some uses of 1000, 1000000, etc., complex numerals ending in 5-9, and various quantifiers and mathematical expressions.

<sup>5</sup> Such nouns are simultaneously masculine and virile. Their virility only has an effect on adjectival and verbal agreement in the plural. For this reason, I consistently gloss the nouns as masculine, but gloss adjectival and verbal agreement as either masculine (M) or virile (V) depending on whether agreement occurs in the singular or plural, respectively.

- (4) Jeden chłopiec spał.  
 One<sub>M.SG.NOM</sub> boy<sub>M.SG.NOM</sub> slept<sub>3.M.SG</sub>  
 'One boy slept.'

The numerals 2, 3, and 4 optionally have this pattern. As above, they can surface with full verbal agreement and nominative on the numeral and noun (5a), but, additionally, they can appear with neuter singular on the verb and genitive on both the numeral and the noun (5b).

- (5) a. Dwaj / trzej / czterej chłopcy spali.  
 Two<sub>V.NOM</sub> / three<sub>V.NOM</sub> / four<sub>V.NOM</sub> boy<sub>M.PL.NOM</sub> slept<sub>3.V.PL</sub>  
 'Two / three / four boys slept.'  
 b. Dwóch / trzech / czterech chłopców spało.  
 Two<sub>GEN</sub> / three<sub>GEN</sub> / four<sub>GEN</sub> boy<sub>M.PL.GEN</sub> slept<sub>3.N.SG</sub>  
 'Two / three / four boys slept.'

With the 5+ numerals, this pattern also occurs, but in this case, obligatorily. Note that the only difference between these constructions and the non-virile gendered nouns is the form of the numeral, which takes on a genitive shape with virile nouns and a nominative-accusative shape with non-virile nouns. Compare (6) and (7).

- (6) Pięciu chłopców spało.  
 Five<sub>GEN</sub> boy<sub>M.PL.GEN</sub> slept<sub>3.N.SG</sub>  
 'Five boys slept.'  
 (7) Pięć ptaków spało.  
 Five<sub>NOM/ACC</sub> bird<sub>M.PL.GEN</sub> slept<sub>3.N.SG</sub>  
 'Five birds slept.'

There is discussion in the literature concerning the case feature of the numeral in examples like (6) and (7) above. Numerous authors claim that the numeral is assigned accusative case, this being a display of gender agreement (known as the Accusative Hypothesis, see Schenker 1971, Franks 1994, 2002, Przepiórkowski 1999, among others). Other authors claim that this difference is related to case, the numeral appearing in a genitive form with virile nouns and a nominative/accusative form otherwise (known as the Nominative-Genitive Hypothesis, see

Doroszewski 1952, Klockmann 2012). I adopt the second approach here and it reflects my basic assumptions concerning the 5+ numerals.<sup>6</sup>

To summarize, the pattern is as follows: numeral 1 and its accompanying noun always appear in the nominative with full verbal agreement. This is also found with the numerals 2, 3, and 4, but, in addition, they allow a second pattern with virile nouns in which the numeral and noun are genitive and the verb is neuter singular. Finally, the 5+ numerals always have neuter singular verbs and genitive nouns, but they alternate between genitive marked numerals (virile) and nominative-accusative marked numerals (non-virile). This is captured in Table 1 below.

		<b>Numeral</b>	<b>Noun</b>	<b>Verb</b>
1	V / NV	NOM	NOM	Agrees
2,3,4	V / NV	NOM	NOM	Agrees
	V	GEN	GEN	3.N.SG
5+	NV	NOM/ACC	GEN	3.N.SG
	V	GEN	GEN	3.N.SG

*Table 1: Case and agreement patterns with numerals*

I turn now to the properties of the numerals themselves.

<sup>6</sup> For reasons of space, I cannot fully address each hypothesis, but I direct the reader to Klockmann (2012) for a fuller discussion. Below, I present the main arguments contra each hypothesis.

Nominative-Genitive Hypothesis:

- i. It postulates a non-nominative case (genitive) in subject position.
- ii. It assumes that case is conditioned by gender for 2, 3, 4 and 5+ numerals.
- iii. Although there is nominative case, verbal agreement does not occur.

Accusative Hypothesis:

- i. It postulates a non-nominative case (accusative) in subject position.
- ii. It must assume that case is conditioned by gender for the 2, 3, 4 numerals, but not 5+. This is an empirical necessity since 2, 3, and 4 numerals have different (case-related) alternatives for virile and non-virile genders.
- iii. Nominative is the default, least-marked case. This makes the use of an accusative, rather than a default nominative suspect.
- iv. While there are claims about dative and genitive subjects, there do not seem to be analogous claims for accusative subjects (Przepiórkowski 1999: 175).

As this paper believes there to be a relation between the virile patterns of 2, 3, 4 and 5+ numerals, it is necessary to adopt the Nominative-Genitive Hypothesis.

### 1.2 Properties of the numerals

In this section, I consider in particular the gender, number, and case features of the numerals. I use agreement as a diagnostic for determining whether a particular feature is initially unvalued, valued, or missing. I assume that unvalued features co-vary with the presence of another element, while valued features do not; missing features will lead to phi-defectivity and therefore, have consequences for agreement.

1.2.1 Numeral 1. Numeral 1 agrees in gender (*jeden*<sub>M.SG</sub>, *jedno*<sub>N.SG</sub>, *jedna*<sub>F.SG</sub>), number (*jedne*<sub>NV.PL</sub>, *jedni*<sub>V.PL</sub>), and case with the quantified noun (e.g. for a masculine inanimate singular noun: *jeden*<sub>NOM/ACC</sub>, *jednego*<sub>GEN</sub>, *jednym*<sub>INST/LOC</sub>, *jednemu*<sub>DAT</sub>). In particular, number agreement can be seen with *pluralia tantum* nouns such as *drzwi* ('door'), in which the singular form of the numeral is ungrammatical (*\*jeden*<sub>SG</sub> *drzwi*<sub>PL</sub> ('one door')) and must be plural (*jedne*<sub>PL</sub> *drzwi*<sub>PL</sub> ('one door')). Together, this suggests that numeral 1 has unvalued gender, number, and case features. Adjectives in Polish also show agreement for gender, number and case, and this puts numeral 1 on a par with adjectives; this seems to be generally accepted among Slavicists.

1.2.2 Numerals 2, 3, and 4. Numerals 2, 3, and 4 agree in gender with the following noun. This is illustrated in Table 2 for the nominative case paradigm.

	Masculine		Neuter	Feminine
	Virile	Non-virile		
2	dwaj	dwa		dwie
3	trzej	trzy		
4	czterej	cztery		

Table 2: Gender agreement of numerals 2,3,4 in the nominative

Thus, they have an unvalued gender feature. Unlike the numeral 1, however, they do not decline for number. Instead, they are restricted to modifying plural nouns ('two bird(s)': *dwa ptaki*<sub>PL</sub>, *\*dwa ptak*<sub>SG</sub>) and outside agreement by demonstratives and adjectives can only be plural, as shown below.

- (8) a. Te ostatnie dwa ptaki  
 These<sub>PL</sub> last<sub>PL</sub> two birds  
 ‘These last two birds’  
 b. \*Ten ostatni dwa ptaki  
 This<sub>SG</sub> last<sub>SG</sub> two birds

This suggests that these numerals have a number feature but it can only be plural. As for case, these numerals decline for case (e.g. for a masculine inanimate noun: *dwa*<sub>NOM/ACC</sub>, *dwóch*<sub>GEN</sub>, *dwoma*<sub>INST/LOC</sub>, *dwom*<sub>DAT</sub>). In sum, these numerals seem to have unvalued gender and case features, and an obligatorily valued plural number feature.<sup>7</sup>

1.2.3 Numerals 5+. Numerals 5+ minimally decline for case (‘five’: *pięć*<sub>NOM/ACC</sub>, *pięciu*<sub>GEN/LOC/DAT</sub>, *pięcioma*<sub>INST</sub>) and thus, carry an unvalued case feature. Like numerals 2, 3, and 4, they do not decline for number. They are restricted to modifying plural nouns (‘five bird(s)’: *pięć ptaków*<sub>PL</sub>, \**pięć ptaka*<sub>SG</sub>) and outside agreement by demonstratives and adjectives can only surface in the plural, as shown below.

- (9) a. Te ostatnie pięć ptaków  
 These<sub>PL</sub> last<sub>PL</sub> five birds<sub>GEN</sub>  
 ‘These last five birds’  
 b. \*Ten ostatni pięć ptaków  
 This<sub>SG</sub> last<sub>SG</sub> five birds<sub>GEN</sub>

Again, this suggests that these numerals have a number feature, but it can only be valued for plural.

<sup>7</sup> An interesting question is whether this plural feature is valued through agreement in the syntax or comes pre-valued from the lexicon. I take the position that there is no motivation for having this feature valued via agreement. If this were the case, we would have no explanation for (a) its lack of a singular paradigm (in comparison with numeral 1 or adjectives which clearly value their number features through agreement), or (b) why the noun *must* be plural. Ionin and Matushansky (2006) argue that semantics requires the quantified noun to be singular; this is seen in the syntax of languages like Finnish, where the presence of a numeral obligatorily leads to a singular noun (Brattico, 2011). For these reasons, it seems problematic to assume that the noun is plural for semantic reasons with the numeral simply agreeing. Rather, it seems more logical to say that the numeral controls the number feature on the noun (as it clearly does in Finnish) and this can be more easily accomplished if the number feature is pre-valued as plural.



With regards to gender, the picture seems more complex. One might suggest that since they trigger neuter singular verbal agreement, they have a neuter gender feature. This, however, cannot be the case. Firstly, if two neuter nouns are coordinated, verbal agreement is plural (10a); if two numeral-noun constructions are coordinated, however, verbal agreement remains obligatorily neuter singular (10b).

- (10) a. Krzesło i biurko rozbiły się.  
 Chair<sub>N.SG</sub> and desk<sub>N.SG</sub> broke<sub>3.NV.PL</sub> PART  
 'A chair and a desk broke.'  
 b. Pięć krzeseł i sześć biurek rozbiło się.  
 Five chairs<sub>GEN</sub> and six desks<sub>GEN</sub> broke<sub>3.N.SG</sub> PART  
 'Five chairs and six desks.'

Secondly, the use of a neuter singular demonstrative is impossible.

- (11) \*To pięć ptaków  
 This<sub>N.SG</sub> five birds<sub>GEN</sub>

Together this suggests that the numeral is not controlling the features of the verb. If we consider the historical development of the numeral, in Old Polish, it functioned as a feminine noun triggering feminine verbal agreement (Miechowicz-Mathiason & Dziubała-Szrejbrońska 2012).

- (12) Ona siedm panien szła.  
 That<sub>F.NOM</sub> seven<sub>NOM</sub> maidens<sub>GEN</sub> walked<sub>3.F.SG</sub>  
 'Those seven maidens were walking.' (Rutkowski 2006:93)

The fact that this no longer occurs suggests that they might be missing a gender feature, and in fact, this is what I claim, in line with Miechowicz-Mathiason and Dziubała-Szrejbrońska (2012).

In sum, these numerals have an unvalued case feature, a valued plural number feature, and are missing a gender feature.

## 2 Framework

I assume the Minimalist framework and base my Agree on Chomsky (2000, 2001), with some minor adjustments. Under Chomsky's Agree,

Agree represents a relation between a Goal and a Probe, both of which are active by virtue of some unvalued (uninterpretable) feature. An active Probe will search in its c-command (complement) domain for a matching active Goal with which to value its features. An Agree relation can only be established with the closest matching Goal (i.e. no interveners). After valuation, an element becomes inactive and the uninterpretable (now valued) features are deleted before transfer. If there are any remaining unvalued features at the end of a derivation, the derivation crashes.

I require two changes to the theory of Agree as presented above. Firstly, it is necessary to question the notion of whether the derivation crashes with unvalued features. A simple counter-example to this notion is cases of default verbal agreement. Polish weather verb constructions and impersonal constructions present a prime case:

- (13) *Weather verb*  
 Padało.  
 Rained<sub>3,N,SG</sub>  
 ‘It rained.’
- (14) *Impersonal construction*  
 Nudziło mi się.  
 Bored<sub>3,N,SG</sub> me<sub>DAT</sub> PART  
 ‘I was bored.’

Weather verbs lack subjects as they do not select for them thematically; this is the explanation used for the presence of expletive *it* in English (e.g. *It rained*), which fills the hole left by a missing subject. In Polish, weather verbs create a configuration in which there is no overt subject, and due to the availability of pro-drop in the language, there is no need for an expletive. As such, we would expect agreement to fail and the derivation to crash. Similarly, in the impersonal construction, there is a DP which could potentially serve as a goal; however it is case-marked as dative, and thus, presumably inactive. Again, we are faced with a configuration in which the unavailability of an active Goal would lead us to expect a derivation crash. However, both examples are perfectly acceptable. Dziwirek (1990) claims that such examples are cases of default agreement and I follow this claim.

In his 2011 dissertation, Preminger argues for a crash-proof syntax. With regards to Agree, he states that while Agree must be attempted, it

does not need to be successful. Thus, if a Probe searches and finds an active matching Goal with which to agree, agreement occurs; if that Probe searches but does *not* find an active matching Goal, then default agreement surfaces. Rather than assuming that the derivation should crash due to the presence of unvalued features, it is assumed that those unvalued features are filled by default values. In the case of default verbal agreement in Polish, those features are third person, neuter, and singular. This is the first change I assume to Agree: default features for unvalued features are possible. Note that there seems to be no principled (theoretical) reason for restricting this result to Probes, suggesting that there also exist default features for Goals, and empirically, there do seem to be examples of default case (Schütze 2001).<sup>8</sup>

The second change to the theory of Agree concerns the search domain of the Probe. There is discussion in the literature as to whether Agree works upwards, downwards, or in both directions. The standard account assumes that a Probe searches in its c-command domain and therefore downwards. Work by Zeijlstra (2010), on the other hand, argues that Agree works upwards. The position I adopt here is that of Rezac (2003) in which Agree looks both upwards and downwards; this is termed “Cyclic Agree.”

Pesetsky and Torrego (2001: 400) propose the Earliness Principle: “an uninterpretable feature must be marked for deletion as early in the derivation as possible.” It is this principle that serves as the motivation for Cyclic Agree. A Probe searches for a Goal with the sole purpose of valuing and deleting its uninterpretable features; by the Earliness Principle, this must be done as soon as possible. When a Probe is first merged into a structure, there exists only the Probe and its complement (its c-command domain). This implies that it can only search downwards. This gives us downwards Agree, and in many cases, downwards Agree is

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<sup>8</sup> The case feature of a nominal is usually considered to be the feature that makes it active for agreement. This case feature has also often been linked to noun licensing, where a noun must receive case in order to be licensed. However, if we are to assume that both Probes and Goals can have default features, then we encounter a problem with regards to the case-licensing link: if nouns can also value their case through default case insertion, what is to prevent this default case from licensing nouns which would otherwise not be licensed, as in *I like [John]<sub>ACC</sub> [a girl]<sub>DEFAULT</sub>*? The answer seems to be that we must divorce case assignment from noun licensing. This is a large issue, and an idea that still requires development, but see Schütze (2001) and McFadden and Sundaresan (2011) for a discussion of the issue of default case.

enough, as a Probe is often able to deactivate after its initial search in its c-command domain. The innovation with regards to Cyclic Agree is that it assumes that if a Probe remains active after this first search, then it is allowed to search again, driven by the need to delete its uninterpretable features. Thus, when more material is merged into the structure, this is where the Probe searches. This derives upwards Agree: a Probe will search upwards in an attempt to deactivate (limited only by proposed boundaries, such as phases). In sum, the Earliness Principle says nothing about the search domains of a Probe, but by adopting it, this is not necessary. It predicts that we will have the canonical downwards Agree, but also that there will be cases of non-canonical upwards Agree, in those instances where downwards Agree has failed. See Rezac (2003) and Baker (2008: 77-83) for examples and discussion about the notion of upwards Agree in this sense.

### 3 Analysis

#### 3.1 *The structure of numeral-noun constructions*

3.1.1 Numeral 1. As noted previously, numeral 1 is essentially an adjective. With regards to agreement and case assignment, it remains indistinguishable from an adjective. For this reason, it is not necessary to say any more on this numeral; whichever analysis we take to apply to adjectives applies equally well to numeral 1.

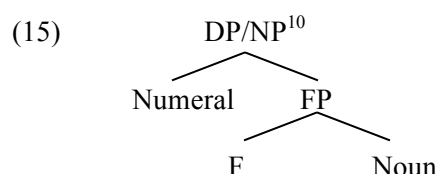
3.1.2 Numerals 2, 3, 4, and 5+. While the numerals 2, 3, and 4 seem to almost pattern with adjectives, the numerals 5+ seem to look more like nouns. Importantly, both numeral types are associated with genitive case marking on the quantified noun, although for the numerals 2, 3, and 4, this is only in combination with a virile noun. Structurally, however, I will treat them the same.<sup>9</sup> Thus, owing to the noun-like behavior of 5+

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<sup>9</sup> There is further evidence that numerals 2, 3, 4, and 5+ pattern similarly, suggesting that assigning them the same structure might be the right approach. For example, with the distributive marker *po*, a following noun is marked locative when it is bare or combined with adjectives or the numeral 1; if it is modified by numerals 2, 3, 4, or 5+, however, the nominative/accusative surfaces (Przepiórkowski 2006, 2010), as in (i).

i. Dałam każdej dziewczynie...  
 I.gave every<sub>DAT</sub> girl<sub>DAT</sub>  
 'I gave each girl ...'

numerals, I assign a noun-like structure to 2, 3, 4, and 5+ numerals, in which they take the noun they quantify as their complement. This entails that the numerals are the syntactic heads of the construction. The Case Resistance Principle, found in Stowell (1981), notes that elements which are assigned case cannot likewise assign case. Thus, based on the fact that both numeral types inflect for case, they cannot simultaneously be case assigners and it becomes necessary to posit an intermediate functional projection, which I call FP, which is responsible for the genitive case assignment. Building on the work of Ionin and Matushansky (2006), I propose the structure given in (15) for 2, 3, 4, and 5+.



### 3.2 Deriving numeral-noun constructions with non-virile gender

I return now to the syntax of numeral-noun constructions with 2, 3, 4, and 5+. Recall that with non-virile nouns, numerals 2, 3, and 4 showed full agreement and nominative case marking on both the numeral and the noun, while numerals 5+ showed neuter singular verbal marking with genitive case on the noun. I begin with the 5+ numerals and turn to 2, 3, and 4 later.

3.2.1 5+ Numerals. We have all the basic ingredients necessary to derive the facts with these numerals for non-virile nouns. Recall that 5+ numerals were posited to have a valued number feature, an unvalued case

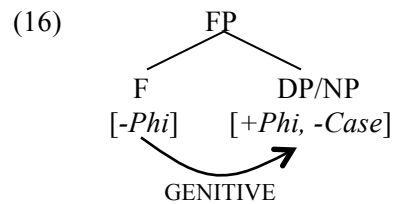
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- a. po (jednym) (małym) cukierku  
 DIST one<sub>LOC</sub> small<sub>LOC</sub> candy<sub>LOC</sub>  
 ‘a/one small candy.’
- b. po dwa cukierki / pięć cukierków  
 DIST two<sub>ACC</sub> candy<sub>ACC</sub> / five candy<sub>GEN</sub>  
 ‘two candies / five candies.’

Note that this pattern occurs regardless of the gender of the noun, suggesting that there should be no structural difference between numerals with nouns of different genders.

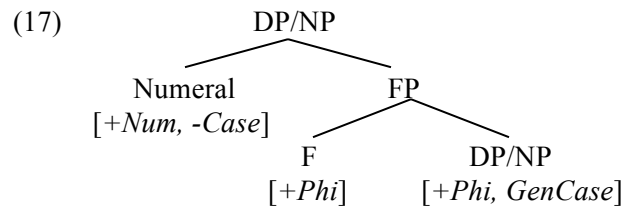
<sup>10</sup> In an attempt to remain agnostic on the question of whether Polish has NPs or DPs, I write DP/NP.

feature, and a missing gender feature. Combining the structure and the assumptions concerning Agree, the solution is simple: the intermediate FP is responsible for the genitive case on the noun, and as numerals 5+ lack gender, they are defective Goals. When agreement is attempted with these numerals (since they are the syntactic head and the noun is presumably unreachable as well as cased as genitive), it will fail and this will lead to default agreement on the verb, which is neuter singular in Polish. This gives us both our genitive-cased noun and neuter singular verbal marking, the morphological characteristics of the 5+ numeral-(non-virile)-noun construction.

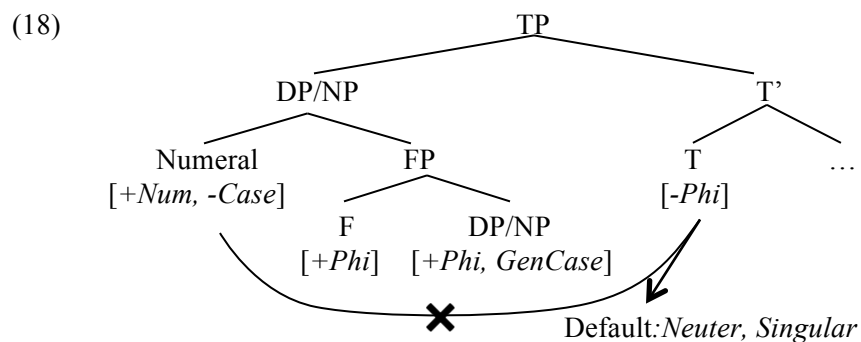
I will illustrate this for more clarity. Initially, FP merges with the noun and, assuming it has unvalued features, is active and agrees with and assigns case to the noun.



This structure is then merged with the gender-less numeral.



This numeral, in turn, enters the larger structure. When agreement is attempted, however, it fails: the numeral lacks a gender feature and thus, phi-valuation cannot be successful. Instead, default values are inserted on the Probe.



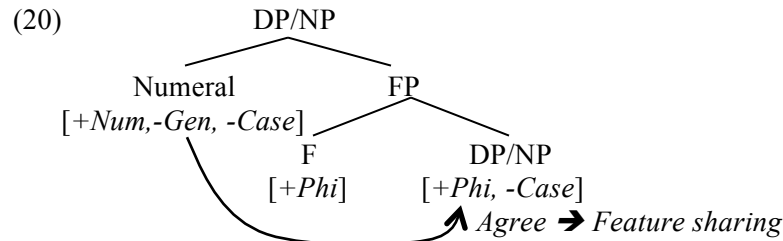
The remaining question concerns the case feature of the 5+ numerals. If the verb cannot agree with the numeral, then it cannot assign case to the numeral either. If we return to the idea of default feature valuation, which is available to both Probes and Goals, then the answer is that the 5+ numerals are cased by default. As nominative is the default case in Polish (see (19)), the numeral must be nominative. Together this gives us the 5+ numeral data.

- (19) a. Ja? Nie chce mi się iść dzisiaj.  
           I<sub>NOM</sub> No it.want me<sub>DAT</sub> PART to.go today  
           ‘Me (lit. I)? I don’t feel like going today.’  
       b. Jan i ja / \*mnie poszliśmy do kina.  
           John and I<sub>NOM</sub> / me<sub>ACC</sub> we.went to cinema  
           ‘John and me (lit. I) went to the cinema.’

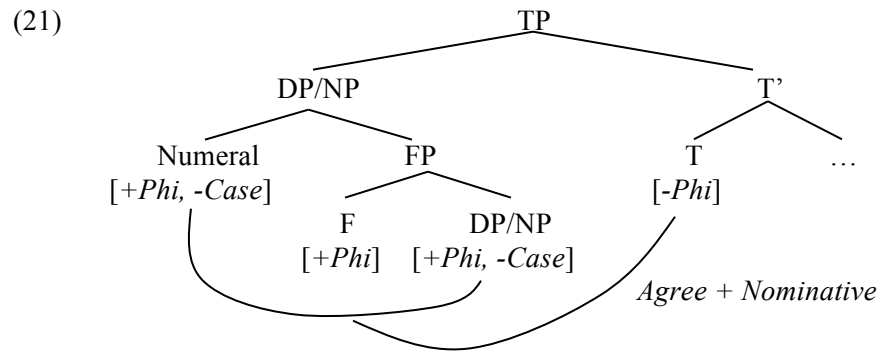
3.2.2 Numerals 2, 3, and 4. We require a stipulation with the 2, 3, and 4 numerals with regards to their behavior with non-virile nouns: the genitive-assigning FP is inactive. That being said, the rest follows straightforwardly. Having an unvalued gender feature, the numeral is an active Probe and agrees in gender with the noun. I adopt the feature sharing approach of Pesetsky and Torrego (2007) and as a result, feature instances are shared between the numeral and the noun. Thus, when the verb probes into the numeral-noun construction, it encounters the active numeral. This numeral has a full set of valued phi-features, and an unvalued case feature, which makes it active. By feature sharing, these features are shared between the numeral and the noun. Agreement occurs and the numeral is assigned nominative case, as is the noun, through its

relation with the numeral. Thus, we have full agreement and nominative case marking.

I illustrate this in more detail below. Assuming FP is inactive, it does not assign case upon merger. We can model activity by saying F already has valued phi-features and is therefore not a Probe. When the numeral is merged above the FP, it agrees in gender with the noun.



This is then merged into the main structure. When agreement is attempted, it is successful: the numeral/noun carries a full set of valued phi-features and is active by virtue of the unvalued case feature. The verb copies the phi-features of the numeral/noun and assigns it nominative case.



### 3.3 Deriving numeral-noun constructions with virile gender

Recall the data concerning the virile nouns. The numerals 5+ obligatorily appeared with genitive case marking on both the numeral and the noun, along with neuter singular on the verb. Likewise, numerals 2, 3, and 4 optionally showed this same pattern, otherwise showing full agreement as with the non-virile nouns. In this section, I focus specifically on the

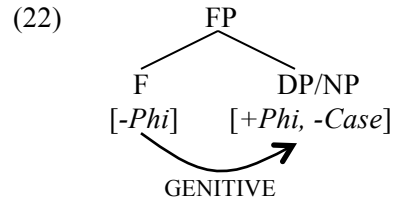


construction in which we see genitive case marking with neuter singular verbal marking. I assume that the option in which the 2, 3, and 4 numerals pattern with the non-viriles is derived in the way just illustrated above.

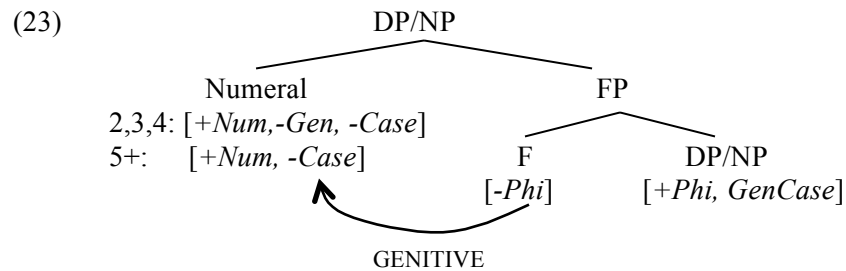
With regards to the verbal agreement, the answer is simple: as both the numeral and the noun are marked as genitive with 2, 3, 4, and 5+ numerals, agreement cannot be successful, since there are no active Goals. This will lead to default agreement, the neuter singular. The more intriguing question then is: from where does the genitive come? In this section, I will propose a mechanism by which genitive is found on both the noun and the numeral. However, it, in essence, still remains to be explained what triggers this mechanism and I can only offer tentative suggestions at the moment.

Recall the notion of Cyclic Agree introduced previously. If a Probe cannot deactivate after searching its c-command domain, it will extend its search space and look upwards. This is essentially the mechanism we use to derive genitive marking on the numeral and noun. With virile gender, FP is active. For 5+ numerals, it is always active, so this is nothing new, but with numerals 2, 3, and 4, this is the only point in time at which FP can be active. Due to the fact that the genitive appears on both the noun and the numeral, Cyclic Agree suggests that FP first assigns genitive to the noun, and then assigns genitive to the numeral. This seems to indicate that the Probe is unable to deactivate via agreement with the noun, although it can assign case. As far as I can say here, this may be related to the more semantic nature of the virile gender in contrast to the other genders: as a “gender,” virile is restricted to the subset of humans (semantic) within the (non-semantic) masculine gender. I will say nothing more on this here, but note that it requires further research into the nature of virile gender in Polish in order to answer more concretely how this gender blocks the FP Probe from deactivating.

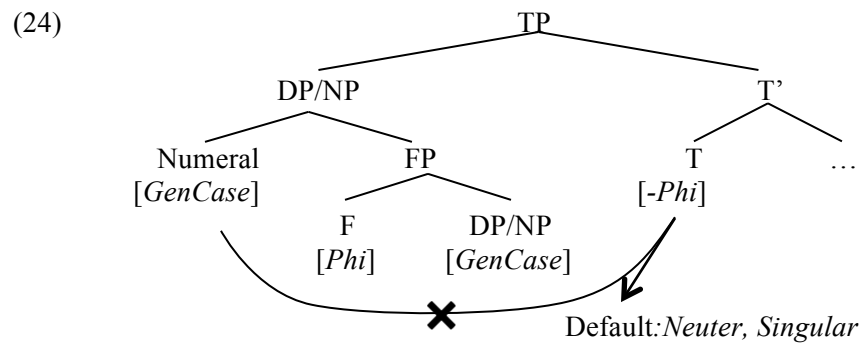
I now turn to an illustration. Active FP first merges with the virile noun and assigns it genitive case. FP, however, remains active.



The numeral then merges above. If it is a 2, 3, or 4 numeral, gender agreement occurs with the noun. The active FP continues its probing and probes and assigns genitive case to the numeral.



This is then merged into the main structure. When agreement is attempted, it cannot succeed, as the numeral is marked genitive and thereby, inactive. This will lead to default agreement.



#### 4 A brief interlude: case alternations and semi-lexicity

Having shown how the case assignment and agreement facts in nominative positions can be derived, I will now briefly discuss the behavior of numeral-noun constructions in other case positions.

As accusative case is a structural case, we expect to see the same patterns of case assignment with the numerals; this is indeed the case, and I say no more on it here. The more interesting data concerns oblique case positions. In Polish and a number of other Slavic languages (see Babby 1987; Franks 1994, among others), the genitive case associated with numerals seems to be lost in oblique case positions, being replaced by the oblique case, which also occurs on the numeral.

- (25) Spałam z pięcioma ptakami.  
 I.slept with[INST] five<sub>INST</sub> birds<sub>INST</sub>  
 'I slept with five birds.'

Given the account established above, this might seem rather strange. However, we can solve this puzzle, while maintaining the above account. The feature composition of the 5+ numerals (unvalued case, valued number, missing gender) differs from that of a normal lexical noun (unvalued case, valued number and gender) or lexical adjective (unvalued case, number, and gender). Thus, it seems to be the case that these numerals are not lexical, but rather, semi-lexical (Corver and van Riemsdijk 2001). Consider for a moment the behavior of numeral 1000.

- (26) a. Spałam z tysiącem ptaków.  
 I.slept with[INST] thousand<sub>INST</sub> birds<sub>GEN</sub>  
 'I slept with a thousand birds.'  
 b. %Cały tysiąc ptaków spał.  
 Whole<sub>M.SG.NOM</sub> thousand<sub>M.SG.NOM</sub> birds<sub>GEN</sub> slept<sub>3.N.SG</sub>  
 'A whole thousand birds slept.'

Unlike the 5+ numerals, the numeral 1000 does not seem to enter into a case alternation (26a), nor does it trigger neuter singular verbal agreement (26b). Instead, it seems to carry its own gender and number features (masculine singular), thus, making it like lexical nouns. Taking

this as fact, then, it seems that while semi-lexical items have case alternations, lexical elements do not.

One way to solve this puzzle then, is to claim that oblique cases are interested in lexical items. Due to the fact that 5+ numerals are semi-lexical, oblique case assignment will percolate down to the noun, overwriting the genitive assigned by the FP. Assuming that case stacking is present in the language, as has been claimed for Russian (Matushansky 2010, Pesetsky 2012), then the only difference with regards to an oblique case position is that, in oblique positions, it is the oblique case which surfaces, rather than the genitive.

## 5 Conclusion

To conclude, the patterns found with numerals in Polish (and other Slavic languages) seem to be difficult to account for using the traditional tools of Agree. However, if we grant cyclic agree, feature sharing, and default agreement a place in our theory, then we can model the facts of Polish in a fairly straightforward manner. In the present work, the behavior of Polish numeral-noun constructions is the result of an interaction between the feature composition of the numerals and agreement. Phi-defective, semi-lexical 5+ numerals lead to default agreement, while the non-phi-defective 2,3,4 numerals do not. This default agreement is also found in virile constructions, as a result of an application of Cyclic Agree, triggered by the presence of virile gender (a point that requires more exploration). In sum, this approach provides a new perspective into Polish numeral-noun constructions.

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## **Multiple *wh*-fronting Can be Optional, Too<sup>\*</sup>**

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In this paper, I show that Slovenian multiple *wh*-fronting is optional. This goes against the standard description of multiple *wh*-fronting, which describes it as obligatory. I show that while restrictions on movement can account for the lack of movement in other languages, they cannot account for the optionality of multiple *wh*-fronting in Slovenian. This implies that multiple *wh*-fronting is not always obligatory.

To show that multiple *wh*-fronting in Slovenian and other multiple fronting languages can be optional, in Section 1, I illustrate optionality of *wh*-movement in general. In Section 2, I illustrate that Slovenian is a typical multiple *wh*-fronting language. Section 3 presents phonological, semantic, and syntactic restrictions on movement (based on Bošković 2002) and the Principle of Distinctness (Richards 2010). Section 4 shows all the forms of multiple *wh*-questions available in Slovenian. Section 5 provides the conclusions.

### **1 Optionality of *wh*-movement**

Within the Minimalist Program, optional movement is typically associated with an optional EPP feature, which can, but does not have to be present in the numeration (Chomsky 2001). When the EPP is not present in the numeration, no movement will occur; however, when the EPP is present in the numeration, there will be movement (in the case of

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*wh*-movement, the *wh*-phrase will move to the clause initial position). Crucially, this will influence the meaning (i.e. provide a new interpretation). However, there also exists another kind of optionality, termed ‘true optionality,’ which is semantically vacuous (Biberauer and Richards 2006).

There are many reported cases of optional *wh*-movement. Following Sabel (2006), languages that allow optional *wh*-movement are: French, Bellunese, Greek, Spanish, Brazilian Portuguese, Athabaskan languages Ancash Quechua, Babine-Witsuwit'en, Navajo, West-Apache, Slavic, Austronesian languages, such as Malagasi, Malay, Tagalog, Bantu languages, like Duala, Kikuyu, Kinyarwanda, Tuki and Zulu and Afro-Asian languages, such as Iraqi Arabic, Hausa and Coptic. These languages are, for the most part, either languages with a single instance of *wh*-movement or *wh*-in-situ languages (one exception is Malagasy which is said to have multiple *wh*-fronting). In this paper, I argue that that multiple *wh*-fronting can be optional too.

### *1.2 Optionality of multiple wh-movement*

There are two different views on the optionality of *wh*-fronting in multiple *wh*-fronting languages. On the one hand, Rudin (1988) claims that Serbo-Croatian (SC) can leave *wh*-phrases in situ, still retaining a non-echo reading in these questions, but Polish and Czech can leave *wh*-words in situ only in echo questions. On the other hand, Bošković (2002) claims that *wh*-fronting in multiple *wh*-fronting languages is obligatory. In other words, in multiple *wh*-fronting languages, all *wh*-phrases must move, except in cases where movement would violate either phonological, semantic, or syntactic restrictions (cf. Bošković 2002). This obligatoriness of movement is shown below for SC, Polish and Russian, where the lack of *wh*-movement of all phrases results in ungrammaticality. Note that I am following the grammaticality markings that were assigned to the examples by the authors I am citing, but not all speakers agree with these judgments.

- |        |                      |                       |
|--------|----------------------|-----------------------|
| (1) a. | Ko    šta    kupuje? | <i>Serbo-Croatian</i> |
|        | who   what   buys    |                       |
|        | ‘Who buys what?’     | (Bošković 1997a: 11a) |
| b.     | *Ko kupuje šta?      |                       |



- (2) a. Co gdzie Jan położył? *Polish*  
       what where John put  
       ‘What did John put where?’ (Citko 1998: (1))  
       b. \*Co Jan położył gdzie?  
       c. \*Jan położył co gdzie?
- (3) a. Kto što kupil? *Russian*  
       who what bought  
       ‘Who bought what?’ (Bošković 2002: (15))  
       b. \*Kto kupil što?

However, things are not completely uniform in multiple *wh*-fronting languages. For example, there are speakers of SC who find (1b) completely acceptable and, in addition, there are reported cases in which not all *wh*-phrases move to the left periphery (see Citko 2010 for Polish). I will here focus on Slovenian, a multiple *wh*-fronting language that allows *wh*-phrases to stay in situ in multiple *wh*-questions (as first noted by Golden 1997). This is illustrated in (4) where either all *wh*-phrases move in any order possible (cf. (4a-b)), or a *wh*-phrase can stay in situ, as in (4c), which Slovenian speakers find completely acceptable.

- (4) a. Kdo kaj kupuje? *Slovenian*  
       who what buys  
       ‘Who buys what?’  
       b. Kaj kdo kupuje?  
       c. Kdo kupuje kaj?

The examples in (4) show that Slovenian behaves differently from what is typically assumed for multiple *wh*-fronting languages. Based on this data, we can assume that multiple *wh*-fronting is, in fact, not obligatory in all multiple *wh*-fronting languages. However, in order to show that optional fronting is possible in multiple *wh*-fronting languages, we must first establish that Slovenian is a multiple *wh*-fronting language.

## 2 On multiple *wh*-fronting in Slovenian

Slovenian is a multiple *wh*-fronting language, as shown by Golden (1997), who also proposed an analysis of Slovenian *wh*-fronting.

However, this account needs to be revised in light of more recent developments in the research of multiple *wh*-fronting.

The analysis by Golden (1997) was based on Rudin's (1988) division between languages with and without Multiply Filled Specifiers (MFS). Under Golden's analysis, Slovenian has properties of both [+MFS] languages (e.g. Bulgarian) and [-MFS] languages (e.g. Serbo-Croatian). Based on these facts, Golden claims that Slovenian has a [-MFS] structure, as in (5), in matrix *wh*-questions (which she terms 'direct' questions) and a [+MFS] structure, as in (6), with multiple extraction out of embedded sentences and movement out of *wh*-islands:

- (5) [ CP [SpecCP *wh*P [C' ...[IP *wh*P [IP]]]]]  
 (6) [ CP [SpecCP *wh*P [SpecCP *wh*P ...[C' [...]]]]] (Golden 1997)

Following a more recent line of work on *wh*-fronting (Bošković 1997a, 1997b, 1998, et seq., Stepanov 1998, and Stjepanović 1999, et seq.), I propose a different analysis of Slovenian. According to this research, superiority can be used as a diagnostic for determining the motivation of *wh*-movement, as well as the landing site of a moved *wh*-phrase.

While Rudin (1988) shows that languages such as Bulgarian always exhibit superiority effects and languages such as Serbo-Croatian do not, Bošković (1997b, 1997c, 1999, 2002) shows that Rudin's analysis does not account for all the available data from multiple *wh*-fronting languages. He shows that word order of *wh*-phrases is free in SC short distance matrix questions, but that word order is rigid in long distance questions, indirect questions, embedded questions with correlative constructions, and overt C questions (see Bošković 1997c). Bošković shows that the environments in which SC exhibits superiority effects are the same as environments in which French exhibits obligatory *wh*-movement. In addition, Bošković observes a parallelism between languages that always exhibit superiority effects (e.g. Bulgarian and Romanian) and languages that always have overt *wh*-movement (e.g. English) on the one hand and, on the other hand, between languages that never exhibit superiority effects (e.g. Russian) and languages that never exhibit *wh*-movement (e.g. *wh*-in-situ languages). This leads Bošković to posit a correlation between superiority and *wh*-movement: languages only exhibit superiority when *wh*-movement takes place. This means that SC short-distance *wh*-questions do not have *wh*-movement and, contra

Rudin (1988), there is no movement to Spec-CP in examples with no superiority. On the other hand, ‘real’ *wh*-movement (movement to check the [+wh] feature on C) occurs in SC long distance, overt C, and embedded questions where the first *wh*-phrase moves to Spec-CP. In determining the motivation of non-*wh*-fronting, Bošković (1997b, 1997c, 2002) follows Stjepanović (1995, 1998), who shows that, in Serbo-Croatian, contrastively focused phrases and *wh*-phrases exhibit parallel behavior in that focused phrases and *wh*-phrases occupy the same position. This suggests that focus is the motivation for movement.

Bošković (1998) argues that focus movement of *wh*-phrase does not exhibit superiority effects because the strong feature (i.e. the driving force behind movement) is in the moved element; the operation called Attract, as shown in (7). The strong features are found on the elements that undergo movement and consequently, it is irrelevant in which order they move as they must cross the same nodes in order to check their strong feature, hence, no superiority effects are found.

(7)	F	<i>wh</i> -phrase1	<i>wh</i> -phrase2	<i>wh</i> -phrase3
	+focus	+focus	+focus	+focus
	weak	strong	strong	strong

(Bošković 1998: (39))

As for the differences in environments with and without superiority, they can be explained by different options for the merge of C. In accordance with the Minimalist Program (Chomsky 1995), Bošković (1997c) states that an element and its features can be merged before or after spell-out (i.e. either at PF or LF). In examples without superiority effects (such as matrix questions in SC), the interrogative C is inserted in LF: a *wh*-phrase undergoes covert *wh*-movement to check the [+wh] feature on C and no overt *wh*-movement is needed. In environments with superiority effects, on the other hand, interrogative C with the [+wh] feature is inserted overtly and overt *wh*-movement proceeds to check the [+wh] feature (for example in SC embedded questions).

### 2.1 *Applying the theory to Slovenian*

Slovenian is a multiple *wh*-fronting language, as shown in (8), where all *wh*-phrases are moved to the clause initial position. Example (8) also shows that there is no strict word order of *wh*-phrases for the subject and

direct object in matrix questions (i.e. there are no superiority effects in matrix clauses). Example (9) shows that the same holds for the subject and the adjunct *wh*-word. However, as shown by Bošković (1997a), the word order of *wh*-phrases in matrix questions is not enough to establish where and why *wh*-phrases move. Thus, we must also look at embedded and long distance questions.

Examples (10) and (11) show that the word order of *wh*-phrases is free in Slovenian embedded questions (for argument and non-argument *wh*-phrases).

- (8) a. Kdo je koga poljubil?  
       who<sub>NOM</sub> is who<sub>ACC</sub> kisses  
       ‘Who kissed whom?’  
       b. Koga je kdo poljubil?
- (9) a. Kdo jekdaj poljubil Toneta?  
       who is when kissed Tone  
       ‘Who kissed Tone when?’  
       b. Kdaj je kdo poljubil Toneta?
- (10) a. Miha razmišlja, kdo je koga poljubil.  
        Miha thinks who<sub>NOM</sub> is who<sub>ACC</sub> kissed  
        ‘Miha is thinking about who kissed whom.’  
       b. Miha razmišlja, koga je kdo poljubil.
- (11) a. Miha razmišlja, koga je kdaj poljubil.  
        Miha thinks who<sub>ACC</sub> is when kissed  
        ‘Miha is thinking when did he kiss whom?’  
       b. Miha razmišlja kdaj je koga poljubil.

Most speakers of Slovenian find multiple long distance fronting from embedded clauses unacceptable (contrary to what Golden (1997) claims). Nevertheless, the examples are equally (un)acceptable regardless of the word order of fronted *wh*-phrases, as shown for argument *wh*-phrases in (12).

- (12) a. \*Kdo je komu Miha trdil Maji, da je  
        who<sub>NOM</sub> is who<sub>DAT</sub> Miha claimed Maja<sub>DAT</sub> that is  
        dal darilo?  
        give gift  
        ‘Who is Miha claiming to Maja, that have a gift to whom?’  
       b. \*Komu je kdo Miha trdil Maji, da je dal darilo?

Questions with overtly projected interrogative Q on C in Slovenian can be tested in questions with topicalized phrases. Topicalized phrases are, following Stepanov (1998), adjoined to CP; because they are adjoined to CP, the C (with the interrogative Q) needs to be projected overtly. The word order of fronted argument and non-argument *wh*-phrases in questions with topicalization is free (as in Russian, see Stepanov 1998). In addition, Slovenian behaves the same as Russian with respect to correlative sentences (see Stepanov 1998), but as in Russian, *wh*-words do not have interrogative meaning and the examples below in (13-15) are not questions.

- (13) a. V tej šoli, kdo koga vzgaja?  
           in this school who<sub>NOM</sub> who<sub>ACC</sub> educates  
           ‘In this school, who educates whom?’  
       b. V tej šoli, koga kdo vzgaja?
- (14) a. V tej šoli, kdo kako vzgaja?  
           in this school who<sub>NOM</sub> how educates  
           ‘In this school, who educates how?’  
       b. V tej šoli, kako kdo vzgaja?
- (15) a. Če bo kdo koga videl, bo ta tega spoznal.  
           if will who<sub>NOM</sub> who<sub>ACC</sub> see will this that recognize  
           ‘If somebody sees someone, he will recognize him.’  
       b. Če bo koga kdo videl, bo tega ta spoznal.

The examples above show that Slovenian never exhibits superiority effects. Following the analysis described above, this means that Slovenian never exhibits real *wh*-fronting (i.e. movement to check [+wh] feature) but that *wh*-phrases move to check the [+focus] feature. In addition, this indicates that movement does not proceed to CP.<sup>1</sup> We can

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<sup>1</sup> Another argument for different locations of multiple *wh*-fronting comes with the interpretation of multiple *wh*-questions. There exists a division between single-pair (SP) and pair-list (PL) answers and Bošković (2001a, 2002) shows that *wh*-movement to SpecCP forces a PL reading and that when no *wh*-element is overtly moved to Spec-CP both SP and PL answers are available. Bulgarian and Romanian only have PL answers, while Serbo-Croatian, Russian and Polish have PL and SP answers, which means the *wh*-phrases are moved below CP (Bošković 2002). This also holds in Slovenian, where an example like (i) can get two readings:

therefore conclude that *wh*-fronting in Slovenian is in fact focus fronting. In this sense, Slovenian is similar to other multiple *wh*-fronting languages, such as Russian (cf. Stepanov 1998). Consequently, we might also expect that, as in Russian (see example (3) in Section 1), *wh*-fronting is also obligatory in Slovenian. This, however, is not the case.

### 3 Restrictions on movement

In this section, I go over a set of restrictions that account for instances of *wh*-phrases remaining in situ in multiple *wh*-fronting languages (based on Bošković 2002). While multiple *wh*-fronting is said to be obligatory in multiple *wh*-fronting languages, multiple *wh*-movement can be avoided and a *wh*-phrase can stay in situ when movement would violate certain types of restrictions, including phonological, semantic and syntactic. I add the Principle of Distinctness (Richards 2010) to the list of restrictions on *wh*-movement. I show that these restrictions either do not apply to Slovenian and therefore, cannot be responsible for the optionality of multiple *wh*-fronting, or that they do apply to Slovenian, but do not account for all instances of optionality.

#### 3.1 Phonological restrictions

Bošković (1997b, 2001b, 2002) observes that, in Serbo-Croatian, *wh*-movement is typically obligatory but that *wh*-phrases do not have to move when they are phonologically identical or similar. According to Bošković (2002), the same restriction against sequences of homophonous *wh*-phrases also holds in Bulgarian, Russian, and Romanian.

This is shown in (16): (16a) is completely acceptable: the two *wh*-phrases are homophonous and one is left in situ; however, if both

- 
- (i) Kaj je kdo / kdo je kaj kupil?  
       what is who / who is what buy  
       ‘Who bought what?’

Two contexts and corresponding answers are possible:

1. *Single pair*: We are in a store and see a person buying an item, but cannot see who it was and what they bought. We ask (i). *Answer*: John bought pants.
2. *Pair list*: We know there is a group of people and that each of them bought something, but we do not know who bought what. We ask (i). *Answer*: John bought pants, Mary bought a cake, Tom bought coffee,...

homophonous *wh*-words are fronted and form a sequence, the question is ungrammatical (or marginally acceptable if the second *wh*-phrase is heavily stressed, see Bošković 2001b), as in (16b). In addition, when a sequence is not formed and the homophonous *wh*-phrases are divided by additional material, such as by an adverb in example (17), both *wh*-phrases must move (Bošković 2001b, 2002).

- (16) a. Šta uslovljava šta? *Serbo-Croatian*  
           what conditions what  
           ‘What conditions what?’ (Bošković 2002: (37))  
       b. \*Šta šta uslovljava?  
           what what conditions (Bošković 2001b: 102, fn. 5)
- (17) a. Šta neprestano šta uslovljava?  
           what constantly what conditions  
           ‘What constantly conditions what?’  
       b. ?\*Šta neprestano uslovljava šta?  
           what constantly conditions what (Bošković 2002: (38))

Bošković (2001b, 2002) accounts for the data with Franks’ (1998) proposal for the deletion of copies in PF. According to this proposal, the deletion of a tail of a non-trivial chain in PF is preferred. However, when the pronunciation of the head would lead to a PF violation, the lower copy is pronounced and the higher copy is deleted. This means that both of the *wh*-phrases move because of their [+focus] feature (see Section 2), as shown in (18) (cf. Bošković (2001b)). I am also ignoring the lower copy of the first *šta* (‘what’) but because the pronunciation of the higher copy of the second *šta* would lead to a PF violation, the lower copy is pronounced, as shown in (19).<sup>2</sup>

<sup>2</sup> A possible alternative analysis is presented in Bošković (2002): In accordance with Chomsky’s (1995) Move F analysis, the second *wh*-phrase moves only features but leaves phonological features behind (and the second *wh*-phrase is pronounced in situ). The first *wh*-phrase moves via phrasal movement.

(i) [FP Šta FF(šta<sub>i</sub>) [uslovljava šta<sub>i</sub>]]

Richards (2010), on the other hand, claims that the ungrammaticality of homophonous sequences is a consequence of Distinctness (see Section 3.4). The two *wh*-phrases have a syncretic form, which is visible when Distinctness applies, possibly because of Impoverishment, which deletes parts of the feature bundle (for example: in Greek, the Case feature is deleted when the feature Neuter is present (see Richards 2010)).

- (18) [FP Šta Šta<sub>i</sub> [uslovljava šta<sub>i</sub>]]  
 (19) [FP Šta ~~Šta<sub>i</sub>~~ [uslovljava šta<sub>i</sub>]]

Phonological restrictions limit movement in examples where *wh*-phrases are homophonous. To avoid sequences of homophonous *wh*-phrases, movement is suppressed and the lower copy is pronounced for one of the identical *wh*-phrases. The question is then if such a restriction also holds for Slovenian.

### 3.1.1 Phonological restrictions in Slovenian

Restrictions against sequences of homophonous *wh*-words do not hold in Slovenian. As (20a) shows, when both instances of *kaj* ('what') move, the question is grammatical but the second *wh*-phrase can also stay in situ in these examples, as in (20b). The same also holds for examples in which a sequence of homophonous *wh*-words is separated by an adverb (i.e. examples where the *wh*-phrase must move in SC). In Slovenian, the second *wh*-phrase can either move or stay in situ.

- (20) a. Kaj kaj pogojuje?  
           what what conditions  
           'What conditions what?'  
       b. Kaj pogojuje kaj?  
           what conditions what  
 (21) a. Kaj vedno kaj pogojuje?  
           What always what conditions  
           'What always conditions what?'  
       b. Kaj vedno pogojuje kaj?  
           what always conditions what

Based on the examples in (20) and (21), we can conclude that the optionality of Slovenian *wh*-fronting cannot be explained using phonological restrictions. In addition, there are many examples of questions with non-homophonous *wh*-phrases in which one of the

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Nonetheless, as Richards notes, not all languages are sensitive to syncretism (e.g. German).



phrases can stay in situ, such as (22). These examples cannot be accounted for using phonological restrictions.

- (22) a. Kdo obĉuduje koga?  
           who admires whom  
           ‘Who admires whom?’  
       b. Kdo koga obĉuduje?

### 3.2 *Semantic restrictions*

Following Bošković (2002), SC (but also Russian and Bulgarian) is limited by semantic restrictions, which only apply to D(iscourse)-linked phrases. As (23a) shows, a D-linked phrase can stay in situ and the sentence is grammatical. Example (23b) shows that the D-linked *wh*-phrase can (optionally) be fronted (which again also holds in Russian, Polish, etc.).<sup>3</sup> Further, Bošković (2002) notes that most Bulgarian speakers allow optional fronting of the D-linked *wh*-phrase, as shown in (24): example (24a) shows the D-linked phrase in situ and example (24b) demonstrates the optionally fronted D-linked phrase.

