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The NYU Meeting 2015

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Preface

The present volume consists of 21 peer-reviewed, revised, and edited versions of papers presented at the twenty-fourth annual meeting of Formal Approaches to Slavic Linguistics, held at New York University May 7th – 10th, 2015. FASL 24 was organized and sponsored by the Department of Linguistics and the Division of Arts and Science at New York University. We were fortunate to host a one-day workshop on Slavic Morphology on May 7th, thanks to a grant from the National Science Foundation (co-PIs Maria Gouskova and Stephanie Harves). 16 papers from the main session were submitted to the current volume, along with 5 papers from the workshop on Slavic Morphology. We are grateful to our invited plenary speakers who presented at the morphology workshop and the main sessions: John Bailyn (Stony Brook University), Christina Bethin (Stony Brook University), Vera Gribanova (Stanford University), Katya Pertsova (UNC Chapel Hill), Maria Polinsky (Harvard University), and Ora Matushansky (CNRS Paris VIII).

Several presenters at the conference opted not to submit papers to this volume, but we are nevertheless grateful for their presentations. A complete list of presenters can be found on the official conference program online: https://www.nyu.edu/projects/fasl24/program.shtml.

The organizing committee for the conference and workshop was led by NYU graduate students Sonia Kasyanenko and Yohei Oseki, in conjunction with Professors Maria Gouskova and Stephanie Harves. Other members of the graduate student organizing committee were: Suzy Ahn, Isaac Bleaman, Daniel Duncan, Masha Esipova, Itamar Kastner, Maria Kouneli, Daniel Szeredi, Dunja Veselinović, Adina Williams, and Vera Zu. We are extremely grateful to the committee at large for putting together an extraordinarily smooth and successful conference.

As always, we owe our reviewers a great deal of thanks, both for reviewing abstracts as well as reviewing submitted papers. Thank you, Michael Becker, Petr Biskup, Isaac Bleaman, Lev Blumenfeld, Wayles

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Finally, we thank Jindřich Toman and Michigan Slavic Publications for handling the final stages of production in order to publish this volume.

The Editors,

Yohei Oseki
Masha Esipova
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Russian Scope Freezing: Novel Evidence and Account*

Svitlana Antonyuk
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In this paper I examine a phenomenon of quantifier scope freezing, familiar from English (Larson 1990, Bruening 2001, i.a.) and argue, on the basis of novel data from Russian, that the latter exhibits the same scope freezing effects. Moreover, I show that the considerably broader range of scopally frozen contexts in Russian not only makes existing accounts of scope freezing difficult to extend to the Russian data, it also arguably provides an important insight into what causes scope freezing in the first place, thus, dramatically limiting the space of possible accounts of the phenomenon. I propose an account of scope freezing that is crucially based on the insights drawn from the Russian data and tentatively suggest that this account can provide a viable alternative to current accounts of scope freezing found in such diverse languages as English and Japanese.

* I gratefully acknowledge helpful comments, discussions and suggestions of Andrei Antonenko, John Bailyn, Chris Barker, Jonathan Bobaljik, Wayles Browne, Benjamin Bruening, Lucas Champollion, Barbara Citko, Chris Collins, Marcel den Dikken, Daniel Finer, Janet Fodor, Danny Fox, Stephanie Harves, Tania Ionin, Kyle Johnson, Heejeong Ko, Tony Kroch, Ivona Kučerova, Richard Larson, Ora Matushansky, Asya Pereltsvaig, Paul Pietroski, Masha Polinsky, Anna Szabolcsi, Sergei Tatevosov, Satoshi Tomioka and Jiwon Yun, who have commented on the current or earlier versions of the material presented here, as well as the audience of FASL 24 held at NYU. All mistakes remain my own.

1 Relevant Facts about English Scope Freezing

Despite earlier characterizations of Russian as a mostly scope rigid language allowing only local, interpretability-driven QR (Ionin 2001/2003), recent research converges on the conclusion that Russian is in fact comparable to English in terms of Quantifier Scope and the operation of Quantifier Raising, and thus can no longer be considered a "scope rigid language" (Antonyuk 2006, Antonyuk 2015, Ionin and Luchkina (this volume), Zanon 2015, i.a.). However, although English is a scope fluid language, certain contexts are known to make inverse scope relations difficult to inaccessible. Lebeaux, as cited in Larson 1990, notes that the double object construction (DOC) appears to "freeze" scope in this way[1]. Thus, whereas an English prepositional dative like (1a) allows either the direct object or the prepositional object to take wider scope, (1b) requires the scope to follow the surface order, i.e. ∃ > ∀. The difference in scope possibilities becomes particularly notable in pairs like (2), where we insert the modifier *different*, which requires a wider scope quantifier to distribute beneath. Presence of *different* forces the wide scope universal reading in (2a), but yields unacceptability in (2b), presumably because a wide scope reading is unavailable.

(1) a. The teacher gave **a book** to **every student**. (∃ > ∀, ∀ > ∃)
b. The teacher gave **a student every book**. (∃ > ∀, *∀ > ∃)
(2) a. The teacher gave **a different book** to **every student**. (∀ > ∃)
b. #The teacher gave **a different student every book**. (*∀ > ∃)

Larson (1990) also proposed that the scope contrast observed in the *spray-load* alternation exhibited in (3) below (first noted in Schneider-Zioga 1988), is an instance of the same phenomenon. Thus, while the locative variant (3a) is ambiguous, just like the prepositional dative (1a), the *with*-variant in (3b) allows surface scope only, just like the double object form (1b).

[1] An anonymous reviewer observed that scope rigidity in English double object constructions was first noted in Aoun and Li (1989), predating Larson (1990), and that spray-load alternation is also discussed in Aoun and Li (1993).

(3) a. Maud draped a (different) sheet over every armchair. (∀ > ∃)
b. Maud draped a (#different) armchair with every sheet. (*∀ > ∃)

As further noted by Larson (1990, ft. 10), the inability of the outer quantifier in the double object and the related *with* variant of the *spray-load* construction to move is relative rather than absolute. This is demonstrated by the following observations. First, double object structures show Antecedent-Contained Deletion in the outer quantified object phrase:

(4) a. John gave someone [everything that Bill did [$_{VP}$ e]].
b. Max wants to give someone [everything that you do [$_{VP}$ e]].

As argued in analyses of ACD put forth in Sag 1976, May 1985, and Larson and May 1990, reconstruction of the deleted VP requires the quantified DP to have scope at least as wide as the VP serving as the reconstruction source. This entails that in (4a) *everything that Bill did e* must scope at least as high as the VP headed by *give*, and in (4b) *everything that you do e* must scope as high as the VP headed by *want*. Without such QR, the sentence in (4b), for instance, would not be able to receive its correct interpretation, 'Max wants to give someone everything you want to give them'. Second, Larson also shows that outer objects in the double object construction are able to interact with the higher intensional predicate yielding *de dicto*/*de re* ambiguities[2]:

(5) I promised to rent someone every apartment in the building.

Thus, *every apartment in the building* can be read opaquely (*de dicto*) or transparently (*de re*) with respect to the predicate *promise*. On the former reading, the promise is to rent someone each and every apartment in the building, whatever they are and however many there are. On the latter, for every given apartment, I made a promise to rent that apartment to

[2] A reviewer objects to the use of sentences such as (5) and (16) involving a *de dicto*/*de re* distinction, arguing that "it is not at all clear that *de re* readings can be identified with high scope with respect to an intensional operator", citing, in particular, recent work by Keshet and Schwarz (2014). For now, I will keep these examples and leave it to the readers to decide whether they find these examples convincing in light of the above.

someone. Incidentally, Larson notes, the sentence exhibits the scopal properties familiar from the double object contexts: thus, if *every apartment* is interpreted *de re*, *someone* must be interpreted *de re* as well. As is standard to assume, the *de re* interpretation is derived via assigning wide scope to the relevant QP relative to the intensional predicate, which requires the QP in question to undergo QR above the predicate. As Larson (1990) stresses, such results point to the conclusion that the scope freezing effect in the DOC, which restricts the scope of the outer object, is relative, meaning the scope of the outer object is restricted with respect to the inner object, but not restricted otherwise[3],[4].

2 Scope Freezing in Russian: the General Picture

Given recent research results on Russian QP scope (e.g., Antonyuk 2006, 2015) one might expect, *ceteris paribus*, that the Russian equivalent of the double object construction should show essentially the same scope freezing behavior found in English. And indeed, the scope parallelism exhibited between Russian and English extends to ditransitives.

2.1 Frozen Scope in Russian: Evidence from Ditransitives

Russian ditransitive verbs represent a rather broad class of predicates, some of which can take two case-marked arguments, such as (6a,b), with the direct object marked with Accusative and the indirect object marked with Dative case[5]:

[3] For further syntactic evidence of the relative nature of scope freezing in English and in Russian, see Bruening (2001) and Antonyuk (2015) respectively. All the data on scope freezing in Russian discussed here are novel, first presented in Antonyuk (2015) and published for the first time in this volume.

[4] For syntactic tests (such as the Pair-List test) supporting the conclusion that scope is indeed frozen between the two object QPs in a DOC, see Bruening (2001). The tests employed by Bruening yield the same results when applied to the Russian data; however, the tests themselves are given a different theoretical explanation in Antonyuk (2015); still, they are shown to be a robust indicator of scope freezing.

[5] For reasons of space, in what follows I will provide only one example of each sentence type under discussion. To verify that the results described here are quite general, see Antonyuk (2015) where numerous examples are provided.

(6) a. Učitel' predložil kakuju-to knigu každomu
teacher$_{NOM}$ offered some book$_{ACC.FEM}$ every
studentu.
student$_{DAT.MSC}$
'The teacher offered some book to every student.'
(∃ > ∀, ∀ > ∃)

b. Učitel' predložil kakomu-to studentu každuju
teacher$_{NOM}$ offered some student$_{DAT.MSC}$ every
knigu.
book$_{ACC.FEM}$
'The teacher offered some student every book.'
(∃ > ∀, *∀ > ∃)

The general point to note about the above example and others like it is that while the (a) example above allows for both surface and inverse scope interpretations, the (b) example categorically disallows inverse scope. Thus, the above scope facts provide initial justification for unifying Russian ditransitives such as (6a,b) above with the English PP Datives and Double Object Constructions respectively[6].

2.2 Frozen Scope in Russian: Evidence from the Russian Spray-Load Alternation

Larson (1990) proposed that the scope contrast observed in the *spray-load* alternation (provided in (3) above) is an instance of the same phenomenon exemplified by the double object and the prepositional dative constructions. Given the initial evidence for the parallelism with respect to quantifier scope and scope freezing between English and Russian, we might ask whether similar facts hold of the *spray-load* alternation in Russian. In fact, scope facts fully parallel to those found in the English *spray-load* alternation hold in the Russian sentence pairs such as (7) as well[7].

[6] See Pereltsvaig 2006 for arguments in favor of equating Russian ditransitives with the English double object construction.

[7] The Russian *spray-load* construction has also been discussed in Partee 2005, Dudchuk 2006 and Tsedryk 2009; however, none of these authors have noted that the Russian construction demonstrates scope freezing that is identical to the English counterpart.

(7) a. Vanja zagruzil kakoe-to seno na každyj gruzovik.
Vania loaded some hay_{ACC} on every $\text{truck}_{\text{ACC}}$
'Vania loaded some hay on every truck.' (∃ > ∀, ∀ >∃)

b. Vanja zagruzil kakoj-to gruzovik každym vidom.
Vania loaded some $\text{truck}_{\text{ACC}}$ every $\text{type}_{\text{INSTR}}$
sena
of hay
'Vania loaded some truck with every type of hay.'
(∃ > ∀, *∀ > ∃)

The Russian *spray-load* alternation is fully parallel to its English counterpart in terms of scope: (7a) is parallel to (3a) in being scopally ambiguous, (7b) is like (3b) in allowing surface scope only. While the construction in Russian is known to be much less productive than it is in English, Antonyuk (2015) provides a long list of what appear to be bona fide *spray-load* verbs, all of which exhibit the above scope contrast as well as the semantic entailment relations that are known to hold between the alternating *spray-load* pairs in English[8]. In addition to the true *spray-load* verbs, Russian also possesses a much more numerous group of *spray-load* type verbs that do not participate in the morphological alternation proper observed in (7), but that nevertheless show the same scope freezing effect.

2.3 Frozen Scope in Russian: Novel Evidence from Russian Spray-Load Type Verbs

The verb in (8) and many more like it appear to correspond semantically to the English *spray-load* verbs, but they do not participate in the *spray-load* alternation. Still, perhaps surprisingly, these verbs also exhibit the scope freezing observed with true *spray-load* verbs:

(8) a. Maša nakryla kakoj-to prostynej každoe kreslo.
$\text{Masha}_{\text{NOM}}$ covered some $\text{sheet}_{\text{INSTR}}$ every $\text{chair}_{\text{ACC}}$
'Masha put some sheet over every chair.' (∃ > ∀, ∀ > ∃)

b. Maša nakryla kakoe-to kreslo každoj prostynej.
$\text{Masha}_{\text{NOM}}$ covered some $\text{chair}_{\text{ACC}}$ every $\text{sheet}_{\text{INSTR}}$
'Masha covered some chair with every sheet.' (∃ > ∀, *∀ > ∃)

[8] See Rappaport and Levin 1988 and Kearns 2011 for details.

As seen in (8), the verbs in this group take two internal arguments, neither of which is headed by a preposition, as is the case with true *spray-load* verbs. Both arguments can be realized as Quantifier Phrases, one marked with Accusative case, and the other with Instrumental. In all of the examples of this type, the order on which the Instrumental-marked QP precedes the Accusative-marked QP is scopally ambiguous, while the opposite order exhibits scope freezing.

2.4 Frozen Scope in Russian: Novel Evidence from Russian Reflexive Monotransitives

The last syntactic context related to ditransitives I will discuss here is what I call "reflexive monotransitives". These predicates are built from true ditransitives (9a,b) by reflexivization; one of the predicate's arguments is then typically expressed as an adjunct PP as in (9c,d).

(9) a. Maša zarazila kakoj-to bolezn'ju každogo pacienta.
Masha $\text{infect}_{\text{PST}}$ some $\text{disease}_{\text{INSTR}}$ every $\text{patient}_{\text{ACC}}$
'Masha infected every patient with some disease.' (∃ > ∀, ∀ > ∃)

b. Maša zarazila kakogo-to pacienta každoj bolezn'ju.
Masha $\text{infect}_{\text{PST}}$ some $\text{patient}_{\text{ACC}}$ every $\text{disease}_{\text{INSTR}}$
'Masha infected some patient with every disease.'
(∃ > ∀, *∀ > ∃)

c. Maša zarazilas' kakoj-to bolezn'ju ot každogo pacienta.
Masha $\text{infect}_{\text{PST.REFL}}$ some $\text{disease}_{\text{INSTR}}$ from every $\text{patient}_{\text{GEN}}$
'Masha got infected with some disease by every patient'
(∃ > ∀, ∀ > ∃)

d. Maša zarazilas' ot kakogo-to pacienta každoj bolezn'ju.
Masha $\text{infect}_{\text{PST.REFL}}$ from some $\text{patient}_{\text{GEN}}$ every $\text{disease}_{\text{INSTR}}$
'Masha got infected with every disease by some patient.'
(∃ > ∀, *∀ > ∃)

The scope pattern that holds with the ditransitive predicate in (9a,b) is preserved with the reflexive predicate in (9c,d). However, the internal argument structure of the ditransitive and the corresponding reflexive is

different, with one of the ditransitive's internal arguments being realized as an adjunct that takes a Genitive-marked complement. Held constant in the two examples is the linear order of quantification phrases, with scope being free when the order is INSTR >> ACC and surface scope frozen, when the order is reversed. Given that such crossing of QPs is observed with all the other cases of scope freezing we have seen so far, it appears to offer a clue as to what causes freezing in the first place. In the next section we will see that this idea is correct and that there are even more drastic cases of scope freezing in Russian where it is observed between "crossed" QPs that are sometimes the internal and the external arguments of the verb[9] (i.e., object QP scrambling across the subject QP) or, most strikingly, are arguments of different predicates (as is the case with scope freezing that obtains with Long-Distance Scrambling of a QP across the structurally higher QP in the upper clause).

2.5 Scope Freezing and Scrambling

As noted above, recent research on quantification has observed many similarities between Russian and English in the covert movement of quantifiers and the syntactic properties of this movement. However, Russian being a language with much more flexibility in terms of allowed word order permutations, known as Scrambling, the question naturally arises as to how Scrambling interacts with QR (if at all). As I will now show, overt movement of QPs, as instantiated by both Local and Long-Distance Scrambling in Russian, despite their other well-known syntactic differences (Bailyn 2001, 2002), behave identically with respect to scope[10]. Specifically, both types of QP Scrambling seem to lead to frozen surface scope[11]. Sentences with overtly scrambled QPs therefore present another context where frozen surface scope is found in the language.

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[9] Note that Bruening (2001) specifically argues that the internal and the external argument of the verb do not participate in scope freezing, as in his Superiority-based feature attraction system the two QPs would not be in competition with each other.

[10] The facts are indeed surprising when viewed from the perspective of scope freezing accounts provided for English that posit a certain structural relation between VP-internal QPs that results in frozen scope (cf. Bruening 2001, Johnson 2001). On such accounts neither Local nor Long-Distance Scrambling are expected to exhibit scope freezing, as no comparable structural relation between the two QPs can be posited in scrambled sentences.

[11] To my knowledge, Ionin 2001/2003 was the first paper to look at the interaction of word order and scope in Russian. Although I disagree with Ionin regarding the

2.5.1 Scope Freezing with Long-Distance Scrambling

Reconstruction of Long-Distance Scrambling (LDS) of non-quantificational phrases appears to be obligatory, as illustrated by pairs like (10a,b). The Principle C violation in (10a) is not improved after the application of LDS (10b), suggesting that the name *Mašinu* must reconstruct to its position in the c-command domain of *ona* 'she'[12]:

(10) a. * Ja xoču čtoby **ona$_j$** vstretila **Mašinu$_j$**
I want that she$_{NOM}$ met Masha$_{POSS}$
babušku.
grandmother$_{ACC}$
'I want her to meet Masha's grandmother.'

b. * [**Mašinu$_j$** babušku]$_k$ ja xoču čtoby **ona$_j$**
Masha$_{POSS}$ grandmother$_{ACC}$ I want that she
vstretila **t$_k$**.
met
'Masha's grandmother, I want her to meet.'

LDS of quantificational phrases, on the other hand, does not reconstruct, which is especially clear if the matrix subject is also quantificational. Scrambling a QP containing a coreferenced R-expression may or may not reconstruct for different speakers with the non-quantificational matrix subject such as *ja* ('I') in (11b); when the subject *is* quantificational (as in (11c)), all speakers agree that the sentence is

---

(un)availability of non-local QR in Russian, her main original insight that overtly moved QPs do not reconstruct for the purposes of scope is strongly supported with my own data presented in this section (originally discussed in Antonyuk-Yudina 2009 and developed in more detail in Antonyuk 2015).

[12] A reviewer suggested that I add a baseline configuration showing that coreference between a possessive and a pronoun is in principle possible in Russian:

(i) [**Mašina$_j$** babuška]$_k$ xočet čtoby **ona$_j$** vstretila ee$_k$ na vokzale.
Masha$_{POSS}$ grandmother$_{NOM}$ wants that she met her at train station
'Masha$_j$'s grandmother$_k$ wants her$_j$ to meet her$_k$ at the train station.'

The example in (i), in which the possessive phrase is in Nominative case, is fully grammatical on coreference with the pronoun. The same configuration with the possessor marked with Accusative case would not be grammatical, of course, as the phrase in question would have to be scrambled to its surface position and would then obligatorily reconstruct, which is exactly the point demonstrated in (10b) above.

perfectly grammatical on coreference between the pronoun and the R-expression:

(11) a. * Ja xoču čtoby **on$_j$** uvolil každogo sovetnika
I want that he$_{NOM}$ fired every adviser
Buša$_j$.
Bush$_{ACC}$
'I want him$_i$ to fire every adviser of Bush$_i$.'

b. */??[Každogo sovetnika **Buša$_j$**]$_i$ ja xoču čtoby **on$_j$**
every adviser Bush$_{ACC}$ I want that he$_{NOM}$
uvolil **t$_i$**.
fired
'Every adviser of Bush$_i$, I want him$_i$ to fire.'

c. [Každogo sovetnika **Buša$_j$**]$_i$ kto-to xočet čtoby
every adviser Bush$_{ACC}$ someone wants that
on$_j$ uvolil **t$_i$**.
he$_{NOM}$ fired
'Every adviser of Bush$_i$, somebody wants him$_i$ to fire'
(every > someone > want, *(someone > want > every)

Thus LD Scrambling of a QP across another QP results in surface scope due to the scrambled QP not being able to reconstruct to a position below the QP it crossed on its way up[13],[14]. Both the scope facts and Binding Principle C facts strongly support this conclusion.

[13] It has been suggested to me by a reviewer of a related paper that the way to resolve this tension is to adopt the Copy Theory of Movement (Chomsky 1993) in conjunction with a theory of which phrases can and cannot be late-merged, such as Takahashi and Hulsey 2009. On such an account, the R-expression would be merged before the application of LDS, thus, being present at the lower position as well as the higher one, hence accounting for the Principle C effect in (10b). While I acknowledge the ability of this account to explain examples like (10), I believe it is not enough to account for the contrast in (11), where the sentences also contain an R-expression in the LD-Scrambled phrase as in (10), yet, are grammatical. The crucial difference between the ungrammatical (10b) and the grammatical (11c) then appears to be that in the latter the R-expression is contained within a QP that undergoes LDS and, moreover, the QP is 'trapped' in the higher position by the presence of another QP in the upper clause that is being crossed over; in the former, this is not the case. On the above-suggested account we might reasonably expect the R-expression to be present before LDS in sentences in (11) just as in (10), predicting, incorrectly, no difference between (11c) on the one hand and (10b) on the other.

2.5.2 Scope Freezing with Local Scrambling

Russian sentences with a quantificational subject and a quantificational object are ambiguous between surface and inverse scope in their standard word order (Antonyuk 2006, 2015). Thus, (12a) can mean that Masha is sure there is some one person who heard every joke in some contextually delimited set (surface scope reading), or it can mean that Masha is sure that for each joke in the relevant set, some person or other heard it, where people can vary with jokes (the inverse scope reading).

(12) a. Maša uverena, čto kakoj-to čelovek uslyšal
Masha sure that some person$_{NOM}$ heard
každuju šutku.
every joke$_{ACC}$
'Masha is sure that some person heard every joke'
(some > every, every > some)

b. Maša uverena, čto [kakuju-to šutku]$_{i}$ každyj
Masha sure that some joke$_{ACC}$ every
čelovek uslyšal $\mathbf{t_i}$.
person$_{NOM}$ heard
'Masha is sure that some joke, every person heard.'
(some > every, *every > some)

By contrast, the sentence in (12b), where the object QP has been locally scrambled to the front of the clause, seems to have only the surface scope reading, on which some particular joke was heard by every person in the

[14] The scope facts in the following sentences similarly suggest that reconstruction of a Long Distance-scrambled QP does not take place. Thus, while the sentence in (iia) is ambiguous between the surface and the inverse scope reading due to the interaction of the two QPs in the subordinate clause, the sentence in (iib) only allows surface scope or the wide scope for the scrambled QP. Given the clause-bound nature of QP scope, the lack of interaction between the two QPs is expected if there is no reconstruction of the scrambled QP, since the two quantificational phrases are now in different clauses.

(ii) a. Ja xoču čtoby dva studenta priglasili každogo spikera.
I want that two students$_{NOM}$ invited every speaker$_{ACC}$
'I want two students to invite every speaker.'
(two > every, every > two)

b. Každogo spikera kto-to xočet čtoby dva studenta priglasili
every speaker$_{ACC}$ someone$_{NOM}$ wants that two students$_{NOM}$ invited
'Every speaker, someone wants two students to invite.'
(every > someone> two, *someone > every)

relevant set of people[15]. Moving a QP overtly across another QP, thus, appears to fix scope so that the structurally higher QP now unambiguously takes wide scope, that is, 'frozen' surface scope obtains[16],[17]. Overt

[15] The existential and the universal QPs have been switched in this sentence to ensure that the universal remains in a structurally lower position after scrambling has taken place, thus, restricting available interpretations to those that arise through the syntactic mechanism of QR only (see Pietroski and Hornstein 2002 for relevant discussion).

[16] The lack of reconstruction of the object QP is surprising given that non-quantificational phrases must reconstruct, as again shown by the Principle C violation in (iii) where the R-expression has been scrambled outside of the c-command domain of the coreferring pronoun:

(iii) * [Mašino otraženie]$_{\mathbf{j}}$ ona$_{\mathbf{j}}$ uvidela t$_{\mathbf{j}}$ v bol'šom zerkale na stene.
Masha's reflection$_{ACC}$ she$_{NOM}$ saw in big mirror on wall
'Masha's$_j$ reflection, she$_j$ saw in the big mirror on the wall'

[17] Expectedly, the same behavior of QPs with respect to reconstruction is observed with ditransitives as well. Consider the contrast in (iv):

(iv) a. * Druz'ja rekomendovali ee$_{\mathbf{j}}$ každomu buduščemu bossu Maši$_{\mathbf{j}}$.
friends recommended her$_{ACC}$ every future boss$_{DAT}$ Masha$_{GEN}$
'Friends recommended her$_i$ to every future boss of Masha$_i$.'

b. ? Každomu buduščemu bossu Maši$_{\mathbf{j}}$ druz'ja rekomendovali
every future boss$_{DAT}$ Masha$_{GEN}$ friends$_{NOM}$ recommended
ee$_{\mathbf{j}}$ (po ee$_{\mathbf{j}}$ že pros'be).
her$_{ACC}$ on her PART request
'Every future boss of Masha$_i$, her friends recommended her$_i$ [to him] (on her$_i$ own request).'

c. Každomu buduščemu bossu Maši$_{\mathbf{j}}$ kto-to recommended
every future boss$_{DAT}$ Masha$_{GEN}$ someone$_{NOM}$ rekomendoval
ee$_{\mathbf{j}}$ (po ee$_{\mathbf{j}}$ že pros'be).
her$_{ACC}$ on her PART request
'Every future boss of Masha$_i$, someone recommended her$_i$ [to him] (on her$_i$ own request).'

Here the Accusative-marked pronoun *ee* c-commands the coreferenced R-expression contained within the Dative-marked object in surface syntax (iva), with the sentence being ungrammatical due to a Principle C violation. Scrambling the QP containing the R-expression to the front of the sentence improves the sentence for most speakers (ivb); those who accept (ivb) but find it somewhat degraded do agree that (ivc), containing a quantificational subject *kto-to* 'someone' instead of the non-quantificational *druz'ja* 'friends', is perfectly grammatical on coreference. The contrast between (ivb) and (ivc) that exists for most speakers I have consulted seems particularly important, as it shows that it is the quantificational nature of the scrambled constituent and of the constituent that is being scrambled across that is responsible for the lack of reconstruction. It is quite likely that the speakers who find sentences such as (ivb) to be acceptable interpret the matrix subject as containing a covert existential quantifier (e.g., *kakie-to druz'ja* 'some

displacement of a QP (versus a referring expression) via Local Scrambling, thus, may not reconstruct.

Taking together the results of this and the preceding section, we see that Local or Long Distance Scrambling of one quantifier (QP1) across another quantifier (QP2) exhibits scope freezing in two distinct ways. First, QP1 needn't subsequently (i.e. post overt movement) scope under QP2 by reconstruction (13a). Second, QP2 cannot subsequently scope over QP1 by QR (13b).

(13) a. … QP1 … QP2 … **QP1** …
↳ → → **X RECONSTRUCTION**
b. … QP1 … QP2 … **QP1** …
← ← ↲ **X QUANTIFIER RAISING**

The former is evidenced by binding facts (Principle C). The latter is evidenced by scope judgments. The scrambling facts in particular thus suggest the following broad Scope Freezing Generalization:

(14) **SF Generalization (SFG):** Scope freezing always results from overt raising of one QP over another to a c-commanding position.

As reminded to me by Richard Larson (p.c.), it is standard in the literature on scope freezing to think of the phenomenon exclusively in the following terms: … QP1 … QP2 … are frozen = one cannot *raise* QP2 above QP1. The observation of this paper is that there is another independent half to this: … QP1 … QP2 … are frozen = one cannot *lower* QP1 beneath QP2. The empirical phenomenon of Scope Freezing then is that adjustments in both directions are blocked. Under the SF Generalization, the feature unifying all scopally frozen cases in Russian is the presence of an overt instance of raising of a structurally lower QP across a higher one[18],[19]. In what follows I argue

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friends' rather than *druz'ja* 'friends'). This would explain why the otherwise predicted reconstruction does not take place for such speakers.

[18] As already mentioned, that it is an overt instance of QP raising across another QP that freezes scope is particularly clear in examples with QP Scrambling, as well as with cases involving *spray-load* type verbs, where it is fairly obvious that it is overt QP "crossing" that leads to freezing, everything else being kept the same. The willingness to accept the conclusion that similar instances of overt QP crossing take place in cases with

that the SF Generalization in (14) provides the crucial empirical insight that will help us better understand the phenomenon of scope freezing and offer a novel account that can cover the full range of scope freezing data discussed in this section.

3 Capturing Russian Scope Freezing: the Proposed Account

In what follows I would like to explore a novel idea that scope freezing is a phenomenon that obtains due to a special relation, call it Relation $\mathfrak{R}$, which is established between the two QPs whenever the lower QP *overtly* crosses the higher one[20]. The idea is inspired by and is based on the empirical SF Generalization provided in (14). As discussed in detail in Antonyuk 2015, all existing accounts of scope freezing run into significant problems when encountered with the totality of Russian QP scope data. To understand the nature of the proposed relation between the two QPs in a frozen scope configuration that is able to account for its relative nature, it will be helpful to consider some analogies from syntax that we are already well familiar with. The most striking analogy that will be helpful for us in trying to understand the Relation $\mathfrak{R}$ is one that is suggested by binding. Consider the pair of examples in (15), due to Higginbotham (1980):

(15) a. Some musician played every piece. ($\exists > \forall$, $\forall > \exists$)

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ditransitives and true *spray-load* alternations, for instance, depends on one's assumptions about the underlying verb phrase structure in those constructions. For reasons of space, I cannot provide evidence supporting the above conclusion, instead referring the reader to Bailyn 2012, Antonyuk 2015, i.a. I will note, however, that making the assumption that all surface scope frozen sentences discussed above are derived in accordance with SFG in (14) allows us to unify all these rather distinct constructions as well as offer a truly novel perspective on the phenomenon of scope freezing in general.

[19] A speaker of Russian may notice that related OVS sentences are ambiguous, which at first glance appears to falsify the SF Generalization in (14). However, as discussed in Antonyuk 2015, the ambiguity of OVS sentences is not only expected, given the analysis of such sentences that involves remnant VP movement with subsequent object raising into subject position (see, for instance, Erechko 2003; cf. Bailyn 2012), but it also provides important new insights into what instances of overt movement do and do not freeze scope. See Antonyuk 2015 for details.

[20] I am very grateful to Richard Larson (p.c.) for suggesting this route for me to explore.

b. [Some musician]$_j$ played every piece that you wanted him$_j$ to. (∃ > ∀, *∀ > ∃)
c. [every piece that you wanted him$_j$ to play]$_k$ [some musician]$_j$ x_j played x_k.

As can be easily verified, sentences such as (15a) are scopally ambiguous. (15b), in which the subject QP binds the pronoun contained inside the lower QP object, is not. The position of the two QPs is the same in the two sentences; the ambiguity of (15a), thus, proves that *every piece* is indeed capable of taking scope over the subject QP. Yet, in (15b) it doesn't. Such lack of ambiguity is generally recognized to be due to the bound variable relation established between the subject QP and the pronoun embedded in the object QP. Raising the object QP to a position where it would be able to scope over the subject is disallowed, since the variable would be left unbound at LF in this case (15c)[21]. Thus, the presence of this binding relation effectively leads to a frozen surface scope configuration, with the object technically being able to move, yet, unable to do so due to the existing binding relation. The same point is illustrated in a somewhat richer context in (16), which involves an intensional verb *want*. Again the object's ability to take scope is dependent on existing binding relations.

(16) a. Everyone wants [John to buy something].
(∀ > want > ∃, ∀ > ∃ > want, ∃ > ∀ > want)
b. Everyone$_j$ wants [John to buy [something for him$_j$].
(∀ > want > ∃, ∀ > ∃ > want)
c. Everyone wants [John$_i$ to buy [something for himself$_i$]].
(∀ > want > ∃)

(16a) allows all possible scopes for the object QP *something*: it can be read *de dicto* or *de re* with respect to the verb *want*, and it can have wide

[21] On accounts that argue for the obligatory reconstruction of the subject below its surface position with simultaneous object raising above the subject's reconstructed position for the ambiguity to arise (i.e. Johnson and Tomioka 1998), the lack of ambiguity in (15b) would result from the subject being unable to reconstruct because of the established binding relation. As we have just discussed, blocking of either of these mechanisms, QR or Reconstruction (post overt QP movement), seems to be involved in producing scopally frozen configurations.

scope or narrow scope with respect to the matrix subject. In (16b), with the pronoun bound by the subject QP, the highest scope for the object QP is excluded. As with (15b), this reading would entail scoping the object QP above the subject, leaving the pronoun *him*$_j$ unbound at LF. Now consider (16c). Here the lower QP contains an anaphoric pronoun *himself*$_i$, which is bound by the embedded subject *John*. Given locality binding constraints on the anaphor, the object QP containing the anaphor cannot raise above the intensional verb, hence only the lowest scope for this QP is available. The sentence can, thus, only mean that everyone has a wish that John buy something for himself, whatever it may be.

A closely related set of cases, demonstrating the properties ascribed to Relation $\mathfrak{R}$, involves Inverse Linking constructions (May 1977, 1985, Larson 1985, Larson and May 1990, May and Bale 2005), provided in (17a)[22].

(17) a. Someone from every city despises it. (May 1985, ex.26)
b. [every city]$_j$ [someone from t_j]$_i$ t_i despises it$_{j/k}$
c. [someone [[every city]$_j$ from t_j]]$_i$ t_i despises it$_{*j/k}$

Two scopal assignments are available for (17). On the one corresponding to the most natural reading (17b), the contained QP (*every city*) takes scope over the containing quantifier (*someone*). In this case, *every city* can be understood as binding the object pronoun *it*. On the assignment corresponding to the less natural (pragmatically odd) reading (17c), the containing quantifier (*someone*) takes scope over the contained QP (*every city*). Here *every city* cannot be understood as binding the object pronoun *it* and its reference must be fixed deictically/pragmatically. (15b) above and the inversely linked structure (17b) resemble each other insofar as in both a higher quantifier binds into the nominal restriction (the NP complement) of a lower quantifier (18). In the case of (15b), the relation is pronominal binding (QP$_i$, *him*$_i$); in the case of (17b), the relation is trace binding, produced by movement (QP$_j$, t_j).

[22] Please note that the above examples from scope and binding and Inverse Linking are meant to provide a way of thinking of this new Relation $\mathfrak{R}$ by discussing its similarities with phenomena that are more familiar and better understood at the moment. I do not mean to imply equivalence or full analogy between these phenomena.

(18) ... QP_i ... [Q [NP ... x_i ...]] ...

This makes the interpretation of the lower quantifier dependent on the interpretation of the upper quantifier in a stronger sense than the usual one determined by scope. On the usual Tarskian semantics for quantifiers, involving alternative assignments of values to variables, interpretation, for example, of a universal quantifier with scope over an existential quantifier (19a) is understood as requiring that for each choice of **x** from a domain determined by some predicate P, there is a **y** from a domain determined by some predicate Q such that R(x,y). Here the domains of individuals over which the two quantifiers range are determined independently of each other. In the case of an LF like (18), however, the quantifiers become much more intimately linked (19b).

(19) a. [∀x: P(x)] [∃y: Q(y)]R(x,y)
b. [∀x: P(x)] [∃y: S(x,y)] R(x,y)

Now we require that for each choice of **x** from a domain determined by P there be a **y** from a domain determined by the choice of **x** (S(x,y)) such that R(x,y). The domain over which the inner quantifier ranges is thus not determined independently anymore, as in (19a), but instead relationally with respect to the outer quantifier.

Interestingly, Stanley and Szabó (2000) and Stanley (2002) have argued that binding into quantifier domain restrictions is far more pervasive than is generally recognized. Thus, as Stanley (2002) observes, (20) is naturally interpreted along the lines of 'Every person x answered every question that x was asked', 'Every person x answered every question on x's exam', etc.

(20) Everyone answered every question. (Stanley (2002), p.4, ex. 41)

Such an understanding implies the presence of a variable somewhere inside the phase *every question* that is available for binding. Similar examples offered by Stanley are (21a,b) (2002, p.5):

(21) a. In most of his classes, John fails exactly three Frenchmen.
= In most of his classes x, John fails exactly 3 Frenchmen in x.

b. In every room in John's house, he keeps every bottle in a corner.
= In every room x in John's house, he keeps every bottle in x in a corner.

Note that the strength of this interpretive effect is considerable. Most speakers report that it is not only natural to interpret the object quantifier domain in (20) and (21) relative to the subject quantifier or the preposed PP, it is virtually necessary to do so. Thus the questions in (20) must be understood as questions posed to the persons quantified over by the subject. The Frenchmen in (21a) must be understood as Frenchmen in John's classes, etc. This effect is particularly notable in cases of quantifiers that otherwise resist contextual determination. Compare (22a,b):

(22) a. John spoke to each boy.
b. John spoke to each of these three boys.

In (22a) the domain of quantification is naturally understood as contextually restricted; each boy can be understood as 'each boy at the party/each boy in John's class', etc. However, as observed by Danny Fox (p.c.), (22b) shows much less latitude in that respect. Deictic determination of the quantifier domain by these does not readily allow for further contextual restriction. Consider now (23), a variant of (21a):

(23) a. In most of his classes, John fails each of these three boys.
= In most of his classes x, John fails each of these three boys #(in x).
b. Everyone answered each of these three questions.
= Every person x answered each of these three questions on x's exam.

Here again it seems virtually impossible to resist interpreting the three boys in question as boys in John's classes. Similarly for (23b). Hence even in the case of deictic determination, the domain restriction effect continues to assert itself.

The cases surveyed above show interesting similarities to what is found with "domain determining constructions" like those setting a topic

(24a–c). Note that the latter can be connected to the main clause by means of a trace (24a), or a pronoun that is either explicitly present (24b) or left implicit (24c). Furthermore, as in the quantifier case, it is virtually impossible to resist interpreting the main clause with respect to a topic, and when this is excluded the result is virtually uninterpretable (24d).

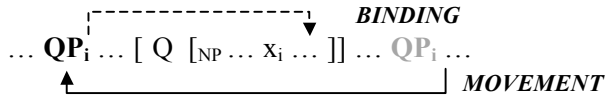
(24) a. Fish_i, Mary eats t_i every Friday.
b. As for fish, Mary eats it every Friday.
c. As for fish, Friday is Mary's preferred day.
d. #As for fish, Mary buys Rolex watches.

I propose an account of Scope Freezing that assimilates it to domain restriction binding and, in particular, leverages the fact that all of Russian inversion constructions discussed above have the general effect of "topicalizing" the fronted item. Thus, I want to suggest that when a quantifier is raised over another to a c-commanding position the result is, effectively, creation of a "domain topic" as in (21a) that must be resumed by binding in the quantifier beneath it (25). An important question in this respect is what differentiates between the overt raising of a QP that arguably causes scope freezing from the covert quantifier raising, QR, which clearly does not[23]. There are two related ways to answer this question. First, as reminded to me by Richard Larson (p.c.), if we conceptualize QR as a relation in which only the operator remains in its LF position, with the restriction being interpreted at the tail of the chain (Fox 1999), then the kind of domain binding I suggest takes place with overt QP crossing simply becomes impossible with QR[24] (I believe that this idea, if correct, also provides an argument in favor of Stanley and Szabó's (2000) treatment of variable as localized in the nominal restriction, as opposed to in the quantificational determiner (von Fintel 1994)). Another way to respond to the question would be to note that while the proposed scope-freezing overt QP movement is argued to crucially possess topicalizing properties, the same is not true of QR: to the best of my knowledge no one has argued for the existence of LF

[23] The question is due to Chris Collins (p.c.)
[24] As pointed out by a reviewer, this explanation is at odds with the facts of and the explanation given for (11c), predicting it to be ungrammatical, contrary to fact. I do not currently have a solution to this problem.

Topicalization/LF Left Dislocation; indeed, it is not clear what the operation would entail and what properties one would ascribe to it.

(25)



As shown in (25), creation of this binding relation has the outcome of freezing relative scopes of the two QPs, insofar as any further movements the two make must preserve binding on pain of an unbound variable (x_i) at LF as in (15c) above. Thus, the current account gets the distribution of scope freezing facts right specifically since either raising QP2 above QP1 or lowering QP1 beneath QP2 will break the binding relation between them that gets established by overt QP raising.

To illustrate this with a concrete example, consider the Russian "double object construction" equivalent in (26a), which shows frozen scope, and which I assume to derive from an underlying ACC >> DAT order by raising the Dative over the Accusative (26b)[25].

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[25] A reviewer notes that quantifier domain restriction becomes less pervasive if we use an overt restrictor. Thus, while (20) indeed suggests an interpretation like 'Every person x answered every question that x was asked', (20') is completely natural without any implicit restriction.

(20) Everyone answered every question.

(20') Everyone answered every question that I was asked.

According to the reviewer, this may have consequences for the analysis — i.e., one might expect (26) to allow inverse scope if some overt restriction was introduced, making the implicit restriction pragmatically unlikely. Modifying (26) in the way suggested by the reviewer, we get (26'):

(26') Maša predložila [kakoj-to devočke] [každuju igrušku], čto ja kupila.
Masha offered some girl.DAT every toy.ACC that I bought
'Masha offered some girl every toy that I bought' (∃ > ∀, *∀>∃)

The Russian sentence in (26') remains surface scope frozen (as does the English equivalent), suggesting that the addition of an overt restrictor is insufficient to break up the syntactic binding relation established upon overt raising of the lower QP. I would argue that this is as expected, if Relation $\mathfrak{R}$ that I posit in such cases is indeed a case of syntactic binding. For instance, adding an overt restrictor does not break binding in Inverse Linking cases either, as far as I can tell:

(17') Someone [from every city that I never even heard about] despises it.

Thus, testing the reviewer's suggestion against the data highlights the point possibly not stressed strongly enough in the text above: namely, that although the quantifier domain restriction theory of Stanley and Szabó inspired the account due to the striking similarity

(26) a. Maša predložila [kakoj-to devočke] [každuju igrušku].
Masha offered some girl.DAT every toy.ACC
'Masha offered some girl every toy' (∃ > ∀, *∀ > ∃)

b. **[kakoj-to devočke]** [každuju igrušku] **[kakoj-to devočke]**

c. **[kakoj-to devočke]$_i$** [každuju igrušku^i] **[kakoj-to devočke]**

As pointed about by Sergei Tatevosov (p.c.), the intuition of domain dependence is not especially strong with cases like (26); a potential way to interpret *igrušku*^{i} is as 'toy for x_i to have' so that (26c) is interpreted 'Mary offered some girl x every toy y for her (= x) to have'. In other cases, however, the sense of domain dependence is much clearer. Thus, consider (27a), an example of what I termed "reflexive monotransitives". (27a) exhibits scope freezing, just like ditransitives and *spray-load* verbs, and I assume it derives from an underlying INSTR >> GEN order by raising the Genitive over the Instrumental (27b). By assumptions, this induces a binding relation between the raised existential quantifier *[ot kakogo-to pacienta]*$_i$ and a variable contained within the domain restriction of the universal *[každoj bolezn'ju]* (27c):

(27) a. Maša zarazilas' [ot kakogo-to pacienta]
Masha infected$_{REFL}$ [from some patient$_{GEN}$
[každoj bolezn'ju].
every disease$_{INSTR}$
'Masha got infected with every disease by some patient.
(∃ > ∀, *∀ > ∃)

b. **[ot kakogo-to pacienta]$_i$** [každoj bolezn'ju^i] **[ot kakogo-to pacienta]**

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between the phenomena in question, they nevertheless do not seem to be identical. Specifically, while in the cases discussed in Stanley and Szabó 2000 and Stanley 2002 lexical and pragmatic considerations seem to play a significant role (as rightly noted by another reviewer, "The binding relation seems obligatory in (21a) because one simply cannot fail students that are not in one's class. Similarly for (21b), one cannot keep a bottle in a room unless the bottle is in the room"), this simply does not seem to be the case with Relation $\mathfrak{R}$, which in this sense appears to be a strictly syntactic, non-optional phenomenon.

Here we plainly understand the diseases Masha developed precisely as the diseases of the relevant patient, so that (27a) is understood equivalently to 'Some patient x infected Masha with all of x's diseases'. Here binding into the domain restriction of the universal is straightforward. Again, assuming this binding is established by raising, it will need to be preserved in any further movements of the two quantifiers. Hence, although there is no barrier to their raising higher (for example, out of an embedded clause), the relative scope order of the two QPs must be maintained for LF well-formedness, which offers a natural account of the *relative* nature of scope freezing.

4 Conclusions

In this paper I have presented novel evidence supporting the view of Russian as a language that exhibits the same basic properties in the area of quantifier scope as those known from English. Specifically, the data presented here establish that Russian possesses constructions exhibiting the scope freezing effect that is fully parallel to that found in the English double object construction and the *with*-variant of the *spray-load* construction.

However, the Russian data also show that the scope freezing that is arguably limited in English is a much more wide-spread phenomenon in Russian: it is found in constructions ranging from ditransitives to scrambling configurations. Such numerous, diverse and often syntactically unrelated contexts where scope freezing is found present a major challenge for all current accounts of surface scope freezing (Bruening 2001, Johnson 2001, Antonyuk-Yudina 2009, Larson and Harada 2011, Bobaljik and Wurmbrand 2012). On the basis of the empirical Scope Freezing Generalization advanced here I propose a novel analysis, which views the phenomenon as a Relation $\mathfrak{R}$, established directly between the two QPs whenever the lower QP overtly raises over the higher one to a c-commanding position. This relation, conceptualized as domain restriction binding in the spirit of Stanley and Szabó 2000 and Stanley 2002 bears distinct similarities to phenomena familiar from the literature, such as limitations on scope that arise from the interaction between scope and binding (Higginbotham 1980, i.a.). The account also allows us to explain what is arguably the crucial

property of scope freezing: its *relative* nature. While the analysis needs to be developed more fully from the theoretical standpoint in future work, it allows us to account for the totality of Russian scope freezing facts and has significant cross-linguistic implications for other languages exhibiting the phenomenon of surface scope freezing.

Specifically, while I take the generalization in (14) to describe accurately the state of affairs in Russian and the closely related Ukrainian, the really interesting question, which falls outside the scope of this paper, is whether the SF Generalization can describe cross-linguistic facts accurately as well. Thus, the empirical question now is whether SFG can be brought to explain comparable scope freezing facts in languages such as English, Japanese, German, French, Icelandic and Norwegian, among others. I plan to explore this question in detail in my future work.

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Bulgarian Superiority and Minimalist Movement Theory

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1 The Bulgarian Superiority Puzzle

As everyone who has taught introductory syntax knows, English Superiority of the kind found in (1)a)-(1)b) vindicates Minimalist claims about architecture and economy.

• Superiority (English-style):

a)	a. **Who** said **what**?	$SUBJ_{wh} > OBJ_{wh}$
	b. ***What** did **who** say?	$*OBJ_{wh} > SUBJ_{wh}$
b)	a. **Who** works **where**?	$SUBJ_{wh} > LOC_{wh}$
	b. ***Where** does **who** work?	$*LOC_{wh} > SUBJ_{wh}$

Minimalism's bottom-up system of syntactic construction (generally know as Bare Phrase Structure, see Chomsky 1995, a.o.) is typically accompanied by top-down triggering of movement, in that a Probe X (with relevant feature F) searches within its c-command domain for a matching feature on a Goal Y with which it establishes an Agree relation. Overt movement is then parasitic on Agree, given the proper specification of a sub-feature of [F] (its "strength", or EPP feature) which forces Y to move so that the eventual relation between X and Y be maximally local. Together with an Economy principle such as Attract Closest (see (2)), this system allows effects such as English Superiority to be handled in a highly elegant fashion, in that the structurally highest WH (here the subject) is always the one to be attracted, because it is

closer to the Probe, hierarchically speaking, than some Z that is lower in the structure such as the object WH. (a)-(b)b are underivable.

2) Attract Closest (descriptive): If an attracting head X (a Probe) carries a (strong) feature [F] and two elements Y and Z (Goals) also carry [F] then the **closest** [F] element wins (closest defined by c-command) (Chomsky 1995, Richards 1997, Pesetsky 2000)

This account does away with any need for the ECP, Proper Government, Comp indexing or other devices required in theories such as Government and Binding (Chomsky 1995, ch. 1). Just pure Probe-Goal and Economy.

However, under Minimalism things don't work out so nicely for the Superiority effects shown in (3) from a multiple overt WH-movement language such as Bulgarian:

• Superiority (Bulgarian-style): (Rudin 1988, Bošković 1998, Grewendorf 2001)

3) a. **Koj** **kogo** e vidjal? $SUBJ_{wh}$ > OBJ_{wh}
who whom aux seen (Bulgarian)
"Who saw whom?"

b. ***Kogo** **koj** **e** vidjal? *OBJ_{wh} > $SUBJ_{wh}$
whom who_{NOM} aux seen **Superiority**
*"Whom did who see?"

All WH-elements must front in Bulgarian. It has been known since at least Rudin 1988 that after multiple WH movement, the originally structurally higher element must precede the structurally lower one. Further, the WHs form a single constituent that precedes auxiliaries and parentheticals, as shown in (4).

4) a. **Koj** **kakvo** ti e kazal? [WH-1, WH-2, WH-3] > clitics
who what you aux told
"Who told you what?"

b. ***Koj** ti e **kakvo** kazal? *WH-1 > clitics > WH-2, WH-3
who you aux what told
"Who told you what?"

At the same time, it has been claimed that non-structural factors play a role in determining better and worse orderings among Bulgarian WHs, especially animacy, topicality/discourse-salience, and type of adjunct/

modifier. This had led some to deny the structural basis of Bulgarian Superiority (as in Jaeger 2004).

However, the subtle contrasts among orderings in Bulgarian Multiple WH constructions are examined in detail in Krapova & Cinque 2005, whose cartographic approach could be expected to challenge claims of uniform landing sites competing for similar Goals and who propose distinct landing sites for various kinds of WH elements. It is all the more persuasive, therefore, that Krapova & Cinque conclude that although there are nuances among various orders, especially with adverbial WHs, subjects always precede other elements, and surface order generally mimics base order: "the surface order of Bulgarian … wh-phrases … appears to reflect *their relative order prior to wh-movement*" (Krapova & Cinque 2005: 190, emphasis mine) Krapova and Cinque conclude that a generalized principle of structure preservation is required, that is, some kind of principle that guarantees Superiority is respected, even in this most articulated cartographic approach.[1] [2] So we can be confident that there is some sort of Superiority effect in Bulgarian to be accounted for, one which has the effect of structure preservation. I will now turn to how minimalist accounts of Bulgarian Superiority generally run.

2 The Standard Account

The standard account rests on several assumptions. One preliminary assumption, needed by everyone, it appears, is that some kind of *lexical property* of Bulgarian WH-phrases requires them to move:

- Assumption 1 (needed for all): Bulgarian WHs have a property that *requires* them to move

Here's how the standard story goes: we have WH-1, a subject, and WH-2, an object, let us say. Standard top-down Probe-motivated movement is assumed, as it is for English.

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[1] I will not address their own version of this principle, deriving from feature-based Relativized Minimality (of the kind in Rizzi 2004), because they term it "highly tentative" and it does not appear to be fully worked out or empirically adequate.

[2] I do not address the question of triple WH-questions since there is no consensus on the ordering restrictions (or lack thereof) within them.

STEP 1: Structure is built up to the level of C. C probes down and finds the closest relevant element, WH-1, as it does in English, pulling it up to a local Specifier position. Here two additional assumptions come in: First, it is assumed that Bulgarian C allows multiple specifiers. Second, C is also claimed to be distinct in Bulgarian in that it continues to Probe after the initial WH-1 is located, matched with and pulled up. This is the famous Probe-that-Keeps-on-Probing.

- Assumptions 2-3: Bulgarian has a "special" kind of C_{wh}: ("The Probe-that-Keeps-on-Probing"

  (i) it allows multiple specifiers and
  (ii) it allows non-deletion of its uninterpretable feature (to attract more WH_s)

STEP 2: C thus probes on, finds WH-2, and agrees with it.

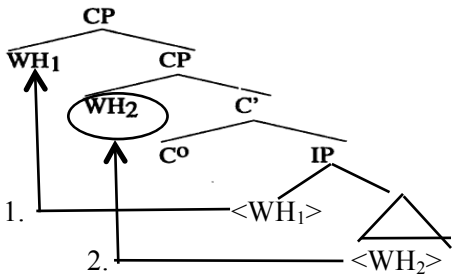
- Assumption 4: There can be "Tucking-In" (movement to a lower Specifier)

STEP 3: C pulls WH-2 up as well, and, crucially, "tucks it in" to a lower specifier position (Richards 1997, 1999 a.o.) The *necessity* that WH-2 land in the Tucked-in landing site is motivated by an additional Economy principle – Shortest Move, which requires that WH-2 move to the *closest* available position. An additional assumption is thus required here, namely that the lower Spec is crucially closer to the base position than the outer Spec, so that Shortest Move forces WH-2 to tuck in.

- Assumption 5: Tucked-in elements, in lower Specs, are not equidistant. Shortest Move requires movement to this "closer" Specifier for WH_2

Underlying order (WH-1 > WH-2) is thus preserved. The order of operations is shown in (5).

5) Schematic picture of Bulgarian Superiority obeying derivations such as (3)a)



(this one tucks in)

In what follows, I first present what I consider to be serious problems with this standard account of Bulgarian superiority. Then, I propose an alternative that solves those problems, which, though admittedly unusual, in fact solves the problems I identify in a principled fashion, without machinery that is not already independently needed in the grammar. Finally, I present two welcome consequences of the account.

3 Problems with the Standard Account

So what's wrong with the standard account? In fact, there are quite a few problems with it, some conceptual some empirical. In what follows, I will discuss five major issues with the standard account.

Problem 1. The primary concern, at least for those working within the architectural framework of Bare Phrase Structure (Chomsky 1995), is that *Tucking-In is counter-cyclic, violating the Extension Condition*, as loosely given in (6): (Adger 2003: 95)

6) **The Extension Condition**: A syntactic derivation can only be continued by applying operations to the root projection of the tree.

In my view it is serious business to abandon Extension, the core property of Bare Phrase Structure, and the property that allowed us originally to dispense with X'-theoretical templates (or Phase-Structure rules) and the central component needed for accurate labeling as well, if Chomsky's 2013 approach to the matter is on the right track. To ask us to abandon Extension to allow Tucking-in is far less innocuous than those advocating the standard approach to Bulgarian Superiority would have us

believe. It is it not at all clear how Bare Phrase Structure can function without some such principle of Extension; at very least proponents of Tucking-In have not, as far as I know, addressed the issue of projection and labeling without Extension.[3]

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[3] Without answering the issue of how BPS can function without Extension, Richards (1999) does provide an empirical argument for Tucking-In, relying on The Principle of Minimal Compliance:

i) The Principle of Minimal Compliance (PMC) (Richards 1997, 1998, 1999) (loosely):

> "permits the computational system to "ignore" those portions of a syntactic structure that have already been determined to be participating in a well-formed dependency" (Richards 1999: 137)

Bulgarian Subjacency violations such as (iia) are thus said to be improved due to a higher instance of Subjacency-obeying WH-movement, as in (iib):

(ii) a. *[**Koja kniga**]$_2$ otreče senatorât [mâlvata če
which book denied senator.the rumor.the that

[pravitelstvoto iska da zabrani **t$_2$**]]?
government.the wanted to ban

"Which book did the senator deny the rumor that the government wanted to ban?"

b. ?[**Koj senator**]$_1$ [**koja kniga**]$_2$ t$_1$ otreče [mâlvata če
which senator which book denied rumor.the that

[pravitelstvoto iska da zabrani **t$_2$**]]?
government.the wanted to ban

"Which senator denied the rumor that the government wanted to ban which book?"

Assuming the PMC, and that the legitimate move must precede the potentially illegitimate one, Richards (1998, 1999) derives an argument that WH_2 must move second, and therefore tuck-in, to derive the proper surface order. Richards also shows that multiple WHs starting from non-c-commanding positions have to obey a certain linear order in Bulgarian, consistent with the PMC. However, the nature of the amelioration effect is unclear – Grewendorf (2001) shows it does not apply to certain violations (adjunct islands etc). Thus the PMC is generally suspect. And without the PMC, the facts in (ii), along with others in Richards 1997, 1999, do not constitute an argument for the *orderings* of multiple movements. The apparent correct generalization is that the acceptable surface order of WHs that result from multiple WH-movement always shows structure preservation. These facts are consistent with the approach here, whereby WHs move from the bottom up, forming structure-preserving clusters as they go.

Problem 2. Not only must the standard account of Bulgarian Superiority allow multiple specifiers, an assumption that those working in cartographic frameworks do not allow on independent grounds, it crucially *must assume that multiple specifiers are not equidistant from the rest of the tree***.** (Otherwise, Shortest Move would not *force* Tucking-In, and the object would at least have the option of not tucking–in, deriving an ungrammatical order.) The idea that multiple specifiers are not equidistant contradicts successful analyses of various multiple Spec constructions such as Grewendorf and Sabel 1999's contrastive analysis of German vs Japanese Long Distance scrambling, and various others. Non-equidistance of multiple Specs in some cases but not in others could of course be justified with the right kind of fancy maneuvering, but what I would like to suggest is that we'd all be better off in a world where if there are multiple Specs, they are at very least equidistant from the rest of the tree. If one's basic assumptions allow multiple Specs, as mine do. they need to be equidistant. If multiple Specs are not permitted in principle (as with Cartography), then you need to use Specifiers of distinct categories, with the lower WH in the Spec of a lower category, rendering the Extension violation even more problematic, and the constituency of the Bulgarian WHs more difficult to account for. So everyone should be somewhere between somewhat unhappy and very unhappy with the current claim of non-equidistant multiple Specifiers.

Problem 3. Two different economy conditions are needed for Bulgarian superiority - Attract Closest and Shortest Move.

Problem 4. We need to posit the Probe-that-Keeps-on-Probing. Though possibly collapsible with multiple Specifier projection, the Keeps-On-Probing quality of the Bulgarian C head involves a kind of Extremely Enlightened Self-interest (the Probe must continue to probe for exactly as long as is needed to pull up all the WH's present), and be satisfied with exactly no fewer and no more. C is thus omniscient, and its requirement have at least a highly descriptive (if not an entirely fortuitous) character. This is of course undesirable.

Problem 5. Finally, there are *three* claimed parameterized distinctions between English and Bulgarian. First, there is the one difference any theory needs to acknowledge, namely that (i) Bulgarian WH elements differ from their English counterparts in having to move. However, the

standard account requires positing two further differences: (ii) that the Bulgarian C head can have multiple Specifiers, and (iii), that the Bulgarian C head is a Probe-that-Keeps-on-Probing.

(7) summarizes the problems identified with the standard analysis:

(7) **Problems with the standard analysis**:

A. Tucking-In is counter-cyclic (violates the Extension Condition (6), and is is unmotivated by Economy)

B. Multiple specifiers must crucially *not* be equidistant, contrary to both evidence (Richards 1999, Grewendorf & Sabel 1999, Grewendorf 2001) and intuition, in order for Shortest Move to force Tucking-In.

C. *Two* economy conditions are required (Attract Closest and Shortest Move) for Bulgarian Superiority

D. The account needs the Probe-that-Keeps-on-Probing

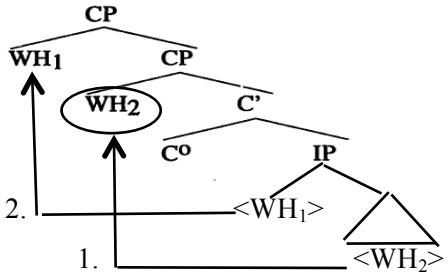
E. Parametrization is required in three (related) aspects:
   (i) in the lexicon (Bulgarian WH elements differ from their English equivalents in having to move)
   (ii) in the ability/need to have multiple Specifiers (Bulgarian) vs a single Specifier (Eng).
   (iii) in the nature of the [wh] features of C (it must be a multiple rather than single attractor)

Before turning to my alterative, I should acknowledge other accounts that deserve mention: Rudin's original 1988 account, whereby WH-2 adjoins directly to WH-1, but to its right (the latter being a required but undesirable stipulation), and Grewendorf's 2001 account that allows WH's to cluster in the course of the derivation, though also with a stipulation of right-edge landing site. (The right adjunction/landing is their equivalent of Tucking-In.) My primary goal is to find a way to avoid this as well, without introducing extra machinery or assumptions. The rest of this article will be devoted to that attempt.

4 A Possible Solution

The way to do that, of course, is to abandon the assumption of top-down triggering of movement in such derivations. As Richards himself admits: "If we wish to maintain the idea that movement always expands the tree, creating a Specifier higher than all the existing structure, we must apparently conclude that the lower of the two WH-words must move first" (Richards 1999). Top-down Probe systems don't allow that, so Richards pursues Tucking-In. But imagine, instead, that WH-2 somehow *is* able to move first, ending up extending the tree, intuitively speaking, after which WH-1 moves above the initially derived structure, and original order is preserved: WH-1 > WH-2. That's the angle I am pursuing here. This is shown schematically in (8).

8) Picture of Bulgarian Superiority if WH-2 moves first (no Tucking-In)



(this one moves first)

Here's the main idea: WH-2 *does* move first, so long as Goal-driven (or "self-motivated") movement occurs in such cases. How might this come about? Here, I follow the primary claim of Bošković 2007 ("On the Locality and Motivation of Move and Agree: An Even More Minimal Theory"). In that article, Bošković assumes movement is (*always*) triggered by a morphological requirement of the moved element itself (hence the term Goal-driven movement, which I call Self-motivation, a version of the old Greed principle). In my approach, such elements are equipped with what I call a Blinking Blue Light, which is the equivalent of Bošković's [*u*K] feature. "In a multiple *wh*-fronting language like Bulgarian, *wh*-phrases would be obligatorily specified with a *u*K feature" (Bošković 2007):

9) Self-motivated movement (Bošković 2007: 609)

$[_{XP} \ldots X \ldots \quad Y]$
*i*F
*u*K [← the Blinking Blue Light]

Bošković's [*u*K] feature is essentially an instantiation of the need to move as soon as possible. Their need to move *is* the Blinking Blue Light, this is the source of such WH elements (always) undergoing self-motivated movement. Conversely, *everything* that undergoes self-motivated movement (and *only* those things), are elements with a similar feature, lexically determined.[4]

It is important to note that although Bošković's focus is English WH-elements undergoing successive cyclic Long-distance movement, which I will in the end argue *do not* undergo self-motivated movement, the core idea here comes from there. For me, the Blinking Blue Light property of Bulgarian WH elements follows as an instantiation of the shared assumption everyone needs about Bulgarian WH's, namely that they have a distinct lexical property that forces them to move.

The natural question arises for any claim of self-motivated movement, HOW DO SELF-MOTIVATORS MOVE BEFORE THEIR EVENTUAL PROBE IS PRESENT IN THE STRUCTURE? Bošković 2007 does not fully answer this question, other than to assume that movement to phase edges is generally possible as an option, which, if not taken, leads to failure associated with the higher Probe when the time comes to close off a phase (basically a bottom-up version of the Phase Impenetrability Condition). The elements cry "I need to move", but where can they go? There is no feature-driven position available to go to.

Here, then, we get to the technical core of my proposal, – elements with Blinking Blue Light undergo *immediate* movement of the kind that has been called **Sidewards Movement** (see 10)), (Nunes 2001, 2004), exiting their subtree and immediately merging with C, the element they share the relevant [wh] feature with.

[4] I depart from Bošković's 2007 overall approach in one crucial respect - for Bošković this feature is found on all moving elements; here, it is only found on obligatorily moving elements, a possibly more intuitive and successful assumption, to be explored below.

10) Sidewards Movement (Nunes 2001, 2004)

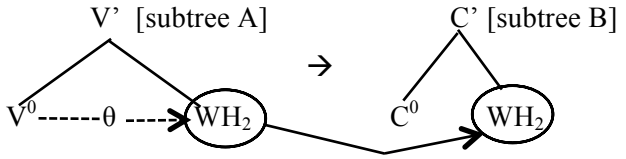
- (sub)trees are built in parallel in the "workspace"
- Sidewards movement allows an element in a partially built structure to dis-attach and move "sidewards" into a distinct subtree. The theory allows this freely, subject to linearization.

Other than Sidewards Movement (an option Bare Phrase Structure certainly allows, as Nunes (2001, 2004) argues convincingly), I assume nothing other than bottom-up derivations, the Extension Condition, and that Specifiers precede Complements (or, more exactly, that 2nd merge elements precede 1st merge elements). Here's how the derivation works:

STEP 1: WH_2 is merged in base position in the usual way (for theta-assignment) in Subtree A).[5]

STEP 2: WH_2 has *u*K (the Blinking Blue Light). This forces it to move sidewards and join with C^0 [wh] (already in the Numeration/Workspace), creating Subtree B and shown in (11):

11) result of Step 2:



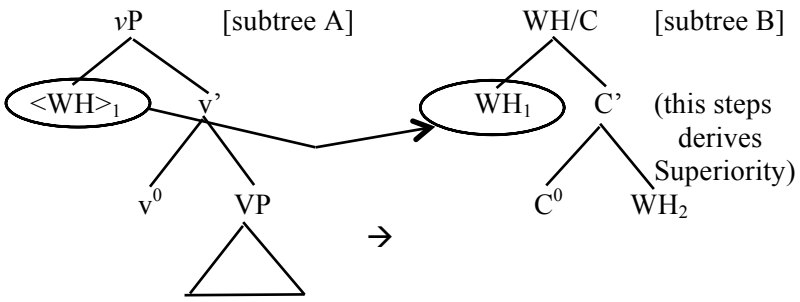
Assuming standard right-branching LCA-driven principles of combination, the first Merge position is to the right of the relevant head, and the second Merge is to a higher c-commanding Specifier type position to the left, (which is where WH-1 will eventually Merge, deriving the required surface order). The derivation proceeds.

[5] For A-movements necessary to establish case and other relations, I assume that Sidewards Movement launches from theta position (as a function of the Blinking Blue Light), and that case checking (and any A-movement involved) involves the remaining silent copy of the WH phrase. With subject Wh phrases, the same would apply at Step 3, with regard to movement to SpecTP for EPP purposes. Thanks to an anonymous reviewer for suggesting this possibility.

STEP 3: WH_1 is merged into its base position in the usual way.

STEP 4: WH_1 has *u*K (the Blinking Blue Light). This forces it to move sidewards, merging with the already existing C+WH-2 cluster (Subtree B), as shown in (12):

12) Result of Step 4:[6]



In terms of the WH elements, this is similar to Grewendorf's 2001 cluster account, quoted here (except that his account requires WHs attracting other WHs, and right-attachment of rising WHs). He says:

> I wish to suggest an analysis of overt multiple wh fronting that does not proceed from the idea that wh-elements move individually to [Spec, CP]. I will argue that it is instead *a cluster of wh-elements* that moves to [Spec, CP] in languages such as Bulgarian, and that assuming the formation of a wh-cluster prior to wh-movement to [Spec, CP] avoids the conceptual and empirical problems of the other approaches mentioned here and enables us to answer the question of what motivates multiple wh-fronting.

My approach obviously shares this aspect of Grewendorf's. However, it does not require any right attachment. The derivation proceeds.

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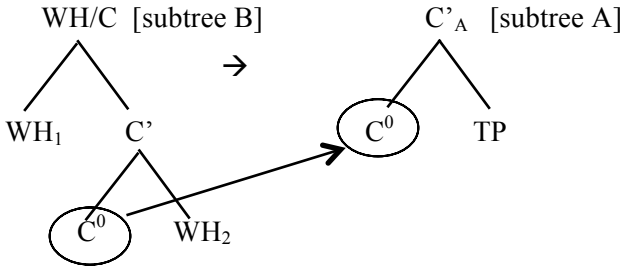
[6] A reviewer raises the issue of why the clusters resulting from this step do not form CED islands. After Step 5, when they are headless clusters, and without whatever restricts movement out of true conjunctions, I see no reason why they should resist further extraction (in fact, as we know from analyses of Polish-style multiple Wh constructions, further movements after similar clustering is standardly assumed, see below).

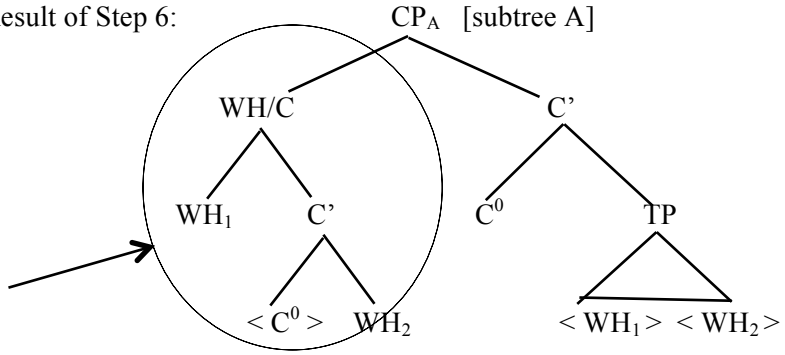
STEP 5. At the moment when TP is complete, we see an unusual, but entirely plausible, case of what I call Backwards Sidewards Movement, whereby C exits Subtree B, (leaving a "bare" WH cluster behind), and joins Subtree A in the manner C always does, namely merging with TP, as shown in (13). This movement is driven by the standard c-selectional needs of C and the requirement that it end up in the proper place (above T), in the "hierarchy of projections" (Adger 2003).

13) Result of Step 5:



STEP 6. We now integrate the two trees, by merging Subtree B (the WH cluster) with the top of Subtree A (the existing C projection (call it C' or CP as you like). This is shown in (14):[7]

14) Result of Step 6:



[7] A reviewer raises the issue of the motivation for Step 6, noting that in principle the move is not required for feature checking of the [+wh] elements in Subtree B. However, we can assume that something akin to the original wh-criterion (Lasnik & Saito 1992) namely that [+wh] elements must appear in a [+wh] CP, will require it. Alternatively, it could be an optional move, in terms of features, but a derivation without it will never be integrated, and the Sidewards movement never resolved, the copies never deleted, etc. I leave the matter open.

Constituency is now as we need it to be to account the constituency facts identified by Rudin 1988 and others for Bulgarian type languages, and we share Grewendorf's advantage over other accounts that no Multiple Specs are needed, no Probes-that-Keep-on-Probing are needed, and, crucially, no Tucking-In is needed. The derivation converges. A summary of the resulting theory of movement is provided in (15):

15) Summary of the hybrid proposed theory of movement:

a. Single movements (Attract) are driven by a (strong) feature of the Probe (standard top-down assumption)

b. Multiple movements to a single head are driven by a (strong) feature [*u*K] *of the moved element itself* (cf Bošković 2007) (this is Self-motivated Movement)

c. Derivations are entirely bottom up. Self-motivated movement begins before the checking head (Probe) is merged (=Bošković's "early" movement)

d. Sidewards movement always takes place with Self-motivated Movement

A note on linearization: For the WHs, I assume that the cluster shares elements of both of its WH conjuncts, as in a ConjP structure. The cluster in SpecCP, sharing both WH-1 and WH-2 features, then c-commands the lower WH copies of each, and the WH elements are linearizable. As for C, either we have to claim that a head c-commands into its Specifier (not an unreasonable assumption, given that the Spec is the position to which overtly raised element are located), and so the C in the cluster is deleted, as desired, or we are left with a kind of Remnant Movement structure, whose gap needs to be analyzed on a par with other cases of remnant movement. The fact that this structure is created by 2 instances of Sidewards movement does not matter in that regard.[8]

The account has obvious advantages, summarized in (16) below.

[8] It is also possible that Sidewards Movement is not copy-based (even if other movements are) and only reintegration is required, not linearization of Chains as in the original Nunes view of things. If so, then the issue of linearization of C does not arise.

16) Summary of the account's advantages:

A. It derives structure preservation in Bulgarian Superiority instances in a principled fashion. Bulgarian-Superiority is pure Structure Preservation - a side effect of the system's architecture; nothing special needs to be assumed (other than BPS – Merge, Extend, Copy, etc.)

B. It dispenses with multiply active Probes: all multiple moving elements are driven by their own strong features. The Probe probes once. (It also raises the questions of whether all purported multiple Spec instances can be derived in the same manner, though limited of course to those checking with a single head).[9]

C. It dispenses with the assumption of Probes-that-Keep-on-Probing.

D. It derives the right word order without resorting to Tucking-In.

E. The various WH elements are equidistant (for purposes of further movement).

F. Parameterization reduces to the one lexical difference that everyone needs: – the (lexical) property of Bulgarian WH phrases requiring them to move (here the Blinking Blue Light). This property itself triggers Sidewards Movement and cluster formation – everything else results from the independently needed workings of the system.

G. Finally, there is only one relevant Economy Principle for both kinds of Superiority – Attract Closest. Shortest Move is not needed.

5 Extensions

There are two positive extensions of significance: the first involves the resulting analysis of Russian/BCS/Polish type languages, in which all WHs move but which apparently lack Superiority (see (17)), and which show distinct properties from Bulgarian (see list in (18)). The second set of consequences concern locality. I turn to these now.

17) a. **Ko koga** vidi? b. **Koga ko** vidi? (BCS)
who$_{NOM}$ whom$_{ACC}$ sees whom$_{ACC}$ who$_{NOM}$ sees
'Who sees whom?' 'Whom does who see?

[9] Note that the account does not dispense with multiple Specifier constructions in general – it just derives them through Sidewards movement, and maintains the assumption that they are equidistant for the purpose of further movement.

18) Properties of BCS/Russian type languages (Rudin's (1988) [-MFS] languages):

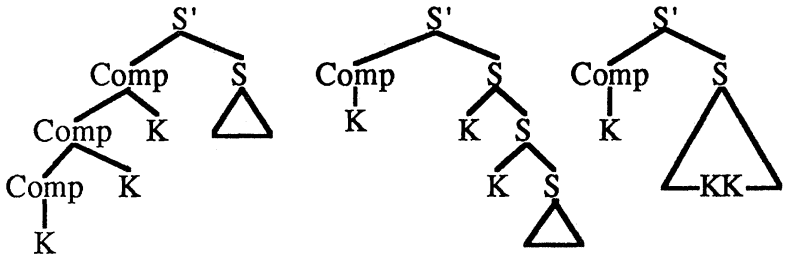
a. **+MFS languages**: (Bulgarian / Romanian)	b. **–MFS languages**: (SC/Polish/Russian)
i. Parentheticals/ clitics come after all WHs	i. Parentheticals/ clitics come after 1st WH
ii. multiple WH extraction possible	ii. multiple WH-extraction not possible
iii. Superiority holds	iii. Superiority doesn't hold

5.1 Russian/SC apparent lack of superiority

For the Russian/Polish/SC type languages, I follow Rudin's (and everyone else's) general idea about constituency of WH's in these languages, (schematized in (19)b):

19) Rudin's (1988) Wh movement types: (K] here = [wh])

a. Bulgarian b. SC/Russian c. English



It is generally assumed, following Rudin 1988, that all but one of the WH elements cluster at the TP edge; the leftmost one is in SpecCP (see also Bošković(1998, 2002 etc). The position of clitics and parentheticals after WH-1 is thus accounted for (basic placement at the two distinct edges for Bulgarian vs SC/Polish is maintained in this account).

Standard accounts assume a TP-level feature driving non-wh-movement of WH elements in the BCS/Polish-type languages, usually Focus, though I take no stand on that particular feature. Regardless of the driving feature. the question remains: *why should Superiority not hold in such languages?* Some accounts are given in Rudin 1988, Bošković 1997, Richards 1997, and Stepanov & Stateva 2009.

For Rudin (1988), the workings of the Empty Category Principle conspire to allow (17)b, an approach no longer available under modern assumptions. For Bošković 1997, single WH-mvt happens first, followed *later* by *lower* adjunction to IP, an undesirable counter-cyclic stipulation. ("I leave it open here how this should be reconciled with the cycle" Bošković 1997: 12). For Richards 1997, "IP absorption" is not subject to Superiority but "CP absorption" is, a distinction that is not further accounted for. Standard accounts assume that multiple movement driven by Focus are simply not subject to Superiority whereas multiple ("true") WH-movements are. Superiority is claimed not to apply because the inherent [Foc] movement requirement of Rus/BCS WHs forces the movement, so each element is driven separately (so no competition): "Attract/Shortest is simply irrelevant… Each *wh*-phrase in a multiple *wh*-question moves for an independent reason [Focus]" (Stepanov & Stateva 2009, following Stepanov 1998). In addition to its stipulative nature, such an approach obviously cannot apply here, given the architecture described above for self-motivated WH-movement since the Focus movement to the TP edge is also self-motivated, being obligatory for all WH element sin these languages.

A more useful account runs as follows: WHs in these languages are also Self-motivated movers, as in standard accounts -- their obligatory movement for Focus purposes is instantiated as their having what we could call a Blinking Purple Light, and therefore they also undergo Sidewards Movement just as we have seen for Bulgarian WHs. (Note that the Blinking Purple Light is no different from the standard assumption that these are "TP-absorption" languages as in Richards sense.) These WHs form a (Superiority-obeying) [Foc] cluster in a Subtree in parallel fashion to what we have just seen for Bulgarian [wh]. Superiority *appears* not to hold only because of *subsequent* movement of one element to a higher spot. This final move is standard Probe-driven *single* WH-movement (this piece is based on Scott 2012).[10]

The choice of WH element to undergo this final move is free, due to the natural (and expected) equidistance of elements in the TP level

[10] This has the additional advantage of rendering all overt WH-mvt languages the same in that the feature movement of their C elements are the same– a singly probing Probe with a strong (EPP) WH feature attracting a single WH element (which could be a cluster) to a single Specifier.

cluster to a higher Probe.[11] Crucially, the cluster *does* obey Superiority, an effect identified by Scott (2012) as The Emergence of Superiority.[12] When the additional movement is blocked, Superiority emerges as predicted, as shown in (20)-(21) for BCS and throughout Scott's dissertation for Russian.

Emergence of Superiority in BCS: (Bošković 1997, 2002, Stjepanović 1999)

• subordinate clauses:

20) a. Jovan i Marko ne znaju **ko** je **koga** istukao.
Jovan and Marko not know who is whom beaten
'Jovan and Marko do not know who beat whom.'

b. *Jovan i Marko ne znaju **koga** je **ko** istukao.
Jovan and Marko not know who is whom beaten
*'Jovan and Marko do not know whom who beat.'

• overt topics:

21) a. Tom čoveku, **ko** je **šta** poklonio?
that man who is what bestowed

b. ??Tom čoveku, **šta** je **ko** poklonio?
that man what is who bestowed

No parameterization of Superiority is required, or permitted, or ever possible (marking the end, by the way, for both Bruening's (2001) account of Scope Freezing and Stepanov and Stateva's (2009) attempt to correlate WH and QR Superiority, both of which have been shown to encounter major problems anyway, see Antonyuk 2015). The principles

[11] This assumption incidentally renders the Tucking-In account additionally untenable, since multiple Specs must crucially *not* be equidistant for that account to work, in that the lower of the Multiple Specs must be closer to the lower part of the tree than the higher one to force Tucking-In to give the correct surface order in Bulgarian. The Richards-style accounts can not, then, derive lack of Superiority in the Russian/SC type languages in this manner. And in fact, it is never explained why CP-absorption obeys superiority but IP-absorption does not. For me, they both do, but a single further move obscures it in the Russian/SC case.

[12] Note that I differ from Scott in associating Russian with the BCS/Polish-type languages and not with Bulgarian.

that lead to Superiority of this kind are independent parts of the system (Merge order and bottom-up derivations) and of course would not be expected to be parameterized. This is obviously a welcome result.

5.2 Locality

The second consequence involves Locality. Here I assume a version of the Bošković 2007 story on successive cyclicity, namely a *non-feature checking* account of intermediate stopping points in standard successive-cyclic LD WH-movement. Sidewards movement, however, *requires* feature checking for reintegration into Subtree A. Thus any WHs being attracted by main clause C as part of matrix questions should never need (or even be able) to stop in intermediate SpecCP where there is no relevant feature, and this allows them to simply skip the intervening SpecCP (wjhether it is locally [+wh] or not), thus deriving the well-known obviation of WH-islands in Bulgarian, shown in (22).

22) Bulgarian WH-island obviation:

a. **Kakvo** se čudiš **koga** e kupil Ivan ?
what wonder-2sg when aux bought Ivan
"What do you wonder when Ivan bought?"
(WH-island in English)

b. **Koga** se čudiš **kakvo** e kupil Ivan ?
when wonder-2sg what aux bought Ivan
"When do you wonder what Ivan bought?
(lower reading of *when* – WH-island in English)

In fact, we expect no Subjacency effects in Bulgarian at all with WH-movement, and it is possible that there are none (except for Complex NP constraint violations, which have a different character and constitute a much stronger violation in English as well). The account derives the WH island obviation effect as well. This is another welcome result.

In the Russian/BCS/Polish case, since the Sidewards movement involves reintegration at the TP/Focus level, we don't expect WH-island obviation, and this is exactly what we find: the Russian equivalent in (23) are as bad as they are in English.

23) Russian WH-islands:

a. ***Čem** ty sprašivaeš', **kogda** Ivan zanimaetsja?
What-Instr you ask-2sg when Ivan studies
"What do you ask when Ivan studies?"

b. ***Kogda** ty sprašivaeš', **čem** Ivan zanimaetsja?
when you ask-2sg what Ivan studies
"When do you ask what Ivan studies? (lower reading of *when*)

We also might predict something else – since the WH-elements cluster at the TP edge, and if we assume they must do so in every clause (which is plausible given a certain view of FocP projections), we would expect them to behave as subjects (also a TP edge element) with regard to extraction over an overt complementizer. That is, we would expect a *that*-trace type effect with all embedded WH phrases in Russian and Polish, and this has in fact been observed, as shown in (24):

• Russian/Polish LD WH-movement out of indicatives:

24) a. ?? **Komu** ty dumaeš', čto Ivan pozvonil __ ?
who you think that Ivan called
"Who do you think that Ivan called?"

b. * **Kak** ty dumaeš', čto Ivan počinil mašinu ?
how you think that Ivan fixed car
"How do you think that Ivan fixed the car?"

If C is dropped, the effect disappears, as in (25):

25) a. **Komu** ty dumaeš', Ø Ivan pozvonil __ ?
who you think Ø Ivan called
"Who do you think that Ivan called?"

b. **Kak** ty dumaeš', Ø Ivan počinil mašinu ?
how you think Ø Ivan fixed car
"How do you think that Ivan fixed the car?"

This last application is fairly tentative, but seems promising, covering a restriction that is otherwise quite mysterious.

Such consequences for extraction and locality seem useful in helping us understanding how phrasal chunking takes place and when it is unsuccessful. At very least the account leads us to ask a different set of questions about locality effects and language types – we will expect multiple-movement languages to have different locality effects from single-movement languages and that appears to be what we find. Another possible advantage of the overall approach.

6 Conclusion

Under this account, there are two kinds of Superiority with different sources: English Superiority follows from Attract Closest, whereas Bulgarian Superiority follows from Bare Phrase Structure, the Extension Condition, and Sidewards Movement (all independently motivated). Happily, Tucking-In can be removed from the grammar. Superiority is non-parameterized and apparent lack of Superiority always results from independent factors.

More generally, we have a general theory of multiple movement as Self-motivated, requiring immediate satisfaction and hence Sidewards Movement (this piece, but only this one, follows Bošković 2007). Successive cyclicity cannot be forced in cases of Self-motivated Movement, resulting in some greater restrictions and some greater freedoms tha**n** Probe-driven movement, a rich area for further research.

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Instrumental Situations: On Case Marking in Copular Clauses in Czech*

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This paper addresses case variation in Czech NP-NP copular clauses, namely, the difference between the NOM-NOM and the NOM-INSTR patterns. We argue that this case alternation should be accounted for in terms of a situation pronoun optionally present within a predicative DP in a copular clause. Specifically, we argue that INSTR DPs contain a syntactically merged situation pronoun in D while NOM DPs do not. The crucial evidence comes from sentences in which a subject DP is realized as an anaphoric pronoun TO which - we argue - is in and of itself an overt manifestation of a situation pronoun. If a subject DP is realized as TO, a predicate DP cannot be in INSTR. We argue that these distributional facts follow from the Situation Economy of Keshet (2010).

1 Introduction

Predicate noun phrases in Czech NP-NP copular clauses (and other Slavic languages) can appear either in Nominative case (henceforth

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NOM) or in Instrumental case (henceforth INSTR). While one of the NPs[1] in a copular clause must be in NOM, the other one may be in INSTR (Kopečný 1958, Uličný 2000), see (1).

(1) Hana byla zpěvačka /zpěvačkou.
Hana was $\text{singer}_{\text{NOM}}$ /$\text{singer}_{\text{INSTR}}$
'Hana was a singer.'

Both NOM and INSTR are possible in (1) and similar examples, however, there are copular clauses in which both NPs must be in NOM. The example in (2) shows one such environment. Examples similar to (2) are going to be crucial for our analysis.

(2) Byla to zpěvačka /*zpěvačkou.
was it $\text{singer}_{\text{NOM}}$/ $\text{singer}_{\text{INSTR}}$
'She was a singer.'

Since NOM is more frequent than INSTR, Uličný (2000) proposes to analyze NOM in Czech copular clauses as a default case and INSTR as a marked case.

Even though copular clauses in which INSTR is preferred over NOM are rare, they do exist. As we see in (3), noun phrases like *příčina* 'cause' appear more often in INSTR than in NOM. We will address copular clauses with nouns like *příčina* later in our analysis as well (section 4).

[1] We will not be particularly consistent while using the labels NP and DP. The convention in the syntactic literature on copular clauses is to use NP, while the relevant semantic literature talks about DPs. The literature disagrees on the diagnostics that would tease apart DPs from NPs. The problem is that, despite some proposals to the contrary (Winter 2001, a.o.), it is not clear what the mapping between the syntactic structure and its semantic interpretation is. Furthermore, not even the presence of overt 'determiners' cuts the pie clearly; see, for instance, Partee 1986, Rothstein 2012, and Kučerová 2014 for arguments that in English 'the NPs' — but not proper names — can be semantically predicates. We assume that there is a connection between D and a referential index-like function (Winter 2001, Borer 2005). But there might be structural differences between argumental DPs and DPs in copular clauses (for instance, in head-movement properties). Irrespective of what the exact structure of these phrases turns out to be, proposals such as that of Pereltsvaig (2007) that make a tight connection between the NP/DP distinction and case assignment/interpretation do not seem to be accurate.

(3) Matka byla ???příčina /příčinou rozvodu.
Mother was cause$_{NOM}$ /cause$_{INSTR}$ of-divorce
'Mother was the cause of the divorce.'

The distribution of NOM versus INSTR has been widely studied in Slavic languages. Most existing proposals concern Russian and Polish. In sections 1.1 and 1.2 we will lay out the basic facts of the syntactic distribution of INSTR in Russian, Polish, and Czech copular clauses and discuss their differences. As we will see, while Russian and Polish morphosyntax of copular clauses is similar, Czech is rather different.

1.1 Syntactic distribution

In Russian and Polish, the distribution of case in NP-NP copular clauses correlates with the form of the copular verb. In Russian, if the copula is null, both NPs must be in NOM:

(4) a. Vera asistent.
Vera assistant$_{NOM}$
'Vera is an assistant.'
b. * Vera asistentom.
Vera assistant$_{INSTR}$
'Vera is an assistant.' (Matushansky 2007)

(5) *Russian:*
If the copula is null both NPs must be in NOM
(Matushansky 2007)

Polish has a verbal copula *jest* 'is' and a nominal copula *to*. Only the verbal copula is compatible with a NP in INSTR (6a). The nominal copula requires the NOM-NOM pattern, irrespective of whether or not the verbal copula is present as well (6b,c).

(6) a. Jan jest moim najlepszym przyjacielem.
Jan is my best friend $_{INSTR}$
'Jan is my best friend.'
b. Jan to mój najlepszy przyjaciel.
Jan PRON my best friend$_{NOM}$
'Jan is my best friend.'

c. Jan to jest mój najlepszy przyjaciel.
Jan PRON is my best friend$_{NOM}$
'Jan is my best friend.' (Citko 2008)

(7) *Polish:*
If the copula is pronominal, both NPs must be in NOM[2]
(Citko 2008)

Crucially, in Czech there are no clear one-way implications between the form of the copula and the case assignment. Copular clauses require a finite copular verb, and the form of the copula is the same in both the NP-NP and the NP-INSTR patterns.

Interestingly, only the NP that must be in NOM triggers phi-feature agreement on the copula. We will call this NP 'NP$_1$'. As we can see in (8), irrespective of the word order, the copula must agree with *Susana*, that is, the invariantly NOM NP. The other NP that may vary in case never triggers agreement (8c). We will call this other NP 'NP$_2$'.

(8) a. Susana byla vítěz /vítězem závodu.
Susana$_{F.NOM}$ was$_F$ winner$_{M.NOM}$/winner$_{M.INSTR}$ of-race
'Susana was the winner of the race.'
b. * Susanou byla/byl vítěz /vítězem
Susana$_{F.INSTR}$ was$_F$/was$_M$ winner$_{M.NOM}$/winner$_{M.INSTR}$
of-race
závodu.
Intended: 'Susana was the winner of the race.'
c. * Susana byl vítěz /vítězem závodu.
Susana$_{F.NOM}$ was$_M$ winner$_{M.NOM}$/winner$_{M.INSTR}$ of-race
Intended: 'Susana was the winner of the race.'

Thus, in Czech, the only immediately observable morphosyntactic restriction is the correlation between case invariability and the ability to trigger agreement. Since there are no additional morphosyntactic

[2] In fact, the same holds for Russian pronominal copula *eto*. The NOM-INSTR pattern is impossible in copular clauses containing the pronominal *eto* instead of a verbal copula (Markman 2008).

restrictions, it is important to investigate the semantic properties of these two case patterns as well.

1.2 Semantic restrictions

Even though the difference is rather subtle in most contexts, the NOM-NOM copular clauses and their NOM-INSTR counterparts are not semantically identical (Kopečný 1958, Uličný 2000). The semantic difference is reminiscent of the individual-level versus stage-level distinction, respectively (Carlson 1977, Kratzer 1995, Geist 1999, Filip 2001, a.o.). However, as pointed out by Geist (1999) and Filip (2001) for Russian, this cannot be the correct characterization of the distinction because purely individual-level predicates such as 'a doctor's daughter' may appear both in NOM and INSTR, as in (9), modeled after Geist (1999).

(9) Petra je dcera /dcerou lékaře.
Petra is daughter$_{NOM}$/daughter$_{INSTR}$ of-doctor
'Petra is a doctor's daughter.'

As explicated by Geist (2007), a more precise formulation of the semantic difference between NOM and INSTR is that INSTR is more likely to be used as a description of a situationally restricted property, such as employment, while NOM describes a more general property of the NP. In most cases, speakers tend to accept both case forms (Uličný 2000). However, if the context is appropriately restricted, the difference emerges. For instance, in (10), the context is restricted to a specific role-playing situation. Consequently, only INSTR is plausible as it restricts the predicate to the role-playing temporal interval. Thus little Johnny is understood as the store manager only during the temporally restricted role-playing situation. In contrast, NOM is odd because it makes Johnny the store manager even outside of the role-playing situation.

(10) Scenario: Children role-playing in kindergarten.
a. # Honzík byl ředitel obchodu.
Honzík was manager$_{NOM}$ of-store
Intended: 'Honzík's (little Johnny's) role in the kindergarten play was a store manager.'

b. Honzík byl ředitelem obchodu.
Honzík was manager$_{INSTR}$ of-store
'Honzík's (little Johnny's) role in the kindergarten play was a store manager.'

In the next section we will review some existing proposals. We will show that they are not empirically adequate for Czech, as they rely on a morphosyntactic make-up which is absent from the language. Consequently, a new proposal is needed.

2 Previous proposals

There are two families of existing proposals for the case alternation in Slavic. One accounts for the case alternation by manipulating the syntactic properties of the extended verbal projection, while the other puts the burden on the syntax-semantics and pragmatics interface.

The first family of the existing proposals (Bailyn 2001, Baylin and Rubin 1991, Matushansky 2008, Pereltsvaig 2007, Franks & Pereltsvaig 2004) accounts for the case distribution morphosyntactically. The core idea of these proposals is based on the one-to-one correlation between the form of the copula and the case assignment in Polish and Russian, discussed in section 1.1.

According to Bailyn (2001), the case alternation corresponds to different case-assigning properties of a copular verb (Pred head). He argues that in NOM-NOM copular clauses both NOMs are assigned by T. In contrast, in NOM-INSTR copular clauses NOM is assigned by T and INSTR is assigned by the Pred head. The intuition is that the Pred head in NOM-INSTR clauses behaves like a transitive verb and assigns INSTR in the same way that a transitive verb assigns case to its complement. In NOM-NOM clauses, the Pred head does not have case-assigning properties.

Authors such as Matushansky (2000) and Markman (2008) take seriously the semantic distinction and argue that the spatiotemporal restriction associated with INSTR requires either an aspectual projection (Matushansky 2000), or a form of eventive predication (Markman 2008).

Geist (2005) agrees with the above mentioned syntactic analyses in that if an NP is in NOM or in INSTR, then each case corresponds to a distinct predicate phrase. The NOM NP agrees in case with the subject of

the copular clause. The INSTR NP corresponds to an extended predicative projection where the Pred head bears an unchecked INSTR feature. Geist, however, departs from the other proposals in arguing that the unchecked INSTR feature on the Pred head contains a specificity presupposition that links the INSTR NP to a specific topic situation. In contrast, there is no specificity presupposition in NOM. That is, there is no Pred Head that would bear the case feature related to the presupposition.

The problem with these proposals is that they do not straightforwardly extend to Czech, as Czech lacks the one-way implications between copula and case attested in Polish and Russian. Furthermore, as we will see in section 3.2, in Czech there are non-trivial interactions between NP_1 and NP_2, if NP_1 is realized as an anaphoric pronoun TO ('it' or 'that'). Even though these constructions are restricted to a specific topic situation, their case pattern must be NOM-NOM. This is unexpected under the existing proposals because they predict an interaction between the copula and the NP_2, but no interaction between the two NPs. To account for this problem, we will adopt Geist's insight about topic situations but we will argue that the locus of the situational restriction is within the NP itself and not in the extended predicative projection.

3 The Proposal

3.1 Towards the analysis

The motivation for the analysis to be proposed in section 3.3 comes from a seemingly rather different set of facts, namely, the definiteness marking in Bavarian German. Bavarian German has two morphologically distinct definite articles (Ebert 1971, Krifka 1984, Schwager 2007, Schwarz 2009). The examples in (11) from Schwager (2007) demonstrate their semantic properties. The strong article in the question 'Do you know who the speaker is?' inquires about a general property of a speaker who, for example, stands in front of us but we do not know anything about her (her name, affiliation, etc.). The weak article presupposes the existence of a specific referent but we do not know who the referent is. For instance, this question could be used in a conference setting if we did not know who is scheduled as the next speaker. Interestingly, as we can see in (12), the syntactic distribution of the strong article in copular clauses

corresponds to NOM in Czech, and the distribution of the weak article corresponds to INSTR.

(11) Wast du wea dea/da Redna is?
know you who the_s/the_w speaker is
the_s: 'Do you know who this speaker is (what's his name/affiliation/…)?'
the_w: 'Do you know who is going to speak (e.g. in the next slot)?'

(12) a. Kdo je ten řečník?
who is that $speaker_{NOM}$
~the_s: 'Do you know who this speaker is (what's his name/affiliation/…)?'

b. Kdo je tím řečníkem?
who is that $speaker_{INSTR}$
~the_w: 'Do you know who is going to speak (e.g. in the next slot)?'

Crucially, both in Czech and Bavarian German, the semantic difference is morphosyntactically localized within the DP. In Bavarian, the semantic distinction affects the morphosyntax of D itself (or its specifier (Kučerová and Hardy 2014)) and it is not likely to depend on a Pred head. We will use this similarity between Czech and Bavarian German to motivate our analysis of the Czech case alternation as a reflex of a situation pronoun within a DP. The evidence, to be discussed in the next section, comes from copular clauses with anaphoric pronoun TO.

3.2 TO-copular clauses

The Czech demonstrative pronoun TO can refer to antecedents of any gender and number even though it is invariably N.SG (Bartošová & Kučerová 2014). Crucially, if TO is an NP_1 in a copular clause, NP_2 must be in NOM (13).

(13) Minulé léto Petr chodil s krásnou holkou.
last summer Petr walked with beautiful $girl_{F.SG}$
'Last summer Petr dated a beautiful girl.'

a. Byla to zpěvačka.[3,4]
   $was_{F.SG}$ TO $singer_{NOM}$
b. * Bylo /a to zpěvačkou.
   $was_{N.SG}$ /$_{F.SG}$ TO $singer_{INSTR}$
   'That/she was a singer.'

Note that Czech TO is not the same syntactic object as TO in Polish. Czech TO is an argument and in an NP-NP copular clause it replaces one of the NPs. Polish TO is a nominal copula and consequently it co-occurs with two NPs (Citko 2008).

That NP_2 in a TO copular clause cannot be in INSTR is surprising because neither other pronouns nor *pro*-drop share this restriction on case, as witnessed by the examples in (14)-(16).

(14) *Personal pronoun:*
   a. Ona byla zpěvačka.
      she $was_{F.SG}$ $singer_{NOM}$
   b. Ona byla zpěvačkou.
      she $was_{F.SG}$ $singer_{INSTR}$
      'She was a singer.'
(15) *Pro-drop:*
   a. Byla zpěvačka.
      $was_{F.SG}$ $singer_{NOM}$
   b. Byla zpěvačkou.
      $was_{F.SG}$ $singer_{INSTR}$
      'She was a singer.'

[3] There are two versions of TO in Czech copular clauses, a weak pronoun which linearly appears after the copula, and a strong pronoun which appears at the left periphery (i.e. precedes the verb). In this paper we will only be using the weak version of the pronoun as in most of our contexts it better fits the information structure of the clause.

[4] Note that in copular clauses with TO, the copula agrees with NP_2. Kučerová & Bartošová (2014, 2015) argue that TO is phi-feature deficient and hence cannot trigger agreement.

(16) *Demonstrative pronoun*:[5]

a.	Ta	byla	zpěvačka.
	$\text{that}_{\text{F.SG}}$	$\text{was}_{\text{F.SG}}$	$\text{singer}_{\text{NOM}}$
b.	Ta	byla	zpěvačkou.
	$\text{that}_{\text{F.SG}}$	$\text{was}_{\text{F.SG}}$	$\text{singer}_{\text{INSTR}}$

'She was a singer.'

We argue that the relevant distinction between TO and other pronouns lies in their semantic properties. Pronouns, proper names, and other definite descriptions can either denote individuals of type *e,* or individual concepts, i.e., individuals relativized to a situation (type ⟨*s*,*e*⟩; Elbourne 2005, 2008, Percus & Sharvit 2014).[6] The example in (17) demonstrates the contrast between the individual and the individual concept reading for English. In (17a) *he* refers to an individual about whom it is true that he is currently the Pope, while in (17b) *he* refers to different Popes in different situations, i.e., *he* denotes an individual concept.

(17) a. He [= Francis] is Argentinian.
b. He [= whoever the Pope is] is usually Italian.

English personal pronouns are systematically ambiguous between these two readings. We argue that Czech personal pronouns, demonstrative pronouns and *pro* are not ambiguous: they denote individuals. TO is special in that it denotes an individual concept, i.e., a minimal situation which contains an individual.[7] The example in (18), parallel to what we

[5] The examples with demonstratives are somewhat odd without an appropriate contrastive context. For some speakers, adding a relative clause, as in *Ta, na rozdíl od té jeho současné*... 'That one, in contrast to his current girlfriend…', improves grammaticality.

[6] Two clarifications are in order: in contrast to Elbourne, we side with Percus & Sharvit (2014) in that both individuals and individual concepts are possible denotations of definite descriptions. Second, for ease of exposition we use a version of situational semantics in which every argument does not combine with a situational characteristic function. In the actual analysis, we will clarify that what we really mean by ⟨*s*,*e*⟩ is a DP with a syntactically present situation pronoun, instead of a DP purely having a semantic situational argument.

[7] Since TO is of type ⟨*s*,*e*⟩, one might wonder whether TO is not an NP_2. If that were the case, then TO could alternate between NOM and INSTR. As (i) shows, this is not the case.

saw in (17) for English, demonstrates this distinction. To get the interpretation parallel to (18b), i.e., that it is true that 'Peter's girlfriends' were usually singers, TO must be used. TO denotes an individual concept of 'whoever happened to be Peter's girlfriend in the past', (18a). In contrast, a personal pronoun (18b), *pro* (18c), or a demonstrative pronoun (18d) cannot range over multiple 'Petr's girlfriends'. They must refer to a single individual.

(18) Petr vždycky chodil s krásnou holkou.
Petr always walked with beautiful girl
'Petr always dated beautiful girls.'

a. ✓ *TO:*
   (i) Obvykle to byla zpěvačka.
   usually TO was $\text{singer}_{\text{NOM}}$
   (ii) * Obvykle to byla zpěvačkou.
   usually TO was $\text{singer}_{\text{INSTR}}$
   'She was usually a singer.'

b. # *Personal pronoun:*
   (i) # Ona byla obvykle zpěvačka.
   she was usually $\text{singer}_{\text{NOM}}$
   (ii) # Ona byla obvykle zpěvačkou.
   she was usually $\text{singer}_{\text{INSTR}}$
   Intended: 'She was usually a singer.'

c. # *Pro-drop:*
   (i) # Obvykle byla zpěvačka.
   usually was $\text{singer}_{\text{NOM}}$
   (ii) # Obvykle byla zpěvačkou.
   usually was $\text{singer}_{\text{INSTR}}$
   Intended: 'She was usually a singer.'

d. # *Demonstrative pronoun:*
   (i) # Ta byla obvykle zpěvačka.
   $\text{that}_{\text{F.SG}}$ was usually $\text{singer}_{\text{NOM}}$

(i) * Byla tím zpěvačka.
$\text{was}_{\text{F.SG}}$ TO_{INSTR} $\text{singer}_{\text{NOM}}$

(ii) # Ta byla obvykle zpěvačkou.
that$_{F.SG}$ was usually singer$_{INSTR}$
Intended: 'She was usually a singer.'

Note also that while the INSTR NP is ungrammatical with TO in (18aii), it is grammatical but not felicitous in the other (ii) examples. If the context was set up so that the subject pronouns were interpreted as individuals, both (18bii) and (18cii) would be fully acceptable. The quantificational element 'usually' would then range over different situations with an identical referent. An example of such a context would be: 'Mary used to play in several punk-rock bands with her friend John. While John was a multi-instrumentalist and he played a different instrument in each band, she was usually a singer.' In other words, 'she' refers to Mary in multiple punk-rock bands. We can summarize the data pattern we have seen so far in the empirical generalization in (19).

(19) *Generalization (v.1)*
a. if NP_1 is an individual, NP_2 may be in INSTR
b. if NP_1 is an individual concept, NP_2 must be in NOM

TO may refer not only to individual concepts but to situations or sub-situations as well. Crucially, none of these interpretations allows NP_2 to be in INSTR. We can see this in (20b) where TO refers to the situation of our visit of the castle. Note also that while the individual-concept-denoting TO is best translated to English as a personal pronoun (*she*, *he*), the appropriate translation of the situation-denoting TO is *it*.

(20) S Lucií jsme navštívily hrad v New Jersey.
with Lucie are visited castle in New Jersey
'Lucie and I visited a castle in New Jersey.'
a. Byl to krásný výlet.
was TO beautiful trip$_{NOM}$
b. * Bylo TO krásným výletem.
was TO beautiful trip$_{INSTR}$
'It [= our visit/that we visited the castle] was a beautiful trip.'

The common denominator of the two interpretations of TO, i.e., as individual concept and situation or as sub-situation, is that they are of a

situational type.[8] We argue that it is this semantic property that underpins the case alternation. Our revised empirical generalization that captures the pattern is in (21).

(21) *Generalization (v.2)*
If NP_1 is of a situational type, NP_2 must be in NOM.

3.3 The properties of DPs

How should we explain the pattern described above and the interactions between the two NPs in Czech copular clauses?

Step 1: INSTR versus NOM. We follow the Czech descriptive literature (Kopečný 1958, Uličný 2000) and Slavic formal literature discussed above in that INSTR NP in a copular clause is used when the proposition refers to a spatiotemporally restricted event. Specifically, we follow Geist (2007) in that we treat INSTR as restricting the predication to a specific topic situation. However, we depart from Geist (2007) in that we do not tie the semantic difference between INSTR and NOM to the presence versus absence of a Pred head. Instead, we place the locus of the semantic distinction into the DP itself, analogically to the analysis of Bavarian definite articles.

Concretely, we argue that INSTR in copular clauses is an overt morphological mapping of a DP that contains a situation pronoun (in the sense of Percus 2000, Keshet 2008, 2010, von Fintel & Heim 2007/2011, Schwarz 2012, among others).[9] A situation pronoun is a syntactically merged item whose semantic value is a situation.

We thus follow Schwarz (2012) in stating that situation pronouns are distinct from semantic situation arguments. While all predicates have semantic situation arguments, i.e. they are interpreted with respect to some world or situation and they are bound within some world of evaluation, a situation pronoun can be syntactically merged only in determiners of certain DPs.[10] Finally, we argue that the crucial difference

[8] See Bartošová (to appear) for an analysis of TO as being of a flexible semantic type.

[9] For reasons of space we cannot fully elaborate on the theory of case assignment we assume. In general, we follow the Distributed Morphology framework: for us, INSTR is an overt morphological realization of a feature bundle that contains a situation pronoun, more precisely, its featural representation.

[10] As Schwarz (2012) points out, having every semantic situation argument for each predicate represented as a situation pronoun would lead to overgeneration.

between the binding of semantic arguments and a situation pronoun is that a situation pronoun must be bound by 'a situation under discussion', i.e., a contextually restricted (sub)situation (cf. Roberts 2012, von Fintel 1994, Büring 2003, among others). In other words, while a semantic argument of a predicate can be enclosed under an existential closure, a situation pronoun requires an anaphoric antecedent, i.e., a contextually restricted (sub)situation.[11]

This still does not explain why TO cannot co-occur with INSTR NP_2 and thus we need to say something more about TO. The same objection applies to Geist's (2007) original analysis. However, as we will discuss in Step 3, the distribution of situation pronouns can be further restricted.

Step 2: TO. While other pronouns and *pro* refer strictly to individuals and not individual concepts, as we have seen in (18), TO is always of a situational type. We argue that the reason for this is that TO is an overt morphological realization of a structure containing a situation pronoun (or might even be an overt situation pronoun itself):

(22) TO = SP

Step 3: Situation Economy. So far we have established two important points: (i) in copular clauses, NOM NPs do not contain situation pronouns unless they are realized as TO; (ii) if an NP is realized as TO or if an NP is in INSTR, it always contains a situation pronoun. We need to take one step further in order to explain why NP_2 must be in NOM if NP_1 is realized as TO.

Here we depart from Schwarz (2012) in that we assume that the distribution of situation pronouns is regulated by the Situation Economy of Keshet (2010)[12]:

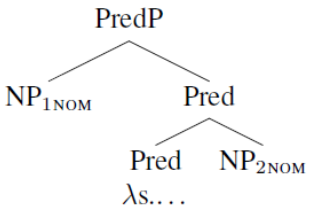
[11] We are not sure what the exact denotation of a situation pronoun is. Note that in a system such as that of Elbourne (2005, 2008, 2013) or Percus and Sharvit (2014), the work is being done by a (presupposed) referential index either in the denotation of the pronoun, or the denotation of the copula. This implementation works well for individual concepts but does not straightforwardly extend to the other configurations discussed here.

[12] Situation Economy belongs to a larger family of semantic economy principles which operate at the syntax-semantics interface (Heim 1991, Fox 1995, Reinhart 2006, Kučerová 2007, among others).

(20) *Situation Economy*
Rule out a structure α if there is a grammatical alternative to α that has fewer situation pronouns. (Keshet 2010)

Step 4: How it works.[13]

(21) NOM-NOM

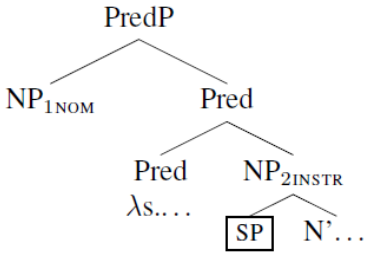


✓ Situation Economy

Let us first look at the basic NOM-NOM pattern. There is no situation pronoun in the structure because there is no contextually restricted situation that would require being bound by a situation pronoun. As all predicates bear a semantic situation argument and there is no contextually salient situation that would need to be bound by a situation pronoun, no situation pronoun is necessary. Only the predicate bears a semantic situation argument which is bound by the λ on the Pred head. A situation pronoun is not needed and consequently is excluded by Situation Economy. In turn, the NP_2 is realized as NOM (21). The NOM-NOM pattern is a grammatical alternative to the NOM-INSTR pattern which contains fewer situation pronouns. More precisely, the NPs in the NOM-NOM pattern do not contain any situation pronoun. As no situation pronoun is required on the NPs, the copular clause surfaces as NOM-NOM.

[13] The following trees are for clarity of presentation only; that is, their structure is rather crudely simplified.

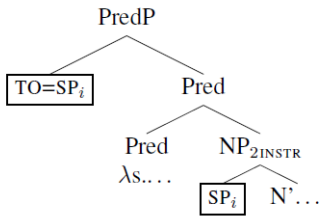
(22) NOM-INSTR



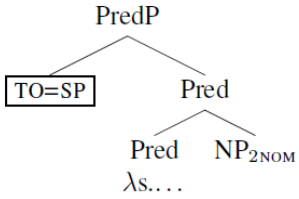
✓ Situation Economy

In the NOM-INSTR pattern, the matrix predication is restricted to a contextually restricted situation and a situation pronoun is needed in this type of copular clauses. Since a situation pronoun may only be merged within certain DPs (Schwarz 2012), a situation pronoun is merged in the noun phrase within the predicative part of the structure. On the surface, this DP is morphologically realized as INSTR (see the tree in (22)), as INSTR DPs contain situation pronouns while NOM DPs do not. In other words, the context requires the copular clause to be bound within a contextually salient situation. Thus the copular clause surfaces as NOM-INSTR and not as NOM-NOM, because the NPs in the NOM-NOM pattern lack a situation pronoun.

(23) TO-NOM



* Situation Economy



✓ Situation Economy

In the case of the TO-NOM pattern, the matrix predication is restricted to a contextually salient situation and a syntactically represented situation pronoun is necessary. However, since there is already a situation pronoun in the structure within TO, the Situation Economy prevents the merge of another situation pronoun which would be anaphoric to the same contextually restricted situation. Consequently, the TO-INSTR pattern is ruled out because there is a more economical structure, namely, TO-NOM (23).[14]

4 Predictions

4.1 More than one proposition → more than one situation pronoun

Our analysis predicts that if there is more than one contextually salient situation, there could be more than one situation pronoun within a single copular clause. In other words, if the distribution of INSTR is restricted by Situation Economy, we expect TO to co-occur with an INSTR NP but only if the situation pronoun within INSTR NP refers to a situation distinct from the contextually salient situation of the matrix predication.

This prediction is borne out with NPs denoting a concealed proposition (Heim 1979, Nathan 2006, Percus 2014). If NP_2 corresponds to a complex nominal structure containing a proposition, this inner proposition can in principle be bound by a contextually restricted situation distinct from the contextual restriction on the matrix predicate (TO). As the following examples with *příčina* 'cause' demonstrate, this prediction is borne out. If NP_1 is TO and NP_2 is a concealed proposition, NP_2 may appear in INSTR (24).[15]

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[14] An anonymous reviewer correctly pointed out that our analysis involves an inherent asymmetry between NP_1 and NP_2 in that NP_1 can be a situation pronoun but cannot contain it. In contrast, NP_2 may contain a situation pronoun but cannot be a situation pronoun itself. We do not have a principled explanation for the difference, mostly because we lack an understanding of the interaction between situation pronouns associated with a TP and its counterparts associated with nominal structures.

[15] An anonymous reviewer correctly pointed out that the existence of TO-INSTR constructions when an additional contextually salient situation is available not only confirms the predictions of the analysis, it is able to disprove a possible alternative case-based analysis, according to which the obligatory nominative case on NP_2 in the presence of TO is just a reflex of the obligatory agree relationship between the copula and NP_2.

(24) Petr potkal nádhernou dívku.
Petr met beautiful girl
'Petr met a beautiful girl.'
a. Byla to příčina jeho rozvodu.
was TO $cause_{NOM}$ of-his divorce
b. Bylo TO příčinou jeho rozvodu.
was TO $cause_{INSTR}$ of-his divorce
'It [= that Petr met the girl] was the reason of his divorce.'

4.2 Concealed propositions → INSTR without TO

Since concealed propositions contain a proposition that needs to be situationally bound, if a concealed proposition cannot be parasitic on another situation pronoun in the structure, we expect the concealed proposition to combine with a situation pronoun more often than other types of NPs. Recall the example in (3) in which INSTR was preferred over NOM in a copular clause containing the concealed proposition *příčina*. This prediction is further confirmed by the distribution of INSTR in the Czech National Corpus. There are only a few dozen of instances of *příčina* in NOM in the relevant syntactic contexts, that is, those in which the NP could have appeared in INSTR. In contrast, there are 2,518 instances of *příčina* in INSTR. This distribution sharply contrasts with concealed propositions in TO-copular clauses where only about a half of NP_2s denoting concealed propositions are in INSTR.

5 Conclusions

We have argued that the case variation in Czech NP-NP copular clauses needs to be accounted for in terms of the distribution of situation pronouns within a syntactic structure. Specifically, we have argued that while the anaphoric pronoun TO and INSTR NPs contain a syntactically merged situation pronoun, NOM NPs do not. Furthermore, we have argued that the distribution of situation pronouns is regulated by the Situation Economy of Keshet (2010). This economy condition on representations rules out structures that contain more situation pronouns than necessary in the given context. Even though we restricted our analysis to Czech copular clauses, the analysis lends itself to an extension to Polish and Russian pronominal copulas as well. Since in Polish and Russian the nominal copula (TO) is incompatible with the

NOM-INSTR pattern, it is plausible that the pronominal copula is a situation pronoun (or might contain one). Consequently, the NOM-pronominal copula-INSTR structure might be ruled out by the Situation Economy analogically to the TO-INSTR pattern in Czech. The details of the extended analysis, however, have to await another occasion.

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Surface Phonotactics in Morphology: Ongoing Change in the Belarusian Noun Declension*

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There is ongoing language change in the Genitive plural of Belarusian nouns where the Declension Ia masculine suffix /-ow/ is being extended to other declension classes. The focus here is on the neuter and feminine noun classes where the original Gen pl suffix /-Ø/ is now being replaced by /-ow/. The progress of this change appears to be guided primarily by phonotactics. First, I show that the /-ow/ is favored in nouns with stem-final consonant clusters in both the Ib neuter and the II feminine declensions. Second, I demonstrate that these phontactic conditions also hold in the a-stem masculine and common gender nouns. This conditioning environment appears to be a new development in Belarusian. I then look at a subgroup of neuter and feminine nouns where both allomorphs continue to be acceptable. Finally, I provide some explanations for why it is the /ow/ and not the other available suffix /-ej/ which is being extended and for why it is the unstressed variant with vowel neutralization [-aw] that is generalized and not the stressed version [-ow]. This preliminary study compares the Gen pl forms for a representative set of nouns from Biryla and Shuba (1985), the 1987

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Academy dictionary and the 2008 grammatical dictionary of nouns; a complete statistical analysis remains for future work.

1 Introduction

Standard Belarusian is currently experiencing language change in the Genitive plural case of nouns. The primary suffix in Declension Ia masculine nouns after any type of stem-final consonant is /-ow/, pronounced [-ów] under stress and [-aw] when not stressed, and it is now being actively extended to all other declension classes, as shown in (1).

(1) Belarusian Gen pl allomorphy (Biryla and Shuba 1985:86-97)

Declension Ia masculine nouns
All stem types: **/-ow/** (brat-ów 'brother', matór-aw 'motor', naʒ-ów 'knife', vútʃnʲ-aw 'pupil')
Declension Ib neuter nouns
All stem types: /-Ø/ (balót-Ø 'swamp', vójsk-Ø 'army')
All stem types: **/-ow/** (palʲ-ów 'field', ɣórl-aw 'throat')

Declension II a-stem feminine nouns
All stem types: /-Ø/ (nóɣ-Ø 'leg', lʲínʲij-Ø 'line')
All stem types: **/-ow/** (dólʲ-aw 'lot', malʲítv-aw 'prayer')

Declension III i-stem feminines (palatalized Cʲ and shibilant stems)
All stem types: /-ej/ (ɣusʲ-éj 'goose', natʃ-éj 'night')
Some stems: **/-ow/** (rétʃ-aw 'thing')

Given that the plural subparadigm in Belarusian has one suffix exponent per case except in the Genitive, it is not surprising that change is taking place in the Genitive plural. But the nature of this change is unusual in that in Declension II feminine nouns, the /-ow/ is being extended under phonotactic conditions that are not active elsewhere in the nominal paradigm and that do not appear to be a generalization over the lexicon of masculine Ia nouns where the suffix originates. And in a subset of Ib neuter and II feminine nouns with a vowel-zero alternation in the stem, allomorphy in the Genitive plural appears to be stable and accepted as the norm.

2 Declension Ib Neuter Nouns

The spread of the overt /-ow/ allomorph is particularly common in neuter and feminine nouns which historically had no overt inflectional exponent in the Genitive plural. Its spread within Declension I itself from Ia masculines to Ib neuters is almost complete with only a few nouns retaining their original /-Ø/ allomorph, but even these often have variants with /-ow/ [-aw], e.g., [bulʲbasxóvʲiʃʧa] 'potato cellar', with Gen pl [bulʲbasxóvʲiʃʧ ~ bulʲbasxóvʲiʃʧaw], and many others (2). (Citations throughout are from Biryla and Shuba 1985, *Sloŭnik belaruskai movy: Arfahrafija, arfaepija, aktsentuatsyja, slovazmjanenne* 1987, and the *Hramatychny sloŭnik nazoŭnika* 2008. No date is given when all three sources agree.) The focus here is on the progress of the change over a relatively short period of time by comparing the Gen pl forms in the three sources. The clear general trend is for an increase in the acceptability of /-ow/ over time.

Because the spread of /-ow/ is almost always realized in its unstressed variant [-aw], the suffix is given as [-aw] below. Compare the occurrence of [-aw] with different types of noun stems, those with final consonant clusters in (2a), geminates in (2b), and those with only one stem-final consonant in (2c). What we see is that the [-aw] is now the preferred Gen pl allomorph for stems with final consonant clusters of any type while stems that end in a single consonant show the change in progress with both /-Ø/ and [-aw].

(2) Spread of [-aw] within Declension I to Ib neuter nouns

a. CC-stems

Nom sg	*Gen pl*	
vójsk-a	vójsk (1985), vójsk~vójsk-aw (2008)	army
ɣnʲazd-ó	ɣnʲóst~ɣnʲózd-aw (1985, 1987) ɣnʲózd-aw (2008)	nest
mʲésts-a	mʲésts ~ mʲésts-aw (1985), mʲésts-aw (2008)	place
sérts-a	sérts-aw	heart
sónts-a	sónts-aw	sun
lʲakárstv-a	lʲakárstv-aw	drug
lʲústr-a	lʲústr-aw	mirror
rabr-ó	rébr-aw	rib
fútr-a	fútr-aw	fur

stsʲabl-ó	stsʲóbl-aw	stem
zʲarn-ó	zʲórn-aw	grain
jarm-ó	járm-aw	yoke

b. Geminate stems

vʲasʲélʲlʲ-e	vʲasʲélʲlʲ-aw	wedding
sʲnʲadánʲnʲ-e	sʲnʲadánʲnʲ-aw	breakfast
ablʲíʧʧ-a	ablʲíʧʧ-aw	face
baɣátsʲtsʲ-e	baɣátsʲtsʲ-aw	wealth
plátsʲtsʲ-e	plátsʲtsʲ-aw	dress
ruʒʒ-ó	rúʒʒ-aw	rifle
pɨtánʲnʲ-e	pɨtánʲnʲ-aw	question
uzvíʃʃ-a	uzvíʃʃ-aw	elevation
valʲlʲ-ó	vólʲlʲ-aw	craw
sʲvʲitánʲnʲ-e	sʲvʲitánʲnʲ-aw	dawn
staɣódzʲdzʲ-e	staɣódzʲdzʲ-aw	century

c. C-stems

Nom sg	*Gen pl*	
réʃat-a	raʃót (1985), raʃót ~ raʃót-aw (2008)	sieve
vʲeratsʲan-ó	vʲeratsʲón (1985), vʲeratsʲón ~vʲeratsʲón-aw (2008)	spindle
karít-a	karít (1985), karít ~ karít-aw (2008)	trough
zabrál-a	zabrál (1985), zabrál ~ zabrál-aw (2008)	visor
kalʲén-a	kalʲénʲ ~ kalʲénʲ-aw (2008)	knee
pavʲék-a	pavʲék (1985), pavʲék-aw (2008)	eyelid
blʲúd-a	blʲút (1985), blʲút ~ blʲúd-aw (2008)	dish
vʲék-a	vʲék (1985), vʲék-aw (2008)	lid
dzʲív-a	dzʲíw (1985, 1987), dzʲív-aw (2008)	miracle
vʲin-ó	vʲín (1985), vʲín ~ vʲín-aw (2008)	wine
sʲít-a	sʲít (1985), sʲít-aw (2008)	sieve
vózʲer-a	azʲór (1985), azʲór ~ azʲór-aw (2008)	lake
zubʲíl-a	zubʲíl (1985), zubʲíl ~ zubʲíl-aw (2008)	chisel
kadzʲíl-a	kadzʲíl (1985), kadzʲíl ~ kadzʲíl-aw (2008)	censer
pamʲal-ó	pamʲól (1985), pamʲól-aw (2008)	mop
dzʲív-a	dzʲíw ~ dzʲív-aw (1985), dzʲív-aw (2008)	marvel
bʲervʲan-ó	bʲarvʲón-aw	log

As we see in (2), there is sensitivity to phonotactics in that the [aw] allomorph is the only acceptable one in stems with final clusters or geminates, though it is also spreading to nouns with a single stem-final consonant where there is a clear preference for [-aw] in the later source.[1] Given that neuter nouns belong to the same declension class as masculine nouns and thus share oblique case suffixes in the singular as well as the plural, it is not unexpected that the shift to [-aw] be fairly rapid in Declension Ib neuters because it would be strongly supported by uniform exponence within Declension I itself.

3 Declension II Feminine Nouns

The process is fairly advanced in Declension Ib neuters where nouns, including those ending in a single consonant, show an increased use of the [-aw] over the /-Ø/ allomorph. But in Declension II feminine nouns, the spread of [-aw] seems to be slower and we get more insight into the actual mechanism of this morphological change. Belarusian grammars (e.g., Kryvitski et al. 1973: 84-85; Burlyka 1979:75; Lukashanets 2007:151; Bazylenka et al. 1957:46; Biryla & Shuba 1985: 90-92) observe that the spread of [-aw] in feminine nouns is particularly favored when stems end in a consonant cluster. But I would argue that it is more than just the presence of a cluster. What we see is that the progress of this change has to a large extent been guided by the specific nature of the stem-final cluster. Nouns with stem-final consonant clusters of equal or rising sonority sequences (obstruent - obstruent, geminates, or obstruent followed by a sonorant) overwhelmingly favor the [-aw] allomorph, as shown in (3). In general, [-aw] appears to be the only option for most of these nouns, and by 2008 even those that had earlier permitted the /-Ø/ allomorph, such as *spazma* 'spasm' or *kljaksa* 'blot', now do not.

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[1] The process has not reached all nouns, e.g., [jájka] 'egg', [jájek]; [slóva] 'word', [slów]; [balóta] 'swamp, mud', [balót], [sʲaló] 'village', [sʲól], and identical stem-final conditions show different suffixes in the Genitive plural: [vúʃka] 'ear, dim.', [vúʃak]; [brúʃka] 'belly', [brúʃkaw]. It is likely that frequently used forms may be lexicalized. The Gen pl suffix appears as [-ow] in the few neuter nouns where stress falls on the suffix in the plural, e.g., *pólja* 'field' [palʲów], *ačkó* 'point in game', [aʧków], *právo* 'law' [práw~pravów], and in two nonsyllabic stems, *dno* 'bottom' [dnów] and *švo* 'seam' [ʃvów], but there may be a stress shift and a variant with [-aw], as in [brivów ~ brówaw] 'eyebrows', [azʲartsów ~ azʲértsaw] 'lakes, dim'.

(3) Spread of [-aw] to Declension II feminine nouns: CC-stems

a. CC-stems

Nom sg	*Gen pl*	
prízb-a	prízb-aw	mound of earth
próz^{j}b-a	próz^{j}b-aw	request
mɨʃʦ-a	mɨʃʦ-aw	muscle
kl^{j}átv-a	kl^{j}átv-aw	oath
l^{j}íʃtv-a	l^{j}íʃtv-aw	plank
mal^{j}ítv-a	mal^{j}ítv-aw	prayer
jázv-a	jázv-aw	ulcer
krókv-a	krókv-aw	rafter
bítv-a	bítv-aw	battle
padéʃv-a	padéʃv-aw	shoe sole
l^{j}íʤb-a	l^{j}íʤb-aw	number
xarúɣv-a	xarúɣv-aw	church banner
búks-a	búks ~ búks-aw	axle box
kúks-a	kúks ~ kúks-aw (1985,1987), kúks-aw (2008)	stump
kl^{j}áks-a	kl^{j}áks ~ kl^{j}áks-aw (1985,1987), kl^{j}áks-aw (2008)	blot

b. Geminate stems (CC and RR)

Nom sg	*Gen pl*	
vánn-a	vánn-aw	bathtub
k^{j}él^{j}l^{j}-a	k^{j}él^{j}l^{j}-aw	cell
ilɣún^{j}n^{j}-a	ilɣún^{j}n^{j}-aw	liar
prál^{j}l^{j}-a	prál^{j}l^{j}-aw	washwoman
b^{j}aɣún^{j}n^{j}-a	b^{j}aɣún^{j}n^{j}-aw	runner
tkál^{j}l^{j}-a	tkál^{j}l^{j}-aw	weaver
sváʦ^{j}ʦ^{j}-a	sváʦ^{j}ʦ^{j}-aw	mother of son/daughter -in-law

c. CR-stems

Nom sg	*Gen pl*	
skóbl^{j}-a	skóbl^{j}-aw	shaving knife
vɨ́dm-a	vɨ́dm-aw	dune
pav^{j}érxn^{j}-a	pav^{j}érxn^{j}-aw	surface

vʲédzʲm-a	vʲédzʲm-aw	witch
pásm-a	pásm-aw	lock (hair)
kówdr-a	kówdr-aw	blanket
báɣn-a	báɣn-aw	marsh
lʲústr-a	lʲústr-aw	chandelier
bútlʲ-a	bútlʲ-aw	big bottle, drum
ʃáblʲ-a	ʃáblʲ-aw	sword
vɨ́dr-a	vɨ́dr-aw	otter
spázm-a	spázm~spázm-aw (1987), spázm-aw (2008)	spasm

In feminine nouns with stem-final clusters of falling sonority, either sonorant (R) plus obstruent (C), fricative (S) plus /t/, or a sequence of liquid/glide (R) followed by a nasal, it looks like the change is still in progress and both allomorphs, [-aw] and /-Ø/ are used, though some have now advanced to only [-aw] (4).

(4) Variation between /-Ø/ and [-aw]: -RC, -ST, -RN stems:

Nom sg	*Gen pl*	
vʲeránd-a	vʲeránt ~ vʲeránd-aw	veranda
kamánd-a	kamánt ~ kamánd-aw	command
lʲeɣʲénd-a	lʲeɣʲént ~ lʲeɣʲénd-aw	legend
ard-á	órt ~ órd-aw	horde
délʲt-a	délʲt ~ délʲt-aw	delta
strélʲb-a	strélʲp ~ strélʲb-aw	rifle
plómb-a	plómp ~ plómb-aw	filling
vʲarb-á	vʲérp ~ vʲérb-aw	willow
tórb-a	tórp ~ tórb-aw	bag
lʲámp-a	lʲámp ~ lʲámp-aw	lamp
katʃaryɣ-á	katʃérx ~ katʃéryɣ-aw	poker
skáryɣ-a	skárx~ skáryɣ-aw	complaint
árf-a	árf ~ árf-aw (1985), árf-aw(1987)	harp
nʲímf-a	nʲímf ~ nʲímf-aw	nymph
flʲéjt-a	flʲéjt ~ flʲéjt-aw	flute
málp-a	málp (1985), málp ~ málp-aw(2008)	monkey
fáld-a	fált (1985), fált ~ fáld-aw (2008)	pleat
vʲarst-á	vʲórst ~ vʲórst-aw	verst

xúst-a	xúst ~ xúst-aw	large scarf
nʲavʲést-a	nʲavʲést ~ nʲavʲést-aw	bride, fiancee
múft-a	múft ~ múft-aw	fur muff
kóft-a	kóft ~ kóft-aw	woman's jacket
búxt-a	búxt ~ búxt-aw	bay (in coast)
ʃáxt-a	ʃáxt ~ ʃáxt-aw	mine shaft
pláxt-a	pláxt ~ pláxt-aw	type of skirt
nórm-a	nórm ~ nórm-aw	norm
fórm-a	fórm ~ fórm-aw	form
pálʲm-a	pálʲm ~ pálʲm-aw (1985), pálʲm-aw (2008)	palm
sʲérn-a	sʲérn ~ sʲérn-aw	chamois
vajn-á	vójn ~ vójn-aw (1985), vójn-aw (2008)	war
tájn-a	tájn ~ tájn-aw	secret
platfórm-a	platfórm ~ platfórm-aw	platform
fʲérm-a	fʲérm ~ fʲérm-aw	farm
kavʲérn-a	kavʲérn ~ kavʲérn-aw	cavity
katakómb-a	katakómb-aw	catacomb
turm-á	túrm-aw	prison
ájv-a	ájv-aw	quince
spálʲnʲ-a	spálʲnʲ-aw	bedroom
ɣulʲnʲ-á	ɣúlʲnʲ-aw	game

The nouns in (3) and (4) contrast with those in (5) below whose stems end in a single consonant. The latter generally do not have accepted Gen plurals with [-aw], though this allomorph is beginning to make inroads here as well.[2]

(5) Resistance to the spread of [-aw]: C-stems

Nom sg	*Gen pl*	
ʃkól-a	ʃkól	school

[2] A few other stems with palatalized or palatal single consonants take [-aw]: [réja] 'marine yard', [réj~réjaw]; [rólʲa] 'role', [rólʲaw]; [pálʲa] 'pile', [pálʲaw]; [lʲéja] 'lei', [lʲéjaw]; [tsalʲa] 'inch', [tsalʲaw]; [pʲádzʲa] 'span', [pʲádzʲaw], [ʃálʲa] 'scale pan', [ʃálʲaw] (Biryla and Shuba 1985:91), and these sometimes have variants with /-ej/. A few with /j/ admit variants: [kalʲajá] 'rut, track', [kalʲéj ~ kalʲéjaw]; [ʃĭja] 'neck', [ʃĭj ~ ʃĭjaw]; also [vadá] 'water', [vót~vódaw]. Kryvitski et al. (1973:85) tolerate more variation and also list variants for 'school' [ʃkól] ~ [ʃkólaw], 'peasant house' [xát] ~ [xátaw], 'wave' [xválʲ] ~ [xválʲaw].

bʲaróz-a	bʲarós	birch
palíʦ-a	palíʦ	shelf
rak-á	rék	river
bliɨx-á	blóx	flea
straf-á	stróf	verse
as-á	vós	wasp
lʲítar-a	lʲítar	letter (alphabet)
zón-a	zón	zone
paʤʲéj-a	paʤʲéj	event
idéj-a	idéj	idea
mʲinút-a	mʲinút	minute
láp-a	láp	paw
prémʲij-a	prémʲij	premium, bonus
kópʲij-a	kópʲij	copy
pártɨj-a	pártɨj	party
ɣalav-á	ɣalów	head
xát-a	xát	cottage
prafʲésʲij-a	prafʲésʲij	profession
kúlʲ-a	kúlʲ	bullet
dát-a	dát	date
daróɣ-a	daróx	road
nʲív-a	nʲíw	cornfield
dalʲín-a	dalʲín	valley
ɣrúʃ-a	ɣrúʃ	pear
pʧal-á	pʧól	bee
vúlʲiʦ-a	vúlʲiʦ	street
sʲistém-a	sʲistém	system
ɣazʲét-a	ɣazʲét	newspaper
katastróf-a	katastróf	catastrophe

The progress of the [-aw] spread is not as complete in Declension II as it appears to be in the neuters of Declension Ib for there is not the same morphological pressure of uniform exponence within the paradigm. Although there is some individual variation and lexical differences within Declension II feminine nouns, we can see that overall the progress of this change in Declension II appears to be guided by surface phonotactics, and specifically, by the nature of sonority sequencing in the stem-final consonant cluster. The phonotactic conditions favoring an

overt suffix in Declension II feminine nouns may be represented in terms of a cluster preference hierarchy: CC, CR > RC, ST, RN > C stems.