- (23) a. Ko je kupio koju knjigu? *Serbo-Croatian*  
           who is bought which book  
           ‘Who bought which book?’ (Bošković 2002: (26a))  
       b. ?Ko je koju knjigu kupio?  
           who is which book bought (Bošković 2002: (27))  
       (24) a. Koj e kupil koja knjiga? *Bulgarian*  
               who is bought which book  
               ‘Who bought which book?’ (Bošković 2002: (26b))  
           b. Koj koja knjiga e kupil?  
               who which book is bought  
               ‘Who bought which book?’

Bošković (2002) accounts for the SC data and the contrast between SC and Bulgarian with the motivation of *wh*-fronting in these languages. In SC, as shown in Section 2, *wh*-movement is essentially focus movement and *wh*-phrases are focused. On the other hand, D-linked phrases are present in the discourse and an answer to a D-linked phrase is

<sup>3</sup> I will be leaving single questions with D-linked phrases aside, but see Bošković (2002).

limited to familiar objects. As these elements are already given, they are not focused and therefore cannot undergo focus movement. In Bulgarian, on the other hand, *wh*-movement is not focus movement but rather movement to check the [+wh] feature. Since none of the *wh*-phrases move for focus reasons, it is not surprising that a D-linked phrase can move in Bulgarian.

As for examples in which the D-linked phrase moves in Serbo-Croatian, Bošković (2002) claims that these are grammatical because of scrambling; scrambling being optional. This would also explain why some speakers find (25) below grammatical (but marked):

- (25)   Kuju knjigu je ko kupio?  
          Which book is who bought  
          ‘Who bought which book?’

To summarize: The semantic restrictions described in Bošković (2002) account for the lack of fronting of D-linked phrases in languages in which *wh*-phrases undergo focus fronting, just as they do in Slovenian. The question is then, whether these restrictions also apply in Slovenian.

### 3.2.1 Semantic restrictions in Slovenian

D-linked phrases in Slovenian can stay in situ (26a) or move (26b). In addition, as (26c) shows, the order of fronted *wh*-phrases is free.

- (26) a.   Kdo je poljubil katero punco?  
           who is kissed which girl  
           ‘Who kissed which girl?’  
       b.   Kdo je katero punco poljubil?  
           who is which girl kissed  
       c.   Katero punco je kdo poljubil?  
           which girl is who kissed

Despite the fact that Slovenian *wh*-fronting is an instance of focus fronting and that D-linked phrases are not focused<sup>4</sup>, these elements can

<sup>4</sup> Note that Slovenian also behaves differently with respect to non-*wh*-focus phrases. While these have to move in SC (i) they do not have to move to a clause initial position in Slovenian.

still move in Slovenian. In addition, non-D-linked phrases can also stay in situ in Slovenian.

- (27) a. Kdo je poljubil koga?  
           who is kissed who  
           ‘Who kissed whom?’  
       b. Kdo je koga poljubil?  
           who is whom kissed

From these examples, we can conclude that the semantic restrictions described in Bošković (2002) cannot account for the optionality of Slovenian multiple *wh*-fronting.

### 3.3 Syntactic restrictions

According to Bošković (2002), syntactic restrictions are restrictions that apply to non-Relativized Minimality islands (i.e. non-*wh*-islands) in languages such as Romanian.

Following Chomorovski (1996), in Romanian, echo phrases must always front; this also holds for a context in which a non-echo *wh*-phrase cannot move. This contrast is shown below: a non-D-linked *wh*-phrase cannot be extracted out of a *wh*-island in Romanian (28a) but if the *wh*-question receives an echo intonation, the question is acceptable (28b):

- (28) a. \* [Ce<sub>i</sub> [ nu ştii [ cine<sub>j</sub> [e<sub>j</sub> a spus e<sub>i</sub> ] ] ] ?  
           what not you-know who has said  
       b. [Ce<sub>i</sub> [ nu ştii [ cine<sub>j</sub> [e<sub>j</sub> a spus e<sub>i</sub> ] ] ] ?  
           what not you-know who has said  
           ‘You don’t know who said what?’ Comorovski 1996: (10))

- 
- |      |   |  |
|------|---|--|
| (i)  | a. JOVANA savjetuje.<br>Jovan.ACC advises<br>‘(S)he advises Jovan.’<br>b. ?*Savjetuje JOVANA. | <i>Serbo-Croatian</i><br><br>(Bošković 2002: (17)) |
| (ii) | a. JOŽETU svetuje.<br>Jože.ACC advises<br>‘(S)he advises Jože.’<br>b. Svetuje JOŽETU.         | <i>Slovenian</i>                                   |

Following Comorovski (1996), Bošković shows that echo *wh*-phrases in Romanian can exceptionally stay in situ within non-*wh*-islands. Thus, while echo phrases must move in Romanian (at least in some dialects), as (29) shows for matrix questions, they stay in situ in non-*wh*-islands (31). *Wh*-movement out of an island is not allowed in true questions (30).

- (29) \*Ion a adus CE? *Romanian*  
 Ion has brought what (Bošković 2002: (53))
- (30) \*Ce<sub>i</sub> vă intrigă zvonul că ar fi cumpărat e<sub>i</sub>?  
 what you intrigues rumour-the that he-may be bought  
 (Comorovski 1996: (12a))
- (31) Vă intrigă zvonul că ar fi cumpărat  
 ou intrigues rumour-the that he-may be bought  
 CE?  
 what  
 ‘You are intrigued by the rumor that he may have bought what?’  
 (Comorovski 1996: (13a))

Bošković (2002) assumes that islandhood is syntactic in nature and based on this, he claims that the grammaticality of (31) can be accounted for under the Move F analysis (while feature movement is not subject to non-Relativized Minimality islands, phrasal movement is): Full phrasal movement of the echo *wh*-phrase in (30) is not possible but the *wh*-phrase can undergo feature movement, as in (31) (for more details, see Bošković 2002).

### 3. 3.1 Non-*wh*-islands as restrictions in Slovenian

In Slovenian, echo *wh*-phrases can stay in situ or move in matrix questions:

- (32) a. KOGA je Janez podkupil?  
 who is Janez bribe  
 b. Janez je podkupil KOGA?  
 Janez is bribe who  
 ‘Janez bribed WHO?’

Slovenian does not allow *wh*-fronting from syntactic islands for either *wh*-phrases or echo *wh*-phrases). This means that the syntactic restrictions described in Bošković (2002) always apply in Slovenian:

- (33) a. ?Janez je slišal govorico, da je Peter kupil kaj?  
 Janez is heard rumor that is Peter bought what  
 ‘Janez heard the rumor that Peter has bought what?’  
 b. Janez je slišal govorico, da je Peter kupil KAJ?
- (34) a. \*Kaj je Janez slišal govorico, da je Peter kupil?  
 What is Janez heard rumor that is Peter bought  
 b. \*KAJ je Janez slišal govorico, da je Peter kupil?

Since echo *wh*-phrases do not obligatorily front in Slovenian, it is not an exception that they can stay in situ in complex NP islands. However, as the examples in previous sections have shown, a *wh*-phrase can also stay in situ in questions without islands. Syntactic restrictions, therefore, cannot account for all available Slovenian data displaying optional movement.

### 3.4 Principle of Distinctness

Richards (2010) proposes the Principle of Distinctness as a restriction on similar objects appearing close together. The principle is stated as: Two nodes of the same type (e.g.  $\langle \alpha, \alpha \rangle$ ) in an asymmetric c-command relation cannot be linearized in the same Spell-Out domain.<sup>5</sup>

For Slovenian, this means that in multiple *wh*-fronting examples, there cannot be two *wh*-phrases of the same type in a single phase (Mišmaš 2013), as shown in (35). If *wh*-phrases have the same features (case and gender), the question is ungrammatical when both *wh*-phrases are fronted (i.e. are in the same phase). However, the question can be grammatical if one *wh*-phrase stays in situ (i.e. in a different phase). Multiple questions, however, are acceptable when both fronted *wh*-features differ in features, as in (36), where the two DPs have different gender features (a similar situation holds in Serbian and Croatian, see Richards (2010)). However, even in these examples a *wh*-phrase can stay in situ in Slovenian, (36b).

<sup>5</sup> ‘Same type’ means having the same label in some languages or having the same features in others. The notion Spell-Out domain coincides with a phase.

- (35) a. \*Kateri puncī kateri tetki ni zoprno  
 [Which girl]<sub>DAT.F</sub> [ which aunt]<sub>DAT.F</sub> not-be annoying  
 pomagati?  
 help<sub>INF</sub>  
 b. Kateri puncī ni zoprno pomagati  
 [Which girl]<sub>DAT.F</sub> not-be annoying help<sub>INF</sub>  
 kateri tetki?  
 [which unt]<sub>DAT.F</sub>  
 ‘Which girl is not annoyed to help which aunt?’
- (36) a. Kateri punčki katere starke ni zoprno  
 [which girl]<sub>DAT.F</sub> [ which old-lady]<sub>GEN.F</sub> not-be annoying  
 narisati?  
 draw<sub>INF</sub>  
 ‘Which girl is not annoyed to draw which old-lady?’  
 b. Kateri punčki ni zoprno narisati katere starke?

Nevertheless, while the Principle of Distinctness holds in Slovenian, it does not explain all occurrences of optional *wh*-fronting, as in (36b). Further, in (37) below, the two *wh*-phrases have different features yet can both be fronted without violating the Principle of Distinctness and there still exists the completely grammatical option of leaving a *wh*-phrase in situ, as in (37a); in this case, the accusative *wh*-phrase does not front.

- (37) a. Kdo gleda koga?  
 who<sub>NOM</sub> looks-at whom<sub>ACC</sub>  
 ‘Who is looking at whom?’  
 b. Kdo koga gleda?  
 who<sub>NOM</sub> whom<sub>ACC</sub> looks-at

To conclude this section: Slovenian is not affected by phonological and semantic restrictions on *wh*-movement, which hold in other multiple *wh*-fronting languages, but the language is affected by syntactic restrictions (no movement out of non-*wh*-islands and *wh*-islands is permitted) and the Principle of Distinctness. These two restrictions, however, do not account for all optionality; these patterns will be shown in next section.

#### 4 Patterns of *wh*-fronting in Slovenian

The main goal of this paper is to establish that optional *wh*-fronting is a valid pattern in multiple *wh*-fronting. While it was shown that Slovenian is a typical multiple *wh*-fronting language and that non-movement in Slovenian is not a result of restrictions on movement, it still has to be established how optionality is displayed in Slovenian. Below I show the typical patterns of multiple *wh*-fronting questions in Slovenian. I am only using questions with two *wh*-phrases but the same patterns hold for questions with three or more *wh*-phrases. They also hold for simple *wh*-phrases and D-linked phrases.

1. All *wh*-phrases move. As shown above, there are no superiority effects in cases where all the *wh*-phrases move. This pattern holds in both matrix and embedded questions (while multiple *wh*-movement out of embedded questions is not acceptable, cf. Section 2.1).

- (38) a. Kdo kaj kupuje?  
           who what buys  
           ‘Who buys what?’  
       b. Kaj kdo kupuje?
- (39) a. Janez sprašuje, kdo je kaj kupil.  
           Janez asks who<sub>NOM</sub> is what<sub>ACC</sub> buy  
           ‘Janez is asking, who bought what.’  
       b. Janez sprašuje, kaj je kdo kupil.

2. At least one *wh*-phrase moves, while the others stay in situ. This is again grammatical in matrix and embedded questions.

- (40) a. Kaj je Miha kupil komu?  
           what<sub>ACC</sub> is Miha buy who<sub>DAT</sub>  
           ‘What did Miha buy for whom?’  
       b. Komu je Miha kupil kaj?
- (41) a. Janez sprašuje, komu je Ana kupila kaj.  
           Janez asks who<sub>NOM</sub> is Ana buy what<sub>ACC</sub>  
           ‘Janez is asking what Ana bought for whom.’  
       b. Janez sprašuje, kaj je Ana kupila komu.

3. At least one *wh*-phrase moves to the left periphery, while the others move to a certain point (note that this is a valid option also in Polish, see Citko (2010)).

- (42) a. Kaj je Janez komu kupil?  
           what<sub>ACC</sub> is Janez who<sub>DAT</sub> buy  
           ‘What did Janez buy for whom?’  
       b. Komu je Miha kaj kupil?
- (43) a. Tone sprašuje, kaj je Janez komu kupil?  
           Tone asks what<sub>ACC</sub> is Janez who<sub>DAT</sub> buy  
           ‘Tone is asking what Janez bought for whom.’  
       b. Tone sprašuje, komu je Janez kaj kupil.

4. No *wh*-phrases move. I include this pattern in the list because one might expect it. However, these questions are not acceptable under a true question reading. Nevertheless, they are acceptable as echo questions. (When *komu* (‘who’) and *kaj* (‘why’) are pronounced without emphasis, (44) receives a yes/no-question interpretation).

- (44) Miha je kupil KOMU KAJ?  
       Miha is bought who<sub>DAT</sub> what<sub>ACC</sub>  
       ‘What did Miha buy for whom?’

What we end up with is a complicated set of questions which all have a common property that at least one *wh*-phrase must move. However, all of the types of questions still need to be explained. This is a topic of ongoing work. What is hopefully clear from the data presented in this paper is that a simple selection of a head with or without an EPP feature will not suffice, as this would only allow for a difference between move nothing or move all *wh*-phrases in questions. Rather, some of the responsibility has to be assigned to *wh*-phrases themselves. Future work then has to focus on an account that captures all three patterns, the fact that the patterns hold for embedded and matrix questions and that no superiority effects are found in any of these questions.



## 5 Conclusions

Based on Slovenian data, we can conclude that multiple *wh*-fronting is not universally obligatory in multiple *wh*-fronting languages. In addition, the restrictions on movement that were previously observed do not affect all multiple *wh*-fronting languages. There are instances of optionality in Slovenian that cannot be accounted for with phonological, semantic, syntactic restrictions or the Principle of Distinctness. Three patterns of questions arise in Slovenian due to the availability of optionality: (i) all *wh*-phrases move,; (ii) at least one *wh*-phrase moves while the others stay in situ; and (iii) at least one *wh*-phrase moves to the left periphery and the others move to a certain point.

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## **On the Scope of Aspectual Operators<sup>\*</sup>**

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I argue that the imperfective progressive operator is a V-operator in Russian and a VP-operator in Germanic and support this by two sets of contrasts between Russian and English involving temporal modification and numerical incremental themes. This suggests a generalization of Filip & Rothstein's (2006) proposal that perfectivity is a V-operator in Slavic and a VP-operator in Germanic to other aspectual operators, specifically the progressive interpretation of imperfective root verbs.

### **1 The proposal**

Filip & Rothstein (2006) propose a *semantic telicity parameter*:

- (1) **The semantic telicity parameter:**  
Perfectivity is associated with V scope in Slavic and with VP scope in Germanic.

Perfectivity is associated with a maximalization operator operating on the V in Slavic and on the VP in Germanic, which yields a set of maximal, atomic events. Filip & Rothstein argue that telicity is derived

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from maximality and atomicity and thus, as a result, the V is telic in Slavic while the VP is telic and maximal in Germanic. This proposal is supported by a contrast in aspectual composition noted in Krifka (1992), who ascribes the insight to Wierzbicka (1967) for Polish. In English, the telicity or atelicity of the VP is apparently determined by the properties of the incremental theme argument: A bare theme argument usually forces an atelic interpretation of the VP, while a definite theme argument forces a telic interpretation, as in (2):

- (2) a. John drank wine for an hour/#in an hour.  
 b. John drank the wine in an hour/#for an hour.

However, in Slavic languages, this situation is reversed and the perfective or imperfective status of the V determines the interpretation of the theme. In (3), from Czech, the imperfective verb highly privileges an indefinite reading of the bare NP theme, while the perfective V forces a definite interpretation of the bare NP. Thus, it is clear that the semantic properties of the V are determined before the direct object is attached. (For details see Filip & Rothstein 2006).

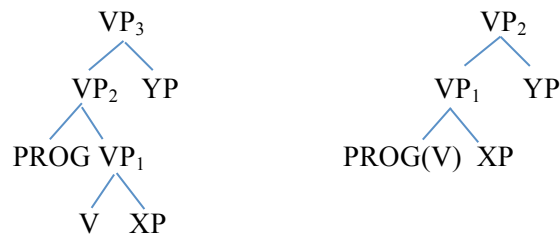
- (3) a. Ota pil vino.  
 Ota drank<sub>IMPF</sub> wine  
 'Ota drank wine/?the wine.'  
 b. Ota vypil vino.  
 Ota drank<sub>PERF</sub> wine  
 'Ota drank the wine/#wine.'

Given the analysis in Filip & Rothstein, it is plausible to ask whether a similar contrast in scope of aspectual operators occurs with the imperfective. Restricting discussion to progressive interpretations of imperfective root verbs such as (3a) (so-called 'root imperfectives'), and to the contrast between Russian and English, I suggest, analogously to (1), that the progressive operator associated with imperfective morphology varies in scope in the same way as perfectivity. This suggests the parameter in (4):

- (4) **The progressive (imperfective) parameter:**  
 The progressive operator has scope over V in root imperfectives in Russian and scope over VP in English.

(4) predicts the following structures:

- (5) a. English:                      b. Russian:



(For simplicity of exposition, I have labeled all projections of the V head VP. This correctly indicates that we are interested in the contrast between lexical projections and phrasal projections.)

The structures in (5) represent the fact that, in English, PROG, the progressive operator, has scope over the low VP (here called VP<sub>1</sub>). Material adjacent to the V is under the scope of PROG. As (5a) indicates, adverbials which are adjacent to VP (and in YP position) will be outside the scope of PROG. By hypothesis, in Russian, PROG has scope over V. This means that all material outside V, including all temporal adverbials, is outside the scope of PROG. This hypothesis makes very strong empirical predictions which we will now examine. In Section 2, we discuss the interaction between temporal adverbials and the progressive operator, and in Section 3 we look at the contrasts in the distribution of incremental theme arguments discussed in Mehlig (2008). As I will show, in both cases, the differences between Russian and English are explained by the structures in (5).

## 2 Temporal Adverbials

### 2.1 The predictions

The temporal adverbials we are interested in are verbal modifiers, dominated by VP, which express temporal properties of the events in the denotation of verbal projections. They can thus modify any projection of

the V. By hypothesis, in English, PROG is a VP operator. It follows, as indicated that (5a), that temporal adverbials adjacent to V are dominated by VP<sub>1</sub> and thus under the scope of PROG, while those adjacent to VP<sub>1</sub> are outside the scope of PROG. If PROG is a V operator, as hypothesized for Russian, all temporal modifiers are outside its scope, however high in the VP they are. This is represented in (6), with the scope of the operator marked by a bracket:

- (6) a. English:  $[[\text{PROG} [ \text{V} \text{ ADV}_{\text{temporal}} ]_{\text{VP1}}] \text{ ADV}_{\text{temporal}}]_{\text{VP2}}$   
       b. Russian:  $[[ (\text{IMPF}_{\text{PROG}}(\text{V})) \text{ ADV}_{\text{temporal}} ]_{\text{VP1}} \text{ ADV}_{\text{temporal}} ]_{\text{VP2}}$

This makes very clear predictions. Example (7) is predicted to be ambiguous in English, since the durative can, but need not be, under the scope of PROG, depending on whether it is within VP<sub>1</sub> or adjacent to it, but its Russian counterpart in (7b) should be unambiguous, since the durative must be outside the scope of the progressive operator associated with the imperfective root verb, no matter how low it is adjoined.

- (7) a. John was working for two hours.  
       b. Ivan rabotal dva časa.  
           ‘Ivan worked<sub>IMPF-PAST</sub> two hours.’

In the next sections, we examine the interpretations of these sentences in English and in Russian and show that these predictions are correct.

## 2.2. English

As is well known, durative adverbials such as *for a time* modify atelic or homogeneous predicates (state and activities), while *in a time* modifies telic or quantized predicates, as in (8-9). PROG takes either a telic or atelic VP as its complement as in (10), and the resulting VP is atelic:

- (8) a. John ran for two hours.  
       b. John slept for two hours.  
       c. #John built a house for two weeks  
       (9) a. #John ran in an hour.  
           b. #John slept in an hour.  
           c. John built a house in a year

- (10)a. John was running for two hours.  
 b. John was sleeping for two hours.  
 c. John was building a house for 6 months (but then he stopped).

We assume an interpretation for the progressive operator PROG, based on Landman (1992), in which PROG applies to a set of events and gives the set of parts of/stages of those events.<sup>1</sup>

- (11) John was running =  
 John be [PROG[run]] =  
 $\exists e \exists e' [e \in \text{RUN}: e' \sqsubseteq_{\text{stage}} e \wedge \text{Ag}(e') = \text{JOHN}]$   
 'There is an event  $e'$ , which is a stage of a RUN event  $e$ , and John is agent of  $e'$ .'  
 (12) John was building a house =  
 John be [PROG[build a house]] =  
 $\exists e \exists e' [e \in \text{BUILD A HOUSE}: e' \sqsubseteq_{\text{stage}} e \wedge \text{Ag}(e') = \text{JOHN}]$   
 'There is an event  $e'$  which is a stage of a BUILD-A-HOUSE event  $e$ , and John is agent of  $e'$ .'

PROG( $\text{VP}_1$ ), the result of applying the progressive operator, denotes a set of stages of the events in the denotation of  $\text{VP}_1$ . The intensionality of the progressive follows from a modal restriction on PROG (which I have not included in (12)), and the precise definition of 'stage' (Landman 1992). The imperfective paradox follows: A stage of a running event is itself a running event, while every stage of a build-a-house event, except the complete event, is not an event in *build a house*. PROG has scope over the  $\text{VP}_1$  and thus over  $\text{VP}_1$  internal temporal adverbials, but not over adverbials external to  $\text{VP}_1$ . Thus, we predict a contrast in interpretation depending on the position of the adverbial.

Since *in*-adverbials modify telic predicates and progressive VPs are atelic, any *in*-adverbial must be under the scope of PROG. Thus, in examples like (13), *in a month* modifies *build a house* and *build a house in a month* is the complement of the progressive operator.

- (13) John is so busy because he is *building a house in a month*. (He is not nearly finished and there is only a week before the

<sup>1</sup> This is a simplified extensional version of the intensional semantics in Landman 1992.

deadline.)

John be PROG[build a house in a month]

$\exists e \exists e' [e \in \text{BUILD A HOUSE IN A MONTH}: e' \sqsubseteq_{\text{stage}} e \wedge$

$\text{Ag}(e') = \text{JOHN}]$

'There is an event  $e'$  going on which is a stage of a BUILD-A-HOUSE-IN-A-MONTH event  $e$ , and John is the agent of  $e'$ .'

*For*-adverbials modify atelic predicates. When PROG applies to an atelic predicate, the adverbial can either come under the scope of PROG (and modify the lower atelic predicate) or above it (modifying [PROG VP]). The interpretations of the two structures are different. Take (7a), which for simplicity, we will put in the present tense: *John is working for two hours*. The reading in which *for two hours* applies to the V *work* and PROG applies to the VP *work for two hours* is given in (14):

- (14) John be [PROG[work for two hours]] =  
 $\exists e \exists e' [e \in \text{WORK} \wedge \text{DUR}(e) = 2 \text{ HOURS}: e' \sqsubseteq_{\text{stage}} e \wedge \text{Ag}(e') = \text{JOHN}]$   
 'There is an event  $e'$  going on which is a stage of a WORK-FOR-TWO-HOURS event  $e$ , and John is agent of  $e'$ .'

Crucially, *for two hours* gives the length of the complete event. PROG applies to *work for two hours* to give a set of stages of that event. These stages will (usually) have a duration of less than two hours. The stage which witnesses the assertion is the stage which culminates at the speech time. Here is a plausible context, in which we learn that this stage has lasted one hour<sup>2</sup>: I call at 2pm and ask to talk to John. You answer: "John is working for two hours and cannot be disturbed. You can talk to him at three o'clock." Some other examples are given in (15):

- (15)a. John is resting for an hour, then he is going to do his maths homework. Please wake him in 30 minutes.  
 b. The cake is baking for an hour. Please take it out in 35 minutes.

Past tense examples work similarly:

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<sup>2</sup> Landman 2008 gives a semantics for the progressive in which the witness stage for a present tense progressive assertion must be the stage which culminates at the speech time.



- (16)a. I was sleeping for two hours, but the phone went after an hour and woke me up (so I only slept for an hour).  
 b. John was working for two hours but the guests arrived in the middle and he had to stop (so he only worked for an hour).

In contrast to (14), *for two hours* can also apply to PROG(VP). It then has scope over PROG and modifies the denotation of [PROG VP], the set of stages of events in VP. This is illustrated in (17). Since PROG applies to the telic VP *build a house*, the *for*-adverbial must apply to VP<sub>2</sub>, i.e. [PROG VP], since it is the only atelic VP available:

- (17) John was building a house for five years. (Then he stopped.)  
 John be [[PROG[build a house]] for five years] =  
 $\exists e \exists e' [e \in \text{BUILD A HOUSE}: e' \sqsubseteq_{\text{stage}} e \wedge \text{Ag}(e') = \text{JOHN} \wedge \text{DUR}(e') = 5 \text{ YEARS}]$   
 'There was an event  $e'$  going on which is a stage of a build-a-house-event  $e$  and that stage  $e'$  lasted five years and John was the agent of  $e'$ .'

Since *for five years* has scope over PROG VP, it modifies the set of stages of build-a-house events and the sentence asserts that the witness event, the incomplete house-building event, lasted five years.

Although, in principle, *for*-adverbials can occur both inside and outside the scope of PROG, grammatical constraints or context often make one or other position more likely. When the VP is telic, the only position for *for*-adverbials is outside PROG(VP), since PROG(VP) is the only atelic predicate available. Thus, (17) only has the reading in which *for five years* gives the length of the stage and not the completed event. When the verbal predicate is atelic, the temporal durative can in principle occur in the lower position (as in (16)) or the higher position, as in *John was working for ten hours all night yesterday*. However, it is often more natural to use the past simple for completed atelic eventuality descriptions, as in (18a), and the progressive of the perfect when the durative modifies [PROG VP] in the present tense, as in (18b-c).

- (18)a. John worked for ten hours/all night.  
 b. John has been sleeping for two hours. (Shall I wake him?)  
 c. John has been building a house for five years.

(18b) asserts that an (incomplete) stage of a house-building event started five years ago and has carried on up to the present, lasting for 5 years.

To complete this brief discussion of the scope of temporal adverbials in English, we note that combinations of *for*-adverbials and *in*-adverbials are possible in English. When the restrictions imposed by the progressive do not hold, either order is possible. In (19a), *in a month* is the lower adverbial, since it modifies the individual telic events of building a house in a month. Example (19a) asserts that this was John's habitual behaviour for five years, with *for five years* modifying the habitual. In (19b), the converse is the case. *In a month* is the higher adverbial, telling us how long it took for the event *walk for half an hour* to come about.

- (19)a. John built houses in a month for five years. After that, the shortage of labour and the strikes meant that it took much longer.
- b. After the operation, John could walk for half an hour in a month.

Both the adverbials in (19) can come under the scope of PROG:

- (20) John was building houses in a month for two years, but because of the labour crisis, he often didn't finish them on time, and finally he gave up after a year.

In the next section, we compare these data with data from Russian.

### 2.3 Russian

In Russian, imperfective morphology is associated with several possible interpretations, including a durative, a habitual and a progressive (Mehlig 2006). We are concerned here only with the progressive interpretation of imperfective root verbs, which we assume is associated with an operator PROG, analogous in interpretation to English PROG, but with scope over V. If PROG is a V-operator in Russian, we predict that all temporal adverbials have scope over PROG, as in (6b) above. This means that in the progressive interpretation of the imperfective, the durative modifier equivalent to *for an hour* is incorporated outside the scope of PROG and can only modify the set of stages of V. Thus it gives only the temporal properties of the event stages. This predicts that the reading given in (14) will never be available. This appears to be correct:

- (21) Ivan rabotal                      dva časa.  
       Ivan work<sub>IMPF-PAST</sub>        two hours  
       ‘Ivan had been working for two hours (at that moment).’

Example (21), on the surface, seems to be a direct translation of (7a).<sup>3</sup> The V has a progressive meaning and is modified by the durative adverb. However, (21) has only the interpretation where the durative modifies the event stage which has already taken place and not the reading we gave for the past tense version of (14) above, namely ‘Ivan was in the middle of working for two hours.’ The sentence in (21) can only be used to assert that the stage of Ivan’s working which has already taken place has lasted two hours. In fact, my informants prefer the sentences if *uže* (‘already’) is added, reinforcing the fact that this is the only interpretation available.<sup>4</sup>

- (22) Ivan rabotal            uže        dva    časa.  
       Ivan work<sub>IMPF-PAST</sub> already two hours  
       ‘Ivan had already been working for two hours (at that moment).’

That this is the only reading available is predicted by the structure in (5b). If PROG has scope over the V, then the only possible reading is (23), parallel to the English (17) and not to (14).

- (23) Ivan [(PROG(rabotal)) dva časa] =  
 $\exists e \exists e' [e' \sqsubseteq_{\text{stage}} e \wedge e \in \text{WORK} : \text{Ag}(e') = \text{JOHN} \wedge \text{DUR}(e') = 2 \text{ HOURS}]$   
       ‘There is an event  $e'$  going on which is a stage of a WORK event,  $e$ , and the duration of the stage  $e' =$  two hours and Ivan is the agent of  $e'$ .’

The contrast with English holds also in the present tense. While *John is working for two hours* asserts that currently, John is in the middle of a work event whose total duration will ultimately be two hours, as is

<sup>3</sup> Note we discuss a past tense example in (21) and a present tense example in (14). This is because it is easier to make the point this way. As the discussion below shows, the same constraints on interpretation hold in the present in Russian.

<sup>4</sup> Mehlig (2008) points out that these sentences are infelicitous on a progressive reading, but he gives a different analysis, as we will discuss in Section 3.

shown in (14), (24) has only the interpretation where Ivan has already been working for two hours. Again, it is preferred to insert *uže*:

- (24) Ivan rabotaet            uže       dva   časa  
       Ivan work<sub>IMPF-PRES</sub>    already   two   hours  
       ‘Ivan has already been working for two hours’

Example (25) gives another example illustrating the same point.

- (25) Context: my cat is having her afternoon rest. She usually sleeps for three hours.  
       a. My cat is sleeping for three hours, then she will wake up and mew at the door! I guess that will be in about an hour.  
       b. ?sejčas ona spit            tri   časa   a potom pojdet mjaukat’  
           now she sleep<sub>IMPF-PRS</sub> three hours and then will go to mew  
           pod dver’ju.  
           under door.  
       *Intended:* ‘Now she is sleeping for three hours and then she will go and mew under the door.’

Example (25a) is perfect. Example (25b) is odd to all informants. For many of them, it only has the reading in which the cat has already been asleep for three hours. This is the reading in which the temporal modifier has scope over the imperfective operator. The continuation in (26) is impossible:

- (26) #eto proizojdet    gde-to       čerez   čas.  
       this occur<sub>PERF-FUT</sub> somewhere   over/in   hour  
       ‘This will happen in about an hour.’

Informants who do get the reading equivalent to (25a) nonetheless find the sentence very odd. Again, (25b) is improved by adding *uže*, clearly indicating that the durative has scope over the progressive operator:

- (27) ona spit uže tri časa, značit skoro pojdet  
 she sleep<sub>IMPF-PRS</sub> already three hours, means soon will go  
 mjaukat' pod dver'ju.  
 to mew under door.  
 'She has been sleeping already for three hours, this means she  
 will go and mew under the door soon.'

Even in *when*-clauses, the reading parallel to (14) is not available:

- (28) kogda ja prišla domoj, Ivan spal ?(uže) dva  
 when I came home, Ivan sleep<sub>IMPF-PAST</sub> already two  
 časa  
 hours.  
 'When I got home, Ivan had already been asleep for two hours.'

The reading 'When I got home, Ivan was in the process of sleeping for two hours' simply is not available for (28). The only reading available is the past perfect reading given, again reinforced by *uže*.

There seems to be no way to get exactly the meaning in (25a). The future perfective, as in (29), implies that the cat is not yet asleep, or has only just fallen asleep, or will sleep three hours from the point of speech:

- (29) sejčas kak vseгда ona pospit/prospit časa tri a  
 now as always she sleep<sub>PERF-FUT</sub> hours three and  
 potom pojdet mjaukat' pod dverju.  
 then will go mew under door  
 'Now as usual she will sleep for about three hours and then she  
 will go to mew at the front door.'

Note that a durational modifier is also possible in the following context:

- (30) Context: A is B's personal trainer and tells her what the plan is:  
 tak my sejčas begaem desjat' minut, potom  
 so we now run<sub>IMPF-PRES</sub> ten minutes, then

prygaem      pjat' minut, a      potom spim      dva  
 jump<sub>IMPF.PRS</sub>      five minutes, and then      sleep<sub>IMPF.PRS</sub>      two  
 časa.  
 hours.  
 'So we will run for ten minutes, then we will jump for five  
 minutes, then we will sleep for two hours.'

Here, the durational modifier modifies the 'complete' event and has scope over the imperfective verb. The list context is crucial, since it forces a reference to types of activity.

The conclusion is that, unlike in English, durative temporal modifiers must scope over the progressive operator with imperfective root verbs in Russian. This supports the hypothesis that progressive IMPF is a V-operator in Russian and a VP-operator in English.

Our claim is further supported by the distribution of *za*-adverbials, the Russian equivalent of English *in a time*. *Za*-adverbials can modify naturally telic imperfective predicates, as in (31a-b), but only if the verb denotes a completed event, as (31c) shows. As the glosses indicate, the interpretation is generic or habitual.

- (31)a.    oni      stroili      dom      za      mesjac.  
          they   build<sub>IMPF-PAST</sub>   house   in   month  
          (The team was really efficient:) 'They used to/could build a  
          house in a month.'
- b.    # Ivan   spal      za      dva   časa.  
          Ivan   sleep<sub>IMPF-PAST</sub>   in   two   hours  
          *Intended*: 'Ivan used to sleep in two hours.'
- c.    # oni   stroili      dom/      doma      za      mesjac,  
          they build<sub>IMPF-PAST</sub>   house<sub>SG</sub> / house<sub>PL</sub>   in   month,  
          no    nikogda ego/   ix      ne   zakančivali  
          but   never   it/      them   not finish<sub>IMPF-PAST</sub>  
          *Intended*: 'They used to/could build a house/houses in a  
          month, but never finished it/them.'

The reading that we had in English in (20), where the progressive operator had scope over *build houses in two months* and allowed incompleting house-building events, is totally impossible here.

So far, we have discussed the progressive operator, and have seen good evidence that the progressive has scope over the imperfective verb in Russian and not over VP. However, this does not extend simply to other operators associated with the imperfective, such as the habitual, as the acceptability of (31) shows. Informants are divided about the naturalness of scoping a durative under the habitual operator in examples such as (32), and often the secondary imperfective is preferred.

- (32) *kogda Ivan vozvraščaetsja s raboty on vseгда*  
 when Ivan returns from work, he always  
*spit svoi dva časa.*  
 sleep<sub>SIMPR-PRES</sub> his two hours.  
 ‘When Ivan returns from work, he always sleeps two hours.’

When temporal adverbials are stacked, as in (33), many people prefer the secondary imperfective. In (33a), *vysaživala* is derived by applying secondary imperfectivization to the perfective *vysadit* (‘to plant’), which denotes a set of singular planting events. *Za polčasa* modifies it, giving the set of singular planting events, which last half an hour. The habitual introduced by the secondary imperfective has scope over this phrase. In (33b), the habitual is associated with a root imperfective taking scope over V + *za polčasa*. This is dispreferred by many (but not all) people.

- (33) Context: Ivan and Masha have *dača* and they are very fond of gardening. Ivan complains that Masha is not as young and energetic as she used to be....
- a. *v tečenie pervyx pjati let ona vysaživala*  
 during first five years she plant<sub>IMPRF2-PAST</sub>  
*rassadu za pol časa.*  
 seedling in half hour  
 ‘During the first five years she would plant (the) seedlings in half an hour.’

- b. ? v        tečenie pervyx pjati    let    ona    sažala  
               during first               five    years she    plant<sub>IMPRF-PAST</sub>  
               rassadu za pol časa.  
               seedling in half hour  
               ‘During the first five years she would plant (the) seedlings in  
               half an hour.’

Further discussion of habituais is beyond the scope of this paper.

### 3 Incremental Themes

Our claim that the progressive operator has scope only over V explains restrictions on incremental themes in progressives, discussed in Mehlig (2008), who attributes the original observations to Košev (1996: 169). Mehlig shows that numerical or quantity NPs are not possible as incremental themes of accomplishment verbs, as shown in (34):

- (34)a. sečas Maša varit                100 grammov mjas.  
           now Masha cooks<sub>IMPF-PRES</sub> 100 grams of meat  
           ‘Masha is cooking 100 grams of meat now.’  
       b. # sečas Maša est                100 grammov mjas.  
           now Masha eats<sub>IMPF-PRES</sub> 100 grams of meat.  
           ‘Masha is eating 100 grams of meat now.’

This restriction is peculiar to the progressive interpretation of imperfective aspect. (35a), where the imperfective is interpreted as habitual (and includes the optional distributive marker *po*), and (35b), with the perfective, are both acceptable.

- (35)a. Maša est                (po) 100 grammov mjas v den’  
           Masha eats<sub>IMPF-PRES</sub> DIST 100 grams meat in day/  
           každyj den’.  
           every day.  
           ‘Every day, Masha eats 100 grams of meat.’  
       b. včera Maša s’ela                100 grammov mjas.  
           yesterday masha eat<sub>PERF-PAST</sub> 100 grams meat  
           ‘Yesterday, Masha ate 100 grams of meat.’



Mehlig points out that measure complements, as in (36), are restricted in the same way as incremental themes and also notes that the restriction applies to temporal modifiers, citing (37), analogous to (21) above:

- (36) gde Igor'? # on begaet dva kilometra.  
 where Igor? He run<sub>IMPF-PRES</sub> two kilometers  
*Intended:* 'Where is Igor? He is running two kilometres.'
- (37) kogda ja prišel, Igorja ne bylo. # on begal dva  
 when I arrived Igor not was. He run<sub>IMPF-PAST</sub> two  
 časa.  
 hours.  
*Intended:* 'When I arrived, Igor wasn't there. He was  
 running for two hours'.

Mehlig also points out that numerical plural themes are possible when all of the atomic parts of the theme are involved in the event simultaneously:

- (38) Igor' est dva jajca, kotorye ja emu  
 Igor eat<sub>IMPF-PRES</sub> two eggs, which I for-him  
 prigotovil.  
 made<sub>PERF-PAST</sub>  
 'Igor is eating two eggs I have made for him.'

Example (38) is an acceptable description of the situation in which the eggs are scrambled together, or Ivan is eating a two-egg omelette, but not if he is eating the two eggs one after the other. Similar facts are shown by (39). Example (39a) is only acceptable in the (unusual) situation in which both books are being read simultaneously. (39b-c) are infelicitous as continuations.

- (39) a. Igor' čitaet dve knigi, kotorye emu  
 Igor read<sub>IMPF-PRES</sub> two books which to-him  
 dali.  
 give<sub>PERF-PAST</sub>  
 'Igor is reading two books which have been given to him.'
- b. #vtoruju on ešče ne načal čitat'.  
 second he yet not start<sub>PERF-PAST</sub> read<sub>IMPF-INF</sub>.  
*Intended:* 'The second one he has not started reading yet.'

- c. #pervuju on uže pročital.  
 first, he already read<sub>PERF-PAST</sub>  
*Intended:* 'The first one he has already read.'
- (40) a. on rešaet dve zadački , kotorye emu  
 he solve<sub>IMPF-PRES</sub> two problems which to-him  
 dali.  
 give<sub>PERFS-PAST</sub>  
 'He is solving two problems given to him.'
- b. #vtoruju on ešče ne načal rešat'.  
 second he yet not start<sub>PERF-PAST</sub> solve<sub>IMPF-INF.</sub>  
*Intended:* 'The second one he has not started solving yet.'
- c. #pervuju on uže rešil.  
 first, he already solve<sub>PERF-PAST</sub>  
*Intended:* 'The first one he has already solved.'

Mehlig (2008) suggests that the progressive (what he calls the 'focalized progressive reading') asserts that an event is going on at a time of evaluation E. Since the de facto length or duration of the event and the overall quantity of the incremental participant is not determined until after the event is completed, it is inappropriate to specify a quantity property of the whole event when it is still in progress. Mehlig writes:

"The actual amount consumed, as denoted by the incremental complement, can only be determined when the situation in question has ended. However, using the impf. aspect in its focalized processual reading means that the situation denoted is presented before its possible end. In other words, there is a contradiction between the focalized-processual impf. aspect denoting the situation before its end and the information about the amount of the meat eaten, which will only be known after the situation has reached its end." (Mehlig, 2008, page 270)

This inappropriateness explains the infelicity of the examples cited. In (34b), (36) and (37), there is a contradiction between the 'point of view' of the speaker at the utterance time E and the content of the sentence, which cannot be known at E.

A closer look shows that that this explanation is not adequate. First, as a pragmatic explanation, it should hold cross-linguistically but examples comparable to (38-40) are acceptable in English, even though they exhibit the same 'contradiction' described above.

- (41)a. Mary is reading two books by Virginia Woolf for her literature class. She hasn't started the second one yet.  
 b. John is solving two maths problems at the moment. He is still working on the first.  
 c. Jane is doing her homework. She is colouring in four pictures. She still has two more to do.  
 d. Don't disturb John. He is wrapping 25 parcels. He has done 7 and he has another 18 to go.

Second, Mittwoch (2012) discusses sentences like (42a), which are infelicitous in English. She gives the same explanation for this infelicity that Mehlig proposes for the infelicitous Russian examples. However, she supports her explanation by showing that in the appropriate 'hindsight' context in (42b), the sentence becomes acceptable.

- (42)a. #The level of the lake was rising two meters when I arrived.  
 b. The level of the lake was rising two meters when I arrived.  
 But I couldn't know that at the time.

However, while context improves the examples in English, the parallel example in Russian does not seem to improve in the same way:

- (43) # kogda my priexali uroven' vody podnimalsja/  
 when we arrive<sub>PERF-PAST</sub> level water rise<sub>IMPF-PAST</sub>/  
 padal na dva metra no my ètogo ešče  
 fall<sub>IMPF-PAST</sub> on two meters, but we this yet  
 ne znali  
 not know<sub>IMPF-PAST</sub>  
*Intended:* 'When we arrive the water was rising/falling two meters, but we didn't know that yet (at that point).'

If the 'hindsight' context does not improve the sentence in Russian, it seems that a different, non-pragmatic explanation of the data is needed.

The hypothesis that the progressive operator has VP scope in English but V scope in Russian allows us to give a grammatical explanation of the contrast between the data in English and in Russian. On the assumption that PROG has scope over VP in English, *Mary is reading two books* will have the interpretation in (44):

- (44) Mary is reading two books.  
 Mary be [PROG[read two books]<sub>VP</sub>]<sub>VP</sub>  
 $\exists e \exists e' [e \in \text{READ TWO BOOKS}: e' \sqsubseteq_{\text{stage}} e \wedge \text{Ag}(e') = \text{MARY}]$   
 ‘There an event  $e'$  going on which is a stage of an event  $e$  in  
 READ-TWO-BOOKS, and the agent of  $e'$  is Mary.’

Example (44) asserts that there is an event which is part of (or a stage of) a read-two-books event. The theme argument *two books* is of course sister to the V and dominated by VP. PROG has scope over this VP. This means that, as we see in (44), *two books* is the theme of the complete event. The progressive operator derives a set of stages of complete read-two-books events and the sentence asserts that a stage of a read-two-books event took place, but does not specify which stage it was nor, crucially, what part of the two books was the theme of this event-stage. In order to make the assertion in (44) felicitous, there must be enough evidence to warrant positing that  $e'$  really is a stage of a read-two-books event and for the sentence to be true, there must be evidence that ultimately, if the event runs its full course, both books will be read. However, both books do not need to be involved in the partial event, or event stage, which supports the assertion (44).

Now compare the Russian sentence (45), taken from (39a), which, without a special context indicating simultaneous reading, is infelicitous.

- (45) # v dannyj moment , Igor' čitaet dve knigi  
 at given moment Igor read<sub>IMPR-PRES</sub> two books  
*Intended:* ‘At the moment, Igor is reading two books’

We assume that PROG has scope over V, giving the meaning in (46):

- (46)  $\exists e \exists e' [e \in \text{READ}: e' \sqsubseteq_{\text{stage}} e \wedge \text{Ag}(e') = \text{IVAN} \wedge \text{Th}(e') = \text{two books}]$   
 ‘There an event  $e'$  going on which is a stage of a reading event  $e$ ,  
 and the agent of  $e'$  is Ivan and the theme of  $e'$  is two books.’

The progressive operator applies to the event denoted by *čitaet* and gives the set of stages of reading events. The theme argument, like the durative modifier discussed in Section 2, is outside the scope of the progressive V and is thus an argument not of the V but of [PROG V]. This means that

*dve knigi* is the theme of the event stage and not of the complete event. Thus, (45-46) asserts that there is an event going on which is a stage of, or part of, a reading event and this **partial event** has as theme two books. This means that both the two books must be involved in the partial event. This is a stronger requirement than in (44) and explains the contrasts above. Example (34a) is acceptable since in *varit 100 grammov mjas*, the 100 gram quantity of meat is the theme of the event stage which witnesses the progressive, but (34b) is infelicitous since in *est 100 grammov mjas*, the whole quantity of 100 grams of meat is not the theme of the event stage witnessing the progressive. For the same reason, (38-40) can only be interpreted as asserting that both eggs/books/problems are simultaneously involved in the relevant event stage.

Our account explains Mehlig's observation that possessive modifiers and definites improve the felicity of these sentences. Possessives and definites allow numerical plurals to be interpreted as collectives or singularities. *Svoi dva banana* ('his two bananas'), e.g. the ones I gave him, form a singular collective. As is well known, a singular collective counts as a participant in an event even if only part of the collective is directly involved in the event at any given time.

- (47)a. # v dannyj moment Igor' est dva banana.  
           at this moment Igor eat<sub>IMPR-PRES</sub> two bananas.  
           odin on uže s'el.  
           one he already eat<sub>PERF-PAST</sub>  
*Intended:* 'At the moment Igor is eating two bananas. And he has already finished one of them.'
- b. v dannyj moment Igor' est svoi dva banana.  
    at this moment Igor eat<sub>IMPR-PRES</sub> his two bananas.  
    odin on uže s'el.  
    one he already eat<sub>PERF-PAST</sub>  
    'At the moment Igor is eating his two bananas. And he has already finished one of them.'

The formation of a singular collective from an indefinite plurality is a grammatical operation which allows *svoi dva banana* ('his two bananas') to participate as an atomic individual as the theme of the eating event. Even if only part of the singular collective has been involved in the stage witnessing the assertion, this is enough to licence the numerical

expression denoting the singular collective as theme of the incremental verb denoting the event stage. A possessive can licence a durative in the same way:

- (48) on spit                      svoi dva časa, dolžen prosnut'sja čerez čas  
       he sleep<sub>IMPF-PRES</sub> his two hour, must wake up over hour  
       ‘He is sleeping his two hours, he is supposed to wake up in about  
       an hour.’

#### 4 Conclusion

Contrasts in interpretation with both durative adverbials and incremental themes provide good evidence that the imperfective-progressive operator (associated with imperfective root verbs) is a V-operator in Russian but a VP-operator in English. Themes and low adverbials, which are sister to the V and dominated by the lowest VP, can modify the complete event in English, indicating that they are generated below the progressive operator. They must modify the partial event/event stage in Russian, indicating that they are outside the scope of the progressive operator. There is thus good evidence that the semantic telicity parameter (Filip & Rothstein 2006) can be extended to a more general (a)telicity parameter:

- (49) **The semantic (a)telicity parameter:**  
       Perfective and root imperfective aspectual operators expressing maximality and partiality are associated with V scope in Slavic and with VP scope in Germanic.

(49) applies only to the imperfective on its progressive (or partial) reading. It remains to be investigated how secondary imperfectives, habituais and other interpretations of the imperfective fit into this picture.

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## **Focusing on Irrealis Concessions\***

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Universal Concessive Conditionals (UCCs) are adjunct clauses which assert that the main clause is true regardless of which of a set of conditions applies. Thus, in (1), “he” looks great, whether he wears jeans, a tuxedo, or any other possible choice of clothing:

- (1) Whatever he wears, he looks great.

Clauses of this type have received relatively little attention in the linguistic literature, and most treatments have been from perspectives primarily typological (e.g. Haspelmath and König 1998, henceforth H&K), semantic (e.g. Izvorski 2000; Citko 2003), or descriptive (e.g. Van de Cruys 2011) in nature. Our paper explores the syntax of UCCs in two Slavic languages, Russian and Bulgarian.

### **1 UCCs Universally, in Slavic, in Russian and Bulgarian**

A few Slavic examples are shown in (2), to illustrate the range of UCCs cross-linguistically. Similar examples could be given from outside Slavic or even Indo-European (see e.g. Caponigro et al). Despite superficial

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\* Previous versions of some of the material in this paper were reported in Rudin (2012), Franks (2013), and Franks and Rudin (2012). Many thanks to those audiences, as well as to an anonymous *FASL* 22 reviewer for insightful comments.



diversity, all UCCs have the same essential structure: an adjunct clause containing a *wh* phrase, irrealis modality, and focus interpretation. In Slavic, as elsewhere, irrealis and focus can be instantiated in many ways, including free-choice particles, the inherent focus feature of the *wh* word, (pleonastic) negation, conditional or modal auxiliary, a verb of wanting, a relativizing element, hortative, imperative, or subjunctive mood, etc.

(2) **A brief survey of types of UCCs in Slavic**

Free-choice element preceding or following *wh*

- a. Bilo šta da mu učiniš, on neće biti zadovoljan.  
any what to him do he won't be satisfied  
'Whatever you do to him, he won't be satisfied.' *BCS*
- b. Cokolwiek ona powie, on milczy.  
what-ever she says he keeps-quiet  
'Whatever she says, he keeps quiet.' (H&K) *Polish*

Negation

- c. Czego bym nie zjadła, to robi mi się niedobrze.  
what cond neg eat, it makes me refl unwell  
'Whatever I eat, I feel sick.' *Polish*

Modal elements (*may*, conditional, future)/volitional (*want*, *will*)

- d. Karkoli boste izbrali, zabave ne bo manjkalo!  
what-ever will choose fun neg will lack  
'Whatever you choose, there'll be plenty of fun!' *Slovene*
- e. Za kojato štete partija glasuvaj, ...  
for which want party vote-imp  
'Whatever party you vote for, ...' *Bulgarian*

Imperative/hortative

- f. Kak ni kruti, a otvečat' pridětsja odnomu Afanas'evu.  
how neg turn<sub>impv</sub> but answer must only Afanas'ev  
'However you look at it, Afanas'ev is the only one that has  
to take responsibility.' (Van de Cruys) *Russian*
- g. At' je to kdokoli, bude přísně potrestán.  
let be it who-ever will-be severely punished  
'Whoever it is, s/he will be severely punished.' (H&K) *Czech*

Citko (2003) demonstrates how the semantics of UCC clauses—universal quantification over possible worlds—can be computed from quite different morphosyntactic material; she deals specifically with

English versus Polish, but her results apply more broadly to suggest that UCCs have necessary semantic components of quantification, focus, and irrealis, which can be expressed in various ways.

The two languages treated in this paper have superficially very different UCCs. Russian UCCs contain a *wh* phrase, often followed by the modal element *by*, and require the apparent sentential negation *ni*. Bulgarian UCCs contain a *wh* word with the relativizing suffix *-to*, followed by the focus particle *i* and the modal particle *da*.

(3) **Russian: *wh (by) ni***

Gde by ja **ni** byla, vezde menja vstrečali  
 where mod I *ni* was<sub>f</sub> everywhere me met<sub>3pl</sub>  
 druželjubno.  
 friendly

‘Wherever I was, everywhere I was met in a friendly way.’ (H&K)

(4) **Bulgarian: *wh-to i da***

Kakvoto **i da** izbereš, pečeliš!  
 what-*to i da* choose<sub>2sg</sub> win<sub>2sg</sub>  
 ‘Whatever you choose, you win.’

Nonetheless, Russian and Bulgarian have much in common. The parallels between the two languages are summarized in Table (5):

(5) Bulgarian and Russian in parallel

	Bulgarian	Russian
quantification over alternatives	<i>wh-to</i>	<i>wh</i>
irrealis modality	<i>da</i>	<i>n(e)-</i>
focus	<i>i</i>	<i>-i</i>

- Bulgarian *wh-to* is comparable to *wh*, but the suffix element *-to* and well-known differences in *wh* movement landing sites change the picture somewhat. Russian UCCs (unlike Bulgarian ones) are in fact smaller than Izvorski’s bare CPs, since *wh*-fronting adjoins below CP.
- Bulgarian *da* is comparable to the *ne* part of Russian *ni* (which, being morphologically composed of *ne* + *i*, instantiates both irrealis and focus). While not syntactically parallel, *da* and *n(e)*

are both somewhat unexpectedly obligatory; in both cases we claim that this is because they are the locus of irrealis modality.