4 Mixed Declension a-Type Masculine and Common Gender Nouns

Whether this sonority sequencing condition eventually comes to be reinterpreted as a simpler "stem-final consonant cluster vs. no stem-final cluster" condition remains to be seen. There has been some move in this direction in the minor class of masculine and common gender a-stem nouns: the distribution of [-aw] and /-Ø/ is now generally determined on the basis of a "consonant cluster vs. no cluster" environment and nouns with stem-final clusters prefer [-aw] (6a), those with single consonants take the /-Ø/ (6b), and some nouns have variants (6c) (Lukashanets 2007:155, 158).

(6) Allomorphy in masculine and common gender a-type nouns

a. CC-Stems: Gen pl with [-aw]

Nom sg	*Gen pl*	
bátsʲk-a	bátsʲk-aw	father
dzʲátsʲk-a	dzʲátsʲk-aw	uncle
júnɣ-a	júnɣ-aw	ship's boy
stárast-a	stárast-aw	village elder
májstr-a	májstr-aw	master
vɨnaxóttsʲ-a	vɨnaxóttsʲ-aw	discoverer
tsʲútsʲk-a	tsʲútsʲk-aw	dog, coll.
tsʲésʲlʲ-a	tsʲésʲlʲ-aw	carpenter
pramówtsʲ-a	pramówtsʲ-aw	orator
rɨkʃ-a	rɨkʃ ~ rɨkʃ-aw	rickshaw
sudzʲdzʲ-á	súdzʲdzʲ-aw	judge
pláks-a	pláks-aw	crybaby
múrz-a	múrz-aw	slovenly person
znáwtsʲ-a	znáwtsʲ-aw	expert
skupʲand-á	skupʲénd-aw	cheapskate

b. C-Stems: Gen pl with /-Ø/

Nom sg	*Gen pl*	
muʃʧĭn-a	muʃʧĭn -Ø	man
starʃɨn-á	starʃɨn-Ø	sergeant
starʃɨnʲ-á	starʃɨnʲ-Ø	chairman
sabák-a	sabák-Ø	dog
sʲirat-á	sʲirót-Ø	orphan
vʲatrúɣ-a	vʲatrúx-Ø	strong wind
vajavód-a	vajavót-Ø	voivode
vaják-a	vaják-Ø	warrior
tupʲítʂ-a	tupʲítʂ-Ø	dolt, blockhead
tʂʲixónʲ-a	tʂʲixónʲ-Ø	meek person
kapɾizúlʲ-a	kapɾizúlʲ-Ø	capricious person
tulʲáɣ-a	tulʲáx-Ø	wanderer
zadavák-a	zadavák-Ø	arrogant person
pustamʲélʲ-a	pustamʲélʲ-Ø	windbag
sarvʲiɣalav-á	sarvʲiɣalów-Ø	daredevil
sknár-a	sknár-Ø	miser, skinflint

c. Variation between /-Ø/ and [-aw]

Nom sg	*Gen pl*	
xlapʧĭn-a	xlapʧĭn-Ø ~ xlapʧĭn-aw	boy
sluɣ-á	slúx-Ø (1985, 1987), slúɣ-aw (L. 2007)	servant
kalʲéɣ-a	kalʲéx-Ø ~ kalʲéɣ-aw (1987), kalʲéx-Ø (2008)	colleague
lʲistanóʃ-a	lʲistanóʃ-aw (1987), lʲistanóʃ-Ø (1985, 2008)	mail man
prajdóx-a	prajdóx-Ø ~ prajdóx-aw (1987), prajdóx-Ø (2008)	old fox (person)

What is unusual about this morphological change in Belarusian is that it is sensitive to surface phonotactics rather than to the morphosyntactic features of gender or declension class, or some other morpho-phonological property. This point is even better made by those common gender nouns above that have different syntactic and semantic gender. For example, the word *pláksa* 'crybaby' may refer to a male crybaby or a

female crybaby. When it refers to a male crybaby, it takes Declension Ia suffixes in the Dat sg, Prep sg, Instr sg and when it refers to a female crybaby, the word takes Declension II suffixes in the singular. Because the two referents actually have different inflectional paradigms in the singular, gender as a cue to declension class is obviously relevant. Yet this class of nouns tends to follow phonotactics rather than gender or class in the choice of the Gen pl suffix. They do not have the expected corresponding Gen pl suffix of Declension Ia [-aw] when referring to males and that of Declension II /-Ø/ when referring to females. Instead, the choice of [-aw] vs. /-Ø/ appears to be determined primarily by phonotactics (Lukashanets 2007:155-157).

5 Phonotactic Conditioning Is a New Development

The striking thing about the generalization of the [-aw] suffix in Standard Belarusian today is that its phonotactic conditioning environment appears to be a new development. Originally the spread of the /-ow/ suffix was based on gender: it spread from the masculine short ŭ-declension first to masculine nouns of Declension Ia, then to masculine a-stem nouns, and finally to Declension II a-stem feminines. Belarusian documents of the 15th -17th century show instances of morphological /-ow/ extension to stems of all types in Declension II. When the suffix was stressed, it was pronounced [-ów], even in feminine nouns such as *baba* 'old woman' with the Gen pl form [bab-ów] (Karskii 1911/1957:168-169). Compare the Old Belarusian citations from the 15th to the 17th centuries to Standard Belarusian forms today in (7).

(7) Old Belarusian compared to Standard Belarusian today

Old Belarusian	Standard Belarusian	
a-stem masculine nouns		
muzík-aw	muzík-aw	musician
starast-ów	stárast-aw	elder
sudzʲdzʲ-ów ~ súdzʲdzʲ-aw	súdzʲdzʲ-aw	judge
starʃĭn-aw	starʃĭn	sargeant
sluɣ-ów	slúx ~ slúɣ-aw	servant

a-stem feminine nouns		
sʲóstr-aw	sʲasʲtsʲór ~ sʲóstr-aw	sister
lisíʦ-aw	lisíʦ	vixen
kós-aw	kós	plait
líp-aw	líp	linden tree
sʲlʲóz-aw	sʲlʲós	tear
sarók-aw	sarók	magpie
varón-aw	varón	crow
maladzʲíʦ-aw	maladzʲíʦ	young woman
mátuʃk-aw	mátuʃak	priest's wife
karówk-aw	karóvak	cow, dim.
múx-aw	múx	fly
bab-ów	báp	old woman
knʲíɣ-aw	knʲíx	book, tome

Note that some of these nouns have lost the overt /-ow/ suffix and have reverted back to the /-Ø/ allomorph. Although it is difficult to generalize on the basis of the attested forms cited in Karskij (1911/1957), it is clear that syllable phonotactics are more central to the progress of the change today, in spite of the fact that syllable structure phonotactics do not play a role in Belarusian declensional allomorphy elsewhere. The phonotactic environment seems to be a question of well-formedness of the output form in terms of syllable structure. There does not appear to be an obvious pattern in the original distribution of /-ow/ ([-ow], [-aw]) within Declension Ia nouns themselves—all of which take /-ow/ regardless of their stem structure—from which the cluster sonority pattern could have been generalized, but this remains to be confirmed by lexical statistics.

6 Nouns with a Vowel-Zero Alternation (yer) in the Stem

We have seen that in some neuter (2c) and feminine (4) nouns both Gen pl allomorphs are in use. This was taken to represent a transitional stage in the change from /-Ø/ to [-aw] allomorphy either because the 1985 source listed only the /-Ø/ allomorph while the later source gave both options, as in (2c), or because variation was being suplanted by a preference for [-aw] in some nouns within the group, as in (4). Yet it is interesting that there is a subset of Ib neuter and II feminine nouns whose

stems end in a consonant cluster of rising sonority and which, by virtue of this phonotactic condition, could be expected to have now become fully [-aw] preferring types, but they are not. Nouns in this subset are distinguished by their consistent preference for having both Gen pl allomorphs available.

What distinguishes this group from the other neuter and feminine nouns is that they all permit a vowel-zero alternation in the stem. These are often referred to as yer stems and they are given in (8). The vowel in parentheses within the stem is the inserted vowel (yer) which appears only before the Gen pl /-Ø/ and in no other case form.

(8) Yer-stems: Gen pl forms with /-Ø/ and [-aw]

a. Declension Ia neuter nouns

Nom sg	*Gen pl*	
krésl-a	krés^{j}(e)l-Ø ~ krésl-aw	armchair
valakn-ó	valók(a)n-Ø ~ valókn-aw (1985), valókn-aw (2008)	fiber
p^{j}is^{j}m-ó	p^{j}ís^{j}(e)m-Ø ~ p^{j}ís^{j}m-aw	letter
v^{j}asl-ó	v^{j}ós^{j}(e)l-Ø ~ v^{j}ósl-aw	oar
palatn-ó	palóts^{j}(e)n-Ø ~ palótn-aw ~ palats^{j}(ó)n-Ø (2008)	cloth
másl-a	más^{j}(e)l-Ø ~ másl-aw	butter
b^{j}adr-ó	b^{j}ódz^{j}(e)r-Ø ~ b^{j}ódr-aw	hip
akn-ó	vók(a)n-Ø ~ vókn-aw	window
v^{j}adr-ó	v^{j}ódz^{j}(e)r-Ø ~ v^{j}ódr-aw	bucket
rúsl-a	rús^{j}(e)l-Ø ~ rúsl-aw	channel

b. Declension II feminine nouns

Nom sg	*Gen pl*	
kúxn^{j}-a	kúx(a)n^{j}-Ø ~ kúxn^{j}-aw	kitchen
ʧaréʃn^{j}-a	ʧaréʃ(a)n^{j}-Ø ~ ʧaréʃn^{j}-aw	cherry
p^{j}és^{j}n^{j}-a	p^{j}és^{j}(e)n^{j}-Ø ~ p^{j}és^{j}n^{j}-aw	song
sasn-á	sós^{j}(e)n-Ø ~ sósn-aw	pine
ʃábl^{j}-a	ʃáb^{j}(e)l^{j}-Ø ~ ʃábl^{j}-aw	sword
krópl^{j}-a	króp^{j}(e)l^{j}-Ø ~ krópl^{j}-aw	drop
barazn-á	baraz^{j}(ó)n-Ø ~ barózn-aw	furrow
z^{j}aml^{j}-á	z^{j}am^{j}(é)l^{j}-Ø ~ z^{j}éml^{j}-aw	earth, soil
váfl^{j}-a	váf^{j}(e)l^{j}-Ø ~ váfl^{j}-aw	wafer, waffle

sʲastr-á	sʲastsʲ(ó)r-Ø ~ sʲóstr-aw	sister
vʲasn-á	vʲósʲ(e)n-Ø ~ vʲósn-aw	spring
sʲamj-á	sʲamʲ(é)j-Ø ~ sʲémʲ-aw	family
aɣlóblʲ-a	aɣlabʲ(é)lʲ-Ø ~ aɣlóblʲ-aw	shaft
ɣréblʲ-a	ɣrébʲ(e)lʲ-Ø ~ ɣréblʲ-aw	dam, dike
ɣrɨ́wnʲ-a	ɣrívʲ(e)nʲ-Ø ~ ɣrɨ́wnʲ-aw	old monetary unit
vazównʲ-a	vazóvʲ(e)nʲ-Ø ~ vazównʲ-aw	cart shed
vʲíʃnʲ-a	vʲíʃ(a)nʲ-Ø ~ vʲíʃnʲ-aw	sour cherry
tamóʒnʲ-a	tamóʒ(a)nʲ-Ø ~ tamóʒnʲ-aw	customs house
ɣubʲérnʲ-a	ɣubʲér(a)nʲ-Ø ~ ɣubʲérnʲ-aw	province
takárnʲ-a	takár(a)nʲ-Ø ~ takárnʲ-aw	lathe shop
awʧárnʲ-a	awʧár(a)nʲ-Ø ~ awʧárnʲ-aw	sheepfold
ʦɨ́stérn-a	ʦɨ́stérn-Ø ~ ʦɨ́stér(a)n-Ø ~ ʦɨ́stérn-aw	cistern
lʲadównʲ-a	lʲadównʲ-Ø ~ lʲadównʲ-aw (1985), lʲadóvʲ(e)nʲ-Ø ~ lʲadównʲ-aw (1987)	ice house
rózg-a	rózak~rózg-aw (1987), rózg-aw (2008)	birch rod

If surface phonotactics is guiding the progress of the change in feminine nouns, then we might expect nouns which potentially have access to different types of stems to show different types of behavior. The nouns discussed in sections 2 through 4 above have one stem throughout the paradigm. For example, [kowdra] 'blanket' has the stem [kowdr-] throughout its inflectional paradigm with Nom sg [kowdr-a], Gen sg [kowdr-ɨ], Gen pl [kowdr-aw]. But the yer stem Declension Ib neuter and Declension II feminine nouns have a vowel inserted into the stem when the Gen pl allomorph /-Ø/ is used: [kresl-a] 'chair' has the Gen pl form of [kresel]. Thus there are two possible output stems for this type of noun: [kresl-] and [kresel-] and there may be two ways to process them in the Genitive plural.

If speakers take the noun stem as it appears throughout most of the paradigm (which can also be argued to be the underlying stem) as the starting point for allomorph selection, then most of these yer nouns have stem-final consonant clusters with rising sonority squences (CVCR-). We might expect these yer stem nouns to share the behavior of their declension class with Declension Ib neuter nouns favoring the [-aw] in general and Declension II feminine yer nouns favoring the [-aw] because

of stem-final sonority sequencing. In both declension classes, the [-aw] is fully expected.

If, on the other hand, speakers take the Gen pl output form as the starting point for deciding whether to adopt /-ow/ [-aw], then there is no stem-final cluster: the inserted vowel is now part of the Genitive plural stem (CVC(V)R-) and this alternating vowel (yer) in the Genitive plural stem eliminates what would be a relevant phonotactic condition for allomorph selection. So we might expect these nouns to behave somewhat differently from the other members in their declension class in that there is much less pressure for the adoption of the overt [-aw].

In other words, yer nouns offer the option of accessing either stem in the formation of the Genitive plural. If the paradigmatic or underlying stem is the basis for allomorph selection, then [-aw] is predicted. If the Genitive plural wordform is the starting point, then there is no compelling reason to choose the syllabic allomorph and /-Ø/ remains. The prediction is that both allomorphs should be acceptable because either option, the use of the syllabic Gen pl allomorph or the insertion of a yer vowel into the stem, is equally good in resolving what would otherwise be a complex syllable coda with rising sonority. This is exactly what we find both in neuter nouns (8a) as well as in Declension II feminine nouns (8b).

A related set of yer nouns with stems in -k- shows the opposite behavior. Here the only option is the /-Ø/ Gen pl allomorph (9).

(9) Declension II feminine yer stems in -k-

Nom sg	*Gen pl*	
búlk-a	búl(a)k-Ø	roll
butélʲk-a	butélʲ(e)k-Ø	bottle
dúmk-a	dúm(a)k-Ø	thought
zavʲásk-a	zavʲáz(a)k-Ø	plot, action
kásk-a	káz(a)k Ø	fairy tale
knʲíʃk-a	knʲíʒ(a)k-Ø	book
lɨʃk-a	lɨʒ(a)k-Ø	spoon
zórk-a	zór(a)k-Ø	star
xústk-a	xúst(a)k-Ø	scarf
kúrtk-a	kúrt(a)k-Ø	jacket

mátk-a	mát(a)k-Ø	womb
ʃápk-a	ʃáp(a)k -Ø	cap, hat
bájk-a	báj(e)k-Ø	fable
av^{j}étʃk-a	av^{j}étʃ(a)k-Ø	lamb
sarótʃk-a	sarótʃ(a)k-Ø	shirt
ʤ^{j}éwk-a	ʤ^{j}év(a)k-Ø	girl
padúʃk-a	padúʃ(a)k-Ø	pillow

Note that for the most part the stems in this noun set have stem-final clusters of falling sonority, though there are some with clusters of equal sonority, so the data are consistent with the phonotactic explanation: stem-final RC and some CC sequences are not as likely to favor the overt allomorph as are the CR and a few CC sequences in (8) above.[3]

In general, one would expect that [-aw] would be the preferred allomorph in yer stems, especially because the vowel that is inserted in the stem may be a stressed [o], an unstressed [a], a stressed [e] or an unstressed [e]. Although these variants are to a certain extent predictable outcomes of paradigmatic stress patterns and vowel neutralization after shibilants or of vowel fronting after paired palatalized consonants, there may be some degree of uncertainty about what to do in the Genitive plural. This uncertainty is reflected in attested variants: sometimes no vowel is inserted, as in the word for 'cistern' or 'ice house' in (8b) above, or there are several possibilities, as in the treatment of 'cloth' (palóts^{j}en ~ palótnaw ~ palats^{j}ón). One advantage of using the syllabic suffix is that it eliminates a decision about which yer vowel, if any, should appear in the stem.[4]

7 A Note on Declension III Feminine Nouns

We saw in (1) above that the /-ow/ suffix is also being generalized to Declension III feminine nouns in the form of [-aw] where it replaces an original overt suffix /-ej/ in some nouns (Lukashanets 2007:161), shown

[3] But it is also possible, and probably more likely, that the exceptional behavior in the subset of -k- stem nouns in (9) is due to stress, as I show in Bethin (2016 ms).

[4] Because vowel insertion takes place only before the /-Ø/, the other advantage is that the use of [-aw] eliminates the vowel alternation within the stem, contributing to paradigm uniformity, though this does not seem to be a motivating factor as much as one would expect.

in (10), though the /-ej/ suffix still has robust representation in this declension class. [5]

(10) Spread of [-aw] in Declension III nouns

Nom sg	*Gen pl*	
dalónʲ	dalónʲ-ej ~ dalónʲ-aw	palm of hand
kʲiʃénʲ	kʲiʃénʲ-ej ~ kʲiʃénʲ-aw	pocket
ɣávanʲ	ɣávanʲ-ej ~ ɣávanʲ-aw	harbor
karusʲélʲ	karusʲélʲ-ej ~ karusʲélʲ-aw	carousel
vʲérf	vʲérfʲ-ej ~ vʲérfʲ-aw	shipyard
kʲísʲtsʲ	kʲísʲtsʲ-ej (1985), kʲísʲtsʲ-ej ~ kʲísʲtsʲ-aw	hand
pápʲertsʲ	pápʲertsʲ-ej (1985), pápʲertsʲ-ej ~ pápʲertsʲ-aw (2008)	church porch
rétʃ	rétʃ-aw	thing
ɣazʲélʲ	ɣazʲélʲ-ej ~ ɣazʲélʲ-aw	gazelle
abrótsʲ	abrótsʲ-ej ~ abrótsʲ-aw	bridle
ɣránʲ	ɣránʲ-ej ~ ɣránʲ-aw	facet
ʃtʃólatʃ	ʃtʃólatʃ-aw	alkali
madélʲ	madélʲ-ej ~ madélʲ-aw	model
rísʲ	rísʲ-ej ~ rísʲ-aw	lynx
tʃvértsʲ	tʃvértsʲ-ej ~ tʃvértsʲ-aw	quarter
vʲijalantʃélʲ	vʲijalantʃélʲ-ej ~ vʲijalantʃélʲ-aw	violincello
flʲéʃ	flʲéʃ-aw	flash, fleche
maɣʲistrálʲ	maɣʲistrálʲ-ej ~ maɣʲistrálʲ-aw	magistral

It is interesting that the phonotactic conditions observed on the spread of [-aw] in a-stem feminines (Declension II above) do not play so much of a role in Declension III. They seem to be more active in nouns where the [-aw] is replacing the /-Ø/ allomorph and do not hold to the same extent for Declension III nouns where the Gen pl suffix [-ej] is being

[5] The large group of derived nouns suffixed in /-astsʲ/ may retain the /-ej/ allomorph: [krépasʲtsʲej] 'fortress', [rádasʲtsʲej] 'joy, happiness' (but see Kryvitski et al. 1973:84 and Mayo 1976:25 where [rádasʲtsʲaw] is given), [kaʃtównasʲtsʲej] 'expense, cost', [apóvʲesʲtsʲej] 'story', though many of these nouns now also have variants with [-aw]: [maɣtʃɨmasʲtsʲ] 'possibility', [maɣtʃɨmasʲtsʲej~maɣtʃɨmasʲtsʲaw]; [uratʃɨstasʲtsʲ] 'solemnity', [uratʃɨstasʲtsʲej] (2008)~[uratʃɨstasʲtsʲaw] (Lukashanets 2007); [jákasʲtsʲ] 'quality', [jákasʲtsʲej ~ jákasʲtsʲaw], [apóvʲesʲtsʲaw] (Mayo 1976:25).

replaced by [-aw]. There are at least two possible explanations: either 1) the spread of [-aw] in Declension III is nearing completion just as it is in Declension Ib neuter nouns, or 2) speakers are operating with the Gen pl form itself in deciding what to do. In other words, it may not be so much a question of *stem*-final phonotactics as a question of *word*-final phonotactics. When the Gen pl wordform ends in a cluster because the Gen pl allomorph is /-Ø/, then the nature of the cluster may have an effect on the likelihood of taking on an overt syllabic allomorph [-aw]. But if there already is an overt suffix in the Genitive plural and it is a question of replacing one overt syllabic suffix, [-ej], with another, [-aw], and the syllable structure of the output wordform is not affected, then the presence vs. absence of a stem-final cluster is less relevant to the change. If this is indeed the case, then it would lend support to the suggestion that yer nouns, too, may be processed on the surface as words (where the insertion of a vowel eliminates a cluster) and not only as paradigmatic stems (with clusters). And it raises the question of where morphological analogy takes place, at the stem level within the paradigm or at the word level of the Gen pl form itself, but this remains for future work.

8 Why /-ow/ spreads

There are two overt suffix allomorphs available in the Genitive plural of East Slavic languages: some version of /-ov/ (Russian /-ov/, Belarusian /-ow/ and Ukrainian /-iw/) and /-ej/. In Russian, the /-ej/ allomorph has been generalized to Declension Ia masculine and Declension II feminine nouns that end in a palatalized or shibilant consonant, sometimes replacing /-ov/ (Zalizniak 1967, 1977), so its distribution is controlled by the palatalized/shibilant property of the stem-final consonant. Belarusian morphology also shows sensitivity to palatalized/shibilant vs. non-palatalized stem-final consonants in selecting the appropriate case allomorph in the singular of all declension classes (Biryla and Shuba 1985; Lukashanets 2007; Mayo 1976, 1993). So why is it the /-ow/ suffix and not the /-ej/ suffix that is being generalized in Belarusian?

Part of the explanation lies in distribution: The /-ow/ allomorph occurs in almost all Declension I masculine nouns, a very large noun class. Compare 10,304 masculine nouns, 7,970 feminine nouns, 4,642 neuters and 3,170 Declension III feminines (Biryla and Shuba 1985:387). The /-ej/ allomorph has a much more restricted distribution, being in

effect limited to Declension III and to a few stems that end in a palatalized or shibilant consonant in other declensions. The other factor is that the /-ej/ allomorph is consistently associated with the palatalized or shibilant stems that constitute Declension III so the extension of /-ej/ would normally require palatalization of a paired stem-final hard consonant before the front vowel. In many nouns, this would produce a new palatalized vs. non-palatalized consonant alternation in the stem only in the Gen pl form, a major complication.

Why is it specifically the unstressed variant [-aw] with vowel neutralization that is generalized? The predominant pattern of stress in Declension Ib neuter noun and in Declension II feminine noun paradigms is to have stress fixed on the stem throughout the entire paradigm (this includes about 10,750 nouns, per Biryla and Shuba 1985:387); the second most common pattern is to have stress on the suffix in the singular but stress retracted onto the stem in the plural (approx. 260 nouns). When nouns in these declension classes take on the /-ow/ suffix, the pronunciation of the allomorph is automatically the unstressed neutralized [-aw].[6] The vast majority of Belarusian nouns in all declension classes are stressed on the stem and as a result all of the plural inflectional suffixes, including the Gen pl, are predominantly unstressed.

Furthermore, given that vowel neutralization in Belarusian is of the *full or strong akan'ne/jakanne* type (Iankoŭski 1976:28; Vyhonnaia 1991: 133-139; Dubina 2012: 155-10, and others), whereby the unstressed non-high vowels /e/, /o/, and /a/, are all pronounced as [a] after any type of consonant (palatalized, non-palatalized, shibilant, velar, etc.), the vowel /a/ is found after any type of consonant. So the unstressed [-aw] is particularly favored because it does not impose any conditions on the preceding stem-final consonant.

In terms of the plural subparadigm itself where all oblique case exponents have the vowel /a/ as part of the suffix allomorph, as shown in (11), the neutralized [a] in the unstressed Gen pl [-aw] fits the pattern very well.

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[6] See also Biryla 1986, Loban 1957, and Dubina 2012 for data and analysis of stress in Belarusian.

(11) Belarusian noun plural subparadigm for major noun classes

Nom	-i	
Acc	Nom or Gen	
Gen	-aw	(also /-ow/, /-ej/, /-Ø/ under stress)
Dat	-am	
Pep	-ax	
Instr	-am^{j}i	

Finally, because the neutralization of unstressed non-high vowels is actually spelled in Standard Belarusian, the orthography also contributes to the salience and independence of the unstressed [-aw] exponent.[7]

I would argue that it is the [-aw] pronunciation of the unstressed Gen pl allomorph /-ow/ which is the primary factor in facilitating the spread of the /-ow/ [-aw] allomorph to the other noun declension classes (Bethin 2016 ms). In fact, there is evidence to suggest that Belarusian speakers have reanalyzed [-aw] as an independent lexical allomorph, /-aw/, and there are now four Gen pl allomorphs available: /-ow/, /-Ø/, /-ej/ and the /-aw/. For this type of reanalysis to take place, speakers must have access to the output of vowel neutralization in morphology. This suggests that the morphological change in the Gen pl case of Standard Belarusian appears to be taking place on the surface, both in paying attention to surface well-formedness conditions on syllable structure and in specifically preferring the outcome of vowel neutralization, the unstressed allomorph [-aw]. Unlike in Russian where allomorph selection must take place before vowel reduction (Pertsova 2015), in Belarusian, vowel neutralization actually contributes to morphological change because it is specifically the unstressed variant [-aw] that is so favored and which spreads so readily beyond Declension Ia to other declension classes. The nature of this morphological change in Belarusian raises questions about possible triggers of morphological change, the nature of potential morphological bases (stems vs. words), the representation of

[7] In Belarusian, consonant palatalization is represented by the vowel letter symbols and a suffix such as /-ow/ may be spelled four different ways: when stressed after non-palatalized consonants as "оў", when stressed after palatalized consonants and /j/ as "ёў", when unstressed after non-palatalized consonants as "аў", and when unstressed after palatalized consonants and /j/ as "яў".

Belarusian noun plural allomorphy in general, and the nature of phonology-morphology interactions, but this remains for future work.

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Prominence Redistribution in the Aŭciuki Dialect of Belarusian*

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One of the South-Eastern dialects of Belarusian exhibits an unusual phonological property: in certain environments, the immediately pretonic syllable is pronounced with prominence which is equal to or greater than that of the stressed syllable. This phenomenon has been analysed, albeit tentatively, as stress retraction (Kurylo 1928; Kryvicki 1959; Belaja 1974), and also as pitch peak retraction (Bethin 2006a, 2006b). Instrumental data presented in this paper confirms that the pretonic vowel can be higher in intensity and longer in duration than the stressed one, as well as comparable to it in pitch, depending on the respective heights of the pretonic vowel and the stressed one. However, the acoustic data does not lend support to either the stress retraction or pitch peak retraction hypothesis. Instead, this paper argues that the phenomenon at hand results from redistribution of the acoustic prominence associated with stress over two syllables.

The paper is structured the following way. Section 1 lays out the basic facts of the Aŭciuki dialect, spoken in the villages of Malyja Aŭciuki and Vialikija Aŭciuki (Kalinkavičy region, Homel province) in Belarus. Section 2 presents acoustic data illustrating the Aŭciuki phenomenon, collected during fieldwork done in 2014 and 2015.

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Section 3 summarises an earlier investigation by Belaja (1974). Section 4 discusses previous accounts of the phenomenon, and introduces the current analysis. Section 5 concludes.

1 The Aŭciuki Dialect

Standard Belarusian, as well as its dialects, has stress and no tonal distinctions. Stress in Belarusian is free and mobile, and is acoustically signalled by greater intensity and duration of the stressed vowel as compared to the neighbouring ones (Sussex & Cubberly 2006:179); there is no phonemic vowel length in the language. In addition to intensity and duration, the stressed syllable is realised with high pitch (Bogorodickij 1939:48). The relative importance of these three factors — pitch, intensity and duration — for determining the position of stress in Belarusian does not seem to have been investigated instrumentally, but, like in other East Slavic languages, intensity is often taken to be the primary correlate of stress in Belarusian.

The object of study in this paper is the unusual phonological feature that the Aŭciuki dialect has: a high tone, lengthening, and an intensity peak may be introduced on the immediately pretonic syllable, depending on the height of the pretonic and stressed vowels. I will dub this phenomenon *pretonic prominence*. More specifically, pretonic prominence applies to cases in which the stressed vowel is high (i/ɨ, u), and the pretonic vowel is mid-low or low (ɛ, ɔ, a).[1] In the examples of pretonic prominence in (1) below, the pretonic vowel is underlined, and the stressed vowel is boldfaced; in contrast, pretonic prominence does not apply to the examples in (2):

(1)	a.	se̲str**u**	‘sister$_{ACC}$’[2]	[sʲɛːˈstru]
	b.	dvo̲r**ɨ**	‘courtyard$_{PL}$’	[dvɔːˈrɨ]
	c.	na̲s**i**	‘carry$_{IMP}$’	[naːˈsi]

[1] The Aŭciuki dialect has been previously analysed as having a seven-phoneme vowel system, including mid-high vowels /e/ and /o/ (e.g., Vojtovič 1972b; Kryvicki 1959). However, there is no reliable acoustic evidence for the existence of mid-high vowels in the dialect. While the matter requires further investigation, I am treating the Aŭciuki dialect as having five vowel phonemes: /i ~ɨ/, /u/, /ɛ/, /ɔ/, /a/. I am also leaving out examples that might include mid-high vowels /e/ and /o/ when discussing pretonic prominence facts.

[2] Abbreviations used in the glosses: 3 — third person, ACC — accusative, GEN — genitive, IMP — imperative, INS — instrumental, LOC — locative, NOM — nominative, PL — plural, SG — singular.

(2) a. sestra ‘sister$_{NOM}$’ [sʲɛˈstra]
b. nazad ‘backwards’ [naˈzad]
c. krušɨna ‘buckthorn’ [kruˈšɨna]

Relatively recent borrowings into the dialect have been reported to adopt the pattern too, as in (3), which means that pretonic prominence is a productive feature. The examples in (3) also show that pretonic prominence does not depend on the position of either of the two relevant syllables in the word: that is, the pretonic syllable can be initial or non-initial, and the etymologically stressed syllable can be final or non-final:

(3) a. z brɨhadz**i**ram ‘with crew chief$_{INS}$’ [z brɨɣaːˈdziram]
b. scienakardz**i**ja ‘stenocardia’ [scʲenakaːˈrdzija]
c. izasarb**i**d ‘isosorbide’ [izasaːˈrbit]

(examples from own fieldwork)

It should be noted, however, that since mid-twentieth century the viability of the dialect has been challenged, and it is likely that younger speakers are not acquiring the phonological system of the dialect in full. Nevertheless, pretonic prominence is robust in the speech of older informants. The recent data presented in this paper comes from speakers who show pronounced pretonic prominence.

There are other East Slavic dialects that have been reported to exhibit phenomena similar to pretonic prominence. In older literature they are usually described as having a ‘special musical contour’ on the pretonic syllable, or even a shift of stress one syllable to the left. This has been reported for some Mosalsk dialects (Broch 1916), Vladimir dialects (Avanesov 1927), Tver’ dialects (Nikolaev 2009), tentatively for some north-Russian dialects (Kolesov 1964), and also for certain Černihiv dialects, known as the Upper Snov dialects, adjacent to the Aŭciuki dialectal area (Žylko 1953). However, it is only in the Aŭciuki and Upper Snov dialects that pretonic prominence is conditioned by vowel height; in other reported cases, acoustic prominence on the pretonic syllable is unconditional. This makes the Aŭciuki phenomenon even more unusual.

Belarusian and its dialects also exhibit variable degrees of vowel neutralisation. Namely, while in the standard language, mid-low vowels /ɛ/ and /ɔ/ are neutralised to /a/ unless under stress (Mayo 1993:891), the degree of vowel neutralisation in the dialects decreases from north-east to south-west (Vojtovič 1971). The

Aŭciuki dialect lies on the boundary between vowel neutralising and non-vowel neutralising dialects, and has rather irregular vowel neutralisation. It is often noted that the neutralisation facts interact with the pretonic phenomena like the one discussed here (e.g., Belaja 1974; Vojtovič 1972b). Nevertheless, the nature of this interaction is unclear at present, and neutralisation facts will not be discussed in detail here. With this background in mind, let us proceed to the instrumental data.

2 Acoustic Data

The acoustic data used here was collected in 2014 and 2015 in the villages of Malyja Aŭciuki and Vialikija Aŭciuki. The recordings were made using Panasonic RR-US570 and Zoom H4n voice recorders. Data from three informants is used in this paper: MB, female, born in 1954, a native of Vialikija Aŭciuki; LD, female, born in 1935, a native of Malyja Aŭciuki; and LB, female, born in 1938, a native of Malyja Aŭciuki.

Seventy five tokens containing conditions in which pretonic prominence is predicted to apply (a low or mid-low pretonic vowel followed by a high stressed vowel) were extracted from the recordings. Additionally, twenty five tokens with no conditions for pretonic prominence (both vowels non-high) were extracted, in order to investigate the unmarked pattern of stress realisation in the dialect. All of the examples were produced in declarative clauses with all-new intonation. They were then analysed using Praat (Boersma & Weenink 2016). A highest value for intensity, pitch, and duration were extracted for vowels in four conditioning environments: (1) pretonic, unmarked; (2) stressed, unmarked; (3) pretonic, pretonic prominence; and (4) stressed, pretonic prominence. Then, the values for each acoustic characteristic of pretonic vowels in pretonic prominence contexts were compared with those of (i) stressed vowels in pretonic prominence contexts, and (ii) pretonic vowels in unmarked contexts.

It should be pointed out that vowels of different heights vary in their intrinsic phonetic properties. That is, the lower the vowel, the higher its intrinsic intensity and duration. This factor significantly complicates comparing acoustic characteristics of vowels of different heights, as in pretonic prominence contexts. In order to avoid this methodological issue, I am also comparing pretonic vowels in pretonic prominence contexts to their counterparts in unmarked contexts, so that both vowels under comparison are non-high.

2.1 Duration

The values for vowel duration across environments are presented in Figure 1, and the mean values are given in Table 1. In the tables and figures, V_1 stands for the pretonic vowel, and V_2 for the stressed vowel.

Figure 1. Vowel duration in unmarked and pretonic prominence (PP) contexts

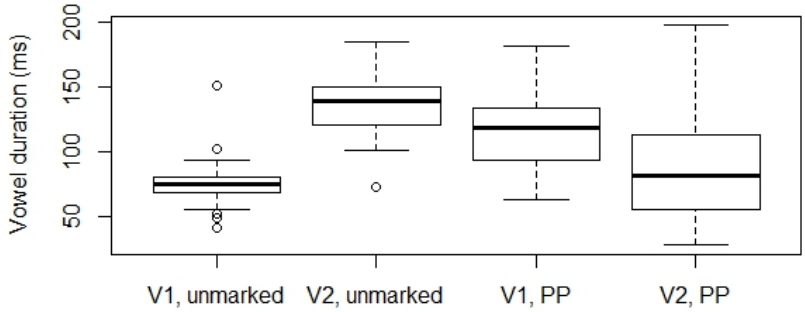

Table 1. Mean vowel duration in unmarked and pretonic prominence contexts

	V_1	**V_2**
Unmarked	75.23 ms	135.0 ms
Pretonic prominence	114.88 ms	86.88 ms

As expected, in the unmarked cases the stressed vowel is significantly longer than the pretonic one. In the pretonic prominence examples, however, the trend is reversed: here, V_1 is significantly longer than V_2 (Wilcoxon paired test, $p < 0.01$). Moreover, the difference between the pretonic vowels in the two environments is significant too (Wilcoxon test, $p < 0.01$).

2.2 Pitch

The values for pitch across environments are presented in Figure 2, and the mean values are given in Table 2.

Figure 2. Vowel pitch in unmarked and pretonic prominence (PP) contexts

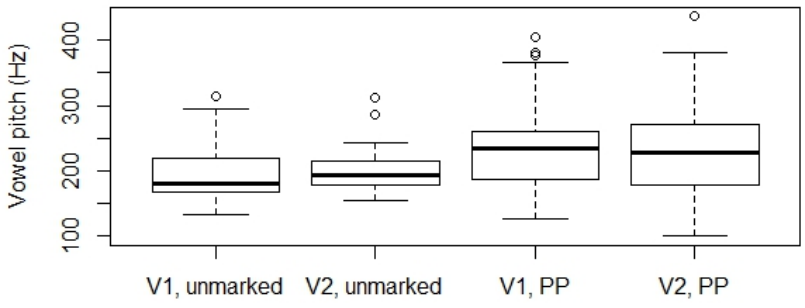

Table 2. Mean vowel pitch in unmarked and pretonic prominence contexts

	V_1	V_2
Unmarked	198.0 Hz	203.0 Hz
Pretonic prominence	231.8 Hz	230.0 Hz

The pattern of variability in pitch values differs from that of duration values. As Table 2 shows, V_1 and V_2 are close to each other in their values (no statistically significant difference) both in the unmarked context and in the pretonic prominence context. However, there is a notable difference in mean pitch values between the two environments, and the difference between pretonic vowels in unmarked and pretonic prominence contexts is statistically significant (Wilcoxon test, $p = 0.01$).

2.3. Intensity

The values for intensity in the two environments are presented in Figure 3, and the mean values are given in Table 3.

Figure 3. Vowel intensity in unmarked and pretonic prominence (PP) contexts

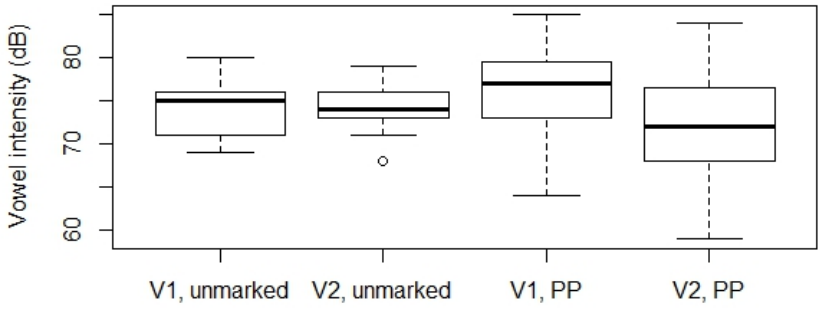

Table 3. Mean vowel intensity in unmarked and pretonic prominence contexts

	V_1	V_2
Unmarked	74.0 dB	74.4 dB
Pretonic prominence	76.3 dB	72.5 dB

The picture is still different for intensity values. In the unmarked contexts, the two values, V_1 and V_2, are very close to each other, exhibiting a pattern similar to the one that pitch values have in unmarked cases. In pretonic prominence contexts, however, the pre-

tonic vowel is significantly higher in intensity than the stressed one (Wilcoxon paired test, $p < 0.01$). The difference between the pretonic vowels in the two different environments is also highly significant (Wilcoxon test, $p = 0.01$).

2.4. Discussion

To sum up, as we have seen, the distribution of acoustic prominence between V_1 and V_2 in the unmarked cases is quite different from that between V_1 and V_2 in pretonic prominence examples. Specifically, in the unmarked cases, the stressed vowel is significantly longer than the pretonic, but both vowels are close in pitch and intensity, with the stressed vowels' values only slightly higher. In the pretonic prominence contexts, the pattern is quite different. Here, the pretonic vowel is significantly longer and higher in intensity than the stressed one, while the pitch values of the two vowels are comparable. Finally, there is a significant difference when the three values are compared on pretonic vowels in unmarked and pretonic prominence contexts. The question therefore is: in the pretonic prominence examples, which syllable bears the stress? This question will be addressed in detail in Section 4.

It should be noted that even in older speakers pretonic prominence may not be entirely consistent: sometimes it does not surface when predicted, and occasionally applies in unexpected contexts. This may be due to ongoing changes in the dialect, or even the gradual decline of pretonic prominence as a feature. However, so far this has not influenced the results significantly, and the general pattern of the pretonic prominence facts is clear.

3 Investigation by Belaja (1974)

The trends evident in the Aŭciuki data discussed above are broadly consistent with the results obtained in the same dialectal area forty years ago. Belaja (1974) is an earlier instrumental investigation of vowel quality in the Upper Snov dialect. Unlike the Aŭciuki dialect, Upper Snov has mid-high diphthongs /i͡e/ and /u͡o/, and also stronger vowel neutralisation, but the pretonic prominence facts in the two dialectal areas are very similar. Belaja (1974) reports on a number of experiments conducted in order to investigate the acoustic properties of the vowels /a/ and /ɛ/ when they surface pretonically, both in unmarked and pretonic prominence contexts. The paper presents measurements of duration, pitch and intensity of the pretonic and stressed vowels in declarative, interrogative and exclamative

contexts, as well as word lists. No statistical analysis is offered in Belaya (1974), and consequently the data in this section is represented as measurements made for individual tokens, as in the source paper.

Belaja comes to the conclusion that pretonic /a/ is most prominent when followed by stressed /i, ɨ u, i͡e/, and pretonic /ɛ/ — when followed by stressed /i, u/. Neither /a/ nor /ɛ/ receives pretonic prominence when followed by stressed /a, ɔ, ɛ, u͡o/. Table 4 below contains Belaja's (1974) results for pretonic prominence examples as found in different types of clauses, and Table 5 presents results of a word-list reading task. Values unexpected in the pretonic prominence context (i.e., V_1 value higher than V_2) are underlined. Note that in Belaja's study intensity was measured as a range on an oscillogram waveform, and therefore the measuring unit is mm.

Table 4. Belaja's results for pretonic prominence in narratives

Item	Clause type	Duration, ms		Pitch, Hz		Intensity, mm	
		V_1	V_2	V_1	V_2	V_1	V_2
va**z**i carts	decl.	240	140	167	166	13.5	0
	interrog.	280	90	228	-	16.1	0
	exclam.	300	340	179	196	14.3	0
va**z**u cart$_{LOC}$	decl.	240	80	149	159	13.1	0
	interrog.	210	90	175	35	5.1	0
	exclam.	300	206	220	234	23	1.9
v^{j}a**z**i͡ec^{j} carry$_{3SG}$	decl.	200	170	145	175	11.3	1.2
	interrog.	220	180	191	262	18.7	2.1
	exclam.	200	176	214	157	17.2	0.6

As you can see, the results in Table 4 would be quite striking if the Upper Snov dialect didn't have pretonic prominence, but are easy to explain if pretonic prominence is taken into account. Though some details about the stimuli Belaja (1974) used — such as token number, or the position of the test word within a clause — are unclear, the general trend is evident. Consistently with the Aŭciuki data, Belaja's study shows that the three characteristics that constitute acoustic prominence behave differently in pretonic prominence contexts. Specifically, the values for duration and intensity are consistently higher on the pretonic vowel, as is the case in the more recent data too. The pattern of pitch value distribution is less clear, with no reliable generalisation readily available.

The picture is slightly different for Belaja's word-list results: as Table 5 shows, in the word-list task, pitch is consistently higher on the etymologically stressed syllable. This is likely due to the fact that list intonation contributes a high tonal target to the final syllable, and not to lack of pretonic prominence as such.

Table 5. Belaja's results for the word-list task

Item	Duration, ms		Pitch, Hz		Intensity, mm	
	V_1	**V_2**	**V_1**	**V_2**	**V_1**	**V_2**
va̲z**ɨ** 'carts'	300	310	157	179	14,4	0
va̲z**u** 'cart$_{LOC}$'	340	300	186	219	19,2	1,5
v^{j}a̲z**ie**c^{j} 'carry$_{3SG}$'	260	240	217	227	17,3	4,5
va̲z^{j}**u**ra (non-word)	230	230	179	190	13,4	1,7

It should be noted that there is one considerable difference in the intensity results between the two studies: while in the recent Aŭciuki data, the pretonic and stressed vowels are relatively close in their intensity levels, in Belaja's data, the difference between them is nothing short of extreme, with the etymologically stressed vowel often being as low in intensity as post-tonic unstressed vowels (0 mm — that is, no detectable movement on the oscillogram). At present, there is no immediate explanation for this fact.

Overall, Belaja's results are in accord with the more recent Aŭciuki data. Both studies show that the acoustic prominence of a low pretonic vowel before a high (in the Upper Snov basin, also mid-high) stressed vowel can be greater than that of the stressed vowel. This is a striking result. If in pretonic prominence contexts the pretonic vowel is systematically more acoustically prominent than the stressed one, the very nature of stress realisation in the Aŭciuki dialect is called into question. Section 4 discusses the two previous accounts of the phenomenon, and puts forward the current proposal.

4 Analysis

In this section, I will summarise the earlier approaches to the Aŭciuki phenomenon, before proceeding to the current analysis.

4.1 Earlier Analyses: Stress Retraction?

The conclusions made in the earlier analyses of pretonic prominence in the Aŭciuki dialectal area are very cautious — this is true of Kurylo (1924, 1928), Kryvicki (1959) and Belaja (1974). While they

note that a naive listener perceives pretonic prominence as a shift of stress one syllable to the left, and acknowledge that the instrumental investigation also suggests stress retraction to the pretonic syllable, such a conclusion is never made explicitly. Namely, Kurylo (1924:14–15) notes that an unaccustomed ear perceives the phenomenon at hand as stress on the pretonic syllable. Kryvicki (1959:102) notes about the pretonic prominence contexts: "It might seem at first that the pretonic syllable bears stress in such cases… and in the speech of the younger generation, who don't have the feature any more, it often does". Similarly, Belaja (1974:29) mentions that in disyllabic words with pretonic prominence "auditory analysis registers stress on the first vowel — that is, shift of stress to the pretonic syllable". However, none of these investigations explicitly argue that stress retraction had taken place in the Aŭciuki dialect.

Similar uncertainty is also reflected in the Dialectological Atlas of Belarusian Language (1963). Specifically, some villages in the Aŭciuki dialectal area are reported to have stress one syllable closer to the beginning of the word: Navinki (Kalinkaviči district), Vialiki Bor (Xojniki district), Svedskaje (Rečyca district), Spiaryžža (Brahin district). However, about the Spiaryžža, Navinki and Svedskaje data it is also said that the second investigation disconfirms earlier results and suggests that the stress is in the etymologically correct place.

There are even fewer attempts at understanding the mechanism of pretonic prominence. Belaja's (1974) conclusion drawn from the experimental data is that in the Upper Snov dialect the etymologically stressed syllable in pretonic prominence contexts has grown weaker and lost its culminating position. Belaja further hypothesises that this weakening of the stressed syllable leads to the compensatory prominence that the pretonic syllable acquires. However, no explanation is offered for why the weakening of stressed vowels took place, neither why it is limited to high and mid-high stressed vowels.

Overall then, the stress shift account was one of the prominent ideas in earlier literature, but was not persuasively argued for or against. Nevertheless, there are several reasons for why the stress shift account cannot be correct. Firstly, it is evident from the hesitation with which it had been proposed that there is intuitive understanding that pretonic prominence and stress constitute two distinct phonological entities in the Aŭciuki dialect. It appears to be so for the speakers too — specifically, it was my fieldwork experience that older speakers with robust pretonic prominence, when prompted, assign stress to its etymologically correct position.

Vowel neutralisation facts also suggest that in pretonic prominence contexts stress stays in its original position. Specifically, in the infrequent cases when pretonic prominence appears before a stressed [o], there is no vowel neutralisation on the etymologically stressed syllable:

(4) a. basonožki ‘sandals’: [basɔːˈnoški], not [baˈsɔːnaški]
b. ɣodoŭ ‘years$_{GEN}$’: [ɣɔːˈdow], not [ˈɣɔːdaw]

(examples from own fieldwork)

Had the stress shifted to the pretonic syllable, the etymologically stressed vowel would have become neutralised to /a/, as post-tonic non-high vowels do. Since this is not the case, there is clearly not enough evidence to argue for a stress retraction in the Aŭciuki dialect. With this in mind, let us proceed to the next account.

4.2 An Autosegmental Account by Bethin (2006a, 2006b)

The Aŭciuki and Upper Snov data reappeared more recently in Bethin’s (2006a, 2006b) work. Using Belaja’s (1974) data, Bethin (2006a, b) proposes another analysis of the phenomenon, arguing that pretonic prominence results from a shift of the high tone H, associated with stress, from the stressed syllable to the pretonic one. Bethin explains the distribution of pretonic prominence by taking intrinsic phonetic length of the stressed vowel to be the crucial factor for the development of pretonic prominence. The analysis successfully accounts for pretonic prominence as a phonological phenomenon, but the instrumental data from Aŭciuki discussed above poses some serious challenge for this account. Let us look at it in more detail.

Bethin (2006a, b) takes it that in the Aŭciuki dialect, the stressed vowel bears a falling tonal contour (HL), whereas unstressed vowels, including the immediately pretonic one, are marked by a low tone (L). This is so in the unmarked cases with no pretonic prominence, such as when the stressed vowel is low.

The conditions for pretonic prominence, as we know, are created when the pretonic vowel is low or mid-low, and the stressed vowel is high. High vowels are known to be phonetically shorter than lower vowels. Therefore, in Bethin’s analysis, a high or mid-high vowel is too short to accommodate the HL contour a stressed vowel needs to have, and the tonal peak H is forced to shift to the preceding syllable. The LHL contour over two syllables is still there, but H is now realised on the pretonic syllable, and the pretonic vowel lengthens in

order to accommodate the pitch rise. Bethin therefore takes pretonic prominence to be a way of aligning the high tonal target associated with stress with respect to the position of stress. Pretonic prominence, under this account, is just a context in which the two are not realised on the same syllable.

While this is an elegant analysis of the Aŭciuki facts, it runs into two problems, both of them empirical in nature. Firstly, it makes a wrong prediction for the contexts in which both pretonic and stressed vowels are high: pretonic prominence does not apply to such contexts, and yet the account at hand predicts it to apply. If phonetic shortness of a stressed high vowel is taken to be the driving force behind the shift of H to the pretonic syllable, the shift should apply regardless of the height/phonetic length of the pretonic vowel. Yet this is not the case:

(5) a. pi**l**i ‘drank$_{PL}$’: [piˈli], not [piːˈli]
b. vuzl**ɨ** ‘knots’: [vuˈzlɨ], not [vuːˈzlɨ]

The other problem with Bethin’s account is that it is not consistent with the instrumental data. Namely, it is difficult to reconcile the following two facts: the idea that the shift of H from V_1 to V_2 is the driving force behind pretonic prominence, and the fact that in the Aŭciuki data pitch is comparably high on both vowels in pretonic prominence contexts, while highest intensity and duration are found on the pretonic syllable. Therefore, the shift of the pitch peak can hardly be the driving force behind the phenomenon of pretonic prominence.

In the next subsection, I put forward an alternative account of the Aŭciuki facts.

4.3 Current Proposal

I am proposing that in the Aŭciuki dialect, the stress domain is disyllabic, as opposed to the usual monosyllabic. That is, in the dialect, the physical correlates of stress do not culminate on a single syllable, but instead are distributed across two syllables, etymologically stressed and immediately pretonic. That is not to say that both syllables bear stress, or that it can fall on either of the two vowels within the stress domain. Stress as a phonological entity, under this account, stays in its etymological position, but in certain well-defined cases its physical correlates can be manifested on the immediately preceding vowel. Specifically, I am proposing that in those instances where two vowels, pretonic and stressed, are unequal in height, the

lower one of the two will attract the acoustic prominence associated with stress — that is, higher intensity and longer duration, as well as high pitch. The phenomenon of pretonic prominence therefore results from the redistribution of the acoustic prominence associated with stress over two syllables. A formal account of the process at hand is to be developed in future work.

A similar account has been proposed for Welsh (Williams 1999). In Old Welsh, stress used to be word-final, but was later retracted onto the penultimate syllable. Nevertheless, some acoustic 'residue' of former final stress is still found on the final syllable — such as high pitch, often higher than that on the currently stressed penultimate syllable. Williams (1999) therefore concludes that it is not the position but the phonetic manifestation of Welsh stress that is unusual. The same can be said about the Aŭciuki dialect stress, except that in the Aŭciuki case the current disyllabic stress distribution is not a result of an earlier stress shift.

Moreover, it is not a coincidence that it is the immediately pretonic syllable that is selected as the supplementary bearer of stress-associated prominence. The pretonic syllable is 'special' for a number of phonological processes affecting vowels in East Slavic languages. For instance, the immediately pretonic syllable in Russian has a pattern of vowel reduction different from that of all other unstressed syllables (Sussex & Cubberly 2006:161). Also, recall that the phenomena similar to pretonic prominence that have been reported for other East Slavic dialects also affect the immediately pretonic syllable. In the Aŭciuki dialect then, the significance of the pretonic syllable is still higher, since it attracts some stress-associated prominence from the stressed syllable.

The mechanism of the prominence redistribution in the Aŭciuki dialect is the following. I hypothesise that the shift of the intensity peak from the stressed vowel to the pretonic one is the trigger for pretonic prominence. This shift of intensity is what subsequently attracts high pitch to the pretonic vowel and causes it to lengthen.

The intensity peak shift is easy to explain in the following way. Within the disyllabic stress domain in the Aŭciuki dialect, the intensity peak is attracted to the vowel with the greatest intrinsic phonetic intensity — that is, the lowest vowel. The shift of the intensity peak, in turn, causes the pretonic vowel to lengthen. As for high pitch associated with stress, in pretonic prominence contexts it spreads onto both vowels rather than shift from stressed to pretonic.

Such an analysis also does not run into the problem of both vowels being high, which is challenging for Bethin's (2006a, b) analysis, illustrated in (5) repeated below as (6):

(6) pi**l**i ‘drank$_{PL}$’: [piˈli], not [piːˈli]
vuz**l**i ‘knots’: [vuˈzlɨ], not [vuːˈzlɨ]

Recall that Bethin's analysis wrongly predicts that pretonic prominence should apply in the contexts in which both the pretonic and the stressed vowel is high, since the high stressed vowel is too short to bear the tonal contour associated with stress. The current account makes no such prediction. Since stress-associated prominence shifts to the lower of the two vowels within the disyllabic stress domain, it does not apply to cases where both vowels are of equal height.

5 Conclusion

This paper discussed an unusual phonological phenomenon found in the Aŭciuki dialect of Belarusian — pretonic prominence. In the dialect, intensity, pitch and duration found on the immediately pretonic vowel can be greater than the corresponding values on the stressed vowel, depending on the height of the pretonic and the stressed vowel. Since these three characteristics — intensity, pitch, and duration — are also the three correlates of stress, the question of stress placement arises. In order to answer the question, I presented a sample of recent acoustic data from Malyja Aŭciuki and Vialikija Aŭciuki, as well as an analysis of the acoustic characteristics of pretonic and stressed vowels, both in unmarked and pretonic prominence contexts. Then, I considered two earlier accounts of pretonic prominence: the stress retraction analysis and the pitch peak retraction analysis. It was shown that the instrumental data does not lend support to either of these approaches. Instead, this paper proposed that pretonic prominence results from the redistribution of acoustic prominence associated with stress over two syllables, pretonic and stressed. The current analysis successfully accounts for the pretonic prominence phenomenon and avoids the challenges that other accounts face.

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Three Kinds of 'Homogeneous' Patterns of Czech Numerals: A Phrasal Spell Out Account*

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This paper is concerned by the case patterns found with Czech higher numerals. In a well-known paper on cognate Russian numerals, Babby (1985) established and provided theoretical grounding for a split into two distinct case patterns, which he called heterogeneous (in structural cases) and homogeneous (in oblique cases). This bifurcation is based on the case found on the counted noun: it is either a genitive (in the heterogeneous pattern) or a case that co-varies with the case of the whole noun phrase (in the homogeneous pattern). The distinction can be extended to a number of other Slavic languages (see esp. Franks 1994), including Czech.

Against this background, I show that in Czech, the homogeneous pattern can be further sub-divided into three distinct patterns depending on the morphology of the numeral. The shape of the numeral either reflects the particular case (agreeing pattern), it is invariably nominative (phrasal case pattern), or it is invariably genitive (the genitive-as-oblique pattern).

I show how these three patterns can be captured in the split-case system of Caha (2009), where individual case features head separate syntactic projections. A crucial part of the proposal is the use of phrasal

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spell-out introduced in Starke (2009). I also make use of the possibility that case affixes attach to a whole syntactic phrase, rather than to each word.

1 The Homogeneous/Heterogeneous Pattern in Russian and Czech

In Russian, as well as in most other Slavic languages, higher numerals (≥5) have a special behavior. When phrases including such numerals are used in the subject or object position, the counted noun appears in the genitive plural, see (1). This pattern has been called 'the heterogeneous pattern,' because the case of the counted noun ('bottles') does not match the syntactic context (object) or the case of the numeral (accusative).

(1) pjať bolšix butylok vina (Russian, Babby 1985:2)
five$_{ACC}$ big$_{GEN.PL}$ bottles$_{GEN.PL}$ wine$_{GEN}$
'five big bottles of wine'

In oblique cases, like the instrumental, the counted noun drops its genitive and appears in the case appropriate for its syntactic/semantic role (2). This pattern has been called 'the homogeneous pattern' by Babby, because of the match between the case of the noun and the case of the numeral.

(2) pjať'ju bolšimi butylkami vina (Russian, Babby 1985:2)
five$_{INS}$ big$_{INS.PL}$ bottles$_{INS.PL}$ wine$_{GEN}$
'five big bottles of wine'

Czech apparently exhibits the same split between the heterogeneous and the homogeneous patterns. In the object position, the counted noun is in the genitive plural (3a), which is just like (1). In the instrumental case, the counted noun drops its genitive, and appears in the instrumental (3b).

(3) a. pět velkých flašek vína
five$_{ACC}$ big$_{GEN.PL}$ bottles$_{GEN.PL}$ wine$_{GEN}$
b. pěti velkýma flaškama vína
five$_{???}$ big$_{INS.PL}$ bottles$_{INS.PL}$ wine$_{GEN}$
both: 'five big bottles of wine'

There is, however, a difference that has to do with the case borne by the numeral. If Czech was like Russian, the gloss in (3b) should have INS under the numeral 'five'; instead, I put there three question marks, because it is actually unclear what the gloss should be. Why is that so?

In both Czech and Russian, the numeral 'five' inflects like a noun of a particular type. For Russian, I show this in the first two columns of the table in (4). Comparing the declension of 'notebook' and 'five,' we see a perfect match in the endings. *Pjat'ju* seen in (2) shows no quirk; it looks exactly like an instrumental. The data are taken from Timberlake (2004).

(4) *The declension of 'five' in Russian and Czech*

	notebook	five	bone	five
NOM	*tetrad'*	*pjat'*	*kost*	*pět*
ACC	*tetrad'*	*pjat'*	*kost*	*pět*
GEN	*tetrad'-i*	*pjat'-i*	*kost-i*	*pět-i*
LOC	*tetrad'-i*	*pjat'-i*	*kost-i*	*pět-i*
DAT	*tetrad'-i*	*pjat'-i*	*kost-i*	*pět-i*
INS	*tetrad'-ju*	*pjat'-ju*	*kost-**í***	*pět-**i***

In Czech, however, the comparison shows that the instrumental ending of the numeral is different from the instrumental ending of the corresponding noun. They differ in vowel length, which is distinctive in Czech.

This quirk is not limited to 'five.' The numerals 'six,' 'seven,' 'eight,' 'nine,' 'ten' and 'thousand' all follow the same paradigm as 'five.' Also the partly irregular compound numerals which contain 'ten' as the head (i.e., 'twenty,' 'thirty,' …) show the same peculiarity: there is something odd with the instrumental of Czech numerals in general.

Should we ignore this difference, replace the question marks in (3b) by INS, and treat the unexpected form as an arbitrary morphological noise? Or is the replacement of *–í* by *–i* significant beyond pure morphology, suggesting that Czech and Russian differ in the syntax of the 'homogeneous pattern?' In the following sections, I argue that the latter is the case. Specifically, I will be lead to conclude that the *–i* found on the Czech version of 'five' is actually a genitive marker throughout the oblique paradigm; a fact that only becomes obvious in the instrumental because of the observed contrast with the corresponding noun. In other words, the question marks in (3b) should be replaced by GEN. Why?

2 The Agreeing Pattern and the Phrasal-Case Pattern

The main reason for such a claim is that it can be shown independently of 'five' that in Czech, there is a problem for the INS gloss in (3b). This can be seen when we look at the numeral 'hundred.' This numeral can enter into three distinct patterns of case marking, which are most clearly distinguished in the oblique cases. I will now demonstrate the three different patterns on the example of the dative.

The first option of expressing a phrase 'to hundred crowns (the Czech currency)' is to say (5a), which I call the nominal pattern. In this pattern, 'hundred' behaves like a noun: it bears dative and its complement is in the genitive. In (5b, c), the counted noun drops the genitive and bears the case appropriate for the syntactic role of the whole phrase; a hallmark of the homogeneous pattern. It is hard to say whether the patterns differ in meaning, and if yes, how.

(5) a. ke st-u korun
up to 100_{DAT} $CZK_{GEN.PL}$
b. ke st-u korun-ám
up to 100_{DAT} $CZK_{DAT.PL}$
c. ke st-o korun-ám
up to 100_{NOM} $CZK_{DAT.PL}$

The two last examples differ in the form of the numeral. In (5b), the numeral is dative just like the noun; but in (5c), the numeral looks as if it was in the nominative (*sto korun* is the nominative of '100 CZK'). [1]

It can be shown that the numeral in (5c) not only looks like nominative, it also triggers nominative agreement on modifiers. For instance, numerals like 'three' generally agree with the counted noun in Czech. When such a numeral is added to a structure like (5b), we get (6a); 'three' is dative, copying expectedly the case of 'hundreds.' When the numeral 'three' modifies the suspected nominative seen in (5c), the agreeing numeral is also nominative, see (6b).

[1] A reviewer points out that numerical phrases sometimes behave differently after a preposition and after a verb, wondering whether all the patterns can be used after a verb. The answer is yes; after a dative selecting verb (e.g., *blížit se* 'approach,' as in 'the price approaches 100 CZK'), all the three patterns are still grammatical.

(6) a.	k	(těm)	tř-em	st-ům	korun-ám
	to	those$_{DAT}$	three$_{DAT}$	hundreds$_{DAT}$	CZK$_{DAT.PL}$
b.	k	(těm)	tř-i	st-a	korun-ám
	to	those$_{DAT}$	three$_{NOM}$	hundreds$_{NOM}$	CZK$_{DAT.PL}$

'to (those) three hundred crowns'

A reviewer asks what happens when a demonstrative is added between the preposition and the numeral. We see that it is dative in both (6a) and (6b). This can be explained under the assumption that the structure of the example is [those [*[three hundred]* CZK]], and nominative is only available for elements inside the projection of 'hundred' (in italics).