- Finally, Bulgarian *i* is directly comparable to the *i* portion of Russian *ni*. In both, the focusing function of the UCC is provided by this same element, *i*, free-standing in Bulgarian and fused with a negative element in Russian. Differences in its syntax between Russian and Bulgarian are due to its different status (fused versus independent), its position within the clause, and the possibility of a focus projection within nominal constituents.

We deal very briefly with *wh(-to)* in Section 2, arguing that UCCs are syntactically a type of relative clause, and with the instantiation of irrealis modality in Russian and Bulgarian UCCs in Section 3. In Section 4 we turn our attention to a more detailed look at the syntactic position of *i*, propose structures for both languages in Section 5, and then consider multiple UCCs in Section 6. Section 7 is the conclusion.

## 2 *Wh, -to* and the status of UCC as free relative

In both Bulgarian and Russian, the UCC is a CP adjoined to the main clause and has the internal structure of a relative clause. Izvorski (2000) argues that, although not nominal, UCCs crosslinguistically are a type of bare CP free relative. The point that UCCs have the structure of relative clauses has been made by Tomaszewicz (2012) for Polish, and is assumed in works that mention UCCs under the heading of free relative clauses, e.g. Caponigro et al (2013), Rudin (1986/2013). Examination of UCCs in Bulgarian and Russian confirms this conclusion.

### 2.1 *Bulgarian*

One reason for considering UCCs to be free relatives is that their form is identical to that of undoubted free relatives. Bulgarian has several types of nominal free relatives, one of which can have exactly the same form as a UCC: the underlined clauses in (6) and (7) are a nominal free relative and a UCC, but appear identical:

- (6) Pârvata reakcija na kakvoto i da kažeš e “Da ne me  
 first-the reaction to what-*to* *i da* say<sub>2sg</sub> is *da* neg me  
 budalkaš?”  
 kid<sub>2sg</sub>  
 ‘The first reaction to whatever you say is “Are you kidding  
 me?”’
- (7) Kakvoto i da kažeš, njama da mi promeniš mnenieto.  
 what-*to* *i da* say<sub>2sg</sub> won’t *da* me change<sub>2sg</sub> opinion-the  
 ‘Whatever you say, you won’t change my opinion.’

The morphology of the *wh* word itself provides a nice argument for relative clause status not available in other languages studied to date. All *wh* relatives in Bulgarian, including all free relatives, contain a *wh* word with the same *-to* suffix found in UCCs. The nature of this obligatory *-to* suffix is an important and little-discussed issue;<sup>1</sup> whatever its correct analysis, *-to* always indicates relative as opposed to interrogative status of a *wh* clause. Compare (8a–c): the question in (8a) must have the suffixless *wh* word *kakvo*, while the free relative in (8b) and headed relative in (8c) require a *wh* word ending with *-to*. The fact that UCCs require *-to* is thus a strong indication that they are free relatives.

- (8) a. Kakvo kažeš?  
 what say<sub>2sg</sub>  
 ‘What are you saying?’
- b. Kakvoto kažeš ne e istinata.  
 what-*to* say<sub>2sg</sub> neg is truth-the  
 ‘What you’re saying isn’t true.’
- c. Tova, koeto kažeš ne e istinata.  
 this which-*to* say<sub>2sg</sub> neg is truth-the  
 ‘The thing you’re saying isn’t true.’

The *wh* word in UCCs, as we have already suggested, designates quantification over a list of alternatives much as it does in other *wh* constructions, supplying the “free choice” element crucial to the

<sup>1</sup> Rudin (2009) argues that it is a relative clause complementizer, an allomorph of the relative complementizer *deto*, which cliticizes to the *wh* word in its specifier. In work in progress, we are exploring alternative accounts of the *-to* found in UCCs.

interpretation of UCCs. As in other *wh* constructions, all *wh* words in Bulgarian UCCs are fronted. The position to which *wh* moves is an interesting question, one to which we return after considering other aspects of the structure of the construction.

## 2.2 Russian

Like Bulgarian, Russian also has clear free relatives, which are identical in form to UCCs, as in (9a). We take it, then, that UCCs in Russian, as in other languages, are parasitic on free relatives in their form and at least part of their meaning. However, we disagree with Van de Cruys's (2012) claim that in Russian the free-choice interpretation of UCCs is due to *ni*. Instead, the relative *wh* supplies the free-choice meaning; see for instance the free relative (9b), which has free choice meaning, even though it lacks the negative element *ni*.

- (9) a. Ja poedu kuda by ty **3ni** poexal.  
       I go where mod you *ni* went  
       'I'll go wherever you go.'
- b. On vseгда žil, gde ja žila.  
       he always lived where I lived  
       'He always lived where I lived.'

*Wh* in Russian UCCs, as in Bulgarian ones, presumably conforms to the normal behavior and position of *wh* in other constructions; we thus expect *wh*-landing-site-related differences between the two languages, including differences between the types of multiple *wh* UCCs possible in each language. We return to this issue in Sections 5 and 6.

## 3 *Ni*, *da*, and irrealis

The second part of the UCC is Russian *ni* and Bulgarian *da*. Both of these elements are obligatory in UCCs in their respective languages, though, unlike *wh*, they are not usually found in other free relatives. We believe that they are required because they are the source of the irrealis modality which all UCCs must have. We start with Russian *ni*.

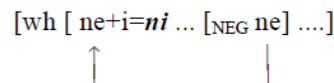
### 3.1 Russian *ni*

Although it might seem obvious that Russian UCCs derive the irrealis aspect of their semantics from the modal *by* which they typically contain, *by* is in fact not essential. As Van de Cruys observes, instances of UCC without *by* abound in the Russian National Corpus. Some representative examples are given in (10); see also (2g) above:

- (10)a. Kak provodniki **ni** topili vagon, ...  
 how conductors *ni* heated wagon  
 ‘No matter how much the train conductors heated the wagon, ...’
- b. Skol’ko v nego **ni** vkladivaj sredstv, ...  
 how-much in it *ni* put<sub>impv</sub> resources  
 ‘No matter how much money you put in, ...’
- c. Čto **ni** nadenut na sebja, ...  
 what *ni* will-put<sub>3pl</sub> on self  
 ‘No matter what they wear, ...’
- d. K komu **ni** zajdëš’, ...  
 to whom *ni* will-drop-in-on<sub>2sg</sub>  
 ‘Wherever you come, ...’

While (10a) could have *by*, since the verb is an *l*-participle, other UCCs, like (10b) with imperative or (10c, d) with finite verbs, cannot. What is obligatory in all UCCs is *ni*. As argued by Citko (2003), a negative element can provide the irrealis force necessary for establishing a set of hypothetical situations. Franks (2013) discusses the status and syntactic behavior of *ni* in greater detail. Here we simply assert that *ni* obviates any need for an explicitly modal element: *by* when it occurs is redundant. The negative element *ne* is presumably merged in the Neg head, from which it raises to fuse with focus *i* to form the lexical item *ni*, giving us the very rough beginnings of a syntactic structure:

(11)



### 3.2 Bulgarian *da*

In Bulgarian UCCs, hypothetical or unrealized modality is conveyed not by a negative element, but rather by the so-called “subjunctive” marker, *da*, which heads the infinitive-replacing construction common to Balkan languages.<sup>2</sup> The modal character of *da* clauses has frequently been discussed; see e.g. Krapova (2001) among many others. As (12) shows *da* can have optative, dubitative, conditional, purposive and other overtones, but it always conveys a non-realized meaning:

- |        |  |                             |
|--------|--|-----------------------------|
| (12)a. | <b>Da</b> trāgnem.<br><i>da</i> leave<br>‘Let’s leave.’  | <i>Imperative/hortative</i> |
| b.     | <b>Da</b> ne si bolen?<br><i>da</i> not are ill<br>‘Are you perhaps ill?’  | <i>Dubitative</i>           |
| c.     | <b>Da</b> bi mi kazal, ...<br><i>da</i> would me told<br>‘If he had told me, ...’  | <i>Conditional</i>          |
| d.     | Dojdoxa <b>da</b> me vidjat.<br>came <sub>3pl</sub> <i>da</i> me see <sub>3pl</sub><br>‘They came (in order) to see me.’ | <i>Purposive</i>            |

Izvorski (2000) addresses the question of why *da* is required in UCCs. Her proposal is that *da* is needed because of *-to*, which she claims blocks the ability of the UCC to reference a set of alternatives. UCCs, in her view, must either have subjunctive mood or what she calls “interrogative syntax” (that is, they must contain interrogative rather than relative *wh* words). She considers the *-to* suffix to be a definiteness marker, which precludes interpretation as a set of alternatives; languages which have “definite” *wh* words in UCCs must have subjunctive mood to reintroduce an element of uncertainty, the choice of alternatives. This is an attractive idea, but it cannot be right, as can be seen by comparing Macedonian, where *da* is equally required although the *wh* word is interrogative rather

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<sup>2</sup> Unlike Russian UCCs, which, as (10) shows, can occur with various verb forms, Bulgarian UCCs must have this subjunctive-like construction with its limited range of tenses.

than relative in form.<sup>3</sup> *Da* is thus required only because of the modality it contributes, not for any reason connected to the *-to* (or *što*) suffix.

- (13)a. **Kade i da** odeš, doma će si dojdeš!  
           where *i da* go home will REFL come  
           ‘Wherever you go, you’ll come back home.’ *Macedonian*  
       b. \***Kadešto i da** odeš, ...

In terms of its syntactic position, *da* heads a modal phrase above *vP*; this position is relatively low, since fronted subjects and similar material can intervene between focus head *i* and irrealis head *da*, as in (14a), with a structure roughly as in (15); compare also neutral word order (14b) and unacceptable (14c):

- (14)a. kolkoto **i knigite da** mi xaresvat, ...  
           how-much-*to i* books-the *da* me please<sub>3pl</sub>  
           ‘However much I like the books, ...’  
       b. kolkoto **i da** mi xaresvat knigite, ...  
       c. \*kolkoto knigite **i da** mi xaresvat, ...  
       (15) [[<sub>CP</sub> kolkoto [<sub>FocP</sub> **i** [knigite [<sub>ModP</sub> **da** [<sub>VP</sub> ... ]]]]]]

To sum up this section, the irrealis semantics of the UCC construction originate from *da* in Bulgarian but *ni* in Russian. Each of these elements presumably has a modal operator in its Spec, that is, in SpecModP in Bulgarian but SpecNegP in Russian.

#### 4 All about *i*

We come now to the syntactically most interesting part of the UCC construction in Bulgarian and Russian, which is the morpheme *i*.

<sup>3</sup> Why the relativizing suffix *-što*, parallel to Bulgarian *-to*, does not occur in Macedonian UCCs is a mystery, especially if UCCs are universally free relatives. Macedonian *-što* does, however, behave differently from Bulgarian *-to* (e.g. it is optional rather than obligatory in relative clauses), so the fact that it does not occur in UCCs does not invalidate arguments that UCCs are a type of relative construction. See also fn. 11.



#### 4.1 Bulgarian *i* is a focus marker

The claim that Bulgarian *i* marks focus is uncontroversial and not limited to UCCs; in fact, *i* is well known to function as a focusing particle in a variety of conditional clauses and emphatic expressions, as in (16):

- (16) a. *i* da gi napiša...      b. *i* dvamata  
           *i* da them write            *i* two-the  
           ‘even if I write them’      ‘both of them’  
       c. *i* az                              d. *i* tvojata kola  
           *i* I                                *i* your-the car  
           ‘I too/even I’                    ‘even/also your car’

We treat this *i* as the head of a FocP that has a Focus operator in its Spec and takes the focused material as its complement:

- (17) [FP OP<sub>focus</sub> [*i* XP<sub>[+focus]</sub>]]

In UCCs, however, the word order is different, with *i* following rather than preceding the focused item, the *wh-to* expression:

- (18)a. **kojto** *i* da go vidi, ...      b. \***i** **kojto** da go vidi  
           who-to *i* da it see<sub>3sg</sub>  
           ‘whoever sees it, ...’

This is the same *i*, with the same (proclitic) prosodic properties, and we believe that the structural position of *i* is the same in UCCs as in other focus constructions. The difference is that the *wh* phrase, being itself the operator, occurs in the Spec position, before *i*, as sketched in (19):

- (19) [FP OP=***wh-to*** [*i* ModP]]

In fact, we claim that at some level copies of the *wh* phrase occur both following and preceding *i*, the higher copy always being the one which is pronounced in simple UCCs such as those seen so far. To show this we need to consider UCCs with larger *wh* phrases. As we have discussed in several earlier papers (Franks and Rudin 2012, Rudin 2012, Franks 2013), in the case of a multi-word *wh* phrase *i* may immediately follow the *wh* word, as in (20a), or may follow the entire *wh* phrase, as in (20b):

- (20)a. [kakvoto **i** objasnenie] da izmisliš, ...  
           what-kind-to *i* explanation *da* think-up<sub>2sg</sub>  
           ‘whatever explanation you think up, ...’  
       b. [kakvoto objasnenie] **i** da izmisliš, ...

This closely parallels the behavior of another focus marker, the interrogative particle *li*, which similarly occurs either within or after a questioned phrase:

- (21)a. [ Novata **li** knjiga] vidja?  
           new *li* book saw  
           ‘Did you see the NEW book?’  
       b. [Novata knjiga] **li** vidja?  
           ‘Did you see THE NEW BOOK?’

The “copy-and-delete” analysis of this *li* question pattern proposed in Franks (2006) extends naturally to accommodate *i* in UCCs: in both constructions a phrase containing a focused element moves to SpecFocP, headed by *i* or *li*, leaving a copy in the Spec of the next projection down. PF deletion of non-focus material preceding *i* or *li* then results in pronunciation of the higher copy of the focused portion of the phrase but the lower copy of any non-focused portion, as follows:

- (22)a. [[kakvoto ~~objasnenie~~ [<sub>Foc</sub> **i** [~~kakvoto~~ objasnenie...]]] = (20a)  
       b. [[kakvoto objasnenie [<sub>Foc</sub> **i** [~~kakvoto~~ ~~objasnenie~~...]]] = (20b)
- (23)a. [[novata ~~knjiga~~ [<sub>C[+foc]</sub> **li** [~~novata~~ knjiga ...]]] = (21a)  
       b. [[novata knjiga [<sub>C[+foc]</sub> **li** [~~novata~~ ~~knjiga~~ ...]]] = (21b)

Thus, the difference between (22a) and (22b) is whether the entire *wh* phrase *kakvoto objasnenie* is focused or only the *wh* word itself. Since *wh* words are always intrinsically focused, the *wh* word is always pronounced above *i*, but the rest of the phrase may be pronounced either above or below, depending on what is focused.<sup>4</sup>

The difference between UCCs and the free focus construction seen in

<sup>4</sup> Among other advantages, this scattered deletion analysis accounts for the pattern of occurrence of *i* in UCCs without claiming that they involve Left Branch Extraction, which is otherwise unknown in a DP-language (cf. Bošković 2005).

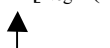
(16) is that in free focus *Foc* merges with an XP with the [+focus] feature, but in UCCs it merges with a phrase which *contains* a focused element. The phrase containing [+focus] adjoins to the left edge of the clause below *i*, then moves above *i* (to the Spec of the Focus projection) to satisfy the requirement that whatever bears the focus feature merge with *i*, creating the two copies of the *wh* expression. Therefore, in UCCs whatever part is actually focused (always including the *wh-to* expression) must precede *i* since it merges with (a projection of) *i*.

#### 4.2 *i* in Russian

Russian UCCs instantiate focus using the same morpheme as Bulgarian: *i*. Similarly to Bulgarian (16), Russian *i* can be used to focus any XP.<sup>5</sup> However, in Russian, the Neg head *ne* raises and fuses morphologically with *i*, as already described. The *wh* expression occurs in a different position too, not necessarily immediately to the left of (*n*)*i*, but higher up, as shown by the ability of other material to intervene, for instance, the underlined *by vy ego* in (24), with structure roughly as in (25). The Focus projection headed by *i* is thus lower in Russian than in Bulgarian.

- (24) Kak by vy ego ni nazyvali, ...  
 how mod you it *ni* named  
 ‘No matter what you call it, ...’ (van de Cruys)

- (25) **Kak** by vy ego [<sub>FocP</sub> **ni** [<sub>NegP</sub> (ne) nazyvali, ....



It is possible that *wh* in Russian, as in Bulgarian, passes through the SpecFocP position at some point in the derivation, but there is no direct evidence of this; in particular, Russian does not exhibit the pattern of scattered deletion in multi-word *wh* phrases that we saw in Bulgarian. In Russian, the entire complex *wh* phrase is above *ni*, as in (26), provided by T. Slobodchikov and N. Kondrashova. The modal element *by*, when present, cliticizes onto the *wh* word and thus immediately follows it.

<sup>5</sup> An anonymous reviewer provides (i) as an example of constituent focus, noting that either *Petja* or *botinki* can be focused, although not both at once:

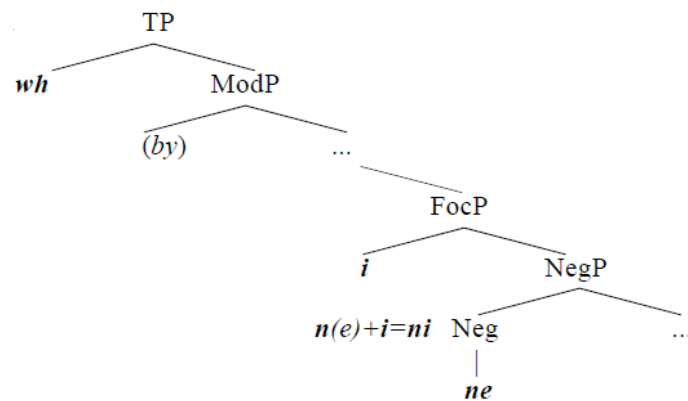
(i) (I) Petja kupil (i) botinki  
*i* Petja bought *i* shoes  
 ‘(Even) Petja bought (even) shoes.’

- (26) a. Na kakoj **by** ženščine on **ni** ženilsja, ...  
           to which mod woman he *ni* married  
           ‘No matter which woman he married, ...’  
       b. Skol’ko **by** knig vy **ni** pročitali, ...  
           how-many mod books you *ni* read  
           ‘No matter how many books you read, ...’

### 5 Putting it all together: what is where?

Russian UCCs have more or less the structure in (27). The irrealis element *n(e)* is merged as the head of NegP and raises to the Focus head, where it fuses with *i* (instantiating Focus semantics); *wh* raises past this.<sup>6</sup>

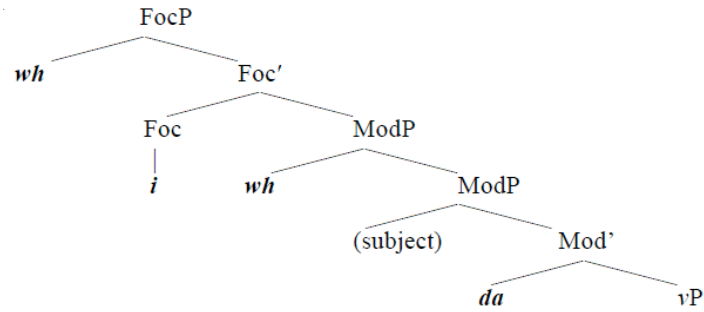
(27)



A possible structure for Bulgarian UCCs is sketched in (28), with *i* (instantiating Focus semantics) located in Foc, and *da* (instantiating hypothetical modality) in a Modality head. *Wh* phrase copies are in Spec of FocP and a position below Foc, represented here as adjoined to ModP.

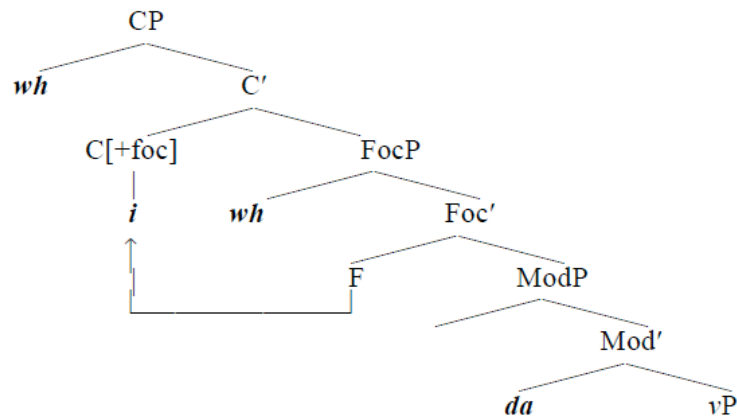
<sup>6</sup> Following Stepanov (1998), we assume that *wh* phrases in Russian are adjoined to TP.

(28)



The exact identity of some projections in this tree can be debated. Another possibility is one considered by Franks (2006) for *li*, in which *wh* copies are in Spec of FocP and CP, with *i* also raising from Foc to C. This is shown in (29). This structure provides well-motivated Spec positions for two *wh* copies; see e.g. Bošković (2002) on types of *wh* movement. It is however less than clear why *i* would move to C.

(29)



Details obviously remain to be worked out, especially with respect to how to fit *-to* into the Bulgarian system. We leave this aside, in order to examine one more complication, what happens in multiple UCCs.

## 6 Multiple UCCs

Like other *wh* constructions in Slavic languages, UCCs can be multiple. (30) gives typical Bulgarian and Russian examples.<sup>7</sup>

- (30)a. Kakvoto kâdeto i da krijâ, vse go namirat.  
 what where *i da* hide always it find  
 ‘No matter what I hide where, they always find it.’ *Bulgarian*
- b. Kuda by kto by ni poexal, vezde odno i  
 where mod who mod *ni* went everywhere one and  
 to že.  
 same  
 ‘No matter who goes where, it’s always the same.’ *Russian*

### 6.1 Multiple UCC in Bulgarian

In Bulgarian multiple UCCs both *wh* words require the *-to* suffix, and *i* can occur once or multiple times, either at the end of the *wh* word string (31a) or following each *wh* word (31b).<sup>8</sup> The configuration in (31c), with *i* after only the first *wh* word, is judged marginal at best.

- (31)a. Kojto kakvoto i da vi pomoli, ne možete da otkazete.  
 who-to what-to *i da* you ask neg can to refuse  
 ‘No matter who asks you [to do] what, you can’t refuse.’
- b. Kojto i kakvoto i da vi pomoli, ne možete da otkazete.
- c. ??Kojto i kakvoto da vi pomoli, ne možete da otkazete.

In multiple UCCs with larger *wh* phrases, *i* again follows either a *wh* word or the entire *wh* string. So in (32a–f) *i* occurs within either or both of the bracketed *wh* phrases and/or after the second *wh* phrase. What is

<sup>7</sup> Citko (2003) gives similar examples in Polish.

<sup>8</sup> Note that the configuration in (31b–c) is not simply a conjoined *wh*, since subject and object *wh* phrases cannot conjoin. Compare the ungrammatical attempt to do this in (i):

(i) \*Koj i kakvo vi pomoli?  
 who and what you asked  
 ‘\*Who and what asked you (to do)?’

impossible is for *i* to be between the two *wh* phrases, as in (32g–l), where it would have to be interpreted as the (underlined) conjunction ‘and’.<sup>9</sup>

- (32)a. [Kojto *i* student] [kojato *i* statija] da pročete, ...  
           which *i* student   which *i* article to read  
           ‘No matter which student reads which article, ...’  
       b. [Kojto student] [kojato *i* statija] da pročete, ...  
       c. [Kojto student] [kojato statija] *i* da pročete, ...  
       d. ?[Kojto *i* student] [kojato statija] *i* da pročete, ...  
       e. ?[Kojto *i* student] [kojato *i* statija] *i* da pročete, ...  
       f. ?[Kojto student] [kojato statija] da pročete, ...  
       g. ??[Kojto student] *i* [kojato *i* statija] da pročete, ...  
       h. \*[Kojto *i* student] *i* [kojato *i* statija] da pročete, ...  
       i. \*[Kojto *i* student] *i* [kojato *i* statija] *i* da pročete, ...  
       j. \*[Kojto student] *i* [kojato statija] da pročete, ...  
       k. \*[Kojto student] *i* [kojato statija] *i* da pročete, ...  
       l. \*[Kojto *i* student] *i* [kojato statija] *i* da pročete, ...

The occurrence of *i* both within the *wh* phrase and after the entire *wh* string suggests that there are two sources of focus *i*: in addition to its clausal location as head of FocP, *i* has a second location within XP. If Bulgarian nominal phrases can have FocP above DP, a UCC such as (33) (= (20)/(22)) would have the structure in (34):

- (33) [kakvoto *i* objasnenie] da izmisliš

- (34) da izmisliš [<sub>FocP</sub> kakvoto ~~objasnenie~~ [*i* [<sub>DP</sub> [<sub>XP[+wh, +foc]</sub> ~~kakvoto~~  
           objasnenie]]]]]

Movement of *wh* to SpecFocP takes place within this nominal domain, and the structure which leads to “splitting” by scattered deletion (Section 4.1 above) is created before the *wh* phrase moves to the top of the clause. This allows for the various multiple options, when the entire *wh* phrase, including its own FocP layer, moves to the higher clausal FocP.

<sup>9</sup> Thanks to E. Dimova for providing her own and several other speakers’ judgments. The relative acceptability she found for (32f), with no *i* at all, may be due to processing error as hearers lose track of whether they have heard any *i*.

The concept of information-structure positions within nominal projections is not as far-fetched as it might seem, and in fact has been independently proposed in Bulgarian, as well as for instance in Chinese (Hsu 2013). Clitic doubling within Bulgarian DPs arguably indicates the presence of a Topic projection above DP, as in (35):

- (35) [TOP na brat mi [DP žena mu \_\_\_\_ ]]  
           of brother my wife his  
           ‘my brother’s wife’

There are problems to be worked out with this account, of course. One is why *i* cannot occur in both slots in single-*wh* UCCs: having each DP inside a FocP and another FocP at the top of the clause, as shown by multiply repeating *i*, is just slightly awkward in the multiple case (36a), but completely ungrammatical in the corresponding single case (36b):

- (36)a. ?[Kojto *i* student] [kojato *i* statija] *i* da pročete,...  
           which *i* student which *i* article *i* to read  
       b. \*[Kojto *i* student] *i* da pročete тази statija,...

Another problem is why *i* seldom occurs in all three possible positions, as in (36a), and is instead generally only in one or two of them. Also, multiple UCCs with simple one-word *wh* phrases never have three *i*’s:<sup>10</sup>

- (37) \*Kojto *i* kakvoto *i* *i* da vi pomoli, ...  
           who-to *i* what-to *i* *i* da you ask

Perhaps the FocP above DP is not always projected, or the Foc head is not always realized as *i*, especially in less complex constructions. A third problem is *-to* within the proposed DP-inside-FocP structure. It may not be possible to reconcile *-to*’s obligatory occurrence on all *wh* words in multiple UCCs in Bulgarian and *-što*’s impossibility in Macedonian UCCs with the analysis of *-to* as a C head in Rudin (2009); cf. fn. 3.<sup>11</sup>

<sup>10</sup> This is presumably due to the impossibility of having two focus *i*’s in a row. The same is true incidentally of multiple occurrences of focus *li*.

<sup>11</sup> One alternative possibility we are pursuing in future work is that this difference relates to the pervasive availability of dative-like (possessive *and* argument) clitics in Bulgarian DPs versus their virtual absence in Macedonian. The general idea is that, adapting



### 6.2 Multiple UCC in Russian

Multiple UCCs in Russian also raise interesting issues involving which parts of the UCC are repeated. There can only be one instance of *ni*, presumably because the *ne* on which it is based is proclitic on the verb (and there is only one verb). But *by* can repeat, following each *wh* word:

- (38) Kto **by** kogda **by** s kem **by** ni prišël (**by**), ...  
 who mod when mod with whom mod *ni* came mod  
 ‘No matter who arrived when with whom, ...’

The second *by* is optional, but apparently only if nothing intervenes between the two (or more) *wh*s; see (39b, d) with intervenor underlined:

- (39)a. Kuda **by** kto (**by**) ni poexal, ...  
 Where mod who mod *ni* went  
 ‘No matter who went where, ...’  
 b. Kuda **by** na kanikuly kto ?\*(**by**) ni poexal, ...  
 where mod on vacation who mod *ni* went  
 ‘No matter who went where for vacation, ...’  
 c. Kto **by** čto (**by**) ni prinēs tebe, ...  
 who mod what mod *ni* brought you  
 ‘No matter who brings you what, ...’  
 d. Kto **by** tebe čto ?\*(**by**) ni prinēs, ...  
 who mod you what mod *ni* brought  
 ‘No matter who brings you what, ...’

As in other multiple *wh* constructions, the multiple *wh* words or phrases in a Russian UCC need not all front to the same position, do not appear to form a constituent, and do not obey Superiority. In Bulgarian, examples parallel to (39) are ungrammatical; no non-*wh* constituent can separate the two *wh*s (compare (39b) and (40b)), and the non-Superiority-respecting order in (39a, b) is impossible in (40c). Thus, multiple fronting in UCCs is the same as in multiple questions and

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suggestions in Embick and Noyer (2001: 572), the syntax produces a complex head in D containing [definiteness + agreement] features, which lower in the morphology to the next head down. The former are realized inflectionally, the latter are split off as a clitic. Since UCCs are [-agreement], this feature remains and the result in Bulgarian is invariant *-to*; Macedonian, on the other hand, lacks agreement features on D.

relatives, with well-known differences among languages in *wh* landing sites (see Rudin 1988 along with many later works). Essentially, Bulgarian has all *wh*'s fronted to some type of multiple Spec-CP structure, while Russian has multiple adjunction to TP or perhaps other projections. The fact that multiple *wh* fronting in UCCs has the same characteristics as in other *wh* constructions is an additional confirmation that UCCs have the internal structure of free relative clauses.

- (40)a. Kojto (i) kâdeto i da otide na otpusk, ...  
           who-*to* *i* where-*to* *i* *da* go on vacation  
           'No matter who goes where on vacation, ...'  
       b. \*Kojto (i) na otpusk kâdeto i da otide, ...  
       c. \*Kâdeto kojto i da otide, ...

The possibility of additional Focus projections in nominal expressions suggested in Section 6.1 is another area where Russian differs from Bulgarian: both Russian and Bulgarian clauses have positions for discourse information, but only Bulgarian has the option of Topic or Focus projections in the nominal domain. This is one manifestation of the overall generalization that Bulgarian nominals are bigger than Russian ones: not only do they have a DP layer, but they can have additional projections as well.

## 7 Conclusion

Russian and Bulgarian UCCs both have the internal structure of free relatives in the respective languages, and both make crucial use of the focus marker *i*. Many other particulars of the UCC construction differ between Russian and Bulgarian. These differences reflect a combination of morpho-lexical factors (the *-to* suffix on Bulgarian *wh* words; the fused negative word *ni* in Russian) and larger typological characteristics of the two languages, including whether nominal phrases have DP and higher functional layers, and whether *wh* fronting is movement to Spec-CP or adjunction at some lower level.

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## **On Some Cliticization Phenomena in Slavic and Their Theoretical Implications<sup>\*</sup>**

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The aim of this paper is to account for a number of cliticization phenomena found in Prizren-Timok Serbian and Gorica Slovenian. These two non-standard dialects exhibit a very similar behavior in clitic doubling environments, key among which being an adjacency requirement between a clitic and its associate and a ban on the *verb-clitic* order. I argue that the peculiarities in the vernaculars at stake can be accounted for by appealing to Bošković's (2001) approach to cliticization in South Slavic set in the context of language contact and language change.

### **1 The Puzzle of Clitics in Non-Standard Slavic**

This paper explores cliticization phenomena found in the clitic doubling context in Prizren-Timok Serbian (PTS) and Gorica Slovenian (GS), two non-standard dialects spoken in Southeastern Serbia and Western Slovenia. Unlike their standard vernaculars, Standard Serbian and

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Standard Slovenian, these dialects have clitic doubling, as illustrated in (1a) for PTS and (1b) for GS:

- (1) a. Je l' *gu* *njuma* vide na pijacu?  
 AUX Q her.<sub>CL.ACC</sub> her.<sub>ACC</sub> saw. 2.SG on market  
 'Did you see her in the (open) market?'  
 b. Ma to *me* *mene* ne briga.  
 but this me.<sub>CL.GEN</sub> me.<sub>GEN</sub> not cares  
 'But I don't care about this.'  
 (GS, Marušič and Žaucer, 2010: 103)

In both (1a) and (1b), the full/strong pronominal form is doubled with the clitic. In PTS, the pronoun *njuma* ('her') is doubled with the clitic *gu* (□her'). In parallel fashion, Marušič & Žaucer (2009, 2010) report that GS allows clitic doubling, as illustrated by the co-occurrence of the pronoun *mene* ('me') with the clitic *me* ('me') in (1b). In Runić (to appear), I examine the status of pronouns in (1) and argue that they have both the D and the N status. This claim is based on allowed pronoun modification, which is, however, disallowed in the clitic doubling context.<sup>1</sup> In this paper, I explore additional cliticization peculiarities in the clitic doubling context. The adjacency requirement between a clitic and its double, as illustrated by PTS in (2), has been previously unnoticed:

- (2) a. \*Je l' *me* čekaš *mene*?  
 AUX Q me.<sub>CL.ACC</sub> wait. 2.SG me.<sub>ACC</sub>  
 b. Je l' *me* *mene* čekaš?  
 AUX Q me.<sub>CL.ACC</sub> me.<sub>ACC</sub> wait.2.SG  
 'Are you waiting for me?'

A clitic and its doubled pronoun cannot be separated by a verb in this position (2a). The verb has to follow the whole clitic doubling cluster (2b). Second, the verb cannot precede the doubling clitic; it must follow it. This is shown in (3a) and (3b):

<sup>1</sup> See Runić (to appear) regarding how this state of affairs fits with Bošković's NP/DP parameter (Bošković 2008, 2012).

- (3) a. \*Čekaš    *me*                    *mene?*  
           wait.2.SG    *me*.CL.ACC    *me*.ACC  
       b. Ti    *me*                    *mene*    čekaš?  
           you *me*.CL.ACC    *me*.ACC    wait. 2.SG  
           ‘Are you waiting for me?’

These new data, along with a number of other cliticization features, raise a number of theoretical questions, for which I propose several analyses, as discussed in the subsequent sections. First, I analyze the adjacency requirement (Section 2), after which I turn to all other cliticization facts relevant for the scope of this paper. These are discussed in Section 3.2, preceded by the theoretical framework I adopt, Bošković’s (2001) approach to cliticization in South Slavic, summarized in Section 3.1. Finally, Section 4 concludes the paper.

## 2 The Adjacency Requirement

The first property that should be immediately noted is that in both PTS and GS, a doubled pronoun and a clitic cannot be separated by a verb, repeated here as (4a) for PTS. In such environments, a clitic and its associate have to be adjacent (4b):<sup>2</sup>

- (4) a. \* Je    I’    *me*                    čekaš    *mene?*  
           AUX    Q    *me*.CL.ACC    wait. 2.SG    *me*.ACC  
       b. Je    I’    *me*                    *mene*    čekaš?  
           AUX    Q    *me*.CL.ACC    *me*.ACC    wait.2.SG  
           ‘Are you waiting for me?’

This property of clitic doubling found in PTS and GS is very different from other clitic doubling languages, where the clitic and the doubling element can be separated by a verb, as illustrated by the Macedonian

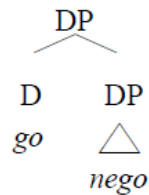
<sup>2</sup> Example (4a) is possible if the doubled argument forms a distinct prosodic phrase, in which case this is not an instance of clitic doubling but a clitic right dislocation phenomenon.

example in (5), where the clitic and its associate are separated by the verb *zamoli*:<sup>3</sup>

- (5) Mila *go*                      *zamoli*    *nego*.  
       Mila him.<sub>CL.ACC</sub>    asked.    him.<sub>ACC</sub>  
       ‘Mila asked him.’

Regarding the adjacency effects in PTS and GS in (4), and the lack thereof in Macedonian (5), it should be mentioned that a number of authors have argued that a clitic and its doubled argument are located in the same phrase at some point during the derivation (Kayne 2002, *i.a.*).<sup>4</sup> Under this view, clitics are D heads and they constitute a DP together with their associate. By applying such an analysis to Macedonian in (5), the clitic *go* and the doubled argument *nego* form a constituent in their base position prior to clitic movement, as illustrated in (6):

(6)



I suggest that PTS and GS preserve the constituency of the *clitic+double* complex. As a result, if there is movement in front of the verb, the whole complex (clitic+double) moves in front of it, as in (4b). It should be noted, however, that some speakers do allow elements other than verbs to intervene between a clitic and its double in the pre-verbal position. Such examples are best when the intervening elements are phonologically light, for example, a clitic or a short adverb, as exemplified in (7a) for PTS and (7b) for GS:

<sup>3</sup> In (5), the clitic, in fact, has to be separated from its associate because in Macedonian, verbal clitics are proclitics, i.e. they are prefixes to the verb (see Bošković 2001, among others).

<sup>4</sup> Pronominal doubling in Romance is treated in terms of a ‘big-XP’ analysis by a large number of authors. See Uriagereka 1995, among many others.



- (7) a. Je I' me sad mene čekaš?  
 AUX Q me.<sub>CL,ACC</sub> now me.<sub>ACC</sub> wait.2.SG  
 'Are you waiting for me now?'  
 b. Ali si ga včera njega videl  
 but AUX. 2.SG him.<sub>CL,ACC</sub> yesterday him.<sub>ACC</sub> saw  
 na tržnici?  
 on market  
 'Did you see him yesterday in the (open) market?'

The speakers in question then allow movement of the clitic from the *clitic+double* constituent, but they (or at least some of them) may have a further restriction that the clitic and its associate must form a prosodic constituent, which disallows intervening prosodic words. PTS and GS may then still be in the process of initiating the stage where the clitic movement from the doubling phrase takes place, with some speaker variation regarding this issue.

Before analyzing other cliticization phenomena found in PTS and GS, I will first present Bošković's (2001) approach to cliticization in South Slavic, which is the cornerstone of the analysis to be proposed below for several cliticization phenomena in PTS and GS.

### 3 Other Cliticization Phenomena

#### 3.1 Bošković's (2001) Approach to Cliticization in South Slavic

Bošković's (2001) analysis of cliticization phenomena in South Slavic is based on Chomsky's (1993) Copy Theory of Movement, placing specific emphasis on the pronunciation of copies in non-trivial chains. Thus, clitics move from their original position to their landing site, forming a chain and leaving a copy in their original position. Which copy will be pronounced is a matter of PF considerations. Following Franks (1998), Bošković (2001) contends that a chain is pronounced in the head position, with lower members deleted in PF. Yet, if the pronunciation of the head position of a chain leads to a PF violation, then the tail of the chain gets pronounced.<sup>5</sup>

<sup>5</sup> See Nunes (2004) for a deduction of the above in terms of linearization computations accompanied by economy conditions regarding deletion.

Bošković's (2001) analysis will be illustrated first by clitic placement in Bulgarian and Macedonian. In Bulgarian and Macedonian, clitics are verbal clitics, which means that they must be adjacent to a verb. The difference between clitic placement in the two languages is prosodic: in Bulgarian, clitics are enclitics, whereas in Macedonian, clitics are proclitics. This can be illustrated by the following minimal pair in (8) and (9) from Bošković (2001: 180):

- (8) a. Petko *mi* *go* dade včera. *Bulgarian*  
           Petko me.<sub>CL.DAT</sub> it.<sub>CL.ACC</sub> gave yesterday  
       b. \**Mi go* dade Petko včera.  
       c. Dade *mi go* Petko včera.  
           ‘Petko gave it to me yesterday’
- (9) a. *Mi* *go* dade Petko včera. *Macedonian*  
           me.<sub>CL.DAT</sub> it.<sub>CL.ACC</sub> gave Petko yesterday  
       b. \*Dade *mi go* Petko včera.  
           gave me.<sub>CL.DAT</sub> it.<sub>CL.ACC</sub> Petko yesterday  
           ‘Petko gave it to me yesterday’

In (8), since Bulgarian clitics are enclitics, they cannot be found in sentence initial position (8b). In Bulgarian, clitics precede the verb (8a) unless that would lead to a PF violation (8b), in which case, clitics follow the verb (8c). Similarly to Bulgarian, clitics in Macedonian must be adjacent to a verb. In contrast to Bulgarian, Macedonian clitics cannot follow the verb (9b); they must precede the verb (9a). However, being proclitics, they can appear sentence-initially (9a).

Bošković's (2001) analysis of the aforementioned facts in (8) and (9) proceeds as follows: a copy of the pronominal clitics is present both above and below the verb since the clitics undergo movement, as illustrated in (10) from Bošković (2001: 184):

- (10)a. X clitic V ~~clitic~~  
       b. ~~clitic~~ V clitic

The head of the chain is pronounced (10a) unless its pronunciation leads to a PF violation. In this case and only in this case, the tail of the chain gets pronounced (10b). Thus, (10a) corresponds to the pronunciation of Macedonian clitics (9a). Since Macedonian clitics are proclitics, the head

of the chain can be pronounced without any PF violations; thus, the head of the chain must always be pronounced. Therefore, (10a) is the only option, which is indeed the case, as (9) shows. In Bulgarian, on the other hand, the pronunciation of the head of the chain leads to a PF violation whenever a clitic cannot encliticize, as in (10b), where the clitic is sentence-initial, preceding the verb. Since the head of the chain cannot be pronounced here for PF reasons, the pronunciation of the tail of the chain is possible, as in (10b), illustrated by (8c).

Bošković (2001) follows the same line of reasoning for cliticization phenomena in other South Slavic languages. Unlike Bulgarian and Macedonian, where clitics are verbal, clitics in Serbo-Croatian (SC) and Slovenian are second position clitics. However, there is a clear prosodic difference between the two. In SC, clitics encliticize to the left, being enclitics (i.e. suffixes), as illustrated in (11):

- (11)a. Vidio *si* *ga*?  
           seen AUX.<sub>2.SG</sub> him.<sub>CL.ACC</sub>  
       b. \**Si* *ga* vidio?  
           AUX.<sub>2.SG</sub> him.<sub>CL.ACC</sub> seen  
           ‘Have you seen him?’

Unlike SC, Slovenian clitics are prosodically neutral: they can be prefixes (12a) or suffixes (12b) on the initial element (the example is taken from Bošković 2001: 154):

- (12)a. *Si* *ga* videl?  
           AUX.<sub>2.SG</sub> him.<sub>CL.ACC</sub> seen  
       b. Videl *si* *ga*?  
           seen AUX.<sub>2.SG</sub> him.<sub>CL.ACC</sub>  
           ‘Have you seen him?’

While the clitic placement for SC can be easily captured by providing clitics with lexical specification as suffixes, Slovenian clitics, *prima facie*, look like they are lexically unspecified. Bošković (2001) considers two possibilities in order to account for cliticization phenomena in Slovenian. These possibilities define prosodic requirements in the lexical entries of Slovenian clitics. The first option Bošković (2001) considers is to treat Slovenian clitics as having both a prefix and a suffix option, as in

(13) below: (13a) indicates that clitics in Slovenian/SC must cliticize to an element that is adjacent to an intonational phrase boundary; this is the essence of the second position clitic requirement (see Bošković (2001) for discussion).

- (13)a. #\_\_\_\_  
       b. Suffix  
       b.' Prefix

The second option Bošković (2001) considers is that Slovenian clitics lack lexical specification with regard to the direction of attachment, as in (14):

- (14) #\_\_\_\_

What (14) amounts to saying is that there is no information in the lexicon that specifies clitics as prefixes or suffixes. Clitics can either procliticize or encliticize: they merely need a host in order to meet their prosodic requirements. Crucially, however, the option in (14) would ban lower copy pronunciation, simply because the presence of a sentence-initial clitic, following this line of reasoning, would not lead to a PF violation. If the *verb-clitic* order were to arise only through the pronunciation of a lower copy, this order would be banned. This is clearly not the case, as shown by the grammaticality of (12b), where the *verb-clitic* order is legitimate. However, Bošković (2001) shows that, in contrast to SC, Slovenian allows VP fronting of the complement of an auxiliary clitic.<sup>6</sup> Example (12b) can then be analyzed as involving remnant VP fronting, rather than the pronunciation of lower copy.

A more conclusive test for determining lexical specification for Slovenian clitics is provided by coordination constructions in SC and

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<sup>6</sup> Slovenian quite generally allows fronting of the complement of an auxiliary clitic, while SC does not. To illustrate, consider the contrast in the acceptability of the following minimal pair in Slovenian (ia) and SC (ib), from Bošković (2001: 157):

- (i) a. Sposoban direktor je.  
       capable manager is  
       b. \* Sposoban direktor je.  
           capable manager is  
           'Capable manager he is.'

Slovenian, where, according to Bošković (2001), the second conjunct represents a separate intonational phrase. First, consider SC (15), where the clitic in the second conjunct cannot precede the verb (cf. (15a) vs. (15b)) (the examples are taken from Bošković 2001: 158):

- (15)a. \* Janez je kupio auto i ga razbio.  
           Janez is bought car and it ruined  
       b. Janez je kupio auto i razbio ga.  
           Janez is bought car and ruined it  
           ‘Janez bought a car and ruined it.’

Bošković (2001: 158-159) explains the asymmetry between (15a) and (15b) from a pronounce-a-copy analysis angle. Thus, in (15a), the clitic *ga* in the second conjunct cannot be properly supported, being an enclitic.<sup>7</sup> Consequently, the pronunciation of the head of the chain cannot occur. In (15b), on the other hand, the pronunciation of the lower copy of the moved clitic takes place, which is possible because the pronunciation of the head of the chain would lead to a PF violation (15a).

Now, consider the Slovenian counterpart of the SC example above in (15). Only the clitic preceding the verb is allowed in the second conjunct (cf. (16a) vs. (16b)); the example is again from Bošković 2001: 158):

- (16)a. Janez je kupil avto in ga razbil.  
           Janez is bought car and it ruined  
       b. \*Janez je kupil avto in razbil ga.  
           Janez is bought car and ruined it  
           ‘Janez bought a car and ruined it.’

Bošković (2001) argues that VP fronting of the kind discussed above (cf. (12b)) is ruled out for examples like (16) since the second conjunct is too small to provide a landing site for VP fronting. Consequently, Bošković (2001) considers the pronunciation of copies above and below the verb. Since apparently there is no reason to block the pronunciation of the head of the chain, as in (16a), the lower copy of the moved clitic cannot get pronounced in (16b).

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<sup>7</sup> Recall that the second conjunct is a separate intonational phrase.

Considering the options in (13) and (14) above, which provide lexical specifications for Slovenian clitics: (16b) would be possible on the (13b') option. Put somewhat differently, this specification incorrectly predicts (16b) to be grammatical due to the option in (13b), which licenses lower copy pronunciation. On the other hand, (14) rules out the *verb-clitic* order (i.e. the lower copy pronunciation in (16b)), because nothing would go wrong in PF if the head of the chain is pronounced, as in (16a), under (14). Bošković (2001) then concludes that (14) is the correct specification for Slovenian clitics.

### 3.2 *Cliticization Phenomena in Non-Standard Slavic: A Change in Progress*

Before analyzing cliticization phenomena found in PTS and GS, let us summarize the relevant cliticization facts, both in non-doubled and doubled constructions. In PTS, like in Standard Serbian (cf. (11)), non-doubled clitics are second position clitics, or following Bošković's (2001) account, non-doubled clitics are lexically specified as suffixes, requiring a host to the left (17a). They cannot appear in initial position (17b), as shown below:

- (17)a. Ti *me*            čekaš?  
           you *me*.<sub>CL.ACC</sub>    wait.2SG  
       b. \**Me*            čekaš    ti?  
           *Me*.<sub>CL.ACC</sub>    wait.2SG you  
           'Are you waiting for me?'

GS non-doubled clitics pattern with Standard Slovenian (cf. (12)), being able to encliticize (18a) or procliticize (18b) to their host:

- (18)a. Jst *ga*            spoštujem.  
           I    *him*.<sub>CL.ACC</sub>    respect.1SG  
       b. *Ga*            spoštujem.  
           *him*.<sub>CL.ACC</sub>    respect.1SG  
           'I respect him'

Doubled clitics in PTS are, again, enclitics, hence they are not allowed sentence initially, as illustrated in (19):

- (19)a. Ti    *ga*            *njega*        čekaš?  
           you him.<sub>CL.ACC</sub> him.<sub>ACC</sub>        wait.<sub>2SG</sub>  
 b. \* *Ga*            *njega*        čekaš    ti?  
           him.<sub>CL.ACC</sub> him.<sub>ACC</sub>        wait.<sub>2SG</sub> you  
       ‘Are you waiting for him?’

In (19a), the clitic *ga* occupies the second position, requiring a host to the left, as illustrated by the ungrammaticality of (19b), where the clitic cannot encliticize and the sequence is ruled out. Interestingly, if the doubling clitic follows its associate pronominal, as in (20), the sentence is still ungrammatical:

- (20) \* *Njega*        *ga*            čekaš?  
           him.<sub>ACC</sub>        him.<sub>CL.ACC</sub> wait.<sub>2SG</sub>  
       ‘Are you waiting for him?’

In (20), although the prosodic requirements of the clitic are met, the clitic *ga* being able to encliticize, the sequence is ruled out. Moreover, the clitic can encliticize to other prosodic words, as illustrated in (19a). The asymmetry between (19a) and (20) reveals that the order of the doubling clitic and its associate is fixed. In particular, the legitimate order is *clitic-doubled pronoun* (19a). The asymmetry between (19a) and (20) would look odd if certain facts are not taken into consideration. Recall that I have suggested in Section 2 that a doubling clitic and its associate form a constituent with some speakers allowing movement of the clitic out of this constituent under certain conditions. Given that the *doubled pronoun-clitic* order is not possible, this indicates that the order within this constituent is *clitic-doubled pronoun*, which is confirmed by the grammaticality of (19a), and not *doubled pronoun-clitic*, as revealed by the ungrammaticality of (20).

In GS, a doubled clitic patterns with PTS, as it cannot occur sentence-initially, as exemplified in (21):

- (21)a. Jst *ga*            *njega*        spoštujem.  
           I him.<sub>CL.ACC</sub> him.<sub>ACC</sub>        respect.<sub>1SG</sub>  
 b. \* *Ga*            *njega*        spoštujem.  
           him.<sub>CL.ACC</sub> him.<sub>ACC</sub>        respect.<sub>1SG</sub>  
       ‘I respect him.’

Example (21b) shows that the prosodic behavior of doubled clitics in GS is fundamentally different from non-doubled clitics in GS (cf. (18b)). Specifically, GS doubled clitics pattern with PTS in that they are enclitics, i.e. they attach to their host to the left (cf. (19a) and (21a)). It is worth noting though that doubled clitics in GS differ from doubled clitics in PTS in that they allow their doubled associate to precede the clitic, as illustrated in (22):<sup>8</sup>

- (22)a. *Njega ga spoštujem.*  
 him.<sub>ACC</sub> him.<sub>CL.ACC</sub> respect.<sub>1SG</sub>  
 b. *Jst njega ga spoštujem.*  
 I him.<sub>ACC</sub> him.<sub>CL.ACC</sub> respect.<sub>1SG</sub>  
 ‘I respect him.’

Thus, unlike PTS, GS allows the *doubled pronoun-clitic* order to surface. This means that the base-generator of a clitic and its associate is either way in GS: *doubled pronoun-clitic* (cf. (22)) or *clitic-doubled pronoun* (cf. (21a)).

Another relevant property of doubled clitics is that they cannot follow a verb, as demonstrated by (23) in PTS and (24) in GS:

- (23)a. \* *Čekaš me mene.*  
 wait.2.SG me.<sub>CL.ACC</sub> me.<sub>ACC</sub>  
 b. *Ti me mene čekaš?*  
 you me.<sub>CL.ACC</sub> me.<sub>ACC</sub> wait. 2SG  
 ‘Are you waiting for me?’  
 (24)a. \* *Spoštujem ga njega jst.*  
 respect. 1SG him.<sub>CL.ACC</sub> him.<sub>ACC</sub> I  
 b. *Jst ga njega spoštujem*  
 I him.<sub>CL.ACC</sub> him.<sub>ACC</sub> respect. 2SG  
 ‘I respect him.’

This contrasts with non-doubling clitics in Standard Serbian and Slovenian, which can follow a verb.

<sup>8</sup> The reader may object that (22a) represents a clitic left dislocation construction, given that a doubled associate appears on the left edge of the sentence. However, such constructions require a pause between a constituent and a clitic. According to Tatjana Marvin (p.c., 2011), no pause is needed between *njega* and *ga*.



In order to account for the ban on the *verb-clitic* order in the clitic doubling environment, I adopt Bošković's (2001) analysis of cliticization based on the Copy Theory of Movement (Chomsky 1993) and propose that lower copy pronunciation of clitics is ruled out in clitic doubling contexts.<sup>9</sup> Recall that Bošković (2001: 184) assumes that a copy of pronominal clitic is present both above and below the verb, thus forming a non-trivial chain, repeated here as (25):

- (25)a. X<sub>clitic</sub> V ~~clitic~~  
       b. ~~clitic~~ V clitic

There is a preference for pronouncing the head of the chain in PF. Thus, the *clitic-verb* order is obtained through the pronunciation of the head of the chain. The tail of the chain is pronounced only if this pronunciation would lead to a PF violation, giving us the sequence *verb-clitic*. To illustrate, recall that Macedonian clitics are lexically specified as prefixes, hence the head of the chain can be and must be pronounced (cf. (9)), while clitics in Bulgarian are lexically specified as suffixes, the tail of the chain getting pronounced if the verb precedes the clitic (cf. (8)). Recall also that another option where the *verb-clitic* order is not possible, as in the case of Slovenian (16b), is that there is no lexical specification in terms of attachment, which allows the sequence *clitic-verb* only. If, as Bošković (2001) argues, Slovenian clitics are lexically unspecified regarding the attachment to their host, there is nothing wrong in PF if the head of the chain is pronounced. The no-specification-of-attachment analysis correctly predicts that the tail of the chain should not be pronounced. Following Bošković (2001), suppose that there is a copy of the doubled clitic above and below the verb in PTS and GS, as illustrated in (26) for PTS:

- (26) *me mene čekaš me mene*

If the doubled clitic is lexically unspecified for being a prefix or a suffix, there would be no PF violation if the head of the chain is pronounced, hence the tail of the chain would have to be deleted, as in (27):

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<sup>9</sup> Additionally, we also need to assume that remnant VP fronting is not available in clitic doubling contexts.

(27) *me mene čekaš* ~~*me-mene*~~

This would then correctly predict that the *verb-clitic* order is ruled out, as attested in PTS (23a) and GS (24a).

Nevertheless, if this is the entire analysis, then examples like (19b) and (21b) with a doubled clitic preceding the verb should be acceptable because the head of the chain is pronounced. In order to completely understand this phenomenon, it is important to understand these facts in the context of neighboring languages. Doubled clitics in PTS and GS behave in exactly the same way as (verbal) clitics in Macedonian and Italian. Clitic doubling in PTS and GS is, in fact, probably the result of borrowing from Macedonian and Italian, due to the contact situation. Crucially, in both Macedonian and Italian, verbal clitics are proclitics, hence the pronunciation of a lower copy is excluded. The suggestion is then that since clitic doubling in PTS and GS seems to be the result of borrowing from Macedonian and Italian, at least some of its properties are influenced by Macedonian and Italian; in particular, the ban on the *verb-clitic* order, i.e. the ban on the pronunciation of lower copies of clitics in this context.

Another possibility (at least for some speakers) is that, in a context like (27), if lower copy pronunciation were to take place, only the clitic would be pronounced in a lower position, not its doubled associate (there is no need to pronounce a lower copy of the associate), yielding the order *doubled pronoun-verb-clitic*, which could be ruled out if we assume that the clitic and its doubled associate cannot be split up by a prosodic word in PF. Additionally, this order would result in a violation of the second position requirement.

#### 4 Conclusions

I have discussed several cliticization phenomena in clitic doubling constructions in two non-standard Serbian and Slovenian dialects, Prizren-Timok Serbian and Gorica Slovenian. These phenomena pertain to the adjacency requirement between a clitic and its associate and the ban on the *verb-clitic* order. The clitic behavior in the two dialects simultaneously exhibits similarities with verbal and second-position clitics, which I argued is the consequence of language contact and language change.

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## **Givenness and the Position of the Direct Object in the Czech Clause\***

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We study the impact of givenness on the position of the direct object in Czech with respect to three other clause-mate constituents: subject, verb, and a VP-modifying PP. Based on two controlled acceptability judgment experiments, we establish two main observations: (i) objects in all-new clauses are significantly less acceptable in a pre-verbal position than in a post-verbal position; and (ii) given objects are free to occur anywhere (pre-verbally or post-verbally) as long as they do not appear in the linearly final position with default main sentence stress.

We argue that the latter finding provides evidence for an interaction between givenness and prosody in Czech in that given expressions avoid sentence stress. We propose to model this interaction by a DESTRESS-GIVEN constraint. We did not find evidence for an obligatory given-new partition in Czech clauses: except for the sentence-final position with

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sentence stress, any position is acceptable for a given object, completely irrespective of the givenness status of the subject.

Our general conclusion is that neither relative word order phenomena nor scrambling give us a reason to believe that the information structural category of givenness is represented in the syntax, whether it occurs in the form of movement-triggering formal features or in the form of Kučerová's (2012) LF operator, which imposes a given-new partition on propositional domains. Our proposal is that givenness "communicates" with prosody via the DESTRESS-GIVEN constraint and the fact that given direct objects tend to scramble out of their base positions follows from the tendency to realize sentence stress clause finally.

The paper is organized as follows. Section 1 gives the necessary background on the category of givenness. In Section 2, we introduce two prominent approaches to the formal realization of givenness: the prosodic approach and the partition approach of Kučerová (2007, 2012). Section 3 describes two experiments designed to test some particular predictions of these approaches. In Section 4, we discuss open issues and conclude.

## 1 Preliminaries

### 1.1 Background on Givenness

Similarly to other notions of information structure (IS), givenness has been used in many different ways (see Prince 1981 for an early overview). In this paper, we define givenness in terms of presupposed discourse salience (see e.g. Wagner 2012): an expression A is given if the discourse participants know that there is an expression B (of the same semantic type as A) in the recent discourse that counts as an antecedent of A. Whether B counts as an antecedent of A depends on the semantic type of A and B. For the semantic type of entities (referential arguments), B counts as an antecedent of A if  $\|A\| = \|B\|$ . For functional types (predicates, propositions, etc.), B counts as an antecedent of A if, for all x of the relevant type, it holds that  $\|B\|(x) \rightarrow \|A\|(x)$ .

Some examples are provided below. In (1) the expressions *him/this friend of mine* are given (marked by boldface) because there is an antecedent in the preceding discourse, namely *John*, and the meaning of *him/this friend of mine* and *John* is identical (relative to some variable assignment). This represents the case of a given expression that has the

semantic type of an entity, where semantic identity is required. In English, givenness influences accentuation: sentence stress usually falls on the rightmost element, but as *him/this friend of mine* is given, it would be deaccented here by shifting the sentence stress to the verb. If *him/this friend of mine* did not refer to John, it would not be given and would thus receive sentence stress.

- (1) I thought about John yesterday. I decided to call **him/this friend of mine**.

Example (2) provides cases of given expressions that are of a functional or particularly predicative type (assuming this type of semantics for nonspecific objects of intensional verbs). In (2a), *octopus* in the second sentence counts as given due to the occurrence of the same noun in the first sentence. In this case, the semantics of the given expression and its antecedent are identical (for all  $x$ , it holds that  $\text{octopus}(x) \leftrightarrow \text{octopus}(x)$ ). In (2b), the predicate *is musical* counts as given due to the occurrence of the predicate *play the guitar* in the previous sentence. This is because everyone who plays the guitar is also musical.

- (2) a. – Did you see an octopus when you were diving?  
       – No, I didn't look for an **octopus**.  
    b. – Does anyone of them play the guitar?  
       – I heard that Tom **is musical**.

What matters for givenness under this approach is whether an expression with the relevant meaning has been mentioned in the discourse; there is no need for there to be a specific referent that matches the description of the expression. For instance, in (2a), there does not need to be any specific octopus in the discourse participants' minds in order for the second occurrence of *octopus* to count as given. More generally, givenness is independent of referential specificity.

Recently, Kučerová (2007) argued that givenness in Czech influences word order and that it is a stronger notion than the property that causes deaccentuation in English. According to her analysis, the condition on discourse salience characterized above is a necessary but not sufficient condition for an expression to be given in Czech. For instance, in the

Czech paraphrase of (2a), the second occurrence of *chobotnici* ('octopus') does not count as given, according to Kučerová.

- (3) – Viděl jsi při potápění chobotnici?  
           saw AUX.2SG at diving octopus  
 – Ne, já jsem chobotnici nehledal.  
           no I AUX.1SG octopus NEG.looked.for  
 – Did you see an octopus when you were diving?  
 – No, I didn't look for an octopus.'

According to Kučerová, an expression in Czech is given if it is discourse salient in the above sense and in addition, if the discourse participants know that there is a particular referent that satisfies the description of that expression. In other words, given expressions are assumed to satisfy the existence presupposition. In the second sentence in (3), no particular octopus is presupposed to exist and hence *chobotnici* ('octopus') does not count as given. It follows from this approach that given expressions in Czech are always referentially specific.<sup>1</sup> Examples of expressions that are given in this stronger sense are *ji/bankovku* ('it/banknote') in (4a) and *ho/Honzu* ('him/Honza') in (4b): they have salient discourse antecedents and satisfy the existence presupposition.<sup>2</sup>

- (4) a. Na zemi ležela bankovka. Martin **ji/bankovku** zvedl.  
           On floor lay banknote Martin it/banknote picked.up  
           'There was a banknote on the floor. Martin picked it/the  
           banknote up.'  
       b. – Je tady i Honza?  
           is here also Honza  
       – No, já jsem **ho/Honzu** nepozval.  
           well I AUX.1SG him/Honza NEG.invited  
       '– Is Honza also here? – Well, I didn't invite Honza.'

<sup>1</sup> Kučerová (2007) assumes that partitive indefinite NPs can also be given. Even though the existence of a particular referent is not necessarily presupposed in this case, what is presupposed is the existence of a particular set of referents.

<sup>2</sup> It is important to keep in mind that the satisfaction of the existence presupposition in itself is not a sufficient condition for an expression to count as given. It must also have an explicit discourse antecedent. For instance, the first occurrence of *Honza* in (4b) is not given even if the discourse participants know the person to whom the proper name refers.

For the purposes of this paper, we remain agnostic as to which one of these two notions of givenness is the right one for Czech.<sup>3</sup> In what follows, if we call an expression “given,” it is given in both of the senses above. This allows us to test the predictions related to givenness marking, irrespective of which one of the two givenness notions is assumed in the tested theory.

### 1.2 Background on Sentence Prosody in Czech

In Czech, word stress is on the left whereas both phonological and intonational phrase stress is on the right (Daneš 1957). As exemplified below in grid notation, this causes the rightmost grid mark of a phrase such as *starší pár* (‘older couple’) to project to the level of  $\phi$  and the rightmost  $\phi$  thus projects to the level of  $\iota$ .

- (5) ( x )  $\iota$   
 ( x ) ( x ) ( x ) ( x ) ( x )  $\phi$   
 ( x x x x x x )  $\omega$   
 V Praze prý útočník napadl starší pár kvůli penězům.  
 in Prague allegedly offender attacked older couple because.of money  
*'In Prague allegedly some criminal attacked an older couple*  
*because of money.'*

We postulate that, for the relevant purposes, Czech uses the OT constraints HEAD- $\iota$ -R (Féry 2013) and DESTRESS-GIVEN (Féry & Samek-Lodovici 2006). These are defined below:

- (6) a. HEAD- $\iota$ -R: Align the right boundary of every intonation phrase with its HEAD  
 b. DESTRESS-GIVEN: A post-nuclear given phrase is prosodically non-prominent.

HEAD- $\iota$ -R is responsible for the observed realization of  $\iota$ -level stress at the right edge. DESTRESS-GIVEN is a higher ranking constraint that ensures that given elements in the sense of presupposed discourse-salience, as described in the previous section, do not receive  $\iota$ -level stress

<sup>3</sup> See Šimík and Wierzba (under review) for a detailed comparison of the two notions and a defense of the weaker one for Czech.



called for by HEAD-t-R. By virtue of ranking higher, this constraint simply overrides and shifts the accent to another nearby position. It has been observed as early as Daneš (1957) that stress shift is an option to achieve this destressing of given elements in Czech.

## 2 Two Approaches to Deriving Word Order Alternations in Czech

Kučerová (2007, 2012) makes the strong claim that, for a number of Slavic languages, including Czech, given elements must linearly precede new elements within a propositional domain.<sup>4</sup> This is due to a G(ivenness)-operator which is present in the LF of every propositional domain (Kučerová 2012). The G-operator adds a givenness<sup>5</sup> presupposition to all elements that asymmetrically c-command it and thus “partitions” the domain into a given and a new area.

This kind of partition approach predicts that any word order in which a given element is preceded by a new element within the relevant domain will be ruled out. This is because, without a partition, any insertion of the G-operator would either add a givenness presupposition to a new element (leading to a presupposition failure) or leave a given element without a presupposition (leading to a violation of Heim's 1991 Maximize Presupposition principle). If this partitioning requirement is not satisfied in the basic word order, scrambling can be used to amend it. Scrambling is, however, restricted by an economy principle: changing the basic word order is allowed only if it yields an interpretation that would not be available otherwise. In what follows, we will evaluate the theory both with and without this additional economy assumption where different predictions emerge.

In the prosodic account that we are proposing, word order alternations arising from givenness are due to prosodic well-formedness, in the way described in the previous section. In light of the recent literature, we pursue the idea that word order changes can also be used to satisfy

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<sup>4</sup> According to Kučerová (2012:14), the relevant domain can be the finite clause, but it can also be smaller: if a tense auxiliary is present, its complement is the relevant domain. For all materials tested in this study, we made sure that all crucial constituents were within one domain.

<sup>5</sup> In the version proposed by Kučerová for Czech, as described in Section 1.1. See Šimík and Wierzbica (under review) for a detailed and critical discussion of Kučerová's proposal.

prosodic well-formedness constraints (cf. Féry 2013, among others). The DESTRESS-GIVEN constraint thus interacts with some additional word order constraints to yield output linear orders where a given element is effectively moved away from the rightmost position, thus satisfying HEAD-*t*-R and DESTRESS-GIVEN simultaneously.

For our simple DESTRESS-GIVEN constraint to be satisfied, it is enough that a given element is simply not stressed, either by stress shift or by occurring in a different position than the stressed *t*-final position. Therefore, we do not expect to find any interactions regarding the given/newness of other elements solely based on this constraint. Given the availability of stress shift, we expect that givenness-based word order alternations are optional, however, the details regarding the exact nature and interaction between such prosodic and word order constraints were not sought to be investigated by the experiments reported here.

### 3 Experiments

We conducted acceptability judgment experiments to test the predictions of the two approaches. We report the results of two experiments here that we ran together within one experimental set-up.

Auditory stimuli were used, since the prosody of the materials had to be controlled. Precisely, stimulus sentences were all recorded by a native speaker of Czech with pitch accents on all phrases where the rightmost was the most prominent, instantiating default sentence stress (as in (5) above). In the experiment, each stimulus sentence was presented as a response to a context utterance (read by two different native speakers), forming a short dialogue. A Latin-Square design was used, so that each participant saw each item in only one of the conditions. Forty-four students from the University of Olomouc participated in the experiment. They were instructed to rate the acceptability of the target sentence in relation to the given context on a scale from 1 (unacceptable) to 9 (completely acceptable). Each participant heard and rated 142 dialogues in a pseudo-randomized order. Thirty-two of the dialogues were for Experiment 1, thirty-two of the dialogues were for Experiment 2, and the rest were for other studies not reported here.

### 3.1 Experiment 1: What happens in an all-new context?

The goal of Experiment 1 was to find out which positions are acceptable for an object in an all-new context, in which no givenness-related movement is assumed to occur.

We used a within-subjects design with two independent variables: referentiality of the object (referential versus non-referential) as a between-items factor and position of the object (four levels, see below) as a within-items factor. The proportion of referential and non-referential subjects was balanced.<sup>6</sup> We constructed 32 sets of items. None of the elements of the target utterance were mentioned in the preceding context utterance. An example item set illustrating this context and the four possible positions of the object in the target utterance is given in (7) and (8).<sup>7</sup> Sentence stress (indicated by underlining) was always on the rightmost element.

- (7) C. Co ses dočetl v novinách?

*'What did you read in the newspaper?'*

- a. V Praze prý starší pár útočník napadl  
in Prague allegedly older couple<sub>.ACC</sub> offender<sub>.NOM</sub> attacked  
kvůli penězům.  
because.of money

*'In Prague allegedly some criminal attacked an older couple  
because of money.'*

- b. V Praze prý útočník starší pár napadl kvůli penězům. O S V PP  
c. V Praze prý útočník napadl starší pár kvůli penězům. S O V PP  
d. V Praze prý útočník napadl kvůli penězům starší pár. S V PP O

- (8) C. Píší něco zajímavého v novinách?

*'Do they write anything interesting in the newspaper?'*

<sup>6</sup> Referential NPs used in the experiment include proper names and definite NPs. Non-referential NPs were always non-specific indefinites.

<sup>7</sup> An anonymous reviewer points out that the object in (7) is ambiguous between accusative and nominative (in the referential condition, the object was ambiguous in 3 out of the 16 items; in the non-referential condition, it was ambiguous in 9 out of the 16 items). We performed a post-hoc analysis and found that items with a case-ambiguous object in the preverbal position were rated significantly lower than comparable items with a case-unambiguous object. As suggested by the reviewer, the relatively lower acceptability of these items might be due to a garden path effect: the case-ambiguous objects can temporarily be read as subjects. We come back to this issue in the discussion, where we show that the case ambiguity factor confounds with the referentiality factor.

- a. Včera prý Dalíka soudce poslal do vězení.  
 yesterday allegedly D.<sub>ACC</sub> judge.<sub>NOM</sub> sent to prison.  
*'Yesterday allegedly a judge sent Dalík to prison.'* O S V PP
- b. Včera prý soudce Dalíka poslal do vězení. S O V PP
- c. Včera prý soudce poslal Dalíka do vězení. S V O PP
- d. Včera prý soudce poslal do vězení Dalíka. S V PP O

The results are illustrated graphically in Figure 1 and summarized in Table 1.

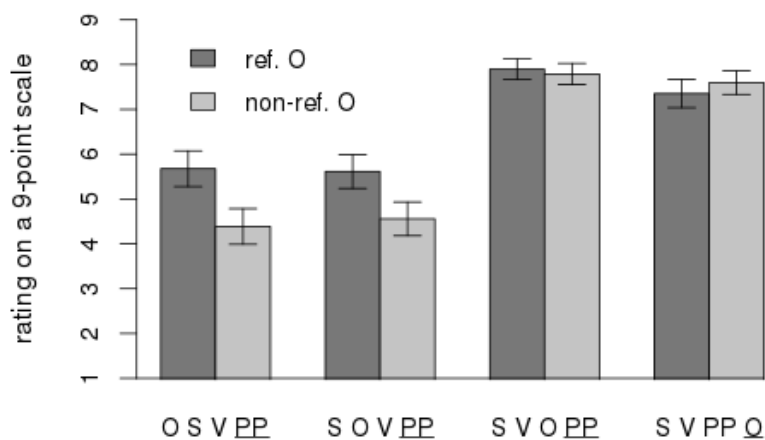


Figure 1: Mean ratings with 95% confidence intervals for Experiment 1

Word order	Referential object	Non-referential object
O S V PP	5.68 (0.20)	4.39 (0.20)
S O V PP	5.61 (0.19)	4.56 (0.19)
S V O PP	7.90 (0.11)	7.79 (0.12)
S V PP O	7.35 (0.16)	7.60 (0.13)

Table 1: Mean ratings for Experiment 1, standard errors in brackets

An ANOVA revealed significant main effects of object position ( $F_1 = 160.61$ ;  $F_2 = 86.70$ ) and referentiality of the object ( $F_1 = 19.62$ ,  $F_2 = 11.01$ ; all  $p$ 's < 0.001). There was also a significant interaction between the two factors ( $F_1 = 29.50$ ,  $p < 0.001$ ;  $F_2 = 6.53$ ,  $p = 0.002$ ). Post-hoc

pairwise t-tests showed that non-referential objects were rated significantly lower than referential ones in initial and pre-verbal position (Holm-Bonferroni adjusted  $p < 0.001$  for both pairs) but equally high in the other two positions, where no significant differences were found for any of the pairs of sentences.

## 2.2 Experiment 2: To which position can a given object scramble?

The goal of Experiment 2 was to test whether givenness influences word order options in Czech, and if it does, in which way.

If it is true that a partition between new and given elements is necessary in Czech sentences, a given object should only be acceptable in positions in which it precedes all-new elements. The prosodic approach, on the other hand, predicts that any position should be fine for a given object as long as it does not carry main stress.

Again, we used a within-subjects design with two independent variables. The position of the object was manipulated in the same way as in Experiment 1, but this time, the object was given, i.e. it was mentioned in the context utterance. The second manipulated factor was givenness of the subject (given versus new). The verb and the PP were always new and did not contrast with anything in the context. In order to keep the number of factors manageable, referentiality was not manipulated in this experiment: all objects and subjects were referential. This also makes them given following Kučerová (2007, 2012), who requires that an element is both given and presupposed in order to count as given in Czech. All target utterances began with the words *protože prý* ('because allegedly') in order to avoid potential interferences from the left-peripheral position, which might trigger some special information-structural interpretation. We assume that these two clause-initial elements are not relevant for the predictions in any other way because they cannot be given/new in a non-trivial way. We constructed 32 items. An example item set with a new subject is shown in (9) and an example with a given subject in (10). As before, given elements are in boldface and sentence stress is marked by underlining.

- (9) C. Zjistil jsi, proč dnes sekretářka tak nadávala?

*'Did you find out why our secretary was so angry today?'*

- a. Protože prý **sekretářku** Karel poslal do obchodu.  
 because allegedly secretary K. sent to store  
*'Because allegedly K. sent the secretary to the store.'* O S V PP

- b. Protože prý Karel **sekretářku** poslal do obchodu. S O V PP  
 c. Protože prý Karel poslal **sekretářku** do obchodu. S V O PP  
 d. Protože prý Karel poslal do obchodu **sekretářku**. S V PP O
- (10)C. Zjistil jsi, proč dnes sekretářka tak nadávala na Karla?  
*'Did you find out why our secretary was so angry with K. today?'*  
 a. Protože prý **sekretářku Karel** poslal do obchodu.  
     because allegedly secretary K. sent to store  
     *'Because allegedly K. sent the secretary to the store.'* O S V PP  
 b. Protože prý **Karel sekretářku** poslal do obchodu. S O V PP  
 c. Protože prý **Karel** poslal **sekretářku** do obchodu. S V O PP  
 d. Proto že prý **Karel** poslal do obchodu **sekretářku**. S V PP O

When applied to our experimental materials, the partition approach predicts that only the object-initial structure will be acceptable when the subject is new. When the subject is given, the predictions depend on whether an economy condition is assumed to be active in Czech scrambling. If it is, the object is expected to move to the position preceding the (new) verb, but following the (given) subject, since this is the minimal movement necessary for establishing a partition. If no economy condition is assumed, the initial position should also be acceptable. In any case, an interaction between object position and the givenness status of the subject is expected under the partition approach.

In contrast, the prosodic approach does not predict such an interaction: only the position in which the given object is in sentence-final position, carrying sentence stress should be unacceptable, irrespective of the givenness status of the subject.

The results are illustrated in Figure 2 and summarized in Table 2.

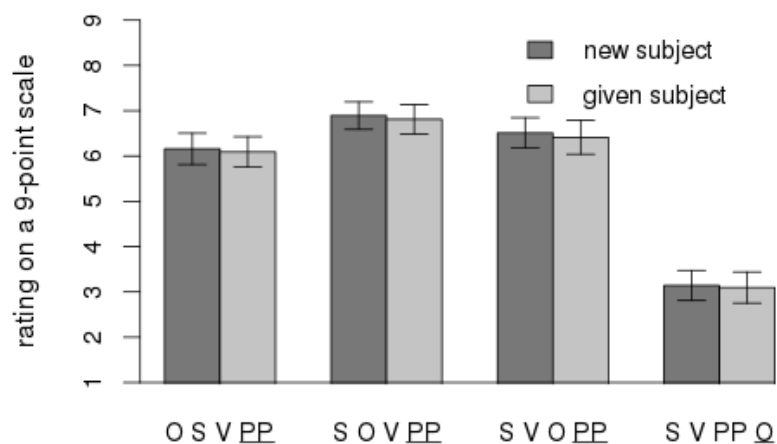


Figure 2: Mean ratings with 95% confidence intervals for Experiment 2

Word order	Given subject	New subject
O S V PP	6.09 (0.17)	6.16 (0.17)
S O V PP	6.81 (0.16)	6.89 (0.15)
S V O PP	6.41 (0.19)	6.51 (0.17)
S V PP O	3.10 (0.17)	3.14 (0.17)

Table 2: Mean ratings for Experiment 2, standard errors in brackets

An ANOVA showed a significant main effect of object position ( $F_1(1,43) = 132.90$ ,  $F_2(1,31) = 151.87$ , all  $p$ 's  $< 0.001$ ). The givenness of the subject did not have a main effect ( $F_1 = 0.42$ ,  $p = 0.52$ ;  $F_2 = 0.22$ ,  $p = 0.64$ ) and did not interact with the other factor ( $F_1 < 0.001$ ,  $p = 0.95$ ;  $F_2 = 0.01$ ,  $p = 0.92$ ). A post-hoc analysis showed that all four levels of the object position factor differed significantly from each other, with S V PP O  $<^*$  O S V PP  $<^{**}$  S V O PP  $<^{**}$  S O V PP (\*\*Holm-Bonferroni adjusted  $p = 0.001$ ;  $*p < 0.05$ ).

### 3.3 Discussion

As for the Experiment 1, we interpret the results as an indication that there are two fully acceptable word orders in Czech in the absence of any givenness-related movement: S V PP O and S V O PP. We assume that

both orders can be base-generated. When the object is scrambled to a position further to the left, acceptability decreases significantly. At the same time, a referentiality effect shows up for these orders, in that the acceptability decrease is larger for non-referential than for referential objects.

Yet, upon a closer examination we found that this referentiality effect is partly due to the confounding factor of case ambiguity (we are grateful to an anonymous reviewer for drawing our attention to this factor; see also footnote 7). We found that the items in which the object was ambiguous between accusative and nominative case were rated as significantly less acceptable than the items in which the object was unambiguously accusative. Importantly, there were many more non-referential case-ambiguous objects (9 out of 16) than referential ones (3 out of 16). The high proportion of such items in the non-referential condition contributed to the relatively low acceptability of the whole non-referential condition. Indeed, after removing the case-ambiguous items from the analysis we find no significant difference between the acceptability ratings in the referential and non-referential pre-verbal condition. However, this step also decreases the number of items and thus the statistical power and it is unclear whether the observed contrast can be fully reduced to an effect of the confounding factor of case ambiguity or whether a part of the contrast has to be attributed to a genuine referentiality effect: a trend for higher acceptability of referential objects in pre-verbal position was found both within the ambiguous and unambiguous items. This remains to be tested in a study with a more careful control of the ambiguity factor.

The results of Experiment 2 confirm the prediction of the prosodic approach: S V PP O is the only word order that is clearly unacceptable, which was distinguished from the other candidates by the fact that the given object carried sentence stress. The prosodic approach does not have anything to say about the significant differences between the other conditions. However, these were very small numerically. With ratings consistently higher than 6 on a 9-point scale, we believe that all three orders with the object in non-final position should be considered acceptable options and an adequate model of Czech grammar should be able to generate them. If we are right in our assumption that S V O PP is a word order that can be base-generated, it is particularly interesting that this structure is also acceptable when the object is given: this means that



scrambling is possible, but not obligatory, for given elements if they are not in a position to receive sentence stress to begin with.

The main prediction of the partition approach was not borne out: no interaction was found between the givenness status of the subject and the position of the given object. In fact, givenness of the subject did not have any effect whatsoever, which is unexpected under the view that a partition between all given and all new items is the crucial requirement for acceptability. For the items with a new subject, the fact that S O V PP and S V O PP were both rated better than O S V PP clearly contradicts the prediction that the only acceptable position for the given object should be one where it precedes all other (new) elements. Within the items with a given subject, the fact that S O V PP is the most acceptable order is expected under a partition approach with an economy condition. However, the rather marginal size of the acceptability difference to the second- and third-best options makes it doubtful that a presupposition failure or a violation of Maximize Presupposition should be involved here, as the partition approach in Kučerová's implementation in terms of a G-operator would predict. We conclude that a given-new partition is not a relevant condition on the acceptability of Czech sentences.<sup>8</sup>

#### 4 Conclusion and open issues

In this paper, we aimed to distinguish empirically between two approaches to Czech scrambling. The theory proposed in Kučerová (2007) assumes a direct link between syntax and information structure by requiring a partition between given and new elements. We did not find

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<sup>8</sup> An anonymous reviewer points out that the givenness of the subject might be accommodated (drawing a comparison with existence presupposition accommodation in definite NPs). If that were the case, the participants would somehow come to believe that the new subject was in fact mentioned earlier in the discourse (prior to the context to which they were exposed). If new subjects were indeed systematically interpreted as given, the lack of an interaction between subject givenness and object position would be expected. Such an explanation needs support by independent evidence. At this point, we can only point out that we found no such evidence in our reaction time data: the participants did not take significantly more time to rate the new-subject items than they needed for the given-subject items. This is unexpected, since accommodation needs time, as was first experimentally shown by Haviland and Clark (1974) (see also Šimík and Wierzbica under review for a reaction time effect found for uniqueness presupposition accommodation in Czech).

evidence for this requirement: any position without sentence stress is fine for a given object, even if it follows a new element. The prosodic approach assumes a direct link between prosody and information structure in the form of the DESTRESS-GIVEN constraint, and a direct link between syntax and prosody in form of the HEAD-*t*-R constraint. An interaction between syntax and information structure is established only in an indirect way. Our results are consistent with the prosodic theory, but it is clearly not sufficient to explain all the contrasts (or lack thereof) found in the results. Strictly speaking, the prosodic theory overgenerates and an adequate model of the results would ultimately have to refer to additional rules and/or constraints.

Consider first the most robust contrast found in Experiment 1: in all-new sentences, pre-verbal positions of the object were less acceptable than post-verbal positions. The prosodic theory itself predicts no such contrast: in none of the conditions was DESTRESS-GIVEN (or any other prosodic constraint) violated. The contrast could follow from an economy constraint prohibiting unmotivated movement (of the kind argued for e.g. in Reinhart 2006), assuming that the pre-verbal position is derived by scrambling. A relevant motivation for such movement could, for instance, be the satisfaction of the prosodic constraint DESTRESS-GIVEN. Since this constraint is satisfied by the base-generated order, there is no reason for scrambling, a consequence of which is that the conditions with the pre-verbal object were rated as less acceptable. Unfortunately, this reasoning is problematic with respect to the results found in Experiment 2. The main result of this experiment was that the scrambling of the given object is just as acceptable as keeping it in situ – as long as it is not placed clause-finally to receive main stress. Under our assumptions, there is a base-generated order that satisfies DESTRESS-GIVEN (the O PP order), and, as such, scrambling should be unmotivated and therefore prohibited, contrary to the observed facts.

Furthermore, it seems as though given expressions, as opposed to new ones, are allowed to scramble freely, provided that independent constraints are not violated. This difference between given and new elements does not follow from the prosodic theory either. Although we did not find a direct interaction between givenness and word order in the form of a partitioning requirement, this observation might make it necessary to introduce a connection between givenness and the degree of word order flexibility. Another possibility potentially compatible with

the view that givenness does not directly relate to syntax is that scrambling is not conditioned or supported by givenness but rather by some other factor(s). As discussed in Section 3.3, case ambiguity and possibly also referentiality influences the acceptability of objects in pre-verbal positions. In Experiment 1, we saw a significant acceptability advantage for case-unambiguous objects in pre-verbal condition and a similar trend for referential objects. Since all the objects in Experiment 2 were referential, we cannot exclude the possibility that referentiality might have been a relevant licensing factor for scrambling there. More research is needed to establish the impact of these additional factors on Czech scrambling.

Further, from a prosodic perspective as well, we are far from having exhausted relevant possibilities regarding the realization of preferred and dispreferred options that we have considered. Finer and further prosodic distinctions such as rules governing minor or prosodic phrase construction, phonological phrase-internal organization, or focus realization when taken separately from the realization of givenness, may impose additional restrictions on the well-formedness of some of the relevant structures about which we may be unaware. The investigation of factors such as these warrant hypothesis testing in their own right.

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## **Case Errors in Processing: Evidence from Russian<sup>\*</sup>**

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### **1 Introduction**

Many studies discuss the role of morphological ambiguity in production and comprehension. This work sheds light on several major questions: how are ambiguous forms, and thus any inflectional forms, represented in the mental lexicon, how are syntactic trees built in production and processed in comprehension, and what is the nature of features. This paper contributes to these debates by looking at novel data. We conducted two self-paced reading experiments exploring how Russian adjective forms, which are ambiguous for case, influence the processing of case errors on the following nouns.

In Russian, some adjective forms are ambiguous between different cases: genitive, dative, instrumental, and prepositional for singular feminine forms and genitive and prepositional for plural forms, which are the same in all three genders. Rusakova (2001, 2009), who studied

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naturally occurring errors in Russian, noted a number of examples such as (1a-e). In all of these examples, a type of case, let us call it case A, is required on the noun; the form of the adjective modifying this noun is ambiguous between cases A and B and the noun erroneously appears in case B.

- (1) a. \*v predposlednej igry  
       in second-to-last<sub>F.PREP.SG (=F.GEN.SG)</sub> game<sub>F.GEN.SG</sub>  
       ‘in the second to last game’
- b. \*komitet po nauke i vysšej  
       committee for science<sub>F.DAT.SG</sub> and higher<sub>F.DAT.SG(=F.GEN.SG)</sub>  
       školy  
       school<sub>F.GEN.SG</sub>  
       ‘the committee for science and higher education’
- c. \*obitateli pjatoj kvartire<sup>1</sup>  
       residents fifth<sub>F.GEN.SG (=F.DAT.SG=F.PREP.SG)</sub> apartment<sub>F.DAT/PREP.SG</sub>  
       ‘the residents of the fifth apartment’
- d. \*more udovol’stvija ot tex  
       sea pleasure<sub>GEN.SG</sub> from those<sub>GEN.PL(=PREP.PL)</sub>  
       točnyx roditel’skix otvetax  
       precise<sub>GEN.PL(=PREP.PL)</sub> parental<sub>GEN.PL(=PREP.PL)</sub> answer<sub>PREP.PL</sub>  
       ‘a lot of pleasure from the parents’ precise answers’
- e. \*na voennyx sborov  
       during military<sub>PREP.PL(=GEN.PL)</sub> assembly<sub>GEN.PL</sub>  
       ‘during the military assembly’

These errors are remarkable because the distance between the wrong noun form and the preposition or the head noun that determine its case is very short: in the majority of cases, they are separated only by the ambiguous adjective form. How do these errors arise, what is the role of morphological ambiguity in triggering them, and what can they tell us about the inner workings of our mental lexicon and grammar? Unfortunately, Rusakova recorded only a dozen of such errors so it is impossible to say how different factors influence their frequency, which would give us a better understanding of their nature.

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<sup>1</sup> Dative singular coincides with prepositional singular for some feminine nouns, so it is impossible to tell which case was erroneously used in this example.

In this paper, we aim to solve this problem experimentally. We rely on the rich literature dedicated to another type of error: number and gender attraction errors in subject-predicate agreement. Several crucial findings and theories that are most relevant for our research are presented in Section 2. In particular, Section 2 shows that agreement attraction errors were studied not only in production, but also in reading experiments, which gave parallel results: errors that tend to arise more often in production are more easily overlooked in comprehension. Since experimental techniques used to induce agreement attraction errors are not applicable to our case, we conducted two self-paced reading experiments described in Sections 3 and 4. Section 5 contains the discussion of experimental results and conclusions.

## 2 Agreement attraction errors

A classical English example of an attraction error in subject-predicate agreement is given in (2).

- (2) \*The key to the cabinets are rusty.

The term *attraction* is used to describe the following phenomenon: the verb *are* erroneously agrees not with the head of the subject DP, *key*, but with an intervening noun, or attractor, *cabinets*. Attraction errors were studied in a variety of languages (e.g. Badecker & Kuminiak 2007; Bock & Miller 1991; Eberhard et al. 2005; Fayol et al. 1994; Francis 1986; Franck et al. 2002, 2006; Vigliocco et al. 1995, 1996) including Russian (e.g. Lorimor et al. 2008; Malko & Slioussar 2013; Wilson & Nicol 1999; Yanovich & Fedorova 2006). It was shown that such errors frequently occur naturally and are produced in high numbers in experimental conditions. In comparison, agreement errors without attraction, like (3), are very rare.

- (3) \*The key (to the cabinet) are rusty.

Almost all of the studies focused on number agreement; some studies looked at gender agreement as well. Examples like (2) and (3) were analyzed most often, but other constructions, like the one in (4), were also studied.

- (4) \*The hypotheses one entertain influence the outcome.

It was demonstrated that, while reading, people tend to overlook the same agreement errors that they produce more often (e.g. Pearlmutter et al. 1999; Wagers et al. 2009). This tendency can be measured in reading times, in grammaticality judgment accuracy and in ERP data. Numerous experiments also revealed various syntactic, semantic, and morphological factors affecting production and perception of agreement attraction errors. We will list several key findings that we refer to in later sections.

Agreement attraction was initially explained by linear proximity: the verb agrees with the closest DP rather than with the subject (e.g. Francis 1986, Jespersen 1924). Many studies proved that the linear order plays a very minor role (if any at all) and that the phenomenon depends on the syntactic structure of the sentence. For example, in Franck et al.'s (2002) study, there were significantly more errors with subject DPs like (5a) than with DPs like (5b), where the potential attractor is linearly closer to the verb, but hierarchically further away from the head of the subject DP. Examples like (4) above also illustrate this point.

- (5) a. the inscription on the doors to the toilet  
 b. the inscription on the door to the toilets

In all of the examined languages, only plural nouns caused significant attraction effects, provoking more errors in production and making errors less noticeable in comprehension. Agreement errors with singular attractors, like in (6), are almost as infrequent and as easy to detect as errors without attraction, as in (3). Most of the proposed accounts argue that the singular feature is unmarked in some sense and therefore cannot interfere with number agreement (e.g. Eberhard et al. 2005, Franck et al. 2002, Vigliocco et al. 1995).

- (6) \*The keys to the cabinet is rusty.

Morphological ambiguity of the attractor is an important factor. For example, in an experiment on German (Hartsuiker et al. 2003), subject DPs like (7a), where the form of the attractor is ambiguous between accusative and nominative, provoked significantly more errors than



subject DPs like (7b), where the attractor is unambiguously dative. Intuitively, the attractor should *look like* a subject. We will come back to the nature of this phenomenon below.

- (7) a. die                   Stellungnahme gegen die  
           the<sub>F,NOM,SG</sub> position                   against the<sub>ACC,PL(=NOM,PL)</sub>  
           Demonstrationen  
           demonstrations
- b. die                   Stellungnahme zu den  
           the<sub>F,NOM,SG</sub> position                   on the<sub>DAT,PL(≠NOM,PL)</sub>  
           Demonstrationen  
           demonstrations

Major theories modeling agreement attraction can be divided in two groups. Most authors argue that attraction is a result of illicit feature percolation (for example, from a dependent DP to the subject DP) or some similar mechanism (e.g. Eberhard et al. 2005, Franck et al. 2002, Nicol et al. 1997), i.e. it takes place when syntactic structure is constructed in production or in comprehension. Alternative accounts claim that errors arise when correctly constructed subject DPs are accessed to determine the number on the agreeing verb (e.g. Bock & Cutting 1992, Solomon & Pearlmutter 2004, Wagers et al. 2009). Several DPs are active in our working memory at this point and, especially if one of them formally resembles a subject, we are prone to confusion. We can produce an agreement error or overlook it in comprehension.

In the following sections, we reveal interesting parallels between agreement attraction and case errors in Russian, as discussed in the introduction. As a result, we gain a better understanding of these errors and make a contribution to some debates presented in this section.

### 3 Experiment 1

#### 3.1 Method

This study focuses on the following errors in Russian: case A is required on the noun, the form of the adjective modifying this noun is ambiguous between cases A and B, and the noun erroneously appears in case B. We decided to start looking at these errors in comprehension experiments, primarily because the experimental techniques used to induce agreement

errors in production are not applicable to our case, so new techniques need to be developed. We also kept in mind that while there are some sparse production data from naturally occurring errors, such errors have never been studied in comprehension. Figuring out whether such errors affect parsing in a different way than other case errors and, if yes, how in particular is crucial to understanding their nature.

Twenty-seven native speakers of Russian (17 female), aged 18–26, took part in Experiment 1.

The materials included 33 sets of target sentences and 108 fillers. All target sentences consisted of a subject DP: a noun with a PP modifier (N P Adj/Part N) and a predicate group. Predicate groups contained a verb with an object or a modifier, which were three words in total (prepositions, conjunctions or auxiliary verbs, which tend to be read especially fast, were avoided). DPs inside the PPs were in genitive plural and prepositional plural, where the adjective form is ambiguous, and in dative plural, which was used as a control condition. In every case group, nouns were animate in half of the target sets, but we note in advance that this distinction did not play a role for our data. Subject nouns were inanimate and always appeared in nominative plural.

In every set of target items, the noun inside the PP was in the correct case form in one sentence and in the wrong case form in the two other sentences. An example is given in (8a–c): the verb and the words following it coincide in all three sentences, so they are not repeated in (8b–c).

- (8) a. Neudači      v      prošlyx      sezonax      zastavili  
       failure<sub>NOM.PL</sub> in previous<sub>PREP.PL</sub> season<sub>PREP.PL</sub> made  
       komandu potrudit'sja.  
       team<sub>ACC.SG</sub> work<sub>INF</sub>  
       'Failures in the previous seasons made the team work.'
- b. \*Neudači      v      prošlyx      sezonov...  
       failure<sub>NOM.PL</sub> inprevious<sub>PREP.PL(=GEN.PL)</sub> season<sub>GEN.PL</sub>
- c. \*Neudači      v      prošlyx      sezonam...  
       failure<sub>NOM.PL</sub> inprevious<sub>PREP.PL(≠DAT.PL)</sub> season<sub>DAT.PL</sub>

The resulting experimental conditions are shown in Table 1. Let us note that conditions C2 and C4 contain the errors in which we are interested:

the preposition requires case A, the adjective form is ambiguous between cases A and B and the noun appears in case B.

	Prepositions taking genitive: 11 sets	Prepositions taking prepositional: 11 sets	Prepositions taking dative: 11 sets
Nouns in genitive	C1: correct form	C4: wrong form, as in (8b)	C7: wrong form
Nouns in prepositional	C2: wrong form	C5: correct form, as in (8a)	C8: wrong form
Nouns in dative	C3: wrong form	C6: wrong form, as in (8c)	C9: correct form

Table 1. Experimental conditions C1-C9 from Experiment 1.

Every subject saw one sentence from each set of target items. So, we had three experimental lists with 33 target sentences (22 of them contained case errors described above) and 108 fillers.<sup>2</sup> Filler sentences had diverse syntactic structures and were all grammatically correct. The number of target sentences in different conditions was balanced across lists. Every list started with five filler sentences and then target and filler sentences were pseudo-randomized (at most, two target sentences with errors appeared in a row).

The experiment was run on a PC using *Presentation* software. We used the so-called self-paced reading methodology. Target and filler sentences appeared one-by-one and were masked. Every key press revealed a new word in a sentence and masked the previously revealed word and RTs were measured. Comprehension questions with a choice of two answers were asked after 50% randomly selected sentences to ensure that the participants were reading properly.

We analyzed participants' question-answering accuracy and reading times. The raw reading times (per word) that exceeded 1500 ms were adjusted to this threshold. In total, about 0.4% of the data was adjusted. As for question-answering accuracy, given that no participant made more

<sup>2</sup> Initially, we had 12 sets in every group, but one had to be discarded due to a minor mistake in the procedure, and two sets in two other groups were also discarded to keep materials balanced.

than five mistakes, a breakdown of RTs into correct and incorrect question trials was not completed.

### 3.2 Results

We compared average RTs per region in conditions C1–C3, C4–C6 and C7–C9, shown in Table 1. The results are presented in Figures 1–3. All target sentences were seven words long, so there were seven regions in every sentence. There were no significant differences in regions 1–3 (before the nouns in a wrong case appeared) and in regions 6–7. The effects of violations were local, confined to regions 4–5. Average RTs in these regions are given in Table 2.

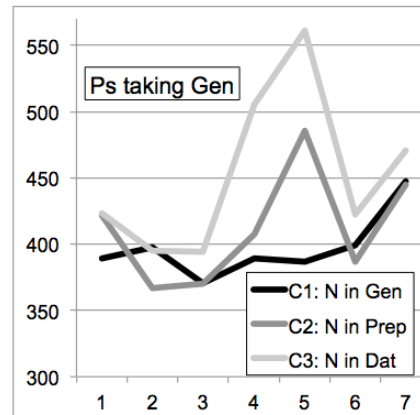


Figure 1. Average RTs per region (in ms) in conditions C1–C3.

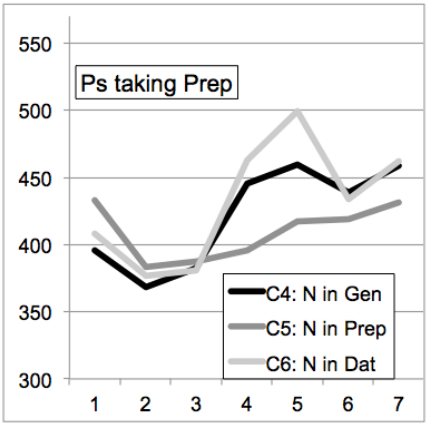


Figure 2. Average RTs per region (in ms) in conditions C4–C6.

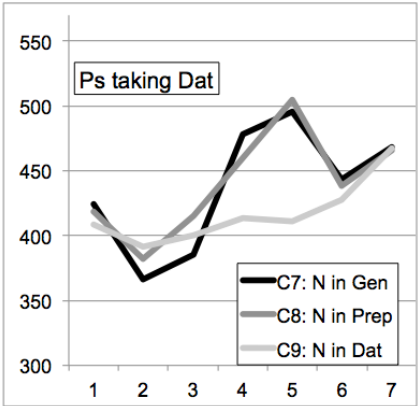


Figure 3. Average RTs per region (in ms) in conditions C7–C9.

Conditions	C1	C2	C3	C4	C5	C6	C7	C8	C9
Region 4	389.5	407.5	505.7	445.3	395.6	462.9	478.0	460.2	413.4
Region 5	386.7	485.8	560.9	459.3	417.4	499.5	496.0	505.1	411.3

Table 2. Average RTs (in ms) in regions 4–5 in Experiment 1.

After analyzing these data, we can make the following generalization: in C2 and C4, where the adjective form is ambiguous between cases A and B and the wrong noun appears in case B, the slow-down associated with

the errors is delayed and less pronounced in comparison with the other ungrammatical sentences, i.e. these errors are less noticeable than the other errors. Thus, there are parallel effects in production and comprehension, as in the case of agreement errors. Let us illustrate this generalization for all conditions triplets.

In the sentences with prepositions selecting genitive case, the difference between C1 (correct) and C3 (N in dative) is significant both in region 4 ( $F_1(1,52) = 7.19, p = 0.01$ ;  $F_2(1,20) = 6.12, p = 0.02$ ) and region 5 ( $F_1(1,52) = 12.26, p < 0.01$ ;  $F_2(1,20) = 15.55, p < 0.01$ ). The difference between C1 (correct) and C2 (N in prepositional) is significant only in region 5 ( $F_1(1,52) = 6.89, p = 0.01$ ;  $F_2(1,20) = 10.18, p < 0.01$ ). In the sentences with prepositions selecting prepositional case, the difference between C5 (correct) and C6 (N in dative) was significant in region 5 ( $F_1(1,52) = 4.14, p = 0.05$ ;  $F_2(1,20) = 5.81, p = 0.03$ ). The difference between C5 (correct) and C4 (N in genitive) never reached significance. In the sentences with prepositions selecting dative case, all errors were processed similarly. The differences between conditions were not significant in region 4, but reached significance in region 5 ( $F_1(1,52) = 7.74, p < 0.01$ ;  $F_2(1,20) = 13.34, p < 0.01$  for C9 versus C7;  $F_1(1,52) = 9.40, p < 0.01$ ;  $F_2(1,20) = 9.23, p < 0.01$  for C9 versus C8). No other comparisons between different conditions in different regions revealed significant results.

Several hypotheses can be suggested to explain the observed generalization. According to the first hypothesis, we forget what the case on the noun should be, try to recover it from the adjective and can make a mistake if the adjective is ambiguous. However, this hypothesis is undermined by the fact that the distance between the preposition and the noun is too short (the cases discussed in the literature usually involve something like an embedded clause or a participial construction intervening between the case licenser and the noun).

According to the second hypothesis, it is possible to build a local syntactic structure, say, a DP, in C2 and C4, and the violation is discovered only at a later stage, when we embed this DP in a PP, while otherwise, it is visible immediately. However, this does not explain the parallel mistakes made in production. In comprehension, we receive a form and need to determine its case, while in production, we first select the case and then choose the relevant form. Thus, ambiguity cannot play

any role in production, unless we deal with something like forgetting mentioned above or rechecking, as discussed below.

Given the problems with the first and second hypotheses, we favor the third one that will be elaborated in Section 4: the phenomenon we observed is similar to the subject-predicate agreement attraction. To gain a better understanding of this phenomenon, Experiment 2 analyzed how it depends on the linear distance between the adjective and the noun. Unlike many other effects, agreement attraction was demonstrated to be independent from linear distance. Finally, let us note that it is unclear why all effects are more pronounced in the sentences with genitive case.

## 4 Experiment 2

### 4.1 Method

Thirty-six native speakers of Russian (20 female), aged 17–34, took part in Experiment 2.

The materials consisted of 36 sets of target sentences and 108 fillers. There were six sentences in every set of target items. As before, all target sentences contained a subject noun with a PP modifier and a verb with an object or a modifier. However, this time, three sentences in every set had four words inside the subject DP (N P Adj/Part N) and the other three had seven words: the adjective or participle was followed by a three-word long modifier. An example is given in (9a–f) below.

Eighteen sets contained prepositions taking genitive case and 18 sets contained prepositions taking prepositional case (this time, we did not include prepositions taking dative case). In every set of target items, the noun inside the PP was in the correct case form in two sentences and in the wrong case form in the four other sentences. Genitive, prepositional and dative cases on nouns were used, as before. In all other respects, the stimuli were analogous to those used in Experiment 1.

- (9) a. Listja na pešexodnyx dorožkax radujut  
 leaf<sub>NOM.PL</sub> on pedestrian<sub>PREP.PL</sub> path<sub>PREP.PL</sub> gladden<sub>3PL</sub>  
 zolotistym cvetom.  
 golden<sub>INSTR.SG</sub> color<sub>INSTR.SG</sub>  
 ‘Leaves on the pedestrian paths gladden (us) with their golden color.’

- b. \*Listja na pešexodnyx dorožek...  
 leaf<sub>NOM.PL</sub> on pedestrian<sub>PREP.PL(=GEN.PL)</sub> path<sub>GEN.PL</sub>
- c. \*Listja na pešexodnyx dorožkam...  
 leaf<sub>NOM.PL</sub> on pedestrian<sub>PREP.PL(≠DAT.PL)</sub> path<sub>DAT.PL</sub>
- d. Listja na iduščix vdol' krutogo berega  
 leaf<sub>NOM.PL</sub> on going<sub>PREP.PL</sub> along steep<sub>GEN.SG</sub> bank<sub>GEN.SG</sub>  
 dorožkax...  
 path<sub>PREP.PL</sub>  
 'Leaves on the paths going along the steep (river) bank...'
- e. \*Listja na iduščix vdol' krutogo berega  
 leaf<sub>NOM.PL</sub> on going<sub>PREP.PL(=GEN.PL)</sub> along steep<sub>GEN.SG</sub> bank<sub>GEN.SG</sub>  
 dorožek...  
 path<sub>GEN.PL</sub>
- f. \*Listja na iduščix vdol' krutogo berega  
 leaf<sub>NOM.PL</sub> on going<sub>PREP.PL(≠DAT.PL)</sub> along steep<sub>GEN.SG</sub> bank<sub>GEN.SG</sub>  
 dorožkam...  
 path<sub>DAT.PL</sub>

The resulting experimental conditions are shown in Table 3. Conditions C2, C4, C8 and C10 contain the errors in which we are interested. We had six experimental lists. Every list contained 36 target sentences (24 of them with case errors) and 108 fillers. Otherwise, the design and procedure were the same as in Experiment 1.

	Prepositions taking genitive: 18 sets		Prepositions taking prepositional: 18 sets	
	'Short' conditions	'Long' conditions	'Short' conditions	'Long' conditions
Nouns in genitive	C1: correct form	C7: correct form	C4: wrong form, as in (9b)	C10: wrong form, as in (9e)
Nouns in prepositional	C2: wrong form	C8: wrong form	C5: correct form, as in (9a)	C11: correct form, as in (9d)
Nouns in dative	C3: wrong form	C9: wrong form	C6: wrong form, as in (9c)	C12: wrong form, as in (9f)

Table 3. Experimental conditions C1–C12 from Experiment 2.