To sum up: *sto* 'hundred' enters into three patterns: a nominal pattern and two types of the homogeneous pattern. In one of its versions (in 5b), the numeral has the same case as the counted noun. Therefore, I call it the *agreeing* pattern. In (5c), the numeral is nominative, and the dative case is only expressed once in the phrase consisting of the numeral and the noun. This is reminiscent of languages with so-called phrasal case marking; therefore I call this the *phrasal-case* pattern, and treat it as an instance of the homogeneous pattern, even though there is no homogeneity in case. The reason for using the term 'homogeneous' is to preserve the traditional term and provide further distinctions within the established terminology.

The difference between the agreeing and the phrasal-case pattern is relevant for processes that are known to correlate with that distinction. For instance, in languages with agreement, it is generally possible to elide the noun with its affixes, leaving a modifier in place (see, e.g., Lipták and Saab 2014). This is possible in (6a), yielding (7a). However, in languages where modifiers do not agree, such an ellipsis is impossible. Correlating with that is the observation that ellipsis is impossible in the phrasal case pattern (6b), yielding the ungrammatical (7b). Including or omitting the demonstrative is orthogonal to this split behavior; I come back to this later on.

(7) *How much did it cost?*

a.	někde	k	(těm)	tř-em	st-ům	~~korun-ám~~
	somewhere	to	those$_{DAT}$	three$_{DAT}$	hundreds$_{DAT}$	CZK$_{DAT.PL}$

b. ?*někde k (těm) tř-i st-a ~~korun-ám~~
somewhere to $those_{DAT}$ $three_{NOM}$ $hundreds_{NOM}$ $CZK_{DAT.PL}$
'somewhere around three hundred'

(6) and (7) then show that the issue here is not that the expression of the dative case is variable (*st-o* or *st-u*). Instead, it seems that what varies is the case borne by 'hundred', with at least two different options available within a single grammar.

3 The Agreeing Pattern in the Instrumental

With the three way distinction between the nominal, agreeing and phrasal-case patterns in place, let me turn to the behavior of the three patterns in the instrumental case. The expected forms are below:

(8) a. se st-em korun
with 100_{INS} $CZK_{GEN.PL}$
b. *se st-em korun-ama
with 100_{INS} $CZK_{INS.PL}$
c. se st-o korun-ama
with 100_{NOM} $CZK_{INS.PL}$
all 'with hundred CZK'

(8a) shows the nominal pattern, with instrumental on the numeral and genitive plural on the counted noun. (8c) shows the phrasal-case pattern, with nominative on the numeral, and instrumental on the noun.

A strange thing happens when we look at the agreeing pattern. From (5), we know that the agreeing pattern arises by combining the cased form of the numeral and the 'homogeneous' form of the noun. When we construct an example with these properties in the instrumental (i.e., 8b), it turns out that it is ungrammatical. The purely descriptive conclusion is that 'hundred' lacks the agreeing pattern in the instrumental case. It is impossible to have the instrumental case both on the noun and the numeral.

This should be compared to the fact noted in section 1, namely that many numerals lack the expected instrumental form altogether. The point is that this now seems to be just an instance of the same pattern that we observe for 'hundred,' only more general: in Czech, it is impossible to

have the instrumental expressed simultaneously on both a higher numeral and the noun. The numeral has to be in a different case (nominative for 'hundred').

4 The Genitive-as-Oblique Pattern

But if *pět-i* in (3b) is not an INS (because Czech in general does not allow INS both on the numeral and the noun), then what is it? 'Hundred' shows up in the nominative form *st-o*; but *pět-i* 'five' cannot be analyzed this way, because it is not identical to the nominative form *pět*. Looking at other quantifiers sheds some light on this. Consider, for instance, *mnoho* 'many,' see (9). This item has a paradigm where *–a* stretches from GEN to INS. This is the same context where we find *–i* with 'five.'

(9) *'town' : 'many' = 'bone' : 'five'*

	city	many	bone	five
NOM	*měst-o*	*mnoh-o*	*kost*	*pět*
ACC	*měst-o*	*mnoh-o*	*kost*	*pět*
GEN	*měst-**a***	*mnoh-**a***	*kost-**i***	*pět-**i***
LOC	*měst-ě*	*mnoh-**a***	*kost-i*	*pět-**i***
DAT	*měst-u*	*mnoh-**a***	*kost-i*	*pět-**i***
INS	*měst-em*	*mnoh-**a***	*kost-**í***	*pět-**i***

The difference between 'many' and 'five' is that they belong to different declensions. Whereas 'five' inflects much like 'bone,' 'many' draws its case markers from the declension of the noun 'city' (at least in NOM to GEN). That is relevant, because 'city' (unlike 'bone') has a highly differentiated paradigm – all the oblique cases are distinct. Because of this, we can see that the invariant oblique ending *–a* corresponds to the genitive *–a* of 'city.' This pattern leads to the idea that 'five' (just like 'many') appears in all the oblique case environments bearing an ending of the genitive case. In sum, the claim is that all the boldfaced endings in the table should be understood as true genitive endings, and not as a surface conflation of distinct feature structures (syncretism). In plain language, the numeral is in the genitive case when it counts a noun in the instrumental.

I will call this pattern the 'genitive-as-oblique pattern,' because the numeral has in its paradigm only two case forms, tracking the division structural/oblique, with the oblique category expressed by the genitive.

I admit that the actual forms of 'five' are in principle open to other interpretations (the genitive form is only in the instrumental, the remaining forms are in the appropriate case; the form in the instrumental is not genitive but dative, etc.), but the overall system of Czech does not lend much support to such alternatives, as far as I am aware. On the other hand, interpreting the pattern of 'five' as a pattern where the genitive form spreads to other cases is independently supported by the pattern of 'many.'

If this way of understanding the facts is on the right track, we are led to the conclusion that in Czech, the homogeneous pattern really sub-divides into three distinct sub-patterns, depending on the case of the numeral. The numeral may either bear the same case as the noun (the agreeing pattern), it may be invariably nominative (the phrasal-case pattern) or it may be invariably genitive (the genitive-as-oblique pattern). The question I ask in the remainder of the paper is how to analyze these patterns, adopting certain independent proposals about case.

5 Case Decomposition

In many frameworks, it is believed that individual cases are not primitive entities, but internally complex objects that can be decomposed into features. I am also going to rely on case features in providing one possible explanation for the existence of the three distinct patterns.

In prototypical case-decomposition theories going back to Jakobson's pioneering work, researchers rely on binary features such as +/- structural, +/- oblique, etc. (see Niedle 1988, Franks 1995, Halle 1994 among many others). However, there are reasons to think that decomposition into binary features is not the best way to represent (minimally Slavic) case. McCreight and Chvany (1991) and Johnston (1997) (see also Baerman et al. 2005) point out that such a system is inappropriate to capture certain restrictions on syncretism. Taking Russian as their paradigm language, they observe that syncretism is restricted by a linear contiguity constraint, such that only adjacent cases in a linear sequence show syncretism. For Russian, they state the sequence NOM-ACC-GEN-LOC-DAT-INS. Caha (2009:ch.8) argues

that the same restrictions apply in Czech. All the works cited in this paragraph conclude that such a constraint, if true, cannot be captured by binary features. As Caha (2013:1027-1028) sums up the observations, any approach based on binary features either under-generates or massively over-generates (to the extent that anything goes), depending on how the details are set.

Various alternatives to binary features have been proposed, but it is impossible to do the justice to this literature here. Instead, I directly turn to the alternative explored by Caha (2009), where binary features are replaced by syntactically arranged privative features, such that individual cases stand in a containment relationship to other cases, as dictated by the syncretism sequence observed first by McCreight and Chvany (1991):

(10) *Case containment*

a.	NOM	=	[A]
b.	ACC	=	[B [A]]
c.	GEN	=	[C [B [A]]]
d.	LOC	=	[D [C [B [A]]]]
e.	DAT	=	[F [D [C [B [A]]]]]
f.	INS	=	[E [F [D [C [B [A]]]]]]

With this proposal in place, the adjacency/contiguity restriction on syncretism can be easily derived, see Caha (2009, 2013). Details of the proposal aside, it builds on similarity between cases. For instance, if GEN and NOM are treated as similar enough for a spell-out/pronunciation by one marker (they both share A and lack D), the relevant notion of 'similarity' must also include ACC (which also has A and lacks D). This way, contiguity is guaranteed for any syncretic relation between cases.

Note as well that Caha builds on Starke's (2009) proposal that individual morphemes may correspond to a whole phrase, such that a single instrumental marker may spell out all the projections in (10f), each projection containing just a single feature; see Caha's work for details.

The proposal in (10) – intended to capture syncretism patterns – can shed light on the peculiar properties of the three distinct patterns, a proposal I spell out below in the following sections. My goal is to avoid construction specific proposals, or special morphological rules known

from Distributed Morphology. For instance, within DM, one can imagine that a structure with full concord is subject to various degrees of Impoverishment, yielding the genitive-as-oblique pattern if Impoverishment deletes all features but A,B,C on the numeral; or the phrasal case pattern, if Impoverishment deletes all case features. Such an approach seems to me overly simplistic in that it loses (*prima faciae*) a handle on the fact that the distinctions in agreement correlate with syntacic distinctions, such as ellipsis. The three tools I will be using instead are (1) ellipsis, (2) variable pied-piping, and (3) whether concord is present or absent in the base-generated structure.

6 Two Cases, One Host: Case Attraction in Numerical Phrases

There are many theories of numerals in the literature, and I cannot do any justice to them here. Instead, I start directly by providing one possible explanation for how the homogeneous pattern arises.

I start from the observation that in a number of languages, we can find constructions where something looking like case competition takes place. For instance, there are languages where in free relative clauses (*He ate what John cooked*), the relative pronoun (*what*) can in principle bear either the case assigned by the matrix verb (*He **ate** what*), or by the embedded verb (*what John **cooked***). But despite there being two potential candidates for assigning case, the pronoun only appears with one case. Which case that turns out to be (the matrix or the embedded one) is governed by a set of rules, which partly differ from language to language.

What is important is that in many cases, the set of rules governing such a competition incorporates something looking like a case hierarchy. In Gothic, for instance, Harbert (1983) observes that if any of the two verbs assigns DAT, the realization of this case takes precedence over all other cases (GEN, ACC, NOM). This phenomenon is called case attraction, and we say that DAT attracts GEN/ACC/NOM. Looking at the competition in other cases, Harbert reports that in the hierarchy NOM-ACC-GEN-DAT, it is always the case on the right that attracts cases on the left.

The standard term for such an effect is 'markedness.' The most marked case is realized, the less marked case is left out. The decomposition in (10) allows us to understand this 'markedness' effect as a regular

instance of ellipsis. When two sets of features appear on one host, say both GEN and DAT, but only one set may be realized, the other set must be eliminated by ellipsis. Ellipsis (here as elsewhere) relies on recoverability: the content of the elided material must be recoverable on the basis of an antecedent. Notice that (10) provides an independently motivated proposal that determines which case may be recovered: NOM (A) may be recovered on the basis of ACC (A,B), which in turn may be recovered on the basis of GEN (A,B,C), and so on. Hence, when GEN and DAT meet, GEN is eliminated and DAT is expressed. The case with more features survives.

Caha (2015) extends this logic to Czech numerical phrases. He proposes that in numerical phrases, the numeral is a nominal-like head (as previously proposed by Ionin and Matushansky 2006), and it always assigns the genitive to the counted noun. In order to reflect the proposal, I will be calling numerals also numerical nouns. Caha (2015) further proposes that in addition to the genitive, the counted noun is also marked by the same case as the numeral has (due to concord). This proposal is depicted below, where the counted noun has two cases, one assigned by the nominal numeral, and the other copied by concord. It is thus a type of an agreeing genitive construction, or a *Suffixaufnahme* structure, a term used in Plank (1995). This is important, since I want to avoid any construction specific proposal, and derive the numerical pattern through an interplay of processes and structures that are independently attested.

(11) *The numeral construction:*
[*Numeral*-CASE$_i$ [*Counted-Noun*-GEN-CASE$_i$]]

As in free relatives, only one case survives on the host, and the other case is eliminated. The decomposition in (10) ensures that it is always the case with more features that survives, and the other case is elided. In other words, in the sequence NOM-ACC-GEN-LOC-DAT-INS, cases to the right of GEN license its ellipsis, while cases to the left of GEN (NOM, ACC) are elided, and GEN preserved. There is thus no construction specific process involved in the numerical construction; any theory of grammar has to provide for agreeing genitives and for ellipsis.

This theory provides an account of the split between the heterogeneous and homogeneous patterns. In the heterogeneous pattern, the concord case is elided and the genitive preserved. In the homogeneous pattern,

the genitive is elided and the concord marker preserved. However, as it stands, the account only provides an explanation for how the agreeing pattern arises, with both the numeral and the counted noun marked for the particular case. The following sections explore how to capture the additional patterns. What I will suggest is that in order to capture these patterns, the theory expressed in (10) and (11) must be further enriched by two additional (and independently needed) parameters of variation.

7 The Host of Case Markers: the Agreeing Pattern vs. the Rest

The first parameter concerns the *host* for case marking. For example, in Turkish, case is expressed only once in the whole noun phrase. I will thus be saying that it is the whole extended NP that serves as the host. In Czech, case is marked on almost every member of the noun phrase; we see it on Ns, As, DEMs, NUMs and a subset of possessors. For Czech, I will thus be saying that (nearly) every extended projection in the NP serves as the host. Theoretically, I encode this in a way that the case marker combines with the particular constituent that correponds to the host: [K [*host*]].

I will then assume that for each language, a set of hosts for case marking will be determined. There are various technical ways of doing this. In works inspired by recent Chomsky's work (Chomsky 2001), this aspect of variation is handled by placing uninterpretable features at the appropriate places in the structure (or deriving this from the theory of categories, as in Baker 2008). In a DM inspired tradition (Bobaljik 2008), case is determined after the syntactic computation, and concord is handled by special rules at Morphological Structure (see, e.g., Norris 2014).

A third option, which I adopt here, is to assume that depending on the language, case features may be base-generated at one or multiple places inside the noun phrase. In concrete terms, I assume that in Czech, case features are base-generated inside the extended projection of the adjective, yielding concord. Turkish or English lack case inside the extended projection of the adjective and no concord is observed.

In languages where such features are base-generated in the adjectival projection, they need to be checked Spec-Head (Chomsky, 1995). This is achived by treating adjectives as a type of a relative clause, such that a copy of the head noun is present inside the relative clause, and it is this

copy which does the checking. I refer the reader in particular to Leu (2008) for a detailed proposal along these lines. Technicalities aside, what is crucial is that there is indisputable variation in what the host of case marking is. I will call this 'the host parameter.'

An important observation is that such a variation can also be present within a single language. In the interest of space, I have to skip examples, but one relevant languages to point at is East Slovak Romani. The important message is that the variation in what the host is, will be used here as one of the factors involved in the multiplicity of numerical patterns. In particular, when *both* the numerical noun and the genitive serve as hosts, the agreeing pattern arises. When only the whole phrase [Num N] serves as the host, the remaining patterns arise. We will need movement to distinguish further among the possibilities, but it is relatively easy to see that when the (boldfaced) case on the dependent genitive is left out from (12a), the nominal pattern arises in (12b):

(12) *The numerical construction: the host parameter*
   a. AGR pattern: [*Num*-CASE$_i$ [*Counted-Noun*-~~GEN~~-**CASE$_i$**]]
   b. The nominal pattern: [*Num*-CASE$_i$ [*Counted-Noun*-GEN]]

It is worth noting that the two patterns in (12) are also implicated in the alternation between a plain genitive and an agreeing genitive construction (see Corbett 1995 for a discussion of such an alternation in Slavic), which relates to my goal that the analysis should not be construction specific.

Let me also make a note here concerning the strange fact that in Czech, the agreeing pattern (12a) is not available for numerals in the instrumental case, while it is available in DAT, LOC and GEN. A partial understanding of this fact comes from the observation that case is not a uniform category, and that languages tend to switch from concordial marking to phrasal marking somewhere along the hierarchy of cases in (10). For instance, in Icelandic, NOM, ACC, GEN and DAT are expressed on every member of the NP (there is concord for these cases), while the meaning of an instrument is expressed only once (there is a preposition marking this meaning). The pattern of case marking in Czech – that is when it comes to the phrase [Num N] – apparently has a similar system, where GEN and DAT are expressed both on the noun and the

numeral, while the meaning of an instrument is marked only once per phrase.

Finally, let me address a question raised by a reviewer concerning the pattern in (5). The pattern is repeated below. In this pattern, (5a-c) present three logical options of placing a dative marker in the string, either on the numeral, on the counted noun, or on both. (5d) corresponds to the fourth logical option of not placing it on either of them. A potential line of thinking is: we know that *sto* is compatible with dative environment (5c), and so is *korun* (5a); so we just combine these two and see what happens.

(5)	a.	ke	st-u	korun	c.	ke	st-o	korun-ám
		up to	100_{DAT}	$CZK_{GEN.PL}$		up to	100_{NOM}	$CZK_{DAT.PL}$
	b.	ke	st-u	korun-ám	d.	*ke	st-o	korun
		up to	100_{DAT}	$CZK_{DAT.PL}$		up to	100_{NOM}	$CZK_{GEN.PL}$

What happens is that the example is ungrammatical – and the question is why. The answer is that the logic which only looks at single words in the pattern is too simplex: we have to look at the phrase as a whole. If we do that, (5a,c) are just two different ways of expressing the dative case inside a complex phrase, an intuition I spell out in detail in what follows. (5d) is different: there is no dative at all here, and that is why the example is out as a phrase in an environment that requires dative (whatever its host).

8 Locating Case with respect to Host: the Nominal vs. Phrasal Pattern

I will now turn to the second parameter of variation, namely movement, and show how it may be used to further differentiate among the various patterns. Involving movement in the picture relates to a descriptive variation along the following lines: for a given host, how is case marking realized on that host? Does it precede the host, does it follow the host, or is the marking super-imposed on the host (suppletion, ablaut, etc.)?

In Czech, the instrumental meaning is expressed by a marker that follows the host (where the set of hosts include the noun, the adjective and so on); we get *t-**ím** velk-**ým** kladiv-**em*** 'that-INS big-INS hammer-INS.' In Bulgarian, on the other hand, the host of case marking is the

whole noun phrase (since the meaning of an instrument is expressed only once in the whole phrase), and the phrasal marker precedes the host; we get ***s*** *tozi guljam čuk* 'INS that big hammer.'

There are reasons to think that case (labelled K) is a separate funcional head, which takes its host as the complement (Bittner and Hale 1996). If that is so, the ordering between case and its host (whatever that host is) can be understood as a consequence of regular principles governing the ordering of heads and complements in the syntax.

The theory of ordering I adopt here falls in the camp of LCA based theories (Kayne, 1994, see also Cinque 2005). According to such theories, any functional head precedes its complement in the base structure. If nothing happens, the functional head will keep preceding the host, and we get a language like Bulgarian (13a). However, the complement of K may move to its left, placing the host to the left of the case marker, which in Czech happens with both nouns (13b) and adjectives (13c). The noun and the adjective are assembled together only after each of them crosses its K.

(13) *The ordering of the host and the case marker*

a. Bulgarian:	[K [HOST]]	[s [tozi guljam čuk]]
b. Czech:	[HOST [K [~~HOST~~]]]	[kladiv [em [~~kladiv~~]]]
c. Czech:	[HOST [K [~~HOST~~]]]	[velk [ým [~~velk~~]]]

If this view is correct, we must update our structure for Czech numerical phrases. This will have little effect when case marking is placed on every member of the noun phrase; we will just have to move each host to the left of its case marker before assembling them together. However, in cases where the whole numerical phrase only has one case marker, different patterns arise depending on how movement proceeds. To show that, consider first the base structure (14a). Here we have the numerical noun (*Num*) taking a complement (*N*) in the genitive, and on top of this constituent, we base-generate a single case marker (K) signalling the semantic/syntactic role of the phrase including the numeral and the noun.

(14) a. K [*Num* [*N-GEN*]] base structure

b. *Num* [K [~~*Num*~~ [*N-GEN*]]] the nominal pattern

c. [*Num* [*N-GEN*]] [K ~~[*Num* [*N-GEN*]]~~] the phrasal-case pattern

In Czech, case is a suffix, so something moves to the left of K. In Czech, there are two options. Either the head of the complement moves, and we get the structure (14b). Here the case affix ends up on the numerical noun (we have the sequence *Num-K*), and the complement of the numerical noun is in genitive (*N-GEN*). This corresponds to the nominal pattern.

Alternatively, the whole complement of K moves, and we get the phrasal case pattern (14c). Here, the numeral is uninflected for case (*Num* is directly followed by N), and the case marker follows linearly the counted noun. The sequence we have on the surface is such that after the counted noun in the genitive, an additional case marker should appear. In the surface strings (8), however, we never see phrasal case marking superimposed on the genitive marking. The reason for that has already been explored in section 6: ellipsis. The inner GEN is elided because its features are contained inside any oblique K that follows it.

To sum up, the analysis says that the phrasal case pattern should be analyzed as an instance of phrasal affixation, where a case affix attaches to the whole phrase containing the numeral and the noun. In addition, the sequence of two case affixes is simplified by eliding the genitive (because its features can be recovered from the other oblique affix).

This proposal singles out the agreeing pattern against the nominal and the phrasal-case patterns by proposing two distinct base-generated structures. The agreeing pattern corresponds to (12a) with two case markers in the base structure (in addition to GEN); the nominal pattern and the phrasal-case pattern only have one case marker (in addition to GEN), see (14a). This split seems to be empirically justified by the fact, seen in (8), that 'hundred' in the instrumental has both the nominal pattern and the phrasal-case pattern (corresponding to the base structure in 12b), but lacks the agreeing pattern (corresponding to 12a).

Let me finaly turn to the question of how ellipsis operates in these examples; recall from (7) that ellipsis cannot eliminate the counted noun in the phrasal case pattern (7b); this can now be understood as a consequence of the fact that the elided material (boldfaced in (15a)) does not form a constituent. That is because the numeral is included in the smallest constituent containing the counted noun and the case marker, so ellipsis cannot apply to the relevant string.

The demonstrative (if present) has its own case marker internally in its projection, and it would be added on top of the whole structure (15a).

Therefore, it would not interact with the ellipsis (which it doesn't, as we saw in (7)).

(15) a. [*Num* [***N-GEN***]] **[K** [*Num* [*N-GEN*]]]
b. [[Num [K ~~Num~~]] **[N-GEN [K** ~~N-GEN~~ **]]**]

The structure assumed for the greeing pattern is in (15b). Both the genitive and the numeral each have their own case marker. Each of them moves across it, and then they are assembled. In this case, the counted noun and the case marker form a constituent (in bold), which can be elided.

What remains is to provide an account for the genitive-as-oblique pattern, a task which I turn to now. The analysis I provide below is rather tentative. In simple terms, it builds on the idea that the numeral has a defective paradigm: it only has the nominative, accusative and genitive – but it does not have the locative, dative or instrumental case (see Bošković 2001 for a discussion of Serbian examples of this sort). In the theory outlined here, this means that the numeral has restricted movement options – it can only move as high as the feature C, but no higher. However, in order to express the instrumental meaning, the remaining features must be somehow expressed. The idea I am going to encode formally below is that they are spelled out on the complement noun.

9 Case Decomposition and Pied-Piping

As the first step of the (tentative) explanation for the genitive-as-oblique pattern, let me first specify in more detail the derivation of the nominal pattern. What I do first is to enrich the simplified representation in (14b) by the proposal in (10), namely that case decomposes into a number of features. When we do that, replacing the single K for a sequence of projections, we get the base structure (16a), and, after moving the numerical noun as in (14b), the derived structure (16b). The problem with (16b) is that the features of the instrumental A—F do not for a constituent (there is the genitive noun inside the constituent as well). Hence, if we adopt the idea of phrasal spell-out, these features cannot be pronounced by a single morpheme in (16b). A solution is provided by the proposal – put forth in Cinque's (2005) theory of ordering in the noun

phrase – that genitive complements always move high up to the left, as shown in (16c). After this movement, the case features A—F do form a constituent (ignoring traces), and they can be spelled out by the instrumental marker as indicated below the line (16c). Finally, a step of remnant movement takes the numerical noun back to the left of the noun (again as in Cinque's 2005 proposal). The only non-standard aspect of the proposal is that I treat the numeral as a noun.

(16) a. [F [E … [A [*Num* [*N-gen*]]]]]
b. *Num* [F [E … [A [~~*Num*~~ [*N-gen*]]]]]
c. *N-gen* [*Num* [F [E … [A [~~*Num*~~ [~~*N-gen*~~]]]]]]
Num ------ *ins* ------
d. *Num-ins* *N-gen*

Let me now combine this more detailed and accurate derivation with the idea that some numerical nouns are defective, and only move as high as C in the structure, but never as high as F.

The derivation is shown in (17). We first merge features A—C and build the genitive case (17a), which is as high as the numerical noun may move (17b). What we do then is add the rest of the case features that make up the instrumental. If the numeral were not defective (like 'hundred'), we could move it to the left of the feature F as we did in (16b); but remember that 'five' and its kin are defective and may not move higher than C. Therefore, we skip moving the numeral, and move the counted noun in a way similar to (16c), thereby creating a constituent containing the features A—C, which can now be spelled out as a genitive following the numeral. The numerical noun now undergoes remnant movement as in (16d), and ends up to the left of the counted noun. However, unlike in the nominal pattern (16d), the numeral is marked genitive. The final observation is that the features D—F now follow the counted noun, which itself has the features A—C. The final point of the analysis is that the features of the counted noun (A—C) and the features that actually belong to the whole phrase (D—F) now form a complete set of features (A—F) that correspond to the instrumental (see the boldfaced part). Since spell out is post-syntactic, it does not care about the derivational origin of the features, and spells them out as one marker. This way, the genitive-as-oblique pattern emerges.

(17) a. [C [B [A [*Num* [*N-gen*]…
b. *Num* [C [B [A [~~*Num*~~ [*N-gen*]…
c. [F [E [D [*Num* [C [B [A [~~*Num*~~ [*N-gen*]…
d. *N-gen* [F [E [D [*Num* [C [B [A [~~*Num*~~ [~~*N-gen*~~]…
Num *--- gen ---*
e. *Num-gen* *N-**gen*** **[F [E [D** [~~*Num* [C [B [A [*Num* [*N-gen* ~~]…

The way the features belonging to two different nouns merge in a single marker is reminiscent of clitic-cluster effects. For instance, in Pazar Laz (Blix 2012), the following pattern is found. If the subject or object is 3rd plural, the suffix *–an* appears on the verb. Further, if the subject or object is 3rd singular, *-s* appears, and if the subject or object is plural (but not 3rd person) the suffix *–t* appears. In this system, when a 3rd singular subject and a second plural object appear as arguments of the verb, we would expect the combination of suffixes *–s-t*, where *–s* marks a third singular argument (the subject), and *–t* marks a plural argument (the object). But what in fact happens is that we get a single marker: the 3rd plural *–an*. The features of subject (3rd) and object (Pl) merge together. Similarly in (17e), features with different sources (some belong to the counted noun, and some belong to the whole numerical phrase) merge in a single morpheme.

10 Conclusions

The current paper makes two contributions. The first one is to enrich our typology of numerical constructions. Specifically, what has been called the homogeneous pattern divides in Czech into three distinct sub-patterns: the agreeing pattern, the phrasal-case pattern, and the genitive-as-oblique pattern. The second goal was to explain the syntax of these patterns using a particular analysis of the homogeneous pattern as an instance of case attraction. Assuming this analysis, the existence of the various sub-patterns was explained as arising from varying two parameters: what the host of case marking is, and how movement proceeds.

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A CVCV Account of the Russian *ɔ/a* Alternation[1]

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In this paper, I propose an analysis of the Russian *ɔ/a* alternation in the CVCV framework introduced by Lowenstamm (1996)[2]. My aim is to give a phonological account of the correlation between ɔ/a alternation and stress. I first present the data and introduce the issue. Second, I give a brief overview of basic facts concerning the framework. Finally, I show how CVCV can account for the alternation at issue.

1 The Russian *ɔ/a* alternation

In this section, I introduce some properties of the ɔ/a alternation: **i.** the morphological context in which it occurs; **ii.** its correlation with stress; and **iii.** the exceptions and their evolution.

1 Examples are in IPA, but stressed nuclei are underlined. Square brackets represent phonetic forms and slashes represent underlying forms. Intermediary forms are represented without slashes. All examples were checked with a native speaker of Russian.
2 Because of the restricted page number, I will not discuss the analysis explored in Pesetsky (1979), Rubach (1986) and Matushansky (2009) (among others), which considers the ɔ/a and Ø/ɨ alternations as two manifestations of an ATR feature. First, this analysis does not: **i.** account for the correlation between ɔ/a alternation and stress, which is the main topic of the present paper; and **ii.** it does not motivate the insertion of an ATR feature. Second, unlike the ɔ/a alternation, the Ø/ɨ alternation is not related to stress. I propose an account of the latter in Anonymous (XXXX).

1.1 Data

1.1.1 Morphological context. The Russian ɔ/a alternation[3] is involved in verbs ending with the secondary imperfective suffix -ɨva. It concerns exclusively the last (non-yer) root vowel. When the last root vowel is an underlying /ɔ/ in the perfective form, it is most often replaced by /a/ in the secondary imperfective form ending with -ɨva (Mazon, 1908: 62, 1943: §133; Chernyshev, 1911: §324-326; Garde, 1980: §584) (1).

(1) Examples of ɔ/a alternation

Perfective	**Imperfective**	**Gloss**
na-brɔs-a-tʲ	na-bras-ɨva-tʲ	*sketch sth*
za-kɔnʧʲ-i-tʲ	za-kanʧʲ-iva-tʲ	*finish*
za-rabɔt-a-tʲ	za-rabat-ɨva-tʲ	*earn*

1.1.2 Correlation with stress. Along with this ɔ/a alternation, the suffix -ɨva involves a pre-suffixal stress: stress falls on the last (non-yer) vowel before the suffix -ɨva (Mazon, 1908:61; Garde, 1980:§582) (2).

(2) Examples of stress shift to the pre-suffixal vowel

Perfective	**Imperfective**	**Gloss**
s-prɔsʲ-**i**-tʲ	s-pra**ʃ**-ɨva-tʲ	*ask*
na-brɔs-**a**-tʲ	na-bra**s**-ɨva-tʲ	*sketch sth*
raz-pʲis-**a**-tʲ-sʲa	raz-pʲ**i**s-ɨva-tʲ-sʲa	*sign*

As a consequence, -ɨva involves two phonological properties: **i.** an a-mutation of the last root vowel /ɔ/; and **ii.** a pre-suffixal stress.

1.1.3 Exceptions. Today, less than 20% of the verbs in -ɨva (with an underlying root vowel /ɔ/) are exceptions to the ɔ/a alternation (Sagitova, 2012). These exceptions changed during the history of Russian. Before the 19th century, exceptions were conditioned by phonology. Verbs with

3 Historically, the ɔ/a alternation stems from a quantitative alternation o/ō in Proto-Slavic. In Russian, o became ɔ, and ō became a (Vaillant, 1948).

a stressed root vowel /ɔ/ in the perfective did not undergo a-mutation (Mazon, 1908:63, 1943:§133; Chernyshev, 1911:§325-326) (3).

(3) Examples of exceptions to the ɔ/a alternation (19th Russian)

Perfective	**Imperfective**	**Gloss**
za-rɔb**ɔ̲**t-a-tʲ	za-rɔb**ɔ̲**t-ɨva-tʲ	*earn*
na-str**ɔ̲**j-i-tʲ	na-str**ɔ̲**j-iva-tʲ	*tune*
za-mɔr**ɔ̲**zʲ-i-tʲ	za-mɔr**ɔ̲**ʒ-ɨva-tʲ	*freeze*

After the 19th century, a lot of former exceptions came to show an ɔ/a alternation (e.g. u-sv**ɔ̲**j-iva-tʲ > u-sv**a̲**j-iva-tʲ 'to assimilate') (Mazon, 1908: 63; Chernyshev, 1911: §326; Garde, 1980: §595; Sagitova, 2012: 100-101) (4), sometimes resulting in competitive forms (e.g. ɔ-bʲɛz-b**ɔ̲**lʲ-iva-tʲ / ɔ-bʲɛz-b**a̲**lʲ-iva-tʲ 'to anesthetize'). This spreading is still applying in Modern Russian (Sagitova, 2012:112). Thus the a-mutation of the root vowel /ɔ/ is not only regular, but it also became a productive process (Sagitova, 2012: 101-114).

(4) Spreading of the ɔ/a alternation after the 19th century

19th century	**20th century**	**Gloss**
za-rɔb**ɔ̲**t-ɨva-tʲ	za-rɔb**a̲**t-ɨva-tʲ	*earn*
na-str**ɔ̲**j-iva-tʲ	na-str**a̲**j-iva-tʲ	*tune*
za-mɔr**ɔ̲**ʒ-ɨva-tʲ	za-mɔr**a̲**ʒ-ɨva-tʲ	*freeze*

Today, exceptions are rare (Chernyshev, 1911: §325; Garde, 1980: §584, §595), and are no longer conditioned by phonology. Following Mazon (1908:63, 1943: §133), Garde (1980: §595) and Sagitova (2012: 113), the remaining exceptions are essentially denominal verbs (5).

(5) Examples of denominal verbs with no *ɔ/a* alternation (20th Russian)

Imperfective	**Gloss**	**Noun**	**Gloss**
ɔ-zab**ɔ̲**ʧʲ-iva-tʲ	*disquiet*	zab**ɔ̲**t-a	*care*

ɔ-pɔz**o̲**rʲ-iva-tʲ	*disgrace*	pɔzo̲r	*shame*
ɔ-bʲɛz-pɔk**o̲**j-iva-tʲ	*perturb*	pɔko̲j	*peace*
u-pɔlnɔm**o̲**ʧʲ-iva-tʲ	*empower*	pɔlnɔmɔ̲ʧʲijɛ	*power*
za-ʃt**o̲**p-ɨva-tʲ	*darn*	ʃto̲p-ka	*darn*
za-pɔ-d**o̲**zrʲ-iva-tʲ	*suspect*	dɔzo̲r	*watch*
za-xl**o̲**p-ɨva-tʲ	*slam*	xlo̲p-ɔk	*clap*
u-zak**o̲**nʲ-iva-tʲ	*legalize*	zako̲n	*law*
pɔd-zad**o̲**rʲ-iva-tʲ	*defy*	zado̲r	*ardor*
ɔt-ʃlʲ**o̲**p-ɨva-tʲ	*spank*	ʃlʲɛp-o̲k	*spank*
prɔ-sr**o̲**ʧʲ-iva-tʲ	*let expire*	sro̲k	*term*
prʲɛ-ɔbraz-**o̲**v-ɨva-tʲ	*transform*	o̲braz	*form*

Verbs with a suffix -ɔv count as *one* exception: the absence of ɔ/a alternation is conditioned by -ɔv. This suffix is defined as denominal in Mazon (1908: 63; 1943: §133), Meillet (1924: §234, §321) and Garde (1980: §553). It derives: **i.** adjectives from nouns (e.g. dʲɛ̲d-ɔv 'of grand-father'); **ii.** verbs from nouns (6); and also **iii.** some verbs from foreign roots (e.g. tramb-ɔv-a̲-tʲ < germ. *trampeln* 'to trample', etc.).

(6) Examples of denominal suffix -ɔv (20th Russian)

Imperfective	**Gloss**	**Noun**	**Gloss**
prʲɛ-ɔbraz-**o̲v**-ɨva-tʲ	*transform*	o̲braz	*form*
raz-tɔlk-**o̲v**-ɨva-tʲ	*explain*	to̲lk	*sense*
za-vɔj-**o̲v**-ɨva-tʲ	*conquer*	vɔj-na̲	*war*
vɨ-tɔrg-**o̲v**-ɨva-tʲ	*bargain*	to̲rg	*bargain*
za-ɨntrʲig-**o̲v**-ɨva-tʲ	*intrigue*	intrʲi̲g-a	*intrigue*
pʲɛrʲɛ-arʲɛnd-**o̲v**-ɨva-tʲ	*sublet*	arʲɛ̲nd-a	*lease*
za-brak-**o̲v**-ɨva-tʲ	*reject*	bra̲k	*flaw*

pʲɛrʲɛ-gaz-**ɔ̲v**-ɨva-tʲ	*give a boost (car)*	ga̲z	*gas*
prʲi-park-**ɔ̲v**-ɨva-tʲ	*park*	pa̲rk	*(car) park*
ɔb-vɔr-**ɔ̲v**-ɨva-tʲ	*deprive*	vɔ̲r	*thief*
za-strax-**ɔ̲v**-ɨva-tʲ	*insure*	stra̲x	*anxiety*
ɔ-ʃtraf-**ɔ̲v**-ɨva-tʲ	*fine*	ʃtra̲f	*fine*
raz-ɔ-ʧʲar-**ɔ̲v**-ɨva-tʲ	*disappoint*	ʧʲa̲r-ɨ	*charms*
raz-krʲitʲik-**ɔv**-ɨva-tʲ	*criticize*	krʲi̲tʲik-a	*critism*

Hence the following generalization: *exceptions to the ɔ/a alternation are denominal verbs*. However, it does not mean that all denominal verbs are exceptions (i.e. za-rɔba̲t-ɨva-tʲ 'to earn', derived from rɔbɔ̲t-a 'to work').

1.2 Issue

In sum, I showed in the preceding sub-section that there is a correlation between ɔ/a alternation and stress in Russian. First, the ɔ/a alternation is correlated to a pre-suffixal stress. Second, exceptions to the ɔ/a alternation were correlated, before the 19th century, to the occurrence of a stressed root vowel /ɔ/ in the perfective form. Thus I formulate the questions in (7).

(7)

a. How to account for the fact that -ɨva involves both an ɔ/a alternation and a pre-suffixal stress?

b. How to account for the fact that a stressed root vowel /ɔ/ in the perfective form of verbs conditions (before the 19th century) the absence of ɔ/a alternation in the imperfective form ending with -ɨva?

I address these two questions in the following sections. I show that these questions are closely related to the issue in (8).

(8) How to account for the fact that only /ɔ/ alternates with /a/?

2 Framework and Representation

In this section, I introduce: **i.** the representation of the -i̶va suffix that I proposed in Anonymous (XXXX); and **ii.** some basic facts about the CVCV framework (Lowenstamm, 1996; Scheer, 2004; among others).

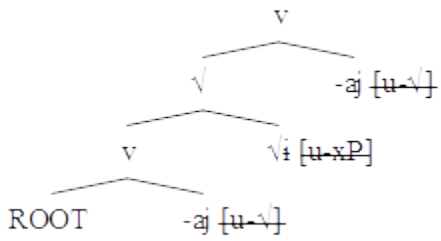
2.1 The Representation of -i̶va

In Anonymous (XXXX), I proposed a representation of the -i̶va suffix based on Coats (1974) and Feinberg (1980). I give a brief overview of this representation in this sub-section. Coats (1974) and Feinberg (1980) agree that -i̶va is the realization of two suffixes -aj (i.e. underlyingly /-aj-aj/). Following Coats (1974), the first suffix -aj is an unstressed thematic vowel. For Feinberg (1980), it is the stressed imperfectivizing suffix -a̲j (see Garde, 1980: §582 and Melvold, 1989:295 about the stress property of this suffix). In the last section, I will propose that both representations occurred during the history of Russian: **i.** -i̶va with an unstressed suffix -aj could sometimes occur in the 19th century; but then **ii.** -i̶va with a stressed suffix -a̲j spread to all forms during the 20th century.

According to these analyses, the vowel of the first suffix needs to be reduced to [ɨ] (for obscure reasons)[4], and an intervocalic j/v alternation occurs. We get -i̶va(j). To explain the reduction of /a/, I proposed in Anonymous (XXXX) that: **i.** both -aj suffixes are phonological exponents of a head v; and **ii.** the vowel [ɨ] is an expletive root (see Faust, 2011: 223 for Modern Hebrew) inserted in order to avoid a succession of two identical heads. See the corresponding complex head in (9).

4 [ɨ] is not the regular reduced form of the vowel /a/.

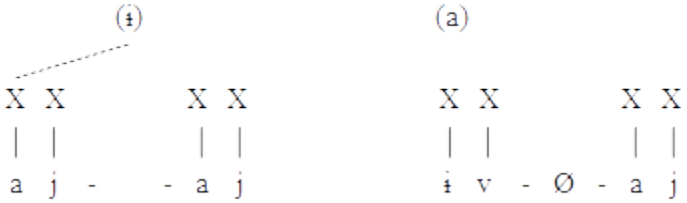
(9) /aj-ɨ-aj/



I assumed in Anonymous (XXXX) that the vowel /ɨ/ of the expletive root is floating (represented between round brackets in 10a). In order to be realized, it associates to the nearest vocalic position on the left[5] (i.e. the vocalic position of the first suffix -aj) (10a). Accordingly, /a/ is delinked (it becomes floating) and we get -ɨva(j) (after intervocalic v/j alternation) (10b).

(10)

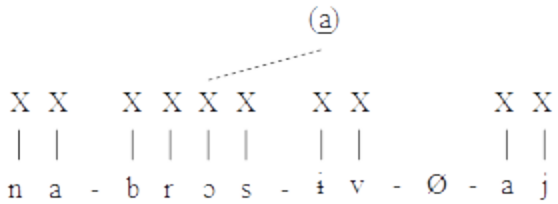
a. underlying: /-aj-ɨ-aj/ b. surface: -ɨva



The advantage of this representation – except the fact that the change from /a/ to [ɨ] on the surface is now motivated – is that we do not get the suffix -ɨva only, but also a floating vowel /a/ (10b). If we assume that this floating vowel originally belongs to the stressed imperfectivizing suffix -a̲j (see Feinberg, 1980), then it should also be stressed. In Anonymous (XXXX), I argued that this floating stressed vowel /a̲/ is responsible for the ɔ/a alternation and for the stress shift to the pre-suffixal syllable: after it was delinked, /a̲/ aims to be realized. For this purpose, it moves to the nearest vocalic position on the left (11).

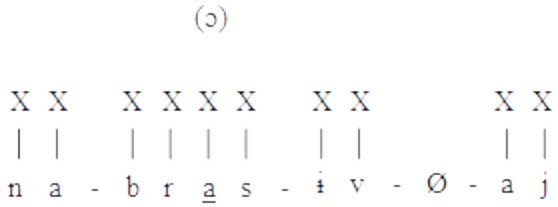
5 Segmental assimilation is most often supposed to occur leftward (Javkin, 1979).

(11)



If this vowel is an underlying /ɔ/, it is delinked and replaced by the stressed /a/: both ɔ/a alternation and pre-suffixal stress are obtained (12).

(12) na-bras-i̱va-tʲ



Thus this representation accounts for: **i.** the fact that -i̱va involves an a-mutation, and not an i- or u-mutation (or whatever); and **ii.** the fact that -i̱va involves a pre-suffixal stress. In this paper, I aim to show more precisely what happens phonologically. That is: **i.** why only /ɔ/ undergoes an a-mutation; and **ii.** how is stress always shifted to the pre-suffixal vowel?

2.2 The CVCV Framework

2.3.1 Basic Facts. The CVCV framework is an autosegmental approach to phonology that supposes that the skeleton is made of a sequence of consonant and vowel positions (i.e. C and V respectively). The melodic content is associated to these positions via association lines: **i.** long segments are associated to two C- or V-positions (13a); **ii.** a melodic material that is not associated to the skeleton is floating (13b); and **iii.** a skeletal position that is not associated to melody is unexpressed.

(13)

a. b.

CVCV follows the universal association convention in (14) (Lowenstamm, 2003).

(14) Universal Association Convention
- a. consonants associate to C-positions, and vowels to V-positions
- b. the melody is associated to the skeleton from left to right
- c. association lines cannot cross (LCC)
- d. adjacency of two identical melodic materials is forbidden (OCP)
- e. the remaining skeleton units (i.e. CV) are identified by spreading

2.2.1 Element Theory. CVCV (which is a theory of the skeleton) is inextricably linked to the element theory (which is a theory of the melodic content) introduced in Kaye, Lowenstamm and Vergnaud (1985) and later developed in Backley (2011), among others. Following this theory, vowels are made of some sets of features called *elements* (and represented with capital symbols). Each element (e.g. A, I, U, and the zero element @) can be a head (underlined) or an operator[6].

Russian vowels (both plain and reduced forms[7]) are represented in (15). The vowels /i/, /u/ and /ɨ/ are never reduced (Garde, 1980: §102). I deduce that, in unstressed context: **i.** only the operators I and U are lost; and **ii.** the head element A loses its head function (it is also lost after *always hard* consonants /ʃ, ʒ, ʦ/). The most important fact to retain is that /ɔ/ is reduced to a single element A in unstressed (non palatalized) context.

---

6 A head shares all its features, and an operator shares only its *marked* feature (see Kaye, Lowenstamm and Vergnaud, 1985 for details).

7 The reduction in palatalized context is not relevant for the present study. Just note that the palatalized context shares an I element with the reduced vowel.

(15) Representation of Russian vowels (element theory)

Plain vowels				**Reduced vowels (non palatalized context)**			
|I|	/i/	|U|	/u/		-		-
|AI|	/ɛ/	|AU|	/ɔ/	|@|	[ɨ]	|A|	[ə, ʌ][8, 8]
|A|	/a/	|@|	/ɨ/	|A|	[ə, ʌ][9]		-

The specificity of CVCV with regard to element theory is that the phonetic realization of elements can be conditioned (in some languages) by their length. Lowenstamm (1991) argues that: **i.** a non branching element is likely not to be realized (16a); when **ii.** a branching element is phonetically expressed, but it can be realized as a short segment (16b).

(16)

a. /a/ → [ɨ]

b. /aa/ → [a]

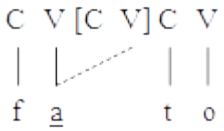
This abstractness of CVCV representations is particularly relevant for the present study.

2.2.2 Representation of Russian stress. In the frame of CVCV, Larsen (1998) (and then Lowenstamm, 1996; Scheer, 2000; Anonymous, XXXX; among others) proposed that stress is represented by length: a CV unit is inserted on the right of the *stressed* nucleus, thus accounting for Tonic Vowel Lengthening in languages like Italian. After the *stress CV* (represented with square brackets) was inserted, the tonic vowel spreads (17) in order to satisfy the association convention in (14e).

8 After the consonants ʒ, ʃ and ʦ, /ɔ/ is reduced to @ (i.e. [ɨ]), when it directly precedes the stress.

9 [ʌ] is found in pre-tonic position. The reason why /ɔ/ and /a/ reduce to [ʌ] in pre-tonic context is not relevant here: only the neutralization of these two vowels is phonologically relevant. Thus, I here assume that the contrast between [ʌ] and schwa is phonetic.

(17) Italian /fa̲to/ → [fa̲a̲to]



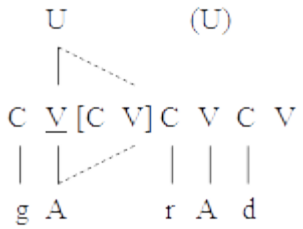
I assume that this representation accounts for Russian stress, and especially for the reduction of unstressed vowels (e.g. compare stressed vowels in 18a with their unstressed counterparts in 18b).

(18) Examples of Russian vowel reduction

a.	[gɔ̲rət]	*city*	b.	[gərʌda̲]	*cities*
	[na̲ʧʲɪl]	*he began*		[nəʧʲila̲]	*she began*
	[ʒ:e̲ʧʲ]	*burn sth* (PF)		[ʒ:i̲ga̲tʲ]	*burn sth* (IPF)

Following Zlatoustova (1953), Fedorova (1971), Chistovich *et al.* (1976), Al'muhamedova and Kul'sharipova (1980: 47), Svetozarova (1982: 155-158), Kasatkina (1996), Crosswhite (2000: 5-7), Krivnova (2004), Knjazev (2006: 43), Shastina (2011) and Apushkina (2013) (among others), one of stress correlates in Russian is vowel length: stressed vowels are longer than unstressed vowels. Thus I propose the representation of the word /gɔ̲rəd/ in (19). Stress is represented by an *extra* CV unit (in brackets) on the right of the phonetically stressed nucleus. This CV unit is identified by spread of the vowel on the left (see 14e). As a consequence, all the elements of this vowel are branching and thus phonetically expressed (see Section 2.2.2). We get [ɔ] (see 15). On the contrary, the unstressed vowel cannot branch. Thus all the operators I and U are delinked (i.e. they are floating). We get [ə].

(19) Russian /gɔ̲rəd/ → [gɔ̲rət]



After having introduced these basic facts, I now propose a CVCV account of the issues in (7) and (8), repeated in (20).

(20)

a. How to account for the fact that -ɨva involves both an ɔ/a alternation and a pre-suffixal stress?

b. How to account for the fact that a stressed root vowel /ɔ/ in the perfective form of verbs conditions (before the 19th century) the absence of ɔ/a alternation in the imperfective form ending with -ɨva?

c. How to account for the fact that only /ɔ/ alternates with /a/?

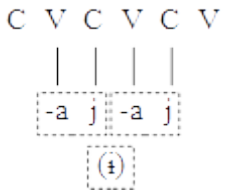
3 The Proposed Account

In this section, I propose an account of: **i.** the fact that -ɨva involves a pre-suffixal stress; **ii.** the fact that only /ɔ/ can undergo an a-mutation; **iii.** the fact that a stressed root vowel /ɔ/ (in the perfective) did no't undergo any a-mutation during the 19th century; and **iv.** the fact that the exceptions to the ɔ/a alternation today are restricted to denominal verbs.

3.1 The Pre-Suffixal Stress

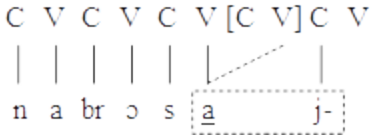
In Section 2.1, I briefly presented a representation of the -ɨva suffix that makes it possible to motivate the a-mutation involved by -ɨva. Following this representation, -ɨva is the realization of two suffixes -aj with an intervening floating vowel /ɨ/ (boxed) (see Section 2.1) (21).

(21) /aj-ɨ-aj/ (underlying form)



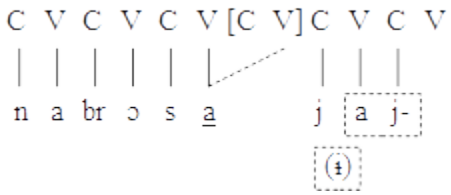
Note that this set of suffixes is not necessarily added to a stem as a monolithic bloc. See for example the representation of the perfective verb na-brɔs-a̲-tʲ 'to sketch sth' in (22): it already contains a stressed suffix -a̲j (boxed). (Remember that stress is now represented with vowel length.)

(22) /na-brɔs-a̲j-/ (underlying form)



The derivation of the imperfective form ending with -ɨva results from the suffixation of a *new* imperfectivizing suffix -aj and an intervening floating vowel /ɨ/ (boxed) (23). However, note that in perfective stems ending with another suffix than -aj (e.g. s-prɔsʲ-i̲-tʲ 'to ask'), the derivation of the imperfective form ending with -ɨva (e.g. s-praʃ-ɨva-tʲ) implies a suffixation of the two suffixes -aj simultaneously (see Coats, 1974; Feinberg, 1980; and Anonymous, XXXX for argumentation).

(23) /na-brɔs-a̲j-ɨ-aj-/ (underlying form)

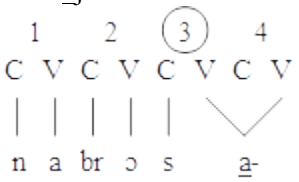


Now, the question is: how is the surface form (e.g. na-bra̲s-ɨva-tʲ) derived? In Anonymous (XXXX) (see Section 2.1), I argued that the floating vowel /ɨ/ *forces* the vowel of the first suffix -aj to shift to the root and replace the vowel /ɔ/ (see 10, 11, 12). Thus, the suffix vowel /a/ in na-brɔs-a̲-tʲ and the a-mutated root vowel in na-bra̲s-ɨva-tʲ are analyzed as the same item. There is no need for a readjustment rule or a set of features arbitrary involved by -ɨva in the morphosyntactic tree (*contra* Gribanova, 2015).

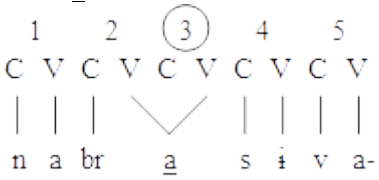
But it is still unclear how stress phonologically moves from one skeletal position to another. In fact, I now aim to argue that neither the suffix vowel nor the stress really move. Compare the surface representations of the perfective na-brɔs-a̲-tʲ 'to sketch sth' (24a) and its secondary imperfective form na-bra̲s-ɨva-tʲ in (24b)[10]. We can observe that the suffix vowel in (24a) and the a-mutated vowel in (24b) are associated to the same (third) position of the skeleton in both cases. There is no vowel shift.

(24)

a. na-brɔs-a̲j-



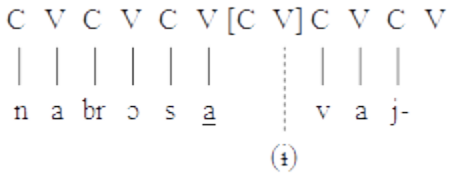
b. na-bra̲s-ɨva-



Thus I propose the following phonological derivation of secondary imperfectives ending with -ɨva. After /-aj-ɨ-aj/ was suffixed (see 23): **i.** /j/ alternates with /v/ (see Coats, 1974); and **ii.** the floating vowel /ɨ/ associates to the nearest vocalic position on the left (25).

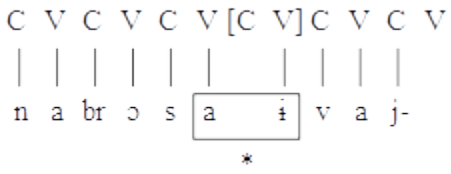
10 For convenience, the consonants b and r are represented on the same C-position, and the infinitive suffix -tʲ is not represented.

(25)



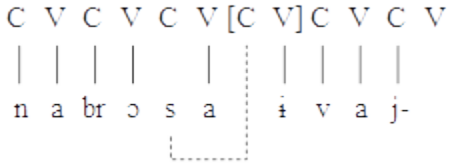
It results a hiatus (26), which is, in Russian, prohibited between a root vowel and a suffix vowel, or between two suffix vowels (i.e. at the right edge of the word; see Jakobson, 1948: 159; Garde, 1972: 372).

(26)



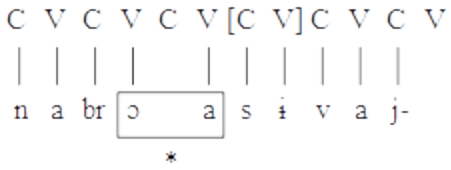
Consequently, I assume that the apparent *moving* of the vowel /a/ is the effect of a metathesis: the consonant /s/ associates to the C-position that follows /a/ (see 27) in order to repair the hiatus in (26).

(27)



Metathesis is the optimal solution in (27) to repair a hiatus without losing any material. However, it creates a new hiatus in the following stage of the derivation, represented in (28).

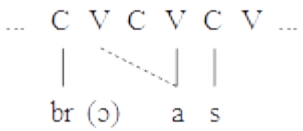
(28)



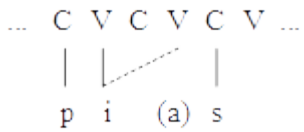
In order to account for the pre-suffixal stress, I assume that this new hiatus is repaired by assimilation (29). If the first component of the hiatus is an /ɔ/, /a/ spreads (29a). But if the first component is another vowel that /ɔ/, then it spreads (29b).

(29)

a. na-bras-iva-tʲ ‘to sketch sth’



b. za-pʲis-iva-tʲ ‘to record’



In both cases, it results a long vowel surfacing as stressed (given that the underlying representation of stress is vowel length, see Section 2.2.3).

3.2 The Specificity of the Vowel /ɔ/

I now show that this representation accounts for the fact that /ɔ/ undergoes an a-mutation (29a), while the other vowels do not (29b). Recall that operators I and U are not phonetically unexpressed when they do not branch in Russian (see Sections 2.2.2 and 2.2.3). The representations in (29a, b) are now adapted to element theory in (30a, b). Given that the root vowel is unstressed in the perfective form (which is a stem of the secondary imperfective, see Karcevski, 1927: 87), it does not branch. In (30a), the vowel reduction implies that U in /ɔ/ is not associated to the skeleton (see 13). In (30b), the vowel /i/ is not reduced.

(30)

a. na-bra̲s-ɨva-tʲ ‘to sketch sth’ b. za-pʲi̲s-ɨva-tʲ ‘to record’

As a consequence, the hiatus in (30a) is made of two elements A only, and can be repaired by fusing them (31a). But the hiatus in (30b) is made of different elements. Thus the element on the left spreads (31b).

(31)

a. na-bra̲s-ɨva-tʲ ‘to sketch sth’ b. za-pʲi̲s-ɨva-tʲ ‘to record’

The basic assumptions of this analysis is that only vowels that are underlyingly reduced to an element A can undergo an a-mutation in verbs ending with -ɨva. Thus, this analysis supposes that the ɔ/a alternation is strongly related to stress and vowel reduction.

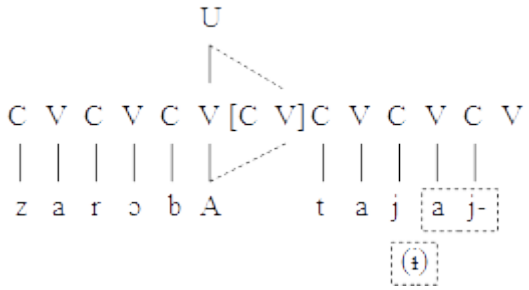
3.3 The Exceptions to the ɔ/a Alternation

Now, I show that the exceptions to the ɔ/a alternation can also be accounted for with this representation. I first address the exceptions that were attested before the 19th century. Then, I propose an interpretation of how this system evolved in present-day Russian.

3.3.1 19th Century. Recall that before the 19th century, exceptions to the ɔ/a alternation concerned verbs with a stressed /ɔ/ and an unstressed

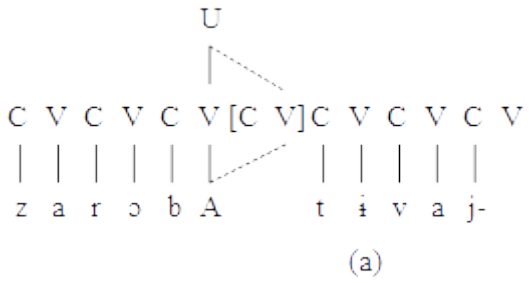
suffix in the perfective form (see Section 1.1.3). See the underlying representation of za-rɔbɔ̲t-ɨva-tʲ ‘to earn’ in (32). I assume that -ɨva results from the suffixation of a new suffix -aj *plus* the intervening floating /ɨ/ (boxed) to the perfective stem za-rɔbɔ̲t-aj- containing the unstressed thematic vowel -aj. The last root vowel is stressed. In terms of CVCV and element theory, all the elements of this vowel are branching and phonetically realized.

(32) /za-rɔbɔ̲t-aj-ɨ-aj-/ (underlying form)



As a consequence, after the floating /ɨ/ was associated to the nearest V-position (33) (see Section 3.1), the element A of the suffix becomes floating. But this floating A cannot involve the mutation of the root vowel, because this is not reduced to a single element A (see Section 3.2).

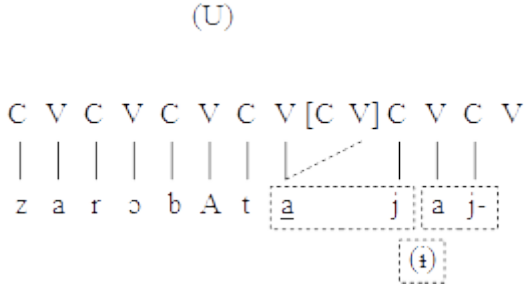
(33) za-rɔbɔ̲t-ɨvaj- (surface form)



In more simple terms, the ɔ/a alternation applied only when the root vowel /ɔ/ was underlyingly *reduced* to a single element A.

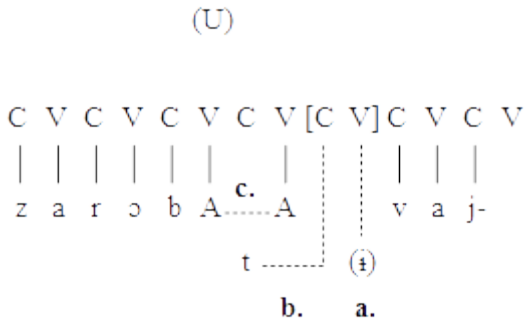
3.3.2 20th Century. In the 20th century, this situation changed. Some exceptions to the ɔ/a mutation came to show an a-mutation of the root vowel (e.g. za-rɔbat-ɨva-tʲ) (see Section 1.1.3). I assume that this change is due to a reanalysis of the representation of -ɨva. Before the 19th century, the first component of -ɨva (which is here analyzed as /-aj-ɨ-aj/, see Section 2.1) might be in some cases the unstressed thematic vowel -aj (as in Coats, 1974), hence the representations in (32) and (33). But in the 20th century, I assume that the first component of /aj-ɨ-aj/ was always the imperfectivizing suffix -aj (as in Feinberg, 1980), which is always stressed (Garde, 1980: §582; Melvold, 1989: 295). In other terms, -ɨva now results from the suffixation of the whole /-aj-ɨ-aj/ (boxed) to a stem za-rɔbɔt- (i.e. the unstressed thematic vowel -aj of the perfective form is replaced) (34). Now, as the stressed suffix -aj is *dominant* (see Garde, 1980: §158, §582 and Melvold, 1989: the stress of the last *dominant* morpheme of a word 'culminates'), it triggers the loss of stress in the preceding root or prefixes (e.g. v**ɨ**-brɔsʲ-ɨ-tʲ ~ /vɨ-brɔsʲ-**a**j-ɨ-aj-tʲ/ → vɨ-br**a**s-ɨva-tʲ 'to throw away').

(34) /za-rɔbɔt-aj-ɨ-aj-/ (underlying form)



As a consequence, the root vowel /ɔ/ is reduced to a single element A, and it can now undergo an a-mutation (35): **i.** the floating vowel /ɨ/ associates to the skeleton, thus triggering a hiatus (35a); **ii.** the last root consonant /t/ shifts in order to repair this hiatus (35b); and **iii.** the two neighboring A elements fuse (35c). The ɔ/a alternation with pre-suffixal stress is obtained.

(35) za-rɔbat-ɨvaj- (surface form)



3.3.3 Denominal Verbs. But present-day Russian still has some exceptions. Recall that these are denominal verbs (see Section 1.1.3). I argue that the absence of a-mutation is not due to phonological reasons in this case, but to morphological reasons. For this, I follow the framework *Affixes as Roots* introduced in Lowenstamm (2012, 2014). This framework is based on the *Phase Impenetrability Condition* (PIC) defined in Chomsky (1998), and adapted to morphology in Marvin (2003) (36)[11].

(36) For strong phase HP with head H: the domain of H is not accessible to operations outside HP; only H and its edge are accessible to operations. The edge being the residue outside of H-bar, either SPECs or elements adjoined to HP.

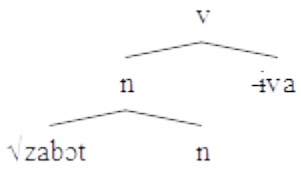
Consider the simplified[12] representation (after head movement) of the denominal verb ɔ-zabɔʧʲ-iva-tʲ 'to disquiet' in (37). The head v selects an nP the complement of which is the lexical root. Following PIC (36), phonological operations are not possible between the material situated in

11 It is very important to notice that the generalization of PIC is *not* too strong in the framework *Affixes as Roots*. Lowenstamm (2012) proposes an alternative solution to the locality issue addressed in Embick (2010). This solution is based on the hypothesis that all affixes may be sub-categorial.

12 For convenience, prefixes are not represented, and the complex structure aj-ɨ-aj is here represented with the surface form -ɨva on the head v.

v (or higher) and the root. Thus we do not expect any a-mutation of the root.

(37) ɔ-zabɔ̲ʧ-iva-tʲ



Note that this analysis does not involve that *all* denominal verbs necessarily have the structure in (37). In other words, it does not predict that *all* denominal verbs are exceptions to the ɔ/ɑ alternation. A verb that apparently derives from a noun can also be represented with v selecting a bare root. The most important here is that the structure in (37) can be assumed *only* for denominal verbs. Thus it accounts for the fact that only denominal verbs are exceptions to the ɔ/a alternation in present-day Russian.

In sum, I showed that the spread of the ɔ/a alternation during the 20th century is due to a reanalysis of the suffix -ɨva. This suffix first was a sequence of a stem suffix -aj or -a̲j plus another imperfectivizing suffix -aj (with an interlayer expletive root /ɨ/, see Section 2.1). Then it was reanalyzed solely as a sequence of two imperfectivizing suffixes -a̲j (see also Anonymous, XXXX): -a̲j-ɨ-aj. Given the accentuation and dominance of -a̲j, the root vowel /ɔ/ came to be always reduced to a single element A, and was likely to undergo the a-mutation. Finally, I showed that the exceptions that are still found in Russian can be accounted for by PIC. This analysis captures the fact that the exceptions to the ɔ/a alternation were phonologically conditioned before the 19th century, but morphologically conditioned during the 20th century (see Section 1.1.3).

5 Conclusions

As a conclusion, I proposed a CVCV analysis of the Russian ɔ/a alternation and its exceptions. The novelty of this analysis lies in the fact that it accounts for the correlation between ɔ/a alternation and stress.

This proposition is based on the following three assumptions: **i.** the a-mutation is due to the underlying representation of the -ɨva suffix as /-aj-ɨ-aj/ (see Anonymous, XXXX); **ii.** stressed vowels are underlyingly branching vowels (via a skeletal representation of stress as a CV unit); and **iii.** the non-branching vowel /ɔ/ is reduced to a single element A. First, pre-suffixal stress results from some repair mechanisms involving the skeletal representation of stress and the underlying representation of -ɨva. Second, the a-mutation of /ɔ/ applies only when /ɔ/ is reduced to an element A (i.e. when it is underlyingly unstressed). Finally, I proposed an account of the fact that the exceptions to the ɔ/a alternation, which were phonologically conditioned before the 19th century, came to be morphologically conditioned during the 20th century.

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Samyj in Fragment Answers*

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1 Introduction

The goal of this paper is to provide a syntactic analysis of constructions in which Russian intensifying adjective *samyj* 'self' is used as part of a fragment answer, as in (1):[1]

(1) A: Do you remember Peter? He called me yesterday.
B: Which Peter? Peter who plays the violin?
A: On samyj.
he $self_{M.SG.NOM}$
'That's the one.' (lit. He himself.)

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[1] Russian has two different lexical items coming from the same root meaning 'self': an intensifying adjective *samyj* and an emphatic pronoun *sam*. They can be distinguished by stress (*samyj* always has the stress on the root vowel, whereas *sam* has the stress on the ending) and their agreement pattern (*samyj* has so-called adjectival agreement, whereas *sam* has pronominal agreement), see Unbegaun 1957, Shvedova 1980. This paper discusses only *samyj*. For the discussion of *sam* see Klenin 1980, Weiss 2006, inter alia.

In the dialogue in (1), A's affirmative reply consists of a nominative pronoun and *samyj* that agrees with it in number, gender and case. This answer has an emphatic flavour when compared to simple answers, such as *Da* 'yes' or *On* 'he', which are also possible in such a dialogue.

The analysis I propose derives the fragment answer 'He self' in (1) from the identity sentence 'He self is Peter'. I argue that 'he self' raises to the specifier of a positively valued ΣP above TP and triggers TP-ellipsis, as schematically shown in (2):

(2) $[_{\Sigma P}\ [_{DP}$ he self$]_i\ [_{\Sigma'}\ \Sigma_+\ [_{TP}\ t_i$ is Peter]]] (simplified)

The paper is organized as follows: In section 2, I discuss the properties of Pron+*samyj*. Section 3 contains evidence that Pron+*samyj* is a sentential fragment. In section 4, I propose and provide evidence for the analysis of Pron+*samyj* in terms of TP-ellipsis. Section 5 concludes.

2 Properties of Pron+*samyj*

2.1 Pron+samyj *with 1st and 2nd person pronouns*

The first notable property is that *samyj* combines more freely with 3rd person pronouns, than 1st and 2nd person pronouns, as shown in Table 1.

	1st.sg		1st.pl	2nd.sg		2nd.pl	3rd.sg			3rd.pl
	masc.	fem.		masc.	fem.		masc.	fem.	neut.	
# of tokens	6	2	2	1	0	0	161	39	23	30
total	10 (4%)			1 (0%)			253 (96%)			

Table 1: Nominative pronouns + *samyj* in NRC[2] (1950 - present)

This restriction is not due to pragmatic impossibility. As shown in (3), a context in which a participant in the conversation might need to re-state his or her own identity can be constructed and can trigger a response where *samyj* is used with the 1st person pronoun. This response, however, has a humorous flavour and in such contexts, it is more natural to use a 3rd person pronoun with a *de se* interpretation, see (4). (4) is

[2] NRC = National Russian Corpus online (http://ruscorpora.ru/en/)

especially illuminating as the responder first uses the 1st person pronoun and when *samyj* is added for emphasis, s/he switches to the 3rd person.

(3) A: Posvol'te, vy — avtor knigi "Fizičeskie faktory"?
excuse-me you author book "Physical factors"
'Excuse me, are you the author of the book "Physical factors"?'
B: Ja samyj!
I self
'That's right.' (lit. I myself.) (NRC)

(4) A: Tak eto vy — odin na odin s medvedem?
so this you one on one with bear
'So, was that you who were one-on-one with a bear?'
B: Ja, on samyj.
I he self
'That was me, me, indeed.' (lit. I, he himself.) (NRC)

2.2 Embeddability of Pron+samyj

The second important property of Pron+*samyj* is that it can be embedded under reporting verbs and epistemic attitudes, see (5), but not under attitudes expressing desire, see (6):

(5) A: Kto eto? Neuželi professor Semenov?!
who this? $_{\text{NEG.FOC.Q}}$ professor Semenov
'Who is this? Isn't this Professor Semenov?'
B: Dumaju, on samyj.
think$_{\text{1SG}}$ he self
'I think this is he, indeed.'

(6) A: Ne znaju kto prijdet. Možet byt', professor Semenov.
not know who will.come may be professor Semenov
'I don't know who will come. Maybe, professor Semenov will.'
B: * Xotelos' by čtoby on samyj.
desirable $_{\text{COND}}$ that$_{\text{COND}}$ he self
'I'd love it to be him!'

2.3 Pron+samyj *with negation*

The third property is that Pron+*samyj* can be used only as an affirmative answer. If the identity of a person (or thing) is not verified and the negative particle *ne* is used, *samyj* cannot be added, see (7).

(7) [Context: two persons are looking through some photos of children]

A:	Eto Petr?	B:	Net, ne on (* samyj). Eto ego brat.
	this Peter		no not he self this his brother
	'Is this Peter?'		'No, that is not he. This is his brother.'

NRC (sub-corpus 1950 – present) does not contain any example where Pron+*samyj* is used in a negative reply, although there are numerous examples where in a relevant context, a pronoun is used without *samyj*.

2.4 Pron+samyj *in argument positions*

The fourth important property of Pron+*samyj* is that it cannot be used in a regular argument position (unless it is used as proper name). This is illustrated by the ungrammatical examples in (8) where Pron+*samyj* is used as subject — (8a), object of a transitive verb — (8b), and object of preposition — (8c).[3]

(8) [Context: two persons are remembering their old friend Peter.]

a. * Ty znaeš', on samyj ko mne včera prixodil.
you know he self to me yesterday came
'You know, he came to me yesterday.'

b. * Ty znaeš', my včera v parke videli ego sámogo.
you know we yesterday in park saw him self
'You know, we saw him in the park yesterday.'

c. * Ty znaeš', my včera govorili o nem sámom.
you know we yesterday talked about him self
'You know, Masha and I talked about him yesterday.

In section 4.4, I discuss an apparent counterexample to this restriction, in which Pron+*samyj* seems to appear in an argument-like position with the emphasized copula as in (9).

[3] In (8b,c), I added the stress on *samyj* to avoid confusion with *sam* which is felicitous in argument positions, see fn.1.

(9) On samyj *(i) jest'.
he self FOC is
'That's right, this is he.' (lit. He himself is.)

To summarize, in this section we saw four important properties of Pron+*samyj*: a) infelicity with 1st and 2nd person pronouns, b) embeddability under reporting verbs, but not desire attitudes, c) deviance under negation, and d) impossibility to surface in the regular argument position.

3 Pron+*samyj* is a sentential fragment

3.1 Comparison with a fixed expression

To answer a *yes*/*no*-question, Russian can use the expression *Vot to-to i ono*, which can be approximately translated as '(That's) true' or 'This is so'. It is composed of a proximal presentative particle *vot* (optional) which is close in meaning and distribution to the French *voici* (Grenoble 1998:69-72); the reduplicated distal demonstrative in neuter nominative *to-to*; an additive focus proclitic *i*, which is a Slavic equivalent of the English unstressed *also* and German *auch* (Jasinskaja 2013:18-9) and the 3rd person neuter nominative pronoun *ono*.[4] In what follows, I will gloss the particles using their phonetic form, rather than function. The use of *vot to-to i ono* is shown in (10):

(10) Aga, a tuxloe jajco vse-taki vozmožno? Vot to-to i ono.
aha but spoiled egg indeed possible? VOT TO-TO I ONO
'But a spoiled egg is possible, isn't it? That's true.' (NRC)

In (10), the pronoun in the answer agrees with the subject of the question in gender, number and case. Thus, the response might appear similar to the Pron+*samyj,* especially given examples like (11), in which Pron is neuter and *vot* is present.

[4] For some discussion of *vot to-to i ono* from a cognitive linguistic perspective and its comparison to German discourse particles see Dobrovol'skij and Levontina 2012 and Ёoppel et al. 2012.

(11) [about a feeling which is neut. in Russian]
Nakonec... Vot ono samoe.
finally VOT it self
'Finally, here is this feeling.' (lit. Here is it itself) (NRC)

However, there is an important interpretative difference between the responses in (10) and (11). The pronoun *ono* in (10) does not refer to the noun *jajco* 'egg'. Rather, it refers to the event itself (i.e. the possibility that an egg can be spoiled). *Ono* in (11), on the other hand, refers to the feeling, not to the event of the final attainment of this feeling.[5]

This point is reinforced by the fact that unlike Pron+*samyj*, the pronoun in *vot to-to i ono* does not change its gender or number depending on the referent in the question, see (12).

(12) a. Pisatelja takogo, Aksenova, znaete? —Vot to-to i ono/*on.
writer$_M$ such Aksenov know VOT TO-TO I pron$_N$/$_M$
'Do you know the writer Aksenov? — That's true.'
b. A nužna nam takaja Rodina?
but need us such Motherland$_F$
— Vot to-to i ono/*ona.
VOT TO-TO I pron$_N$/$_F$
'Do we need such a Motherland? — True.' (NRC)

3.2 Additional material

Another indication that Pron+*samyj* is not a fixed expression comes from the fact that it can co-occur with additional material that seems to be remnants of sentential ellipsis, see (13).

[5] *Ono*+*samyj* can also refer to the event, as in (i). What is important for us here is that *ono* in *vot to-to i ono* cannot refer to a person or object in the question.

(i) Il'in čto li, produlsja? — Ono samoe, — otvetil Lexa.
Il'in what Q lost it self replied Lexa
'Il'in has lost, hasn't he? — So, indeed, — Lexa replied.' (NRC)

(13) a. Dlja drugix eto, možet, i ne xolod,
for others this maybe I not cold
a dlja staruxi on samyj.
but for old.lady it self
'For others, this may be not cold, but for the old lady, it is.'
b. Fel'tikul'tjapistaja. — I u nas ona samaja.
erratic and at us it self
'It is erratic. — And we have the same.' (NRC)

3.3 Case-matching connectivity effect

As discussed in Merchant 2004:676–9, fragment answers bear the same morphological case as its corresponding argument in the full sentence, see (14) for English and Russian:

(14) a. Q: Whose car did you take? A: John's/*John.
b. Q: Komu pomogla Anna? A: Ivanu./*Ivan/*Ivana.
whom helped Anna $Ivan_{DAT}$ /$Ivan_{NOM}$ /$Ivan_{ACC}$
'Who did Anna help?' 'Ivan.'
Merchant 2004:678

In the overwhelming majority of cases in which Pron+*samyj* is used, the pronoun is in the nominative case. The reason is that Pron+*samyj* is an answer to an identity question and identity statements in Russian are expressed by a binominative construction (see below). However, the case-matching connectivity effect is found with the verbal construction *imet' v vidu* 'have in mind', which assigns accusative, see (15):[6]

[6] The picture in fact is more complex. The nominative case can be used with *imet' v vidu* in some predictable cases. In Goncharov 2015, I argue that Pron+*samyj* is a reply to so-called biased questions, which involves a secondary assertion of identity. The identity assertion (expressed by binominative sentences in Russian) makes the nominative case available, in addition to accusative. However, the nominative option is selected only if the accusative results in confusion due to the syncretism in the Case system. For example, masculine and neuter Pron+*samyj* are distinct in nominative, but not in accusative; therefore, in (ii), nominative is available:

(ii) Ty imeeš' v vidu to delo? — Ono samoe.
you have in view $that_{ACC}$ $case_{ACC}$ it_{NOM} $self_{NOM}$
'Do you mean that case? — Yes, indeed.' (lit. It itself.)

(15) a. Ty imeeš' v vidu Zubrilovu Veroniku?
you have in view $\text{Zubrilova}_{\text{ACC}}$ $\text{Veronika}_{\text{ACC}}$
— Ee samuju!
her self_{ACC}
'Do you mean Veronika Zubrilova? — Her, indeed.' (NRC)
b. Do you mean Veronika Zubrilova? — * Ona samaja.
she self_{NOM}

3.4 Preposition stranding

Another test discussed by Merchant (2004:685–7) involves preposition stranding. The observation is that languages that allow preposition stranding, like English, permit fragment answers without a preposition, see (16a). On the other hand, in languages that do not allow preposition stranding, like Russian, the preposition is obligatory, see (16b).

(16) a. Q: Who was Peter talking with? A: Mary.
b. Q: S kem ona govorila? A: S Ivanom. /*Ivanom.
with who_{INS} she spoke with Ivan_{INS} /Ivan_{INS}
'With whom did she talk?' 'With Ivan.'
Merchant 2004:685, 687

As shown in (17), the same requirement is in effect for Pron+*samyj*:

(17) A vy k Kol'ke priexali, k Popovu?
and you to $\text{Kol'ka}_{\text{DAT}}$ came to Popov
— *(K) nemu samomu.
to him_{DAT} self_{DAT}
'Did you come to Kol'ka Popov? — To him, indeed.' (NRC)

To summarize, in this section, I presented evidence in favour of the analysis of Pron+*samyj* as a fragment answer. The evidence came from the contrast with the fixed expression *vot to-to i ono* and different connectivity effects.

4 Analysis: Pron+*samyj* is derived by TP-ellipsis

If Pron+*samyj* is derived by ellipsis, as the evidence in the previous section suggests, the natural questions are how much structure is elided

and what the elided material contains. In this section, I provide answers to these questions arguing that Pron+*samyj* involves TP-ellipsis.

4.1 Binominative copular sentences in Russian

There are two elliptical mechanisms that can be envisaged for deriving Pron+*samyj* as a fragment answer and that were proposed in the literature for answers to *yes*/*no*-questions in other languages (Holmberg 2001, 2007, 2013, Dvorak and Gergel 2004, Dvorak 2007, Kazenin 2006, Authier 2013, Liptak 2013, among others): VP-ellipsis (VPE), see (18a), and TP-ellipsis (TPE), see (18b):

(18) a. $[_{TP}$ [he self]$_i$ ~~$[_{VP}$ t_i is Peter $]$~~$]$ (VPE)
b. $[_{\Sigma P}$ [he self]$_i$ ~~$[_{TP}$ t_i $[_{VP}$ t_i is Peter $]]$~~$]$ (TPE)

The strongest argument for TPE is the absence of subjects in answers (Holmberg 2001). In this section, I consider a case in which Pron+*samyj* bears the nominative case and seems to be the subject, and argue that the construction is derived by TPE. There are two reasons why I am concerned with investigating this particular case. The first reason is that it is by far the most frequent use of Pron+*samyj*. The second reason is that it is the hardest case to argue for; the constructions in which Pron+*samyj* bears non-nominative cases as in (15) or is part of a PP as in (17) will follow automatically.

As already mentioned, Pron+*samyj* is an emphatic affirmative answer to a question that seeks to verify the identity of a person, e.g. *Is he Peter?* The question-answer congruence requires that the answer be an identity statement, e.g. *He is Peter*. Most Slavic literature, both traditional (e.g. Paducheva and Uspenskij 1979, Testelets 2008, Yuzhakova 2011) and generative (e.g. Bailyn and Rubin 1991, Partee 1998, Pereltsvaig 2007a), converges on the idea that identity statements in Russian can be expressed only by binominative copular sentences, i.e. sentences in which both NP1 and NP2 are marked by nominative, see (19a), and contrasts them with predicational copular sentences in which NP2 is marked with instrumental, see (19b):

(19) a. Čexov byl pisatel'. Pereltsvaig 2007a:1
Chekhov$_{NOM}$ was writer$_{NOM}$
'Chekhov was a writer.' (≈ identity)

b. Čexov byl pisatelem.
Chekhov$_{NOM}$ was writer$_{INS}$
'Chekhov was a writer.' (≈ predication)

Binominative sentences, as in (19a), pose the following question: which of the two NPs is a subject and which one is a predicate? Consider the following example from the seminal work of Paducheva and Uspenskij (1979:358–9), which aims at determining the criteria that would help to determine subjects and predicates in binominative sentences. In the context of (20a), NP1 is a referential expression and the subject, whereas NP2 is a property, thus, the predicate. In the context of (20b), the situation is reversed. In (20c), the same sentence is an identity statement. Both NPs are referential and there is no way to determine which one is the subject. The conclusion in Paducheva and Uspenskij 1979 is that the syntax of identity statements in Russian is "undetermined".

(20) a. [pointing at a woman]
Eta ženščina — ego žena.
This woman$_{NOM}$ his wife$_{NOM}$
'This woman is his wife.'
b. Eto mogla sdelat' tol'ko odna ženščina.
this could do only one woman
Eta ženščina ego žena.
this woman$_{NOM}$ his wife$_{NOM}$
'Only one woman could do this. This woman is his wife.'
c. I tut on uznaet ee: eta ženščina — ego žena.
and here he recognizes her this woman$_{NOM}$ his wife$_{NOM}$
'And finally he recognizes her: this woman is his wife.'

The criteria that Paducheva and Uspenskij (1979) discern and that are still used today (e.g. Partee 1998, Testelets 2008) are 'degree of referentiality' of NPs, information structure of the sentence and whether one of the NPs can be interpreted as a predicate and paraphrased with NP$_{INS}$. In 'hard cases', in which one NP is a personal pronoun or definite description and the other NP is a proper name (i.e. both NPs are highly referential) as in (21a), Paducheva and Uspenskij (1979:358) suggest that it is the proper name that assumes an uncharacteristic role of a predicate.

One indication that this is correct comes from the fact that only the proper name can be paraphrased with NP_{INS}, cf. (21b) and (21c):

(21) a. Etot starik — graždanin Korobejnikov.
this$_{NOM}$ old.man$_{NOM}$ Mr$_{NOM}$ Korobejnikov$_{NOM}$
'This old man is Mr. Korobejnikov. '

b. Etot starik javljaetsja
this$_{NOM}$ old.man$_{NOM}$ appears.to.be
graždaninom Korobejnikovym.
Mr$_{INS}$ Korobejnikov$_{INS}$

c. * Etim starikom javljaetsja
this$_{INS}$ old.man$_{INS}$ appears.to.be
graždanin Korobejnikov.
Mr$_{NOM}$ Korobejnikov$_{NOM}$

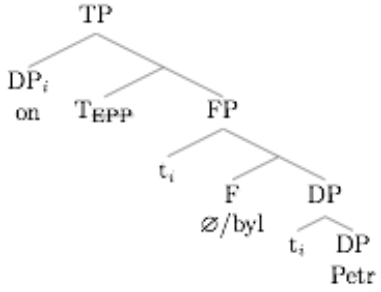
Paducheva and Uspenskij 1979:358

The same point can be demonstrated using a pronoun and a proper name in sentences like *On — Petr* 'He (is) Petr.'

In the generative framework, the intuition that binominative sentences in Russian have an undetermined syntax is captured in the analysis proposed by Pereltsvaig (2007a). Following Moro (2000), Pereltsvaig (2007a) proposes that in binominative copular sentences in Russian, the two DPs are merged symmetrically. One of the DPs then moves to the specifier of TP to satisfy the EPP requirement which is interpreted as an unvalued D-feature on T, as in Pesetsky and Torrego 2000. According to Pereltsvaig (2007a:53), the choice which DP is raised is free in syntax, but it affects the information structure of the sentence, as the raised DP is interpreted as Topic, whereas the remaining DP receives a Focus interpretation.[7] This is illustrated in (22b) for a prototypical identity sentence with relevant DPs in (22a):

[7] An alternative would be to postulate a PredP which takes one DP as its specifier and the other DP as its complement, as in Bailyn and Rubin 1991. Either way, all generative approaches to binominative sentences in Russian agree that they do not contain a lexical verb, Voice-head or secondary predication PredP. This property distinguishes them from nom-ins sentences. Many asymmetries in binding (see Pereltsvaig 2007a:29–30) and extraction (see Bailyn and Rubin 1991:123) can be derived from this structural

(22) a. On ∅/byl Petr.
he is/was $\text{Peter}_{\text{NOM}}$
'He is/was Peter.'

b. 

FP in (22b) is a verbal functional projection that in different accounts is depicted as AgrP or PredP (different from secondary predication PredP, see fn.7). For the purpose of this paper, I adopt Pereltsvaig's analysis of binominative sentences in Russian shown in (22) and use her umbrella-label FP. (I will slightly modify this representation in section 4.4.) I will also follow Pereltsvaig (2007a) in assuming that verbs in Russian do not move to T (see Pereltsvaig 2007a:13–4 for arguments).

4.2 Proposal: Pron+samyj *is in ΣP*

I propose that Pron+*samyj* is spelled out in the specifier position of a ΣP which triggers an obligatory deletion of TP as with the polar particles *yes*/*no*, as illustrated in (23):

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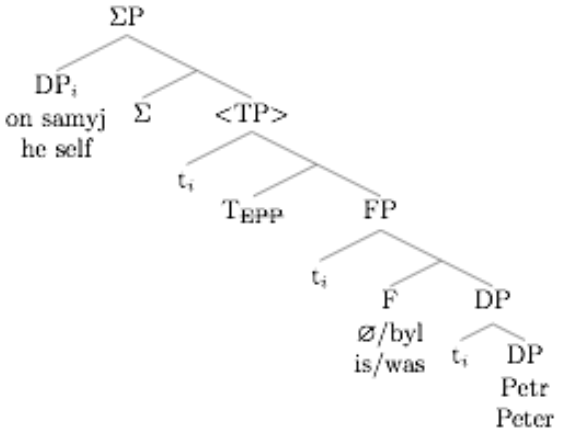
difference. Nothing in my account hinges on choosing a symmetrical or asymmetrical initial merge of two DPs.

(23)



Since the influential proposal by Laka (1994/1990), most researchers who investigate the syntax of answers to polar questions have arrived at the conclusion that in fact we need two Polarity Phrases (or ΣPs): a High PolP/ΣP which hosts polarity particles and triggers TPE and a Low PolP/ΣP which supports sentential negation, affirmation or emphasis (see esp. Progovac 2005, Holmberg 2013, Authier 2013, Citko 2014a). The availability of two ΣPs is remarkably practical when dealing with polar mismatches as positive answers to negative questions in (24):

(24) Is John not coming? Holmberg 2013:41
Yes. ('He is not coming.')

Although the exact featural make-up and syntactic behaviour of the two ΣPs vary from language to language and from account to account, it seems to be uncontroversial that the High ΣP is situated in the extended C-domain (Rizzi 1997) somewhere above FinP/TP and below TopP/FocP

(25) ForceP > TopP > (FocP) > HΣP > FinP/TP

This position of HΣP accounts for the following facts: (a) in those languages in which polarity particles can be embedded, they appear below the complementizer (assuming that complementizers are in ForceP), (b) some topicalized and focused material can escape elision

(by raising to TopP and FocP),[8] and (c) HΣP controls the (non-)spell-out of its complement (FinP/TP). Pron+*samyj* patterns with polarity particle in this respect (see below), which justifies the analysis in (23).

The proposal in (23) also partly captures the observation that Pron+*samyj* cannot surface in argument positions by assimilating Pron+*samyj* to polarity particles, which do not usually surface as adverbials in sentences, although they can sometimes surface in the left-periphery of the embedded clause (as for instance argued by Authier (2013) for French *oui ou non*).

4.3 Pron+samyj *and polarity particles*

It has been noticed in the recent literature (e.g. Authier 2013) that some languages, like French, German, Hungarian, Polish, Romanian and Spanish, allow polarity particles, such as *yes* and *no*, to be embedded, see (26a). This is also true of Russian polarity particles, see (26b).

(26) a. Je crois que oui. Authier 2013:368
'Lit. I believe that yes.'
b. Dumaju, čto da/net.
think$_{1SG}$ that yes/no

In Russian, fragment answers to *wh*-questions can also be embedded, see (27):

(27) Čto Ivan pjet? — Dumaju, čto vino.
what Ivan drinkst hink$_{1SG}$ that wine
'What does Ivan drink? — I think wine.'

Authier (2013:362–4) discusses an interesting constraint on the embeddability of polarity particles in French. He argues that they can be embedded under epistemic attitudes (expressed by verbs or adverbs), see (28a), but not under desire attitudes, see (28b):

[8] I assume that the additional material discussed in section 3.2 escapes TPE by raising to TopP or FocP. I thank an anonymous reviewer for raising this question.

(28) a. Je crois/crains/soupçonne/suppose que oui/non.
I think/fear/suspect/suppose that yes/no
b. * Je sais pas s'ils vont gagner,
I know not if they will win
mais Celine veut que oui/non.
but Celine wants that yes/no
'I don't know if they will win, but Celine wants them (not) to.'

Authier (2013:364 and sect.2) explains this observation in terms of selectional restrictions of the main predicate. In his analysis, polarity particles lexicalize clause-typing features (e.g. Cheng 1991) and thus, must meet selectional requirements of the embedding predicate (the way CPs selected by *think* vs. *wonder* do).[9]

What is interesting and seems to support Authier's general intuition is that at least in Russian fragment answers to *wh*-questions do not have this restriction and can appear with either epistemic or desire attitudes, see (29). (30) illustrates that Russian polarity particles are infelicitous with verbs expressing desire.

(29) a. [Context: At a party, you see Paul drinking something that could be either wine or juice.]
Q: What is he drinking?
A: Ne znaju. Dumaju, čto vino/sok.
not know think that wine/juice
'I don't know. I think he's drinking wine/juice.'

[9] See Authier 2013, fn.12 for some criticism of this logic and the author's reply to it. For the purpose of this paper, I will tentatively adopt Authier's explanation, although this raises some non-trivial questions for my analysis. For example, is the embeddability restriction syntactic or semantic? If it is syntactic, does this mean that desire predicates select clauses with a less-elaborated C-domain? Is the use of complementizer (*čto* vs. *čtoby*) relevant? I thank an anonymous reviewer for raising these interesting questions. I will leave them for future research.

b. [Similar context, but now Paul and yourself are leaving soon, Paul is driving and thus, should not drink any alcohol.]
Q: What is he drinking?
A: Ne znaju. Xotelos' by čtoby sok.
not know want $_{COND}$ that$_{COND}$ juice
'I don't know. I'd rather he's drinking juice.'

(30) ?? Ja ne znaju pobedjit li Ivanov
I not know will.win $_{Q}$ Ivanov
no Marija xočet čtoby da/net.
but Maria wants that$_{COND}$ yes/no
'I don't know if Ivanov will win, but Mary wants him to.'

With respect to this restriction, Pron+*samyj* patterns with polarity particles in being infelicitous under desire predicates, as discussed in section 2.2. This provides support to the effect that Pron+*samyj* occupies the same position as polarity particles, as proposed above.[10]

4.4 Apparent counterexample

In this section, I discuss an apparent counterexample to the claim that Pron+*samyj* cannot surface in regular argument positions and propose an account of this counterexample.

Consider (31), in which Pron+*samyj* is used with the copula focused by the focus particle *i*.

(31) On samyj *(i) jest'/byl/budet.
he self $_{FOC}$ is/was/will.be

The focus particle *i* in Russian is homophonous with a simple conjunction equivalent to *and* and additive particles *tože/takže* 'also', see for example Paillard 1986. According to traditional Russian grammars,

[10] Further support comes from the fact that other elliptical answers, for example V-stranding as in (iii), can be embedded under desire attitudes, unlike Pron+*samyj*. This shows that the embeddability restriction is connected to the polarity property/position, rather than ellipsis.

(iii) Maša kupila moloko? — Xotelos' by čtoby kupila.
Masha bought milk want $_{PRT}$ that$_{PRT}$ bought
'Did Masha buy the milk? — I would rather she did.' (lit. I want that bought)

this particle when used before a verb signifies that the event corresponds to what has been expected or anticipated, see (32a,b) (*Tolkovyj slovar' russkogo jazyka* 1935 and 1999).

(32) a. Tak ono i slučilos'. (Dictionary 1935)
so it FOC happened
'So did it happen.'

b. On i vyšel (kak sovetovali ili kak sam rešil).
he FOC left as was.advised or as himself decided
'He did leave (as he was advised or as he decided himself)'.

To account for these cases, I propose that *i* heads a Focus projection above FP and a verb (or a copula) head-moves to this projection and right adjoins to *i*. In cases like (31), where only Pron+*samyj* and the focused copula are pronounced, I propose that *i*+copula undergoes further movement to Σ, as shown in (33).[11]

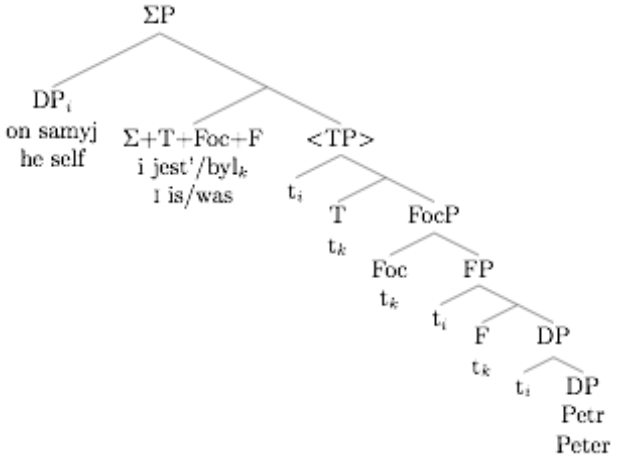
[11] As suggested by an anonymous reviewer, support for this proposal also comes from cases like (iv) which involve elliptical answers to *wh*-questions. The answer to the question in (iv) can either be *Petja* as in A1 or *Petja i V* as in A2.

(iv) Q: Ja znaju čto Petja vsjo vremja darit Maše podarki, no kto
I know that Petja all time gives Maša gifts but who
že kupil ej mašinu?
PRT bought her car
'I know that Petja always gives gifts to Maša, but who on earth bought her the car?'

A1: Petja.

A2: Petja i kupil.
Petja FOC bought
'Petja bought it.'

(33)



4.5 No Low ΣP with Pron+samyj

One property of Pron+*samyj* has not been accounted for so far, namely its inability to occur with negation, as in (7):

(7) [Context: two persons are looking through some photos of children]

A: Eto Petr?	B: Net, ne on (* samyj). Eto ego brat.
this Peter	no not he self this his brother
'Is this Peter?'	'No, that is not him. This is his brother.'

In this section, I propose that this property can be accounted for if we assume that the source for fragment answers Pron+*samyj* is an identity statement that does not have Low ΣP that hosts sentential negation in ordinary sentences. As we will see shortly, negation in identity statements with a zero copula can be expressed only by constituent negation. However, *samyj* is deviant under constituent negation, see (34).[12] As a result, Pron+*samyj* cannot be used with *ne* 'not'. Another consequence of the absence of Low ΣP is that *samyj* cannot check its

[12] Note that *samyj* in (34) is a DP-internal modifier ([$_{DP}$ tu samuju sonatu…]) and the restriction on surfacing in argument positions does not apply, see Goncharov 2015 for discussion.

emphatic feature locally (within TP) and thus, must move to High ΣP (the only ΣP in identity statements with a zero copula).

(34) * Daša igrala ne tu samuju sonatu
Dasha played not that self sonata
kotoruj učila vesnoj.
which studied spring
'Dasha didn't play the very sonata that she studied in spring.'

Let me begin with the observation made by Testelets (2008). Following his work in collaboration with Borschev, Partee, Paducheva and Yanovich (2005), he argues that sentences with zero copula in Russian can be divided into two groups. The first group consists of binominative sentences (excluding identity statements) and sentences with short-form adjectives (hereafter, SF). This group allows for sentential negation, see (35a). The second group, which includes identity statements and copular sentences with PPs, has only constituent negation, see (35b).

(35) a. [DP_i not $\varnothing_{be}$ [DP_j/SF]] (sentential negation)
b. [DP_i $\varnothing_{be}$ [not DP_j/PP]] (constituent negation)

Testelets (2008) uses two tests to demonstrate this. The first test involves scopal ambiguity. As is well known, sentential negation can out-scope quantified subjects or circumstantial phrases giving rise to scopal ambiguity, see (36a). Constituent negation, however, does not have wide-scope readings, see (36b) from Testelets 2008:780.

(36) a. Vse baleriny ne budut v Londone. ∀ > Neg, Neg > ∀
all ballerinas not will.be in London
'All ballerinas won't be in London.'
b. Vse baleriny budut ne v Londone. ∀ > Neg, *Neg > ∀
all ballerinas will.be not in London
'All ballerinas won't be in London.'

As shown in (37), with respect to this test, identity statements and sentences with PPs pattern with sentences with constituent negation — cf. (37c,d) with (36b), whereas specificational binominative copular

sentences and structures with SF behave like sentences with sentential negation — cf. (37a,b) with (36a) (from Testelets 2008:781–3).

(37) a. Oba oni ne lingvisty. (specificational)
both they not linguists
'They both are not linguists.' both > Neg, Neg > both

b. Obe raboty poka ne gotovy. (SF)
both works yet not ready
'Both works are not ready yet.' both > Neg, Neg > both

c. Vse prem'ery ne v etom godu. (PP time)
all premiers not in this year
'All the premiers are not this year.' ∀ > Neg, *Neg > ∀

d. Po vsem priznakam...
by all clues...
'According to all clues...'
avtor " Poslanija k evrejam" ne Pavel. (identity)
author Appeal to Jews not Pavel
'the author of the Appeal to Jews is not Pavel.'
∀>Neg, *Neg>∀

The second test concerns licensing negative concord items (*n*-words) that start with *ni-* in Russian. Only sentential negation can license *ni-* elements. As shown in (38), this test also divides zero-copular sentences into the same two groups (from Testelets 2008:785–6).

(38) a. Ni pervaja, ni vtoraja kniga
NI first NI second book
— ne roman. (specificational)
not novel
'Neither the first nor the second book is a novel.'

b. Ničto ne večno. (SF)
nothing not eternal
'Nothing is eternal.'

c. ?? Ni pervyj, ni vtoroj tom
NI first NI second volume
ne na polke. (locative PP)
not on shelf
'Neither the first nor the second volume is on the shelf.'

d. ?? Ni to zdanie, ni eto — ne moj dom. (identity)
NI that building NI this not my house
'Neither that building nor this one is my house.'

Testelets (2008:786) accounts for these observations by proposing that identity statements and copular sentences with locative and temporal PPs are even smaller than ordinary binominative sentences. They do not contain any functional projection apart from agreement, which he labels as φP, see (39):

(39) a. $[_{\text{CopulaP}}$ DP_i (Neg+)Copula $[_{SC}$ t_i DP]] (ordinary binomintive)
b. $[_{\varphi P}$ DP_i (*Neg+)φ $[_{SC}$ t_i DP]] (identity and PPs)

Recasting Testelets's intuition that identity sentences have an impoverished functional inventory in terms of ΣP/PolP, I propose that the observations above suggest that identity sentences with zero copula lack the Low ΣP which is present in ordinary sentences. If the source of Pron+*samyj* is an identity statement with zero copula, the lack of Low ΣP straightforwardly accounts for two facts: i) the incompatibility of Pron+*samyj* with negation and ii) the obligatory movement of Pron+*samyj* to High ΣP (the only ΣP in this case), where Pron+*samyj* checks [emph] feature of *samyj* and triggers TPE.

5 Conclusion

This paper discussed the use of personal pronouns modified by *samyj* as answers to polar questions. It was argued that Pron+*samyj* is a hybrid fragment answer in the sense that it combines properties of fragment answers to *wh*-questions with properties of polarity particles. The analysis put forward in this paper proposes that an emphatic positive answer *On samyj* 'he self' to the question 'Is he Peter?' is derived by 'he self' moving out of TP to the specifier of High ΣP — a head that is commonly assumed to host polarity particles like *yes* and *no* and trigger

the elision/non-spell-out of its sister TP. This analysis of Pron+*samyj* was shown to account for its major properties such as acceptability under reporting verbs and epistemic attitudes, but not predicates expressing desire, incompatibility with negation, and inability to surface in argument position. Furthermore, it was suggested that the last two properties are consequences of the absence of Low ΣP in identity sentences with zero copula in Russian.

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Stress Shift, Focus, and Givenness in Czech

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This paper is concerned with the prosodic expression of information structure in Czech. We investigate the issue of stress shift, which we understand as a deviation from the default (rightmost) sentence stress realization. Stress shift can be motivated by focus (e.g., Junghanns and Lenertová 2007) or givenness (Šimík and Wierzba 2015). In this paper, we put forth a new generalization, the stress shift generalization in (1), illustrated by the schemas in (2), where b > c indicates that (2b) is more acceptable than (2c) (F-subscript indicates focus, boldface — stress, underlining — givenness).

(1) *Stress shift generalization*
Stress shift to focus is more acceptable than stress shift merely away from a given element.

(2) b > c
   a. X Y **Z** *default stress*
   b. X [**Y**]$_F$ Z *stress shift to focus*
   c. [X **Y** Z]$_F$ *stress shift away from a given element*

If correct, the generalization supports the view that focus and givenness are in principle independent of each other (contra Wagner 2012, pro

Stevens 2013). We argue that the generalization is captured by the newly proposed STRESS FOCUS RIGHTMOST constraint in (3), which is a more specific version of the classical STRESS FOCUS constraint (which merely requires stress to be in focus). In case of narrow focus on a single word SF and SFR collapse in predictions with respect to sentence stress. In case of a larger focus domain however, SFR explicitly predicts that sentence stress falls to the rightmost element in the focus while SF remains unspecific with respect to the actual position of the sentence stress.

(3) STRESS FOCUS RIGHTMOST (SFR)
Sentence stress is realized on the rightmost element of the focus of the sentence.

The paper is organized as follows. Section 1 provides the necessary theoretical background and introduces the core notions discussed in this paper. In section 2, we discuss three experiments that motivate the stress shift generalization. In section 3, we show how the generalization is accounted for by the SFR constraint and how "standard" accounts of stress assignment fail. Section 4 reports on a new experiment that we conducted in an attempt to further support the stress shift generalization. Section 5 concludes and provides an outlook on how the present experimental design could be improved.

1 Theoretical Background

1.1 General Assumptions

We assume that the grammar generates multiple convergent structures for a single meaning. These structures are ⟨o, p, i⟩ triples — information about word order (o), prosody (p), and information structure (i) — which are evaluated with respect to how well they conform to a set of constraints. These constraints encode preferences for certain word orders and prosodic patterns, often in relation to information structure (IS). (In our view, IS constraints are post-syntactic; see, e.g., Fanselow 2006, Horváth 2010.) We depart from standard Optimality Theory (Prince & Smolensky 1993/2002) by assuming that the evaluation system assigns a numerical value to each of the structures, representing the degree to which they satisfy/violate the constraints (rather than selecting a single

optimal output). The empirical correlate of the numerical value is the (mean) acceptability of the structure as judged by (a large number of) native speakers. This implies that each constraint is associated with a certain numerical value (subject to language variation), called "weight", representing the level of acceptability decrease upon its violation. This comes close to the Linear OT of Keller (2000) (see Šimík and Wierzba 2015 for more information and a practical application). We adopt this system because it allows us to capture two empirical effects commonly associated with IS-related manipulations: optionality (multiple structures can be equally acceptable) and gradience in acceptability (structure s_1 can be less acceptable than s_2, which in turn can be less acceptable than s_3).

1.2 Core Prosodic and IS Notions and Constraints

We understand **sentence stress** (sometimes simply called **stress** in this paper) as the most prominent phrasal stress in an intonation phrase (Chomsky & Halle 1968, Selkirk 1995, Truckenbrodt 2006). As argued by Daneš (1957:63), sentence stress in Czech falls by default on the rightmost element that carries phrasal stress. Following the spirit of Chomsky & Halle (1968) and many others since then (see Truckenbrodt 2012 for an overview), one can capture this default rule by the somewhat simplified NUCLEAR STRESS RULE constraint in (4).

(4) NUCLEAR STRESS RULE (NSR)
Sentence stress is realized on the rightmost element of the sentence.

Stress shift characterizes a situation where the NSR is violated, i.e., where a non-rightmost element carries the stress. The term is metaphorical and should not be understood literally: there is no stress shifting operation in the sense of moving stress from one place to another. We simply assume that stress is assigned (potentially differently in different structures representing a single meaning) and the assignment either does or does not conform to the NSR (and other constraints).

The view of information structure (IS) adopted here corresponds, by and large, to the one succinctly summarized in Krifka (2008). We will need two IS notions: focus and givenness. Following the tradition of Rooth (1985, 1992), we assume that **focus** indicates alternative

denotations relevant for the interpretation of utterances. This general IS category underlies various focus "uses", including answerhood focus and contrastive/corrective focus – the two types of uses relevant here and illustrated in (5).

(5) A: What did you order? / Did you order a pizza?
B: (No,) I ordered [**pasta**]$_F$.

Focus interacts primarily with prosody in Czech. As explicitly formulated by Daneš (1959:8), focus always contains sentence stress (in the formal literature, this generalization originates with Chomsky 1971 and Jackendoff 1972). This so called stress-focus correspondence can be modeled by the STRESS FOCUS constraint in (6). As already indicated above, we will propose to replace the SF by the more specific SFR.

(6) STRESS FOCUS (SF)
Sentence stress is realized in the focus of the sentence.

Following the spirit of Schwarzschild (1999), we assume that an element A is **given** if there is another element B in the preceding discourse, such that B is semantically identical to A (for referential expressions) or the existential closure of B entails the existential closure of A (for function-denoting expressions). In (7B), the phrase *baked it* is given (due to the presence of *baked the cake* in (7A)), as are the words *baked* and *it* individually.

(7) A: I doubt that Sue baked the cake.
B: I heard that **Paul** baked it.

Relying on the experimental results of Šimík and Wierzba (2015), we take givenness to interact primarily with prosody in Czech. In particular, given elements are typically stressless (this was noted as early as in Petřík 1938:132–133 for Czech; precedents for English and German are Schmerling 1976, Ladd 1980, and Féry & Samek-Lodovici 2006).[1] The

[1] Note that given constituents are not exclusively stressless (which is why we associate givenness with the lack of sentence stress rather than stress in general, contra Féry & Samek-Lodovici 2006). Prefocal given constituents may carry stress in German, though in a slightly compressed pitch register (Féry & Kügler 2008). Or given constituents are

stresslessness-givenness correspondence is captured by the *STRESS GIVEN constraint in (8).

(8) *STRESS GIVEN (*SG)
Sentence stress is not realized in a given element.

1.3 Ways of Motivating Stress Shift

Both focus and givenness — or more precisely, the need to satisfy SF (SFR) and *SG, respectively — can motivate stress shift in Czech. This assumption is very common for focus (originally Trávníček 1937, Mathesius 1941, Daneš 1957, more recently Junghanns and Lenertová 2007); the existence of stress shift away from a given element is certainly less established but was recently experimentally confirmed in Šimík and Wierzba (2015). Since the background to focus is typically given, the two motivations often go hand in hand. This is illustrated in (9), where stress shift in ($9B_1$) leads to the joint satisfaction of both SF and *SG, while default stress in ($9B_2$) leads to their joint violation. (We indicate violated constraints at the right margin.)

(9) A: Who ordered the pizza?
B_1: [**Bruce**]$_F$ ordered the pizza.
B_2: [Bruce]$_F$ ordered the **pizza**. *SF*, **SG*

If we were to isolate the effect of SF, we would have to consider examples where stress shifts to a focus, but away from a non-given (new) background, as in ($10B_1$). Isolating the effect of *SG involves shifting the stress to an element that is not itself focused (but rather is just part of the focus), as in ($11B_1$). The failure to shift the stress results in a SF and *SG violation, respectively, as in ($10B_2$) and ($11B_2$).

(10) A: What surprised you the most at the reception?
B_1: That only [**Paul**]$_F$ wore a bowtie.
B_2: That only [Paul]$_F$ wore a **bowtie**. *SF*

realized with a less prominent pitch accent in case of a sentence containing only a single pitch accent (Baumann et al. 2015).

(11) A: Do you still enjoy living in your big house?
B_1: [Sometimes I just feel like **selling** the house]$_F$.
B_2: [Sometimes I just feel like selling the **house**]$_F$. **SG*

Our data single out the effect of givenness (*SG) by showing that stress shift away from a given element, as in (11), is less acceptable than stress shift jointly motivated by focus and givenness, as in (9). We will show how this follows from the newly proposed constraint STRESS FOCUS RIGHTMOST, which is violated in ($11B_1$), but not in ($9B_1$). (The case in (10) is not investigated in our paper; however, the SFR-based account makes the prediction that stress shift in this case would be as acceptable as in (9).)

2 Initial Evidence for the Stress Shift Generalization

In this section, we briefly discuss the results of three experiments, which jointly motivate the stress shift generalization (1). The first two show that stress shift to a focused element (e.g., **S**VO) is just as acceptable as alternating word order and placing default stress on the focused element (e.g., OV**S**). The third experiment shows that stress shift away from a given object (**V**O) is less acceptable than alternating word order and assigning default stress (O**V**).

2.1 Stress Shift to Focus

The first experiment described here — call it the S-focus experiment — has not yet been published. It was part of the filler items of the experiment reported on in Šimík, Wierzba, and Kamali (2014). There were 44 participants, all students at the Palacký University in Olomouc, and their task was to rate the acceptability of utterances in a context (on a 1–9 scale, 9 acceptable). The target sentences involved a focused+stressed subject in two different positions (the WORD ORDER/STRESS POSITION factor): clause-initial ($\mathbf{S}_F$VO) and clause-final (OV$\mathbf{S}_F$).[2] The former condition involves stress shift, the latter default

[2] Two factors in addition to WORD ORDER/STRESS POSITION were manipulated in this experiment: CONTEXT TYPE (wh-question vs. yes-no question with an indefinite corresponding to the wh-word) and STRESS TYPE (higher vs. lower pitch), resulting in a 2x2x2 within-items design. The additional factors showed no effect (both *p*s > 0.4) and are therefore ignored.

stress. Focus was manipulated contextually, stress acoustically (the experiment was presented auditively). One item set (out of the total 32) is illustrated in (12). The target in ($12B_1$) involving stress shift is as acceptable as the target with default stress ($12B_2$).

(12) $B_1 \approx B_2$

A: Kdo pil ten den alkohol?
who drank that day alcohol
'Who drank alcohol on that day?'

B_1: *Stress shift*
[Josef **Němec**]$_F$ pil ten den alkohol.
Josef Němec drank that day alcohol

B_2: *Default stress*
Alkohol pil ten den [Josef **Němec**]$_F$.
Alcohol drank that day Josef Němec
'Josef Němec drank alcohol on that day.'

The mean rating for the SVO condition was 7.46 (SD 2.04) and for the OVS condition 7.60 (SD 1.87). The WORD ORDER/STRESS POSITION factor had no effect (p = 0.35 according to ANOVA), suggesting that there is no preference of sentence stress position in case a narrowly focused element is stressed. In other words, stress shift to focus is as acceptable as default stress on focus in Czech.[3]

Groeben (2015) conducted an extension of the S-focus experiment —the narrow focus experiment—enriching the WORD ORDER/STRESS POSITION factor by one level (yielding three levels: initial, medial, and final focus+stress) and adding the CATEGORY factor (three levels: focus+stress on subject, verb, and object), resulting in a within-items design with a total of 9 conditions (3x3). The experiment consisted of 36 target items and 72 fillers. The target items were constructed in a similar way to the S-focus experiment (but used contrastive/corrective instead of answerhood focus). All the conditions were rated with means between 6 and 7 (9-point scale), exhibiting insignificant or marginally significant

[3] We agree with an anonymous reviewer that it is difficult to draw inferences from a null result. What is important, however, is that this null result is compatible with our hypothesis. Some readers might find it relevant that there were other conditions in the overall experimental design (e.g., such that violated *SG), which, expectedly, were rated significantly lower than those in (12); see Šimík, Wierzba, and Kamali 2014.

differences (attributable to independent factors). See Groeben 2015 for details. The narrow focus experiment further corroborated the assumption that stressed narrow focus can be placed in any sentence position (independently of the stressed category).

2.2 Stress Shift away from a Given Element

Šimík and Wierzba (2015) investigated stress shift in a broad focus environment. In their experiment (exp. 1, call it the O-given experiment), the whole clause—represented here by the minimally present VP—was focused. The VP always consisted (at least) of a verb and an object, the latter of which was given. The experiment involved three factors (each with two levels): WORD ORDER (VO vs. OV), STRESS (stress on V vs. stress on O), and DEFINITENESS (definite O vs. indefinite O). Stress was manipulated acoustically, information structure (givenness) and definiteness were manipulated contextually. Example (13) shows one of the 40 item sets (for the indefinite O condition). Here stress shift (B_1) is less acceptable than default stress (B_2).

(13) $B_1 < B_2$

A: Na trhu prý mají čerstvé lososy.
At market report.part have fresh salmon.pl
'Reportedly, they have fresh salmon at the market.'

B_1: *Stress shift*
[Tak to bychom mohli zítra **poobědvat**
so then subj.1pl could tomorrow eat.for.lunch
<u>lososa</u>]$_F$.
salmon

B_2: *Default stress*
[Tak to bychom mohli zítra <u>lososa</u>
so then subj.1pl could tomorrow salmon
poobědvat]$_F$.
eat.for.lunch

B_3: [Tak to bychom mohli zítra poobědvat
so then subj.1pl could tomorrow eat.for.lunch
<u>lososa</u>]$_F$.
salmon

B_4: [Tak to bychom mohli zítra **<u>lososa</u>**
so then subj.1pl could tomorrow salmon
poobědvat]$_F$.
eat.for.lunch
'So tomorrow we could have a salmon for lunch.'

Conditions ($13B_3$) and ($13B_4$) violate *STRESS GIVEN and were significantly less acceptable than the other two. The critical conditions for us are in ($13B_1$) and ($13B_2$), which differed significantly in acceptability: the stress shift condition ($13B_1$) was less acceptable than the default stress condition ($13B_2$). In other words, stress shift is less acceptable than default stress when the stressed category is not focused but only part of focus.

3 Analysis

The above findings are summarized in (14) and (15). Concisely expressed, stress shift leads to an acceptability decrease only if the stressed category is not (narrowly) focused. Another way of looking at the generalization is to say that stress shift is penalized only if it happens within broad focus (in order to satisfy *STRESS GIVEN). In (14) stress shift (a) is as acceptable as default stress (b), whereas in (15) stress shift (a) is less acceptable as default stress (b).

(14) *Stress on +focus:* $\boxed{a \approx b}$

a.	[**X**]$_F$ <u>Y</u>	*stress shift*
b.	<u>Y</u> [**X**]$_F$	*default stress*

(15) *Stress on –focus:* $\boxed{a < b}$

a.	[**X** <u>Y</u>]$_F$	*stress shift*
b.	[<u>Y</u> **X**]$_F$	*default stress*

The newly proposed STRESS FOCUS RIGHTMOST (SFR), repeated in (16) for convenience, captures this generalization nicely: limiting our attention to (14) and (15) above, the only condition where it is violated is (15a), where stress is not placed on the rightmost element of the focus. This correctly captures its reduced acceptability. Notice that the SFR is

satisfied trivially in (14), where the rightmost element of the focus is the focus itself.

(16) STRESS FOCUS RIGHTMOST (SFR)
Sentence stress is realized on the rightmost element of the focus of the sentence.

In contrast, "standard" theories of sentence stress have no way of accounting for the generalization. First, it is clear that STRESS FOCUS (SF) and *STRESS GIVEN (*SG) play no role here because they are satisfied in all of the conditions: the focused element always contains sentence stress and the given element never does so. Consider now the NUCLEAR STRESS RULE (NSR). Opinions differ as to whether (14a) and (15a) violate the NSR. Proponents of what we could call a "strict" NSR would answer in the affirmative: in (14a)/(15a), stress is simply not rightmost, hence the NSR is violated (Chomsky & Halle 1968). Proponents of what we could call a "relaxed" NSR take destressing into account: what counts for the NSR is not the rightmost element, instead, what counts is the rightmost (phrasally) *stressed* element (e.g. Zubizarreta 1998, Truckenbrodt 2012, Féry 2013). Hence, if Y in (14a)/(15a) is stressless (as it is in the previously mentioned experiments), then the NSR is satisfied. The strict NSR predicts (14a) and (15a) to be less acceptable than (14b) and (15b), respectively, and the relaxed NSR predicts no acceptability contrast whatsoever because it is satisfied everywhere — the wrong result in either case.

4 The Stress Shift Experiment

4.1 Motivation

The empirical underpinnings of the stress shift generalization (1) and the newly proposed SFR designed to account for it are not as solid as one would wish. First, the crucial factor (stress shift to focus vs. away from a given element) was manipulated across experiments rather than within a single experiment. Second, there is a potential confound that needs to be ruled out, namely the category to which stress shifts. In the S-focus experiment, the stressed category was the subject (an argumental category), whereas in the O-given experiment of Šimík and Wierzba (2015), the stressed category was the verb (a predicative/functional category). Groeben's (2015) narrow focus experiment confirmed that

stress shift to focus is equally acceptable, independently of the stressed category (S, V, and O). What remains unclear, though, is the acceptability of stress shift away from a given element to a non-verbal category. With our present knowledge, we cannot rule out the possibility that stress shift away from a given element leads to an acceptability decrease just in case the stressed category is verbal (non-argumental), in which case the SFR is too general.

The above-mentioned problems motivate conducting a new experiment — the stress shift experiment. In this experiment, we include stress position (default vs. shifted) as a factor, eliminating the first problem. In addition, we manipulate the type of category stressed (verb vs. object), eliminating the second problem.

4.2 Design

We used a 2x2x2 within items design. Each of the three factors had two levels: The category of the element being stressed (CATEGORY STRESSED) with the levels object and verb, the focus status of the element carrying main stress (FOC-STATUS) with the levels +focus and −focus, and the position of main stress (STRESS POSITION) with the levels default stress and stress shift. Taken together, this resulted in eight conditions. These eight conditions are schematically presented in Table 1 including their word order. Recall that the element carrying main stress is written in boldface, given elements are underlined, and focus is marked by an F-subscript.

	CONDITION	CATEGORY STRESSED	FOC-STATUS	STRESS POSITION
a.	S V XP $[\mathbf{O}]_F$	object	+focus	default
b.	S V $[\mathbf{O}]_F$ XP	object	+focus	stress shift
c.	$[$S V XP **O**$]_F$	object	−focus	default
d.	$[$S V **O** XP$]_F$	object	−focus	stress shift
e.	S O XP $[\mathbf{V}]_F$	verb	+focus	default
f.	S $[\mathbf{V}]_F$ O XP	verb	+focus	stress shift
g.	$[$S O XP **V**$]_F$	verb	−focus	default
h.	$[$S **V** O XP$]_F$	verb	−focus	stress shift

Table 1: Presentation of a schematic item in all eight conditions

All target sentences consisted of four constituents: a subject, an object, a verb, and an additional phrase (XP), which included indirect objects, prepositional objects, or predicational small clauses. All items shared the property of having the canonical (unmarked) order SVOXP (according to the intuition of the second author).

The target sentences had different word orders, depending on the condition they represent. The sentences with default stress (stress on the rightmost element) have a non-canonical word order. As far as givenness is concerned, in the +focus conditions all elements except the stressed one were given (individually as well as together). By contrast, in the −focus condition, only the XP is given in the object-stressed condition and the XP plus the object are given in the verb-stressed condition. The differential size of the given part results as a trade-off of the constant number and order of sentential constituents.

Two of these eight conditions violate the SFR. These are the −focus-conditions involving stress shift, i.e., condition (d) for main stress on the object and condition (h) for main stress on the verb.

An example item is shown in all eight conditions in (17) to (20) (the letters correspond to those in the table). In (17) and (18) the conditions with stress on the object are presented (+focus in (17) and −focus in (18)). The examples (19) and (20) show the four conditions with stress on the verb (+focus in (19) and −focus in (20)). Note that the target sentences for (17) and (18) and for (19) and (20) are the same (the same recording was used for them); they only differ in the context.

(17) Q: Přiměla Marie Václava k odchodu?
'Did Marie convince Václav to leave?'

a. Marie přiměla k odchodu **Jiřího**.
M.$_{NOM}$ convinced to leaving J.$_{ACC}$
'Marie convinced Jiří to leave.'

b. Marie přiměla **Jiřího** k odchodu.

(18) Q: Nevíš, jestli už všichni odešli?
'Do you have an idea if everyone left yet?'

c. Marie přiměla k odchodu **Jiřího**.
M.$_{NOM}$ convinced to leaving J.$_{ACC}$
'Marie convinced Jiří to leave.'

d. Marie přiměla **Jiřího** k odchodu.

(19) Q: Vyzvala Marie Jiřího k odchodu?
'Did Marie ask Jiří to leave?'
e. Marie Jiřího k odchodu **přiměla**.
M.$_{NOM}$ J.$_{ACC}$ to leaving convinced
'Marie convinced Jiří to leave.'
f. Marie **přiměla** Jiřího k odchodu.

(20) Q: Nevíš, proč Jiří odešel?
'Do you have an idea why Jiří left?'
g. Marie Jiřího k odchodu **přiměla**.
M.$_{NOM}$ J.$_{ACC}$ to leaving convinced
'Marie convinced Jiří to leave.'
h. Marie **přiměla** Jiřího k odchodu.

4.3 Method and Procedure

The stress shift experiment is similar in design to the ones described in section 2. It involves acceptability ratings of auditorily presented utterances in a context. Each stimulus forms a short dialog, consisting of a context question read by a female speaker and an answer read by a male speaker, both Czech native speakers.

We used a within-subjects design and the items were presented in a Latin-square design, so that each participant saw each item in only one condition. The experiment consisted of 32 test items and 64 filler items, which were chosen with regard to their expected acceptability to receive a balance between acceptable and unacceptable items.

32 native-speaker students from Olomouc participated. Each of them was paid a small fee for participation and the experiment took around 30 minutes, depending on their individual pace. During the experiment each participant sat in front of a computer screen on which they were presented an introduction to the experiment (in Czech). A familiarization phase contained two example items, one of which was acceptable and the other one unacceptable.[4]

[4] The two example items formed a minimal pair designed to indicate that "unacceptability" corresponds to strange word order and strange prosody (rather than utter ungrammaticality or strange content), without revealing the crucial manipulated factors. The "acceptable" item was of the form SV[**PP**]$_F$ and the "unacceptable" item was of the form V**S**[PP]$_F$.

The examples could be listened to twice, if the participants wanted, whereas the test-items could have been listened to only once. To start the experiment, the participants had to press space-bar and the first item started to play. After having played the item, a scale from 1 (totally unacceptable) to 9 (totally acceptable) appeared and the participants rated the acceptability of the item they have heard with respect to its context (by pressing a number key on the non-numerical keyboard). To start the next item, the participants had to press space-bar again. In addition to the ratings, reaction times were measured (not systematically analyzed here).

4.4 Predictions

According to the SFR, the +focus-conditions should be rated as equally acceptable independently of the position of main stress. For the −focus-conditions, in contrast, the SFR predicts significant differences between stress shift and default stress for both the object- and the verb-conditions. In particular, stress shift is expected to be less acceptable than default stress.

4.5 Results

The mean scores and standard deviations for each condition are listed in Table 2.

	CONDITION	CATEGORY	FOC-STATUS	STRESS POS.	MEAN	SD
a.	S V XP $\lceil$**O**$]_F$	object	+focus	default	7.9	1.36
b.	S V $[$**O**$]_F$ XP	object	+focus	stress shift	7.3	1.86
c.	$\lceil$S V <u>XP</u> **O**$]_F$	object	−focus	default	5.9	2.58
d.	[S V **O** <u>XP</u>]$_F$	object	−focus	stress shift	4.9	2.41
e.	<u>S O XP</u> [**V**]$_F$	verb	+focus	default	7.1	2.11
f.	<u>S</u> [**V**]$_F$ <u>O XP</u>	verb	+focus	stress shift	7.2	1.87
g.	$\lceil$S <u>O XP</u> **V**$]_F$	verb	−focus	default	6.7	2.31
h.	$\lceil$S **V** <u>O XP</u>$]_F$	verb	−focus	stress shift	6.3	1.94

Table 2: Means and standard deviations of the ratings for each condition

We fit a multilevel model (Bates et al. 2013) using crossed random factors participant and item applying random intercepts, and FOC-STATUS (with levels −focus/+focus) and STRESS POSITION (with levels default stress/stress shift) as fixed factors. The analysis relied on the acceptability ratings as a dependent variable. Treatment-coding was applied using level –focus of the factor FOC-STATUS as baseline, and level default stress of the factor STRESS POSITION as baseline. As shown in Table 3, the model reveals an effect of FOC-STATUS (+focus more acceptable than –focus) and the interaction (default stress more acceptable than stress shift, but only in –focus conditions).

	Estimate	SE	t value	sign.
(Intercept)	6.7344	0.2007	33.55	*
FOC-STATUS = +focus	−0.6367	0.1835	−3.47	*
STRESSPOS = stress shift	0.1641	0.1835	0.89	n.s.
Interaction	0.6289	0.2596	2.42	*

Table 3: Report of the linear mixed effects model specified in the text with acceptability ratings as dependent variable

A post-hoc pairwise t-test further reveals that the interaction between FOC-STATUS and STRESS POSITION can only be attributed to the items with a stressed object. In particular, for the −focus-conditions with stress on the object (conditions (c) and (d)) the difference in acceptability between stress shift and default stress was found to be significant ($t = 3.1$; $p = 0.003$), but not so for the items with stress on the verb ($t = 1.5$; $p = 0.60$).

4.6 Discussion

Our results are partly consistent with the predictions from the SFR. For the +focus-conditions no significant differences were found between stress shift and default stress, and for the −focus-conditions with stress on the object this difference was found to be significant. However, for the −focus-conditions with stress on the verb the difference between stress shift and default stress was not significant. This part of our results doesn't support the SFR and is at odds with the findings of Šimík and Wierzba (2015), who found a significant difference between stress shift and default stress in a condition corresponding to our −focus verb-condition (see section 2.2). We hypothesize that the lack of the expected

effect in our experiment could be due to focus accommodation. It is possible that our contextual manipulation of the focus factor in the verb condition might not have been entirely successful: the participants could have treated −focus conditions as if they were +focus-conditions. In our design, example (21) (repeated from (20)) is a representative of broad focus (and hence, −focus on V). If, however, the participants parsed (21A) as having focus on the stressed verb (rather than on the whole sentence), they had no reason to assign a penalty to the stress shift.

(21) Q: Nevíš, proč Jiří odešel?
'Do you have an idea why Jiří left?'
A: [Marie **přiměla** Jiřího k odchodu]$_F$.
M.$_{NOM}$ convinced J.$_{ACC}$ to leaving
'Marie convinced Jiří to leave.'

As Šimík and Wierzba (2015) have shown, focus accommodation does, in fact, facilitate stress shift. Within several post-hoc analyses of their results, they found an "influence of contrast [= focus] in that the acceptability of stress shift is raised when a contrastive interpretation is more likely" (Šimík and Wierzba 2015, 3:59).

There are two reasons to believe that focus accommodation is responsible for the relatively high rating of stress shift to the verb in the −focus-conditions. First, we used contrastive stress in the recordings (the recordings of the target sentences were reused from Groeben's 2015 experiments, which only involved contrastive focus). Second, the size of the given part was larger for the items with stress on the verb than for the items with stress on the object in the −focus-conditions. In the −focus-sentences with stress on the object only the XP was given, whereas in those with stress on the verb the XP and the object were given. It is possible that the larger the given part, the more likely it is to be interpreted as a background to the stressed constituent, ultimately rendering the stressed constituent focused.[5]

More evidence for our focus accommodation conjecture could in principle be drawn from reaction times. As demonstrated by Haviland &

[5] This would also explain the discrepancy between the present findings and the findings of Šimík and Wierzba (2015), who did find a penalty of stress shift in comparable –focus conditions: Šimík and Wierzba used VO/OV items with no constituent corresponding to our XP; O was the only given constituent.

Clark (1974), accommodation takes time. We would therefore expect the participants to take longer to rate the stress shift −focus verb-condition (where focus accommodation takes place, by hypothesis) than the default stress −focus verb-condition (where no accommodation is required). An analysis of the reaction times reveals a tendency in the right direction – rating the former condition took longer (mean: 4153ms) than rating the latter condition (mean: 3771ms) — but the difference is not significant ($t = 0.81$, $p = 0.41$).

5 Conclusion and Outlook

We formulated a new generalization about stress shift in Czech, namely that stress shift to focus is more acceptable than stress shift away from a given element. We argued that this generalization cannot be captured by the standard toolbox used for analyzing sentence prosody — the constraints NUCLEAR STRESS RULE (NSR), STRESS FOCUS (SF), *STRESS GIVEN, or their combination — and proposed a new constraint, STRESS FOCUS RIGHTMOST (SFR), which achieves the required effect by penalizing stress shift to an element that is not focused itself but rather is just a non-rightmost subpart of a broader focus. The newly proposed SFR constraint entails the classical SF and makes it obsolete. The stress shift generalization also entails that focus and givenness are independent IS categories (see, e.g., Stevens 2013).

We conducted an acceptability rating experiment designed to verify the stress shift generalization and, by extension, the SFR that accounts for it. The experiment confirmed our expectations only partly: it proved a decreased acceptability of stress shift away from a given element (relative to stress shift to focus) for the case of stressed object but not stressed verb. Our failure to find the expected effect in the verb-condition could be due to focus accommodation: if the stressed –focus verb was — contrary to the intentions of the experimental design — interpreted as focused, shifting the stress to it produced a relatively acceptable result. We discussed a number of independent reasons why focus accommodation might have taken place in the stress shift verb-condition.

There are a number of ways in which the present experimental design could be improved in order to produce stronger and more reliable results. First, the phonetic stress realization should be more neutral, in order for it to be compatible with non-contrastive focus (the present

experiment involved contrastive stress). Second, the type of focus use should be unified across the +focus and –focus conditions (the present experiment involved contrastive/corrective focus in the +focus (narrow focus) condition and information focus in the –focus (broad focus) condition). Third, the size of the given part should be unified across the levels of the CATEGORY factor (the present experiment involved XP-givenness in the object-condition but O+XP-givenness in the verb-condition). Last but not least, the design could be extended in order to test the third logical environment in which stress shift can take place, namely stress shift to focus from a new (non-given) background.