As before, we analyzed participants' question-answering accuracy and reading times. No participant made more than five mistakes, so a breakdown of RTs into correct and incorrect trials was not done. The raw reading times that exceeded 1,500 ms were adjusted to this threshold. In total, about 0.6% of the data were adjusted.

#### 4.2 Results

We compared average RTs per region in C1–C3, C4–C6, C7–C9 and C10–C12, shown in Table 3. The results are presented in Figures 4–7. The effects of the violations were local, as in Experiment 1. Target sentences contained seven words in the short conditions and ten words in the long conditions. In the short conditions, significant differences were confined to region 4 (where the noun in the wrong case appears) and region 5. Average RTs in these regions are given in Table 4. In the long conditions, there were significant differences only in region 8 (following the region where the noun in the wrong case appears). Average RTs in this region are given in Table 5.

	C1	C2	C3	C4	C5	C6
Region 4	365.4	419.9	439.8	381.7	372.6	402.5
Region 5	384.7	476.0	511.5	450.0	397.6	475.3

Table 4. Average RTs (in ms) in regions 4-5 in conditions C1-C6.

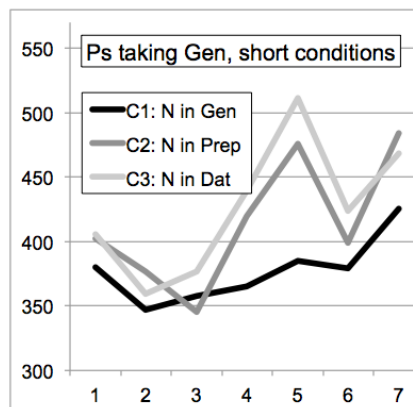


Figure 4. Average RTs per region (in ms) in conditions C1–C3.

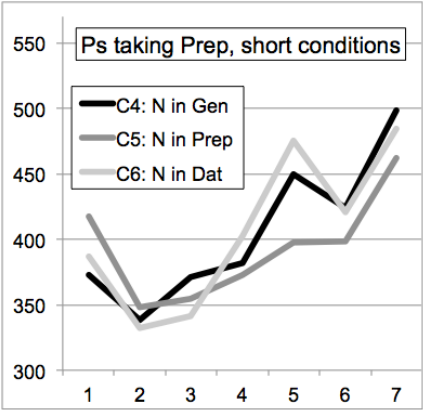


Figure 5. Average RTs per region (in ms) in conditions C4–C6.

	C7	C8	C9	C10	C11	C12
Region 8	366.6	417.8	459.4	417.4	394.3	431.3

Table 5. Average RTs (in ms) in region 8 in conditions C7-C12.

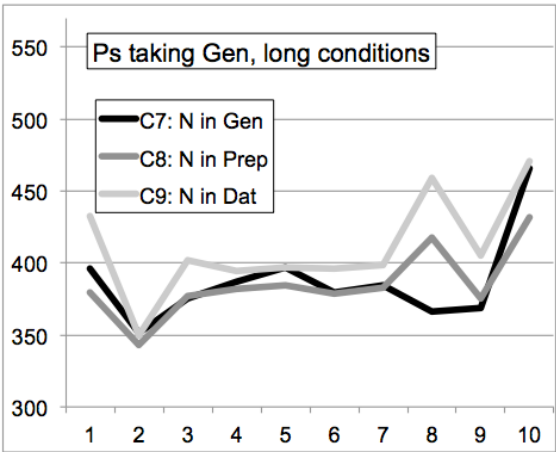


Figure 6. Average RTs per region (in ms) in conditions C7–C9.

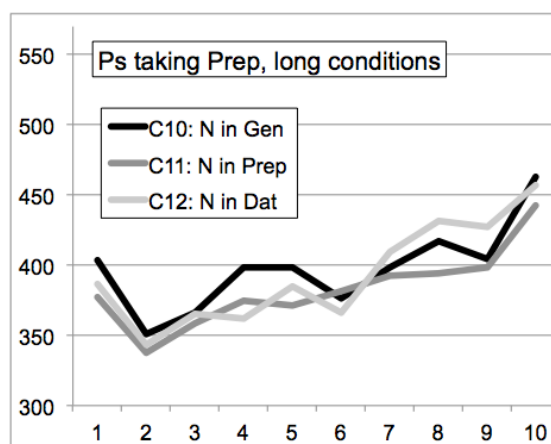


Figure 7. Average RTs per region (in ms) in conditions C10–C12.

In the short conditions, the results were the same as in Experiment 1. In the sentences with prepositions selecting genitive case, the difference between C1 (correct) and C3 (N in dative) was significant both in region 4 ( $F_1(1,70) = 4.01, p = 0.05$ ;  $F_2(1,34) = 6.96, p = 0.01$ ) and region 5 ( $F_1(1,70) = 9.15, p < 0.01$ ;  $F_2(1,34) = 10.05, p < 0.01$ ). The difference between C1 (correct) and C2 (N in prepositional) was significant only in region 5 ( $F_1(1,70) = 7.67, p = 0.01$ ;  $F_2(1,34) = 8.11, p = 0.01$ ). In region 4, the results approached significance ( $F_1(1,70) = 3.06, p = 0.08$ ;  $F_2(1,34) = 4.11, p = 0.05$ ). In the sentences with prepositions selecting prepositional case, the difference between C5 (correct) and C4 (N in genitive) never reached significance, while the difference between C5 (correct) and C6 (N in dative) was significant in region 5 ( $F_1(1,70) = 4.53, p = 0.04$ ;  $F_2(1,34) = 5.65, p = 0.02$ ).

Now let us turn to the long conditions. In the sentences with prepositions selecting genitive case, the difference between C7 (correct) and C9 (N in dative) was significant ( $F_1(1,70) = 10.92, p < 0.01$ ;  $F_2(1,34) = 11.12, p < 0.01$ ) in region 8, while the difference between C7 (correct) and C8 (N in prepositional) only approached significance ( $F_1(1,70) = 3.24, p = 0.07$ ;  $F_2(1,34) = 4.93, p = 0.03$ ). In the sentences with prepositions selecting prepositional case, there were no significant differences in any region. No other comparisons between different conditions in different regions yielded significant results.

In total, the effects of all violations are less pronounced and delayed in the long conditions. This is expected: numerous studies demonstrate that readers' ability to detect errors degrades when the syntactic complexity increases. However, the difference between two types of errors is visible both in the short and in the long conditions (although sometimes, it is not significant statistically). This is compatible with the hypothesis that the errors our study focused on are analogous to agreement attraction errors. Further discussion of the findings from both experiments will follow in the next section.

## 5 General discussion and conclusions

In this study, we looked at the following case errors: the preposition requires case A, the adjective form is ambiguous between cases A and B and the noun appears in case B. We found that such errors are detected later than other case errors. For the sentences with prepositions selecting genitive, this was proved statistically in Experiments 1 and 2 both in short and in long conditions. In the sentences with prepositions selecting prepositional case, no differences reached significance in the long conditions, but average RTs show the same tendency as in the short conditions in Experiments 1 and 2. In the region where the noun in the wrong case form appears and in the two following regions, RTs are longer in the sentences with dative nouns than in the sentences with genitive nouns.

The fact that the observed phenomenon does not depend on linear distance supports the hypothesis that it is similar to agreement attraction. This gives us a better understanding of its nature and at the same time provides an argument for one of two alternative approaches to agreement attraction. As we discussed in Section 2, one group of theories modeling agreement attraction assumes that it occurs due to illicit feature percolation or similar mechanisms when the syntactic structure of the sentence is constructed in production or in comprehension. Thus, in the Russian example (10), the subject DP erroneously gets its number feature from a dependent DP rather than from the head noun. However, this approach is inapplicable to our case errors: there is no other element from which the noun could get the wrong case.

- (10) \*Bilet na koncerty poterjalis'.  
 ticket<sub>NOM.SG</sub> for concert<sub>ACC.PL (=NOM.PL)</sub> got-lost  
 'The ticket for the concerts got lost.'

The alternative approach that claims that errors are produced or overlooked when we access information in the correctly built syntactic structure can be adapted to our examples. The following scenario can be assumed. When a wrong form is produced or encountered in comprehension (for example, the wrong number on the agreeing verb or the wrong case on the noun), the speaker or reader comes back to recheck the structure. Certain things may interfere with this process, such as an attractor noun, especially if it 'looks like' a subject, or an adjective that is ambiguous for case; let us call it 'attractor adjective.' Among other things, this shows that attraction is a more general phenomenon than it was believed, and gives us new tools with which to explore it.

The next step is to figure out how exactly attractors influence the access of information in the structure. When errors like (10) were analyzed in Russian and other languages, it was generally assumed that the plural feature on the dependent DP interferes with the process, while the formal resemblance to the subject only 'boosts' the effect. However, Slioussar and Vakulenko (2013), capitalizing on another type of morphological ambiguity in Russian, showed that the surface form of the attractor plays a more important role. In brief, they demonstrated that agreement attraction errors are more frequent with subjects like (11a) than with subjects like (11b). Thus, looking like a nominative plural subject is more important than actually being plural. Our results also point to the crucial role of the ambiguous surface form.

- (11)a. komnata dlja večerinki  
       room<sub>NOM.SG</sub> for patry<sub>GEN.SG (=NOM.PL)</sub>  
 b. komnata dlja večerinok  
       room<sub>NOM.SG</sub> for patry<sub>GEN.PL (=NOM.PL)</sub>

These findings have important implications for morphological theory because the role of the surface form is hard to explain in non-lexicalist frameworks assuming that syntax operates with sublexical units and actual words forms are glued together or inserted at the last stage. Our results can be taken to support the theories assuming that homonymous

forms share a morphological representation (e.g. Zwicky 1991) and that syntactic processing is sensitive to morphological structure.

Finally, in Experiment 1, all effects were more pronounced in the sentences with genitive case. This was also the case in Experiment 2, both in the long and in the short conditions. Thus, this result can hardly be accidental, but so far, we have no explanation for this finding. We hope that further experiments with ambiguous feminine singular adjective forms will shed light on this problem (these forms are ambiguous between four cases: genitive, prepositional, dative and instrumental).

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## **In Search for the Correlate of a Preposition Missing under Sluicing**

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### **1 Introduction**

Chung (2006) shows that P-stranding under sprouting in sluicing is not allowed cross-linguistically and proposes (1) in order to account for this fact.

- (1) Every lexical item in the numeration of the sluice that ends up (only) in the elided IP must be identical to an item in the numeration of the antecedent CP.

In this paper, I discuss data from Serbo-Croatian (SC), which involve numeral phrases with Genitive of Quantification (GQ QPs) in instrumental contexts under sluicing, as in (2).

- (2) Znam da upravlja jednim brojem fabrika, ali  
know<sub>1SG</sub> that manages one<sub>INS</sub> number<sub>INS</sub> factories<sub>GEN</sub> but  
ne znam (sa) koliko fabrika  
not know<sub>1sg</sub> with how-many factories<sub>GENQ</sub>  
'I know that he manages a certain number of factories, but I  
don't know how many factories.'

Examples like (2) are interesting, because, on the face of it, they seem to be counterexamples to (1). Example (2) shows that the GQ QP, *koliko fabrika*, can serve as a good remnant of sluicing and that P *sa* ('with') is

optional with it. Example (3) shows that when no sluicing occurs in the second conjunct, *sa* is obligatory.

- (3) Znam da upravlja jednim brojem fabrika,  
 know<sub>1SG</sub> that manages one<sub>INS</sub> number<sub>INS</sub> factories<sub>GEN</sub>  
 ali ne znam \*(sa) koliko fabrika upravlja.  
 but not know<sub>1SG</sub> with how-many factories<sub>GQ</sub> manages  
 ‘I know that he manages a certain number of factories, but I  
 don’t know how many factories he manages.’

Note that, in (2), the first conjunct contains no *sa*. The correlate of the remnant phrase *(sa) koliko fabrika* is the instrumental-case-marked NP *jednim brojem fabrika* (‘a certain number of factories’). Thus, examples like (2), without *sa* in the sluicing remnant, do not involve typical sprouting, but they do seem to involve a case of P-omission in the elided IP, where P is not identical to an item in the numeration of the antecedent CP. As such, examples like (2) may be taken to be counterexamples to (1), whenever *sa* is omitted from the remnant in the second conjunct.

In what follows, I first present data showing that SC has two strategies for deleting *sa* in examples like (2). In some cases, *sa* has to be pied-piped with the remnant in overt syntax and is then deleted after sluicing applies. In these cases, Chung’s generalization is not at stake, because *sa* is not included in the IP affected by sluicing. On the other hand, I also discuss examples in which *sa* can remain stranded in the IP undergoing sluicing. The availability of this strategy calls the generalization in (1) into question. However, I show that regardless of which strategy is used to delete *sa*, SC does not falsify Chung’s generalization. By examining the structure of GQ QPs in instrumental contexts, it can be shown that *sa* has a correlate in the antecedent clause. I show that GQ QPs in instrumental contexts are not PPs, despite the presence of *sa*. Rather, *sa* heads a case-related, extended projection of QP. This projection is present in all instrumental nominal phrases and is headed by *sa* whenever the nominal phrase in an instrumental context is a caseless form. In all other cases, it is headed by the instrumental affix. Thus, the correlate of *sa* is the same head in the instrumental NP in the antecedent, which is occupied by an affix that, on the surface, appears on the instrumental NP.

The paper is organized as follows: In Section 2, I examine the structural position of *sa* when sluicing applies, i.e. whether it is included

in the elided IP or not. Having seen in Section 2 that, in some cases, *sa* can be included in the elided IP, in Section 3, I examine the structure of instrumental phrases in order to find out whether the missing *sa* has a correlate in the antecedent. Section 4 is the conclusion.

## 2 Where is *sa* when sluicing applies?

In the previous section, we saw that a GQ QP in instrumental contexts cannot occur without *sa* ('with'), unless it is a remnant of sluicing, in which case, *sa* is optional. To find out whether such examples are counterexamples to (1), in this section, I examine the exact position of *sa* at the point when sluicing applies. More precisely, I examine whether it is included in the elided IP or not.

One case that may have *sa* in examples like (2) included in the elided IP is if P ends up there as a result of P-stranding. It is well known that SC does not allow P-stranding in cases that do not involve sluicing, as shown in (4).

- (4) a. \*Čega je Petar glasao protiv  
           what is Petar voted against  
           'What did Peter vote against?'  
       b. Protiv čega je Petar glasao?  
           against what is Petar voted  
           'What did Peter vote against?'

The question is whether P-stranding is allowed under sluicing. While Merchant (2001) argues that if a language does not allow P-stranding under regular *wh*-movement, it does not allow it under sluicing either, it can be shown that there are cases in SC where Ps must be pied-piped, even though they involve sluicing, but there are also cases where stranding Ps under sluicing is possible.

I first discuss examples showing that *sa* can be omitted in the second conjunct, even though it must be pied-piped with the remnant when it undergoes *wh*-movement. Consider the contrast in (5).

- (5) a. Zna da će upravljati jednim brojem  
           know<sub>3SG</sub> that will manage one<sub>INS</sub> number<sub>INS</sub>

preduzeća i jednim brojem fabrika, ali ne  
 companies<sub>GEN</sub> and one<sub>INS</sub> number<sub>INS</sub> factories<sub>GEN</sub> but not  
 zna tačno (sa) koliko preduzeća i (sa)  
 know exactly with how-many companies<sub>GQ</sub> and with  
 koliko fabrika.  
 how-many factories<sub>GQ</sub>

‘He knows that he will manage a certain number of companies  
 and a certain number of factories, but he doesn’t know exactly  
 how many companies and how many factories.’

- b. Zna da će upravljati jednim brojem  
 know<sub>3SG</sub> that will manage one<sub>INS</sub> number<sub>INS</sub>  
 preduzeća i jednim brojem fabrika, ali ne  
 companies<sub>GEN</sub> and one<sub>INS</sub> number<sub>INS</sub> factories<sub>GEN</sub> but not  
 zna tačno \*(sa) koliko preduzeća i (sa)  
 know exactly with how-many companies<sub>GQ</sub> and with  
 koliko fabrika će upravljati.  
 how-many factories<sub>GQ</sub> will manage

‘He knows that he will manage a certain number of companies  
 and a certain number of factories, but he doesn’t know exactly  
 how many companies and how many factories he will manage.’

Example (5a) shows that the remnant of sluicing is a coordinated phrase with two conjuncts containing GQ QPs. Note that, in the coordinated remnant, *sa* is optional in both conjuncts. Example (5b) shows that P has to be present in the first conjunct if no sluicing applies. Examples like (5a), with *sa* missing, provide a strong piece of evidence that the loss of *sa* in the remnant is not due to P-stranding. This is because, under no current theory of movement, can the coordinated remnant phrase move as a constituent, while stranding the Ps behind. Rather, it must be that the Ps are pied-piped together with the remnant in overt syntax and after sluicing deletes IP at PF, the Ps are dropped. Therefore, while sluicing provides a necessary condition for P-drop, it is not the case that Ps are deleted because they were in the IP affected by sluicing. Thus, whenever this strategy is employed in the deletion of *sa*, SC does not present a threat to (1).

As Stjepanović (2008) shows for similar examples, alternative analyses of examples like (5d), which, if on the right track, could trivially account

for (5a) because they do not implicate P-stranding, are ruled out. In particular, such examples do not involve base-generated remnants nor pseudo-sluicing. They cannot be base-generated remnants, given that they display binding connectivity effects, as shown in (6).

- (6) Petar<sub>i</sub> je upravljao jednim brojem svojih fabrika i  
 Petar<sub>i</sub> is managed one<sub>INS</sub> number<sub>INS</sub> self<sup>s</sup><sub>i</sub> factories<sub>GQ</sub> and  
 većim brojem njihovih preduzeća, ali  
 sizable<sub>INS</sub> number<sub>INS</sub> their companies<sub>GQ</sub> but  
 ne znam tačno (sa) koliko svojih fabrika  
 not know exactly with how-many self<sup>s</sup><sub>i</sub> factories<sub>GQ</sub>  
 i koliko njihovih preduzeća.  
 and how-many their companies<sub>GQ</sub>  
 ‘Petar managed a certain number of his factories and a sizable  
 number of their companies, but I don’t know exactly how many of  
 his factories and how many of their companies.’

Example (6) shows that the remnant can contain an anaphor, which is co-referential with the NP, *Petar*. A straightforward way to account for why the anaphor in the remnant can be bound is if we posit that it is part of a full IP at some point, with the subject, *Petar*, c-commanding it. The base-generated fragment approach would at best require either a rather novel view of binding or a novel and elaborate way of generating the necessary structure and integrating the fragment into it.

Examples like (5a) are also not cases of pseudo-sluicing, a cleft clause strategy of the type illustrated in (7).

- (7) a. Someone just left—guess who (~~it was that just left~~).  
 b. Upravljao je jednim brojem preduzeća i  
 managed is one<sub>INS</sub> number<sub>INS</sub> companies<sub>GEN</sub> and  
 jednim brojem fabrika, ali ne znam tačno  
 one<sub>INS</sub> number<sub>INS</sub> factories<sub>GEN</sub> but not know exactly  
 koliko preduzeća i koliko fabrika  
 how-many companies<sub>GQ</sub> and how-many factories<sub>GQ</sub>

~~(je to bilo kojima je upravljao)~~  
 is that been which<sub>INS</sub> he managed.  
 ‘He managed a certain number of companies and a certain  
 number of factories, but I don’t know exactly how many  
 companies and how many factories (it was that he managed).’

That (7b) is not the right derivation of (5a) is proved by (8).

- (8) Petar je upravljao jednim brojem svojih fabrika i  
 Petar<sub>i</sub> is managed one<sub>INS</sub> number<sub>INS</sub> self’s<sub>i</sub> factories<sub>GQ</sub> and  
 većim brojem njihovih preduzeća, ali ne znam  
 sizable<sub>INS</sub> number<sub>INS</sub> their companies<sub>GQ</sub> but not know  
 tačno koliko njegovih/\*svojih fabrika i  
 exactly how-many his/self’s factories<sub>GQ</sub> and  
 koliko njihovih preduzeća \*(je to bilo kojima je  
 how-many their companies<sub>GQ</sub> is it been with-which is  
 on upravljao).  
 he managed  
 ‘Petar managed a certain number of his factories and a sizable  
 number of their companies, but I don’t know exactly how many  
 of his factories and how many of their companies it was that he  
 managed.’

As (8) shows, cleft clauses in SC exhibit a lack of binding connectivity effects, unlike examples like (5a) above. Therefore, such examples involve sluicing, rather than pseudo-sluicing.

Given that examples like (5a) involve sluicing, it can also be shown that the coordinated remnant is not a biclausal structure, which, if on the right track, could allow for the loss of P to be conditioned by P-stranding, as illustrated in (9).

- (9) [<sub>CP</sub> koliko fabrika [<sub>TP</sub> ... sa ...]] i [<sub>CP</sub> koliko preduzeća [<sub>TP</sub> ... sa ...]]  
 A contrast in interpretation of the example in (10a), which involves sluicing, and the example in (10b), which does not, provides an argument against a bi-clausal analysis of examples with sluicing.

- (10)a. Istovremeno je žonglirao većim brojem loptica  
 simultaneously is juggling sizable<sub>INS</sub> number<sub>INS</sub> balls<sub>GEN</sub>

- i        jednim brojem    čunjeva, ali ne znam tačno  
 and one<sub>INS</sub> number<sub>INS</sub> clubs<sub>GEN</sub> but not know exactly  
 (sa) koliko        loptica i    (sa) koliko        čunjeva.  
 with how-many balls<sub>GQ</sub> and with how-many clubs<sub>GQ</sub>  
 ‘He juggled a sizable number of balls and a certain number of  
 clubs simultaneously, but I don’t know exactly how many balls  
 and how many clubs.’
- b. Žonglirao je većim brojem loptica  
 juggled is sizable<sub>INS</sub> number<sub>INS</sub> balls<sub>GEN</sub>  
 i žonglirao je jednim brojem čunjeva,  
 and juggled is one<sub>INS</sub> number<sub>INS</sub> clubs<sub>GEN</sub>  
 ali ne znam sa koliko loptica je žonglirao  
 but not know<sub>ISG</sub> with how-many balls is juggled  
 i sa koliko čunjeva je žonglirao.  
 and with how-many clubs is juggled  
 ‘He juggled a sizable number of balls and he juggled a certain  
 number of clubs, but I do not know how many balls he juggled  
 and how many clubs he juggled.’

While (10a) with sluicing implies that there was one event of juggling the balls and clubs at the same time, (10b), with no sluicing, can only mean that there were two events of juggling: juggling the balls and juggling the clubs. If (10a) allowed for a biclausal structure in the second conjunct, one would expect the same type of interpretation as in (10b).

Thus, given that examples like (5a) are instances of sluicing and that the remnant is not a biclausal structure, P-stranding cannot be implicated in the loss of *sa* in such examples. While we have seen so far that *sa* can be omitted in the remnants of sluicing in SC without first having been stranded in its IP and then deleted by sluicing when it elides the IP, there are also examples showing that *sa*-stranding can be implicated in the loss of *sa* in the sluice. In addition, if this is the case, then, it brings up the question of whether *sa* has a correlate in the antecedent, given (1).

The examples are based on the proposals regarding extraordinary Left Branch Extraction (eLBE) in Bošković (2005, 2013) and Talić (2012, 2013). ELBE involves Left Branch Extraction (LBE) out of a PP, which appears to involve non-constituent movement:

- (11)a. U veliku on uđe        sobu  
           in big     he entered    room

- b. U veliku on uđe [PP ~~u~~ [ ~~veliku~~ sobu ]]  
 in big he entered in big room  
 'He entered a big room.'

Bošković (2005) provides strong evidence that eLBE does not involve remnant PP fronting, i.e. movement of the NP out of the PP, followed by fronting of the PP. Rather, he provides evidence for the analysis proposed in Borsley and Jaworska (1988) and Corver (1992), where eLBE involves ordinary LBE. Under this analysis, the preposition adjoins to the adjective (P-incorporation) and then the whole complex undergoes LBE. As Bošković (2005) points out, there are two possible implementations of this analysis: either P lowers to the AP (the lowering analysis), or the AP moves to a position c-commanding the P (e.g. Spec-PP), after which P adjoins to it (the raising analysis). Based on the behavior of accent shift in these constructions in the Bosnian variety of the language, Talić (2012, 2013) provides a strong argument for the raising analysis of P-incorporation.

Furthermore, Talić (2012) discusses the contrast between examples similar to those in (12), based on which she concludes that P-incorporation is obligatory.

- (12)a. Neko je ušao u neakvu sobu, ali ne znam  
 somebody is entered in some room, but not know  
 ko (u) kakvu.  
 who in what-kind  
 'Somebody entered some room, but I don't know who what room.'
- b. \*Neko je glasao protiv nečega, ali ne znam  
 someone is voted against something but not I-know  
 ko (\*protiv) čega.  
 who against what  
 'Someone voted against something, but I don't know what.'

In order to explain why it is possible for a preposition to be omitted under sluicing in the remnant in (12a), while this is not possible in the remnant in (12b), Talić (2012) proposes that the contrast is due to two facts: i) that P-incorporation is obligatory; and ii) that a violation of this requirement cannot be repaired by sluicing. Precisely, Talić (2012)



proposes that both examples involve a locality violation induced by AP movement in (12a) and NP movement in (12b), when they strand the Ps, which can be repaired by sluicing. However, (12a) involves movement of the AP only, leaving the rest of the NP inside the PP, so P still has a host into which it can incorporate. In (12b), though, P remains without a host after the NP moves and, therefore, it fails to incorporate. Sluicing cannot override this obligatory P-incorporation requirement and the result is ungrammatical.

Thus, the contrast between (12a) and (12b) is due to the fact that the Ps are stranded in both examples, but the P can still undergo incorporation in (12a), while it fails to do so in (12b). In other words, we have evidence that Ps can be stranded in SC, as long as P still has the possibility to incorporate into a host in its stranded position and P-stranding is rescued by sluicing. Now, note that GQ QPs in instrumental contexts behave the same way with respect to the possibility of the omission of *sa* in examples parallel to (12):

- (13)a. Neko je ovladao većim brojem jezika,  
 someone is mastered larger<sub>INS</sub> number<sub>INS</sub> languages<sub>INS</sub>  
 ali ne znam ko (sa) koliko.  
 but not know who with how-many  
 ‘Someone mastered a large number of languages, but I don’t know who how many languages.’
- b. Neko je ovladao većim brojem jezika,  
 someone is mastered larger<sub>INS</sub> number<sub>INS</sub> languages<sub>INS</sub>  
 ali ne znam ko \*(sa) koliko jezika.  
 but not know who with how-many languages  
 ‘Someone mastered a large number of languages, but I don’t know who how many languages.’

While *sa* is optional when only *koliko* (‘how many’) is a remnant, it is impossible to omit it if the whole QP *koliko jezika* (‘how many languages’) is a remnant. The contrast can be explained in much the same way as the one in (12). Example (13a) is possible without *sa*, because when *sa* is stranded in its IP, it still has the chance to incorporate into *jezika* that also stays behind, before sluicing deletes IP. There is no such possibility for the stranded *sa* in (13b). Note that, in (13a), without *sa*, *sa* is included in the elided IP, but it does not appear to be identical to

an item in the numeration of the antecedent CP. Thus, the question is whether there is a correlate for *sa* in the antecedent or whether such examples present a counterexample to (1). In the following section, I search for the missing *sa*'s correlate.

### 3 The Correlate

In this section, I argue that the correlate of *sa* in the antecedent is the instrumental case marker that, on the surface, appears on the correlate noun, but is inserted into the structure as the head of the same phrase as *sa*. I argue that this phrase is a case-related, extended projection of QP or NP in instrumental contexts. The evidence for the presence of this projection is based on some extraction possibilities out of GQ QPs in instrumental contexts, within Bošković's (to appear) approach to contextually determined phasehood.

Bošković (to appear) proposes that the phasehood of a projection is determined based on the syntactic context in which it is found. He argues that the highest phrase in the extended projection of a lexical category functions as a phase. One piece of evidence for this proposal is based on the divergent behavior of inherently and structurally case-marking NPs with respect to extraction of their NP complements. Bošković (to appear) shows that inherently case-marking NPs allow their inherently case-marked complements (for example, the instrumental NP *čime* ('with what') in (14a)) to be extracted, while structurally case-marking NPs do not allow extraction of their genitive complements, as shown in (14b). Genitive assigned by nouns is a structural case; a counterpart of verbal accusative.

- (14)a. Čime<sub>i</sub> ga je [prijetnja t<sub>i</sub>] uplašila?  
           what<sub>INSTR</sub> him is threat scared  
           'The threat of what scared him?'  
       b. \*Koga<sub>i</sub> si pronašla [sliku t<sub>i</sub>]  
           who<sub>GEN</sub> are found picture  
           'Of whom did you find a picture?'

Bošković (to appear) accounts for the contrast in (14) in terms of interaction between the Phase Impenetrability Condition (PIC) (Chomsky 2000, 2001) and anti-locality which bans movement that is

too short (Bošković 1994, 1997, 2005, Grohmann 2003, Abels 2003, among others), first observed by Abels (2003). Movement is too short if it does not cross at least one full phrase (not just a segment of a phrase). Abels (2003) observes that phasal complements are immobile, as illustrated in (15), where the movement of IP, a complement of the phasal head, C, is prohibited.

- (15)a.  $*[_{CP} IP_i [_{C'} C t_i ]]$  (Abels 2003)  
 b.  $*[_{IP} \text{Anything will happen}]_i, \text{nobody believes } [_{CP} t_i [_{C'} \text{that } t_i ]]$ .

Abels (2003) explains the immobility of phasal complements in terms of conflicting requirements that the two mechanisms impose on movement. The PIC requires phasal complements to move to the Spec of the phase, but given that this movement does not cross a full maximal projection, it is ruled out by anti-locality. Bošković (to appear) argues that this is exactly what bans movement in (14b). He argues that there is a parametric difference between languages with and without articles in that the former have a DP projection, while the latter do not. SC is an articleless language without the DP projection. Instead, the highest projection in a traditional nominal phrase like *knjiga* ('a/the book') in SC is NP. Thus, NP is a phase. In order for the genitive complement of the N *knjigu* ('book') in (14b) to undergo movement out of the NP, headed by *knjigu*, the genitive NP has to move through the Spec of NP headed by *knjigu*, but anti-locality prohibits this movement. If the genitive complement moves out of the NP without stopping in its Spec first, the PIC is violated. Thus, movement of the genitive NP complement of N is doomed. In a language with articles, like English, the highest projection in a nominal phrase is DP. Therefore, DP, rather than the NP complement of D, is a phase. The movement of a complement of N in English is, then, expected to be possible. The expectation is borne out, as illustrated in (16).

- (16)  $[_{PP} \text{Of whom}] \text{ do government employees see } [_{DP} [_{NP} \text{pictures } t_i ]]$   
 every day?

Here, the PP, *of whom*, crosses a non-phase NP *pictures*, a full phrase, before stopping in Spec-DP and moving out of the DP phase.

As for examples like (14a), Bošković (to appear) concludes that NP complements of inherent case assigning nouns have more structure, which enables extraction out of such NPs to obey anti-locality. More precisely, in (14a), there is an additional phrase between the NP headed by *prijetnja* ('threat') and its instrumental NP complement *čime* ('with what'), which Bošković calls FP. The NP headed by *prijetnja* ('threat') is a phase, but movement of its complement can proceed without violating the PIC or anti-locality. This is because the instrumental NP crosses the non-phase FP, before stopping in the Spec of the higher NP, and moving out of it.

Furthermore, Bošković (to appear) shows that there is a parallelism in extraction possibilities between examples like (14) and examples involving extraction of other elements out of structurally and inherently case-marking NPs in SC, and that this parallelism can be explained in the same way. Thus, he shows that while deep LBE, i.e. LBE out of a complement of a noun, is allowed with inherently case-marked NP complements of nouns, it is impossible out of structurally case-marked NP complements of nouns:

- (17)a. ?Kakvom<sub>i</sub> ga je uplašila [prijetnja [t<sub>i</sub> smrću]]?  
 what-kind-of<sub>INSTR</sub> him is scared threat<sub>ACC</sub> death<sub>INSTR</sub>  
 'A threat of what kind of death scared him?'  
 b. \*Kakvih<sub>i</sub> on cijeni [NP<sub>1</sub> [N'1 prijatelje [NP<sub>2</sub> t<sub>i</sub> [NP<sub>2</sub> studenata]]]  
 what-kind-of he appreciates friends<sub>ACC</sub> students<sub>GEN</sub>  
 'The friends of what kind of students does he appreciate?'

Likewise, an adjunct can move out of an inherently case-marked complement of N, but it cannot out of a complement of a structurally case-marking NP:

- (18)a. ?Iz kojeg grada<sub>i</sub> ga je uplašila pretnja [djevojkama t<sub>i</sub>]  
 from which city him is scared threat<sub>NOM</sub> girls<sub>INS</sub>  
 'A threat with girls from which city scared him?'  
 b. ?\*Iz kojeg grada<sub>i</sub> je Petar kupio slike [djevojke t<sub>i</sub>]  
 from which city is Peter bought pictures<sub>ACC</sub> girl<sub>GEN</sub>  
 'From which city did Peter buy pictures of a girl?'

As Bošković (to appear) points out, both deep LBE and deep adjunct movement can proceed unhindered out of an inherently case-marked NP complement because of the presence of FP between it and the inherently case-marking NP. The presence of FP allows both the left branch element (which starts as an adjunct to the lower NP) and the adjunct PP to move out of the higher NP, a phase, without violating anti-locality and the PIC. The lack of FP between structurally case-marking NPs and their complements causes the movement of the left branch element and adjunct to violate either anti-locality or the PIC, just as in the case of the example in (14b) above.

Going back to examples involving GQ QPs, Bošković (to appear) shows that they pattern with inherently case-marked NPs with respect to extraction possibilities. Thus, deep LBE from under the numeral as well as adjunct extraction and movement of the complement of the numeral are all allowed:

- (19)a. Skupih kola<sub>i</sub> je kupio pet t<sub>i</sub>  
 expensive cars<sub>GEN</sub> is bought five  
 'He bought five expensive cars.'
- b. Skupih<sub>i</sub> je kupio pet t<sub>i</sub> kola  
 expensive is bought five cars  
 'He bought five expensive cars.'
- c. Iz kojeg grada je sreo pet [djevojaka t<sub>i</sub>]  
 from which city is met five girls  
 'From which city did he meet five girls?'

Bošković (to appear) shows that the pattern in (19) is accounted for in much the same way as the extraction pattern with inherently case-marking NPs. He assumes that GQ QPs are QPs containing the numeral. The head of QP takes an NP complement with GQ. Given that in contrast to adnominal genitive, GQ is an inherent case, as argued convincingly by Franks (1994), Bošković proposes that there is an FP between QP and GQ NP, as shown in (20).

- (20) [QP five [FP F [NP expensive [NP cars ]]]]

Being the highest phrase in the extended projection of the noun *cars*, QP counts as a phase in this structure. It is easy to see that given the structure

in (20), deep LBE from under the numeral, adjunct extraction and movement of the complement of the numeral in examples like (19) can proceed without violating anti-locality or the PIC, just as they can with inherently case-marking NPs.

Having seen how to account for the extraction possibilities with inherently case-marked NPs and GQ QPs, we are ready to go back to GQ QPs in instrumental contexts under sluicing in order to look for the correlate of the missing *sa*. The extraction patterns out of GQ QPs in instrumental contexts will provide a clue to the structure of instrumental phrases, which will help us in the search for the correlate.

Let us first consider examples involving deep LBE from under the numeral, adjunct extraction and movement of the complement of the numeral in GQ QPs in instrumental contexts:

- (21)a. Ponosio se sa pet skupih kola<sub>i</sub>  
 took-pride SE with five expensive<sub>GQ</sub> cars<sub>GQ</sub>  
 'He was proud of five expensive cars.'
- b. Sa skupih kola<sub>i</sub> se ponosio pet  
 with expensive<sub>GQ</sub> cars<sub>GQ</sub> SE took-pride five  
 'He was proud of five expensive cars.'
- c. Sa skupih<sub>i</sub> se ponosio pet t<sub>i</sub> kola  
 with expensive SE took-pride five cars  
 'He was proud of five expensive cars.'
- d. Iz kojeg grada<sub>i</sub> se ponosio sa pet [djevojaka t<sub>i</sub>]  
 from which city SE took-pride with five girls  
 'Five girls from which city was he proud of?'

As we can see, the extraction of these elements out of GQ QPs in instrumental contexts patterns with their extraction in examples like (14a), (17a), (18) and (19). In other words, it is allowed. The only peculiarity has to do with the presence of *sa*, which has to be pied-piped in the case of complement extraction in (21b) and deep LBE in (21c), and cannot be left in its original position, as shown in (22).

- (22)a. \*Skupih kola se ponosio sa pet  
 expensive<sub>GQ</sub> cars<sub>GQ</sub> SE took-pride with five  
 'He was proud of five expensive cars.'

- b. \*Skupih se ponosio sa pet kola  
 expensive<sub>GQ</sub> SE took-pride with five cars  
 'He was proud of five expensive cars.'

The fact that *sa* must be pied-piped here, even though it does not form a constituent with the moved elements underlyingly, can be explained in terms of P-incorporation discussed above. When the NP complement of Q, *skupih kola*, in (21b) or the left branch element, *skupih*, in (21c) move through the Spec of the phrase headed by *sa*, *sa* can and must incorporate into these elements and move together with them. Since *sa* cannot incorporate into adjunct PPs, as in (21d), it can be left behind where there is a possibility for it to incorporate with *pet djevojaka* or *pet*, if incorporation is obligatory, as discussed above. Regardless of the fact of why *sa* has to be pied-piped in (21b) and (21c), but it cannot in (21d), it is clear that the GQ complement, deep LBE and adjunct extraction are possible out of GQ QPs that occur with *sa* ('with').

The question at this point is: What is the structure of GQ QPs in instrumental contexts that occur with *sa* that allows for this extraction pattern? One obvious possibility is that they are PPs because of the presence of *sa* ('with'). In other words, *sa* heads a PP and takes the GQ QP as its complement. However, one very interesting thing that has not been noticed so far is that GQ QPs with *sa* do not pattern together with PPs, with respect to the extraction possibilities seen above. Consider (23).

- (23)a. Pričao je o pet skupih kola  
 talked is about five expensive<sub>GQ</sub> cars<sub>GQ</sub>  
 'He talked about five expensive cars.'
- b. O skupih kola je pričao pet  
 about expensive<sub>GQ</sub> cars<sub>GQ</sub> is talked five  
 'He talked about five expensive cars.'
- c. O skupih je pričao pet kola  
 about expensive<sub>GQ</sub> is talked five cars  
 'He talked about five expensive cars.'
- d. Pričao je o pet [pjesama sa tog albuma]  
 talked is about five songs from that album  
 'He talked about five songs from that album.'

- e. \*Sa kojeg albuma je pričao o pet [ pjesama t<sub>i</sub>]  
 from which album is talked about five songs  
 ‘Five songs from which album did he talk about?’

As we see in the pattern in (23), while deep LBE and complement extraction from under the numeral and out of PP are acceptable, deep adjunct extraction is not. With GQ QPs in instrumental contexts, deep adjunct extraction is possible. Thus, this contrast points to the fact that GQ QPs in instrumental contexts cannot be PPs. The question is how we account for the pattern observed in (23), as well as for the difference in deep adjunct extraction between GQ QPs in instrumental contexts with *sa* (‘with’) and GQ QPs that occur with other prepositions.

I show that the pattern in (23) is straightforwardly accounted for under the current analysis, with the additional assumption that traces do not head islands, as argued in Bošković (2013). In particular, we derive (23b) and (23c) from the following structure:

- (24) [PP about [QP five[FP [NP expensive [NP cars]]]]] <sup>1</sup>

Under the contextual approach to phasehood (Bošković to appear), QP is a phase in this structure, given that it is the highest nominal projection. The topmost PP is also a phase. Following Bošković (2006), I will assume that the numeral *pet* (‘five’) is in the Spec of QP, which is headed by a null Q. The AdjP *skupih* (‘expensive’) is adjoined to NP. Since GQ is an inherent case in SC, there is an FP between QP and NP. Given this, in (23b), the NP *skupih kola* (‘expensive cars’) must move through the edge of QP and PP, in order to not violate the PIC. It can move to the edge of QP without causing an anti-locality or PIC violation, because of the presence of FP<sup>2</sup>. As for the next step of the movement, if the edge position of QP to which the NP moves is Spec-QP, then the NP can move to the edge of PP without any problems. Once it moves there, P raises to it and incorporates, as discussed above. The whole P+NP

<sup>1</sup> Bošković (to appear) shows that the case assigned by Ps in SC is structural. Therefore, there is no FP between PP and QP.

<sup>2</sup> See Talić (2012, 2013) for an alternative account that forces movement of the complement of F through the edge of FP with the F head also moving, which voids the phasehood of FP.



complex then undergoes further movement. Next, let us see why (23e) is ungrammatical.

The relevant portion of the structure before movement in (23e) is as follows.

(25) [PP about [QP five<sub>[FP</sub> [NP [NP songs] from which album]]]]

The PP *sa kojeg albuma* ('from which album') can undergo movement from its adjoined NP position to the edge of QP without any problem, given the presence of FP. However, the question is why its movement out of PP causes a problem. We can account for the impossibility of its movement out of PP, if, following the line of research in Müller and Sternefeld (1993), we assume that adjoined elements move through adjoined positions (while Specs move through Specs). A similar approach was also proposed in Bošković (to appear). Given this requirement, the adjunct PP, 'from which album,' will have to adjoin to QP. This step does not cause any problems. In the next step, the PP will have to adjoin to PP, another phase. However, this movement violates anti-locality, and we get an ungrammatical result. Having accounted for (23b) and (23e), let us now take a look at (23c).

The structure of the example in (23c) before movement is given in (24). As we can see, the configuration in (24) is almost the same in all relevant respects as the one in (25). The AdjP, an adjunct to NP, has to move out of QP and PP. Given what we said about adjunct movement in (23e), it will have to adjoin to QP and then PP. However, just as the adjunct PP in (23e) violates anti-locality when it adjoins to PP, so does AdjP. In this case, though, we do not get an ungrammatical result. The question is why. The crucial difference between the two cases is that in (23c), P incorporates into the moved AdjP, while P-incorporation into the moved PP is impossible in (23e). Given this fact, if we follow Bošković's (2013) proposal that PIC/anti-locality violations can be rescued by PF deletion, we have a straightforward account of the contrast between (23c) and (23e). In (23c), P-incorporation creates exactly the situation described in Bošković's (2005) generalization about islandhood voiding effects: that a barrier to movement ceases to be a barrier when headed by a trace. Bošković (2013) deduces this generalization by extending Chomsky's (1972) account of Ross's island amelioration effects under sluicing to copy deletion. More precisely, he argues that

that when a violation occurs, a \* is assigned to the head of the island/barrier, rather than to the whole island, as in Chomsky (1972). If the head of the island moves, though, its base-generated copy is deleted together with the \*, and the derivation is repaired. It is easy to see that this mechanism rescues the derivation in examples like (23c). After the AdjP adjoins to PP, a \* is placed on P, given that this movement causes an anti-locality violation. However, after P incorporates into the moved AdjP and its base-generated copy is deleted, the \* is also gone, and the violation is repaired. Thus, we have an account of the pattern in (23). One remaining question is how we can explain the contrast between examples like (23e) and (21d). Recall that while PP adjunct movement from under a GQ assigning numeral is possible in case of QPs in instrumental contexts that appear with *sa* ('with'), it is impossible out of QP complements of other Ps. Therefore, this contrast provides a strong piece of evidence that QPs in instrumental contexts that appear with *sa* are not simply PPs. The question is: What is their structure?

As we have seen above, instrumental GQ QPs that occur with *sa* ('with') pattern together with inherently case-marking NPs, and not with PPs, regarding the extraction of PP adjuncts. We have also seen that the impossibility of PP adjunct extraction out of GQ QP complements of Ps is due to an anti-locality violation caused by the movement of the adjunct PP from the adjoined QP position to the adjoined PP position. If we assume that GQ QPs in instrumental contexts that appear with *sa* ('with') are PPs, we would expect the same type of anti-locality violation with them. Therefore, they cannot be PPs.

In order to account for the extraction pattern observed above with GQ QPs in instrumental contexts, we need to assume that these QPs have an extra layer of structure, which I will refer to as XP. Since this is the highest projection of the numeral phrase, then this XP, rather than QP, functions as a phase. The structure of (21d) before the PP adjunct undergoes movement looks as follows:

- (26) [<sub>XP</sub> with [<sub>QP</sub> five[<sub>FP</sub> [<sub>NP</sub> [<sub>NP</sub> girls] from which city]]]]

Given that FP and QP are not phases in this structure, the adjunct PP, *from which city*, does not need to move through their edges, but it does need to move to the edge of XP. It can do so without causing any problems for anti-locality. It can easily be verified that the derivation of

examples like (21b) and (21c) is not affected by the addition of this XP. Such examples can still be derived in much the same way as above. Thus, the crucial difference between the movement out of PPs in (25) and the movement out of XPs in (26) is that XPs are extended projections of QP, while PPs are not. Given the contextual approach to phasehood proposed in Bošković (to appear), this leads to allowing adjunct movement out of XPs but not PPs (unless such violations are repaired by the rescue and deletion strategy discussed above).

The question is: What kind of functional projection is the XP? Since *sa* ('with') with GQ QPs in instrumental contexts is crucially present in the structure for case theoretic reasons (see Bošković 2006, among others), it is reasonable to assume that this is a case-related projection. Furthermore, Wechsler and Zlatić (2001) show that instrumental case in SC must be morphologically realized. This is straightforwardly implemented if we assume that the head of XP must be morphologically realized. Instrumental case in SC is realized either through *sa* ('with'), whenever the nominal phrase in an instrumental context is a caseless form, or as an affix. This means that X can be headed either by *sa* or by an instrumental affix, as shown in (27).

- (27)       $V [_{XP} X_{aff} [_{NP} \dots ]]$   
               $V [_{XP} X_{sa} [_{QP/NP} \dots ]]$

Given this state of affairs, SC examples like (13), where *sa* remains stranded in the elided IP, are not counterexamples to (1). The missing *sa* ('with') in instrumental GQ QPs has its correlate in the antecedent: it is the head X, which is occupied by an affix that, on the surface, appears on the NP-complement of X.

#### 4 Conclusion

In this paper, I have examined examples that, on the face of it, look like counterexamples to Chung's generalization in (1). The examples involve GQ QPs in instrumental contexts under sluicing. The fact that such phrases cannot occur without *sa* ('with'), unless they are remnants of sluicing, reveals that sluicing has a saving effect on the deletion of *sa*. We have seen that SC has two strategies for deleting *sa* ('with') in these

cases under sluicing. One is a post-syntactic operation that deletes *sa* ('with'), which has been pied-piped together with the *wh*-phrase in overt syntax, after sluicing applies. Stjepanović (2008) shows that this strategy is generally available for all prepositions heading remnants of sluicing in SC. Examples involving this strategy are not counterexamples to Chung's generalization, because *sa* is not included in the IP undergoing sluicing. The other strategy involves stranding *sa* ('with') in its IP in overt syntax, which is then deleted by sluicing. This strategy is only available for cases where *sa* ('with') can incorporate into an element in its stranded position. The question of whether *sa*-less GQ QP remnants of sluicing are counterexamples to Chung's generalization becomes pertinent with such examples because *sa* ('with') is included in the IP undergoing sluicing, but is not present in the numeration of the antecedent clause. However, examining the structure of GQ QPs in instrumental contexts has revealed that they do not behave as regular PPs. Rather, we have seen evidence indicating that *sa* ('with') heads a case-related projection, which is an extended projection of QP. If this projection is the locus of morphological realization of instrumental case, then *sa* ('with') has a matching correlate in the antecedent clause: the same head in the correlate instrumental NP in the antecedent, which can be occupied by an affix that, on the surface, appears on the instrumental NP. Therefore, no matter which strategy is employed for deleting *sa* ('with') from sluicing remnants, *sa* has a correlate in the antecedent, meaning that Chung's generalization holds in SC.

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## **Prepositional Secondary Predication in Polish: Adjectives in Complex Constructions\***

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Polish, as with the rest of the Slavic family, belongs to a group of languages that makes little use of adjectives in secondary predicate constructions (Hentschel 2009). In this respect, it stands in opposition to languages such as English or German, where the use of adjectives is productive. Examples like the ones in (1)<sup>1</sup> are rare in Polish and only a small group of adjectives can appear there. The sentences in (2) vary in their acceptability from highly dispreferred to ungrammatical.

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Grammatical glosses appear in examples only if they are relevant to the discussion. Following abbreviations are used: ADJ – adjective, REFL – reflexive particle, NOM – Nominative, GEN – Genitive, DAT – Dative, ACC – Accusative, INS – Instrumental, SG – singular, PL – plural, F – feminine, M – masculine.

<sup>1</sup> In order to have my data verifiable and influenced as little as possible by my own (native speaker) judgments, I base my arguments and analysis solely on the data obtained from the Polish National Corpus (*Narodowy Korpus Języka Polskiego*), a tagged freely accessible online corpus of Modern Polish ([www.nkjp.pl](http://www.nkjp.pl)). Obtaining a representative dataset of several hundred tokens turned out to be an arduous work because there is no quick and easy way to search for secondary predicates there. For a description of the corpus and its functionalities, see Przepiórkowski et al. (2012) as well as multiple publications on the topic listed at: <http://nkjp.pl/index.php?page=3&lang=1>.

- (1) a. Jan wrócił do domu głodny.  
 Jan returned to home hungry  
 'Jan returned home hungry.' (NKJP)
- b. Tata przyjechał trzeźwy.  
 dad came sober  
 'Dad came sober.' (NKJP)
- (2) a. \* Jan pomalował drzwi czerwone.  
 John painted door<sub>ACC.PL</sub> red<sub>ACC.PL</sub>  
 'John painted the door red.'
- b. ??Anna przyniosła szklankę pusztą.  
 Ann brought glass<sub>ACC.SG.F</sub> empty<sub>ACC.SG.F</sub>

Moreover, adjectives can have only the depictive meaning and never the resultative in Polish (3).

- (3) *Polish*  
 \*Piotr wytarł stół czysty.  
 Piotr wiped table clean  
*Intended:* 'Peter wiped the table until it was clean.'

There is, however, another way to express secondary predication with an adjective, which is not only more common than the one exemplified above, but it also allows for both the depictive and resultative meaning. Consider the following examples:

- (4) Nie brakuje mi jej i po trzeźwemu.  
 not miss I<sub>DAT</sub> her and PO sober  
 'I don't miss her even when I'm sober.' (NKJP)
- (5) Piłem przecież na czczo zaraz po przyjeździe z pracy.  
 I-drunk well NA empty shortly after arrival from work  
 'Well, I drank on empty stomach, right after I returned from work.'  
 (NKJP)
- (6) Potem wytarł ją do sucha i zaczął żuć.  
 then he-wiped her DO dry and started to-chew  
 'Then he wiped it dry and started to chew.' (NKJP)

I will argue in this paper that the underlined phrases in (4-6) are also secondary predicates with an adjective in their core. I will discuss their



properties and structure, basing my arguments on the analyses of small clause constructions both in Polish and more broadly in other languages, as well as on the theory of RELATORS as described in depth by den Dikken (2006). My goal is to show that these complex prepositional secondary predicates are valid secondary predicates, just like the canonical “bare” adjectives<sup>2,3</sup>.

### 1 Structure of Prepositional Secondary Predicates

Prepositional secondary predicates are composed of a preposition and an adjective in an idiosyncratic form. Traditionally, these de-adjectival derivatives have been defined as manner adverbs (Doroszewski 1952: 212; Nowakowska 1933: 41-54; Pałka 2011; Renz and Hentschel 2010; Wróbel 1966) because this seems to be their most dominant syntactic function (7).<sup>4</sup>

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<sup>2</sup> I use the term ‘bare adjective’ syntactically, which simply means that it is not combined with any other syntactic word, as opposed to the combination of a preposition and an adjective. It does not mean that these adjectives lack any morphological marking that is required for an adjective, i.e. Case, number or gender.

<sup>3</sup> There is another type of prepositional secondary predicates, namely those containing nouns, which are not included in my discussion here. They are very rare, including, for instance, several color names, such as *do białości* (‘until white’) and *do czerwoności* (‘until red’), which do not seem to be a productive group synchronically. In this respect, prepositional secondary predicates pattern with non-prepositional secondary predicates, where nouns also became obsolete and can be found only in older Polish literature. The most recent examples that I was able to find thus far are listed in Kałkowska et al. (1975:43), and come from the nineteenth century:

- (i) Zerwaliśmy się, jak to mówią, ptaszkiem.  
We-set-off REFL as it they-say birdy<sub>INS</sub>  
‘We set off, as one says, like birds.’
- (ii) znowu biegł strzałą  
and again he-ran arrow<sub>INS</sub>  
‘and he ran (straight/fast) like an arrow again.’