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Island Obviation in Contrastive Fragment Answers: Evidence from Bulgarian Li-Questions*

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Contrastive fragment answers have been a puzzle to the theory of island insensitivity under ellipsis as in many languages, including English, they appear to be island sensitive (Merchant 2004, Griffiths & Lipták 2014). In this paper, we present novel data from Bulgarian showing that contrastive fragment answers to *li*-questions can be insensitive to islands. We propose that this is possible in Bulgarian due to the semantics of *li*-questions, which allow the preservation of parallelism between question and the answer.

1 Introduction

The term 'Fragment answers' refers to short answers to either wh-questions as in (1), to y/n questions as in (2) or elliptical corrections in declaratives as in (3) (small caps indicate prosodic prominence and association with Focus):

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(1) A: Who did she see? [wh-question]
B: JOHN.
B': She saw JOHN. (Merchant 2004:673)

(2) A: Does Abby speak GREEK fluently? [y/n – question]
B: No, ALBANIAN.
B': No, she speaks ALBANIAN fluently (Merchant 2004:688)

(3) A: John eat a PIZZA for dinner. [declarative correction]
B: No, SALAD
B': No, John eat SALAD for dinner.

Short answers as in the B examples have been analyzed as TP-deletion in the literature and it has been claimed that they have a fully developed sentential syntactic structure as in B' examples (see Merchant 2004 and the references therein). The only difference is that the missing part in the fragment is not pronounced at PF. In this sense, fragment answers represent a type of elliptical structure on par with sluicing.

An already observed puzzle arises, however, by the fact that while sluicing has been shown to be island-insensitive (Ross 1969, Chomsky 1972), contrastive fragment answers show *sensitivity to syntactic islands* in English (3) (Merchant 2004, Griffiths and Lipták 2014):

(4) *English fragment answer [CNP island]:*
A: Is Abby learning [$_{DP}$ the language [$_{CP}$ that JOHN speaks]]?
✗B: *No, PETER$_1$ ~~Abby is learning [$_{DP}$the language[$_{CP}$ that t$_1$speaks]]~~.
✓B': No, [$_{DP}$ the language [$_{CP}$ that PETER speaks]] ~~Abby is learning~~.
(adapted from Merchant 2004:688)

The island sensitivity of fragment answers is challenging in view of the current approaches to islands, in which it has been proposed that syntactic opacities are ameliorated when they are unpronounced (Ross 1969, Chomsky 1972, Merchant 2001, Fox and Pesetsky 2004). Data from Bulgarian contrastive questions, however, provide new evidence in favor of this approach to islands, since fragment answers are possible in Bulgarian[1] even if the element in question is base generated inside a

[1] Transliteration standard used in Bulgarian examples: ISO9 (1968).

syntactic island. In (5) we see that the DP under question 'IVAN' is embedded inside a complex noun phrase (CNP) in a similar manner as 'JOHN' in the English example in (4). Nevertheless, the short answer that corresponds to the subject inside the island is possible**:**

(5) *Bulgarian fragment answer [CNP island]:*
A: Marija uči [$_{DP}$ ezika [$_{CP}$kojto IVAN-**li** govori]]?
Maria learns language.the that Ivan LI speaks
'Is Maria learning the language that IVAN speaks?'

✓**B**: Ne, PETAR$_1$ ~~Maria uči [$_{DP}$ ezika [kojto t$_1$ govori]~~]
'No, Peter'

The goal of the current article is to account for the availability of contrastive fragment answers out of islands in Bulgarian as opposed to English. We claim that Bulgarian fragment answers out islands are possible due to the presence of the *li*-particle in the antecedent contrastive y/n question and we build on two major theoretical conditions:

- *PF-theory of Islands* (Chomsky 1972, Lasnik 2001; Merchant 2001; Fox and Lasnik 2003, Fox & and Pesetsky 2004)
- *Ellipsis under Parallelism* (Fox 1999, 2000, Merchant 2001, Griffits & Lipták 2014)

The paper proceeds as follows: Section 2 presents the theoretical background on *PF-theory of Islands* and *Ellipsis under Parallelism*. Section 3 presents the novel data of island-insensitive fragment answers and investigates the syntactic and semantic properties of *li*-marked y/n questions in Bulgarian. In section 4, we show that a movement analysis of the *li*-marked constituent is not tenable and we propose that parallelism between question and answer is achieved due to the semantics of narrow *li*-questions that is similar to constituent questions. Section 5 concludes and points to the relevance of the Bulgarian data for the syntax of ellipsis and the nature of islands.

2 Theoretical Background

As pointed out in the previous section, fragment answers and sluicing have been both analyzed as TP-Ellipsis. In this section, we briefly outline Merchant's PF-theory of islands and ellipsis and we present Griffiths & Lipták (G&L 2014) account on English island-sensitive contrastive fragment answers as opposed to island-insensitive sluicing.

2.1 Merchant (2001, 2004): Movement & the PF-theory of Ellipsis

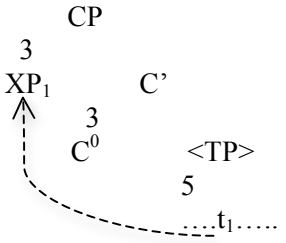
In a series of papers, Merchant provides arguments that the sluiced phrase in (6) and the fragment answer in (7) are derived from fully-fledged syntactic structure:

(6) *Sluicing:*
Ben bought something, but I don't know [$_{CP}$what$_1$ [$_{TP}$ ~~Ben bought t$_1$~~]].

(7) *Fragment Answer to a yes/no question*:
A: Does Abby speak GREEK fluently?
B: No$_i$ ALBANIAN$_1$ [$_{TP}$ ~~Abby speaks t$_1$ fluently~~] (Merchant 2004)

As illustrated in (8), after a phrase (called 'remnant') moves to the left-periphery above TP, the entire TP is silenced (deletes) at PF:

(8)



Two of the major arguments in favor of this analysis are Case-matching effects between remnant and correlate in the antecedent clause (Ross 1967, Merchant 2001, 2004) as well as preposition (P) stranding effects in English vs. languages that do not allow P-stranding (Merchant 2001). For reasons of space we refer to Merchant (2001, 2004) for a detailed illustration of these facts and we turn to the core issue of our talk, namely island-(in)sensitivity under ellipsis.

2.2 Island Insensitivity in Sluicing and the PF-theory of Islands

The proposal that elision of syntactic structure can lead to amelioration of syntactic islands has been around ever since Ross (1967). The example in (9) illustrates the mechanics: the fully pronounced structure in (9B) results in ungrammaticality because the constituent '*a Balkan language*' is embedded in a complex noun phrase (CNP), known as a strong island to syntactic movement. On the other hand, the sluice in (9B') that elides the island leads to a grammatical sentence[2]:

(9) *Complex NP-island*
A: They hired [$_{DP}$ someone [$_{CP}$ who speaks a Balkan language]], but I don't know....
✗ B:…*which Balkan language$_1$ they hired someone who speaks t_1.
✓ B': …. which Balkan language$_1$ [$_{TP}$ ~~they hired [$_{DP}$ someone [$_{CP}$ who speaks t_1~~]]].

Following Merchant (2001) we dub this idea as the *PF-theory of Islands* stated below:

(10) *PF-theory of islands*:
Island violations are due to properties of pronounced syntactic structure, not due to constraints on derivations or LF representations themselves (Chomsky 1972, Lasnik 2001, Merchant 2001, Fox & Pesetsky 2004).

Despite the fact that this proposal has been prominent in the literature on ellipsis, the exact implementation is not entirely clear. In this paper, we follow Fox & Pesetsky (2004) in assuming that islands arise due to the need for *linearization*; when the structure is not pronounced there is no need for linearization, therefore there are no island-constraints.

[2] A different proposal has been developed by Abels (2011), Barros et. al. (2014), according to which there is no island repair under Ellipsis simply because the elided structure does not involve any islands. Barros et. al. (2014) present three possible ways in which the islands are avoided; (i) short sluices, (ii) clefts and (iii) a resumptive strategy. As it is shown below, in footnote 4, none of these strategies seem to work for the data under question in Bulgarian.

Under this view, it is expected that all types of ellipsis should ameliorate islands. However, contrastive fragment answers, as already shown in (4), seem to contradict this generalization. In what follows, we briefly outline G&L (2014) account for the island sensitive fragment answers in English.

2.3 Island-sensitivity in Fragment Answers; Parallelism under Ellipsis

In a recent paper, G&L (2014) attribute the observed contrast between sluicing and fragment answers to the lack of *scopal parallelism* between question and answer:

(11) *Scopal Parallelism:*
In ellipsis, variables in the antecedent and the elided clause are bound from parallel positions.
(due to Fox and Lasnik 2003)

Based on this definition, G&L (2014) propose that *scopal parallelism* is preserved with indefinites, as they are known to take sentential scope, thus licensing TP-elision. Parallelism, they claim, can also be preserved in focused fragment answers given that there are no syntactic islands. As demonstrated by the two LFs in (12), in the absence of an island, the focused constituent moves above TP leaving a variable which is bound at LF by a λ-operator in a parallel fashion. Although we do not see overt focus movement in English, it has been independently proposed that there is covert focus movement (Krifka 1992, 1996, Wagner 2006, 2009):

(12) A. Did John introduce MARY to Sue?
LF: [$_{CP}$ MARY λx [$_{TP}$ John introduced x to Sue]]
B. No, ANA$_1$ [$_{TP}$ ~~John introduced t_1 to Sue~~].
LF: [$_{CP}$ ANA λx [$_{TP}$ John introduced x to Sue]]

However, if the focused constituent is embedded inside an island as in (13), parallelism between the LF of the question and the intended LF of the fragment answer cannot be achieved:

(13) A: Did John introduce [$_{DP}$ the man that JILL admires] to Sue?
LF:[[$_{DP}$the man that JILL admires]$_1$ λx [$_{\mathbf{TP}}$ John introduce x_1 to Sue]].

✗B: *No, [BEN$_1$ [$_{TP}$ ~~John introduced [the man that t_1 admires] to Sue~~]]
LF: [BEN λx ([$_{TP}$ John introduced [the man that x_1 admires] to Sue])]

✓B': No,[the man that BEN admires]$_1$ [$_{TP}$ ~~John introduced t_1 to Sue~~]].
LF: [[the man that BEN admires]$_1$λx ([$_{TP}$ John introduced x_1 to Sue])]

The possible answer to (13) is the one that overtly includes the entire island. In this case, it is assumed that the entire island in the question undergoes Focus movement, thus creating a parallel structure that licenses only the TP-ellipsis in (13B'), which spells out the island itself. The fragment that includes a remnant which correlates just to the contrastively focused constituent as in (13B) is ill-formed. The assumption that English pied-pipes covertly the entire island to a focus-checking position above TP, is well in line with work that independently shows that not only overt but also covert Focus movement, is sensitive to syntactic islands (Krifka 2006, Wagner 2006, Erlewine and Kotek 2014)[3]. So, if the question has a constituent that is contrastively focused and is within an island that prevents the constituent to scope out in order to bind its variable from a relevant scope position, the fragment answer is predicted to be ungrammatical.

Under this view, contrastive fragment answers in English do not present a counterexample to the generalization of *island amelioration under ellipsis*. Since unpronounced structure ameliorates illegal syntactic moves across islands, it is not the LF of the short answer that causes a clash. Instead, it is the LF of the corresponding question that creates the problem as it prevents the formation of parallel LFs between question and answer.

[3] Barros et. al. (2014) criticize the claim that covert movement is sensitive to islands as inconsistent with the PF-theory of islands. They claim that covert movement should also be insensitive to islands if islands were a purely PF-phenomenon. However, based on Fox & Pesetsky's (2004) proposal covert movement still is sensitive to linearization as opposed to elided structures where there is no linearization. There is certainly a lot to be clarified with respect to the PF-theory of Islands and island sensitivity of covert movement but this is far from saying that the PF-theory of Islands predicts covert movement to be island-insensitive.

In sluicing, on the other hand, parallelism is achieved because the indefinite and the wh-phrase can scope out of the syntactic island as argued in G&L (2014) and Fox and Lasnik (2003);

(14) John introduced the man that someone admires to Sue but I don't remember [who [$_{TP}$ ~~John introduced the man that t_1 admires to Sue~~]].

LF antecedent:
[someone$_1$ λx [$_{TP}$ John introduced the man that x_1 admires to Sue]]
LF sluice*:*
[who$_1$ λx ([$_{TP}$ John introduced the man that x_1 admires to Sue])]

As G&L (2014) note, languages with overt focus movement (i.e. Hungarian) also fail to allow contrastive fragment answers out of islands exactly as it is the case in English. In the following section, we provide evidence from Bulgarian, which also has overt focus movement, that island amelioration is possible in contrastive fragment answers but only when their antecedent is a *li*-question.

3 Island-insensitivity of Fragment Answers in Bulgarian

This section introduces novel data from Bulgarian narrow y/n questions, which demonstrate that fragment answers are possible out of syntactic islands. To provide a better understanding of the meaning and syntax of narrow questions, we also discuss the general properties of focus movement and y/n questions in Bulgarian.

3.1 Properties of the Bulgarian y/n-questions

Bulgarian y/n questions are formed with an overt particle *li*[4]. This particle is analyzed as an element that bears [+Q ,+Foc] features because

[4] As one of the reviewers notes, matrix y/n questions in Bulgarian can be formed also by raising intonation (marginally accepted) or the interrogative complementizer *dali* (Engl.'whether'). Different than the structurally flexible li-particle, embedded *dali* can occupy only the left edge of the clause, thus evoking mainly broad focus questions, unless there is additional overt focus movement (Izvorski 1995, Dukova-Zheleva 2010). In addition, matrix *dali*-questions are reported to feel more like *rhetorical questions* (Rudin at al 1999). For reasons of space and because we are concerned specifically with narrow contrastive questions, we will leave the investigation of *dali* and intonation for further research.

it is specific to interrogatives and it is shown to associate always with focus (Izvorski et. al. 1997, Rudin at all 1999, Franks 2006 Dukova-Zheleva 2010)

Crucially, the placement of the *li*-particle matters when it comes to interpreting a question in Bulgarian; when *li* attaches to the right edge of the clause as in (15a) or when it right-adjoins to a non-stressed main verb (which moves to T in Bulgarian) as in (15b), we obtain neutral polar questions with broad focus similar to English questions, for which the answer is either 'yes' or 'no'.

(15) *Broad focus y/n questions*

a. Petar kupi prăsten na Marija **li**?
Petar bought ring to Maria LI

b. Petar kupi **li** prăsten na Marija?
Petar bought LI ring to Maria
'Did Peter buy a ring to Maria?' *(Answer: yes/no)*

The *li-particle* can also attach to individual constituents to create so-called *narrow focused* questions. This type of y/n questions do not interrogate about the entire proposition, but about the particular constituent they adjoin to. If the corresponding answer to such question is 'no' the answer feels incomplete. In this sense, Dukova-Zheleva (2010) draws a parallel between Bulgarian narrow *li*-questions and wh-questions, which can also be oriented towards a part of the clause and have to follow the question-answer congruence. The data in (16) demonstrate how one can interrogate about the particular event[5] (16a), the subject (16b), or the direct object (16c) by marking the constituent with the *li*-particle and moving it to the focus-designated position above TP:

[5] Narrow focus on the verb coincides with the word order of broad focus due to overt V-to-T movement in Bulgarian. Thus, narrow focus on the verb, requires additional stress on the lexical verb.

(16) *Narrow focus y/n questions:*

a. Petar KUPI-**li** prăsten na Marija? **[V – li]**
Petar bought LI ring to Maria
'Is it buying what Peter did a ring to Maria?'
(*Answer: yes / no, {stolen, borrowed, etc}*)

b. PETAR-**li** kupi prăsten na Marija? **[Sbj – li]**
'Is it Peter the one who bought a ring to Maria?'
(Answer : yes / no, {Boris, Ivan, etc})

c. PRĂSTEN(A)-**li** kupi Petar na Marija? **[DO – li]**
'Is it a/the ring that Peter bought to Maria?'
(Answer : yes / no, {(the) necklace, (the) bracelet, etc})

Note than even though some speakers can leave *li*-marked constituents in-situ, overt leftward movement to the focus projection (FocP)[6] is widely preferred (Izvorski 1995). This overt fronting follows from the general properties of focus marking in Bulgarian. Similar to the Hungarian data in G&L (2014), focused (indefinite and definite) constituents in Bulgarian undergo overt movement to a preverbal position above TP (Rudin 1999, Lambova 2004):

(17) a. Petar kupi prăsten(a) na Marija. [neutral declarative]
Petar bought ring.(the) to Maria
'Peter bought a/the ring to Maria.'

b. Petar PRĂSTEN(A)$_1$ kupi t$_1$ na Marija [narrow Focus on DO]
'Peter bought a/the RING to Maria.'

To sum up the observations, Bulgarian creates narrow y/n questions by marking the focused constituent with the overt question particle *li* and fronting it to a preverbal focus position above TP, similarly to what happens in wh-questions and narrow focus declaratives.

[6] In Bulgarian FocP is at the left-periphery above TP but crucially bellow functional projections that host Topic and complementizers in embedded clauses (Izvorski 1995, Lambova 2004).

3.2 Narrow Focus li-questions out of Syntactic Islands

The crucial data regarding the island insensitivity in Bulgarian contrastive fragment answers are presented in (18-20). In (18) the *li*-marked constituent is embedded in a CNP island, in (19) in an adjunct island, and in (20) in a subject island. In all cases, the *li*-marked constituent is easily understood as the element under question and a speaker can answer with a short fragment answer that corresponds to this constituent, contrary to what happens in English or in Hungarian[7]:

(18) **a**. *CNP-Island* (narrow DO-li)

A: Ivan namrazi [momčeto [koeto PRĂSTEN(A)-**li** kupi t_1 na Maria]]?
Ivan hates boy.the that ring(the) LI bought to Maria
'Does Ivan hate the boy that bought a/the RING to Maria?'

B: Ne, GERDAN(A)$_1$ ~~[Ivan namrazi [$_{DP}$ momčeto [$_{CP}$ koeto kupi t_1 na Maria]]]~~?
'No, a/the necklace'

b. *CNP-Island* (narrow V-li)

A: Ivan namrazi momčeto, koeto beše KUPILO-**li** prăsten na Marija?
Ivan hates boy.the that Aux bought LI ring to Maria
'Does Ivan hate the boy that had BOUGHT a ring to Maria?'

B: Ne, OTKRADNALO.
'No, stolen'

(19) *Adjunct Island* (narrow V – li)

A: Ivan se jadosa, zaštoto Marija beše PUŠILA-**li** včera ?
Ivan refl angry because Maria Aux smoked LI yesterday
'Did Ivan get angry because Maria was SMOKING yesterday?'

B: Ne, PILA.
'No, drinking'

[7] Barros et al (2014) draw evidence from similar examples in English to argue against the PF-theory of islands, by showing that the answer fragment out of the island is ungrammatical. They say that this is because none of their suggested strategies (i.e. short sluices, clefts, resumptives) works here and this is correct. The problem for their analysis is that none of these strategies work in Bulgarian in general; a short sluice would be incongruent and a cleft or a resumptive are not possible as well. On the contrary, the PF-theory of islands provides a straightforward explanation for the grammaticality of such fragment answers in Bulgarian.

(20) *Subject Island* (narrow Sbj-li)

A: Kučeto, koeto ANNA-**li** donese, umrja včera?
Dog.the that Anna LI brought died yesterday
'*Did the dog that ANNA brought died yesterday?'*
B: Ne, MARIJA.
'No, Maria'

In the following section, we explore two hypotheses under which parallelism can be achieved due to the *li*-particle.

4 Analysis

We argue that in Bulgarian the culprit for licensing fragment answer out of islands is the *li* particle. The importance of the *li*-particle becomes evident when we look to fragment answers (corrections) to narrow focus declaratives, which lack the question particle. Whereas fragment corrections to declarative statements are possible (see (3)), a fragment correction cannot correspond to a constituent inside an island in a declarative:

(21) A: Ivan namrazi [$_{DP}$ momčeto, koeto PRĂSTEN(A)$_1$ kupi t_1 na Marija].
Ivan hates boy.the that ring(the) bought to Maria
'Ivan hates the boy that bought a/the RING to Maria?'
✗B: Ne, GERDAN(A)$_1$ [~~Ivan namrazi momčeto, koeto kupi t_1 na M.~~].
✓B': Ne, momčeto, koeto podari GERDAN(A) na Marija.
'No, the boy that gave the necklace to Maria.'

The ungrammaticality of the fragment answer in (21B) directly contrasts the well-formed fragment answer in (18). This shows that licensing contrastive fragments in Bulgarian narrow *li*-questions cannot be due to some special properties of focus in Bulgarian because then we would expect contrastive fragment answers to be acceptable across the board. On the contrary, it seems that focus movement is sensitive to islands.

In the following, we first explore the possibility that the *li*-marked constituent moves out of the island to the specifier of CP, such that a parallel structure to the one in the elided answer can be derived. We

show, however, that a movement analysis cannot be maintained as shown by the intervention effects and overt pied-piping.

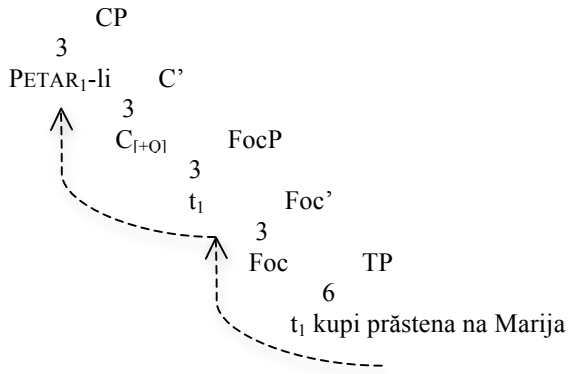
4.1 The movement hypothesis of Scopal Parellelism

One option of obtaining scopal parallelism is by assuming that the *li*-marked constituent moves into the left-periphery to check its [+F] feature in FocP and its [+Q] in CP as illustrated in (22):

(22) <u>*Narrow focus-question*</u>

a. PETAR-**li** kupi prăsten na Marija?
Peter LI bought ring to Maria
'Is it Peter who bought a ring to Maria?'

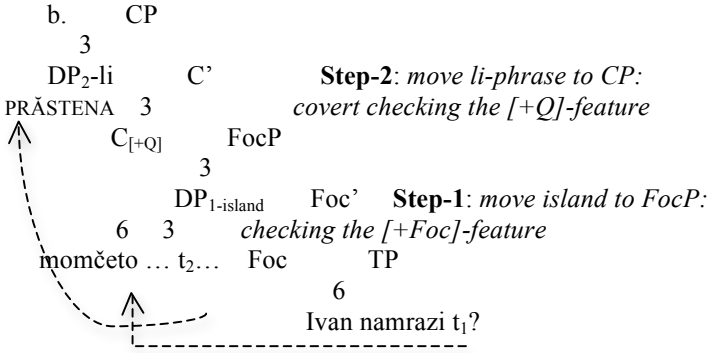
b.



When the *li*-marked constituent is base-generated inside an island, we need to explain how it escapes the island. There is no conclusive answer to this question, but there are proposals in the literature according to which extracting an item out of an island becomes easier after an island has moved itself to a derived position (see von Stechow (1996) and Richards (2008) for an analysis along these lines of wh-questions out of islands in Japanese). For us, this would mean that the entire island pied-pipes to FocP, and then the *li*-marked constituent escapes the island and moves (covertly) to the CP to check its [+Q] feature as illustrated in (23):

(23) *Narrow focus li-movement out of CNP*

a. Ivan namrazi [momče.to, koeto PRĂSTEN(A)-**li** kupi na Marija]?
Ivan hates boy.the that ring(the) LI bought to Maria
'Did Ivan hate the boy that bought a RING to Maria?'

b.


Now, as illustrated in (24) scopal parallelism between the question and the answer is achieved;

(24) *Scopal parallelism*

a. Question LF:
[ring-li λx. [the boy that bought x to Maria λy [$_{TP}$ Ivan hates y]]]

b. Answer LF:
[necklace λx.[the boy that bought x to Maria λy. [$_{TP}$Ivan hates y]]]

A theoretical problem for this analysis, as pointed out by a reviewer, is the derivation of the answer-LF. Namely, under a PF-theory of Ellipsis it is not clear why the F-marked constituent of the answer cannot move directly out of the island but must first pied-pipe to FocP.

An additional empirical problem for the movement analysis arises by so-called *Intervention Effects* in narrow *li*-questions[8]. Beck (2006) shows that when there is an intervening focus sensitive element (i.e. *only*, *always,* (stressed) *negation*, etc.) between a wh-phrase interpreted in situ

[8] We thank Ivona Kučerová for suggesting the relevance of the intervention effects and Hadas Kotek for in depth discussion.

and a higher operator (i.e. Q in C^o), the derivation crashes. On the contrary, if the wh-phrase moves overtly or covertly above the intervener, the question is grammatical. Using intervention effects as a diagnostic, we expect that if the *li*-marked constituent associates with a Q-operator via movement (covert or overt), then there should be no intervention effects. Yet we observe that the presence of an intervener between Q and the *li*-constituent gives rise to ungrammaticality as shown in (25a); the *li*-marked constituent has to move overtly above the intervener (25b), thus suggesting that in (25a) the *li*-constituent is interpreted in-situ.

(25) a. ***Samo** Petar PRĂSTEN$_1$-li beše kupil t_1 na Marija?
only Peter aux bought ring.the LI to Maria

b. PRĂSTEN$_1$-li **samo** Petar beše kupil t_1 na Marija?
ring.the LI only Peter aux bought to Maria
'Is it a ring that only Peter bought to Maria?'

Furthermore, when the *li*-marked constituent is inside an island and there are two interveners - INTERV-1 outside the island and INTERV-2 inside the island - then the entire island must move overtly above INTERV-1 and the *li*-marked constituent must move overtly above INTERV-2 inside the island (26c). This is illustrated by the following example:

(26) [INTERV-1….[Complex Noun [INTERV-2 …LI….]]]

a. *[**Samo** Ivan namrazi **[**momčeto [koeto **vinagi** POZDRAVJAVA**-li**
ONLY Ivan hates boy.the that always greets LI
Marija]]]?
'Does only Ivan hate the boy that always GREETS Maria?'

b.*[momčeto koeto **vinagi** POZDRAVJAVA**-li** Marija]$_1$ **samo** Ivan namrazi t_1?[9]

c. [momčeto, koeto POZDRAVJAVA**-li**$_1$ **vinagi** Marija]$_1$ **samo** Ivan namrazi t_1?

[9] Note that a reading, under which *li* asks the broad question whether the event 'always greeting Maria' takes place, the sentence in (26b) is acceptable. Yet, under a reading under which *li* asks whether it is the event of 'greeting' in contrast to another contextually available event, the reading is out.

Following Beck (2006), we interpret the data in (25) and (26) to mean that in the absence of overt movement, the *li*-marked constituent is interpreted in-situ, below the focus-sensitive intervener.

Finally, probably the strongest argument against the two-step movement analysis comes from overt pied-piping. Overt movement of the entire island containing the *li*-constituent is possible in Bulgarian as shown in (27). Surprisingly, however, the short fragment answer is not acceptable. Instead, the answer must contain the entire island (27B') very similar to what we observe in the English data in (4):

(27) A:Ivan [momčeto, koeto kupi PRĂSTEN(A)**-li** na Marija]$_1$ namrazi t$_1$?
Ivan boy.the that bought ring(the) LI to Maria hates
'Does Ivan hate the boy that bought a/the RING to Maria?'
✗B: Ne, GERDAN(A)$_1$ [~~Ivan namrazi momčeto, koeto kupi t$_1$ na M.~~].
✓B': Ne, [$_{DP}$ momčeto [$_{CP}$ koeto kupi GERDAN(A) na Marija]]
'No, the boy that bought a/the NECKLACE to Maria'

If the two-step movement is correct, then moving the entire island overtly should not prevent the second movement of the *li*-constituent and therefore the licensing of the fragment answer. Unless there is some strange condition that requires both movements to be either covert or overt, we propose that there is no movement to C. Any analysis of the island insensitivity in Bulgarian fragment answers should therefore be able to account for the contrast in the meaning between the overt island pied-piping in (27) and the in-situ interpretation in (5), (18-20).

4.2. Towards a Solution

So far, we have shown that contrastive short fragments out of islands are possible in Bulgarian if i) the antecedent is a narrow *li*-question and ii) if the island containing the *li*-constituent remains in situ.

We therefore propose that it is the dual [+Q] [+F] property of *li* that allows the *li*-marked constituent to associate either with the FocP via overt movement or with Q from its in-situ structural position (via Hamblin semantics).

In a structural environment without islands, one cannot tell whether the contrastive fragment answer is licensed due to focus or due to the question operator, because both operators can be interpreted via the mechanism of distinguished variables (Beck 2006:17), thus allowing for a parallel LF. But in structures with islands, we suddenly observed that overt movement of the island to the left periphery, does not license the short fragment answer. As a result we propose that the fragment answer to the narrow y/n question is licensed not by focus but by in-situ association with Q which results in parallel LFs between question and answer (28):

(28) *Parallelism:*
a. Quesion LF:
[λx. [$_{TP}$ Ivan hates the boy that bought x to Maria]]

b. LF-Answer:
[λx. [$_{TP}$ Ivan hates the boy that bought x to Maria]]

The proposed LF for the question makes sense if we consider that the association of the *li*-marked constituent with Q derives, in addition to the polar alternatives, a set of alternatives similar to those of wh-questions, thus capturing Dukova-Zheleva's (2010) observation that narrow *li*-questions behave like constituent questions[10]. At this point, we remain ignorant as to the exact mechanism of deriving the semantics for narrow *li*-questions, such that they include both the set of alternatives that correspond to the ordinary semantics of y/n questions and the set of alternatives of wh-questions. Yet the intuitive relation to wh-questions, in which the speaker asks only about a constituent by taking everything else in the clause to be given, suggests that proposing parallel semantics is on the right track.

As focus is shown to associate with the entire island (Krifka 2006), we keep the generalization that contrastive fragment answers out of islands are not possible, because focused constituents remain within islands, thus

[10] Furthermore, as pointed out by a reviewer, Bulgarian fragment answers out of islands are possible even when the antecedent is an alternative question with the disjunctive *ili* 'or' inside the island. And this is not surprising, as disjunctive questions have been analyzed with Hamblin alternative semantics without movement.

failing to create parallel structure that would license elision (Fox & Lasnik 2003). This is true for fragments in English and Hungarian and it is also true for fragments in Bulgarian declaratives (21) and for fragments that correspond to overtly fronted islands in Bulgarian (27).

And yet because Bulgarian associates Q with the in-situ phrase inside the island by marking it with an overt element (*li)*, it is possible to create a parallel LF structure with a variable that is bound inside the island. In languages, which mark contrastive constituents in y/n questions only with focus intonation (i.e. English and Hungarian), the LF of the question is predicted to include the entire island as the variable to be bound, thus licensing only the long fragment answers (that includes the island).

5 Conclusions

In this paper we showed that contrary to what happens in English, short fragment answers out of islands are possible in a certain set of Bulgarian y/n questions. Building on Griffits & Lipták (2014) and Fox & Lasnik (2003), we assumed that parallelism between antecedent and remnant is the key for licensing elision and that such parallelism is not given when syntactic islands prevent extraction. However, our evidence from overt pied-piping and focus intervention showed that scopal parallelism is not achieved via movement in Bulgarian *li*-questions and that the *li*-marked constituent is interpreted in situ. This urged us to propose that narrow *li*-questions should be analyzed as a combination of y/n and wh-questions, providing a parallel LF for the short fragment answer. It remains to be seen whether our proposal that Q is associated with an in-situ phrase in Bulgarian can be developed theoretically and supported with further empirical evidence. Crucially, our analysis of the island–insensitivity of contrastive fragment answers in Bulgarian converges with the theoretical generalizations regarding island-insensitivity in other types of ellipsis, such as sluicing, certain types of VP-Ellipsis, and Comparative-Ellipsis (Fox & Lasnik 2003, Griffiths & Lipták 2014), thus providing further evidence that islands are a PF-phenomenon (Chomsky 1972, Merchant 2001, Fox & Pesetsky 2004) and therefore can be ameliorated under ellipsis.

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Topicalisation in Coordination under Subordination*

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The following text considers the interaction of syntax (structure, word order) and semantics (interpretation, information structure). Using question-answer pairs of varying complexity set in different contexts, it outlines a number of properties of contrastive topic in Czech. These properties are then used to argue that topicalisation in coordination under subordination can target elements that are interpreted as contrastive topics. In the process, a couple of examples incompatible with the existing analyses of contrastive topic are presented to justify a new definition of this information-structural category.

1 Information Structure

1.1 Information-Structural Categories

The following categories are commonly used in the literature on information structure: GIVEN (G), NEW (N), TOPIC (T), FOCUS (F), CONTRASTIVE TOPIC (CT), CONTRASTIVE FOCUS (CF). Often, linguists working on information structure differ as to which of these categories

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they consider to be the set of basic theoretical components. Although related, the task of splitting the various competing lines of thought is somewhat orthogonal to the present discussion. In this text, only G, T, F and CT are relevant[1]. In what follows, the information-structural category of each relevant constituent is marked by a subscript.

1.2 Question-Answer Pairs

In his insightful book, Jackendoff (1972) uses question-answer pairs to demonstrate how the form of the question can influence the form of the answer. The question primes the use of CT in the answer. Jackendoff (*ibid.*) distinguishes between an A-accent and a B-accent. The former is realised with a fall accent and the latter with a fall-rise accent (p. 261)[2].

(1) a. Well, what about FRED? What did HE eat?
    b. FRED_{B} ate the BEANS_{A}.
(2) a. Well, what about the BEANS? Who ate THEM?
    b. FRED_{A} ate the BEANS_{B}.

Crucially, (1a) cannot be answered by (2b), and (2a) cannot be answered by (1b). Büring (2003) refers to any constituent marked by the A-accent as F, and to any constituent marked by the B-accent as CT. The accentuation is therefore taken to be a criterion for classifying a constituent as either CT or F. As far as Czech is concerned, Veselá et al. (2003), who studied a relatively large sample of spontaneous speech, claim that native speakers tend to realise CT with a rise accent, T with a level accent and F with a fall accent. However, it seems that, in most cases, elements interpreted as CT can also be realised with a level accent, which is otherwise typical of elements interpreted as T. The accentuation is therefore only indicative of the element's information-structural status. Consequently, it is important to consider the phonetic realisation of each relevant syntactic element in conjunction with the semantic and/or

[1] Sometimes, elements that qualify as G are not marked as such. This is due to the fact that these elements might be interpreted as T or CT. Whenever G-marking is of importance, it is discussed. It is also worth noting that not everyone assumes the existence of the category T. Büring (to appear), for instance, dedicates an entire section to pointing out various problems with pinpointing a precise definition of T. However, the argument defended below does not hinge on the existence of this category.

[2] The example numbering has been altered and the A-/B-accent marking has been added.

pragmatic import that it has. Building on his previous work, Büring (to appear) formulates the following rule to account for the distribution of the category CT (pp. 3–4).

(3) CT-INTERPRETATION RULE
For a sentence S^{CT+F} to be felicitous, there must be at least one question meaning in S^{CT+F}'s CT-value which is
a. currently pertinent, and PERTINENCE
b. logically independent of $[\![S^{CT+F}]\!]_O$, and INDEPENDENCE
c. identifiable. IDENTIFIABILITY

$[\![S^{CT+F}]\!]_O$ refers to the ordinary meaning of the sentence containing CT and F. It is used in juxtaposition with $[\![S^{CT+F}]\!]_{CT}$ and $[\![S^{CT+F}]\!]_F$, which refer to the sentence's CT and F alternatives, respectively. Since the CT alternatives will be of primary importance in what is to follow, it is worth considering Jackendoff's examples in the light of Büring's proposal. The CT alternatives for (1b) and (2b) are *What did x eat?* and *Who ate y?*, respectively. Crucially, the variable *x* must be replaced by an individual other than *Fred*, and the variable *y* must be replaced by a dish other than *the beans*. PERTINENCE ensures that the alternative is relevant in the given context, INDEPENDENCE ensures that it neither entails nor contradicts the ordinary meaning of the sentence containing CT, and IDENTIFIABILITY ensures that it is recognisable by the hearer.

In the following sections, it will be shown that Büring's proposal is too restrictive. More concretely, it precludes *What did x eat?* and *Who ate y?* from being alternatives. This is at odds with the fact that it is possible to conjoin answers to these questions in Czech. In this text, it is assumed that the presence of CT indicates that the expression that contains it is a partial answer to a question that requires a multiple-pair answer (see (4)). This definition follows from the generalisation in (5), which is itself inspired by Kuno's (1982) observation that answers to multiple questions contain a sortal key (i.e., an expression according to which the answer is sorted). The last ingredient of the analysis is that it must always be possible for the element interpreted as CT to realise a rise accent. This can be viewed as a language-specific filter that is operative in Czech, but that need not be operative in other languages.

(4) CT-INTERPRETATION (ALL LANGUAGES)
The expression that contains CT is a partial answer to a question that requires a multiple-pair answer.

(5) CT-PRESENCE (ALL LANGUAGES)
A partial answer to a question that requires a multiple-pair answer must contain an element interpreted as CT.

(6) CT-REALISATION (CZECH)
The element interpreted as CT must (have the possibility to) realise a rise accent.

2 Basic Restrictions on Constituent Order

Czech is a language that is considered to have a very flexible constituent order. While this is generally true, the order of constituents is (often) heavily restricted by the context in which a given sentence is used. The information packaging ensures that each constituent gets interpreted in a particular way. The information structure then places certain (language-specific) restrictions on the order of these constituents. The aim of this section is to explore the nature of some of these restrictions.

2.1 Object-Oriented Questions and Simplex Answers

Assume that Speaker A asks the following question[3]. In the answer, the subject should be interpreted as CT, and the object as F[4].

(7) A co Petr? Co snědl ten?
and what $\text{Peter}_{\text{NOM}}$ what_{ACC} eat_{PST} he_{DEM}
'And what about Peter? What did HE eat?'

The following are all possible permutations of subject, verb and object

[3] Unless specified otherwise, the questions used below are assumed to be uttered in the following context: Disregarding Speaker A and Speaker B, there were >2 individuals (Peter, Mary, Jacob) and >2 dishes (beans, spinach, aubergine), all of whom/which were familiar to Speaker A and Speaker B. Speaker A did not know who ate what, and Speaker B supplied this information. For reasons to do with simplicity, it is assumed that the relation between individuals and dishes is one-to-one. In other words, it is assumed that each individual is linked with exactly one dish. Unless stated otherwise, this is also the case in subsequent examples.

[4] This is due to the fact that *Petr* is being contrasted with the other individuals in the context, and that *fazole* corresponds to the *wh*-element in the question.

that Speaker B could produce in reply to the question in (7). Interestingly, the realisation of the subject with the rise accent is blocked when it follows the object. Examples (9), (10) and (11) are not acceptable regardless of the accent that the subject realises. (12) and (13) are marked, because interpreting the subject as T is at odds with what the context requires. Crucially, it follows from the above that the subject can be interpreted as CT only in the initial position[5].

(8) [Petr]$_{T/CT}$[snědl]$_{G}$ [fazole]$_{F}$. (SVO)
Peter$_{NOM}$ eat$_{PST}$ beans$_{ACC}$
'Peter ate the beans.'
(9) $^{\#}$[Petr]$_{T/CT}$ [fazole]$_{F}$ [snědl]$_{G}$. (SOV)
(10) *[Snědl]$_{G}$ [Petr]$_{T/CT}$ [fazole]$_{F}$. (VSO)
(11) *[Snědl]$_{G}$ [fazole]$_{F}$ [Petr]$_{T/CT}$. (VOS)
(12) [Fazole]$_{F}$ [Petr]$_{?T/*CT}$ [snědl]$_{G}$. (OSV)
(13) [Fazole]$_{F}$ [snědl]$_{G}$ [Petr]$_{?T/*CT}$. (OVS)

2.2 Subject-Oriented Questions and Simplex Answers

To check the reverse, assume that Speaker A asks the following question. In the answer, the object should be interpreted as CT, and the subject as F[6].

(14) A co fazole? Kdo snědl ty?
and what beans$_{NOM}$ who$_{NOM}$ eat$_{PST}$ them$_{DEM}$
'And what about the beans? Who ate THEM?'

The following are all possible permutations of subject, verb and object that Speaker B could produce in reply to the question in (14). Interestingly, the realisation of the object with the rise accent is blocked when it follows the subject. Examples (16), (17) and (18) are not acceptable regardless of the accent that the object realises. (19) is severely degraded, because an element interpreted as G (i.e., *snědl*)

[5] Sentences that would be acceptable with a different information-structural marking (in a different context) are prefixed with a hash. Sentences that would be unacceptable in any context, regardless of the information-structural marking, are prefixed with a star. Various degrees of markedness are signalled by question marks.

[6] This is due to the fact that *fazole* is being contrasted with the other dishes in the context, and that *Petr* corresponds to the *wh*-element in the question.

appears in the sentence-final position, following an element interpreted as F (i.e., *Petr*)[7]. Interestingly, interpreting the object in (15) as T is possible. Crucially, it follows from the above that the object can be interpreted as CT only in the initial position.

(15) [Petr]$_{F}$ [snědl]$_{G}$ [fazole]$_{T/*CT}$. (SVO)
Peter$_{NOM}$ eat$_{PST}$ beans$_{ACC}$
'Peter ate the beans.'
(16) $^{\#}$[Petr]$_{F}$ [fazole]$_{T/CT}$ [snědl]$_{G}$. (SOV)
(17) *[Snědl]$_{G}$ [Petr]$_{F}$ [fazole]$_{T/CT}$. (VSO)
(18) *[Snědl]$_{G}$ [fazole]$_{T/CT}$ [Petr]$_{F}$. (VOS)
(19) $^{??}$[Fazole]$_{T/CT}$ [Petr]$_{F}$ [snědl]$_{G}$. (OSV)
(20) [Fazole]$_{T/CT}$ [snědl]$_{G}$ [Petr]$_{F}$. (OVS)

In principle, Speaker B could select from three types of constituent order (i.e., SVO, OSV, OVS) when answering the question in (7), and from two types of constituent order (i.e., SVO, OVS) when answering the question in (14). However, the rise accent typical of CTs is restricted to appear in an SVO configuration (see (8)) in the answer to (7), and in an OVS configuration (see (20)) in the answer to (14). The fact that the element interpreted as CT must precede the element interpreted as F is in line with similar observations made by other authors for other languages[8].

2.3 Object-Oriented Questions and Complex Answers

Apart from requesting information about a single person or a single dish, it is also plausible to request information about multiple persons or dishes at the same time. This can be achieved by coordinating two subjects or two objects in the question. Assume that Speaker A asks the following question. In the answer, the subject should be interpreted as CT, and the object as F.

[7] An explanation of why this constituent order is blocked can be found in Kučerová 2007 as well as Šimík and Wierzba 2015.

[8] Among others, Büring 1995 for German, and Wagner 2012 for German, Italian and English.

(21) A co Petr a Marie? Co snědli ti?
and what $\text{Peter}_{\text{NOM}}$ and Mary_{NOM} what_{ACC} eat_{PST} they_{DEM}
'And what about Peter and Mary? What did THEY eat?'

Interestingly, the only permissible constituent order within each partial answer (= conjunct) is one in which the subject can be realised with the rise accent.

(22) [Petr]$_{\text{CT}}$ [snědl]$_{\text{G}}$ [fazole]$_{\text{F}}$ (a [Marie]$_{\text{CT}}$ [snědla]$_{\text{G}}$
$\text{Peter}_{\text{NOM}}$ eat_{PST} $\text{beans}_{\text{ACC}}$ and Mary_{NOM} eat_{PST}
[špenát]$_{\text{F}}$). (SVO-SVO)
$\text{spinach}_{\text{ACC}}$
'Peter ate the beans (and Mary ate the spinach).'

The other two constituent orders (i.e., OSV and OVS) that were allowed in an answer to the object-oriented question in (7) may not be used in either a partial or a complete answer to (21). This is predicted by the combination of (5) and (6) in the context of (21).

(23) *[Fazole]$_{\text{F}}$ [Petr]$_{\text{CT}}$ [snědl]$_{\text{G}}$ (a [špenát]$_{\text{F}}$ [Marie]$_{\text{CT}}$ [snědla]$_{\text{G}}$).
(OSV-OSV)
(24) #[Fazole]$_{\text{F}}$ [snědl]$_{\text{G}}$ [Petr]$_{\text{CT}}$ (a [špenát]$_{\text{F}}$ [snědla]$_{\text{G}}$ [Marie]$_{\text{CT}}$).
(OVS-OVS)

2.4 Subject-Oriented Questions and Complex Answers

To check the reverse, assume that Speaker A asks the following question. In the answer, the object should be interpreted as CT and the subject as F.

(25) A co fazole a špenát? Kdo snědl ty?
and what $\text{beans}_{\text{NOM}}$ and $\text{spinach}_{\text{NOM}}$ who_{NOM} eat_{PST} them_{DEM}
'And what about the beans and the spinach? Who ate THEM?'

Interestingly, the only permissible constituent order within each partial answer (= conjunct) is one in which the object can be realised with the rise accent. This is predicted by the combination of (5) and (6) in the context of (25).

(26) [Fazole]$_{CT}$ [snědl]$_{G}$ [Petr]$_{F}$ (a [špenát]$_{CT}$ [snědla]$_{G}$ [Marie]$_{F}$).
beans$_{ACC}$ eat$_{PST}$ Peter$_{NOM}$ and spinach$_{ACC}$ eat$_{PST}$ Mary$_{NOM}$
(OVS-OVS)
'Peter ate the beans (and Mary ate the spinach).'

The only other constituent order (i.e., SVO) that was allowed in an answer to the object-oriented question in (14) may not be used in either a partial or a complete answer to (25)[9].

(27) #[Petr]$_{F}$ [snědl]$_{G}$ [fazole]$_{CT}$ (a [Marie]$_{F}$ [snědla]$_{G}$ [špenát]$_{CT}$).
(SVO-SVO)

Crucially, the overt realisation of either *Petr* and *Marie* or *fazole* and *špenát* in the question does not *per se* restrict the interpretation of the elements in the answer. While (26) would be infelicitous as an answer to (21), (22) would be felicitous as an answer to (25). Thus, the constituent of the answer that corresponds to the *wh*-element of the question does not have to be always interpreted as F, and the constituent of the answer that is primed by the question to be interpreted as CT does not have to be always interpreted as CT.

There are many factors that need to be controlled when considering question-answer pairs such as (25)–(22). First, subjects tend to be better topics than objects. Second, the subject is animate and the object is inanimate. Third, first names might be more easily associated with their referents than definite nouns. Given the complex interplay of these various factors, finding the answer is beyond the scope of this paper.

2.5 Subordination

The acceptability judgments observed above for simplex and complex answers are not preserved under subordination. The answers to questions in (7), (14), (21) and (25) can be embedded. Depending on its complexity (i.e., single-pair vs multiple-pair), the answer could be inserted into the

[9] The sentence in (27) is perfectly grammatical, and it would be acceptable if the interpretation of the subject and the object within each conjunct were reversed (see (22)). The possibility of restructuring the discourse to accommodate such reversals is briefly considered further below.

empty slot(s) in one of the following two templates. A single-pair answer could be inserted into the template in (28), and each conjunct of a multiple-pair answer could be inserted into the template in (29).

(28) No. Jakub řekl, že ____ .
well Jacob.NOM say.PST že
'Well. Jacob said that ____ .'

(29) No. Jakub řekl, že ____ , a že ____ .
well Jacob.NOM say.PST že and že
'Well. Jacob said that ____ and that ____ .'

What is crucial is that subordination allows only those constituent orders in which the element interpreted as CT (realised with either a level accent or a rise accent) precedes the element interpreted as F (realised with a fall accent). Subordination therefore places further restrictions on the order of constituents within the clause.

3 Multiple Questions: Single-Pair vs Multiple-Pair Answers

3.1 Multiple Questions and Multiple-Pair Answers

Czech is a language in which all *wh*-elements are typically fronted. For present purposes, it suffices to consider multiple questions with two *wh*-elements. Interestingly, the questions in (7) and (14) can form different strategies to answer the common super-question below.

(30) Kdo co snědl?
who_{NOM} what_{ACC} eat_{PST}
'Who ate what?'

In an attempt to answer the above question, the speaker can select from two different sortal keys. The answer might be ordered by 'individual' (see (31)) or by 'dish' (see (32)). Note that, in each case, one constituent of the answer that corresponds to a *wh*-element of the question is interpreted as CT.

(31) [Petr]$_{\text{CT}}$ [snědl]$_{\text{G}}$ [fazole]$_{\text{F}}$.
$\text{Peter}_{\text{NOM}}$ eat_{PST} $\text{beans}_{\text{ACC}}$
'Peter ate the beans.'

(32) [Fazole]$_{CT}$ [snědl]$_{G}$ [Petr]$_{F}$.
beans$_{ACC}$ eat$_{PST}$ Peter$_{NOM}$
'Peter ate the beans.'

It is also possible to provide one of the following sentences as an answer to the question in (30).

(33) [Petr]$_{CT}$ [snědl]$_{G}$ [fazole]$_{F}$ (a [Marie]$_{CT}$ [snědla]$_{G}$
Peter$_{NOM}$ eat$_{PST}$ beans$_{ACC}$ and Mary$_{NOM}$ eat$_{PST}$
[špenát]$_{F}$). (SVO-SVO)
spinach$_{ACC}$
'Peter ate the beans (and Mary ate the spinach).'

(34) [Fazole]$_{CT}$ [snědl]$_{G}$ [Petr]$_{F}$ (a [špenát]$_{CT}$ [snědla]$_{G}$
beans$_{ACC}$ eat$_{PST}$ Peter$_{NOM}$ and spinach$_{ACC}$ eat$_{PST}$
[Marie]$_{F}$). (OVS-OVS)
Mary$_{NOM}$
'Peter ate the beans (and Mary ate the spinach).'

Regardless of which strategy is selected, the initial element within each partial answer may not be realised with a fall accent. This is a good indication that it is not interpreted as F.

3.2 Switching the Sortal Key

It was shown above that an answer to the question in (30) might be ordered by 'individual' (see (33)) or by 'dish' (see (34)). In addition, it is also possible to answer (30) by conjoining partial answers with different sortal keys[10] (see (35)).

(35) [Petr]$_{CT}$ [snědl]$_{G}$ [fazole]$_{F}$ a [špenát]$_{CT}$ [snědla]$_{G}$
Peter$_{NOM}$ eat$_{PST}$ beans$_{ACC}$ and spinach$_{ACC}$ eat$_{PST}$
[Marie]$_{F}$). (SVO-OVS)
Mary$_{NOM}$
'Peter ate the beans and Mary ate the spinach.'

[10] Given the combination of (5) and (6), the sortal key has to be different for each conjunct in (35).

The possibility of changing the sortal key was noted in Wagner (2012), who argued against the analysis of parallel examples by Neeleman and van de Koot (2008) as involving a switch in the relative ordering of constituents interpreted as CT and F. The sortal key can be switched most easily if the question is general enough not to prime the answer to follow the 'by-individual' or the 'by-dish' strategy. More concretely, it would not be ideal to use (35) as an answer to (21) or (25).

The fact that the sortal key can be switched poses problems for any analysis that imposes strict interpretive correspondence between the elements of each partial answer. According to Büring (to appear), for instance, the CT alternatives for the two conjuncts in (35) would be *What did x eat?* and *Who ate y?*, respectively. However, the meanings of *What did x eat?* and *Who ate y?* are not compatible in the sense that the former cannot be taken to be an alternative for the latter, and *vice versa*. In other words, the additional layer of semantic embedding (that turns a set of propositions into a set of simple questions) prevents the propositions expressed by the two conjuncts in (35) from being alternatives. However, (4) does not place any such restrictions on the alternatives; on the contrary, the acceptability of (35) in the context of (30) is predicted. This is so, because the answers to *What did x eat?* and *Who ate y?* count as partial answers to the question in (30).

Given the possibility of switching the sortal key, it could be proposed that the elements interpreted as CT must be 'given' in the sense of Chafe 1976: p.30.

(36) GIVEN
Given information is that knowledge which the speaker assumes to be in the consciousness of the addressee at the time of the utterance.

This formulation of givenness encompasses PERTINENCE and IDENTIFIABILITY mentioned in the definition in (3): the speaker may assume that only the elements that are in the consciousness of the addressee are both 'pertinent' and 'identifiable'[11]. In the light of the above, consider the following question[12].

[11] INDEPENDENCE, which is also mentioned in the definition in (3), is an independent property of question-answer pairs. A partial answer to a question must neither entail nor

(37) Kdo se kdy narodil?
who CL_{REFL} when born
'Who was born when?'

Speaker B does not consider the two dates to be in the consciousness of Speaker A at the time the answer is uttered. This explains why (38) can, and (39) cannot, serve as a felicitous answer to (37).

(38) [Petr]$_{CT}$ se narodil [1. října]$_{F}$ a [Marie]$_{CT}$
Peter$_{NOM}$ CL_{REFL} born 1st October and Mary$_{NOM}$
se narodila [31. ledna]$_{F}$.
CL_{REFL} born 31st January
'Peter was born on the 1st of October, and Mary was born on the 31st of January.'

(39) #[1. října]$_{CT}$ se narodil [Petr]$_{F}$ a [31. ledna]$_{CT}$
1st October CL_{REFL} born Peter$_{NOM}$ and 31st January
se narodila [Marie]$_{F}$.
CL_{REFL} born Mary$_{NOM}$

However, if the context comprised (a mention of) the possible dates of birth of the relevant individuals, then (39) would be a perfectly felicitous answer to (37). Büring (to appear) uses a similar example to show that there exists an asymmetry between CT and F. However, it seems that what needs to be 'pertinent' and 'identifiable' is the element interpreted as CT rather than the alternative of the sentence that contains it. Thus, only the element that might be interpreted as G might be interpreted as CT[13].

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contradict any other partial answer to that question. This is a general property of question-answer pairs, which holds independently of the analysis proposed here.

[12] The question used below is assumed to be uttered in the following context: Disregarding Speaker A and Speaker B, there were >2 individuals (Peter, Mary, Jacob), all of whom were familiar to Speaker A and Speaker B. Speaker A did not know who was born when, and Speaker B supplied this information.

[13] Interestingly, syntactic elements such as 'nobody', 'tomorrow', 'quickly', as well as 'sentential subjects' cannot be (easily) interpreted as Ts. However, given the right context, all these elements can be interpreted as CTs in Czech, because they can be easily contrasted with other similar elements.

4 Topicalisation

Topicalisation of the element that is interpreted as CT is readily available in the second conjunct of an embedded coordinate structure.

(40) Jakub řekl, že [Petr]$_{CT}$ [snědl fazole]$_{F}$, a
Jacob$_{NOM}$ say$_{PST}$ že Peter$_{NOM}$ eat$_{PST}$ beans$_{ACC}$ and
[Marie]$_{CT}$ že [snědla]$_{G}$ [špenát]$_{F}$.
Mary$_{NOM}$ že eat$_{PST}$ spinach$_{ACC}$
'Jacob said that Peter ate the beans, and that Mary ate the spinach.'

This movement operation is generally disallowed in the first conjunct; regardless of whether CT in the second conjunct is topicalised or not.

(41) * Jakub řekl, [Petr]$_{CT}$ že [snědl fazole]$_{F}$, a
Jacob$_{NOM}$ say$_{PST}$ Peter$_{NOM}$ že eat$_{PST}$ beans$_{ACC}$ and
([Marie]$_{CT}$) že ([Marie]$_{CT}$) [snědla]$_{G}$ [špenát]$_{F}$.
Mary$_{NOM}$ že Mary$_{NOM}$ eat$_{PST}$ spinach$_{ACC}$
'Jacob said that Peter ate the beans, and that Mary ate the spinach.'

Interestingly, certain predicates that express some sort of 'emphasis' are marginally compatible with topicalisation in the first conjunct[14].

(42) ?? Jakub si stěžoval, [Marie]$_{CT}$ že [ho]$_{G}$
Jacob$_{NOM}$ CL$_{REFL}$ complain$_{PST}$ Mary$_{NOM}$ že he$_{ACC}$
[nemiluje]$_{F}$, a ([Lucie]$_{CT}$) že ([Lucie]$_{CT}$) [ho]$_{G}$
not-love$_{PRS}$ and Lucy$_{NOM}$ že Lucy$_{NOM}$ he$_{ACC}$
[ignoruje]$_{F}$.
ignore$_{PRS}$
'Jacob complained that Mary does not love him and that Lucy ignores him.'

[14] Native speakers differ in the degree to which they accept the topicalised element to intervene between the subordinating predicate and the particle *že*. This movement operation results in strong markedness, which might explain why, even though not completely ungrammatical, examples such as (42) are not productive in contemporary Czech.

While possible, this type of topicalisation seems to be highly restricted. Given this, it seems meaningful to focus only on the more productive type of topicalisation, which takes place in the second conjunct of an embedded coordinate structure.

5 Formalism

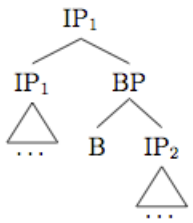
5.1 Topicalisation

Sturgeon (2008) assumes that the rise accent can be realised in SpecIP. While it remains an open question whether this is the only position in which it can be realised, the analysis proposed above is fully compatible with this assumption. Constant (2012, 2014) proposes that there is a functional projection high in the left periphery of the clause that is associated with elements interpreted as CT. At some point in the derivation, these elements must move (either overtly or covertly) into the specifier of this functional projection. He refers to this movement operation as 'topic abstraction'. In the absence of the evidence to the contrary, the present analysis assumes that the elements interpreted as CT move to SpecIP, where they have the possibility to realise the rise accent. Whether there are cases where this movement is covert remains to be seen.

5.2 Coordination

Munn (1993) assumes that coordinate structures are hierarchical adjunct structures, and that only the first conjunct is selected by a higher functional or lexical head.

(43) An abstract representation of the coordinate structure.



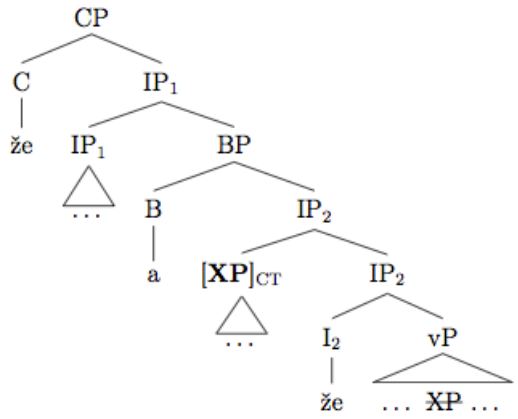
Assuming the structure above seems necessary, for, as was shown above, topicalisation is possible only in the second conjunct if certain

requirements having to do with the licensing of CT are met. This asymmetry is expected if it is only the first conjunct that is selected by the embedding predicate.

5.3 Subordination

Kaspar (2016) argues that the particle *že* can appear in I or C. Given the assumption that the element interpreted as CT moves to SpecIP, the emerging picture is one where the embedded coordinate structures similar to (40) are represented as follows.

(44) A more detailed abstract representation of the coordinate structure.



6 Conclusion

A number of conclusions can be drawn from the relatively large data sample presented above. Perhaps the most crucial one is that the distribution of the information-structural category CT is restricted by the following rules (repeated from above).

(4) CT-INTERPRETATION (ALL LANGUAGES)
The expression that contains CT is a partial answer to a question that requires a multiple-pair answer.

(5) CT-PRESENCE (ALL LANGUAGES)
A partial answer to a question that requires a multiple-pair answer must contain an element interpreted as CT.

(6) CT-REALISATION (CZECH)
The element interpreted as CT must (have the possibility to) realise a rise accent.

The rule in (4), which is itself rooted in the rule in (5), is motivated by the need to explain a number of apparent mismatches in question-answer congruence (i.e., (25)–(22)), and the possibility of switching the sortal key from conjunct to conjunct (i.e., (30)–(35)). The rule in (6) is motivated by the restricted distribution of CT and F in coordinated structures, and by the observation that CTs are typically realised with the rise accent.

Crucially, topicalisation in coordination under subordination can target elements interpreted as CT. Modulo the syntactic and semantic restrictions, an element interpreted as CT may precede *že* in the second conjunct, but not in the first conjunct. The syntactic structure must reflect this fact. The most convenient solution is to treat coordination as adjunction. The element preceding *že* in the second conjunct is in SpecIP, which is a position that has been independently argued to allow the realisation of the rise accent. The possibility of moving an element with a different information-structural status in front of *že* is hard to test, because it is difficult to restrict the interpretation and at the same time control for a number of possible interfering factors (e.g., prosody, re-interpretation). However, the proposed analysis makes clear predictions, which makes it possible for one to test its adequacy against various data from different languages.

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Stem-final Consonant Mutations in Modern Russian*

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1 Introduction

Russian stem-final consonant mutations are a change of a non-palatal stem-final segment to a corresponding palatal one when certain affixes are attached. For example, /*k*/ in *luk 'onion'* becomes /*t͡ɕ*/ in *lu͡ɕok* before the diminutive suffix *-ok-*. [1] These mutations originate in Slavic palatalizations and in particular in iotation, when every non-palatal consonant was turned into a palatal one before a front vowel or /*j*/. In modern Russian, this kind of palatalization is not language-wide anymore, it only applies to certain groups of words under certain inflectional or derivational changes:

- inflective forms of verbs in certain classes;
- comparatives formed from adjectives with stem-final velars and from certain adjectives with stem-final dental plosives;
- nouns derived with certain suffixes (in particular, diminutives).

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[1] Since the paper discusses morphophonological problems, we use IPA transcription rather than transliteration.

However, in non-standard Russian even these forms often feature mutations not attested in standard Russian or very often lack them altogether. In our earlier work (Magomedova & Slioussar, to appear; Slioussar & Kholodilova 2013), we analyzed this phenomenon in verb forms and in comparatives, collecting data on the Internet. In this paper, we present new data (an experimental study of comparatives and Internet and experimental data on nouns with diminutive suffixes) and offer a new account of the phenomenon in the Optimality Theory framework.

Mutations only occur before certain affixes, and, as we will show below, novel and nonce words do not exhibit the same pattern as other words. To account for this, we adopt the sublexical grammar approach (Becker & Gouskova 2012; Allen & Becker 2014) assuming that speakers may have specific grammars for subgroups of words that have a common property. The phonological analysis of consonant mutations is adopted from Wolf (2007). Wolf argues for an autosegmental theory of mutation and proposes that certain affixes have floating features that dock onto the stem border segment, which results in border segment mutation. The model relies on two constraints: MAXFLT[2], which protects a floating feature from deletion, and *FLOAT, which does not allow floating features in the output.

Following Wolf, we assume that Russian affixes triggering mutations have a palatal floating feature on their left edge, which docks onto stem-final segment, if it is possible, and, if not, may be realized as a separate full palatal segment. We denote this feature as *J*. A phenomenon of this kind in Yowlumne (Yawelmani) was analyzed by Zoll (1996) with a similar constraint MAX SUBSEGMENT. She argues that a glottal stop in the /-ʔ*aa*/ suffix is a floating feature rather than an underlying segment.

Consonant mutations in novel Russian words have been previously analyzed by Kapatsinski (2010) who studied verb and diminutive formation. In case of verbs, we look at inflection, rather than at derivation, so the comparison of the data and the proposed accounts is given in the fourth section where diminutives are discussed.

[2] Trommer (2008) argues that MAXFLT is unnecessarily powerful and cases described by Wolf as mutations triggered by floating features can be reanalyzed using REALIZEMORPHEME constraint introduced by van Oostendorp (2005). This discussion goes beyond the scope of our paper.

2 Proposed account exemplified on verb data

2.1 Standard forms

Several verb classes in modern Russian have consonant mutations. Their detailed description can be found in (Slioussar & Kholodilova 2013). Here we will focus on the only productive one, the I class.[3] In standard Russian, I class verbs with certain stem-final consonants have mutations in the 1SG present/future tense form and in the passive past participle: e.g. *brosʲitʲ* 'to throw' — *broʂu* — *broʂenɨj*.

We assume that the 1SG form, which originally had the *-ju* affix, has *-Ju* in modern Russian, and that the past participle affix is *-Jen-*. For reasons of space, we will discuss only 1SG forms in this paper.[4] Table 1 provides examples of 1SG forms from verbs with different stem-final consonants. It shows that the palatal segment of the suffix may appear on its own (*lʲubʲitʲ* 'to love' → *lʲublʲu*) or in coalescence with the stem-final segment (*garadʲitʲ* 'to enclose' → *garaʐu*).

Mutation	Example
d / *t* + *j* → *ʐ* / *t͡ɕ* (*ʐd* / *ʂt* in OCS, *ʂt* > *ʂt͡ɕ*)	*garadʲitʲ* 'to enclose' → *garaʐu*
z / *s* + *j* → *ʐ* / *ʂ*	*krasʲitʲ* 'to paint' → *kraʂu*
b / *p* / *v* / *m* + *j* → *bl* / *pl* / *vl* / *ml*	*lʲubʲitʲ* 'to love' → *lʲublʲu*
l / *r* / *n* + *j* → *lʲ* / *rʲ* / *nʲ*	*ranʲitʲ* 'to wound' → *ranʲu*
st / *sk* / *kt* / *gt* + *j* → *t͡ɕ* (*ʂʂʲ* in OCS), *zg* + *j* = *ʐd*	*pustʲitʲ* 'to let in' → *puʃʃʲu*

Table 1. Consonant mutations and epenthesis in I class verbs, 1SG present/future tense forms

Our proposal relies on the following constraints:

- MAXFLT: All autosegments that are floating in the input have output correspondents (Wolf 2007). Segments that have palatalization as their second articulation violate MAXFLT.
- *FLOAT: assign one violation mark to each output floating segment.