All these examples are from the same source, the novel *Poganka* by Narcyza Żmichowska (first published in 1846).

<sup>4</sup> They are always listed as frozen phrases in the preposition’s lexical entry in Polish dictionaries. For instance, *do czysta* (‘until clean’) is listed as one of the phrases in the entry of *czysty* (‘clean’) in *Słownik Języka Polskiego*, 2002, PWN [computer edition].

- (7) a. Potrzebowałem kilku dni, żeby zobaczyć na czysto.  
 I-needed several days in-order-to see NA clean  
 ‘I needed several days to see [it] clearly. (NKJP)
- b. Konferencja odbyła się w jadalni  
 press-conference took-place REFL in dining-room  
 przemianowanej na szybko w biuro prasowe.  
 renamed NA quick in office press  
 ‘The press conference took place in the dining room, turned quickly into a press room.’ (NKJP)

However, their use proves to be more complex. They can, in fact, serve not only as manner adjuncts (7), but also as primary (8) and secondary predicates, as well as noun modifiers (9).<sup>5</sup>

- (8) Ma to być zupełnie pierwsza wycieczka na wyjeździe  
 have it be fully first trip on excursion  
 i ma być „na lekko” [...] and have be NA light  
 ‘It should be the very first trip of this excursion, and it should be with light gear.’ (NKJP)
- (9) Kolejnydzień - wycieczka „na lekko” z Danielki  
 another day trip NA light from Danielka  
 na Wielką Rycerzową i znowu nocleg w Danielce.  
 on Wielka Rycerzowa and again overnight-stay in Danielka  
 ‘Another day – a “lightly-equipped” trip from Danielka to Wielka Rycerzowa and again an overnight stay in Danielka. (NKJP)

As my corpus study shows, for some of these prepositional phrases, secondary predication turns out to be the dominant function (e.g. *na czysto* (‘clean’) – 90% of all collected tokens, *na trzeźwo* (‘sober’) – 100%, and *do sucha* (‘until dry’) – 100%).<sup>6</sup>

<sup>5</sup> Source: ‘Slavic P-Compounds as Non-Canonical Adjectives’, a paper by J. Nichols, M. Szajbel-Keck, C. Girvin and E. Purdy, presented at the *7th Slavic Linguistics Society Meeting*, Lawrence, KS (August 25-27, 2012).

<sup>6</sup> Source: see footnote 5.

### 1.1 Preposition

Prepositional secondary predicates consist of two syntactic elements: a preposition and an adjective. Neither of them is a standard representative of its word class.

There are few prepositions that appear here, most prominently: NA, DO and PO. These prepositions have lost their canonical properties. They select an adjective, which is otherwise impossible.<sup>7</sup> Further, their original meanings (spatial, temporal, distributive, purposive, etc.) have faded, and they have become functional connectives only. Their only semantic function is to determine whether the secondary predicate is depictive or resultative: NA and PO enforce the depictive meaning (10), whereas DO enforces the resultative (11). Note especially the examples with the adjective *suchy* ('dry') where it is either depictive (12) or resultative (13), depending on the accompanying preposition. This shows that the depictive versus resultative meaning, in fact, stems from the preposition and not from the adjective.<sup>8</sup>

- (10) Tego nie da się słuchać na trzeźwo!  
       that not give REFL listen NA sober  
       'It's impossible to listen to that sober!' (NKJP)
- (11) Rozebrali go do naga.  
       they-undressed him DO naked  
       'They stripped him naked.' (NKJP)

<sup>7</sup> Other cases where the adjective is seemingly selected by a preposition involve either NP-ellipsis (iii) or nominalization of an adjective (iv):

(iii) Lepiej się czuję w zielonej sukience niż w czerwonej *e*.  
       better REFL feel in green dress than in red<sub>ADJ</sub> *e*  
       'I feel better in a green dress than in a red one.'

(iv) Poszliśmy do Małego.  
       we-went to Small<sub>ADJ</sub>  
       'We went to Small [nickname].'

<sup>8</sup> Note that I analyze depictive and resultative secondary predicates as having the same syntactic properties, with the difference being restricted to the semantics of the preposition. I recognize, however, that there might be syntactic reasons to treat them as separate constructions in other languages (see Schultze-Berndt and Himmelmann (2004) for an extensive discussion on which languages and why).

- (12) On je   łykał       na sucho, a   potem   zaczerpnął   wody.  
 he them swallowed NA dry,   and later   he-took   water  
 'He swallowed them dry, and then he took some water.' (NKJP)
- (13) Błagam cię, wytrzyj mnie teraz do sucha i       schowaj   dobrze.  
 I-beg   you wipe   me   now DO dry   and   hide       well  
 'I beg you, wipe me dry now and hide well.' (NKJP)

Moreover, it is not clear what Case these prepositions value on their complements because the suffixes do not match adjectival inflection: NA, as a preposition, values either accusative or locative and none of these Cases surfaces as *-o* on an adjective (12); DO can value only genitive, which is never marked by a suffix *-a* on an adjective (13).

### 1.2 Adjective

This brings us to the next important issue: the surface form of the adjective. Historically, *-o* and *-a* suffixes are remnants of the nominal inflection of adjectives, which has been long lost in Polish.<sup>9</sup> Synchronically, these suffixes are idiosyncratic and carry no Case, number or gender specifications. Hence, it is impossible to say that prepositions value any particular Case on adjectives here. My claim is that prepositions used in secondary predication have a Case feature [Pred], which satisfies the uCase feature on the adjective and deletes the uφ-features (i.e. number and gender). As a result, adjectives in this construction are neither specified for number and gender, nor do they have a 'standard' Case feature. This approach is supported by the fact that there is a correlation between the preposition and the suffix, such that, NA requires *-o* (*na czyst-o* ('clean'), *na sucho* ('dry'), *na cienko* ('thin')), DO requires *-a* (*do czysta* ('until clean'), *do sucha* ('until dry'), *do cienka* ('until thin')), and PO requires *-emu* (*po pijanemu* ('drunk'))).

Another piece of evidence that these are active suffixes is provided by the fact that speakers of Polish have become able to create new prepositional secondary predicates with adjectives not attested earlier in this construction. Although it might be true that the prepositional secondary predicates were a closed group of PPs frozen in the past, they

<sup>9</sup> It is still retained in some other Slavic languages. There is an interesting parallel with Russian, where this short adjectival inflection surfaces on adjectives, when they function as predicates (Pul'kina 1964:142-143).

have been reanalyzed in recent years and have become an open group. *Po trzeźwemu* ('sober') (14) (synonymous with *na trzeźwo*) or *do goła* ('until naked') (15) (synonymous with *do naga*) are such neologisms. They are found in the Polish National Corpus, which consists mainly of modern texts from the last few decades, but they are not listed in dictionaries, which include older prepositional secondary predicates. Now, in order to form *po trzeźwemu* (14), Polish speakers had to reanalyze older similar prepositional secondary predicates, such as *po pijanemu*, as consisting of three elements: PO + adjective + *-emu*.

- (14) Komendanta bał się tylko po trzeźwemu.  
 commander he-feared REFL only PO sober  
 'He was afraid of the commander only when he was sober.'  
 (NKJP)
- (15) Tam też ludzi rozbierają do goła i rabują!  
 there too people undress DO naked and rob  
 'They undress people and rob them there too!' (NKJP)

### 1.3 Control

Secondary predicates are always controlled by a nominal element in the main clause. Bare adjectives can be controlled by a nominative subject (16) or an accusative object (17). There is no ambiguity regarding the controller if the clause contains both a subject and an object because bare adjectives normally agree in Case/number/gender with it.

- (16) I *pro<sub>i</sub>* zwał się na trawę śmiertelnie pijany<sub>i</sub>.  
 and *pro<sub>NOM.SG.M</sub>* he-fell REFL on grass deadly drunk<sub>NOM</sub>  
 'And he fell on the grass deadly drunk.' (NKJP)

- (17) Zdarzało się nawet tak, że Piki, który przyszedł  
 it-happened REFL even so that Piki who came  
 zawsze pierwszy do klasy, znajdował go<sub>i</sub> w  
 always first to class found him<sub>ACC.SG.M</sub> in  
 ostatnich ławkach pijanego<sub>i</sub> i śpiącego<sub>i</sub>.  
 last benches drunk<sub>ACC.SG.M</sub> and sleeping<sub>ACC.SG.M</sub>  
 ‘It used to happen that Piki, who always came first to the class,  
 would always find him in the last row drunk and sleeping.’  
 (NKJP)

The situation is different with prepositional secondary predicates because they do not agree with their controllers. This creates ambiguity, as in (18), where *na sucho* can either depict the subject (‘He swallowed them without drinking’) or the object (‘He swallowed them in a dry state.’). In such cases, only the semantics of the verb or general context can help to disambiguate the sentence. For instance, the verb *wytrzeć* (‘wipe’) in (19) makes it clear that the resultative *do sucha* (‘until dry’) must refer to the object and to not the subject of the main clause.

- (18) *repeated from (12)*  
 On je łykał na sucho, a potem zaczerpnął wody.  
 he them swallowed NA dry, and later he-took water  
 ‘He swallowed them dry, and then he took some water.’ (NKJP)
- (19) *repeated from (13)*  
 Błagam cię, wytrzyj mnie teraz do sucha i schowaj dobrze.  
 I-beg you wipe me now DO dry and hide well  
 ‘I beg you, wipe me dry now and hide well.’ (NKJP)

Further, prepositional secondary predicates can not only be controlled by canonical subjects, i.e. those marked with nominative, but also by the non-canonical ones, such as subjects headed by a numeral phrase (where the noun is in genitive) (20) or dative subjects (21).

- (20) Kilku sędziów<sub>i</sub> jechało po pijanemu<sub>i</sub> [...]  
 several judges<sub>GEN</sub> drove PO drunk  
 ‘Several judges drove drunk, [...].’ (NKJP)

- (21) *repeated from (4)*  
 Nie brakuje mi<sub>i</sub> jej i po trzeźwemu<sub>i</sub>.  
 not miss I<sub>DAT</sub> her and PO sober  
 'I don't miss her even when I'm sober.' (NKJP)

Further, prepositional secondary predicates do not necessarily have to be controlled by a clear syntactic element. They can appear in impersonal clauses, where they refer to generic/indefinite subjects (22-23).

- (22) ...i to nie teraz mi się to kielbasi, że jestem pod  
 and it not now me REFL it mixes that I-am under  
 gazem, a w ogóle miesza się w głowie i po  
 gas and in general mixes REFL in head and PO  
 trzeźwemu.  
 sober  
 '... and I don't get it [all] mixed up now because I'm drunk, and  
 anyway one can get confused sober [too].' (NKJP)
- (23) Powierzchni nie powinno się wycierać do sucha.  
 surface<sub>GEN</sub> not should<sub>IMPERS</sub> REFL wipe DO dry  
 'The surface should not be wiped dry.' (NKJP)

## 2 Syntax of Prepositional Secondary Predication

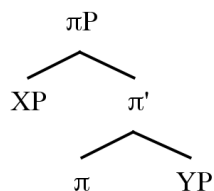
Starting with early GB, there has been an ongoing discussion as to whether secondary predicates, and exactly which ones, should be analyzed as adjuncts or complements to the main predicate (e.g. Cardinaletti and Guasti 1995; Schein 1995; Williams 1980, 1983) or rather as complements of a small clause (e.g. Chomsky 1981, 1995; Safir 1983). I follow the view that secondary predicates are small clauses merged with the main clause at some point in the derivation. This has been proposed for Slavic languages by Bailyn and Citko (1999), Chomsky (1981), Franks (1995) and Franks and Hornstein (1992), among others.

### 2.1 Small clause

I assume, following Bowers (1993), Bailyn (2001), Citko (2008), and den Dikken (2006), among others, that small clauses are asymmetric and

headed by a predication functional head ( $\pi P^{10}$ ), as presented in (24).<sup>11</sup> The sole purpose of this small clause is to establish a relationship between the complement of the  $\pi$ -head and its specifier.

(24)



## 2.2 Preposition as a RELATOR

As I have already shown in Section 1.1, the feature and semantic composition of prepositions appearing in prepositional secondary predicates has been altered. Just to reiterate: they select adjectives as their complements instead of nouns; they lost their ‘prepositional’ semantics and now their meaning is restricted merely to the contrast between depictive and resultative; they do not value any particular Case on their complement. In general, their semantics have been bleached and their c-selection and Case features have been reduced to defaults. They lost their ability to select nouns and, as a result, adjectives can merge with them. They kept their Case feature which still allows them to value uCase on their complements, but the value has been reduced from a particular case to simply [Pred]. All these bleached properties suggest that these prepositions turned into some kind of functional particles, similar to several prepositions in other languages (25-27), as discussed by Den Dikken (2006). It is exactly this observation that led me to the conclusion that NA, DO and PO became RELATORS, which den Dikken (2006) defines as general purpose connectives between predicates and their subjects.

(25) *English*

- a. We have an idiot for a doctor. (den Dikken 2006, p.37, ex.45a)

<sup>10</sup> I borrow the name from Citko (2008). Other articles refer to it also as PredP (e.g. Bailyn and Citko 1999) or PrP (e.g. Bowers 1993).

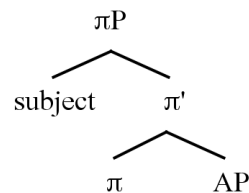
<sup>11</sup> For arguments against symmetric small clauses, see for instance den Dikken (2006).



- b. The book was written by John. (Collins 2005, ex.1b)
- (26) *French*  
 je laisse/fais embrasser Brian à Imogen.  
 I let/make kiss Brian to Imogen  
 'I let/make Imogen kiss Brian.' (den Dikken 2006, p.45, ex.58b)
- (27) *Italian*  
 Imogen fa mangiare le mele da Brian  
 Imogen makes eat the apples by Brian  
 'Imogen makes Brian eat the apples.' [my translation]  
 (den Dikken 2006, p.51 ex.68c)

This RELATOR merges as a  $\pi$ -head with an adjective as its complement and a subject in the specifier position (28).

(28)



The [Pred] Case feature is strong and must be checked on Merge with the AP, in accordance with the “Check-on-Merge” rule, assumed in the Minimalist Program and spelled out for primary and secondary predicates in Slavic (mainly Russian) by Bailyn and Citko (1999:21):

- (29) *Check-on-Merge*  
 Strong inherent Case features must be checked at Merge.

The fact that adjectives are free from agreeing with their controller because their Case feature is satisfied and  $\phi$ -features are deleted locally by the  $\pi$ -head explains why prepositional secondary predicates can appear in clauses where there is no clear syntactic relation between the secondary predicate and its controller. These are the cases where prepositional secondary predicates appear in impersonal clauses (22-23), or refer to numeral or dative subjects (20-21). Further, it allows them to adjoin to non-finite clauses, where the subject is a caseless PRO, without

the necessity of reaching towards a ‘default’ instrumental<sup>12</sup>, which must appear in overt syntax on bare adjectives in that situation (cf. (30) to (31)).

- (30) Potrafię odgadnąć wszystkie kolory życia i po trzeźwemu, [...]  
 I-can guess all colors life and PO sober  
 ‘I can guess all colors of life even when I’m sober, [...]’ (NKJP)
- (31) łapczywie się zaciągnął, by za chwilę poczuć się pijanym  
 greedily REFL inhale to for moment feel REFL drunk  
 ‘He greedily inhaled, only to feel drunk in a moment’ (NKJP)

### 2.3. *PRO subject and the position of the secondary predicate in the derivation*

Similarly to non-finite clauses, secondary predicates allow only a PRO subject. Its referent is determined by control adhering to the Minimal Distance Principle (Bailyn 2001):

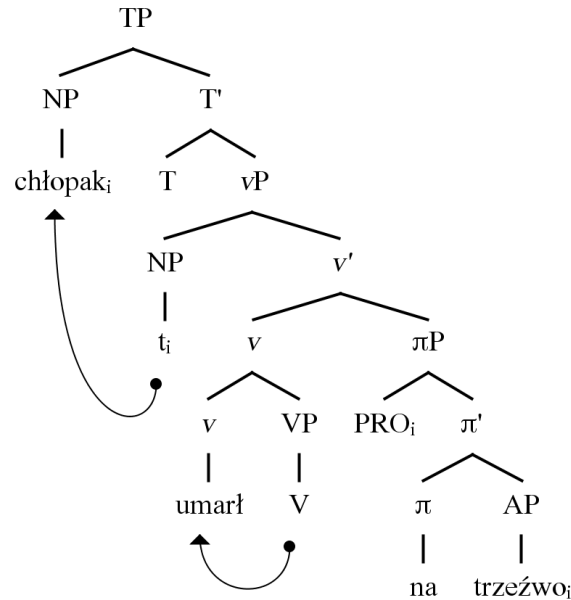
- (32) *Minimal Distance Principle*  
 PRO is controlled by the nearest c-commanding potential antecedent.

In order to comply with the Minimal Distance Principle, subject-controlled secondary predicates right-adjoin to the *v*’ node.<sup>13</sup> In this configuration, the subject in Spec,*v*P is the c-commanding antecedent of PRO in the small clause adjunct, satisfying the Minimal Distance Principle (33-34).

- (33) Chłopak<sub>i</sub> umarł na trzeźwo<sub>i</sub>.  
 Chłopak died NA sober  
 ‘The boy died sober.’

<sup>12</sup> I remain agnostic as to the question of where the instrumental comes from here.

<sup>13</sup> I follow Bowers’ (1993) assumption that adjuncts adjoin to the structure at the X’-bar level.

(34) *Structure of (33)*


The exact location of object-controlled secondary predicates is more problematic. They must adjoin lower in the structure because if they are combined with subject controlled secondary predicates, they always precede it (35).

- (35)a. Kasia<sub>i</sub> wytarła stół<sub>k</sub> do czysta<sub>k</sub> na trzeźwo<sub>i</sub>.  
 Kasia wiped table do clean na sober  
 'Kasia wiped the table clean, when she was sober.'  
 b. \*Kasia<sub>i</sub> wytarła stół<sub>k</sub> na trzeźwo<sub>i</sub> do czysta<sub>k</sub>.

The next lower possible adjunction level is V', but they are not properly controlled in that position. There is strong empirical evidence, for instance, from clitics and idioms, that the base ordering of the verbal arguments in Polish is as given in (36).<sup>14</sup> The direct object merges as a

<sup>14</sup> This order of arguments has been argued for Polish in Witkoś and Dziemianko (2006) and Witkoś (1998; 2007). The ordering Dative>Accusative has also been supported by

complement of V and it cannot c-command V' adjuncts. Scrambling of the direct object to a Spec-*v*P position, postulated independently by Witkoś (2007) in order to account for reverse Accusative>Dative order and proper binding of reflexive anaphors, could repair the c-command problem. However, Witkoś (2007) states clearly that such A-movement is triggered here by an *optional* [+EPP] feature of the *v*-head, which may be present in the derivation *only* if it has effect on the outcome, i.e. when the movement of the direct object is motivated by the output (Witkoś 2007: 463). Example (37) shows that the appearance of a secondary predicate does not motivate movement of the direct object to Spec-*v*P.

- (36) [<sub>VP</sub> NP<sub>SUBJ</sub> *v* [<sub>VP</sub> NP<sub>IO</sub> V NP<sub>DO</sub>]]  
 (37) Adam pokazał dziewczynom Tomka<sub>i</sub> po pijanemu<sub>i</sub>.<sup>15</sup>  
 Adam showed girls<sub>DAT</sub> Tomek<sub>ACC</sub> PO drunk  
 'Adam showed Tomek drunk to the girls.'

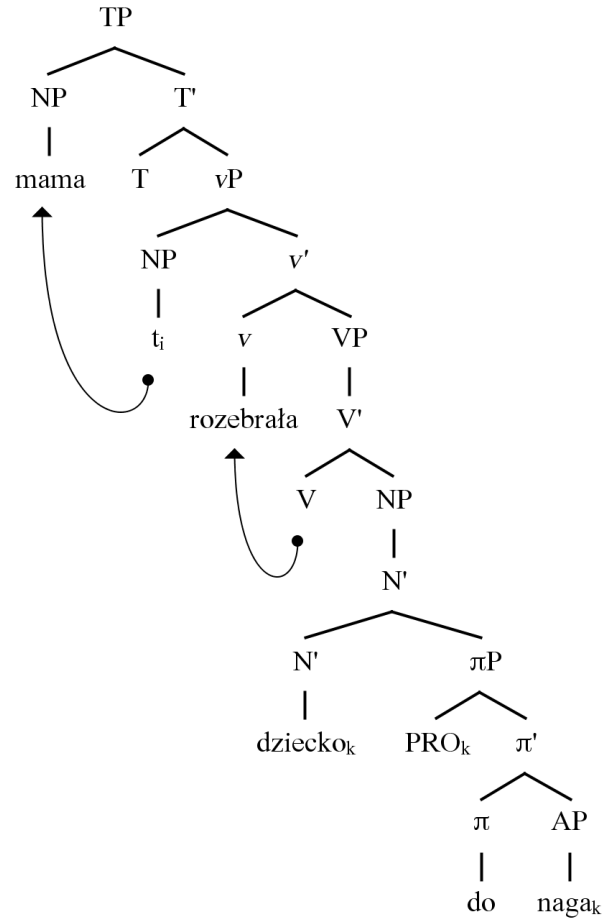
This leads me to the conclusion that for direct objects to control their secondary predicates properly, they must be merged even deeper, inside the NP itself, as right adjuncts to N' (38-39).

- (38) Mama rozebrała dziecko<sub>i</sub> do naga<sub>i</sub>.  
 mother undressed child DO naked  
 'She took off all child's clothes.'

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Dyakonova (2005), Franks (1995), Junghanns and Zybatow (1997), and Richards (1999; 2001).

<sup>15</sup> The controller of the secondary predicate here is in fact ambiguous between the subject and the direct object.

(39) *Structure of (38)*

This claim is supported by the fact that object-controlled secondary predicates undergo object ellipsis together with the object NP.<sup>16</sup> Consider example (40a). Its context given in the corpus makes it clear that the secondary predicate *po pijanemu* ('drunk') is controlled only by the direct object represented here by the personal pronoun in accusative. The second conjoined clause (marked in italics) is added to the original

<sup>16</sup> For a detailed discussion on object ellipsis in Polish, see McShane (1999).

sentence in order to show that the secondary predicate must be deleted in the second conjunct together with the NP object (cf. (40a) to (40b)).

- (40)a. policja zatrzymała go<sub>i</sub> po pijanemu<sub>i</sub> za kierownicą  
 police stopped him<sub>ACC</sub> PO drunk behind wheel  
*i zawiozła e na komisariat*  
 and drove e on police-station  
 ‘Police stopped him drunk behind the wheel *and took him to the police station.*’ (NKJP; italics added)
- b. \* policja zatrzymała go<sub>i</sub> po pijanemu<sub>i</sub> za kierownicą  
 police stopped him<sub>ACC</sub> PO drunk behind wheel  
*i zawiozła e<sub>i</sub> po pijanemu<sub>i</sub> na komisariat*  
 and drove e PO drunk on police-station

### 3 Summary

Categorization of the prepositional phrases discussed here simply as manner adverbials ignores their multiplicity of functions in the clause. In this paper, I analyzed their other very important function, secondary predication. As I have shown, the relation between prepositional secondary predicates and the main predicate can be best described with a small clause construction. As adjuncts, these small clauses are relatively free to choose their merge position. As I have shown, subject-controlled secondary predicates are right-adjoined to  $v'$ , whereas object-controlled ones must be merged much lower inside NP. Moreover, prepositions lost their original semantics and feature composition and became simply a lexicalization of a RELATOR. This analysis allows me both to account for the lack of agreement between the adjective and its controller in the main clause and explain the idiosyncratic inflection on the adjective.

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**Off with Their Heads! - Commonalities Between  
“Extraordinary LBE” and Apparent N-Complement  
Extraction<sup>\*</sup>**

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Based on a newly observed correlation between AP-mobility and certain accent shifts from the host to the proclitic in Bosnian/Croatian/Serbian (BCS), this paper addresses extraction of PP complements out of NPs and APs, which is problematic for Bošković's (2013) approach to phases, where BCS NPs and APs are argued to be phases and complements of phase heads in principle do not move (Abels 2003a). I show that the accent shift facts point towards a rescue-by-PF deletion analysis that resolves the issue with PP complement extraction, and that the analysis proposed for these constructions can also be extended to inherent case-assigning contexts in BCS, and unified with a certain type of left-branch extraction (LBE).

It is standardly assumed that CPs, vPs, and DPs are phases (Chomsky 2000; 2001; 2008; among others) and if a phrase is a phase, it always functions as a phase; i.e. phasehood does not depend on the syntactic context. Recently, phases have been defined contextually and it has been proposed that the phasehood of an element is affected by the syntactic context in which it occurs (Bobaljik & Wurmbrand 2005; Bošković 2005, 2013, 2014; Gallego & Uriagereka 2007; den Dikken 2007; Despić 2011, 2013; M. Takahashi 2011). The details of different contextual approaches to phases vary to a great extent, but I will focus on

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<sup>\*</sup> I would like to thank the anonymous reviewer and the audience of *FASL* 22 for their feedback.

Bošković's (2013, 2014) implementation of it, adopting the core assumptions of the system, and discussing how the issues it raises can be resolved. Bošković (2014) argues that the highest projection of every major lexical category (V, N, A, P) is a phase. The central argument for the contextuality of phases he provides is based on extraction possibilities out of the traditional noun phrase (TNP) in bare NP languages and languages with richer TNP structure. It has been argued that languages without articles lack DP (e.g. Corver 1992; Zlatić 1997; Bošković 2012a). For Bošković, this means that the phasal status of NP differs in different languages, i.e. NP is not the highest phrase in the extended projection of N in English due to the presence of DP, so it is not a phase; but it is a phase in BCS, where the DP is missing. This difference has empirical consequences on the extraction of complements and complement-adjoined elements. Particularly, the conflicting requirements of the *Phase-Impenetrability Condition (PIC)* (Chomsky 2000, 2001) and *anti-locality* (e.g. Bošković 1994; Abels 2003a, Grohmann 2003 (who originally provided this term), among others), the ban on movement that is too short, block phasal complement extraction and extraction of elements adjoined to phasal complements. Consequently, English allows extraction of nominal complements since NP is not a phase, but disallows LBE of adjectives, which are assumed to originate in NP-adjoined positions. In contrast, BCS, where NP is a phase, disallows extraction of genitive- marked NP complements of N, but it allows LBE of adjectives since they are adjoined to the NP phase, rather than to the phasal complement as in English. (see Section 2).

This complementarity between phasal complement extraction and LBE breaks down with BCS PP complements, which can extract out of NPs that also allow LBE of adjectives that modify them, and out of APs that also allow extraction of their intensifiers. I will start by discussing the nature of BCS prepositions, their interaction with accent assignment, and their participation in non-constituent extraction in Section 1. In Section 2, I give my account of the problematic constructions and extend it to inherent case-assigning contexts in Section 3.

### 1 Accent shift and P-cliticization

BCS is characterized by pitch accent, where the pitch contour can be either falling or rising on both long and short vowels. Proclitics, including prepositions, in BCS can take over a falling accent from the first syllable of the host (Riđanović & Aljović 2009; Riđanović 2012).<sup>1</sup> In addition to the phonological constraints on this shift, which I will put aside here, certain syntactic requirements also need to be met. A preposition can take over the accent from a following noun (1a) or an adjective when one adjective modifies the noun (1b), but the shift is impossible if two adjectives of the same type modify the same noun (1c-d). Interestingly, this shift is possible if the two attributive adjectives do not belong to the same class. In (1e), one adjective is descriptive and the other one is possessive (BCS possessives are morphologically and syntactically adjectives, see Zlatić (1997); Bošković (2005); Despić (2011)).

- (1) a. Živjela je ú\_kući.  
       Lived is in\_house  
       ‘She lived in a house.’  
       b. Živjela je ú\_staroj kući.  
       Lived is in\_old house  
       ‘She lived in the old house.’  
       c. \*Živjela je ú\_staroj velikoj kući.<sup>2</sup>  
       Lived is in\_old big house  
       ‘She lived the old big house.’  
       d. \*Živjela je ú\_velikoj staroj kući.  
       Lived is in\_big old house  
       ‘She lived the old big house.’

<sup>1</sup> See Riđanović and Aljović (2009) for a more detailed description of this phenomenon. Note that this accent shift is optional and not all speakers have it and that it is best retained in dialects spoken in Bosnia and Herzegovina.

<sup>2</sup> The adjectives can occur in either order and the sentences are grammatical without the shift:

- (i) Živjela je u staroj velikoj kući. (ii) Živjela je u velikoj staroj kući.  
       Lived is in old big house Lived is in big old house

- e. Živjela je u staroj bratovoj kući.  
 Lived is in\_old brother.POSS house  
 ‘She lived in the old house of her brother’s.’

Compare this to LBE of adjectives, which is also allowed in BCS (2a). As originally observed by Uriagereka (1988), such extraction can be allowed only in languages that lack overt article system, i.e. where DP is missing (see also Corver 1992; Chierchia 1998; Bošković 2012a).<sup>3</sup> When two adjectives of the same type modify the same NP (2b-c), this extraction is impossible. With two adjectives belonging to different classes, however, this extraction improves (1d) (Bošković 2005).

- (2) a. Staru<sub>i</sub> je voljela t<sub>i</sub> kuću.  
 Old is loved house  
 ‘She loved the old house.’  
 b. \*Staru<sub>i</sub> je voljela t<sub>i</sub> veliku kuću.  
 Old is loved big house  
 ‘She loved the old big house.’  
 c. \*Veliku<sub>i</sub> je voljela t<sub>i</sub> staru kuću.  
 Big is loved old house  
 ‘She loved the big old house.’  
 d. Staru<sub>i</sub> je voljela t<sub>i</sub> bratovu kuću.  
 Old is loved brother.POSS house  
 ‘She loved the old brother’s house.’

The phenomena in (1) and (2) demonstrate a striking parallelism, based on which we can formulate the generalization in (3):

- (3) A proclitic (preposition) can take over the accent from its host only if the host is allowed to move independently.

<sup>3</sup> Among Slavic languages, only Bulgarian and Macedonian, the only two Slavic languages that have articles, disallow LBE. Latin differs from Modern Romance languages in that it allowed LBE and it also lacked articles. Colloquial Finnish has developed an overt article and stopped allowing LBE, while literary Finnish allows LBE and lacks the article (Franks 2007). Note that the LBE generalization is a one-way correlation; hence, if a language lacks articles, it does not necessarily mean it will allow LBE.

For the accent shift to take place, the proclitic and its host, AP or NP, need to be seen as one phonological word in PF, i.e. P-cliticization to the host needs to take place before accent assignment. The tight correlation between the accent shift and AP-mobility suggests a possible analysis of P-cliticization and certain extractions out of PP.

In particular, it has been discussed in the literature that BCS prepositions are involved in apparent non-constituent extraction, where the “P+AP” complex moves out of PP (4), referred to as “extraordinary LBE” (Bošković 2012a).

- (4) a.  $\acute{U}$ \_staroj<sub>i</sub> je živjela t<sub>i</sub> (bratovoj) kući.  
 In\_old is lived brother.POSS house  
 ‘She lived in the *old* house (of her brother’s).’  
 b. \* $\acute{U}$ \_staroj<sub>i</sub> je živjela t<sub>i</sub> velikoj kući.  
 In\_old is lived big house  
 ‘She lived in the *old* big house.’

Borsley & Jaworska (1988) treat constructions such as (4a) as ordinary LBE, where the preposition adjoins to the moving adjective (see also Corver 1992; Franks & Progovac 1994; Bošković 2005).<sup>4</sup> This intuition is supported by the fact that extraordinary LBE behaves in the same way as ordinary LBE: (i) neither of the two operations can extract an adjective alone in the presence of an intensifier (cf. (5a-b)); and (ii) deep (extraordinary) LBE out of a complement of N is disallowed (cf. (5c-d)).

- (5) a. \*Veliku<sub>i</sub> je kupila izuzetno t<sub>i</sub> kuću.  
 big is bought extremely house  
 cf. Izuzetno<sub>i</sub> je kupila t<sub>i</sub> veliku kuću.  
 ‘She bought an extremely big house.’ [Bošković 2005: 9, 33-34]  
 b. \* $\acute{U}$  veliku<sub>i</sub> on uđe izuzetno t<sub>i</sub> sobu.  
 in\_big he entered extremely room  
 cf.  $\acute{U}$  izuzetno veliku<sub>i</sub> on uđe t<sub>i</sub> sobu.  
 ‘He entered an extremely big room.’

<sup>4</sup> This phenomenon has also been explained by appealing to remnant PP-fronting (Franks & Progovac 1994; Abels 2003b) and scattered-deletion analysis (Ćavar & Fanselow 2000). For arguments against these approaches, see Bošković (2005).

- c. \* Čije<sub>i</sub> je on prijatelja t<sub>i</sub> majke vidio.  
       whose<sub>GEN</sub> is he friend<sub>ACC</sub> mother<sub>GEN</sub> seen
- d. \* O kakvim<sub>i</sub> je Jovan pročitao članak t<sub>i</sub>  
       about what.kind.of<sub>INSTR</sub> is Jovan read article<sub>ACC</sub>  
       studentima?  
       students<sub>INSTR</sub>  
       cf. O kakvim studentima<sub>i</sub> je Jovan pročitao članak t<sub>i</sub>?  
       ‘About what kind of students did Jovan read an article?’

Concerning P-adjunction to the moving AP, Bošković (2012a) notes two possible analyses: downward and upward P-cliticization. The accent shift facts in (1) actually provide perfect grounds for teasing them apart. Recall that BCS Ps are proclitics and need to form a phonological word with their host for the accent to shift to them. Downward P-cliticization would involve P-lowering to its host, AP, or NP. This would account for why accent shift is possible in (1a-b,e). However, from the perspective of a lowering preposition, the APs immediately following the P in (1c-d) look identical to the ones in (1b,e), since both of them have a falling accent on the first syllable and should allow accent shift, but as we can see, that does not happen. Crucially, the sentences in (1c-d) are contexts where AP-extraction is disallowed (cf. (2b,c)). Thus, we see that it is necessary for the AP to be able to raise for the cliticization to take place, and since a raised AP is higher than P, then the only possible analysis is upward P-cliticization. With upward P-cliticization, the host first moves to Spec,PP and then P adjoins to it. This way, we correctly capture the grammaticality of (1a-b,e) and (4a), where raising of the AP is otherwise allowed (2a,d). Importantly, we also capture the ungrammaticality of (1c-d) and (4b), where raising of the AP is blocked and the accent shift is blocked as well, which downward cliticization cannot explain. The “P+AP” complex can either stay in Spec,PP, yielding (1b,e) or move further, yielding (4a).

Adjectives are not the only possible hosts for Ps. Example (1a) shows that in the absence of attributive adjectives, P takes over the accent of the noun following it. We have seen that P can take over the accent from an adjective only if the AP can move to its specifier, and the P-lowering analysis was ruled out. Thus, the only way for P to take over the accent from its NP host is if the NP raises to Spec,PP and P adjoins to it in this position. Just as the “P+AP” complex can undergo “extraordinary LBE”

out of Spec,PP, it follows that extraction of the “P+NP” complex out of Spec,PP should also be available in this language. I will refer to this as “extraordinary complement extraction” below.

- (6)  $P_j + NP_i \dots [PP \ t_j + t_i \ [P' \ t_j \ t_i \ ]]$

Both of these extractions represent instances of movement out of PP islands/phases that would be ungrammatical if P stayed in situ. Example (7a) illustrates that whenever extraordinary LBE is possible, ordinary LBE is not, i.e. it is not possible to extract an AP out of an NP complement of P. Bošković (2005) ties this to the impossibility of P-stranding in BCS (7b) and makes the observation that extraction out of a PP is possible only if the PP is not headed by a lexical element.

- (7) a. \*Staroj<sub>i</sub> je živjela u t<sub>i</sub> kući.  
           old is lived in house  
           ‘She lived in the old house’  
       b. \*Staroj kući<sub>i</sub> je živjela u t<sub>i</sub>.  
           old house is lived in  
           ‘She lived in the old big house.’

Assuming that BCS PP is a phase, both (7a) and (7b) are accounted for in the contextual approach to phases adopted here: P-stranding is impossible since it would involve phasal complement extraction<sup>5</sup> and ordinary LBE is impossible since moving an element adjoined to a phasal complement also violates PIC/anti-locality. To explain why AP can move if P moves as well, Bošković proposes a rescue by PF-deletion account, which I summarize below and show that (7b) can be explained in exactly the same way.

<sup>5</sup> Bošković argues that in P-stranding languages like English, the PP structure is richer than in BCS:

(i)  $[_{XP} \ [_{PP} \ [_{DP} \ ]]]$

XP is the phase of the P-domain in (i), leaving enough room for the DP to move out. See Bošković (2014) for the difference between English and BCS PP and evidence from Turkish that supports this claim. Turkish has both patterns of P-structure. With more complex PPs, which overtly show that they have more structure, P-stranding is allowed, just like in English. However, simple PPs that lack the additional layer of structure disallow it, just like in BCS.



### 1.1 *Copy deletion*

As observed by Ross (1969), island violations can be rescued by ellipsis (PF-deletion), which is illustrated in data from Merchant (2001: 88, 114) below:

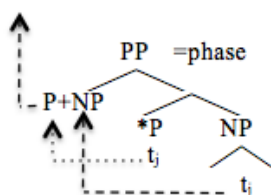
- (8) a. \*Ben will be mad if Abby talks to one of the teachers, but she couldn't remember [which (of the teachers)]<sub>i</sub> Ben will be mad [if she talks to t<sub>i</sub>]  
 b. Ben will be mad if Abby talks to one of the teachers, but she couldn't remember [which (of the teachers)]<sub>i</sub> ~~Ben will be mad [if she talks to t<sub>i</sub>]~~

Chomsky's (1972) formalization of this effect involves placing a \* (originally #) on the island once a moving element crosses it. If the illegitimate category with the \* remains in the final structure and has to be pronounced, the derivation crashes, but if it is not pronounced (i.e. if it is removed by ellipsis), the derivation is rescued. The difference between (8a) and (8b) is only that the island out of which the wh-element moved is silent in (8b) but not in (8a). Bošković (2011) notes that not just ellipsis, but also copy-deletion can save derivations that would otherwise crash, thus deducing Chomsky's (1995, 2001) generalization that traces do not count as interveners for relativized minimality effects. He argues that a \* is assigned to the *head* of the island rather than to the whole island when a violation occurs. Hence, if the head of the island moves, its base-generated copy is deleted, together with the \*, and the derivation is rescued. Galician D-incorporation facts noted by Uriagereka (1988, 1996) provide evidence for this proposal. Specifically, wh-movement from DPs headed by the definite article is disallowed in Galician (9a), suggesting that they are islands for this movement. However, when the article heading the DP incorporates into the verb, this wh-movement becomes possible (9b).



P-cliticization to its host (AP or NP).<sup>6</sup> Thus, it follows from the rescue-by-PF deletion mechanism that if NP movement to Spec,PP, which causes a \* on P, is followed by P-cliticization to NP, the derivation should be rescued since the \*-marked copy of P is not pronounced in PF.

(11)



Now, just like a P+AP complex can move further out of Spec,PP as in (4a), there is also nothing blocking the “P+NP” complex from moving out of Spec,PP, given that it is the edge of the PP phase. This means that most of the examples where we think we see a BCS PP moving, we will not be able to tell whether it was a PP that moved or merely the “P+NP” complex formed by P-cliticization.

In sum, extraordinary LBE (4a, 10) and extraordinary complement extraction (11) are in essence the same phenomenon, in that they both involve anti-locality violations and the element moving out of the PP carries along the preposition rather than the whole PP moving. In the next section, I show how this mechanism can be implemented in constructions where PPs are complements of phase heads and how it resolves issues raised by Bošković’s approach to phases.

## 2 PP complements of Nouns and Adjectives

This section briefly summarizes the application of the contextual approach to phases to traditional noun phrases (TNPs) and traditional adjective phrases (TAPs), pointing out the problems it faces and how they can be resolved by applying the rescue by PF-deletion mechanism

<sup>6</sup> There appears to be a requirement for the host and the clitic to be in the same Spell-Out domain (SOD). If PP is a phase, then the host (AP or NP) and P are not in the same SOD in their base positions. Given that AP-mobility affects the accent shift, as illustrated above, we can assume that the host has to move to the same SOD where the clitic is, so that the cliticization and the accent shift can take place.

to the relevant constructions. As mentioned above, Bošković (2014) argues that the highest phrase in the extended projection of a lexical category functions as a phase. Furthermore, he argues that even though the amount of structure projected within the extended domain of a lexical category can vary in different languages, phasehood is not subject to variation, i.e. the phase is always (and only) the highest projection. The crucial evidence for this approach comes from an interaction of the PIC (Chomsky 2000; 2001) and anti-locality, i.e. the ban on movement that is too short (Bošković 1994, 1997, 2005; Grohmann 2003 (who originally provided this term); Abels 2003a; among many others). Regarding anti-locality, Bošković argues that movement must cross at least one full phrase (not just a segment). Abels observes that the PIC and anti-locality prevent phasal complements from moving due to the conflicting requirement of the two mechanisms: the PIC requires phasal complements to move to the Spec of the phase, but since this movement does not cross a full maximal projection, it is ruled out by anti-locality. One argument for this effect comes from the impossibility of extraction of an IP complement of C, a phasal head:

- (12)a.  $*[{}_{CP} IP_i [{}_{C'} C \ t_i]]$  [Abels 2003a:116]  
 b.  $*[{}_{IP} \text{Anything will happen}]_i, \text{ nobody believes } [{}_{CP} t_i [{}_{C'} \text{that } t_i]]$

Based on Abels' generalization, Bošković (2014) provides evidence for the contextual approach to phases regarding NP-complements in TNPs and TAPs. It is argued that there is a parametric difference between languages with articles and languages without articles in that the former have a DP projection, while the latter lack it (Bošković 2008; 2012a). In the contextual approach to phases outlined above, this leads to an immediate conclusion that NP is not a phase in DP-languages, while it is a phase in NP-languages, being the highest projection in the nominal domain. Consequences of this claim combined with the interaction of the PIC and anti-locality are the following: (i) N complements are extractable only in DP-languages; (ii) LBE of adjectives can only be allowed in NP-languages; and (iii) NP-adjuncts are only extractable in NP-languages. Indeed, the differences between English and BCS in (13) demonstrate this. English allows N -complements to extract (13a), but it is impossible to extract a genitive-marked BCS complement of N (13b). To move out of the TNP, a complement of N has to stop in the Spec of

(13)a. Of which city<sub>i</sub> did you witness [<sub>DP</sub> the [<sub>NP</sub> destruction t<sub>i</sub> ]]?  
 b. \*Ovog studenta<sub>i</sub> sam pronašla [<sub>NP</sub> slike t<sub>i</sub>]  
     this.GEN student.GEN am found pictures.ACC  
     ‘Of this student I found pictures.’  
 c. \*Old<sub>i</sub>, he loves [<sub>DP</sub> [<sub>NP</sub> t<sub>i</sub> [<sub>NP</sub> houses]]]  
 d. \*From which city<sub>i</sub> did you meet girls t<sub>i</sub>.  
 e. Staru<sub>i</sub> je voljela t<sub>i</sub> kuću.  
     old is loved house  
 f. Iz kojeg grada<sub>i</sub> je upoznao djevojke t<sub>i</sub>.  
     from which city is met girls

Interestingly, Bošković shows that even in BCS, if a phase is projected right above an NP, it is impossible to extract an element adjoined to it. For instance, if a noun takes an NP complement, it is impossible for the adjective modifying the lower NP to undergo LBE<sup>7</sup>:

- <sup>7</sup> For further arguments supporting the contextuality of phases and the effects of the PIC and anti-locality interactions, see Bošković (2014).

Though very appealing for its simplicity and great coverage, the system brings up several concerns. The first problem has to do with N complement extraction in BCS. We have seen above that one of the consequences of the system is that N complements should never be extractable in languages with bare NPs, including BCS. However, (15) shows that PP complement extraction does seem to be allowed.

- (15) ? Za koji problem<sub>i</sub> si otkrio rješenja t<sub>i</sub>?  
           to which problem are discovered solutions  
           ‘To which problem did you discover solutions?’

The second problem concerns A complement extraction in BCS. Regarding the TAP structure, there is independent evidence that English TAPs have richer structure than the ones in BCS. Consider (16):

- (16)a. \*Terribly<sub>i</sub> he was t<sub>i</sub> tired.  
        b. Užasno<sub>i</sub> je bio t<sub>i</sub> umoran.  
            terribly is been tired  
            ‘He was terribly tired.’

AP modifiers are not extractable in English (16a), unlike in BCS (16b). Assuming that they originate as AP-adjoined, on par with NP-adjoined adjectives, we get a very simple account of this difference if we posit more structure for English TAPs.

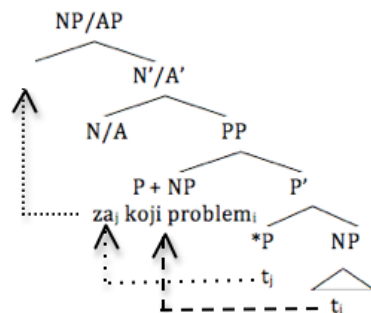
- (17)a. [<sub>XP</sub> [<sub>AP</sub> terribly [<sub>AP</sub> tired]]]  
        b. [<sub>AP</sub> užasno [<sub>AP</sub> umoran]].

In (16a), XP is a phase and it blocks AdvP-extraction, but A complement extraction does not violate any constraint in English (18). However, just like bare NP is a phase in BCS, bare AP is also a phase in this language. This means that AP-adjoined elements can extract, being at the edge of the phase (16b). However, A complements should be immobile, which is not the case (18).

- (18)a. Of John<sub>i</sub>, he is proud t<sub>i</sub>.  
 b. Na koga<sub>i</sub> je on bio ponosan t<sub>i</sub>?  
     of whom is he been proud  
     ‘Of whom was he proud?’

In sum, in both BCS NPs and APs, PP complements are complements of phasal heads, and due to the PIC and anti-locality conflict, they are expected to be immobile. Why are (15) and (18b) grammatical then? We have seen that due to the clitic nature of BCS Ps, they sometimes create an illusion of “non-constituent” movement of a P+AP complex (extraordinary LBE), where it is in fact an AP moving out of the PP, carrying along the preposition that cliticizes to it. Similarly, I would like to propose that, in (15) and (18b), the PP never moves and that this is an instance of an NP moving out of the PP, carrying along the cliticized preposition (see the discussion about the upward direction of P cliticization above). Only NP movement to Spec,PP causes a violation of anti-locality, and therefore, a \* is placed on the head of the phase where the violation occurred (\*P). Other steps of NP movement through phasal edges do not cause any violations and since P cliticizes to NP and its \*-marked copy gets deleted in PF for independent reasons (i.e. this copy of P is a trace), the derivation is rescued. The initial steps of this derivation are below.

(19)



This way, problems with apparent PP complement extraction out of both NPs and APs are resolved. In the following section, I introduce the problems raised by inherent case-assigning context in Bošković's approach to phases and show that these issues also disappear if we extend the mechanism proposed here to these constructions as well.

### 3 Null prepositions assign inherent case

We have seen that genitive N complements cannot move if NP is the highest projection in the nominal domain (13b). Genitive is the nominal structural case; the counterpart of verbal accusative. However, just like some Vs assign cases other than accusative, there are also Ns in BCS that assign cases other than genitive, i.e. they assign lexically specified inherent cases to their complements.<sup>8</sup>

- (20)a. Pružili su otpor neprijateljima.  
 put-up are resistance enemies.<sub>DAT</sub>  
 'They put up resistance to the enemies.'  
 b. Mrzio je prijetnje zatvorom.  
 hated is threats prison.<sub>INST</sub>  
 'He hated threats with prison.'

Importantly, Zlatić (1994) and Bošković (2013) note that nouns assigning inherent case allow complement extraction (21a) and LBE (21b).

- (21)a. Čime<sub>i</sub> ga je [ prijetnja t<sub>i</sub> ] uplašila ?  
 what.<sub>INSTR</sub> him is threat scared  
 'The threat of what scared him?'  
 [Bošković 2013]  
 b. ?Kakvom<sub>i</sub> ga je uplašila [prijetnja [t<sub>i</sub> smrću]]?  
 what-kind-of.<sub>INSTR</sub> him is scared threat.<sub>ACC</sub> death.<sub>INSTR</sub>  
 'Of what kind of death did a threat scare him?'

<sup>8</sup> See Franks (1994), Bošković (2013), and references therein for independent evidence that adnominal genitive case is a structural case, while the cases about to be discussed are inherent.



Similarly, adjectives can also take NP complements to which they assign inherent case and they also pattern with inherent case-assigning nouns with respect to extractions out of APs: they allow complement extraction and deep LBE.

- (22)a. zahvalan studentima  
grateful students-<sub>DAT</sub>  
'loyal/grateful to students'
- b. ?Studentima<sub>i</sub> je on [zahvalan t<sub>i</sub>].  
students-<sub>DAT</sub> is he grateful  
'He is grateful to his *students*.'
- c. Njegovim<sub>i</sub> je on [zahvalan [t<sub>i</sub> studentima].  
his-<sub>DAT</sub> is he grateful students-<sub>DAT</sub>  
'He is grateful to *his* students.'

To account for why it is possible to extract complements in both of these contexts with inherent case assignment, Bošković (2013) argues that there is an additional functional projection (FP) present. Regarding the nature of this projection, he appeals to the frequently adopted assumption that a preposition is involved in inherent case assignment. Following this view, Bošković suggests that F is a preposition-like element similar to English *of*. He assumes that this additional projection enables movement steps in (21a-b) and (22b-c) to obey the PIC, without violating anti-locality. The structures proposed for these contexts in BCS are in (23):

- (23)a. [<sub>NP1</sub> threat [<sub>FP</sub> F [<sub>NP2</sub> cruel [<sub>NP2</sub> death]]]]  
b. [<sub>AP</sub> grateful [<sub>FP</sub> F [<sub>NP</sub> his [<sub>NP</sub> students]]]]

Not much detail is given in Bošković (2013) about this projection. However, a couple of concerns about it immediately follow from the system. First, we need to know to which domain the FP in (23) exactly belongs. The three logical options would be: (i) FP belongs to the extended projection of the higher NP in (23a) or AP in (23b); (ii) FP belongs to the domain of the lower NP; or (iii) FP is a separate domain, i.e. a real preposition. All the three options run into problems.

The first option would be rather strange: functional projections in the domain of a lexical category X are normally introduced after X, i.e. they are higher than X in the structure.

The second and the third option would both lead to undergeneration. If the FP were in the domain of the lower NP, it would be a phase as the highest projection in this domain. On the other hand, if the FP were a real PP, it would also be a phase in this system, since any lexical category, including Ps, projects a phase in its domain. In any case, the complement of FP would be a complement of a phase head and the existence of this additional projection as such does not account for why inherently case-marked complements can extract. It would in fact block the extraction under this approach to phases, rather than providing an explanation as to why these complements can extract, which seems to be the only reason why Bošković does not consider this FP to be a PP.

Moreover, Bošković (2013) points out a related issue with the claim that F is a preposition. In (21a) and (22b), F would be stranded and BCS disallows P-stranding (see (7b) above). As a matter of fact, (21b) and (22c) would also be problematic in his system if F is a preposition, since AP movement across a P that stays in situ is also disallowed in BCS (see (7a) above).

Interestingly, under the analysis of P-complement extraction developed in Section 2, we can easily resolve the problem and in fact consider FP to be a PP headed by a preposition, which happens to be null. This assumption makes the examples in (21a) and (22b) parallel to other instances of extraordinary complement extraction (15), and the examples in (21b) and (22c) parallel to extraordinary LBE (4a). This null preposition projects a phase just like an overt one. The moving NP in inherent case contexts moves to Spec,FP (Spec,PP) due to the PIC. As anti-locality is being violated, a \* is placed on F. The null preposition then cliticizes to the moved NP and finally, the NP, carrying the preposition, moves out of FP. The same steps apply to the moving AP in (21b) and (22c). The anti-locality violation is voided in the same way as with overt Ps, given that the copy of F with the \* in the base position (trace) is deleted in PF.<sup>9</sup> This resolves the problem of the identity of the

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<sup>9</sup> A question follows: Is it necessary to assume that the null-P (F) moves at all, i.e. does a \* placed on a null element cause a problem in PF? Recall that LBE is disallowed in English; this fact does not change even with DPs headed by a null article (*\*Beautiful he has seen houses.*), so the fact that a phase is headed by a null element is not enough to void phasehood effects. In fact, Bošković (2011) shows that \*s assigned to null elements quite generally cause problems, unless the null elements are turned into traces. Thus, it is

FP, since it is a real PP under this analysis. Furthermore, the issue of P-stranding disappears, since the P moves along with the NP complement.

### 3.1 *FP with numerals and quantifiers*

Another context where Bošković (2013) argues for the existence of an FP responsible for inherent case assignment are BCS QPs. These contexts are similar to inherent case-assigning Ns and As in that it is possible to extract a complement of a numeral (24a) and adjectives can undergo deep LBE from below a numeral (24b).