[3] We rely on the classification developed by Roman Jakobson and his followers (e.g. Davidson et al. 1996; Jakobson 1948; Townsend 1975).

[4] The situation with past participles is very similar (Slioussar & Kholodilova 2013).

- IDENT(place): assign one violation mark to each output segment that has a place feature which is different from the corresponding input segment. Segments that have palatalization as their second articulation do not violate IDENT(place).
- DEP: assign one violation mark to each output segment that does not appear in the input (this constraint blocks epenthesis).

Tableau 1 shows the ranking of these constraints for 1SG forms of I class verbs that have consonant mutations.

/*garad*/ + /*Ju*/	MAXFLT	DEP	IDENT(place)
☞*garaʐu*			*
garadʲu	*!		
garadlʲu		*!	
garadʐu		*!	

Tableau 1. Constraints for the 1SG form of *garadʲitʲ* 'to enclose'.

Labial consonants, being too far from palatal by their place, do not mutate into palatal. This would be an instance of saltation, which is known to be very rare, and we rely on the MAP(x,y) constraint (Zuraw 2007; Hayes & White 2013) to forbid it. An epenthetic palatal segment /lʲ/ violating the DEP is used instead to satisfy the MAXFLT constraint. An example is given in Tableau 2.

/*lʲub*/ + /*Ju*/	MAXFLT	*MAP(lab,pal)	DEP	IDENT(place).
lʲubʲu	*!			
☞*lʲublʲu*			*	
lʲuʐu		*!		*
lʲubʐu		*!	*	

Tableau 2. Constraints for the 1SG form of *lubʲitʲ* 'to love'

2.2 Non-standard forms

Now let us look at non-standard forms. Many novel verbs like *zafrɛndʲitʲ* 'to add to one's friend list' or *spamit'* 'to spam' were added to the I class in the last decades. In a previous study (Slioussar & Kholodilova 2013), we searched for 82 such verbs on the Internet and calculated relative frequencies of different forms. We demonstrated that forms without mutations are quite frequent and that various forms with mutations

unattested in standard Russian can be found. For example, *zafrɛndʲitʲ* can have the following 1SG forms: *zafrɛnʐu*, *zafrɛndʲu* without mutations, *zafrɛndlʲu* and *zafrɛndʐu* with two different types of palatal segment epenthesis unattested in standard Russian, as well as some other less frequent variants (for example, *zafrɛn͡tɕu*, *zafrɛnd͡ʒtɕu*). Their relative frequencies are shown in Tableau 3 (forms from other novel verbs show a similar distribution).

/*zafrɛnd*/ + /*Ju*/	Probability[5]	DEP	MAXFLT	IDENT(place).
zafrɛnʐu	0.66			*
zafrɛndʲu	0.28		*	
zafrɛndlʲu	<0.01	*		
zafrɛndʐu	0.06	*		

Tableau 3. Constraints for the 1SG form of *zafrɛndʲitʲ* 'to add to one's friend list'

To give rise to such variation, the IDENT(place) constraint must be promoted. I.e. in a harmonic grammar, its weight should become closer to the weights of MAXFLT and DEP, while for non-novel verbs, where virtually no variation is possible, the weight of IDENT(place) is much less than the one of MAXFLT. So far, we developed a MaxEnt model specifying constraint weights only for diminutives (see section 4.4).

The form *zafrɛndʐu* with an epenthetic palatal segment is of a particular interest: we can see both the stem-final consonant and its mutation product. We cannot give a full phonological analysis of this epenthesis for now. But we suppose that, as the /d/→/ʐ/ is a frequent mutation pattern in Russian, the appearance of /ʐ/ as a surface form of the palatal floating feature *J* is a result of some kind of assimilation. We assume that this new form appeared to satisfy both the promoted IDENT(place) and the MAXFLT constraints.

Verbs with stem-final dental fricatives develop forms with an extra palatal segment slower than other verbs. We could find such forms only for one novel verb *rɛizitʲ* 'to raise'. The relative frequency of different forms in this verb is the same as in other novel verbs. We suppose that

[5] Here and below the numbers are approximate, but can be used to estimate relative frequencies.

this is due to the fact that forms with and without mutation product epenthesis (*rɛizʯu* and *rɛizzʯu*) are phonetically almost indistinguishable.

/*rɛiz*/ + /*Ju*/	Probability	DEP	MAXFLT	IDENT(place)
rɛizʯu	0.73			*
rɛiz^{j}u	0.24		*	
rɛizl^{j}u	not attested	*		
rɛizzʯu	0.03	*		

Tableau 4. Constraints for the 1SG form of *rɛiz^{j}it^{j}* 'to raise'

3 Comparatives

3.1 Overview and previous findings

The comparative group that has stem-final consonant mutations is not productive anymore. There are three comparative suffixes in modern Russian:

- the oldest non-productive *-Je,* which causes mutations (*daragoj* 'expensive' → *darozʯe*);
- the most frequent productive *-ee*/*ej,* which does not cause mutations in standard Russian, but sometimes causes stress shift (*ˈkrasnɨj* 'red' → *krasnjˈee*);
- a very infrequent *-ʂe*, which does not cause mutations, but sometimes causes palatalization of the stem-final segment as its second articulation (*tonk^{j}ij* 'thin' → *ton^{j}ʂe,* the *-k-* suffix is dropped).

As Table 2 shows, three groups of stem-final consonants mutate when the suffix *-Je* is attached: velars, dental plosives and dental fricatives.[6] In standard Russian, all adjectives with stem-final velars either have comparatives with the suffix *-Je* or no synthetic comparatives at all. Ten adjectives with stem-final dental plosives have forms with the suffix *-Je*,[7] while other adjectives from this group have no comparatives due to semantic restrictions or attach the suffix *-ee*/*ej* without mutations (e.g. *ʯoltɨj* 'yellow' → *ʯəlt^{j}ee*). Stem-final dental fricatives mutate in very few cases and only with *-(o)k-* suffix drop.

[6] There is also one word with a stem-final labial: *d^{j}eʂevɨj* 'cheap' → *d^{j}eʂevl^{j}e*.

[7] There is also *gatk^{j}ij* 'nasty' with an underlying /*d*/ that forms *gaʯe* with a suffix drop.

Mutation	Example
g → *ʐ*	*daragoj* 'expensive' → *daroʐe*
k → *t͡ɕ*	*jomkʲij* 'capacious' → *jomt͡ɕe*
x → *ʂ*	*suxoj* 'dry' → *suʂe*
d → *ʐ*	*maladoj* 'young' → *maloʐe*
t → *t͡ɕ*	*krutoj* 'steep, cool' → *krut͡ɕe*
z → *ʐ*	*nʲiskʲij* 'low, short' with an underlying /z/ → *nʲiʐe*
s → *ʂ*	*vɨsokʲij* 'tall' → *vɨʂe*

Table 2. Consonant mutations in comparatives

However, as in the case of verbs, the picture is different in various non-standard forms. Firstly, Russian speakers occasionally form non-standard comparatives from many adjectives that have a standard form with mutations (e.g. *maladoj* 'young' → *maladʲee* with *-ee* instead of *maloʐe*). Secondly, non-standard comparatives are formed from adjectives that do not have a synthetic comparative in standard Russian (e.g. *dlʲinanogʲij* 'leggy' → *dlʲinanogʲee*).

In an earlier study (Magomedova & Slioussar to appear), we searched for nine adjectives with stem-final dental plosives and 53 adjectives with stem-final velars (39 with a standard synthetic comparative and 14 without it) on the Internet to establish the relative frequency of different forms. If an adjective had a standard comparative, 4.9% forms on average lacked mutations (up to 32.7% for certain adjectives). If there was no standard comparative, 57.9% forms on average lacked mutations (up to 100% for certain adjectives). More details can be found in (Magomedova & Slioussar to appear), while in this paper we present an experimental study that confirmed the crucial results of the Internet study and yielded some new findings.

3.2 Experiment

3.2.1 Method. 27 native speakers of Russian participated in the experiment (10 male, 17 female). Ages ranged from 18 to 56.[8] Experimental stimuli included the following adjectives:

[8] Thanks to Tatiana Matyushkina and Ekaterina Tskhoverbieva we did a separate study investigating the influence of participants' age on the mutation rate. There were nine

- simple adjectives having standard comparatives with mutations (with velar and dental plosive stem-final consonants, with *-(o)k-* suffix that drops or does not drop and without it, as in the examples in Table 2);
- compound adjectives, group 1 (the second part is a separate adjective having a standard comparative with mutation: e.g. *trudajomkʲij* 'laborous' — *jomkʲij* 'capacious' — *jomt͡ɕe*);
- compound adjectives, group 2 (the second part is not a separate adjective, but has highly frequent cognate words with mutations: e.g. *dlʲinanogʲij* 'leggy' — **nogʲij* — *noʒka* 'little leg, furniture leg');
- relative adjectives with the *-sk-* suffix that have no standard synthetic comparatives (e.g. *ruskʲij* 'Russian');
- several adjectives with stem-final dental fricatives that have no standard synthetic comparatives (e.g. *galubaglazɨj* 'blue-eyed');
- nonce adjectives resembling different types of real adjectives listed above.

In addition to that, we had various real and nonce filler adjectives with stem-final consonants that never mutate. The procedure involved small dialogues prompting the participant to produce comparatives. For example, the experimenter said: "This cat is fat, but my granny's cat is …". The participant was supposed to say "fatter". We had two experimental lists with 37 target adjectives and 29 fillers in every list. Dialogues with real adjectives were presented before dialogues with nonce adjectives. During the second part, we provided our participants with a printed list of nonce adjectives to avoid unnecessary confusion. There was a training session before both parts of the experiment.

3.2.2 Results. Participants' responses were recorded and then transcribed. The distribution of different forms is shown in Appendix. In the Internet study, we looked only at synthetic forms, while in the experiment, we did not put any restrictions on using analytic comparatives (the percentage of analytic forms indicates how difficult it is to form a synthetic form).

We modeled the experimental data with a mixed-effects logistic regression in the *R* software (www.r-project.org) using the *glmer* function from the *lme4* package (Bates et al. 2015). Logistic regressions

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participants aged 55 or older and nine participants aged 15 or younger. No differences between the two groups were found.

evaluated the likelihood of the occurrence of a certain form (analytic, with mutations, with a suffix drop, etc.) vs. other forms. The relevant characteristics of the adjective (real vs. nonce, group 1 vs. group 2 compound, etc.) were treated as fixed effects. All predictors were binary and centered, coded as 0.5 and –0.5. Random intercepts by participant and by item were also included in the models. For all differences reported as significant below, $p < 0.05$.

Firstly, we found that participants produced significantly fewer analytic comparatives than synthetic comparatives in general. However, they used analytic forms significantly more often with adjectives that do not have an established synthetic comparative form. This is an expected result. Secondly, less frequent adjectives have significantly more analytic forms and significantly fewer synthetic forms with mutations (we used Pearson's correlation coefficient, $p < 0.01$ for both factors, frequency information was taken from (Lyashevskaya & Sharov 2009)). Interestingly, this factor did not reach significance in the Internet study.

Thirdly, the first group of compounds (the second part is a separate adjective) had significantly more comparatives with mutations than the second one (the second part is not a separate adjective). This may be surprising because the relevant stems from the second group can be found in many highly frequent words with consonant mutations (e.g. for an adjective *dalgaruk^{j}ij* the relevant word would be *ručka* 'small hand, handle, pen', for an adjective *lapaux^{j}ij* it will be *uško* 'small ear, eyelet' etc.). Thus, it seems to be crucial whether a particular form is established, not whether the model is available. This is similar to our results with verbs: in the I class, the model is productive, but the most important factor is whether a particular form with mutations is established in standard Russian.

Now let us look at adjectives with different stem-final consonants. In the group with stem-final velars, participants formed significantly more synthetic comparatives without mutations from real adjectives that do not have an established synthetic comparative form[9] and from nonce adjectives[10], as expected. Importantly, despite different mutation ratios, there was considerable variation in every part of this group. As far as we

[9] Real adjectives that have an established comparative were coded as 0.5, real adjectives that do not were coded as –0.5, the intercept was also significant showing that participants generally use less synthetic forms without mutations than other forms.

[10] Real adjectives were coded as 1, nonce adjectives were coded as 0.

can see, apart from the factors noted above, this variation depends on the properties of particular lexical items. For example, *ubog*^{j}*ij* 'poky' is widely used in non-standard Russian, and as a result a third of its forms found on the Internet and many experimental responses lack alternations.

In the group with stem-final dental plosives, real adjectives showed no variation: all responses were synthetic comparatives with mutations. But nonce adjectives had only 19.4% forms with mutations, compared to 38.4% in the velar group. We can see that comparatives with mutations from the nine real dental plosive adjectives are stored in the lexicon and easily accessed because these adjectives are highly frequent, but the model is not productive and does not generalize to nonce words. The situation when mutations are applied to real words, but not to nonce words is unusual and has been previously documented by Zuraw (2000) for nasal coalescence in Tagalog and by Kapatsinski (2010) for velar palatalization in verb and diminutive formation in Russian.

An anonymous reviewer suggested splitting the data by consonant voicing because in diminutives, stems with the final /*g*/ lack mutations more often than with /*k*/ and /*x*/ (see Kapatsinski 2010 and section 4.2). Unfortunately, we do not have enough items to make definitive claims about every consonant. However, the overall picture seems to be different. For example, in the nonce velar group, adjectives with the stem-final /*g*/, /*k*/ and /*x*/ had 32.5%, 29.6% and 25.0% forms with alternations respectively. In the real compound 2 group, the percentages were 11.1%, 14.3% and 7.7%. Further work on comparatives is necessary to explain this difference.

We also had two types of adjectives with stem-final dental fricatives: with and without the *-(o)k-* suffix. In the suffixless group stem-final mutations occur in 10 out of 84 synthetic comparatives, one real and nine nonce (e.g. *galubaglazɨj* 'blue-eyed' → *galubaglaʐe* instead of *bol*^{j}*ee galubaglazɨj*). This is not much, but still notable because no mutations are attested in this group of adjectives in standard Russian. Thus, we can also observe overapplication of mutations, although underapplication is much more widespread. In the group with the *-(o)k-* suffix, 113 synthetic comparatives were recorded (30 real and 83 nonce) (e.g. *vɨsok*^{j}*ij* 'tall' → *vɨʂe*). The suffix is dropped and dental fricatives mutate in 31 comparatives (19 real and 12 nonce), the suffix mutates in 31 forms (9 real and 22 nonce) and is dropped with no mutation in 22 nonce forms.

Another finding is that 30 out of 968 synthetic forms from stimulus adjectives, three real and 27 nonce, had mutations with the *-ee*/*ej* suffix, while 302, 59 real and 243 nonce, attached this suffix without mutations (e.g. *marazastojkʲij* 'frost-resistant' → *marazastojčee* or *marazastojkʲee* instead of *bolʲee marazastojkʲij*). Both types of forms were attested in different stimulus groups (with stems ending in /g/, /k/ and /x/, having different suffixes etc.). Finally, in 23 forms (one real and 22 nonce), the *-şe* suffix was used.

3.3 Applying the proposed account

We will limit ourselves to adjectives with stem-final velars where all synthetic comparatives have mutations in standard Russian. We will rely on the IDENT(place) and the MAXFLT constraints introduced above (DEP[11] and *MAP are not relevant for comparatives) and on one additional constraint specifically required for stem-final velar adjectives:

- **ee*: assign one violation mark to each *-ee*/*ej* suffix.

Although *-ee*/*ej* is the most productive comparative suffix, it never attaches to stem-final velars in standard Russian. The constraint ranking is shown in Tableau 5 (we deliberately chose *ubogʲij* 'poky' that has many non-standard forms as an example to illustrate tendencies that are much less strong for most other words). We can see that, as in the case of verb forms, IDENT(place) gets promoted giving rise to comparatives without mutations and the **ee* constraint loses its importance.

/*ubog*/ + /*comp*/	Probability	MAXFLT	**ee*	IDENT(place)
uboz̨e	0.67			*
ubogʲee	0.33		*	
ubogʲe	not attested	*		
uboz̨ee	<0.01		*	*

Tableau 5. Constraints for the comparative of *ubogʲij* 'poky'

Finally, let us look at the suffix *-şe*. It is by far the least frequent out of three comparative suffixes (it is present only in several standard forms), but it is productively used in non-standard Russian. For example, the

[11] Although forms like *uprugz̨e* (from *uprugij* 'resilient') can be found on the Web, we cannot tell if /z̨/ is a mutation product epenthesis or the palatal segment of the *-şe* suffix that undergoes voice assimilation.

following non-standard forms with stem-final labial fricatives and plosives can be found on the Internet, although *-ʂe* is never used with such stems in standard Russian: *kras^{j}ivɨj* 'beautiful' → *kras^{j}ivʂe*[12] instead of *kras^{j}iv^{j}ee*, *glupɨj* 'stupid' → *glupʂe* instead of *glup^{j}ee*. We hypothesize that the reason is that *-ʂe* contains a palatal continuant segment that, as we suppose, is also underlyingly present in *-Je* as a floating feature, but allows for a complete faithfulness to the stem.

4 Diminutive nouns

4.1 Overview

A variety of derivational suffixes can trigger stem-final consonant mutations in nouns. In this paper, we focus on a group of diminutive suffixes: *-ok-, -ek-, -ik-* and *-t͡ɕik-*. We list them without any floating features at first because the picture is complicated. We will first discuss standard Russian and then turn to non-standard forms.

Historically, stems ending in velars were used with *-ek-*, which triggered mutations, while *-ok-* was attached to other stems ending in hard consonants (Kuznetsov 1953). Both suffixes triggered stress shift (with certain exceptions: for example, many Russian words have two diminutive suffixes, and, obviously, only one of them can be stressed). Then /*e*/ mutated to /*o*/ in the majority of cases. As a result, in modern Russian *-ok-* triggers mutations when it is attached to velars (see Table 3) and does not trigger them otherwise (e.g. *gr^{j}ib* 'mushroom' → *gr^{j}ibok*). *-ek-* attaches only to velars, as before. It can be seen in sequences of two diminutive suffixes (e.g. *krug* 'circle' – *kruʐok* – *kruʐo͡t͡ɕek*) and otherwise is infrequent (e.g. *garoʂek* 'pea, polka dot'). It triggers mutations and never carries the stress in modern Russian.

Mutation	Example
g → *ʐ*	*luk* 'meadow' with an underlying /*g*/ → *luʐok*
k → *t͡ɕ*	*luk* 'onion' → *lu͡t͡ɕok*
x → *ʂ*	*st^{j}ix* 'poem' → *st^{j}iʂok*

Table 3. Consonant mutations in diminutive nouns

[12] This form is well established and widely used in non-standard Russian.

The *-ik-* suffix is used with non-velar stems and does not cause mutations in standard Russian. It also does not trigger stress shift. *-ok-* and *-ek-* lose their vowel in all forms except for nominative singular (and accusative singular in inanimate nouns), *-ik-* does not (e.g. *lʊ́t͡ɕok* 'little onion' — *lʊ́t͡ɕka,* but *nosʲik* 'little nose' — *nosʲika*). Finally, there is a more recent suffix *-t͡ɕik-* that does not cause any stem changes. *-ek-* is analyzed as a variant of *-ok-* in (Polivanova 1967) and as an allomorph of *-ik-* in (Kapatsinski 2010; Gouskova et al. 2015).[13] Sometimes all four suffixes are treated as allomorphs because in standard Russian, they are usually in complementary distribution (*zubok* and *zubʲik* from *zub* 'tooth' can exemplify an exception).

We will analyze all these suffixes separately, because, as we will show below, in non-standard Russian many nouns can be used with all of them. We searched for such forms on the Internet and conducted a pilot experiment. We are going to address the complicated relations between these suffixes in a separate study because this problem goes beyond the scope of the present paper. Here, let us focus on the questions that cannot be avoided in the discussion of consonant mutations.

First of all, we have to explain why in modern Russian *-ok-* triggers mutations when it is attached to velars, but does not trigger them otherwise (e.g. *luk* 'onion' → *lʊ́t͡ɕok,* but *lʲes* 'forest'→ *lʲesok*).[14] All previous studies of diminutive suffixes either simply describe the fact (Polivanova 1967), or do not address it (Kapatsinski 2010). We will argue that stems with different stem-final consonants attach different diminutive suffixes. Historically, velar stems used *-ek-*, and other stems used *-ok-* and *-ik-*; now velar stems attach *-Jok-* and *-Jek-*, while other stems attach *-ok-* and *-ik-*.

When velar stems attach other diminutive suffixes from this group in non-standard Russian, they also have the palatal segment requirement. Data presented in the following sections show that *-ik-* triggers consonant mutations in the majority of cases, although it does not trigger them otherwise, i.e. it should be *-Jik-*. Notably, modern Russian has other examples when velar stems attach suffixes with an underlying palatal

[13] Gouskova et al. (2015) study the distribution of diminutive suffixes without mutations.
[14] Kapatsinski (2010) claims that *-ok-* is "heavily favored by velar-final nouns". We disagree. For example, we checked that in Zaliznyak's (1987) dictionary there are about 300 *-ok-* diminutives, and they are equally distributed between velar and other stems.

segment, while other stems attach variants without it: e.g. *volk* 'wolf' → *valt͡ɕiʂka*, but *trus* 'coward' → *trusʲiʂka*, and not *truʂɨʂka* with the *-(J)iʂk-* diminutive suffix). Another argument for the existence of *-Jok-* comes from forms like *lʲemʲinkt͡ɕok* (from *lʲemʲink* 'lemming') elicited by Gouskova et al. (2015). Such forms were derived only from velar stems. Similar cases of epenthesis of the mutation product, which we consider to be a surface realization of the floating feature, were also discussed in the previous sections.

4.2 Internet study

We selected 24 words with stem-final velars: 14 novel loanwords and 10 words that are rarely used in the diminutive form. For each word we searched for six nominative singular forms with *-Jok-, -Jek-* and *-Jik-* suffixes, with and without mutations (e.g. *blozɨk*, *blazok*, *blozek*, *blogʲik*, *blagok*, *blogʲek* from *blog* 'blog')[15]. The *-t͡ɕik-* suffix was not included in this study because it does not cause mutations.

The results are presented in Tables 4 and 5. The distribution of forms turned out to be different in the cases when diminutives are very infrequent and when they are relatively more frequent. *-Jik-* and *-Jek-* are unstressed, so they are difficult to distinguish aurally, and Internet data contain a lot of orthographic errors in such cases. A question may arise whether this could make a major contribution to the proliferation of forms ending in *-ik-*. Fortunately, *-Jek-* loses its vowel in most case forms, while *-Jik-* does not, e.g. *blozɨk – blozɨka, blozek – blozka.* Therefore we performed an additional search looking for various inflected forms and found numerous examples like *blozɨka, blozɨke* etc.[16] It should also be noted that almost all diminutives lacking mutations were derived from the stems with the final /*g*/. A similar tendency was observed by Kapatsinki (2010) who explains it by /*k*/ mutation being phonetically a smaller change than /*g*/ mutation (a detailed discussion can be found on page 375 of the paper).

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[15] In our earlier work (Slioussar & Kholodilova 2013; Magomedova & Slioussar, to appear), we developed a method and certain tools to estimate relative frequencies of forms on the Web because the counts provided by Internet search engines are unreliable.

[16] *-Jik-* and *-Jek-* can be distinguished in such cases, but it becomes difficult to tell *-Jok-* and *-Jek-* apart. *-Jok-* also exhibits vowel drop, e.g. *blazok — blazka.* Words with *-Jok-* and *-Jek-* have different stress, but it does not help in the written form.

Mutations	Frequent (>50 diminutives found)			Infrequent (<50 diminutives found)		
	-Jik-	*-Jok-*	*-Jek-*	*-Jik-*	*-Jok-*	*-Jek-*
yes	887 36%	748 31%	743 31%	67 50%	37 27%	5 4%
no	40 2%	3 <1%	5 <1%	24 18%	0	1 1%

Table 4. Diminutives from novel loanwords

Mutations	Frequent (>50 diminutives found)			Infrequent (<50 diminutives found)		
	-Jik-	*-Jok-*	*-Jek-*	*-Jik-*	*-Jok-*	*-Jek-*
yes	90 8%	615 52%	313 26%	6 19%	15 49%	6 19%
no	145 12%	3 <1%	28 2%	3 10%	0	1 3%

Table 5. Diminutives from native words and old loanwords

4.3 Pilot experimental study

4.3.1 Method. To compare Internet and experimental data and to address several additional questions (in particular, to estimate the frequency of *-t͡ɕik-*) we conducted a small online experiment, which can be regarded as a pilot study. 59 participants took part in it (we cannot provide age and gender information because some participants did not indicate them).

The experiment consisted of two parts. In the first part we included five loanwords and five corresponding nonce nouns. All nouns were multisyllabic with the stress on the first syllable. Two real nouns and two nonce nouns had stem-final velars. The stimuli in the second part had the same characteristics, only the stress was on the last syllable.[17]

The experiment was conducted on the *Survey Monkey* website (www.surveymonkey.com) and involved the following procedure. The participants were presented with pairs like "big blog — little …" and a choice of several diminutive forms that could be used to complete them. To keep the task relatively simple, we chose three forms: with *-Jok-*, *-Jik-* (both with consonant mutations) and *-t͡ɕik-*.

[17] The first group should be more likely to take *-Jok-* (Gouskova et al. 2015).

4.3.2 Results. The distribution of participants' responses for real and nonce nouns with stem-finals velars is given in Table 6.

Condition	Example	*-Jik-*	*-Jok-*	*-t͡ɕik-*	skipped
real initial stress	*xoldʲink* 'holding'	10 17%	12 20%	37 63%	0
nonce initial stress	*martʲink*	15 25%	21 36%	23 39%	0
real final stress	*fɛjsbuk* 'facebook'	36 61%	2 3%	20 34%	1 2%
nonce final stress	*babrajk*	53 90%	3 5%	3 5%	0

Table 6. The distribution of diminutive forms in the experimental study

Since this was a pilot experiment with very few items, we cannot use statistical tests to estimate the differences between conditions. However, some tendencies are clear. Although nouns with stem-final velars are supposed to select *-Jok-*, this suffix never appears in the majority of cases. Stress-final nouns prefer *-Jik-* and then *-t͡ɕik-*, stress-initial nouns prefer *-t͡ɕik-*. Let us also add an informal observation that multisyllabic loanwords select *-Jok-* less often than monosyllabic ones (we are going to test it in subsequent studies).

4.4 Applying the proposed account

As only velars mutate, we will formulate constraints only for nouns with stem-final velars.[18] We will rely on MAXFLT and IDENT(place) introduced in section 2.1 and on the following other constraints:

- **Jik*: assign one violation mark to each *-Jik-* suffix.
- **t͡ɕik*: assign one violation mark to each *-t͡ɕik-* suffix.
- IDENT(stress): assign one violation mark for each pair of segments that changed their stress.

In case of diminutives, we can present not only constraint ranking, but also their weights obtained from a MaxEnt model of our Internet and experimental data. Tableau 6 shows constraint weights for standard diminutives.

[18] Here and below, we do not consider *-Jok-* and *-Jek-* separately.

/*luk*/ + /*dim*/	MAXFLT w=17	**t͡ɕik* w=17	**Jik* w=17	IDENT(place) w=0	IDENT(stress) w=0
☞*lúk͡ɕok*				*	*
lúk͡ɕik			*!	*	
luk^{j}ok	*!				*
luk^{j}ik	*!		*!		
luk͡ɕik		*!			

Tableau 6. Constraints for the diminutive forms of *luk* 'onion'

Tableau 7 shows the constraint weights for one of the novel loanwords, *lajk* 'like'. Unlike with novel verb forms discussed in section 2.2, where we could outline the common pattern, the model in Tableau 7 definitely cannot be extended to all novel words with stem-final velars. As we noted above, the distribution of suffixes depends on the stress pattern, length and frequency, as well as on some other factors (discussing them would lead us beyond the scope of this paper). So Tableau 7 can only be used to illustrate certain tendencies.

/*lajk*/ + /*dim*/	Probability	MAXFLT w=3.2	**t͡ɕik* w=4.4	IDENT (stress) w=1.5	IDENT (place) w=2.6	**Jik* w=1.9
lajt͡ɕok	0.11			*	*	
lajt͡ɕik	0.48				*	*
lajk^{j}ok	not attested	*		*		
lajk^{j}ik	0.06	*				*
lajk͡ɕik	0.34		*			

Tableau 7. Constraints for the diminutive forms of *lajk* 'like'.

As with verbs and adjectives, we can see that IDENT(place) gets promoted, giving rise to forms without mutations. IDENT(stress) also becomes more important (especially for multisyllabic loanwords, especially for those with the stress on the first syllable). At the same time, constraints against using *-Jik-* and *-t͡ɕik-* with velars are downgraded, so we observe a proliferation of forms unattested in standard Russian. In particular, let us note that the *-t͡ɕik-* suffix, like the comparative *-ʂe*, allows satisfying the MAXFLT and IDENT constraints at

the same time. Although this suffix is very infrequent in standard Russian, it became productive in non-standard forms.

An anonymous reviewer suggested that, instead of introducing a palatal segment, a constraint like *[+back][–back] can be used to forbid a velar before a front vowel. As it seems to us, this approach has the following drawbacks. Firstly, velars mutate not only before front vowels (cf. diminutives), and not only velars mutate (cf. verb and adjective forms). Our approach offers a unified treatment for all mutation cases. Secondly, we will have to specify that this constraint applies only on the border between the stem and the suffix (otherwise nouns like *kʲivok* 'nod' would not be able to form diminutives like *kʲivo͡ʧek*), and is relevant only for certain affixes. For example, the comparative *-e* triggers mutations, while *-e* used in locative singular case forms does not: e.g. *blog* 'blog' — *v bloge* 'in (a/the) blog'.

Diminutive forms from nouns with stem-final /*g*/ and /*k*/ were also analyzed by Kapatsinski (2010). In some respects, the data are similar: in both studies, the mutation rate is higher with *-ok-* and *-ek-* than with *-ik-* and stems ending in /*g*/ lack mutations more often than other stems. However, in Kapatsinski's study, *-ik-* forms lack mutations in 40% cases, while *-ok-* and *-ek-* forms *never* lack them. The picture that emerges from our Internet study is much less dramatic: we did find some *-ok-* and *-ek-* diminutives that lack mutations and observed that *-ik-* triggers mutations in the majority of cases (see Tables 4 and 5). We also noted that the mutation rate depends on frequency and are exploring other factors in our subsequent work (e.g. number of syllables).

Kapatsinski's model relies on the Minimal Generalization Learner to predict the distribution of mutations in novel loanwords. However, it does not address such questions as why the comparative and 1SG affixes trigger mutations in many consonants, while diminutive affixes do so only in velars; why *-ok-* triggers mutations in velars if it does not do so in other stems and has no front vowel, etc. These are the questions we tried to address in this paper (although, obviously, our approach lacks the valuable insights a learning model can offer).

5 Conclusions

In this paper, we studied the pattern of consonant mutations in modern Russian, looking at the distribution of various verb, noun and adjective

forms on the Internet and at experimental results. We reanalyzed materials presented in our previous papers, collected new data and suggested an explanation in terms of the Optimality Theory framework. We claimed that certain affixes that used to trigger consonant mutations because of their left-edge front vowel or /j/ in old Russian now have an underlying palatal segment (floating feature) that needs to be realized. We also argued that in non-standard Russian, the IDENT constraints that require faithfulness to the stem get promoted. This leads the speakers to avoid consonant mutations and to use suffixes like *-t͡ɕik-* and (to a lesser extent) *-ʂe* that already have a palatal segment at their left edge and at the same time allow for complete faithfulness to the stem.

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Appendix. Different types of comparatives in Experiment 1

Columns 1–5 contain numbers and percentages of different synthetic forms. All synthetic forms are considered here as 100%. Column 6 shows numbers and percentages of forms with a suffix drop (since *-(o)k-* and *-sk-* suffixes may be dropped with or without root-final consonant mutation, these numbers and percentages are counted separately from columns 1–5). Columns 7–8 contain numbers and percentages of all synthetic and analytic forms. All forms are considered here as 100%.

synthetic						**total syn-thetic**	**ana-lytic**
mutation			**no mutation**	**other**	**suffix drop**		
-Je	***-ee/ej***	***-ş e***	***-ee/ej***				
Simple adjectives having normative synthetic comparatives with mutations (stem-final consonant: *g, k, x*).							
77 95%	0 0%	0 0%	4 5%	0 0%	0 0%	81 76%	26 24%
Compound adjectives, group 1: the second part is a separate adjective having a normative synthetic comparative with mutations (stem-final consonant: *g, k, x*).							
8 44%	1 6%	1 6%	5 28%	3 17%	0 0%	18 33%	36 67%
Compound adjectives, group 2: the second part is not a separate adjective having a synthetic comparative, but has highly frequent cognate words with mutations (stem-final consonant: *g, k, x*).							
6 29%	0 0%	0 0%	15 71%	0 0%	0 0%	21 39%	33 61%
Adjectives with an *-(o)k-* suffix (with *-z-, -s-* before the suffix, having normative synthetic comparatives with mutations).							
28 93%	0 0%	0 0%	2 7%	0 0%	19 63%	30 56%	24 44%
Adjectives with an *-(o)k-* suffix (with other consonants before the suffix, having normative synthetic comparatives with mutations).							
28 90%	2 6%	0 0%	1 3%	0 0%	4 13%	31 56%	24 44%

synthetic						total syn-thetic	ana-lytic
mutation			no mutation	other	suffix drop		
-Je	*-ee/ej*	*-ş e*	*-ee/ej*				
Relative adjectives with a *-sk-* suffix (not having normative synthetic comparatives).							
1	0	0	1	3	1	5	22
20%	0%	0%	20%	60%	20%	19%	81%
Nonce adjectives resembling simple adjectives ending in *-g, -k, -x*.							
25	6	2	48	5	0	86	29
29%	7%	2%	56%	6%	0%	75%	25%
Nonce adjectives resembling compound adjectives, group 1.							
18	3	4	14	0	0	39	15
46%	8%	10%	36%	0%	0%	72%	28%
Nonce adjectives resembling compound adjectives, group 2.							
18	3	0	44	3	0	68	27
26%	4%	0%	65%	4%	0%	72%	28%
Nonce adjectives resembling adjectives with an *-(o)k-* suffix (with *-z-, -s-* before the suffix).							
34	5	1	41	2	34	83	25
41%	6%	1%	49%	2%	41%	77%	23%
Nonce adjectives resembling adjectives with an *-(o)k-* suffix (with other consonants before the suffix).							
16	6	8	15	2	3	47	21
34%	13%	17%	32%	4%	6%	69%	31%
Nonce adjectives resembling adjectives with an *-sk-* suffix.							
4	3	1	4	2	3	14	13
29%	21%	7%	29%	14%	21%	52%	48%
Adjectives having normative synthetic comparatives with mutations (stem-final consonant: *-d, -t*).							
108	0	0	0	0	0	108	0
100%	0%	0%	0%	0%	0%	100%	0%
Nonce adjectives resembling adjectives ending in *-d, -t*.							
10	1	1	43	7	0	62	19
16%	2%	2%	69%	11%	0%	77%	23%

synthetic						**total syn-thetic**	**ana-lytic**
mutation			**no mutation**	**other**	**suffix drop**		
-Je	***-ee/ej***	***-şe***	***-ee/ej***				
Adjectives without normative synthetic comparatives (stem-final consonant: *-z, -s*).							
1 3%	0 0%	0 0%	31 94%	1 3%	0 0%	33 61%	21 39%
Nonce adjectives resembling adjectives ending in *-z, -s*.							
9 18%	0 0%	0 0%	34 67%	8 16%	0 0%	51 75%	17 25%
Fillers (real).							
0 0%	0 0%	0 0%	211 97%	6 3%	0 0%	217 73%	79 27%
Fillers (nonce).							
0 0%	0 0%	5 2%	255 91%	21 7%	0 0%	281 82%	62 18%

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The Matching Analysis of Relative Clauses: Evidence form Upper Sorbian*

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1 Introduction

Relative clauses in Upper Sorbian are characterized by the peculiar feature that the suffix *ž* is obligatorily attached to the relativizer, as shown in (1).

(1) Tón hólc, kotryž tam sedźi, je mój bratr.
the boy REL there sits is my brother
'The boy who is sitting there is my brother.'

The aim of this paper is to argue that relative clauses in Upper Sorbian have the structure postulated by the Matching Analysis, and that the suffix *ž* is a reflex of the deletion of the head noun internal to the relative clause. According to this analysis, the relative clause in (1) has the structure shown in (2), with *ž* being the reflex of the deletion of the head noun *hólc*.

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(2) Tón hólc, [kotry ~~hólc~~ → ž]$_i$ tam t$_i$ sedźi, je mój bratr.

The paper is structured as follows. In section 2, I give a brief overview of the relativization strategies in Upper Sorbian. I discuss previous accounts to *ž*-suffixation and their inadequacy in section 3. In section 4, I provide evidence that relative clauses in Upper Sorbian require the Matching Analysis structure and that *ž*-suffixation is a morphological reflex of this structure. I will also argue for the inadequacy of the Head External Analysis and the Raising Analyses in this section. In section 5, I discuss some consequences of this analysis.

2 Relative Clauses in Upper Sorbian

Upper Sorbian has two strategies for the formation of relative clauses (cf. Bartels & Spiess 2012 for details). The first involves a relative pronoun — usually drawn from the set of interrogative pronouns — which agrees with the head noun in φ-features, cf. (3a). The second involves an invariant relativizer, which does not agree in φ-features with the head noun, cf. (3b).

(3) a. Tón hólc, štóž/kotryž tam sedźi, je mój bratr.
the boy REL REL there sits is my brother
b. Tón hólc, kiž tam sedźi, je mój bratr.
the boy REL there sits is my brother
'The boy who is sitting there is my brother.'

The two strategies differ from each other in that the first puts no restriction on the relativized element, whereas the second is restricted to subject and objects[1]. The examples in (4) show that relativization of

[1] One sometimes reads in grammars of Upper Sorbian that *kiž* can be also used to relativize grammatical relations other than subject and direct object if a resumptive pronoun appears at the position of the relativized element (Bartels & Spiess 2012, pp. 230-1; Libš 1884, p. 198; Polański 1967, p. 79). It is not clear to me whether this is generally correct. My main informant rejected such sentences. It also clashes with the descriptions in grammars for both the standard language (Fasske 1981, p. 625; Šewc-Schuster 1976, p. 169) and the colloquial language (Schneider 1853, p. 104; Seiler 1830, p. 115). Moreover, the Lower Sorbian equivalent *kenž* is also incompatible with resumptive pronouns. I therefore stick to the restriction that *kiž* is only compatible with subject and object relative clauses.

indirect objects is impossible with *kiž*, the examples in (5) show that relativization of comitative adjunct is impossible with *kiž* either[2].

(4) a. tón hólc, √komuž/√kotremuž ja sym tón knihu dał
the boy REL REL I am the book given
b. tón hólc, *kiž ja sym tón knihu dał
the boy REL I am the book given
'the boy I gave the book to'

(5) a. tón hólc, √z kimž/√z kotrymž ja sym rejwał
the boy REL REL I am danced
b. tón hólc, *kiž ja sym rejwał
the boy REL I am danced
'the boy I danced with'

Importantly, irrespective of the strategy, the suffix *ž* has to appear on both types of relativizers, cf. (6)

(6) a. *Tón hólc, štó/kotry tam sedźi, je mój bratr.
the boy REL there sits is my brother
b. *Tón hólc, ki tam sedźi, je mój bratr.
the boy REL there sits is my brother
'The boy who is sitting there is my brother.'

3 Previous Analyses of *ž*-Suffixation

There exist two approaches to *ž*-suffixation in Upper Sorbian. The first treats *ž* as a derivational suffix that turns an interrogative pronoun into a relative pronoun (Fasske 1981, p. 615; Polański 1967, p. 72; Šewc-Schuster 1976, p. 168), illustrated in (7).

(7) relative pronoun = interrogative pronoun + *ž*

[2] Note that the inflected forms of *štóž* other than the nominative diachronically represent inflected forms of *kiž*.

The second takes *ž* to be a variant of the Upper Sorbian subordination marker *zo* (Libš 1884, p. 190; Schaarschmidt 2002, p. 34). Accordingly, the relative clause in (1) would have the corresponding structure in (8)[3].

(8) tón hólc [$_{CP}$ [$_{SpecCP}$ štó/kotry] [$_{C'}$ [$_{C°}$ ž] tam sedźi]] je mój bratr

Each approach faces significant problems. The first approach runs into two problems. On the one hand, contrary to what this approach predicts, not every relativizer has an interrogative counterpart. There exists, for example, no interrogative counterpart to the relativizer *kiž*, cf. (9).

(9) * Ki je to činił?
who is that done
'Who has done that?'

On the other hand, not every element to which *ž* is suffixed is an interrogative element. For *ž* can also be suffixed to many adverbs, which operation turns them into adverbial complementizers, cf. (10).

(10)	prjedyž	'before'	-	prjedy	'earlier'
	dołhož	'as long as'	-	dołho	'long'
	(hač)runjež	'despite'	-	runje	'just now'
	ručež	'as soon as'	-	ruče	'quickly'

This second problem is more severe than it appears because the suffix *ž* has a very restricted distribution. More specifically, it either appears on relative pronouns or on adverbial complementizers. Moreover only very few monomorphemic words in Upper Sorbian end in *ž* (approximately 20), which means that this restricted distribution cannot be merely accidental. Given this restricted distribution, it is a serious defect of the approach treating *ž* as a derivational suffix that it is not able to provide any insight into the connection between adverbial complementizers and

[3] A variant of this approach is formulated in Šěrak 1973, p. 101. She speculates that *ž* is a general subordination marker. Therefore, it also attaches to relative pronouns and adverbial complementizers (cf. 10). However, given her broad definition of subordination, *ž* is expected to occur on *zo* as well, which it usually doesn't. It is moreover also expected that *ž* is able to attach to wh-items in embedded questions, contrary to fact (cf. 13).

relative pronouns (cf. section 7 for an analysis establishing such a connection).

The second approach faces even more problems. The first problem it faces is that the general subordination marker presumably underlying *ž* is *zo* in Upper Sorbian, cf. (11), which means that an unmotivated chain of changes[4] is needed to get from *zo* to *ž*, cf. (12).

(11) Ja wěm, zo je to wopak.
I know that is that mistake
'I know that that was a mistake.'

(12) tón hólc [$_{CP}$ [$_{SpecCP}$ štó/kotry] [$_{C'}$ [$_{C°}$ zo] tam sedźi]] je mój bratr
→ tón hólc [$_{CP}$ [$_{SpecCP}$ štó/kotry] [$_{C'}$ [$_{C°}$ ž] tam sedźi]] je mój bratr

The second problem is that contrary to what is predicted, *ž* does not appear in all embedded clauses, but only in relative clauses, cf. (13).

(13) Ja wěm, kotry/štó(*ž) je to činił.[5]
I know who who is that done
'I know who did that.'

The last problem of the second approach is that it doesn't capture the position of *ž*. As the example in (14) demonstrates, *ž* can appear internal to a pied-piped constituent.

(14) To je ta žona, [$_{NP}$ čejuž knihu] sym ja čitał.
that is the woman whose book am I read.
'That is the woman whose book I read.'

[4] This chain of changes is unmotivated because it involves two changes that are otherwise unattested, namely, first, the drop of the final vowel and, second, the change from *z* to *ž*. Although the former change occurs with masculine pronouns in the accusative, turning *joho* into *joh'*, it is part of a general change turning bisyllabic forms of personal pronouns into monosyllabic ones. Other instances of this change do not involve *o*-deletion, but dropping of the first syllable (for example, *jemu* → *mu*). And although the second change is attested in many inflectional paradigms, it is reflex of palatalization in all these instances, that is, a reflex of *z* being followed by a front high sonorant. This context does not appear in the case at hand, so the similarity is deceptive.

[5] Even though free relatives are formed with the same set of relativizers (*štož*/*kotryž*/*kiž*), the subordinate clause in (13) cannot be understood as a free relative because the predicate *wědźeć* does not accept NP objects.

This is unexpected because the whole NP in (14) occupies SpecCP so *ž* is predicted to be able to follow that whole NP; this, however, is completely ungrammatical, cf. (15b).

(15) a. To je ta žona, [$_{CP}$ [$_{SpecCP}$ [čeju knihu$_i$]] [$_{C'}$[$_{C°}$ ž] [$_{TP}$ t$_i$ sym ja čitał]]]

b. *To je ta žona, čeju knihuž sym ja čitał.

Also this problem is more severe than it might appear. One could argue that (14) involves an instance of Left Branch Extraction. If so, then the sentence does not contain the bracketed NP from (14) in SpecCP but only the relativizer *čeju*, followed by *ž* in C°, as shown in (16).

(16) To je ta žona, [$_{CP}$ [$_{SpecCP}$ čeju$_i$] [$_{C'}$[$_{C°}$ ž] [$_{TP}$ [$_{NP}$ t$_i$ knihu] sym ja čitał]]]

Although appealing, this alternative cannot be maintained. On the one hand, Left Branch Extraction is optional in Upper Sorbian so that (15b) would still be wrongly predicted to be grammatical. On the other hand, clitic interrogative particles such as *ha* or *da* (cf. Franks & King 2000: 175 for their clitic status), which occur in the same position as the subordination marker *zo*, are licit in both positions, cf. (17).

(17) a. √ Čeju knihu **ha**/**da** sy ty čitał?
whose book QPRT are you read

b. √ Čeju **ha**/**da** knihu sy ty čitał?
whose QPRT book are you read
'Whose book did you read?'

The data in (15) and (17) also show that *ž* is not a second position clitic similar to *ha*/*da*. For if it were one, its positional options should be identical to that of *ha*/*da*. But as the contrast between (17a) and (15b) shows, this is not the case.

In sum, the two previous approaches to *ž*-suffixation are empirically unsatisfactory.

4 A New Analysis of *ž*-Suffixation

4.1 ž-Suffixation as a Reflex of Ellipsis

The claim I want to put forward in this section is that *ž*-suffixation is the reflex of the syntactic structure of relative clauses in Upper Sorbian. As I will argue presently, the syntactic structure underlying relative clauses in Upper Sorbian is the one postulated by the Matching Analysis (Chomsky 1965, Cinque 2015, Citko 2001, Katz & Postal 1964, Salzmann 2006). The structure of the relative clause in (1) according to the Matching Analysis is shown in (18)[6].

(18) tón hólc$_1$ [$_{CP}$ [kotry ~~hólc$_1$~~]$_i$ tam t$_i$ sedźi] je mój bratr
the boy REL there sits is my brother

As this structure indicates, the Matching Analysis embodies three claims about the structure of relative clauses. First, there are two instances of the head noun, one internal to the relative clause and one external to the relative clause. Second, these two instances are independently base-generated, that is, they are not related via movement to each other. Third, the instance of the head noun internal to the relative clause is elided. It is this ellipsis operation that I will argue *ž*-suffixation is a reflex of; cf. (19).

(19) *Ž*-SUFFIXATION ACCORDING TO THE MATCHING ANALYSIS

Base Structure:	tón	hólc$_1$	[$_{CP}$ tam	[kotry	hólc$_1$]	sedźi]	je mój	bratr
	the	boy	there	REL	boy	sits	is my	brother
A'-Movement:	tón	hólc$_1$	[$_{CP}$	[kotry	hólc$_1$]$_i$	tam t$_i$	sedźi]	je mój bratr
Ellipsis:	tón	hólc$_1$	[$_{CP}$	[kotry	~~hólc$_1$~~]$_i$	tam t$_i$	sedźi]	je mój bratr
ž-suffixation:	tón	hólc$_1$	[$_{CP}$	[kotry-ž]$_i$		tam t$_i$	sedźi]	je mój bratr

4.2 Advantages of the Matching Analysis

The decisive argument in favor of the Matching Analysis of relative clauses in Upper Sorbian comes from what I call *special contexts*. Special contexts are contexts that require lexical NPs but disallow all

[6] Here and throughout the paper, numerical indices indicate coreference relations, whereas alphabetical subscripts indicate antecedent-trace relations.

sorts of non-lexical NPs, including personal pronouns and indefinite pronouns. Two such contexts are illustrated in (20) and (21).

(20) Marko je na √**te** **wašnje**/* **njo**/* **něšto** rěčał.
Marko is on the way it something spoken
'Marko has spoken in that way (*it/*something).'

(21) To so w √**tych** **padow** /***nich** /***něčim** wobkedźbuje.
that REFL in these cases them something observes
'That was taken care of in these cases (*them/*something).'

In the remainder of this paper, I will refer to the relevant requirement imposed by special contexts as the *lexicality requirement*.

The reason why special contexts provide the decisive argument in favor of a Matching Analysis is because only this structure allows to correctly capture the distribution of special contexts in relative clause structures. As mentioned above, the Matching Analysis assumes that there are two instances of the head noun — one inside the relative clause, the other external to it — that both instances are base-generated, and that the instance of the head noun internal to the relative clause is elided. These three assumptions lead to three predictions with respect to special contexts and relative clauses. *First*, the relative pronoun should be able to be compatible with a special context. This is predicted because a relative pronoun is a lexical NP in disguise, due to the ellipsis of its lexical noun, and as such it should be able to satisfy the lexicality requirement. *Second*, the head noun appearing external to the relative clause should also be compatible with a special context. This is predicted because if the head noun appears external to the relative clause, then the position it appears in is internal to the clause in which the relative clause is embedded. And if this position defines a special context, then the head noun occurring in this position can satisfy the lexicality requirement. (This prediction appears trivial but as we will see in the discussion of the Raising Structure, it is not.) *Third*, the relative pronoun and the head noun external to the relative clause should be able to be simultaneously compatible with special contexts. This prediction follows from the assumption that the two instances are base-generated and that they can therefore independently satisfy the lexicality requirement imposed by the

special contexts. As the sentences in (22)–(24) show, all three predictions are borne out.

(22) √ Te wašnje, **na kotrež** je Marko rěčał, je mje překwapiło.
the way on which is Marko spoken is me surprised
'The way in which he spoke surprised me.'

(23) √ Marko je rěčał **na wašnje**, kotrež je mje překwapiło.
Marko is spoken on way which is me surprised
'Marko spoke in a way that surprised me.'

(24) √ Marko je rěčał **na te wašnje**, **na kotrež** je hižo
Marko is spoken on the way on which is already
jeho nan rěčał.
his father spoken
'Marko spoke in the way that already his father used to speak in.'

The sentence in (22) has a relative clause in which the relativized element originates in a special context. Since the relative pronoun is in fact a lexical NP, no problem with respect to the lexicality requirement arises; cf. the structure for (22) according to the Matching Analysis in (25).

(25) te wašnje [$_{CP}$ [na kotre ~~wašnje~~]$_i$ je Marko t_i rěčał] je mje překwapiło

In (23), the head noun in the clause hosting the relative clause originates in a special context. As the head noun is lexical, no problem arises in connection to the lexicality requirement; cf. the corresponding structure for (23) according to the Matching Analysis in (26).

(26) Marko je rěčał na wašnje [$_{CP}$ [kotre ~~wašnje~~]$_i$ je mje t_i překwapiło]

Finally, (24) shows that both the head noun and the relative pronoun can appear in a special context. Since both items are lexical NPs, the lexicality requirement imposed by the two special contexts can be

satisfied, as the structure for (24) according to the Matching Analysis in (27) illustrates.

(27) M. je rěčał na te wašnje [$_{CP}$ [na kotre ~~wašnje~~] je hižo jeho nan t_i rěčał]

In order to complete the argument for the Matching Analysis, one also needs to show that the competing alternative proposals for the structure of relative clauses are not able to capture the distribution of special contexts in Upper Sorbian. This is what I will do in the following two parts.

4.3 The Inadequacy of the Head External Analysis

The first alternative to consider is the Head External Analysis (Chomsky 1977 et seq.). It assigns a structure to a relative clause according to which the head noun originates outside the relative clause, whereas internal to the relative clause an operator-like element co-indexed with the head noun undergoes extraction; cf. the structure in (28) for the relative clause in (1).

(28) tón hólc$_1$ [$_{CP}$ [$_{OP}$ kotry$_1$]$_i$ tam t_i sedźi] je mój bratr
the boy REL there sits is my brother

Under this approach, *ž*-suffixation is a reflex of A'-movement internal to a relative clause, as indicated in (29).

(29) *Ž*-SUFFIXATION ACCORDING TO THE HEAD EXTERNAL ANALYSIS

Base Structure:	tón	hólc$_1$	[$_{CP}$ tam	[$_{OP}$ kotry$_1$]	sedźi]	je	mój bratr
	the	boy	there	REL	sits	is	my brother
A'-Movement:	tón hólc$_1$ [$_{CP}$ [$_{OP}$ kotry$_1$]$_i$ tam t_i sedźi] je mój bratr						
ž-suffixation:	tón hólc$_1$ [$_{CP}$ [$_{OP}$ kotry$_1$-ž]$_i$ tam t_i sedźi] je mój bratr						

This alternative account cannot be upheld because it runs into trouble with special contexts. First, it predicts that relative pronouns should be barred from special contexts. This is predicted because operators are not lexical, and therefore cannot satisfy the lexicality requirement imposed by the special contexts. One might suggest that the grammaticality of relative pronouns in special contexts is due to A'-movement. However,

then one predicts A'-movement from special contexts to be generally fine. But as the ungrammaticality of (30) shows, this is not the case.

(30) * Na kotre/čo je Marko rěčał?
on what what is Marko spoken
'What did Marko speak in?'

Second, it predicts that at least A'-movement of relative pronouns is always possible from a special context. But this prediction is not borne out either, cf. (31).

(31) * Wón je so na něšto wobćežował, na kotrež ja
he is REFL on something complained on which I
sym pječa rěčał.
am allegedly spoken
'He complained about something that I had allegedly spoken in.'

The ungrammaticality of (31) is unexpected under the Head External Analysis because A'-movement in relative clauses should guarantee compatibility with special contexts. However, on the assumption that the structure of relative clauses corresponds to the one postulated by the Matching Analysis, the ungrammaticality of (31) is predicted. For as shown in example (20) above, the indefinite pronoun *něšto* is illicit in special contexts. As *něšto* is also included in the relative pronoun in (31), the NP contained in the relative pronoun is not lexical enough to satisfy the lexicality requirement imposed by the special context inside the relative clause, cf. (32)[7].

(32) něšto [$_{CP}$ [na kotre ~~ŠTO~~]$_i$ ja sym pječa t_i rěčał

4.4 The Inadequacy of the Raising Analyses

The other alternatives to consider are Raising Analyses. They come in two varieties, the Head Raising Analysis (Kayne 1994, Bianchi 2000, Vries 2002) and the Promotion Analysis (Heycock 2014, Schachter 1973, Vergnaud 1974). Both analyses agree that the head noun originates

[7] The upper case *što* in (32) is used because I wish to remain agnostic at this point how precisely *něšto* is structurally represented inside the relative pronoun.

inside the relative clause, but differ with respect to its final position. According to the Head Raising Analysis, the head noun is moved to some left peripheral position of the relative clause. It therefore remains inside the relative clause; cf. the structure in (33) for the relative clause in (1).

(33) tón [$_{CP}$ hólc$_k$ [kotry t$_k$] tam t$_i$ sedźi] je mój bratr
the boy REL there sits is my brother

According to the Promotion Analysis, the head noun originates inside the relative clause and is then moved outside the relative clause into the matrix clause; cf. the structure in (34) for the relative clause in (1).

(34) tón hólc$_k$ [$_{CP}$ [kotry t$_k$]$_i$ tam t$_i$ sedźi]je mój bratr
the boy REL there sits is my brother

Under both analyses, *ž*-suffixation is a consequence of the movement the head noun, cf. (35) & (36).

(35) *Ž*-SUFFIXATION ACCORDING TO THE HEAD RAISING ANALYSIS
Base Structure: tón [$_{CP}$ tam [kotry hólc] sedźi] je mój bratr
the there REL boy sits is my brother
A'-Movement: tón [$_{CP}$ [kotry hólc]$_i$ tam t$_i$ sedźi] je mój bratr
Head Raising: tón [$_{CP}$ hólc$_k$ [kotry t$_k$] tam t$_i$ sedźi] je mój bratr
ž-suffixation: tón [$_{CP}$ hólc$_k$ [kotry-ž t$_k$] tam t$_i$ sedźi] je mój bratr

(36) *Ž*-SUFFIXATION ACCORDING TO THE PROMOTION ANALYSIS
Base Structure: tón _ [$_{CP}$ tam [kotry hólc] sedźi] je mój bratr
the there REL boy sits is my brother
A'-Movement: tón _ [$_{CP}$ [kotry hólc]$_i$ tam t$_i$ sedźi] je mój bratr
Head Raising: tón hólc$_k$ [$_{CP}$ [kotry t$_k$]$_i$ tam t$_i$ sedźi] je mój bratr
ž-suffixation: tón hólc$_k$ [$_{CP}$ [kotry-ž t$_k$] tam t$_i$ sedźi] je mój bratr

Either version of the Raising Analysis makes incorrect predictions vis-à-vis special contexts and therefore cannot be upheld.

The Head Raising Analysis incorrectly predicts that only relative pronouns are licit in special contexts. But as shown in (23) and (24), the head noun is licit in special contexts, too. This prediction seems bizarre

but it follows from a crucial ingredient of this analysis, namely that the head noun never leaves the relative clause. This means that (23) has the structure in (37).

(37) Marko je rěčał na [$_{CP}$ wašnje$_k$ [kotre t$_k$]$_i$ je mje t$_i$ překwapiło]

As indicated, *wašnje* is not internal to the matrix clause and can therefore not satisfy the lexicality requirement imposed by the special context in the matrix clause. Crucially, the grammaticality of sentences such as (23) can-not be explained with the help of some mechanism that makes elements in the left periphery of clauses visible to superordinate clause, cf. (38).

(38) To, kogo Maria widziała, jest tajemnicą.[8]
that who Maria saw is secret
'Who Mary saw is a secret.'
= something is a secret
≠ someone is a secret

(Borsley 1997, ex. 8)

As indicated in (38), the element *kogo* sitting in the left periphery of a subordinate clause is not visible in the superordinate clause. If it were, the interpretation that someone is a secret should be available, contrary to fact.
The Promotion Analysis incorrectly predicts that the head noun and the relative pronoun should not be licit simultaneously in special contexts. As this seems slightly counterintuitive, let me explain. Consider the simplified structure in (39) for the crucial example (24).

(39) rěčał na wašnje$_k$ [$_{CP}$ [na kotre t$_k$] je t$_i$ rěčał]
↑ ↑
A B

[8] It is important to stress that even though (38) is not a relative clause but a complement clause to the determiner *to*, it nevertheless counts as an argument against the Head Raising Analysis. For the crucial ingredient of this analysis is that complement clauses and relative clause have the same structure, namely D° + CP. If so, overt manifestations of this structure, such as (38), are predicted to behave identically to relative clauses, contrary to fact.

According to the promotion Analysis, a lexical NP occupies the position of the head noun (=A) and the position of the relative pronoun before movement (=B). Therefore, the Promotion Analysis seems to be able to account for the observation that both the head noun and the relative pronoun are compatible with special contexts. But this account is flawed because it ignores a crucial feature of the derivation in (39), namely that the relevant lexical NP occupies both positions *at distinct stages of the derivation*. This is of importance because special contexts are a variety of selectional restrictions. Selectional restrictions in turn are a property of some designated stage in a derivation. More specifically, selectional restrictions are either satisfied before movement or after movement. Given the Promotion Analysis, the lexical NP moves from the position of the relative pronoun (=B) to that of the head noun (=A). Therefore, either the pre- or the post-movement structure counts for selectional restrictions[9]. Consequently, either the lexical NP in A is visible for selectional restrictions, or the one in B, but not in both. The Matching Analysis faces no such problem because the lexical NP defining the head noun is base-generated in both positions and therefore visible in both positions. Importantly, the problem for the Promotion Analysis remains even if the copy theory of movement is adopted. The structure for (39) incorporating the copy theory is shown in (40) (deleted copies are set in gray).

(40) rěčał na wašnje [$_{CP}$ [na kotre **wašnje**] je [**na kotre wašnje**] rěčał]
↑ ↑
A B

The reason that this modification is of no help is that having multiple copies available doesn't entail that all of them are visible. Consider in this respect the argument from Chomsky (1993) illustrating the advantage of the copy theory of movement. As Chomsky (1993: 38) observes, the sentence in (41a) has the structure in (41b), that is, one containing two copies instead of a moved element and a trace connected to it (deletion of copies at PF will be ignored here).

[9] This argument is unaffected by the precise post-movement position. If reconstruction of the head noun is assumed, then pre- and post-movement position coincide. Nevertheless, only one of them will be available for the satisfaction of selectional restrictions, even if this is trivially B under this scenario, as pre- and post-movement position are identical.

(41) a. John wonders which picture of himself Bill saw.
b. John wonders [which picture of himself] Bill saw [which picture of himself]

Importantly, despite the presence of two copies only one of them is visible, that is, only one copy is interpreted at LF. If the topmost copy is interpreted at LF, then *John* will bind *himself*, cf. (42a). If the lower copy is interpreted at LF, then *Bill* acts as a binder for the anaphor, cf. (42b).

(42) a. John wonders [which x, x picture of himself] Bill saw x
b. John wonders [which x] Bill saw [x picture of himself]

Crucially, it is impossible for both copies to be visible, that is, to be interpreted at LF. For then the two NPs *John* and *Bill* should be able to simultaneously bind *himself*; but such a reading is impossible for (41a). Returning to the discussion surrounding (40), it should have become clear that the presence of two copies of *wašnje* is of no help for an explanation of the fact that *wašnje* can be interpreted both in the relative clause and in the matrix clause. The reason is that also in this structure, only one copy is available to satisfy the sectional restriction. If selectional restrictions are a property of pre-movement structure, then only the lower copy of *wašnje* is visible for selectional restrictions. If selectional restrictions are a property of post-movement structures, then only the topmost copy of *wašnje* is visible[10]. But the option that both copies are visible is as much excluded as interpreting both copies of the moved wh-phrase in (41b).

4.5 Summary

To summarize this section, I have argued that only the Matching Analysis captures the distributional properties of head nouns and relative pronouns vis-à-vis special contexts. On the basis of this demonstration, I conclude that *ž*-suffixation, which so far has not received a satisfactory analysis, is the result of the ellipsis of the head noun inside the relative clause.

[10] If reconstruction is assumed, then again only the lower copy is visible; cf. fn. 9.

5 Consequences of the New Analysis of *ž*-Suffixation

5.1 Benefits

The first benefit of the analysis of *ž*-suffixation relying on the Matching Analysis is that it faces no problems with the position of *ž* internal to an NP, cf. (14), repeated here as (43).

(43) To je ta žona, [$_{NP}$ čejuž knihu] sym ja čítał.
that is the woman whose book am I read.
'That is the woman whose book I read.'

This ceases to be a problem because the instance of the head noun originates next to the possessive determiner *čeju*, so that consequently *ž* will be attached to *čeju* and not to the NP pied-piped by *čeju*, cf. (44).

(44) to je ta žona [$_{NP}$ [$_{D°}$[$_{POSS°}$ čeju]] ~~žony~~] knihu] sym ja čítał

Incidentally, the case mismatch between the nominative marked form *žona* and the genitive marked form *žony* does not preclude ellipsis as ellipsis is known to be insensitive to case specifications (Citko 2001).

The second benefit of the analysis relying on the Matching Analysis is that it does not predict *ž* to appear in all embedded clauses, because not all embedded clauses are relative clauses.[11] Therefore, no stipulative change from *zo* to *ž* is needed, let alone the stipulative restriction that it applies only in relative clauses, but not in embedded clause or indirect questions.

5.2 Problems

The new analysis of *ž*-suffixation seems to inherit all the problems of the analysis treating *ž* as a derivational suffix. But as I attempt to show in this part, these problems are only apparent.

[11] I should note here that I am in fact quite sympathetic to the idea that all subordinate clauses are in fact relative clauses (cf. Arsenijević 2009, Caponigro & Polinsky 2011). Under this view, across the board *ž*-suffixation is nevertheless unexpected because subordinate clause and relative clauses proper still differ in many respects, for example with respect to the base positions of the shared head noun. It will then be these differences that *ž*-suffixation is sensitive to.

The first problem is that *ki* is not a determiner, as predicted by the new analysis relying on the Matching Analysis, cf. (45).

(45) a. Tón hólc, kiž tam sedźi, je mój bratr.
= Tón hólc, [ki ~~hólc~~] tam sedźi, je mój bratr.
b.* ki hólc

The suggestion I want to make is that *ki* is a determiner after all, but one that puts two specific restrictions on its syntactic environment. First, it requires its nominal complement to be elided; and second, it is restricted to relative clauses[12]. Although both requirements seem dubious, they are attested in other languages as well. The first requirement, Sorbian shares with the German indefinite determiner *welch-*. This determiner can be used as an indefinite only when its nominal complement is elided, cf. (46).

(46) Wir brauchen Milch; haben Sie hier welche (*Milch)?
we need milk have you here which milk
'We need milk; do you have any?'

The second requirement, Sorbian shares with Greek, which possesses specialized determiners for interrogative (Q), relative (REL), and free relative (FR) uses, cf. (47a–c), respectively.

(47) a. Ποιος έρχεται;
who.Q comes
'Who is coming?'
b. Ο άντρας ο οποίος έρχεται θα πάρει ένα δώρο.
the man who.REL comes FUT take a present
'The man who is coming will get a present.'
c. Όποιος έρθει πρώτος θα πάρει ένα δώρο.
who.FR comes first FUT take a present
'He who/whoever comes first will get a present.'

[12] If Matching Analysis is universally valid, the first requirement follows from the second.

So, *ki* in Upper Sorbian is similar to a combination of *o οποίος* or *όποιος* in being restricted to very specific uses, and like *welch-* in requiring its nominal complement to be elided.