- (24)a. [<sub>QP</sub> five [<sub>FP</sub> F [<sub>NP</sub> expensive [<sub>NP</sub> cars]]]] [Bošković 2013]  
 b. ?Skupih<sub>i</sub> kola<sub>i</sub> je kupio mnogo/pet t<sub>i</sub>.  
 expensive-<sub>GEN</sub> cars-<sub>GEN</sub> is bought many/five  
 ‘He bought many/five expensive cars.’  
 c. Skupih<sub>i</sub> je kupio mnogo/pet t<sub>i</sub> kola.  
 expensive-<sub>GEN</sub> is bought many/ five t<sub>i</sub> cars-<sub>GEN</sub>  
 ‘He bought many/five expensive cars.’

QPs also behave differently than NPs and APs in (21-22), in that it is possible to extract the numeral, which suggests that their structure is different than (24a).

- (25)a. Pet<sub>i</sub> sam vidjela t<sub>i</sub> slika ovih studenata (a ne tri).  
 five am seen pictures these students (and not three).  
 ‘I saw *five* pictures of these students (not three).’  
 b. [<sub>FP</sub> [<sub>QP</sub> five] [<sub>F</sub> [<sub>NP1</sub> pictures [<sub>NP2</sub> these students]]]]

The example (25a) suggests that the numeral is not in the head position, since it can undergo phrasal movement. Hence, we could assume that it originates in the Spec,FP, as Bošković (2006) argues (25b).

Furthermore, this FP shows different behavior than FPs in (23). In the presence of a numeral, it is possible to extract even a genitive-marked N complement (Bošković 2014) (26a). Comparing this with (26b), where it is impossible to extract a genitive-marked complement of the lower NP

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necessary to assume that F in inherent case environments does move together with the moving NP.

even in the presence of FP, we see that FP in the context of numerals/quantifiers seems to extend the domain of NP, while the FP in (23) does not belong to the extended domain of N.

- (26)a. Skupih kola<sub>i</sub> sam vidio pet vlasnika t<sub>i</sub>.  
 expensive cars am seen five owners  
 'I saw five owners of expensive cars.'
- b. \*Čega<sub>i</sub> je slušao svakodnevne prijetnje prodajom t<sub>i</sub>.  
 what<sub>GEN</sub> is listened everyday<sub>ACC</sub> threats<sub>ACC</sub> selling<sub>INST</sub>  
 cf. Slušao svakodnevne prijetnje prodajom njegovog auta.  
 'He listened to the everyday threats by selling his car.'

#### 4 Conclusions

I have pointed out an interesting correlation between AP-mobility and accent shift, based on which I proposed a mechanism that can resolve several issues raised by Bošković's (2014) phasal system and Abels' (2003a) generalization that phasal complements are immobile concerning apparent extraction of PP complements of Ns and As in BCS. I have argued that complements of phase heads cannot extract unless the head of the phase also moves. For apparent PP complement extraction out of BCS NPs and APs, I argued that these PPs are in fact immobile and that what creates an illusion of PP moving is actually P-cliticization which takes place in the language. The mechanism I proposed for these contexts can be unified with extraordinary left branch extraction where the moving AP carries along a preposition. The same mechanism is also extendable to resolve issues raised by the FP projection proposed for inherent case-assigning contexts, if we just assume that this F is a real preposition. The analysis proposed here resolves problems concerning PP extractions and FP in inherent case contexts and it also unifies three phenomena, which are intuitively very similar: extraordinary LBE, apparent PP complement extraction (=extraordinary complement extraction), and extraction of inherently case-marked NPs.

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## **VP-ellipsis and All Its Phases: The Role of Aspect in VP-ellipsis in Serbian\***

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This paper offers an account of aspect-sensitivity of VP-ellipsis in Serbian, explaining the fact that the availability of ellipsis is affected by the aspectual specification of the antecedent and the target VP. In particular, I discuss aspectual mismatches between the antecedent and the target VP and show that ellipsis is allowed only with certain aspectual mismatches. I argue that seemingly unsystematic discrepancies can be accounted for under a phase-based approach to ellipsis, whereby only phases and complements of phases can be elided, as argued in Bošković (2014). However, I argue that VP-ellipsis in Serbian is even more constrained in that the target and its antecedent need to be identical in terms of their phasal status, i.e. either both are phases or both are phasal complements.

### **1 Aspectual Mismatches and VP-ellipsis in Serbian**

VP-ellipsis in Serbian seems to be sensitive to aspect. When there are aspectual mismatches between the antecedent and the target, ellipsis is allowed only with certain aspectual specifications.<sup>1</sup> For instance, VP-

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<sup>1</sup> Stjepanović (1997) argues that availability of VP-ellipsis in Serbian is affected by finiteness, i.e. antecedents and targets need to match in finiteness. Although Stjepanović discusses only ellipsis under aspectual matching, with aspectual mismatches, finiteness



<sup>5</sup> All the examples in the paper refer to ellipsis of non-finite targets. Examples later in the paper contain only non-finite antecedents; finite antecedents pattern the same way.

as in (3). When secondary imperfectives are antecedents to the perfective targets from which they are derived, ellipsis is allowed, as illustrated in (4).

- (3)    izbaciti –                    izbaci-va<sub>IMPF</sub>-ti  
          to throw out-inf.**pf.**    to throw out-inf.**impf.**
- (4) a.    Aca je redovno    iz-baci-va-o            flaše,    a    Ana je  
          Aca is regularly    out-throw-**impf**-part.    bottles    and    Ana is  
          jedanput ~~iz-bacila~~ ~~flaše~~/    će ovaj put  
          once    out-thrown.**pf**    bottles/ will this    time  
          ~~iz-baciti~~ ~~flaše~~.  
          out-throw.**pf**.inf    bottles  
          ‘Aca was throwing the bottles out regularly, while Ana has  
          (thrown the bottles away) once/will (throw the bottles away) this  
          time.’
- b.    Aca redovno    iz-bacuje            flaše,    a    Ana je jedanput/  
          Aca regularly    out-throws-**impf**.    bottles    and    Ana is once  
          ~~iz-bacila~~ ~~flaše~~/    će ovaj put ~~iz-baciti~~  
          out-thrown-**pf**.    bottles/    will this time    out-throw-**pf**.inf  
          ~~flaše~~.  
          bottles  
          ‘Aca is throwing the bottles out regularly, while Ana (thrown the  
          bottles away) once/will (throw the bottles away) this time.’

Thus, the availability of VP-ellipsis in Serbian seems to be affected by the aspectual specifications of the antecedent and the target. In Section 2, I briefly outline the assumptions about the nature of aspect in Serbian. In Section 3, I argue that the seemingly unsystematic discrepancies in the availability of VP-ellipsis can successfully be accounted for in a phase-based approach to ellipsis, whereby only phases and phasal complements can be elided, provided the target and its antecedent match in their phasal status, i.e. either both are phases or both are phasal complements. In Section 4, it is shown that this analysis can extend to apparently problematic VP-ellipsis with another type of perfective VPs, superlexical perfectives. Section 5 concludes the paper.

## 2 Types of Aspect in Serbian

In terms of semantic contribution, there are two types of aspect: a) lexical, situation aspect or *Aktionsart* that distinguishes between telic and atelic predicates, i.e. between predicates that have and those that do not have an inherent endpoint; and b) grammatical viewpoint aspect which refers to viewing the situation as bounded, i.e. from the outside, seeing its beginning and end, or viewing it as unbounded, i.e. seeing its internal structure. Structurally, it is argued that situation aspect is within the VP (Travis 2010, cf. Marantz 2001, 2007 *i.a.*), whereas viewpoint aspect is in AspP (see von Stechow 2002, Pancheva 2003, Pancheva and von Stechow 2004, Travis 2010, Wurmbrand to appear *i.a.*). I propose that there are both situation and viewpoint aspect in Serbian, but that they are different both in terms of their syntax (VP-internal versus. external aspect, cf. Travis 2010) and semantics (telicity versus. boundedness, cf. Borik 2002, Borik and Reinhart 2004, Travis 2010, Todorović 2013 *i.a.*).

In addition to aspect being already specified on the root in Serbian, as in (5), there are also derived forms, i.e. derived perfectives and secondary imperfectives. Derived perfective forms can be further classified into lexical and superlexical derived perfectives.

- (5)      *baciti*                  *bacati*  
            throw-**pf.**        throw-**impf.**

Milićević (2004) notes that there are two types of prefixes: lexical and superlexical. What she refers to as lexical prefixes are prefixes that change the lexical properties of verbs, contributing idiosyncratic meanings, and sometimes affecting their thematic structure. In (6b), the prefix *pre-*, when added to the stem *skočiti* ('to jump-pf.'), requires an NP argument, unlike (6a). Assuming that situation aspect is VP-internal, I propose that lexical derived perfectives (henceforth, lexical perfectives) introduce an additional VP projection on the top of a VP containing root perfective, as in (7).

- (6) a.   *Skočio*                      *je.*      b.   *Pre-skočio*                      *je* *potok.*  
          jumped-**pf.**3.m.sg.    is            over-jumped.**pf.**3.m.sg. is stream.  
          'He has jumped.'                      'He jumped over the stream.'

- (7) [VP<sub>2</sub> lexical pf. [VP<sub>1</sub> root pf.

Milićević (2004) notes that not all prefixes are the same. For instance, in (8), the prefix *iz-* that is closer to the stem makes the same contribution as the prefix in (6b), whereas the word initial *iz-* in (8) only marks the completion of the event, without contributing any lexical change. The former is lexical and the latter is superlexical. The prefix *po-* in the same example is also an instance of a superlexical perfective, contributing a distributive reading (cf. Filip 2000, Piñon 2001). Regarding their position, these prefixes can only be added to a secondary imperfective base, as illustrated in (9).

- (8) Iz-po-iz-bacivao je sve flaše iz kuhinje.  
 cmpl-dstr-out-thrown-3.m.sg.pf. is all bottles from kitchen  
 'He threw out all of the bottles from the kitchen.'  
 (Milićević 2004:293)

- (9) a. iz-baciti – iz-baci-**va**-ti  
       out-throw-pf. out-throw-impf-inf.  
       b. izbaciti – **iz-po**-iz-baci-**va**-ti  
            cmpl-dstr-out-throw-impf-inf.  
       c. izbaciti – \***po**-iz-baci-ti  
            dstr-out-throw.pf-inf.  
       d. izbaciti – \***iz-po**-iz-baci-ti  
            cmpl-dstr-out-throw.pf-inf.

Following Milićević (2004) and Svenonius (2004), I assume that the superlexical prefixes are structurally higher than the lexical ones. Given the distribution in (9), I propose that they are located in a projection above the secondary imperfective, which I define immediately.

Secondary imperfectives, which are common across Slavic languages (see Isačenko 1960, Forsyth 1970, Zucchi 1999, Filip 2000, Ramchand 2004, Borer 2005, Gribanova 2013 *i.a.*), are formed by suffixation of either root or lexical derived perfectives. The secondary imperfective has been classified in the higher domain, i.e. the domain of viewpoint aspect (Borer 2005; cf. Zucchi 1999, Filip 2000, Svenonius 2004 *i.a.*). In Serbian, the secondary imperfective also shows the characteristics of viewpoint aspect: it does not affect the telicity of the event and it does not change the lexical properties of the verb. Rather, it only changes the

boundedness of the event (9) (cf. (10)). It also interacts with Tense, affecting the availability of morphological present tense with the Utterance Time interpretation (11) (cf. (12)) (Todorović 2013). Given the patterning with respect to the above diagnostics, I propose that the secondary imperfective is exclusively a marker of viewpoint aspect in Serbian (see also Milićević 2004) and as such, it is located in the AspP (cf. Svenonius 2004, Borer 2005, Travis 2010, Gribanova 2013 *i.a.*), as in (13). The superlexical perfective is located in the projection above AspP, as in (14).<sup>4</sup>

- (9) Jovan je u kontinuitetu pobedjivao protivnika.  
Jovan is in continuity won-**impf.** rival  
'Jovan was continuously defeating his rival.'
- (10) Jovan je tom prilikom pobedio protivnika.  
Jovan is that occasion won-**pf.** rival  
'Jovan defeated his rival then.'
- (11) \*Jovan prepriča knjigu Marku.  
Jovan retells-**pf.** book Marko  
'Jovan has retold a book to Marko (just now).'
- (12) Jovan prepričava knjigu Marku.  
Jovan retells-**impf.** book Marko  
'Jovan is retelling a book to Marko (right now).'
- (13) [<sub>AspP</sub> secondary impf. [<sub>VP2</sub> lexical pf. [<sub>VP1</sub> root pf.]]]  
*Izbacivati* 'to throw out' –impf.
- (14) [superlexical pf. [<sub>AspP</sub> secondary impf. [<sub>VP2</sub> lexical pf. [<sub>VP1</sub> root pf.]]]  
*poizbacivati* 'to throw out one by one' –pf.

### 3 Phase-constrained Approach to Ellipsis

In a phase-constrained approach to ellipsis in Bošković (2014), it is argued that the elided material can only be a phasally-relevant domain, i.e. only phases and complements of phases are in principle elidable. That the phasal complement can be elided has been extensively argued for in Gengel (2006, 2009), Boeckx (2009), Gallego (2009), van Craenenbroeck (2010), M. Takahashi (2011), Rouveret (2012) *i.a.*, one

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<sup>4</sup> I return to the nature of this projection in Section 4.

of the arguments being sluicing, i.e. IP ellipsis of the complement of C, a phasal head (see Merchant 2001, van Craenenbroeck 2010 *i.a.*):

- (15) John bought something, but I don't know [<sub>CP</sub> what [<sub>TP</sub> ~~John bought~~]].

(Merchant 2001)

Bošković (in press (a)) argues that full phases can also be elided, as, for instance, in cases of argument ellipsis allowed in Japanese, Korean, Turkish, Chinese, and American Sign Language *i.a.* (see Şener and D. Takahashi 2010, D. Takahashi 2008a,b, 2010, Koulidobrova 2012 *i.a.*) and it is standardly argued to target full phases. In addition, he argues that the availability of eliding either phasal complements or full phases accounts for the discrepancies in the availability of extraction out of an ellipsis site: extraction seems to be acceptable out of elided phasal complements, as in the case sluicing, but not out of elided phases, as in the case of argument ellipsis. Moreover, he also argues that puzzling VP-ellipsis possibilities in English multiple auxiliary constructions, as in (16), can be captured under the proposed model. Assuming a crucially contextual approach to phasehood (e.g. Bobaljik and Wurmbrand 2005, 2013, Bošković 2005, 2013, 2014, den Dikken 2007, Gallego and Uriagereka 2007, Wurmbrand 2013 *i.a.*), in particular a version where the highest projection in the extended domain of a lexical projection is a phase, Bošković (in press (a)) argues that, in (16), AspP is a phase, and only AspP and VP<sub>f2</sub>, a phasal complement, can be elided ((16a), (16b)); crucially, VP, a phasally non-relevant domain, cannot (16c).

- (16) Betsy has been being hassled by the police, and Peter  
 a. has too.  
 b. has been too.  
 c. \*has been being too. (Sag 1976)  
 [<sub>TP</sub> Peter<sub>k</sub> has<sub>i</sub> [<sub>VPf1</sub> t<sub>i</sub> [<sub>AspectP1</sub> be<sub>j</sub>+en [<sub>VPf2</sub> t<sub>j</sub> [<sub>AspectP2</sub> ing [<sub>VPf3</sub> be [<sub>VP</sub> hassled t<sub>k</sub> by the police]]]]]]]]]

### 3.1. Phase-constrained Approach to VP-ellipsis in Serbian

I propose that the phasal approach that restricts the ellipsis site to a phasal complement and a phase can also successfully account for the VP-ellipsis possibilities under aspectual mismatches in Serbian. However, I

argue that this VP-ellipsis is even more constrained in that the general parallelism on ellipsis extends to the parallelism in terms of phasal status between the antecedent and the target, i.e. the target needs to have the same phasal status as its strict aspectual antecedent (17). In other words, either both are phasal complements or both are phases.

- (17) A strict aspectual antecedent is part of a VP antecedent that completely matches a VP target in terms of aspectual properties, both lexical and functional.

Regarding phasehood, I follow Bošković (2013, 2014) and Wurmbrand (2013, to appear), who assume that the highest projection in the extended domain of all major categories constitutes a phase.<sup>5</sup> This approach is contextual in nature since the amount of structure projected cross-linguistically, but also within a language, affects which particular phrase within a major category will count as a phase.<sup>6</sup> To illustrate, Bošković (in press (a,b)) argues that in article-less languages (e.g. Serbian, Chinese, Japanese), which he argues lack a DP projection,<sup>7</sup> NP counts as a phase, since it is the highest projection in the nominal domain in these languages. In article languages, on the other hand, where a DP is projected on top of the NP, DP counts as a phase. Interestingly, Despić (2009, 2011a,b), and Bošković (2013, 2014) show that numerals and certain quantifiers project a phrase above an NP in Serbian. Bošković shows that when QP is projected on the top of an NP in an NP-language, NP ceases to be a phase and QP closes the phasal domain. The main argument concerns Abels' (2003) generalization that complements of phasal heads cannot move. Bošković shows that the complement of a noun cannot move in the configuration in (18a), but it can do so in (18b) and (18c), indicating that NP is a phase only in (18a). In other words, the

<sup>5</sup> Note that what I refer to as the highest projection in the VP-domain is different from the proposal in Grimshaw (1991), where the verbal domain would then extend all the way up to the CP. Bošković (2014) and Wurmbrand (2013, to appear), place pure temporal projections (and CP) outside of the extended domain of VP. Under the current approach, purely functional (semantically impoverished) temporal, but also viewpoint aspectual projections are outside of the extended VP-domain.

<sup>6</sup> Cf. Wurmbrand (2013) who, on the basis of QR, provides evidence that the highest projection of a cyclic domain, i.e. AspP, counts as a phase.

<sup>7</sup> For Serbian, as an NP language, see also Corver (1992), Zlatić (1997), Bošković (2005, 2008, 2012), Marelj (2008), Despić (2011a,b), Runić (2013).

context-sensitive phasal status of a phrase is determined both cross-linguistically and within a single language, depending on what the highest projection is within a particular domain.

- (18) a. [NP=phase (Serbian)  
       b. [DP=phase [NP (English)  
       c. [QP=phase [NP (Serbian)

I propose that applying this kind of contextual approach to Serbian VPs renders the highest VP in a series of VPs a phase (see also Bošković 2014). More precisely, in the case of root perfectives, a VP containing a root perfective is a phase.

- (19) [VP=phase root pf. *baciti* ‘to throw’-pf.

However, if a lexically-derived perfective projects additional structure within the VP-domain (cf. (7)) and closes the VP domain, then a root perfective VP will cease to be a phase and only this higher VP will count as a phase.

- (20) [VP2=phase lexical pf. [VP1 root pf. *iz-baciti* ‘to throw out’-pf.

Regarding the phasal status of secondary imperfectives, I propose that, due to both the functional and lexical nature of aspects in Serbian, situation aspect is part of the VP domain whereas viewpoint aspect, located in AspP, is part of a different phasal domain, i.e. outside of the VP phasal domain. In other words, the secondary imperfective does not affect the phasal status of phrases within the VP domain, since I propose that it belongs to a separate phasal domain.<sup>8</sup>

- (21) [AsPP secondary impf. [VP=phase lexical pf. [VP root pf.  
       *izbacivati* ‘to throw out’-impf.

<sup>8</sup> I return to the nature and phasal status of projection containing superlexical perfective in Section 4.



### 3.2 Deriving VP-ellipsis under aspectual mismatches

As shown in (2), when the target and the antecedent project different levels of structure within the VP, ellipsis is disallowed. This is the case with lexical perfective antecedents and root perfective targets (cf. (2)):

- (22) \*Aca je u petak iz-bacio flaše, a Ana je  
 Aca is in Friday *out-thrown-pf.* bottles and Ana is  
 u sredi ~~bacila~~ ~~flaše~~/ će u sredi  
 in Wednesday *thrown-pf.* bottles/ will in Wednesday  
~~baciti~~ ~~flaše~~.  
 throw- **pf.inf** bottles  
 ‘Aca threw the bottles out on Friday, while Ana threw the bottles  
 away on Wednesday/will throw the bottles away on Wednesday.’

The reason for the ungrammaticality of (22) is the failure to satisfy the phasal identity requirement: the target and its strict aspectual antecedent do not have identical phasal status. Namely, the target is a phase, since a VP containing a root perfective closes the VP domain, as shown in (23). However, its strict aspectual antecedent, i.e. VP<sub>1</sub> is not a phase, but a phasal complement, since there is an additional VP (VP<sub>2</sub>) in the antecedent, introducing the lexical perfective specification and closing the VP phasal domain. Ellipsis is correctly predicted to be unavailable.

- (23) Target: [<sub>VP=phase</sub> root pf.  
           *baciti* ‘to throw’-pf.  
 Antecedent: [<sub>VP<sub>2</sub>=phase</sub> lexical pf. [<sub>VP<sub>1</sub>≠phase</sub> root pf.  
                   *iz- baciti* ‘to throw out’-pf.

On the other hand, if there is no difference between the target and the antecedent in the level of structure projected within the VP, and hence, no difference in the phasal status between the target and its strict aspectual antecedent, then we predict ellipsis to be possible. The prediction is borne out with secondary imperfectives as antecedents and lexical perfectives as targets, as repeated in (24) (cf. (4)). As illustrated in (25), the target and its strict aspectual antecedent match in phasal status. The target is a phase, since VP<sub>2</sub> is the highest projection in the VP domain. Assuming that viewpoint aspect and situation aspect are parts of

separate phasal domains, VP<sub>2</sub>, the strict aspectual antecedent, is also a phase; the phasal identity requirement is satisfied and ellipsis is allowed.

- (24) Aca je redovno iz-baci-va-o flaše, a Ana je jedanput  
 Aca is regularly *out-throw-impf*-part. bottles and Ana is once  
~~iz-bacila~~ ~~flaše/~~ će ovaj put ~~iz-baciti~~ ~~flaše~~.  
*out-thrown.pf* bottles/ will this time *out-throw.pf.inf* bottles  
 ‘Aca was throwing the bottles out regularly, while Ana has (thrown  
 the bottles away) once/will (throw the bottles away) this time.’
- (25) Target: [<sub>VP2=phase</sub> ~~lexical pf~~ [<sub>VP1</sub> ~~root pf~~ *iz-baciti* ‘to throw out’-pf.  
 Antecedent: [<sub>AspP</sub> secondary impf. [<sub>VP2=phase</sub> lexical pf. [<sub>VP1</sub> root pf.  
*iz-baci-va-ti* ‘to throw out’-impf.

Note that, in (24), the secondary imperfective is formed by suffixation of the lexical perfective; the structure is identical to the one in the target. If we retain the same antecedent, but change the target to a root perfective, we are predicting ellipsis to be unavailable since the antecedent contains additional structure that is not otherwise present in the target. This is correct:

- (26) \*Aca je redovno iz-baci-va-o flaše, a Ana je jedanput  
 Aca is regularly *out-thrown-impf*-part. bottles and Ana is once  
~~bacila~~ ~~flaše/~~ će ovaj put ~~baci-ti~~ ~~flaše~~.  
 thrown-**pf**. bottles/ will this time throw-**pf.inf** bottles  
 ‘Aca was throwing the bottles out regularly, while Ana has (thrown  
 the bottles away) once/will (throw the bottles away) this time’

Under this configuration, the phasal identity requirement is not satisfied. Namely, the target is a phase, since the VP containing the root perfective closes the VP domain. However, given that there is an additional structure in the antecedent, i.e. VP<sub>2</sub>, introducing lexical perfective specification, the strict aspectual antecedent, VP<sub>1</sub>, ceases to be a phase and becomes a phasal complement.

- (27) Target: [<sub>VP=phase</sub> ~~root pf.~~  
*baciti* ‘to throw’-pf.  
 Antecedent: [<sub>AspP</sub> secondary impf. [<sub>VP2=phase</sub> lexical pf. [<sub>VP1≠phase</sub> root pf.  
*iz-baci-va-ti* ‘to throw out’-impf.

On the other hand, we expect secondary imperfectives formed by suffixation of root perfective, as in (28), to be felicitous antecedents of root perfectives. The prediction is borne out, as shown in (29). Even though there is an additional structure in the antecedent, it is located outside of the VP-domain (unlike in (26)), not affecting the phasal status of phrases within the VP. Thus, the strict aspectual antecedent of the target VP, the root perfective VP, remains a phase even with the secondary imperfective in the structure; moreover, it has the same phasal status as the target root perfective VP and ellipsis is allowed.

- (28) [<sub>AspP</sub> secondary impf. [<sub>VP</sub> root pf.  
*pobedi* ‘to win’-impf.  
 (29) Aca je redovno pobedi-va-o Ana, a Iva je jedanput  
 Aca is regularly win-**impf**-part. Ana and Iva is once  
~~pobedio Ana/~~ će ovaj put ~~pobediti Ana.~~  
 won-**pf.** Ana/ will this time win-**pf**.inf Ana  
 ‘Aca has been defeating Ana regularly, while Iva has (defeated  
 Ana) once/will (defeat Ana) this time.’  
 (30) Target: [<sub>VP=phase</sub> ~~root pf.~~  
*pobediti* ‘to win’-pf.  
 Antecedent: [<sub>AspP</sub> secondary impf. [<sub>VP=phase</sub> root pf.  
*pobedi* ‘to win’-impf.

#### 4 Superlexical Perfective

In Section 2, it was proposed that superlexical perfectives introduce an additional projection on the top of AspP containing the secondary imperfective (repeated in (31)). Given that its location is outside of the VP domain, the superlexical perfective should not cause problems with respect to the availability of ellipsis. From what has been illustrated above, we only expect VP-ellipsis to be unavailable if the antecedent and the target are different within the VP-domain. Below I show that the

superlexical perfective is actually a highly restrictive antecedent in the sense that it does not allow for VP-ellipsis under aspectual mismatches. This will help us determine the nature of projection hosting it.

- (31) [superlex. pf. [<sub>AspP</sub> sec. impf. [<sub>VP2=phase</sub> lex. pf. [<sub>VP1</sub> root pf.

Superlexical perfectives allow ellipsis only under full identity with the target, i.e. when the target is the superlexical perfective:

- (32) Aca je u sredu po-izbacivao flaše, a Ana je  
 Aca is in Wednesday **dstr-out**.thrown-impf. bottles, and Ana is  
 u petak ~~po-izbaci vala~~ ~~flaše~~.  
 in Friday **dstr-out**.thrown-impf. bottles/  
 će u petak ~~po-izbaci vati~~ ~~flaše~~.  
 will in Friday **dstr-out**.throw-impf.inf bottles  
 ‘Aca threw the bottles out (one by one) on Wednesday, and Ana  
 has (thrown the bottles out, one by one)/will (throw the bottles  
 out, one by one) on Friday.’

That no mismatches between the target and the superlexical perfective antecedents are allowed is illustrated with secondary imperfective targets. Although minimally different from its antecedent, ellipsis of this target is not available:

- (33) \*Marija je ovog puta po-izbacivala flaše, a Ana je  
 Marija is this time **dstr-out**.thrown-impf.part bottles and Ana is  
 redovno izbacivala ~~flaše~~/ će redovno  
 regularly out.thrown-**impf**.part bottles/ will regularly  
 izbacivati ~~flaše~~.  
 out.throw-**impf**.inf bottles  
 ‘Marija threw the bottles out this time (one by one), while Ana  
 was (throwing the bottles out) regularly/will be (throwing the  
 bottles out) regularly.’

Note that ellipsis of secondary imperfectives is, in principle, possible. Secondary imperfectives can be elided when their antecedents are secondary imperfectives:<sup>9</sup>

- (34) Ivan je redovno pobeđivao Mariju, a Petar je  
 Ivan is regularly won-**impf**.part Marija, and Petar is  
 povremeno ~~pobeđivao~~ Mariju/ će povremeno  
 occasionally won-**impf**.part Marija/ will occasionally  
~~pobeđivati~~ Mariju.  
 win-**impf**.inf Marija  
 ‘Ivan was defeating Marija regularly, but Petar was  
 occasionally/will occasionally be (defeating Marija).’

Moreover, superlexical perfectives are also infelicitous antecedents to lexical perfectives:

- (35) \*Aca je ovog puta ~~poizbacivao~~ flaše, a Ana je  
 Aca is this time compl.out.throw-**pf**. bottles, and Ana is  
 prošlog puta ~~izbacila~~ flaše/ će narednog puta  
 last time out.thrown-**pf**. bottles will next time  
~~izbaciti~~ flaše.  
 out.throw-**pf**. bottles  
 ‘Aca has thrown all the bottles out, one by one, this time, and  
 Ana did (throw the bottles out) last time/will (throw the bottles  
 out) next time.’

The lack of ellipsis of lexical perfectives with superlexical perfective antecedents poses an apparent problem for the current analysis. Namely, the target in (35) is a phase, since VP<sub>2</sub> is the highest projection in the VP

<sup>9</sup> Secondary imperfectives can also be elided even when their antecedents are lexical and root perfectives. This seems to be a problem for the approach to ellipsis argued for in here, since there is no strict aspectual antecedent with which to start, i.e. the target seems to be structurally more complex than the antecedent. In addition, the issue of recoverability arises. Although the discussion on these configurations is beyond the scope of this paper, see Todorović (to appear), where it is argued that this problem is only apparent, i.e. that the elided secondary imperfectives are actually VPs, rather than AspPs, containing the same amount of structure as the antecedent, and that the local environment provides information for the interpretation of the target, taking care of the recoverability issue.

domain (as shown in (36)). When it comes to the antecedent, if the secondary imperfective and the superlexical perfective are parts of a phasal domain that is outside of the VP phasal domain, then they should not affect the phasal status of projections within the VP domain; the strict aspectual antecedent, i.e. VP<sub>2</sub>, is also a phase. Given the identity in phasal status, ellipsis should be possible, contrary to the facts.

- (36) Target: [<sub>VP2=phase</sub> ~~lexical pf.~~ [<sub>VP1</sub> ~~root pf.~~  
                   *iz-baciti* ‘to throw out’-pf.  
       Antecedent: [superlex.pf. [<sub>AspP</sub> sec.impf. [<sub>VP2=phase</sub> lex. pf. [<sub>VP1</sub> root pf.  
                   *poizbacivati* ‘to throw out one by one’-pf.

In order to provide a solution for the problematic case in (35), it is necessary to specify the nature of the projection hosting the superlexical perfective. I argue that, given the contribution that superlexical prefixes make in terms of meaning (e.g. distributive), they are, at least to some extent, verb-like in nature. I propose that they are some sort of a VP-projection, potentially a semi-lexical/functional projection (cf. Koizumi’s (1995) implementation of Larsonian (1988) shells in terms of split VP; see also Travis 2010). I propose that due to the nature of this projection, when superlexical perfectives are present in the structure, they close the verbal domain, making the entire domain one phase, as illustrated in (37).

- (37) [<sub>=phase</sub> superlex pf. [<sub>AspP</sub> sec. impf. [<sub>VP2</sub> lex. pf. [<sub>VP1</sub> root pf.

If we now reconsider the availability of ellipsis (or the lack thereof) with superlexical perfective antecedents, the patterns fall out straightforwardly.

It was shown in (33), that not even minimally different secondary imperfectives can be elided with superlexical perfective antecedents. Given that the ellipsis of secondary imperfectives is in principle available (cf. (34)), secondary imperfectives are either a phase or a phasal complement in the domain outside of the VP phasal domain. However, assuming the structure of superlexical perfectives in (37), the strict aspectual antecedent of the secondary imperfective is now part of

the verbal phasal domain. The lack of a match in phasal status renders the ellipsis unavailable.

(38) Target: [<sub>AspP=phase/phasal compl.</sub> sec. impf. [<sub>VP2=phase</sub> lex. pf. [<sub>VP1</sub> root pf.  
*izbacivati-* ‘to throw out’-impf.

Antecedent: [=phase superlex. pf. [<sub>AspP</sub> sec. impf. [<sub>VP2</sub> lex. pf. [<sub>VP1</sub> root pf.  
*poizbacivati-* ‘to throw out one by one’-pf.

We can now also account for the otherwise problematic lack of ellipsis of lexical perfectives (cf. (35)). The target is a phase (and in principle elidable) since the VP containing the lexical perfective closes the VP domain. However, the superlexical perfective again creates a problem, since by extending the phasal domain all the way up, it renders the strict aspectual antecedent, i.e. VP<sub>2</sub>, a complement of a complement of a phasal head. Again, the lack of identity in terms of phasal status precludes ellipsis. Thus, this accounts for an apparently problematic example.

(39) Target: [<sub>VP2=phase</sub> ~~lexical pf.~~ [<sub>VP1</sub> ~~root pf.~~  
*iz-baciti* ‘to throw out’-pf.

Antecedent: [=phase superlex. pf. [<sub>AspP</sub> sec. impf. [<sub>VP2</sub> lex. pf. [<sub>VP1</sub> root pf.  
*po-iz-baci-va-ti* ‘to throw out one by one’-pf.

I provide the list of (un)available mismatches in Table 1:

Antecedent	Target	Ellipsis
imperfective derived from lexical perfective	derived perfective	√
imperfective derived from root perfective	root perfective	√
imperfective derived from lexical perfective	root perfective	*
lexical perfective	root perfective	*
superlexical perfective	derived imperfective	*
superlexical perfective	derived perfective	*

Table 1: Availability of VP-ellipsis under aspectual mismatches

## 5 Conclusion

VP-ellipsis in Serbian seems to be sensitive to aspectual specifications of the antecedent and the target. Even though, under aspectual mismatches, the availability of ellipsis seems unpredictable, I argued that VP-ellipsis can receive a principled account under a phase-constrained approach to VP-ellipsis where the target needs to be either a phase or a phasal complement (Bošković 2014). However, I proposed that VP-ellipsis in Serbian is even more constrained in that the general parallelism requirement on ellipsis extends to a parallelism in terms of phasal status between the antecedent and the target, i.e. either both are phases or both are phasal complements. This approach accounted for a variety of aspectual specifications including both situation and viewpoint aspect.

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## **Solving Adjunct Control Through Tiered Attachment Sites Plus Smuggling**

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### **1 Introduction**

The goal of this paper<sup>1</sup> is to bring to light certain facts concerning the phenomenon of control into adjuncts. With the linguistic examples being restricted to Polish, we nevertheless maintain that the mechanism explaining how adjunct control works can be applied cross-linguistically. We take adjunct control to cover cases of control where the controller is placed in the (tensed) main clause and it controls the subject of an infinitive or gerund, mostly the latter, in an adverbial position. In this paper, we are concerned with control into adverbial gerunds and take (1) to be our cornerstone assumption:

(1) Prepositional gerunds ([<sub>pp</sub> gerunds]) show Obligatory Control

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<sup>1</sup> This paper is a revised and expanded continuation of the work presented earlier at the Generative Linguistics in Poland 2011 and Societas Linguistica Europaea 2012 conferences.

The postulate in (1) is dictated by considerations concerning the nature of adjunct control and the choice of the controller. We show that certain adverbial domains occupy (relatively) fixed positions in the structure of the clause and these positions determine the type of obligatory control that fixes the reference of their subjects. Specifically, PP adverbial gerunds are shown to occupy fixed positions and display fixed control characteristics. We then use these observations based on regular clauses, modified by PP gerunds and built around transitive activity predicates, to test for subject and object properties of Experiencer arguments of psychological predicates. In Section 2.1, we show how our view of the facts characterizing regular transitive verbs is further corroborated by the sentences containing psychological verbs of Class II and III (cf. Belletti and Rizzi 1988). On top of showing that Dative Experiencers do exhibit subject-like properties in terms of their capacity for control into gerunds, we also provide examples to the effect that Dative Experiencers are syntactically distinct from Dative non-Experiencers in that the latter behave like regular transitive objects.

For our analysis<sup>2</sup> to work, we assume an interaction among the following elements:

- (2) a. varied attachment site of the adjunct
- b. theory of connectedness (Kayne 1984, Manzini and Roussou 2000, van Urk 2010)
- c. the passive seen as a result of smuggling (Collins 2005)
- d. the requirement of the c-command relation between the controller and PRO

## 2 Control into [PP gerunds]

Polish gerunds seem to always impose a strict Subject Control or strict Object Control interpretation, which leads us to assume that they

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<sup>2</sup> We are well aware of the ongoing control debate (cf. inter alia Hornstein 1999, 2001; Boeckx and Hornstein 2006; Hornstein and Polinsky 2010; Landau 2000, 2007; Bobaljik and Landau 2009; Culicover and Jackendoff 2006) and although our argumentation follows the Movement Theory of Control, we believe that in principle it could be also adapted to the Agree Theory of Control.

instantiate Obligatory Control forced by distinct adjunction sites. We investigate in more detail three types of gerundive expressions:

- (3) a. [<sub>PP</sub> *bez* gerund] Subject Control, adjunction at vP (high in the VP domain);  
 b. [<sub>PP</sub> *za* gerund] Object Control, adjunction at V' (low in the VP domain);  
 c. [<sub>PP</sub> *po* gerund] Subject Control, Object Control, either site.<sup>3</sup>

We pair examples in both the active and the passive to check for the combined effect of the adjunct control type, related strictly to the attachment site of the gerund, and the movement operation in the passive which promotes to the clause initial position not only the object, but a larger unit of structure. Consider the following data, with (4), (5), and (6) matching the three types in (3a), (3b), and (3c), respectively:

- (4) a. Szef<sub>1</sub> zwolnił swego najlepszego pracownika<sub>2</sub>  
 boss fired his best worker  
 [<sub>PP</sub> *bez* PRO<sub>1/\*2</sub> *zawahania*]  
 without hesitating  
 'The boss fired his best worker without hesitation.'  
 b. Najlepszy pracownik<sub>2</sub> został pro<sub>1</sub> zwolniony  
 best worker was pro fired  
 [<sub>PP</sub> *bez* PRO<sub>1/\*2</sub> *zawahania*]  
 without hesitating  
 'The best worker was fired without hesitation.'
- (5) a. Szef<sub>1</sub> zwolnił swojego najlepszego pracownika<sub>2</sub>  
 boss fired his best worker  
 [<sub>PP</sub> *za* PRO<sub>\*1/2</sub> *picie* w pracy]  
 for drinking at work  
 'The boss fired his best worker for drinking at work.'  
 b. Najlepszy pracownik<sub>2</sub> został pro<sub>1</sub> zwolniony  
 best worker was fired

<sup>3</sup> The choice of the interpretation of the [<sub>PP</sub> *po* gerund] is regulated by factors of semantic and pragmatic nature; for instance, in the passive, the surface subject/underlying object is the preferred controller. We leave this issue for further research.

- [<sub>PP</sub> za PRO\*<sub>1/2</sub> picie w pracy]  
 for drinking in work  
 ‘The best worker was fired for drinking at work.’
- (6) a. Sędzia<sub>1</sub> wysłał piłkarza<sub>2</sub> poza boisko [<sub>PP</sub> po  
 referee sent player outside pitch after  
 PRO<sub>1/2</sub> przebiegnięciu kilkunastu metrów]  
 running several meters  
 ‘The referee sent the player off after having run for several meters.’
- b. Piłkarz<sub>2</sub> został pro<sub>1</sub> wysłany poza boisko [<sub>PP</sub> po  
 player was sent outside pitch after  
 PRO<sub>1/2</sub> przebiegnięciu kilkunastu metrów]  
 running several meters  
 ‘The player was sent off after having run for several meters.’
- c. Bramkarz<sub>2</sub> został pro<sub>1</sub> wysłany poza boisko [<sub>PP</sub> po  
 goalkeeper was sent outside pitch after  
 PRO<sub>1/2</sub> obejrzeniu 15 minut jego fatalnej gry na  
 watching 15 minutes his horrible play on  
 linii bramkowej]  
 goal line  
 ‘The goalkeeper was sent off after having watched his horrible performance on the goal line.’

We take the most intriguing fact to be displayed in (5b); in the passive of Object Control, PRO remains controlled by the object, although this does not seem to be a local phenomenon, with the implicit subject of the passive intervening between the two, assuming following Collins (2005) and Baker (1988), that the argument bearing the thematic role of Agent is always first-merged in the position of [spec,v] in both the active and the passive voice constructions:

- (7) [<sub>TP</sub> DP<sub>O</sub> T [<sub>VP</sub> DP<sub>S</sub> [<sub>V'</sub> [<sub>VP</sub> [<sub>VP</sub> V ~~DP~~<sub>O</sub>] [<sub>PP</sub> za ... PRO ...]]]]]

We propose to account for the interplay between control and the passive through the derivational interrelation between the adjunction site of the gerund and the amount of structural material promoted via smuggling in the operation of the passive. We postulate two adjunction sites for [<sub>PP</sub> gerund] adverbial expressions and movement out of adjuncts through



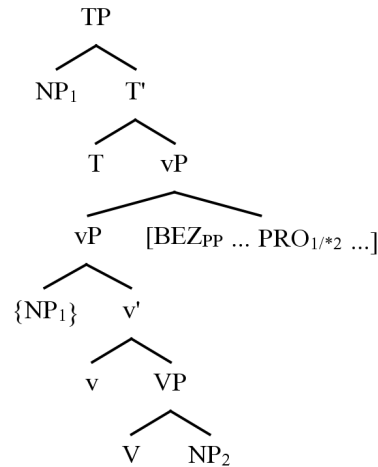
connected paths (Kayne 1984; Manzini and Roussou 2000), analogous to the parasitic gap construction:<sup>4</sup>

- (8) a. \*Którą scenę<sub>i</sub> Piotr znienawidził film po obejrzeniu t<sub>i</sub>?  
 b. \*Which scene<sub>i</sub> did Peter hate the movie after seeing t<sub>i</sub>?  
 \* [ADJUNCT ..... t...]
- (9) a. ?Którą scenę<sub>i</sub> Piotr znienawidził t<sub>i</sub> po obejrzeniu t<sub>i</sub>?  
 b. Which scene<sub>i</sub> did Peter hate t<sub>i</sub> after seeing t<sub>i</sub>?  
 [ ... ... [ ... t [ADJUNCT ... t...]]]
- 

A licit overt A-movement of the controller NP<sub>i</sub> licenses the movement of the element from inside the gerund through establishing a connected subtree (like in parasitic gap constructions in (9) above). In (4) and (10), the PP headed by *bez* is adjoined to vP, an area excluded from the c-command scope of the object, which facilitates the unambiguous interpretation:

<sup>4</sup> A reviewer for this volume raises the issue of suitability of a newer account of PG constructions, such as Nissenbaum (2000) for our hypothesis concerning Adjunct Control. We believe that this account does not affect our rendition of the standard connectedness view of PG phenomena for at least two reasons. First, Nissenbaum (2000) does not radically challenge Engdahl's observation on the need for overt movement as a licenser for PGs, but rather provides an explanation for it within the minimalist phase theory and an additional explanation of alleged exceptions, on the basis of Richard's (1998) tucking-in hypothesis. In fact, Nissenbaum emphasizes that covert movement cannot establish PGs on its own. Second, we follow Manzini and Roussou (2000) and apply the connected paths strategy to A-movement phenomena. Clearly Nissenbaum's basic observation concerning the relative placement of the common *wh*-operator (the common argument at the head of its A-chain for us) and the PG domain (adjunct) still holds here; the former must c-command the latter, otherwise the paths would not connect. We will, however, undertake the task of expanding our hypothesis in future work by investigating control into multiple adjuncts, an area so aptly covered by Nissenbaum with respect to *wh*-movement and PGs.

(10)

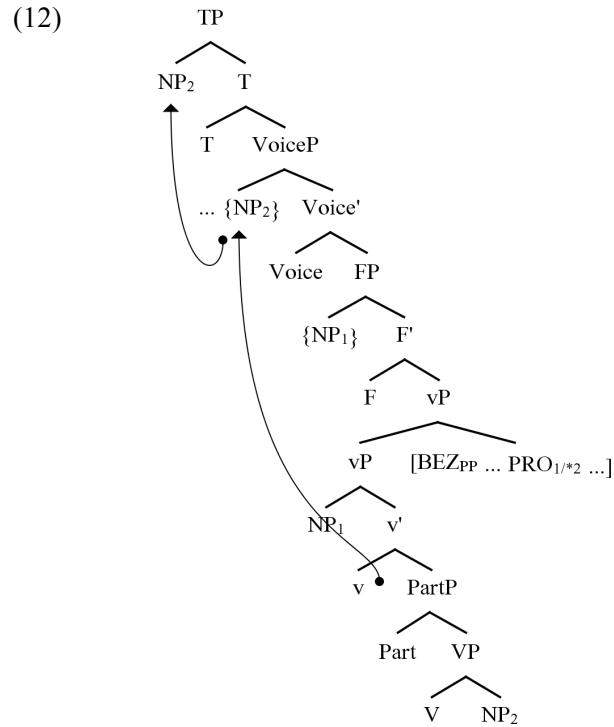


The movement of  $NP_1$  to [Spec,TP] generates the following path: [vP – vP – T' – TP], so if the gerund is adjoined at the level of the vP, the two connected subtrees are created. The locality of control is forced by the Minimal Link Condition and connectedness.

In order to deal with the passive construction in (4b), we follow the analysis put forth in Collins (2005):

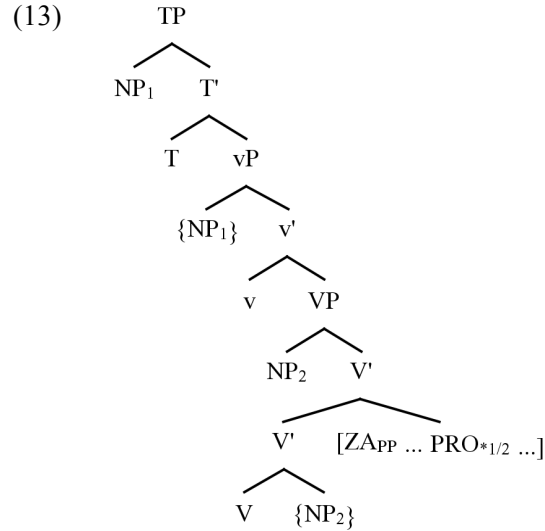
- (11) a. the subject of the passive is an empty category (PRO) in the position of [Spec,vP];  
 b. the preposition *by* lexicalizes the head of VoiceP and values the Null Case on PRO;  
 c. the constituent including the passive participle and the object DP ([<sub>PartP</sub> Part [<sub>vP</sub> V DPo]]) is moved to the position of [Spec,Voice] to avoid the intervention effect from the PRO subject for the movement of the DP object to [Spec,TP]:  
 [<sub>VoiceP</sub> [<sub>PartP</sub> Part [<sub>vP</sub> V DPo]] Voice-*by* [<sub>vP</sub> PRO v [<sub>PartP</sub> ...t...]]]

In effect, the movement of the Voice Phrase (the movement of PartP to [spec,Voice]) ‘smuggles’ the DP object around PRO to a position from which it is attractable by T. Thus, the derivation of (4b) looks as follows:



$NP_1$  moves to [Spec,FP] and forms a connected subtree with the gerundive PP, which paves the way for the movement of PRO to  $NP_1$ .

For the active voice version of the Object Control example with [<sub>PP</sub> *za gerund*] (cf. 5a), we assume that the relevant adjunction site is at the low V' level:



We follow Koizumi (1995), Lasnik (1999), and Chomsky (2008), among others, in claiming that  $NP_2$  moves up to [Spec,VP] to establish a proper feature-valuation configuration, which creates a connected subtree between the matrix object and the PP.

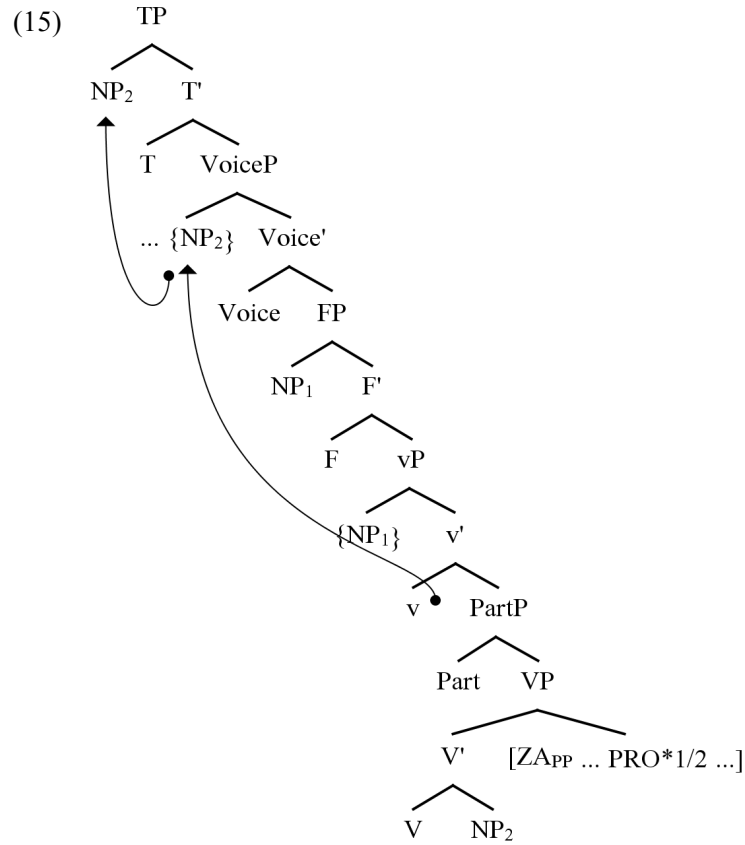
The structures proposed in (10) and (13) lead to the prediction that the object c-commands into the gerund introduced by *za* ('for'), while the subject c-commands into both the gerund introduced by *bez* ('without') and *za* ('for'). There is independent evidence confirming these relations, as shown in the following examples:

- (14) a. Piotr<sub>1</sub> zwalniał każdego recepcjonistę<sub>2</sub> [ za jego<sub>2</sub>  
 Peter sacked every receptionist for his  
 niepunktualność]  
 unpunctuality  
 'Peter would sack each receptionist for his unpunctuality.'
- b. Piotr<sub>1</sub> zwalniał każdego recepcjonistę<sub>2</sub> [za swoją<sub>1/\*2</sub>  
 Peter sacked every receptionist for self's  
 niepunktualność]  
 unpunctuality  
 'Peter would sack each receptionist for his unpunctuality.'

- c. Piotr<sub>1</sub> zwalniał każdego recepcjonistę<sub>2</sub> [ za [PRO<sub>2</sub>  
 Peter sacked each receptionist for  
 obrażanie swojego<sub>1/2</sub> kolegi]]  
 insulting self's friend  
 'Peter would sack each receptionist for insulting his  
 friend.'
- d. Piotr<sub>1</sub> zwolnił pracownika<sub>2</sub> [bez [PRO<sub>1</sub> zachowania  
 Peter sacked employer without keeping  
 swojej<sub>1/\*2</sub> zwykłej ostrożności]]  
 self's usual caution  
 'Peter sacked an employee without (his) due caution.'

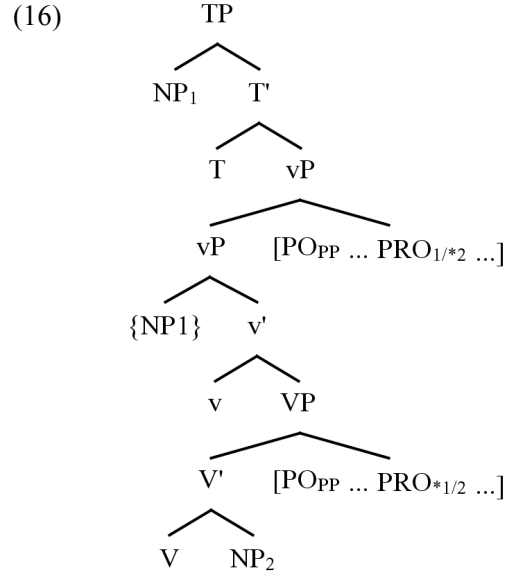
In example (14a), the possessive pronoun *jego* ('his') functions as a pronominal variable, a telltale sign of it being c-commanded by the quantifier (cf. Larson 1988; Fox 1995). Example (14b) is felicitous only on the reading where *Piotr*, a busy manager, has a receptionist who runs his calendar for him but he does not do a good job and *Piotr* keeps coming late to his appointments. Importantly, the Accusative object *każdy recepcjonista* ('every receptionist') cannot bind a reflexive possessive (only the pronominal possessive). This changes as soon as the PP contains a gerund in place of a simple nominal in example (14c); the possessive reflexive, which is strongly inclined to accept only (Nominative) subject antecedents, can be bound by the PRO subject, which is controlled by the object, in turn. As Polish does not observe the Specified Subject Condition of Chomsky (1981) within the domain of the tensed sentence, the possessive reflexive can also refer to the main clause Nominative subject. Example (14d) shows that the PP gerund introduced by *bez* ('without') can contain a reflexive possessive which can be unambiguously bound only by the main clause subject. This is expected under our hypothesis concerning the attachment sites of the various PPs in (10).

In the passive, the [PP *za* gerund] is contained in the PartP; it moves along to [Spec, VoiceP], eliminating the possibility of subject control:



The promotion of the PartP containing the gerund solves the intervention problem in control.

In light of the prior discussion, the two-way interpretation of the [<sub>PP</sub> *po gerund*] follows from its two available adjunction sites:



The higher attachment of the adjunct tallies with Subject Control, while the lower one with Object Control.

Prior to the PartP movement, certain elements can leave PartP; this extraposition can target a position above or below vP in a more articulated structure of the verbal phrase:

(17) [<sub>VoiceP</sub>...Voice...[<sub>αP</sub>...α...[<sub>vP</sub>...v...[<sub>βP</sub>...β...[<sub>PartP</sub>...Part...]]]]]

(18) a. The magazines were sent by Mary to herself.

b. Listy zostały wysłane przez Marię do siebie  
 letters<sub>NOM</sub> be<sub>PAST</sub> sent<sub>PRT</sub> by Mary to self  
 samej.  
 herself<sub>EMPH</sub>

‘The letters were sent by Mary to herself.’

For instance, quantifiers may move (overtly?, cf. Kayne 1998) to a position outside PartP but above [spec,v] (αP in 17):

- (19) a. Books were [ given ] [ to no student ] by any professor.  
 b. Chocolate eggs were [ hidden ] [ from no child ] by any adult.

- (20) Czekoladowe jajka zostały [ wręczone t] każdemu  
 chocolate eggs were handed every  
 studentowi [ przez jego profesora]  
 student<sub>DAT</sub> by his professor<sub>ACC</sub>  
 ‘Chocolate eggs were given every student by his professor.’

Extrapolation of the gerund is possible but, crucially, requires its reconstruction into the PartP-internal position, possibly implemented as copy pronunciation; so example (22a) is an approximation of the LF representation of example (22b):

- (21) a. A driver<sub>2</sub> was [PartP fired t<sub>2</sub> [PPG for PRO<sub>2</sub> drinking on the  
 job] by the boss<sub>1</sub>  
 b. A driver<sub>2</sub> was [PartP fired t<sub>2</sub> ~~PP~~<sub>G</sub>] by the boss<sub>1</sub> [PPG for PRO<sub>2</sub>  
 drinking on the job]
- (22) a. Kierowca<sub>2</sub> został [ wyrzucony [ za PRO<sub>2</sub> picie  
 driver<sub>NOM</sub> was throw<sub>PRT</sub> out for drinking  
 w pracy]] [ przez szefa<sub>1</sub>]  
 at work by boss<sub>ACC</sub>  
 ‘The driver was thrown out for drinking at work by the  
 boss.’  
 b. Kierowca<sub>2</sub> został [ wyrzucony t] [ przez szefa<sub>1</sub>]  
 driver<sub>NOM</sub> was throw<sub>PRT</sub> out by boss<sub>ACC</sub>  
 [ za PRO<sub>2</sub> picie w pracy]]  
 for drinking at work  
 ‘The driver was thrown out for drinking at work by the  
 boss.’

### 2.1 Digression on psych verbs

An interesting collateral observation emerges if this picture of control into gerunds and smuggling is correct: it turns out that the realm of constructions containing psychological verbs gives further support to the picture of adjunct control that we have drawn up so far for Polish. In Bondaruk and Szymanek (2007), it is argued that Dative and Accusative Experiencers are similar in exhibiting certain subject-like properties (a similar view is expressed in Legendre and Akimova 1993 for Russian). This conclusion is reached by way of subjecting sentences with Dative and Accusative Experiencers to a variety of tests, including the capacity



to (marginally) bind subject-oriented anaphors, control into adjuncts, raising, conjunction reduction, and resumption. Despite this fairly comprehensive list of syntactic tests to show a degree of subjecthood among the two groups of Experiencer arguments, it must be noted that only Dative Experiencers (partially) bear out the conclusion reached by Bondaruk and Szymanek, which is shown in detail in Żychliński (2013). Below we show the relevant examples showing that Dative Experiencers fit into our picture of control into adjuncts only if we treat them as (a type of) subjects<sup>5</sup>, whereas the opposite is true of Accusative Experiencers, which we treat as regular objects (contra, among others, Belletti and Rizzi 1988; Landau 2010). First, let us consider constructions analogous to those exemplified in (4-6), only this time featuring Dative Experiencers:

- (23) a. Nowy prezenter<sub>1</sub> spodobał się Adamowi<sub>2</sub>  
 new newscaster<sub>NOM</sub> appealed REFL Adam<sub>DAT</sub>  
 [PP bez PRO\*<sub>1/2</sub> zawahania]  
 without hesitation  
 ‘The new newscaster appealed to Adam without  
 hesitation.’  
 b. Nowy prezenter<sub>1</sub> spodobał się Adamowi<sub>2</sub>  
 new newscaster<sub>NOM</sub> appealed REFL Adam<sub>DAT</sub>  
 [PP za PRO<sub>1/\*2</sub> umiejętnie zachownie zimnej krwi  
 for skillful keeping cold blood  
 w obliczu tragedii]  
 in face tragedy  
 ‘The new newscaster appealed to Adam for remaining cool  
 in the face of a tragedy.’  
 c. Nowy prezenter<sub>1</sub> spodobał się Adamowi<sub>2</sub>  
 new newscaster<sub>NOM</sub> appealed REFL Adam<sub>DAT</sub>

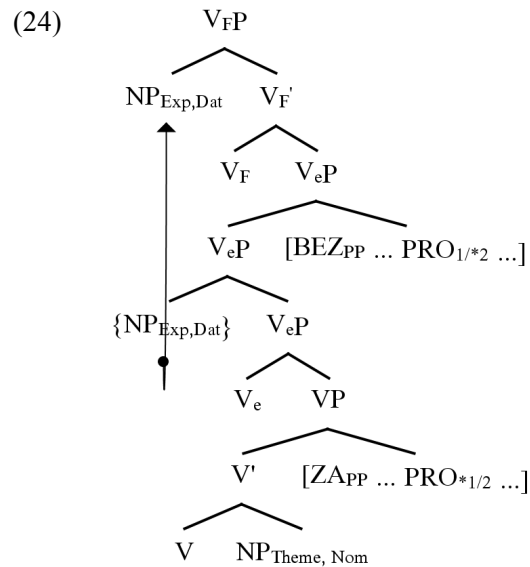
<sup>5</sup> Certainly Dative Experiencers cannot be argued to be fully-fledged subjects as they never determine the agreement on the main verb.

- [<sub>PP</sub> po PRO<sub>1/\*2</sub> wystąpieniu w głównym wydaniu  
 after appearing in main edition  
 wiadomości]  
 news  
 ‘The new newscaster appealed to Adam after making an  
 appearance on the main news.’
- d. Nowy prezenter<sub>1</sub> spodobał się Adamowi<sub>2</sub>  
 new newscaster<sub>NOM</sub> appealed REFL Adam<sub>DAT</sub>  
 [<sub>PP</sub> po PRO<sub>\*1/2</sub> zapoznaniu się z jego  
 after familiarizing REFL with his  
 życiorysem w internecie]  
 biography in internet  
 ‘The new newscaster appealed to Adam after having  
 familiarized with his biography on the internet.’

In (23a-d), the Dative Experiencer controls into PP<sub>BEZ</sub>, which we have diagnosed as a subject property; it is excluded as a controller of the PP<sub>ZA</sub>, which again makes its behavior similar to the behavior of subjects, which cannot control this type of gerunds. Additionally, it can control into PP<sub>PO</sub>, which is a gerund that allows the subject control as well as object control. The Nominative Theme controls into the PP<sub>ZA</sub> and PP<sub>PO</sub> adjuncts, as is expected of an object argument. The available control configurations beg the question of the positions from which the Dative and Nominative elements can control into prepositional gerunds. As for the PP<sub>BEZ</sub>, we do not commit ourselves to the exact position to which Dative Experiencers move (this not being central to the theory advanced in this paper) but we speculate that it may be the specifier of some functional verbal projection, as illustrated in (24)<sup>6</sup> below. The possibility of the PP<sub>ZA</sub> being controlled by the Nominative Theme argument, on the other hand, is assumed to follow from the movement of the VP containing both the Theme argument and the PP<sub>ZA</sub> to a higher functional projection, very much in the smuggling-type of movement entertained

<sup>6</sup> The Dative Case-marking on the Experiencer appears to be inherent (it is not suppressed by the Genitive of Negation). Thus, there is every reason to believe that the position to which the Dative Experiencer moves may be a position licensing its inherent Case (cf. Collins 2005).

for passive constructions in the previous discussion. We cannot currently venture on any more concrete hypothesis as to why it happens, but with the gerund phrase being carried along the VP moved to a higher position in the sentence, a connected path is subsequently formed between its PRO subject and the Nominative Theme moving higher to [Spec,TP], respecting minimality conditions and avoiding intervention effects:



To show that the behavior of Dative Experiencers cannot be carried over to non-Experiencer Dative arguments, it may be instructive to analyze the following example:

- (25) a. Nowy pracownik<sub>1</sub> pomógł Piotrowi<sub>2</sub> [PP bez  
 new employee<sub>NOM</sub> helped Peter<sub>DAT</sub> without  
 PRO<sub>1/\*2</sub> zawahania]  
 hesitation  
 ‘The new employee helped Peter without hesitation.’

- b. Nowy pracownik<sub>1</sub> pomógł Piotrowi<sub>2</sub> [pp po  
 new employee<sub>NOM</sub> helped Peter<sub>DAT</sub> after  
 PRO<sub>1/\*2</sub> skończeniu własnej pracy]  
 finishing own work  
 ‘The new employee helped Peter after finishing his own work.’”

Example (25a) unequivocally rules out the possibility of the Dative Goal argument controlling into the gerund. This ties in with what we have stated before, i.e. that only Dative Experiencers behave similarly to subjects. In (25b), only subject control is possible, which again confirms that the Dative Goal is unlike a regular direct object.

The situation is quite different with Accusative object Experiencers: as argued for extensively in Żychliński (2013), the control pattern resembles the regular transitive activity verb:

- (26) a. Szef<sub>1</sub> przestraszył pracowników<sub>2</sub> [pp bez PRO<sub>1/\*2</sub>  
 boss<sub>NOM</sub> frightened employees<sub>ACC</sub> without  
 podawania przyczyny.  
 giving explanation]  
 ‘The boss frightened the employees without giving an explanation.’
- b. Pracownicy<sub>1</sub> zostali przestraszeni pro<sub>2</sub> [pp bez  
 employees<sub>NOM</sub> became frightened without  
 PRO<sub>\*1/2</sub> podawania przyczyny]  
 giving explanation  
 ‘The employees were frightened without anyone giving them an explanation.’
- c. Burza<sub>1</sub> przestraszyła mieszkańców<sub>2</sub> [pp nawet  
 storm<sub>NOM</sub> frightened villagers<sub>ACC</sub> even  
 bez PRO<sub>1/\*2</sub> złowieszczonego trzaskania piorunami]  
 without ominous roaring thunders  
 ‘The storm frightened the villagers even without the ominous roaring of thunders.’
- d. Mieszkańcy<sub>1</sub> zostali przestraszeni przez burzę<sub>2</sub>  
 villagers<sub>NOM</sub> were frightened by storm  
 [pp nawet bez PRO<sub>\*1/2</sub> pojedynczego uderzenia  
 even without single strike

piorunem]

thunder

‘The villagers were frightened by the storm even without a single thunder strike.’

- (27) a. Szef<sub>1</sub> przestraszył pracowników<sub>2</sub> ( zredukowaniem  
boss<sub>NOM</sub> frightened employees<sub>ACC</sub> making  
etatu) [pp za PRO<sub>1/\*2</sub> przychodzenie  
redundancies for coming  
spóźnionym do pracy]  
late to work

‘The boss frightened the employees with making redundancies for coming to work late.’

- b. Pracownicy<sub>1</sub> zostali przestraszeni pro<sub>2</sub>  
employees<sub>NOM</sub> became frightened  
( zredukowaniem etatu) [pp za PRO<sub>1/\*2</sub>  
making redundancies for  
przychodzenie spóźnionym do pracy]  
coming late to work  
‘The employees were frightened with making redundancies for coming to work late.’

- (28) a. Monotonne krajobrazy<sub>1</sub> znudziły  
dull landscapes<sub>NOM</sub> bore  
wycieczkowiczów<sub>2</sub> [pp po PRO<sub>\*1/2</sub> przemierzeniu  
holidaymakers<sub>ACC</sub> after traveling  
100km prairii]  
100km prairie

‘Dull landscape bore the holidaymakers after having traveled 100km of the prairie.’

- b. Monotonny przewodnik<sub>1</sub> znudził  
dull tour guide<sub>NOM</sub> bore  
wycieczkowiczów<sub>2</sub> [pp po PRO<sub>1/\*2</sub> kilkakrotnym  
holidaymakers<sub>ACC</sub> after multiple  
przytoczeniu tych samych opowieści]  
telling these same stories  
‘The dull tour guide bore the holidaymakers after telling the same stories over and over.’

- c. Wycieczkowicze<sub>1</sub> zostali znudzeni przez  
 holidaymakers<sub>NOM</sub> became bored by  
 monotonnego przewodnika<sub>2</sub> [PP po PRO<sub>1/\*2</sub>  
 dull tour guide after  
 kilkukrotnym wysłuchaniu tych samych historii]  
 multiple listening these same stories  
 'The holidaymakers were bored by the monotonous tour  
 guide after having listened to the same stories over and  
 over.'
- d. Wycieczkowicze<sub>1</sub> zostali znudzeni przez  
 holidaymakers<sub>NOM</sub> became bored by  
 monotonnego przewodnika<sub>2</sub> [PP po PRO<sub>1/\*2</sub>  
 dull tour guide after  
 kilkukrotnym przytoczeniu tych samych historii]  
 multiple telling these same stories  
 'The holidaymakers were bored by the dull tour guide after  
 having told the same stories over and over.'

On the basis of (26-28), it transpires that Accusative-marked Experiencers exhibit the same control characteristics as regular objects (cf. 10, 12, 13), that is, they control into the PP gerund introduced by *za* and (optionally) *po* but do not control into a PP gerund introduced by *bez*.

#### 4 Conclusions

In conclusion, we have shown that control into gerunds instantiates a case of Obligatory Control, although the gerunds can be attached at different levels in the clausal structure.<sup>7</sup> We take the correlation between

<sup>7</sup> A reviewer for this volume notices certain cross-linguistic differences w.r.t. control properties of adverbial gerunds and provides the following two examples to show that, in contrast to Polish (cf. 4a-b), English PP-gerunds headed by *after* are always controlled by the surface subject:

(i) Mary<sub>1</sub> kissed John<sub>2</sub> [after PRO<sub>1/\*2</sub> entering the room]  
 (ii) John<sub>1</sub> was kissed [after PRO<sub>1</sub> entering the room]

the interpretation of PRO and the passive as an interesting diagnostic for the attachment site of a particular type of adverbial domain, whereas the smuggling strategy helps us preserve the syntactocentric and MDP/MLC-compatible view of control. It also transpires that in constructions with psychological predicates, Dative Experiencers act like semi-subjects, while Accusative Experiencers do not and they are basically aligned with regular objects.

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Such a high placement of the adjunct is indeed predicted by the account of adjunction in Witkoś et al. (2011) and Żychliński (2013), where a high position (probably adjoined within the projection of T) is diagnosed for Polish participial clauses, as in (iii-iv):

- (iii) Sprzedawca<sub>1</sub> zaskoczył klienta<sub>2</sub> [PRO<sub>1/\*2</sub> oferując samochód po  
 salesman surprised client offering car at  
 niższej cenie]  
 lower price  
 'The salesman surprised the client by offering the car at a lower price.'
- (iv) Klient<sub>1</sub> został zaskoczony [PRO<sub>1</sub> widząc samochód po niższej cenie]  
 client became surprised seeing car at lower price  
 'The client was surprised at seeing the car at a lower price.'

Thus, English PP gerunds headed by *after* would correspond in their placement to Polish active participial clauses. Two more comments are in order: first, there is some speaker variation with *po* 'after' PP gerunds in Polish, with some speakers tending to point towards Subject Control only in (6a), and second, the Polish gerund is notoriously ambiguous between a nominal and verbal constituent status, while the participle is clearly verbal. A thorough discussion of Adjunct Control is clearly beyond the scope of this contribution.

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## Hybrid *wh*-Coordination in Russian<sup>\*</sup>

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The paper reports on a neglected phenomenon in Russian, *Hybrid Wh-coordination* (HWh), defined as a configuration in which a Y/N marker (*li*) is conjoined with a *wh*-word. I will argue for the biclausal genesis of HWh questions, whose surface sequence is derived via ellipsis in the first conjunct. The novel empirical generalizations concern the dichotomy between adjuncts and certain quantifiers as compared to non-quantified arguments and verbs. Only the former, but not the latter, can appear in the position preceding *li* (pre-*li*) in HWh constructions. The analysis that I propose for these facts also bears on the treatment of ATB-constructions and *li*-placement.

### 1 Introduction

Constructions like (1), dubbed *HWh coordination*, are the focus of this investigation. In (1), a reduced Y/N-interrogative is conjoined with a *wh*-question, giving rise to an interrogative interpretation in both conjuncts. By contrast, the absence of a coordinator leads to the obligatory construal of a *wh*-word as a *wh*-indefinite (2). I will argue that (1) is an instance of CP-coordination with TP-ellipsis in the first conjunct, as in (3).

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<sup>\*</sup> Many thanks to the audience and the reviewers of FASL 22 for comments and discussion.

- (1) Skoro **li** kto pridet?  
 soon Q **and** who come<sub>FUT</sub>  
 'Who will come and will it be soon?'  
 (2) Skoro li kto pridet?  
 soon Q somebody come<sub>FUT</sub>  
 'Will someone come soon?'  
 (3) Skoro li [~~kto pridet~~] **i** kto pridet?

HWh-coordination has been reported in the literature for BCS and Polish, but the Russian case is somewhat distinct given the nature of its Y/N-marker.<sup>1</sup> In non-coordinated Y/N questions, any word (with the exception of certain quantifiers) can appear before *li*. However, in HWh contexts, the position preceding *li* is restricted to certain elements: only (i) adjuncts, but not (non-quantified) arguments or verbs; and (ii) a limited set of argument QPs are licit in pre-*li* slots. In what follows, I discuss (i) and (ii) in turn.

## 2 Adjuncts vs. arguments/verbs: basic facts<sup>2</sup>

All the elements listed in (4) can appear in configuration (5), substituting for X. Some examples are provided in (6) below.

- (4) a. Adverbs: *davno* ('long ago'), *zavtra* ('tomorrow'), *vsegda* ('always'), *sjuda* ('to here'), *daleko* ('afar'), *umyšlenno* ('premeditatedly'), *skoro* ('soon'), *xorošo* ('well'), *bystro* ('quickly'), *pravil'no* ('correctly'), etc.  
 b. Other adjuncts: locational, directional, instrumental PPs  
 (5) **X** *li* & wh-word ...

<sup>1</sup> Browne's (1972) BCS example is (i); Tomaszewicz's (2011) Polish case is in (ii):

(i) **Da li** i gde si ih video? (ii) **Czy** i co studiujesz?  
 DA Q and where Aux<sub>2sg</sub> them seen whether and what study<sub>2sg</sub>  
 'Did you see them and where?' 'Do you study and what do you study?'

Note that the Russian Y/N-marker *li* is distinct from *da li* and *czy* in that it is an enclitic with a strict one prosodic word requirement (see Franks and King 2000).

<sup>2</sup> Elsewhere (Zanon 2013), I argue that 'reverse' HWh cases of the configuration [wh & Y/N Q] as in (i) are not amenable to the analysis advanced in this paper. See cited paper for details.

(i) *Kakoj student i skoro li pridet?*  
 which student and soon Q come

- (6) a. Davno li i kto zakazyval zavtrak?  
 long.ago Q and who ordered breakfast  
 'Who ordered breakfast and did it happen a long time ago?'  
 b. Naročno li i kto zdes' razlil moloko?  
 on.purpose Q and who here spilled milk  
 'Who spilled milk here and did he do it on purpose?'  
 c. ? V magazin li i začem ušel Ivan?  
 to store Q and why left Ivan  
 'Why did Ivan leave, and did he go to the store?'

In non-coordinated contexts any element may precede *li*.<sup>3</sup> Example (7a) with a fronted verb constitutes the most neutral way of asking a Y/N question.<sup>4</sup> The rest of the paradigm in (7) contains fronted arguments (N>*li*), which are interpreted as focus bearing elements.

- (7) a. Darit li Ivan Lene cvety? [Root Y/N-questions]  
 gifts Q Ivan to.Lena flowers  
 'Does Ivan give flowers to Lena?'  
 b. Ivan li darit Lene cvety?  
 'Is it Ivan who gives Lena flowers?'  
 c. Cvety li Ivan darit Lene?  
 d. Lene li Ivan darit cvety?

By contrast, none of the pre-*li* elements in (7) are permitted in HWh-questions, as shown in (8). The worst configuration involves a fronted verb in (8a), while the least degraded one (relative to the rest of the set) is the dative indirect object in (8d).

- (8) a. \*Daril li i čto Ivan Lene? [HWh questions]  
 gave Q and what Ivan to.Lena  
 'Did Ivan give something to Lena and what did he give?'

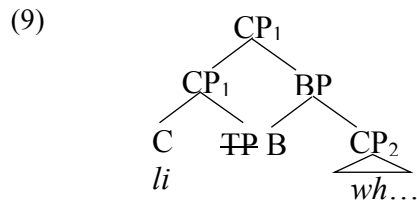
<sup>3</sup> Certain quantifiers are illicit in pre-*li* positions in non-coordinated questions. See footnote 14.

<sup>4</sup> An intonation strategy is often preferred over the *li*-strategy in the formation of Y/N root interrogatives. The *li*-strategy is, however, obligatory in embedded questions. Speakers who find (7) slightly degraded have no objection to such strings in the embedded clauses. My arguments extend to both root interrogatives and embedded contexts.

- b. ?\* Ivan li i komu daril cvety?  
 Ivan Q and to.who gave flowers  
 ‘Was it Ivan that gave flowers and to whom?’
- c. ?\* Cvety li i kto daril Lene?  
 flowers Q and who gave to.Lena
- d. ?? Lene li i čto podaril Ivan?  
 to.Lena Q and what gave Ivan

### 2.1 Adjuncts versus arguments and verbs: towards an analysis

In the ensuing discussion, I adopt Munn’s (1993) BP-adjunction structure. I argue that the surface configuration of HWh questions is derived via TP-ellipsis in the first conjunct, as demonstrated in (9).



Though there is some debate in the literature on the precise nature of Y/N question formation in Russian (see Bošković 2001, Franks and King 2000, King 1995 and references therein), it is not crucial for the analysis that I am entertaining here. For the sake of explicitness, I assume that *li* is in  $C^0$ , the fronted argument occupies Spec-CP, and the verb adjoins to  $C^0$ .

I offer four arguments in support of CP-coordination. First, wh-questions and Y/N-interrogatives are in complementary distribution. They are thus incompatible in a single clause. Second, the conjuncts can be coordinated using a strictly clausal coordinator, *a*, in the presence of high speaker-oriented adverbs, as in (10) (diagnostics due to Tomaszewicz 2011). Third, the coordination of two Y/N markers, as in (11), is possible and predictably so, if the conjuncts are CPs (given the standard practice of treating *li* as a complementizer). Finally, there is a

requirement to answer both conjuncts,<sup>5</sup> suggesting again that HWh questions are underlyingly biclausal; cf. (12b-c) versus (12d).

- (10) a. Skoro li **i/a** glavnoe kto sobiralsja segodnja zajti?  
 soon Q and importantly who was.going today to.stop.by  
 ‘Will someone stop by soon today, and, importantly, who?’  
 b. \* Skoro li glavnoe kto sobiralsja segodnja zajti?
- (11) U každygo **li** i nadolgo **li** xvatit vyderžki i miroljubija?  
 at each Q and for.long Q suffice restraint and amity  
 ‘Will each have enough restraint and amity and will it be for long?’
- (12) a. Skoro li i kto pridet?  
 soon Q and who will.come  
 b. # Ivan zajdět. c. #Da. d. Da, skoro, Ivan zajdět  
 Ivan stop.by<sub>FUT</sub> yes yes soon Ivan stop.by<sub>FUT</sub>

Returning now to the adjunct/argument asymmetry, I propose that ungrammatical sentences are ruled out due to a missing obligatory element in the second conjunct. The adjuncts can freely precede *li*, since they do not need to be present in the second conjunct.

The most straightforward case is demonstrated in (13=8a) with a simplified derivation in (14). The sentence is ruled out because the verb is missing in the second conjunct.

- (13) \* Daril li<sub>[TP</sub> ~~ěto—Ivan—Lene~~ i čto Ivan Lene?  
 gave Q what Ivan to.Lena and what Ivan to.Lena
- (14) \* [V+li<sub>[TP t<sub>V</sub>]] & [<sub>CP</sub> ]  
<sup>^</sup>ellipsis <sup>\*/^</sup>missing verb</sub>

Arguments are excluded in pre-*li* positions for the same reason: the second conjunct is missing an obligatory element, e.g. the subject in the case of (15=8b).

- (15) ?\* Ivan li i komu daril cvety?  
 Ivan Q and to.who gave flowers

<sup>5</sup> The answer to the Y/N interrogative in HWh questions can only be affirmative for obvious reasons: the second conjunct presupposes an affirmative reply to the first conjunct.

- (16) ?\*[NP *li* [<sub>TP</sub> *t*<sub>NP</sub> ]]<sub>^ellipsis</sub> & [<sub>CP</sub> ]<sub>^^missing argument</sub>

Interestingly, Russian offers several strategies that lead to amelioration in HWh questions involving arguments. One such strategy implicates the introduction of resumptive-like elements, e.g. pronouns or epithets, in the second conjunct, as in (17).<sup>6</sup> Observe that, in (17), the argument structure of the predicates in both conjuncts remains intact. The proposed analysis, hence, predicts the improvement observed below.

- (17) a. ? Ivan<sub>1</sub> *li* *i* čto on<sub>1/\*2</sub> včera nakupil?  
           Ivan Q and what he yesterday bought  
           ‘Did Ivan buy something and what did he buy yesterday?’  
       b. ? Ivan<sub>1</sub> *li* *i* čto ètot durak<sub>1/\*2</sub> opjat’ včera nakupil?  
           Ivan Q and what this fool again yesterday bought  
           ‘Did Ivan buy something and what did this fool buy yesterday?’

I am assuming that the counterpart of the pre-*li* argument in the second conjunct must be coindexed with the pre-*li* argument referring back to it, which yields a resumptive-like interpretation. If this is correct, we then expect HWh questions of the configuration [pronoun *li* & name...] to be unacceptable (the issue here is the ban on backward resumption and the focalized nature of the pre-*li* element). This prediction is borne out, as shown in (18):

- (18) \* On<sub>1</sub> *li* *i* čto Ivan<sub>1</sub> včera nakupil?  
           he Q and what Ivan yesterday bought

Contextualization also leads to improvement. As discussed in Gribanova (2013), a contextual antecedent can license object drop in Russian. This is precisely the source of improvement in (19).

<sup>6</sup> Judgments in (17) vary among speakers: from unacceptable to nearly perfect. This variation is presumably due to the availability of this ‘resumptive’ strategy among my informants.

- (19) [Context: There are a few clothing items in need of repair]  
 ? Džinsy<sub>1</sub> li i kto zaš'et e<sub>1</sub>?  
 jeans Q and who will.sew  
 'Will someone sew the jeans and who will sew them?'

In fact, even the speakers who find pre-*li* arguments in HWh questions only slightly degraded (rather than fully unacceptable as reported above) impose a particular interpretation, which correlates with argument drop. The latter is apparent with optionally transitive verbs like *čitat* 'to read' in (20a), which require a bound variable reading in the second conjunct as demonstrated by the paraphrase in (20b). The 'at all' reading, associated with the intransitive incarnation of *čitat*, is impossible (20c).

- (20) a. ? Bulgakova<sub>1</sub> li i kto zdes' čital e<sub>1</sub>?  
 Bulgakov Q and who here read  
 b. = 'Was it Bulgakov that someone read and who read him here?'  
 c. # 'Was it Bulgakov that someone read and who read here (at all)?'

It was noted earlier that, depending on their grammatical function, pre-*li* arguments in HWh configurations are not uniformly bad. There is a scale of (un)acceptability, which sets apart subjects and direct objects from indirect objects. The latter are degraded, but not entirely unacceptable. This idiosyncrasy can be likewise linked to argument drop: omitting dative arguments is easier than dropping direct objects or subjects (though the reason for this remains obscure). So, (21a = 8d) is marginally acceptable for the same reason as (21b).

- (21) a. ?? Lene li i čto podaril Ivan?  
 to.Lena Q and what gave Ivan  
 b. ?? Čto podaril Ivan?

Turning now to adjuncts: since they are not required by the argument structure of the predicates, they do not need to be present in the second conjunct. Sentences like (22) are derived as shown in (23).

- (22) Skoro li i kto pridet?  
 soon Q and who come<sub>FUT</sub>



- (23) [Adverb *li* <sup>full argument structure</sup>  $[_{TP}]$ ] &  $[_{CP}]$

Some predicates, however, require obligatory adverbial support, as in (24a). My analysis predicts that the fronting of this adverbial to the pre-*li* position in HWh questions will result in ungrammaticality, since such a configuration ensures that the required element is not present in the second conjunct. The prediction is borne out: though adverb fronting is perfectly acceptable in non-coordinated contexts like (24b), it is impossible in HWh configurations (24c); cf. (24c) with an optional pre-*li* adverb in (24d).

- (24) a. Kto k nemu \*(xorošo/ploxo) otnositsja?  
           who to him well/ badly treats  
           ‘Who treats him well/badly?’  
       b. Xorošo li Maša k nemu otnositsja?  
           well Q Masha to him treats  
       c. \*Xorošo li i kto k nemu otnositsja?  
           well Q and who to him treats  
       d. Xorošo li i s kem včera sygral *Spartak*?  
           ‘Did *Spartak* play well yesterday and with whom did it play?’

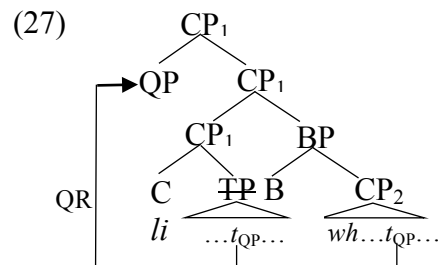
So far, we are led to the following conclusions. HWhs involve CP coordination with ellipsis in the first conjunct. As long as a fully-fledged argument structure is preserved in both conjuncts, HWh configuration is possible. No “rescue” strategies are available for verbs, thus they are the least acceptable; however, some “repair” strategies, e.g. the introduction of resumptive-like elements and argument drop, exist for pre-*li* arguments. These strategies can salvage the argument structure in both conjuncts of HWh questions. By far, the best examples are constructible with pre-*li* adjuncts, since the latter are not required by the argument structure of the predicates.

### 3 Quantifiers

A limited number of quantified arguments may appear in pre-*li* positions. Those allowed in such positions are catalogued in (25a); those prohibited are listed in (25b). Some acceptable examples are given in (26).

- (25) a. Permitted: *vse* ('all'), *vsë* ('everything'), *vsjakij* ('every'), *mnogo* ('a lot;' adverbial), *každyj* ('each').  
 b. Prohibited: *kto-to* ('somebody'), *kto-nibud'* ('somebody'), *kto-libo* ('someone'), *neskol'ko* ('several'), *nikto* ('no one'), *mnogie* ('a lot;' adjectival), *ljuboj* ('any'), *malo* ('little, few'), *nemnogo* ('not much')
- (26) a. *Vsë li i kogda Ivan prodal\_\_ Olegu?*  
 all Q and when Ivan sold \_\_ Oleg<sub>dat</sub>  
 'Did Ivan sell everything to Oleg and when did he do it?'  
 b. *Mnogo li i kto priglasil na novyj god \_\_ ljudej?*  
 many Q and who invited to new year people  
 'Did somebody invite many people to the New Year's eve party, and who was it?'

I propose that an argument can precede *li* only if it is extracted in an ATB-fashion from each conjunct to a position high enough to c-command both traces, as in (27). I suggest that QR is the only possible operation that is able to accomplish this process.



The assumption that Russian has QR is what is driving the following discussion. Antonyuk-Yudina (2006, 2009) demonstrates that Russian patterns with English with respect to the availability of inverse scope in doubly quantified SVO sentences. She claims that Russian obeys complex DP constraint; it is sensitive to Weak Crossover and CSC; and finally, the Inverse Linking Construction is grammatical in Russian. The crucial take-away point for the present exposition is that QR is independently attested in Russian. I take this much for granted.

My proposal concerning the status of QR in HWh questions requires two basic ingredients. First, QR is normally taken to be confined to the

“covert” component of the grammar. I assume a single-cycle syntax where “covert” is understood as a copying operation that results in the pronunciation of the *tail* of the chain in PF (i.e. of the lowest copy).<sup>7</sup> Second, in non-QR cases, certain PF considerations sometimes affect the expected PF copy deletion: instead of “normal” *high* copy pronunciation, a lower copy is pronounced. What I propose is a reflex of those two ideas. PF considerations in the cases of HWh coordination require the pronunciation of the *head* of the chain (to support *li*), instead of the expected low copy of the QP.

Fox and Nissenbaum (1999) conceive of QR in terms of higher copy deletion. Under their account, QR involves movement prior to Spellout with pronunciation of the lower copy. This approach allows them to account for the extraposition facts of English. Briefly, they derive (28a) as follows: first, the indefinite DP is QRed to the right edge of VP; the PP *by John* then adjoins to the QRed DP; in phonology, the higher copy of the quantified DP is deleted, as sketched in (28b).

(28) a. We saw a painting yesterday by John.

b. We saw a painting yesterday [~~a painting~~] by John].

<sup>^</sup>QR:head of chain <sup>^</sup>overt adjunction to the QRed DP

The second component that inspires my analysis has to do with the exigencies of PF. Franks (1998) and Bošković (2001, 2002) demonstrate that certain PF constraints conspire to cause the pronunciation of the lower copy instead of the usual higher copy. Such PF considerations trigger delayed clitic placement in languages like BCS or the unusual low pronunciation of wh-words in multiple wh-fronting languages. The latter is demonstrated in (29). Though wh-fronting is obligatory in BCS (cf. (29b) and (29c)), the phonological ban on contiguous homophonous wh-words forces the pronunciation of the lower wh-copy in (29a).

(29) a. [ Šta šta [ uslovljava šta<sub>i</sub>]]? (Bošković 2002)

what what conditions what

b. Ko šta voli?

who what loves

c. \*Ko voli šta?

<sup>7</sup> See also Bobaljik 1995, Pesetsky 1998, Groat and O’Neil 1994 for more general approaches where covert movement is recast in terms of pronunciation of lower copies.

With these two considerations in mind consider the derivation of (26b) in (30) below. *Vsë* ('all') undergoes QR out of both clauses and adjoins to the highest CP. The prosodic requirements of *li*, which is an enclitic, require that the highest copy be pronounced. Instead of the expected low copy pronunciation (as is normally the case with QR), phonological requirements prompt high copy pronunciation.

- (30) **Vsë** *li* [<sub>TP</sub> ... **vsë** ...] *i* *kogda* *Ivan prodal* **vsë** *Olegu?*  
 all Q and when Ivan sold Oleg<sub>dat</sub>  
 ^The highest copy of Q is pronounced to support *li*

With this first approximation in place, it is possible to examine the details of the proposal. As mentioned earlier, the analysis includes two parts: QR and ATB movement. The next sections deal with each one in turn.

### 3.1 Evidence for QR

There are two arguments in support of QR. First, only quantifiers undergo this movement (recall that non-quantified arguments are not subject to this operation). Second, since "normal" QR is an operation that obeys a clause boundedness restriction, we expect the movement in HWh questions to obey the same locality constraints, which is indeed the case, as in (31).

- (31) \**Vse<sub>i</sub> li i kto skazal, čto Maša prodala \_\_knigi*  
 all Q and who said that Masha sold books  
*Olegu?*  
*Oleg<sub>dat</sub>*  
 'Did somebody say that Masha sold all the books to Oleg and  
 who said that Masha sold all the books to Oleg?'

While extraction out of *čto*-clauses in Russian is assumed to be independently prohibited, in colloquial Russian long-distance movement of non-quantified NPs, as in (32), is possible, albeit somewhat degraded. At the very least, the contrast between (31) and (32) is palpable. Observe also that the pattern in (32-33) is replicated in *čtoby*-clauses in (33) and (34), where the contrast in question is even clearer.

- (32) ?? Ètu knigu Ivan skazal, čto Maša prodala \_\_ Olegu.  
           this book Ivan said that Masha sold \_\_ Oleg<sub>dat</sub>
- (33) ?\* Vse li i kto xotel, čtoby Maša prodala \_\_ knigi  
           all Q and who wanted that<sub>SUBJ</sub> Masha sold \_\_ books  
           Olegu?  
           Oleg<sub>dat</sub>  
           ‘Did somebody want Masha to sell all the books to Oleg, and  
           who wanted Masha to sell all the books to Oleg?’
- (34) Ètu knigu Ivan xotel, čtoby Maša prodala Olegu.  
           this book Ivan wanted that<sub>SUBJ</sub> Masha sold Oleg<sub>dat</sub>

I conclude that there is compelling evidence that QR is operable in HWh contexts. This approach renders the locality restrictions and the impossibility of pre-*li* non-quantified arguments rather unsurprising.

### 3.2 Evidence for ATB-movement

This section presents three pieces of evidence in favor of ATB movement in HWh questions. Based on binding facts, parallelism of HWh questions with the “standard” ATB extraction pattern, and “repair-by-ellipsis” effects, I will show that the quantifier must be extracted out of each conjunct.

The first argument comes from binding facts. The extracted quantifier binds a reflexive in the second conjunct, as in (35). Since this is the case, a copy of *každyj učastnik* (‘every participant’) must be present in the second conjunct in order to establish a local binding configuration. Such an outcome is expected under the current analysis.<sup>8</sup>

- (35) Každyj li učastnik<sub>i</sub> i skol'ko svoix<sub>i</sub> èkzempljarov  
           each Q participant and how.many own samples  
           predstavil na vystavke?  
           presented on exhibition  
           ‘Has each participant presented his samples at the exhibition and  
           how many samples did he present?’

The second argument hinges on the exact parallelism between HWh questions and “standard” ATB extraction facts. In particular, both

<sup>8</sup> Recall also that the fronted quantifier is high enough to c-command the reflexive.

configurations impose the same set of restrictions on left-branch extraction (LBE) out of certain positions: while LBE out of object positions results in acceptable surface strings, LBE out of subject positions is prohibited. Furthermore, certain quantifiers are more amenable to LBE than others.

Consider first the extraction of *mnogo* ('many') out of object positions. In both HWh questions in (36a) and ATB constructions in (37a), LBE of *mnogo* is not only possible, but, in fact, preferred (my informants consistently choose the (a) over (b) examples in (36-37)). This preference is manifested for both HWh questions and ATB-sentences.<sup>9</sup>

- (36) a. Mnogo li i kto prines na večerinku \_\_\_ vina?  
           many Q and who brought to party wine  
           'Did someone bring a lot of wine to the party, and who was it?'  
       b. Mnogo li vina i kto prines na večerinku \_\_\_?
- (37) a. Mnogo li Ivan prines \_\_, a Sergej vypil \_\_\_ vina?  
           many Q Ivan brought and Sergey drank wine  
           'Was it lots of wine that Ivan brought and Sergey drank?'  
       b. Mnogo li vina Ivan prines \_\_, a Sergej vypil \_\_\_?

By contrast, LBE of *každyj*-type quantifiers is worse than LBE of *mnogo*-type quantifiers from object positions in both HWh questions in (38) and "standard" ATB constructions in (39).<sup>10</sup> QPs with *každyj*-type quantifiers exhibit a strong preference for pied-piping their complements.<sup>11</sup>

<sup>9</sup> In the (a) examples, the sole extractee is Q *mnogo*, but in the (b) examples the entire QP *mnogo vina* is fronted. The placement of *li* in (36b-37b) is due to a PF reordering mechanism, which places the complementizer after the first prosodic word. The same holds of (38). See Section 3.4 for details.

<sup>10</sup> Some speakers reject examples (40a) and (41a) altogether.

<sup>11</sup> One possible solution to this split between *mnogo* and *každyj*-type quantifiers with respect to LBE is articulated in Bošković (2006), who argues that the genitive of quantification assigning elements (like *mnogo*) are located in Spec-QP, while agreeing Qs (like *každyj*) are found in the head of QP. Since LBE is an instance of phrasal movement, *každyj* is ineligible for this operation, but *mnogo* is eligible. Whether this analysis is correct is somewhat orthogonal to my argument. The crucial observation is that HWh questions pattern *exactly* like ATB constructions, suggesting that the mechanism deriving the former is the same as the one underlying the latter.

- (38) a. ??Každogo li i kto poxvalil na vystavke \_\_ učastnika?  
 each Q and who praised on exhibition participant  
 ‘Has each participant been praised by someone and who praised each participant?’  
 b. Každogo li učastnika i kto poxvalil \_\_ na vystavke?
- (39) a. ??Každogo li na vystavke Ivan poxvalil \_\_, a Maša  
 each Q on exhibition Ivan praised and Masha  
 osudila učastnika?  
 denounced participant  
 ‘Has Ivan praised and Masha denounced each participant?’  
 b. Každogo li učastnika na vystavke Ivan poxvalil \_\_, a Maša  
 osudila \_\_?

The generalization concerning the parallelism between ATB and HWh object LBE contexts likewise extends to the restrictions on extraction out of a subject position. Regardless of the type of quantifier, LBE out of subject position is uniformly prohibited in both HWh questions and ATB constructions. Examples (40a) and (41a) show that LBE of *mnogo*-type quantifiers is illicit in HWh and ATB sentences, respectively. The same holds of *každyj*-type quantifiers.

- (40) a. \*Mnogo li i kakie imenno èkzempljary poxvalili na  
 many Q and which exactly samples praised on  
 vystavke \_\_ ljudej?  
 exhibition people  
 ‘Did many people praise certain samples at the exhibition and which samples did they praise?’  
 b. Mnogo li ljudej i kakie imenno èkzempljary poxvalili na  
 vystavke?
- (41) a. \*Mnogo li poxvalili Mišiny èkzempljary, no osudili  
 many Q praised Misha’s samples but denounced  
 Mašiny obrazcy \_\_ ljudej?  
 Masha’s giveaways people  
 ‘Did many people praise Misha’s samples but denounced Masha’s giveaways?’  
 b. Mnogo li ljudej poxvalili Mišiny ekzempljary, no osudili  
 Mašiny obrazcy?

The consistently uniform behavior of HWh questions and ATB constructions with respect to the possibility of LBE strongly suggests that the same mechanism is implicated in their derivations.

The strongest piece of evidence for ATB-movement emerges in ellipsis contexts. It has been argued extensively that locality violations improve under ellipsis (Bošković 2011, 2012, Merchant 2001, Ross 1969, among others). Earlier, I demonstrated that quantifiers in HWh questions, being subject to QR, cannot cross a clause boundary. However, if clause boundedness of QR is reducible to locality conditions, we then expect to see amelioration of the clause boundedness effect under ellipsis. This is borne out as shown in (42) for *čto*-clauses and (43) for *čtoby*-clauses. In (42a) and (43a), the elided constituent contains a \*-marked element, which identifies the locality violation site.<sup>12</sup> This site containing the violation is subsequently deleted in PF. No such PF operation applies in (42b) and (43b), resulting in ungrammaticality.<sup>13</sup>

- (42) a. ?Ja uverena, čto naš zlobnyj dekan sčitaet, čto kakoj-to  
           I sure that our evil dean considers that some  
           naš student nepremenno provalit ekzameny, no ne  
           our student definitely fail exams but not  
           uverena vse li [naš zlobnyj dekan sčitaet, čto kakoj-to naš  
           sure all Q  
           ~~student nepremenno provalit \_\_ekzameny~~].  
       b. \*Vse li [naš zlobnyj dekan sčitaet, čto kakoj-to naš student  
           nepremenno provalit \_\_ekzameny]?

<sup>12</sup> Under the standard analysis, \* is assigned to an island if an element crosses it. In order to salvage a derivation, some rescue operation needs to apply. Ellipsis is one such operation: it results in the deletion of an island and the \*-bearing element along with it. If this rescue procedure fails to apply, then a violation incurs. Bošković (2012) also makes use of this notation, placing it on the head of the island.

<sup>13</sup> In principle, *vse* 'all' is subject to LBE:

(i) Vsex li i kogda Ivan priglasil na novyj god \_\_ kolleg?  
       all Q and when Ivan invited to new year colleagues



Some multidominance (MD) accounts of ATB face the same problem. Citko (2003) argues that, in ATB constructions, the extracted

element is shared. Successful linearization depends on the absence of overt phonetic material in the gap. She hypothesizes that the possibility of constituent sharing hinges on economy: whenever the constituent *can* be shared, it *must* be shared in order to minimize the number of applications of Merge. This happens when the gaps in each conjunct contain traces of identical material. For this reason, her Polish example in (46a) is ruled out: the entire NP *którego studenta* ('which student') is shared, so it must be ex-situ, as in (46b), to render the structure linearizable. By contrast, (46c) with distinct remnants in each conjunct is an instantiation of determiner sharing, where the wh-word, *ile* ('how many'), is shared. Once *ile* vacates the shared node, the structure becomes linearizable.

- (46) a. \**Którego on polecił t studenta i firma zatrudniła t*  
           which he endorsed student and firm employed  
           studenta?  
           student  
       b. *Którego studenta on polecił t i firma zatrudniła t?*  
       c. *Ile on kupił t książek, a ona przeczytała t artykułów?*  
           how.many he bought books and she read articles

Now consider (36a) and (37a) in light of the above. On Citko's account, the entire QP, *mnogo vina*, is shared (since the gaps in each conjunct contain non-distinct material). It follows that this entire QP must front to render the configuration eligible for linearization, contrary to the facts in (36a) and (37a). Right-Node-Raising cannot be implicated here, since the remnant can be followed by an adjunct as in (47a). Further, it is impossible to strand a remnant in the first conjunct as in (47b) or to leave the remnant in each conjunct (47c); cf. (46a).

Given the above, Citko's MD treatment of LBE ATB needs to be amended as follows: (i) either the quantifier *can* be shared in the presence of identical nominal complements (but then what precludes (46a) and (47c)?); or (ii) the mechanism of linearization needs to be revised to allow for shared in-situ remnants in order to accommodate (47a).

- (47) a. Mnogo li Ivan prines \_\_, a Sergej vypil \_\_ vina na  
 many Q Ivan brought and Sergey drank wine at  
 večerinke?  
 party
- b. \*Mnogo li Ivan prines \_\_ vina, a Sergej vypil \_\_ na večerinke?
- c. \*Mnogo li Ivan prines \_\_ vina, a Sergej vypil \_\_ vina na  
 večerinke?

A more compelling alternative is offered in Niinuma (2010), whose Romanian ATB-paradigm in (48) evinces a remarkable similarity to the Russian ATB facts in (47). Romanian, a MWF language, like BCS (29), imposes a PF ban on contiguous homophonous wh-words, prohibiting the configurations in (48a) and forcing the pronunciation of the lower  $O_{wh}$  copy. Assuming Fox and Pesetsky's (2005) cyclic linearization mechanism, Niinuma proposes that the conjuncts participating in ATB-configurations are constructed and spelled out independently of each other. The order in the final representation must preserve the initial Spell-out order of individual conjuncts. Example (48b) is thus unproblematic:  $S_{wh}$  precedes, while  $O_{wh}$  follows, both verbs. However, in (48c), the surface position of  $O_{wh}$  leads to a contradiction with the underlying position of  $O_{wh}$  in the second conjunct, resulting in ungrammaticality.

- (48) a. \***Ce ce** a precedat și a influențat?  $*S_{wh} > O_{wh}$   
 what what has preceded and has influenced  
 $*PF$  ban: contiguous homophonous wh-words
- b. **Ce** a precedat și a influența **ce**?  $\checkmark S_{wh} > V1 > O_{wh} \& S_{wh} > V2 > O_{wh}$   
 $\checkmark$  linear order preserved in both conjuncts
- c. \***Ce** a precedat **ce** și a influențat?  $*S_{wh} > V1 > O_{wh} \& S_{wh} > V2 > O_{wh}$   
 $*ordering$  conflict:  $wh_{obj} > influențat > wh_{obj}$

The Russian facts in (47=49) beg for a unified analysis with the Romanian ATB-pattern: (47a=49a) is the only configuration in which the underlying linear order of the remnant is preserved in the final representation (*vina* follows the verbs in each conjunct). Predictably, (47b=49b) and (47c=49c) are ruled out, since they result in ordering conflicts, whereby the pronunciation of the remnant in the first conjunct induces a contradiction with the Spell-out order in the second conjunct.

- (49) a. ✓ mnogo li S<sub>1</sub> V<sub>1</sub> t<sub>i</sub> ~~vina~~ & S<sub>2</sub> V<sub>2</sub> t<sub>i</sub> vina ✓ linear order preserved  
 b. \*mnogo li S<sub>1</sub> V<sub>1</sub> t<sub>i</sub> vina & S<sub>2</sub> V<sub>2</sub> t<sub>i</sub> ~~vina~~ \*ordering conflict  
 c. \*mnogo li S<sub>1</sub> V<sub>1</sub> t<sub>i</sub> vina & S<sub>2</sub> V<sub>2</sub> t<sub>i</sub> vina \*ordering conflict

### 3.4 *LI* placement

In the fully grammatical sentences in (38-41), the entire QP moves in front of *li*. Subsequent PF reordering is responsible for the surface placement of *li* after the first prosodic word, since Russian *li* is subject to the first word restriction (Bošković 2001, King and Franks 2000). Recall from Section 3.2 that LBE out of subject positions is prohibited, so the entire QP must be pied-piped as in (50), with a derivation, as in (51). In syntax, the QP is QRed out of each clause in (51a). In PF, the first conjunct TP is elided, while the phonological properties of *li* force the apparent splitting of the QP, as in (51b).

- (50) **Každyj** li **učastnik** i kakie èkzempljary poxvalil na  
 each Q participant and which samples praised on  
 vystavke?  
 exhibition
- (51) a. Syntax: **Každyj učastnik** li<sub>[TP]</sub> i [kakie èkzempljary] poxvalil  
 ...]      ↑      [TP]      [kakie èkzempljary]      [TP]      [kakie èkzempljary] poxvalil
- b. PF: **Každyj učastnik** li [TP] i [kakie èkzempljary] poxvalil...]  
 ↑      [TP]      [TP]      [kakie èkzempljary] poxvalil...]  
 PF reordering      ^ellipsis

Note that the Prosodic Inversion analysis in which *li* moves to the right in PF is not possible in those examples, since, as I have argued above, the fronted element must be higher than *li*.

In this section, I argued that, in HWh contexts, a subset of quantifiers can be extracted in ATB fashion and adjoined to the higher CP. The process underlying this derivation is QR, since only quantified arguments are subject to extraction in this configuration. The pronunciation of the higher copy is triggered by prosodic requirements of the enclitic *li*.<sup>14</sup>

<sup>14</sup>The quantifiers in (25b) are generally illicit preceding *li*. There are a few possible reasons why these quantifiers cannot participate in the construction under consideration

4 Conclusion

The central claim of this paper is that HWh questions are underlyingly biclausal, with surface strings derived via TP-ellipsis in the first conjunct. HWh questions are distinct from root Y/N questions in that the pre-*li* position is restricted to certain elements. The following table demonstrates possible configurations:

Configuration	Status
(1) Adjunct <i>li</i> & wh	OK
(2) Non-quantified argument <i>li</i> & wh	?*
(3) V <i>li</i> & wh	*
(4) Quantified argument <i>li</i> & wh	OK

The observed asymmetry between pre-*li* adjuncts versus arguments and verbs is due to the preservation of argument structure in both conjuncts: HWh questions are licensed only if both conjuncts contain all the obligatory elements. The behavior of quantifiers is a consequence of QR, which proceeds in ATB-fashion out of both conjuncts. Non-quantified arguments and verbs, on the other hand, are ineligible for this derivation. Their appearance in pre-*li* positions results in a missing obligatory element in the second conjunct. Since the adjuncts are not required by the argument structure of the predicate, they do not need to be present in the second conjunct, so they are licit in pre-*li* positions. For PF reasons (to provide prosodic support for *li*), the highest copy of the quantifier is pronounced.

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(at least one of the following reasons holds for each element in (25b)). First, they simply do not co-occur with *li* as shown in (i):

(i) \*Kto-nibud' li kupil moloko?  
          someone Q bought milk

Second, they do not undergo QR (see Yanovich 2005). Third, Fitzgibbons (2011) argues that the highest possible position for *-nibud'* quantifiers is Spec-AgrSP. I will leave this issue for further research.

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