The second problem the new analysis faces is that *ž* appears on many adverbial complementizers. The suggestion I want to make is that this is not a problem at all but in fact a desired consequence of the new analysis. The appearance of *ž* on adverbial complementizers is only a problem if one wishes to treat adverbial clauses and relative clause separately. But both past and recent research on adverbial clauses (Caponigro & Polinsky 2011, Demirdache & Uribe-Etxebarria 2004, Haegeman 2010, Geis 1970) indicate that adverbial clauses are relative clauses modifying silent nouns in the matrix clause. According to this analysis, the examples in (48) have the corresponding structures in (49) (silent nouns are set in upper case).

(48) a. Wón je domoj šoł, prjedyž dało so do dešćika.
he is home gone before gave REFL to rain
'He went home before it started raining.'
b. Wón je domoj šoł, hdyž dało so do dešćika.
he is home gone when gave REFL to rain
'He went home when it started raining.'

(49) a. Wón je domoj šoł prjedy [TIME X [[~~TIME X~~] dało so do dešćika]
→ Wón je domoj šoł prjedy [TIME X [[-ž] dało so do dešćika]
b. Wón je domoj šoł [TIME X [[hdy ~~TIME X~~] dało so do dešćika.
→ Wón je domoj šoł [TIME X [[hdy-ž] dało so do dešćika.

Independent evidence for this analysis comes from the distribution of the concessive particle *-kuli* (Engl. '-ever'). This particle can attach to relative pronouns (cf. 50a), must not attach to interrogative pronouns (cf. 50b), but is compatible with adverbial complementizers (cf. 50c). In other words, adverbial and relative clauses form a natural class[13].

(50) a. Ty směš jěsć, štož(kuli) ty cejš.
you are.allowed eat whatever you want

[13] I should stress though that this idea needs to be worked in more detail because not all adverbial complementizers combine with *ž*, cf. Fasske 1981, chapter 9.2.

'You can eat what(ever) you want.'

b. Ja so prašam, hdyž(*kuli) ty mje zawołaš.
I REFL ask whenever you me call
'I wonder when(*ever) you call me.'

c. Ja přińdu, hdyž(kuli) ty mje zawołaš.
I come whenever you me call
'I come when(ever) you call me.'

The third problem (raised by a reviewer) concerns the fact that ellipsis defines less strict identity requirements than movement, and that this is a problem for the Matching Analysis of relative clauses. However, it seems to me that this difference in fact supports the Matching Analysis. First, morphological identity is not required; case mismatches are fine in relative clause (cf. 44), similar to cases of nominal ellipsis (Citko 2001). Second, both types of ellipsis allow identity of sense interpretations, cf. (51).

(51) a. John bought a hat, and Mary bought one, too.
b. John ordered the meal that Mary had ordered, too.

In both examples, neither the hat nor the meal are necessarily referentially identical. Lastly, wh-movement gives rise to Principle C effects in questions, but not in relative clauses, cf. (52). Whatever turns out to be the exact source of this difference, it shows that movement dependencies differ from the dependency between a head noun and a relative pronoun.

(52) a. * Which picture of $John_i$ did he_i see in the article?
b. √ The picture of $John_i$ which he_i saw in the article was flattering.

6 Conclusion

Based on contexts requiring lexical NPs, I argued that relative clauses in Upper Sorbian require the Matching Analysis. I showed that this allows for a simple analysis of *ž*-suffixation as a morphological reflex of the ellipsis of the head noun inside the relative clause. I argued against alternative analyses of ž-suffixation as a reflex of A'-movement of the relative pronoun or as a reflex of head raising. I finally discussed the

consequences of the analysis for the syntax of determiners and adverbial clauses in Upper Sorbian. I suggested that some determiners require an elided nominal complement and that adverbial clauses are relative clauses in disguise.

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On Slavic-influenced Syntactic Changes in Yiddish: A Parametric Account*

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Slavic influence on the phonology, morphology, and lexicon of Yiddish is well-documented (Weinreich 1980, *inter alia*). In contrast, syntactic innovations triggered by contact with Slavic languages are rarely investigated. This paper examines the extension of verb-second (V2) from root clauses to embedded clauses, which was suggested to be Slavic-influenced by Weinreich (1958) and Santorini (1989, 1992). However, no satisfactory explanation has been offered in the previous literature for how Slavic languages—which lack V2 in either root or embedded clauses—could have engendered such a change in Yiddish. The key to the proposed analysis is treating (embedded) V2 not as a unitary phenomenon, but as a "constellation" of parameter values, some of which were already in place in Yiddish before Slavic languages came into the picture and the rest of which changed under the influence of Slavic.

1 The History (and Geography) of Yiddish Word Order

According to Santorini (1989), the earliest Yiddish texts reveal it to be an "asymmetrical V2 language", with V2 in root clauses but INFL-final

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order in embedded clauses (for convenience, finite elements are boldfaced in examples below):

(1) ven [der vatr nurt doyts leyan **kan**]. [Early/Old Yiddish]
if the father only German read can
'…provided that the father can read German.' [Santorini 1989: 111]

Modern Yiddish, however, is a symmetrical V2 language, exhibiting V2 in both root and embedded clauses.[1]

(2) … oyb [oyfn veg **vet** dos yingl zen a kats]. [Yiddish]
whether on-the way will the boy see a cat
'… whether on the way the boy will see a cat' [Santorini 1992: 597]

This is particularly true of Eastern Yiddish (the only surviving variety, as Western Yiddish is virtually extinct), while Western Yiddish never exhibited V2 in all types of embedded clauses.[2] Western Yiddish did develop INFL-medial structures; however, unlike in truly symmetrical V2 languages, only subjects could occupy the pre-V2 position in embedded clauses. According to Santorini (1989), Eastern Yiddish went through a stage characterized by this word order; in what follows, I refer to this stage as "Transitional Yiddish". Thus, simplifying the picture, we can say that Yiddish started with the structures as in (1), went through a stage with structures as in (3), and then Eastern Yiddish — but not Western Yiddish — developed true V2 structures as in (2).

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[1] Asymmetrical V2 languages, such as German, allow V2 in some types of embedded clauses, namely those that cross-linguistically tend to exhibit root-clause phenomena (cf. Holmberg 1986, Grewendorf 1988, and Wiklund et al. 2009, *inter alia*). Crucially, Modern Yiddish allows V2 even in embedded clauses of the types that do not exhibit root-clause phenomena elsewhere (except in other symmetrical V2 languages, such as Icelandic).

[2] Western Yiddish is usually described as co-territorial with German(ic), and Eastern Yiddish as co-territorial with Slavic languages. This is not entirely accurate, as Czech-, Slovak-, and Sorbian-speaking lands are in the Western Yiddish zone. Eastern Yiddish is thus better described as co-territorial with Polish, Ukrainian, Belarusian, Lithuanian (and later, Russian).

(3) … dz der mensh **bidarf** nit tsu zukhn eyn mgid
that the human needs not to seek a preacher
'that people don't need to look for a preacher' [Santorini 1989: 123]

Two alternative hypotheses can be developed to account for the word order changes in Yiddish. According to the first hypothesis, the emergence of embedded V2, as in (2), is an instance of an endogenous change: Müller (1996) and Schönenberger (2001: 75–137) have shown that children acquiring German may *spontaneously* produce Yiddish-like structures at a certain stage of L1 acquisition. If many children make this "error" and do not ultimately recover from it, a Yiddish-style symmetrical-V2 language could emerge out of an asymmetrical-V2 language. Although this hypothesis explains how the emergence of embedded V2 *could* have happened, it does not explain *why* this development *actually* happened only in Eastern Yiddish, but not in Western Yiddish or in other West Germanic varieties (e.g. German, Dutch dialects), including German dialects spoken in Slavic-speaking lands. As Weinreich (1958: 369) notes, "the Germans either were Slavicized completely and lost their identity, or preserved a culture and language in which the Slavic factor was marginal. The Jews, on the other hand, have generally maintained their distinctness, but have undergone a Slavic cultural and linguistic influence so deep and enriching as to place them in a relation of affinity with the Slavs". It thus appears that being Jewish and surrounded by Slavs (though not Czechs, Slovaks, or Sorbians) are both prerequisites for this diachronic development in word order. Language contact, thus, appears to be a more likely "culprit" than language-internal processes.

Weinreich (1958: 383) and Santorini (1989: 155–157) have both noted that linguistic contact must be at play in the emergence of embedded V2 in Eastern Yiddish; however, neither has developed a full-fledged analysis that shows how contact with Slavic languages, lacking V2 in both root and embedded clauses, might have engendered this change in Yiddish. In this paper, I do just that. Specifically, two issues that have not been resolved conclusively in the previous literature are addressed here: first, what exactly is the nature of the change in Yiddish (in parametric terms: which parameter values have been reset); and second, what structures and in which Slavic language(s) are evidence

that these languages indeed had the appropriate parameter settings to induce this change in Yiddish.

2 Verb-Second in a Parametric System

For the purposes of this paper, I assume a classical analysis of asymmetrical V2 as having the finite verb in C° and the "first constituent" in Spec-CP (cf. den Besten 1983). Symmetrical V2 languages are usually treated in the literature as having the same configuration, but lower in the structure. Here I adopt the analysis proposed by Santorini (1989) and Diesing (1990), whereby the finite verb is in T° and the "first constituent" is in Spec-TP (see Heycock and Santorini 1993 for arguments against adopting the "CP-recursion" alternative of Holmberg 1986 for Yiddish).

I propose that in order to obtain such a configuration, five binary parameters must each be set a certain way: (i) CP should not be involved in building a root declarative clause (as it is in an asymmetrical V2 language), (ii) the finite verb should raise to T° (cf. Pollock 1989), (iii) the TP must be left-headed, (iv) the subjects must be able to stay below TP (i.e. Nominative Case should be checked by T° downwards), and (v) some phrasal element (but not necessarily the subject) must raise into Spec-TP (i.e. EPP). The parameter space is represented in Table 1 below.[3]

This parametric system is based on the system proposed by Bailyn (2004), but involves several modifications. First, the Weak NOM Case parameter, which controls whether the subject can stay below T°, is defined here for all languages and not just the ones with the "TP" Tense domain setting. Second, the Directionality of TP parameter is added to account for the contrast between INFL-medial and INFL-final languages. The third, and biggest, departure from Bailyn's system concerns the treatment of V-to-T raising and movement into Spec-TP. In Bailyn's system, each of these descriptive contrasts is involved in two distinct parameters, and the two movements (into T° and into Spec-TP) are

[3] For the sake of presentation, I am assuming that INFL-final structures are merged as right-headed, ignoring Kayne's (1994) LCA. I am also setting aside the OV-to-VO change in Yiddish, which some say to be related to the emergence of embedded V2. However, under the analysis proposed here, being VO is not a pre-requisite for being a symmetrical V2 language.

related by the Nom = [+T] parameter, which forces V-to-T raising but only if the nominative subject in Spec-TP cannot check the [+T] feature of T°. In other words, whether the verb raises to T° is controlled in Bailyn's system by a disjunctive set of two parameters: raising occurs if the Kind of EPP is set as "X°" or if the Nom = [+T] parameter is set as "–". In the system proposed here, V-to-T raising is controlled by a separate parameter (as proposed by Pollock 1989) and is not linked to movement to Spec-TP. The main reason for this departure is the fact that in Russian Generalized Inversion clauses, analyzed by Bailyn (2004), V-to-T raising is actually not forced by the lack of a nominative subject in Spec-TP, contrary to his claims. The relevant data is given in (4) below: the verb follows rather than precedes the relevant types of adverbs (cf. Pollock 1989). Moreover, a search in the National Corpus of Russian brings up numerous examples of the format in (4b) and no examples as in (4a). (See also Kallestinova 2007: 130, Slioussar 2011.)

Table 1. Proposed parametric system

Tense domain	V-to-T Raising	Directionality of TP	Weak NOM Case	EPP on T°	Languages
TP	−	L	−	+	English
TP	+	L	−	+	French
TP	+	L	+	+	Icelandic, **Modern Yiddish**
TP	−	L	+	+	Russian
TP	+	L	−	−	Spanish, Italian
TP	+	L	+	−	Irish
CP	−	L	−	−	Welsh
CP	−	L	−	+	Mainland Scandinavian
CP	+	R	?	+	German, **Early Yiddish**
CP	+	L	−	+	**Transitional Yiddish**

(4) a. * U Vani byvali často takie problemy.
at Vanya were often such problems$_{NOM}$
b. U Vani často byvali takie problemy.
at Vanya often were such problems.$_{NOM}$
'Vanya often had such problems.'

Another point worth noting is that V-to-T-to-C movement in asymmetrical V2 languages is not conditional on independent V-to-T raising. Thus, some of the languages with a "CP" Tense domain (i.e. with V-to-T-to-C movement in main clauses) do not have V-to-T raising in embedded clauses (i.e. in the absence of a subsequent movement to C°); this is true of Mainland Scandinavian languages (cf. Taraldsen 1986: 8, Heycock et al. 2010: 62, and Platzack 1986: 28 for Norwegian, Danish, and Swedish examples, respectively) and Welsh (cf. Borsley 2006: 473). Yet, other languages with a "CP" Tense domain (i.e. with V-to-T-to-C movement in main clauses) do exhibit V-to-T raising in embedded clauses (i.e. with no subsequent movement to C°); for example, Eastern Yiddish in its transitional stage (and Western Yiddish in its final stage) did have V-to-T raising even in the absence of a subsequent movement to C°. This can be seen from the example in (3) above, where the finite verb *bidarf* 'needs' precedes rather than follows the negation marker *nit* 'not'.[4] Consequently, the V-to-T Raising parameter is defined for all languages, regardless of the setting of the Tense Domain parameter (in contrast to Bailyn's (2004) system).

According to my system, there were two phases in the history of Yiddish word order: the first change, which occurred in both Western and Eastern Yiddish, involved the resetting the Directionality of TP parameter from right- to left-headed; the second set of changes, which affected only Eastern Yiddish, involved a change in the Tense domain from "CP" to "TP" and a change in the setting of the Weak NOM Case parameter that now allowed subjects to stay low. (This description is a simplification of the actual diachronic picture, as the two phases were overlapping in time rather than strictly consecutive.)

[4] Santorini (1989: 119–121) shows that beside negation, V-to-T movement in these forms of Yiddish can be diagnosed by particles and *Loshn koydesh* compounds (i.e. Hebrew nominal elements of light verb constructions).

Under this model, Yiddish-before-Slavs (*aka* "Transitional Yiddish") was still an asymmetrical V2 language, with V-to-T raising and Subject-to-Spec-TP raising in embedded clauses. In effect, it had the same V2-in-CP structure for root clauses as in modern German and the same structure for embedded clauses (V-in-T and subject necessarily in Spec-TP) as in modern French. Crucially, Transitional Yiddish already had some of the parameter settings that produce the embedded-V2 syntax: the V-to-T raising and EPP-on-T° parameters were both set as "+" and the Directionality of TP parameter was set as "L". All in all, of the five parameters considered here, two already had the same settings in Transitional Yiddish as in Slavic languages and so remained unchanged, two changed their settings as a result of contact, and one (V-to-T Raising) remained unaffected by contact. (Why the latter parameter was not reset through contact is an interesting question, which, unfortunately, space limitations do not allow me to consider in detail.) In the next section, I consider whether the resetting of the Tense domain and Weak NOM Case parameters can be attributed to Slavic languages in contact with Yiddish.

3 Diachrony of Slavic Word Order

As noted in Table 1, Russian has the appropriate settings for the Tense domain and Weak NOM case parameters to trigger the relevant changes in Eastern Yiddish. However, contact with (modern) Russian came too late to engender the emergence of embedded V2 in Eastern Yiddish: the contact began no earlier than the late 1700s, whereas the first attestations of truly V2 embedded clauses (i.e. clauses with a non-subject "first constituent") in Eastern Yiddish manuscripts date from 1590s–1600s (Santorini 1989: 155), around the same time that Yiddish texts from Eastern Europe started exhibiting specifically Eastern Yiddish features in lexicon and phonology. It should be noted, however, that the corresponding changes in *spoken* Eastern Yiddish might have predated those first attestations in manuscripts by as long as several centuries, a period during which Yiddish-speaking Jews used Western Yiddish as their written standard in the Eastern dialectal zone as well as in the Western one. Thus, it is possible that these contact-influenced changes remained "under the radar" (i.e. not reflected in manuscripts) for centuries (cf. McWhorter 2008 on Celtic influence on English).

Therefore, 1590s–1600s is *terminus ante quem* for the change in spoken Eastern Yiddish. In order to find a Slavic "culprit", we must examine Slavic languages that were in contact with Yiddish in the Eastern zone prior to 1590, perhaps as early as 1300s (if not before). At the time, speakers of Eastern Yiddish were in contact with speakers of Polish, Ukrainian, or Belarusian.[5] First Jewish communities in what was to become the "Pale of Settlement" (eastern Poland, Ukraine, Belarus) date from as early as 1128 CE (Hrodno, present-day Belarus); Ashkenazi Jewish communities in Lviv (Lemberg) and Lutsk (both in present-day western Ukraine) were established by 1256 CE and 1430 CE, respectively (Spolsky 2014: 181). More generally, Brook (1999: 282) writes: "[Ashkenazy] Jews arrived in Poland in large numbers starting in the mid-thirteenth century, and in Belarus by the late fourteenth century".

From the preceding discussion one thing is clear: if the emergence of embedded V2 in Eastern Yiddish is to be explained by contact with Slavic languages, it is the settings of the Tense domain and Weak NOM case parameters in pre-1590 Polish, Ukrainian, and Belarusian that we should establish. If we find that these languages had the "TP" Tense domain and the "+" setting for the Weak NOM case parameters in the relevant period, it can be claimed that these parameter settings were transferred to Eastern Yiddish (more on the mechanisms of parameter setting transfer in the following section).

The task, however, is not as simple as it seems, as there is little discussion in the existing literature on the parameter settings (or more generally, word order patterns) in medieval Slavic languages. Nevertheless, a number of syntactic constructions that manifest the relevant parameter settings can be found in relevant languages in the relevant time period. These constructions can be characterized as follows: (i) they are embeddable, without changes in word order, (ii) they exhibit the XP-V-NOM format (even in default, out-of-the-blue contexts), which Bailyn (2004) refers to "Generalized Inversion", and (iii) their diachronic development is relatively well-understood. While Bailyn lists a number of such Generalized Inversion structures, including OVS clauses, locative inversion, and more, some of these structures are

[5] Also Lithuanian; however, since little is known about the complex Polish-Lithuanian-Belarusian triglossia in the relevant period or the diachronic development of major constituent order in Lithuanian, I am leaving this issue for future research.

difficult to work with in the diachronic dimension: for example, OVS clauses can be derived not only via Generalized Inversion but also via Topicalization (A'-movement) of the object and post-posing of the subject; little is known about the diachronic development of the other structures. The one structure that fits the entire description above, including (iii), is the so-called predicative possessive construction (PPC). The diachronic development of these constructions in West and East Slavic is discussed in detail in McAnallen 2011.

According to McAnallen (2011), the earliest attested form of Slavic had three types of PPCs: a *have*-PPC, familiar from English and modern West Slavic languages, and two oblique PPCs characterized by the possessor expressed by a PP headed by *u* 'at' or by a dative noun phrase, while the possessum is expressed by a post-verbal nominative noun phrase. The two oblique PPCs, relevant to the discussion here, are illustrated below:[6]

(5) *u*-PPC (Old Russian, from *Primary Chronicle*; cited in McAnallen 2011: 53-54)
ona že reče imъ nyně, ou vasъ něs medu ni
she$_{NOM}$ PART said to.them now at you not.is honey nor
skory
fur
'She said to them that now you have neither honey nor fur…'

(6) dative-PPC (Old Czech, from *Život Svaté Kateřiny*; cited in McAnallen 2011: 32)
neb mu bieše dci jediná
for him$_{DAT}$ was daughter$_{NOM}$ one$_{NOM}$
'…for he had one daughter'

The oblique PPCs thus have the required XP-V-NOM format (where the XP is either an *u*-PP or a dative noun phrase); moreover, they were (and still are) embeddable in that format as well (for examples from the older forms of West and East Slavic languages, the reader is referred to McAnallen 2011). Finally, McAnallen argues that the diachronic development of these constructions in West and East Slavic receives a

[6] In example (5) in the main text, the post-verbal possessum is in the genitive triggered by the clausal negation (*aka* the Genitive of Negation).

contact-based account: West Slavic lost the oblique PPCs (particularly, McAnallen discusses the loss of the dative PPC in the history of Czech) under the influence of German, whereas East Slavic moved toward the *u*-PPC under the influence of Finnic languages (the dative PPC was completely lost and the *have*-PPC has become limited in its application).

Given the distinct trajectories in the history of oblique PPCs in West and East Slavic, let's consider each language group separately, starting with West Slavic. Polish, which was the West Slavic language in contact with Yiddish in the Eastern zone, descended from Common Slavic, which had both types of oblique PPCs; modern Polish, however, is a *have*-language. The crucial question is when the oblique PPCs were lost in the history of Polish. Unfortunately, McAnallen's discussion focuses on Czech; she claims that Czech lost its dative PPC in the first half of the 15th century (dative PPC is still attested in texts from 1360s, but gone by 1450s). Assuming that the loss of oblique PPCs in Polish dates from roughly the same period or later—a safe assumption if it was induced by contact with German, as McAnallen claims—Ashkenazi Jewish communities have lived side by side with Polish speakers for over 200 years before the loss of oblique PPCs, reasonably long enough for the contact-induced change to take place in spoken Eastern Yiddish. (Further research is needed to verify with more precision when oblique PPCs disappeared in Polish in favor of the *have*-PPC.)

Let's now consider PPCs in East Slavic languages. Like Common Slavic, Old Russian—the ancestor of not only Russian, but Ukrainian and Belarusian as well—had all three types of PPCs: *have*-PPC, *u*-PPC, and dative PPC. The attestation of the three types of PPCs in various kinds of Old Russian texts, from McAnallen (2011: 52-64), is summarized in Table 2 below. As can be seen from the Table, the frequency of the oblique PPCs increased over time, as one moves further north, and in more colloquial texts. Importantly, oblique PPCs are also found, with varying frequency, in texts from different Old Russian regions, including those from the southwest (present-day Ukraine). (There are, unfortunately, no quantitative data specifically for texts from that region; hence, they are not included in the Table below.)

Table 2. Distribution of different types of PPCs in Old Russian

Texts	HAVE	*u*-PPC	dative-PPC
Primary Chronicle[7]	70%	12%	17%
Moscow Chronicle (late 1400s)	51%	17%	33%
Russian Pravda (legal code)	--	75%	25%
Sudebnik of 1497	--	100%	--
Birch bark documents from Old Novgorod (different dates)	8%	65%	27%

As for modern Ukrainian and Belarusian, both retained the *u*-PPC. In Belarusian, the *u*-PPC is the primary way to express the broadest range of "possession" relations (cf. Mazzitelli 2012: 132). Moreover, she also notes (p. 146) that although the exact distribution of the various PPCs in Old Belarusian is not entirely clear, both the *u*-PPC and the dative PPC were present in the language at that stage as well. As for modern Ukrainian, it has both the *have*-PPC and the *u*-PPC, with the former more commonly found in western dialects and the latter in eastern dialects. One possibility is that Ukrainian continuously had the *u*-PPC, from Old Russian to Old Ukrainian to modern Ukrainian, with the *have*-PPC being a later Polish-derived innovation. However, McAnallen (2011: 105) suggests an alternative possibility, which needs to be considered until solid data is available to refute it: namely, that Ukrainian lost the *u*-PPC under the influence of Polish at some point in its development and later reacquired it under the influence of Russian. However, even if the latter scenario took place, I believe that the (temporary) loss of the *u*-PPC under the influence of Polish would come too late to "bleed" the contact-induced resetting of the relevant parameters in Eastern Yiddish (recall from above that Ashkenazi Jewish communities lived in Lviv and elsewhere in Ukrainian-speaking lands as early as the mid-13th century).

While a more detailed analysis of the older forms of Polish, Ukrainian, and Belarusian would help firm up the dates at which oblique PPCs were lost in those languages, it is plausible that Ashkenazi Jews speaking Eastern Yiddish lived side by side with speakers of Slavic that expressed predicative possession via one of two oblique PPCs, which

[7] The Primary Chronicle was composed between 1110 CE and 1118 CE, but the oldest extant manuscript is the Laurentian Codex dating from 1377 CE. The *Russian Pravda* was composed in the early 1000s.

reveal to us linguists that the settings of the Tense domain and Weak NOM case parameters in those languages were appropriate to cause the relevant changes in Eastern Yiddish. But how can parameter settings be transferred from one language into another? The following section addresses that question.

4 How Can Parameter Settings Be "Borrowed"?

The existing literature on language contact stresses time and again that syntactic structures are the least easily borrowable elements of language (cf. Moravcsik 1978, Thomason and Kaufman 1988, Matras 2000, *inter alia*). So how can parameter settings be "borrowed"? Van Coetsem (1988, 2000), Thomason & Kaufman (1988), Louden (2000), and Lucas (2012) distinguish two types of inter-linguistic transfer: (i) borrowing proper, initiated by the speakers of the recipient language, and (ii) imposition, or interference through shift, which is initiated by speakers of the source language who shift to the recipient language as their L2. Louden (2000: 95) recaps: "In situations of borrowing… the structures which are most susceptible to transfer… are lexical, while structures from more stable domains of language, notably phonology and inflectional morphology, are less likely to be borrowed. On the other hand, in situations of… interference through shift…, when native speakers of a source language are acquiring a recipient language, it is predicted that the more stable domains… will be more readily affected". Louden discusses contact-induced phonological changes (in Eastern Yiddish as well, as it happens). In this paper, I propose that syntax is another domain of language that is subject to interference through shift rather than borrowing proper, contrary to Lucas' (2012) claims that some syntactic phenomena may be borrowed (e.g. *dos*-clefts in Yiddish from Slavic). The main reason why Lucas attributes the emergence of *dos*-clefts in Yiddish to borrowing rather than interference through shift is because he could not find a group who might have underwent a language shift, from Slavic to Yiddish. Instead of abandoning the position that syntax is not borrowable but can only be transferred via interference through shift (well-motivated in the literature, see references above), I propose to look harder for a group that might be "to blame" for such interference. Interference through shift in the case of Slavic-Yiddish contact, as schematized in Figure 1 below, involves some speakers of

Slavic as L1 switching to Yiddish (L2) and then their way of speaking (Eastern) Yiddish spreading across the broader linguistic community:

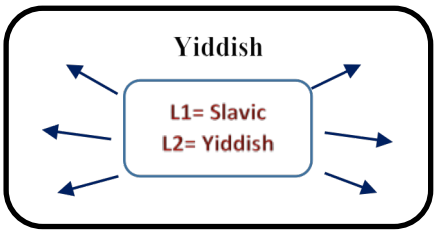

Fig. 1: Speakers' acceptance of case/number forms

Louden (2000) proposes that the group in question were the so-called Knaanic Jews, that is Slavic-speaking non-Ashkenazi Jews of Eastern European origin, possibly descendants of the Khazars who maintained their Judaism, but shifted from a Turkic to Slavic language. Similarly, Weinreich (1958: 410) suggested Knaanic influence on Eastern Yiddish: "…where Yiddish-speaking Jews found settled fellow Jews speaking Slavic languages, as they did in Bohemia and in Russia, they experienced a smoother contact with Slavic than was ever possible across the Jewish-Christian religious barrier". Knaanic Jews are broadly discussed in the historical literature (cf. Ausubel 1953: 133, Samuel 1971: 29, Koestler 1976, Birnbaum 1981: 222–225, Grayzel 1984: 388, Harshav 1990: 5–6, Brook 1999: 302, Spolsky 2014: 158, 171–177, *inter alia*). However, historical indications of a massive presence of Knaanic Jews in Kievan Rus' after 1240 CE, when Kiev was sacked by the Golden Horde and its Jewish Quarter was destroyed, are "frustratingly few…" (Weinreich 1958: 410). Hence, whatever Knaanic Jews might have resided in Kievan Rus' in the early period, they hardly had much opportunity for extensive and prolonged contact with Ashkenazi Jewish communities resettling from the West. Moreover, evidence of Knaanic presence as far north and west as present-day Poland is virtually nil. Genetic evidence also indicates that Knaanic admixture into Ashkenazi Jewish communities was fairly minor: at most 12% of male Ashkenazi Jews trace descent to such Knaanic Jews (Nebel et al. 2005, *inter alia*). Nor were Knaanic Jews a socially prestigious group within the larger (mostly Ashkenazi) Jewish communities. Historical literature is full of mentions of the socially inferior status of Knaanic Jews (wherever and whenever they

were found), their "primitive Judaism"; for example, Samuel (1971: 29) writes about "the cultural backwardness of early Russian Jewry. It had no schools of its own and set its young men to the west, to France and Germany, to obtain a Jewish education…" All in all, it is not likely that Knaanic Jews were the agents of interference through shift.

An alternative possibility, not considered much in the existing literature, is that the interference through shift was a result of frequent intermarriage of Ashkenazi Jews with non-Jewish Slavs. Recent work by Forster and Renfrew (2011) established a pattern whereby language in gender-biased mixed communities correlates better with Y-DNA (passed down along paternal line) than mtDNA (passed down along maternal line). Typically, such communities come about when men invading/ settling from elsewhere marry local women; the resulting communities end up speaking the language of the men. For example, Slavic-speaking men settled in northern Russia and intermarried with the local Finnic-speaking women; as a result, many of the Finnic languages in the region have become extinct (e.g. Merya, Meshchera, and Murom). However, unnoticed by Forster and Renfrew is another generalization: the language that correlates with mtDNA does not disappear without a trace; instead, its grammatical influences are observable in the language of the resulting mixed community. For example, Finnic influences on Russian are discussed in Grenoble (2010), McAnallen (2011), *inter alia*. Both the survival of the "Y-DNA language" and the grammatical influences of the "mtDNA language" are illustrated also by gender-biased mixed communities in coastal Papua New Guinea, where Austronesian men intermarried with Papuan women and the resulting communities speak Austronesian languages that exhibit elements of Papuan substrate (e.g. the Magori language).

Here, I propose that the emergence of embedded V2 in Eastern Yiddish was due to interference through shift by Slavic-speaking women who married into Ashkenazi Jewish communities, adopting both Judaism and Yiddish. Some historians entertain the possibility of relatively common intermarriage with gentile women to explain the so-called "Ashkenazi demographic puzzle" (cf. King 2012): there were too few Ashkenazi Jews in the Germanic-speaking lands (80,000 in 1500 CE) to produce the numbers reported later in the east (500,000 in Poland in mid-1600s; cited from Dubnow 1967). This problem, however, remains hotly debated among historians, particularly because of some scholars'

ideological preconceptions. Perhaps in this instance linguistics can shed a new light on a controversial historical issue.

Additional support for this "interference through shift by mothers" hypothesis comes from L1 acquisition data. Macro-parameters such as the ones involved in the embedded V2 phenomenon are acquired relatively early: for example, the Weak NOM Case parameter is acquired around 24 months (Deprez & Pierce 1993, Baker 2001). The age of acquisition of the Tense Domain parameter is more controversial: some evidence suggests that children acquiring German and Swiss German use the correct patterns for embedded clauses as soon as such clauses emerge in production (3–4 years old), but other studies show that children acquiring Swiss German struggle with this aspect of the grammar till the age of 5 or even 6;3 (see Clahsen & Smolka 1986, Schönenberger 2001: 49–156, and references cited therein). If Lightfoot (1989: 321) is correct that "everything can be learned from simple, unembedded 'domains'" and "children do not need access to more complex structures", it is possible that the Tense Domain parameter is set even earlier than the appearance of the first embedded clauses in production.

Note also that women who transferred their native Slavic patterns (here, parameter settings) into Eastern Yiddish had ample opportunity to affect the L1 acquisition by the next generation of Yiddish speakers because small children in the process of setting the relevant parameters spent more time with mothers (and more generally, womenfolk) than the male members of the community, as evidenced by Talmudic commentaries and rabbinical *responsa* literature which *assumes* that "the demands of children and home chores dictate a woman's 'time-table'" (Biale 1984: 12-13) and hence exempts women from time-bound positive *mitzvot* (i.e. commandments that require one to do something at a particular time, which are "incumbent upon men only"). Thus, children acquiring Eastern Yiddish had more exposure to women's form of Yiddish, sprinkled with grammatical elements from Slavic.[8]

[8] A potential objection can be raised that not much trace has been found of such a massive intermarriage-cum-conversion of non-Jewish women into the Eastern European Ashkenazi Jewish community in the gene pool (see Thomas *et al.* 2002, Behar *et al.* 2006, Costa *et al.* 2013). However, mtDNA may have a wrong "temporal resolution" to adequately represent a relatively recent admixture such as this. I thank Ora Matushansky and Matthew Jobin for discussing this issue.

5 Conclusions

In this paper, I have developed an analysis of the diachronic emergence of embedded V2 in the syntax of Eastern Yiddish as a result of interference through shift by Slavic-speaking women who married into the Yiddish-speaking Ashkenazi Jewish communities.[9] I have argued that the development of true embedded V2 structures (with non-subject in the preverbal position) in the history of Yiddish can be reduced to resetting of two parameters: the Tense domain and the Weak NOM case parameters. Plausibly, relevant Slavic languages (primarily Polish, Ukrainian, and Belarusian) had two oblique PPCs that manifest the settings of these two parameters in clear, unambiguous form. L1 speakers of Slavic (by hypothesis, primarily women) transferred the settings of these parameters into Eastern Yiddish, and the next generations of children acquiring Eastern Yiddish as their L1 were predominantly exposed to this "Slavic-flavored" variety of Yiddish. To summarize, the embedded V2 syntax of modern Eastern Yiddish can be described as "Germanic syntax tweaked under the influence of Slavic". However, the diachronic development of Yiddish word order cannot be accounted as endogenous change or, as Wexler (1993) claimed it to be, "a form of the West Slavic language Sorbian which became re-lexified to High German" (cf. Wexler 2002, Beider 2014).

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[9] It is possible that the emergence of embedded V2 in Icelandic, another symmetrical V2 language, is also a contact-induced development, an instance of "interference through shift by mothers" speaking Irish as their L1 rather than Old Norse/Old Icelandic. Genetic studies (see Goodacre et al. 2005) show that while most of modern Icelanders' Y-DNA traces back to Norsemen, mtDNA hails chiefly from Ireland. I leave this issue for further research.

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Experimental Evidence for Lexical Conservatism in Russian: Defective Verbs Revisited[*]

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Some Russian verbs famously have a paradigm gap in the first person singular non-past form (henceforth 1p.sg. for brevity). A well-known example of such a *defective* verb is the verb *pobedit'* 'win,' for which speakers entertain several possibilities (pobežu? pobed'u? pobežd'u?), but ultimately are not satisfied with any of them. In general, defective words are characterized by lower than expected frequency of the "gapped" wordforms and low confidence in the production of such forms (Sims, 2006). Several researchers propose that paradigm gaps in Russian verbs have a diachronic explanation, but are synchronically arbitrary and must be learned on a verb-by-verb basis (Graudina et. al. 1976, Daland et. al. 2007, Baerman 2008). In contrast, Albright (2009) and Pertsova (in press) connect defective verbs in Russian to aspects of synchronic grammar, the morpho-phonological alternations of stem-final consonants that are expected to occur in the 1p.sg. (see section 1 for details). Such an a-priori plausible connection has been previously rejected on the grounds

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that the alternations in question are exceptionless (for all but one consonant), and that many high- and low-frequency verbs undergo these alternations without any problems. In other words, these alternations should be productive. However, Pertsova (in press) identifies a crucial generalization that addresses the objection above: using evidence from lexical statistics and from web searches she argues that all stems with the problematic alternations (including novel borrowings) are susceptible to gaps *except when the expected alternation appears in at least one other derivationally related form*. In this paper, we confirm the claim above in two production experiments which elicited 1p.sg. forms of both defective and non-defective Russian verbs. We also test whether the relationship between defectiveness and the frequency of expected alternations in related derivatives is gradient, and find that it is categorical instead. That is, there is no significant difference between verbs that have just a few vs. many attested relatives with alternations or verbs for which such relatives are frequent vs. infrequent. Existence of a single relative with an alternation is usually sufficient to protect a verb from being defective.

1 Alternations in 1p.sg. Non-Past Forms

Two types of verbs of second conjugation in Russian (i.e., verbs with the theme-vowel *-i*) have alternations in 1p.sg. non-past form. These alternations used to be conditioned by the glide [j] at the beginning of the 1p.sg. suffix. However, this glide is no longer realized on the surface rendering the 1p.sg. alternations opaque. The first group of verbs with alternations are verbs with a dental stem-final obstruent /d/, /t/, /s/, /z/ (*dental verbs*). The obstruent mutates to a post-alveolar or palatal fricative of the same voicing, whose identity is not entirely predictable. These alternations are summarized in Table 1.

Another group of verbs with alternations in 1p.sg. are verbs whose stem ends in a labial consonant /m/, /f/, /v/, /b/, /p/ (*labial stems*). These verbs undergo insertion of [l^{j}] between the stem and the suffix *-u* (e.g., *lov-it'* –

lov-[l^{j}-u] "to catch"). Interestingly, all defective verbs are dental and not labial.[1] Possible reasons for this asymmetry are mentioned in section 5.

Table 1: Examples of verbs with dental alternations

Alternation	infinitive	1p.sg.	gloss
d → ž	r'ad-it'	r'a**ž**-u	'dress up'
z → ž	vonz-it'	von**ž**-u	'stab'
s → š	kos-it'	ko**š**-u	'scythe'
st → čš	vyrast-it'	vyra**čš**-u	'cultivate'
t → čš	sokrat-it'	sokra**čš**-u	'reduce'
t → č	port-it'	por**č**-u	'spoil'

Below are some examples of both defective and non-defective dental verbs of similarly low lemma frequency (defective status of these verbs is unlikely to be memorized, since they are rarely encountered). Throughout this paper lemma frequency is based on the frequency dictionary of Lyashevskaya and Sharov (2009), and is measured in instances per million (ipm). The defective status of a verb was determined using the list of defective verbs compiled by Sims (2006)[2]. It is worth noting, however, that defectiveness is a gradient notion, and that there is no universal agreement among the speakers about which verbs are defective.

Note that the alternations in Table 1 are consistent or regular except for stems ending in *-t*, which have two possible alternants highlighted in grey. All dental alternations are relatively well-attested in the Russian lexicon (Pertsova, in press) and so should be productive. However, as the data in Table 2 illustrate, speakers hesitate to apply these alternations to some (typically infrequent) dental stems. The natural question to ask is: what separates defective dental verbs from the non-defective ones? We consider one possible answer to this question in the next section.

[1] The only exception is the labial verb *zatmit'* "to eclipse" which is also defective. Defectiveness of this verb is hypothesized to be connected to the illicitness of the cluster [tml'] (see Moskvin, 2015), which does not occur in any other stem.

[2] This list was compiled using a "systematic search of the online version of Ozhegov (1972) [dictionary] and a less thorough search of 8 other major Russian grammars and dictionaries" (Sims 2006).

Table 2: Examples of defective and regular (non-defective) verbs

	infinitive	1p.sg.	lemma freq.	gloss
regular	kvas-it'	kva**š**-u	0.8 ipm	'ferment'
	gorod-it'	goro**ž**-u	2.2 ipm	'enclose'
	skopyt-it'-sja	skopy**č**-u-s'	0 ipm	'keel over'
	opaskud-it'	opasku**ž**-u	0 ipm	'debase"
defective	koles-it'	kole**s'/š**-u ??	1.8 ipm	'wheel'
	grez-it'	gre**z'/ž**-u ??	2.6 ipm	'daydream'
	želt-it'	žel**t'/č**-u ??	0 ipm	'to yellow'
	erund-it'	erun**d'/ž**-u ??	0 ipm	'speak nonsense'

2 The Hypothesis

While 1p.sg. forms of frequent lexemes (or systematic absence of such forms) can be lexicalized, the same is not true of low-frequency verbs, so their defectiveness must be predictable. Such verbs can be divided into two groups: those that have the 1p.sg. alternation in other related derivatives and those that do not. Following Pertsova (in press), we hypothesize that

(1) it is the second group of verbs (those whose stems never show the same alternation as the 1p.sg. form) that are defective.

For many verbs (e.g., *vstret-it'* 'meet$_{PRV}$') the 1p.sg. alternations also occur throughout the past passive participle[3] paradigm (*vstre**č**-enn-yj* 'one who was met'), the secondary imperfective paradigm (*vstre**č**-at'* 'meet$_{IMPF}$'), and occasionally in related nominal or adjectival forms (*vstre**č**-a* 'meeting'). However, some verbs do not have such related forms for semantic or accidental reasons (e.g., intransitive imperfective verbs like *erund-it'* 'to speak nonsense' do not have past passive participles or secondary imperfective forms). Pertsova (ibid.) confirmed

[3] For some verbs whose stem ends in *–d'*, past passive participles (PPP) have a different alternation (d ~ žd) than the one that occurs in the 1p.sg. (e.g., ro**d**it' INF – ro**ž**u 1SG – ro**žd**ennyj PPP 'give birth'). These verbs are typically relatively frequent verbs of Old Church Slavonic origin, some of which are defective.

that practically all verbs marked as defective in dictionaries lack alternations in other related forms. However, some low frequency verbs not marked as defective also have this property. Such verbs, it turns out, behave similarly to defective verbs. In particular, the data from the web shows that speakers tend to disagree with each other about the 1p.sg. form of such verbs and often fail to apply the prescriptively mandatory alternation, while they almost never do that with verbs that have the expected alternations in related derivatives. The same pattern of high variability in 1p.sg. forms (or low interspeaker agreement) holds in novel borrowings with dental but not labial stems (Slioussar and Kholodilova 2013, Pertsova ibid.).

Since the data from the web is noisy and since it cannot be easily used to estimate speakers' lack of confidence in their productions (a prominent hallmark of defectiveness), the experiments presented here will further test the hypothesis in (1).

3 Experiment 1

Previous experimental work on defectiveness (Albright 2003, Sims 2006) showed that when people are asked to produce problematic forms of defective lexemes, the responses they give are highly variable and receive lower confidence ratings or take longer to complete compared to non-defective lexemes. Sims (2006) also showed that low confidence is not simply a result of variation—in other areas of grammar variation is not accompanied by low confidence. In the experiments described here, we take variation in production of 1p.sg. forms coupled with lower confidence ratings as a sign of defectiveness. The first experiment tests the hypothesis in (1) by comparing three groups of verbs described below.

3.1 Stimuli

The stimuli consisted of 36 dental verbs and 36 labial verbs. Dental verbs had average lemma frequency of 0.6 ipm (sd=0.73) and were divided into three groups. The first group (group 1) contained recognized defective verbs (see footnote 3), e.g., *želtit'* 'yellow.' The second group (group 2) contained verbs that are not recognized as defective, but whose root never appears with the expected alternation, e.g., *tuzit'* 'pummel.'

The hypothesis in (1) predicts a gap in the first singular form for such verbs. Finally, the third group (group 3) consisted of verbs which have the expected alternation elsewhere in their family, e.g., *orosit'* `dew' (cf. *orošennyj* "dewed"). Each group had four verbs for each dental obstruent, and the groups were roughly matched in terms of the length of the verbs and their stress patterns. The labial verbs were divided into low-frequency (mean=0.55 ipm, sd=0.5) and high frequency verbs (mean=7.4 ipm, sd=2.3), with the caveat that all f-final verbs were of low frequency due to the sparsity of such verbs in the Russian lexicon. The list of stimuli together with the experimental results are available online in TROLLING (Tromsø Repository for Language and Linguistics: http://opendata.uit.no/).

3.2 Experimental Procedure and Participants

223 native speakers of Russian (who were not linguists) took part in the experiment, but not all of them completed all trials (the data from all participants was included in the analysis). Participants completed an online cloze reading task that required them to provide 1p.sg., 2p.sg., and 3p.sg. non-past forms of Russian second conjugation verbs. Participants first saw each verb in the infinitive form in a carrier sentence and pushed a button to go on to the next screen. They were then asked to fill in the blank in a second sentence with an appropriate singular form of this verb (which also appeared below the blank in the infinitive). An example trial appears below:

(2) Sentence 1: Perestan'te tam taraxtet' na kuxne!
'Stop making hubbab in the kitchen.'
Sentence 2: Ja posudu moju, a ne ____ (taraxtet')!
'I'm washing dishes, and not ____(to make hubbab).'

Participants were asked to rate how confident they were in their response on a 5-point Likert scale, with 5 being "completely confident" and 1 being "not confident at all". The stimuli were counterbalanced so that each participant only had to provide one response (either 1p.sg., 2p.sg., or 3p.sg.) for each verb.

3.3 Results

We excluded all responses that used the wrong form (e.g., a past instead of the non-past tense, a plural instead of a singular form). The rest of the responses were categorized into three groups: the expected alternation, non-alternation, and "other" which included circumlocutions, blanks, or unexpected alternations[4]. First, our results confirm that 1p.sg. forms are problematic for the speakers in a way that 2p.sg. and 3p.sg. forms are not (15% of all 1p.sg. responses were comprised of unexpected non-alternations or "other" responses compared to 1% of such responses for 2p.sg. and 2% for 3p.sg.).

3.3.1 Dental Verbs. Table 4 summarizes the percentages of different types of 1p.sg. responses across the three verb groups of interest. For a statistical analysis we treated all responses as binomially distributed into "expected alternation" vs. "all other" and used a logistic regression mixed-effects model (fit by maximum likelihood with Laplace approximation) with subject and item as random effects.

Table 4: Percent of 1p.sg. responses collapsed over subjects

Response type	Group 1 (known defective)	Group 2 (suspected defective)	Group 3 (suspected non-defective)
alternation	59%	74%	94%
non-altern.	31%	19%	2%
other	10%	7%	4%

We tested how proportion of alternations in the experiment depended on group, stem-final consonant, lemma-frequency, stress, and number of syllables. The best model (based on Akaike information criterion or AIC) was the model with a single predictive variable – group. All three groups of dental verbs were significantly different from each other. Subjects were less likely to produce alternations in verbs of group 1 (known defective) compared to group 2 (suspected defective): coeff.=1.12, 95% CI: 0.036, 2.21, p=0.03. They were also more likely to produce alternations in verbs of group 3 (non-defective) compared to group 2:

[4] Interestingly, half of the unexpected alternations were due to the labial alternation being applied to a dental stem (e.g., *kad**l**-ju* for *kad-it'* 'to burn incense').

coeff.= –2.4, 95% CI: –3.57, –1.2, $p<0.05$. Fig. 1 shows the box-plot for the distribution of expected alternations in the responses for the three groups.

Confidence scores were analyzed using Cumulative Link Mixed Model fitted with the Laplace approximation (Agresti 2002). The model with the best fit (presented in Table 5) included group, stem type, lemma frequency, and number of syllables as fixed effects. Verbs of group 2 were not significantly different from verbs of group 1, but verbs of group 3 received significantly higher confidence ratings compared to verbs of group 2. Fig. 2 shows the box-plot for the distribution of confidence ratings in the three groups. Although all confidence ratings were skewed towards the top of the scale, no verb in group 3 received a rating lower than 3, while verbs in groups 2 and 1 received ratings as low as 1. Confidence scores were also significantly higher for verbs with higher lemma frequency, verbs whose stems ended in *-t*, and verbs with greater number of syllables.

Table 5: Fixed effects of the Cumulative Link Mixed Effects Model on confidence ratings of dental stems in Experiment 1

Predictor	coeff. (logit)	95% CI (LL,UL)	p
group 2	0.53	-0.1, 1.16	0.1
group 3	2.56	1.90, 3.21	1.75e-14 ***
lemma freq	1.17	0.50, 1.84	0.0005 ***
syllable #	0.61	0.22, 1.02	0.002 **
stem type: -t	0.75	0, 1.51	0.05 *
stem type: -s	0.22	-0.53, 0.97	0.56
stem type: -z	-0.17	-0.90, 0.66	0.77

Finally, we found a significant correlation ($r=0.64$) between the mean proportion of produced alternations and confidence ratings in dental verbs. This fact confirms that the variation (or low interspeaker agreement) in dental verbs is due to defectiveness, since, as mentioned earlier, co-existence of multiple grammatical variants does not typically lead to decrease in confidence.

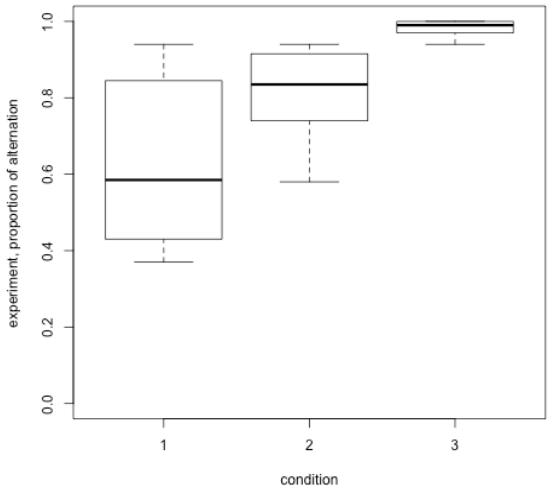

Fig. 1: Dental verbs: proportion of expected alternations in groups 1, 2, 3

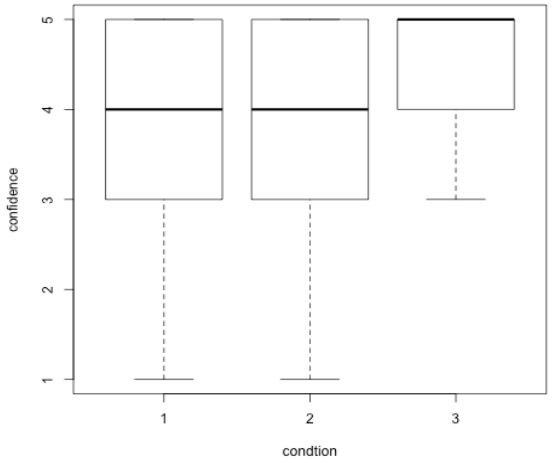

Fig. 2: Dental verbs: confidence rating in groups 1, 2, 3

3.3.2 Labial Verbs. Labial verbs were analyzed in the same way as dental verbs. Low-frequency labial verbs were slightly less likely to have the expected alternation (coeff. = –1.94, 95% CI: –3.03, –0.85, $p<0.05$) compared to high-frequency labial verbs. Additionally, labial verbs with stem-final *-f* differed from the reference category, b-final verbs, (coeff. = 1.67, 95% CI: 0.5, 2.84, $p=0.05$) with no other types of stems showing differences. Table 6 summarizes mean proportions of alternations in labial verbs broken down by stem-final consonant and frequency.

Table 6: Mean proportion of alternations in responses for labial verbs

Stem final consonant	**High-frequency**	**Low-frequency**
f	-	0.89
b	1.00	0.99
p	1.00	0.94
v	1.00	0.99
m	0.99	0.98

Confidence ratings for labial verbs also depended on both group and stem-final consonant. Verbs with higher lemma frequency had somewhat higher confidence ratings (coeff.=1.44, 95% CI: 0.76, 2.12, $p<0.05$). Stems ending with *-f* had lower confidence ratings compared to those ending in *-b* (coeff.= –1.72, 95% CI: –2.89, -0.55, $p<0.05$), while verbs with other stems did not show any differences.

3.4 Discussion

Overall, the results of this experiment confirm the hypothesis in (1) and the asymmetry between dental and labial stems. That is, participants almost always produced expected alternations for all labial verbs even those of low frequency (except for a few *-f* final stems) but not for all dental verbs. Participants were less likely to alternate when a dental verb had no alternations in related derivatives (groups 1 and 2) compared to verbs that did (group 3). There was also a significant difference between group 1 and group 2 in the proportion of produced alternations for which we do not have a good explanation. It is possible (although unlikely) that some of the verbs in group 1 were known to speakers as defective. There was no difference between groups 1 and 2 in terms of confidence scores, indicating that speakers were equally (un)confident about 1p.sg. forms of

recognized defective verbs and suspected defectives of group 2 (while they were significantly more confident about group 3 verbs).

Another interesting finding of Experiment 1 was that f-final verbs elicited lower confidence and lower alternation rates compared to other low-frequency labial verbs. This finding is consistent with what Pertsova (in press) reports for novel borrowings whose stems end in *-f*. The behavior of these verbs can be explained by the fact that there are very few f-final verbs in Russian and almost all of them are infrequent. Artificial language learning experiments, such as Linzen and Gallagher (2013), also show that subjects are less likely to apply a general pattern to a specific instance that conforms to the pattern but that was not attested during the training. Such findings raise questions about the generality vs. specificity bias during learning, which requires further exploration.

The results of Experiment 1 can be interpreted as supporting the Lexical Conservatism hypothesis (Steriade 1997, 1999, 2008, Burzio 1998, and others), according to which a wordform can be influenced by the phonological properties of its derivational relatives (even those from which is was not derived). An extreme form of Lexical Conservatism would lead to complete avoidance of wordforms which contain novel allomorphs of the stem (i.e., variants of the stem that do not occur in any derivational relatives frequent enough to be stored). Such avoidance would then produce defectiveness if all other options of realizing the wordform were illicit. However, other explanations are possible as well and the exact nature of such trans-derivational effects and their connection to defectiveness are not well understood. The goal of our next experiment is to clarify whether the influence of related forms on a word is gradient or categorical. It is plausible that the more experience people have with the alternating allomorph of a root, the more likely they are to use it in the 1p.sg. form. Such behavior, for example, would be predicted by exemplar models of morphological learning.

4 Experiment 2

This experiment was similar to experiment 1, except it included only dental verbs and tested whether confidence and proportion of alternations

produced in 1p.sg. increased proportionally to the increase in frequency of alternations in the derivational nest of a verb and a couple of related variables described below.

4.1 Stimuli

The stimuli consisted of 45 dental verbs that differed from each other in proportion of alternating forms in their verbal derivational nest and two other related variables, frequency of the nest and nest size.

The derivational nest for a stem was defined as a set of forms which included all inflectional forms of the simplex verb with that stem (e.g. forms of *gorodit'* 'enclose'), all forms of verbs that are derived from a simplex verb via productive prefixes (e.g., forms of *otgorodit'* 'fence off', *peregorodit'* 'partition'), secondary imperfectives derived from the prefixed forms (e.g. forms of *otgoraživat'* 'fence off $_{IPFV.}$'), and reflexive forms derived from the verbs mentioned above (e.g. forms of *otgorodit'sja* 'fence off $_{RFV}$' *otgoraživat'sja* 'partition off $_{IPFV}$')[5].

To create a database of derivational nests, we culled all verbs with dental stems from Zalizniak's (1980) dictionary and generated nests for each stem as follows. For each simplex verb, we first automatically generated all possible prefixed forms, secondary imperfectives and reflexive *sja*-forms using a list of verbal prefixes in Russian, a list of imperfective suffixes, and a list of alterations that can occur in these forms. The result of this automatic generation was checked against the modern subcorpus of the Russian National Corpus. All derived forms that were attested in the corpus were then checked manually in order to make sure that they belong to the intended nest.

For each nest, we calculated the following parameters: nest size, frequency of the nest, and proportion of alternating forms. For example, the nest *gorodit'* contains thirty-two different verbs, whose combined forms add up to 4549 tokens in the modern subpart of the RNC. Thus, the nest *gorodit'* has nest size 32 and token frequency of the nest 4549.

[5] We did not include nominal or adjectival derivatives to simplify our searches, but a reviewer also points out that Moscoso del Prado Martín et al. (2004) show that for morphologically rich languages, only closely related derivatives might play a role.

2365 of these tokens do not contain alternations expected in 1p.sg., while the remaining 2184 of the tokens do contain this alternation (e.g., all occurrences of the 1p.sg. forms such as *gorožu*, all occurrences of participles such as *peregorožennnyj, otgoraživajuščijsja* and all forms of secondary imperfectives such as *otgoraživat', peregoraživat'*). Thus, about half (2184/4549=0.48) of the *gorodit'* nest consists of wordforms with the alternating allomorph of the stem.[6] We sampled 45 verbs from our nest database to get a set of verbs with diverse values for the proportion of alternating tokens in the nest, which ranged from 0 to 1 with 75% of the verbs falling in the range between 0 and 0.65.

4.2 Experimental Procedure and Participants

124 native speakers of Russian, who were not linguists, took part in the experiment. The task and the procedure were identical to Experiment 1, except that we changed the 5-point Likert scale to a 7-point scale in hope of getting more fine-grained distinctions at the top of the scale.

4.3 Results

In analyzing results of Experiment 2, we standardized several variables in order to put them on a comparable scale. For example, nest size ranges from 1 to 32, while frequency ranges from 1 to 9458 ipm. We used R library *arm* (Gelman and Su 2015) for rescaling each variable by centering each value and dividing it by two standard deviations (sd). As a result 95% of all data for each rescaled variable is located between –1 and 1, where the center of the distribution is located at 0. The following variables were rescaled: proportion of 1p.sg. alternations in the nest, nest size and nest frequency.

4.3.1 Proportion of Alternations in Responses. We analyzed the results using the same methods as in Experiment 1 fitting logistic regression mixed-effects models to predict presence of alternations with subject and item as random effects and token frequency of alternating forms, token frequency of the nest, nest size, and stem type as fixed effects. The

[6] A few verbs have slightly different alternations in past participles than those that occur in 1p.sg. (the Old-Church Slavonic alternations). We did not include these alternations into the analysis discussed here, because only a handful of verbs in our sample had them, and our preliminary analysis revealed that including such alternations did not change the results in any way.

model with the best AIC score showed three factors to be statistically significant in predicting alternations in 1p.sg. responses: the proportion of alternations in the nest (with higher proportion of alternations leading to more alternations in the 1p.sg. responses), nest size (with larger nests leading to more alternations in the 1p.sg. responses) and stem-type (with t-final stems having more alternations). Of these factors, the proportion of alternations in the nest was the strongest (coeff.= –2.4, 95% CI: –3.5, –1.3, $p<0.05$). A closer examination of this effect shows that it is categorical rather than gradient. Consider Fig. 4 showing the relationship between proportion of alternating forms in a nest of a particular verb and proportion of alternations in the 1p.sg. forms of this verb produced in the experiment. For example, for the verb *sbrendit'* 'go berserk (colloquial)' 9 out of 41 responses contained the expected alternation (i.e., *sbrenžu*). This verb has no forms in the nest with the d ~ ž alternations, so its proportion of alternation in the corpus is 0, while proportion of alternation in the responses is 0.22 (9/41). This verb is represented by a point in the left bottom corner of Fig. 4.

From Fig. 4 one can see that the proportion of alternating 1p.sg. responses for most verbs in the experiment was on average between 0.8 and 1. The only verbs that had low proportion of alternations in the experiment (< 0.8) were verbs whose proportion of alternating forms in the nest was 0, plus one verb whose proportion of alternations in the nest was 0.1 (*pakostit'* 'play tricks'). Thus, the relationship between frequency of alternations in the nest and the proportion of alternations in the responses appears to be categorical: there is a threshold on the proportion of attested alternating tokens in the nest (near 0) that determines the boundary between verbs for which speakers almost always produce expected alternations and verbs for which they begin producing non-alternating forms or resort to circomlocutions.

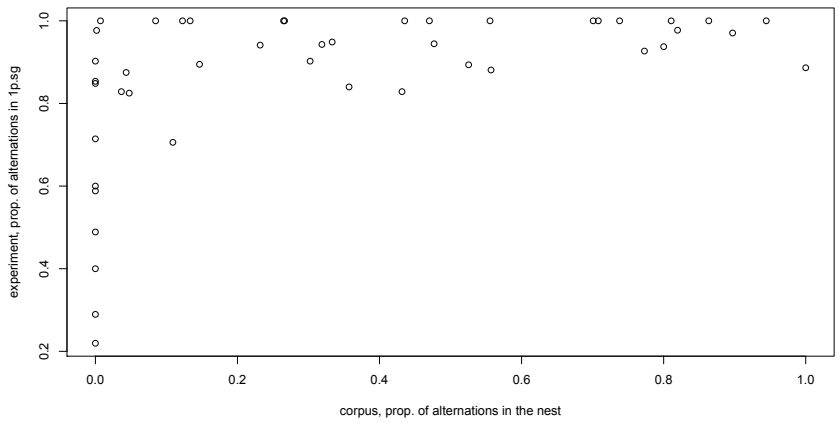

Fig. 4: Proportion of alternation in the responses as a function of proportion of alternations in a derivational nest.

However, five verbs whose proportion of alternating forms in the nest is near 0 still had a high proportion of alternations in the experiment (top left corner in Fig.4). Two of these verbs are *oxladit'* 'cool down' and *predupredit' 'warn,'* whose proportion of alternations in the corpus is low but is actually not 0. The former's verb proportion of alternations in the corpus is 0.001 and the latter verb's – 0.007. The latter verb is particularly frequent and occurs in the RNC with the expected alternation in 1p.sg. 109 times. Thus, it is likely that speakers have memorized the 1p.sg. of these verbs. One other verb, *izborozdit'* 'plow over' that had no relatives with the expected alternation, appeared with this alternation in the experiment on average 85% of the time.

The last two verbs with unexpectedly high proportion of alternating responses were the only two verbs with *-t* final stems among the verbs with no alternations in the corpus (*volokitit'* 'drag out' and *otkološmatit' '*give a beating*'*). Recall that t-final verbs were in general found to have higher proportion of alternations, and in Experiment 1 they elicited higher confidence ratings. Proportion of defective t-final verbs is also one of the lowest compared to other dental verbs (Pertsova, in press).

The fact that t-final stems are more likely to alternate is a mystery, especially given that these stems are the only irregular stems admitting two possible alternants.

4.3.2. Confidence. As in experiment 1, we analyzed confidence ratings provided by the participants using Cumulative Link Mixed Model. Our model indicated that increase in proportion of alternations in the corpus (coeff.=1.38, 95% CI: 2.8, 0.68, $p<0.05$), token frequency of the nest (coeff.=0.91, 95% CI: 1.6, 0.22, $p<0.05$), and nest size (coeff. = 0.81, 95% CI: 1.5, 0.09, $p=0.02$) all significantly increased confidence ratings, while stem type did not have a significant effect (although there was a non-significant trend for t-final stems, $p=0.08$). Fig. 5 demonstrates that the mean confidence rating for each verb is related to its proportion of expected alternations in the corpus in a categorical rather than gradual way much like the relationship in Fig. 4. For most verbs, mean confidence rating was high, ranging between six and seven. The verbs for which mean confidence fell below six were almost exclusively those verbs that had 0 attested alternations in the derivational nest in the corpus. The only exception to this pattern were three verbs with 0 or near 0 alterations in the corpus but relatively high confidence ratings. These verbs are also among those discussed in 4.2.1 as verbs with unexpectedly high proportion of alternating responses (namely, *oxladit', predupredit',* and *otkološmatit'*). The apparent outlier in the bottom right portion of the graph is the verb *obeskislorod-it'* 'deoxygenize' (prop. of alternations in the corpus 1, mean confidence 5.6). The reason why this verb has such a high proportion of alternations in the corpus is because it is highly infrequent and has a single occurrence in the corpus in a participial form *obeskislorož-ennyj* (hence, proportion of alternations is 1). Recall that the token frequency of the nest is taken into account in our statistical model.

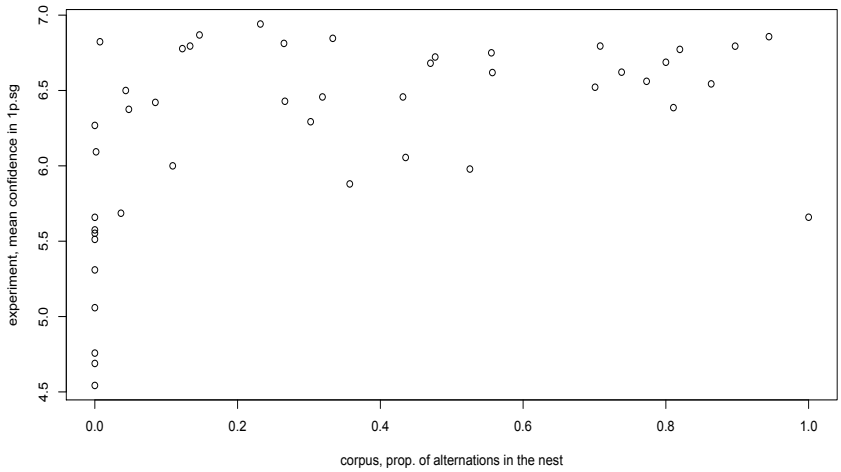

Fig. 5: Mean confidence in responses as a function of proportion of alternations in a derivational nest

4.4 Discussion

In the second experiment like in the first experiment, we found that participants disagree with each other about the 1p.sg. forms of certain dental verbs and report lower confidence in their responses for these verbs. These verbs are exactly those that have no dental alternations in their derivational relatives. We did not find this effect to be gradient. That is, there was no sign of a gradual decrease/increase in confidence and alternation rates with the decrease/increase in the frequency of alternations in the derivational nest. For example, the verb *molotit'* 'hammer' whose proportion of alternating forms in the nest is 0.08 behaved similarly to the verb *namagnitit'* 'magnetize' whose proportion of alternating forms in the nest is 0.74 (both verbs were used with alternations in the experiment 96% of the time, and their mean confidence scores were 6.4 and 6.6 correspondingly).

We also discovered that other factors affect confidence and proportion of alternations: namely, factors related to frequency and possibly type of stem, with t-final stems being somewhat less "gappy". This latter finding is rather surprising since *-t* verbs are the only dental verbs that are

irregular in having two different alternating patterns (the participants in our experiments used the majority t ~ č alternation, not the Old-Church Slavonic t ~ šč alternation).

5 Conclusions

The evidence presented in this paper confirms the hypothesis that what separates dental defective verbs in Russian from the non-defective ones is existence of other derivationally related forms with the expected alternations. This finding is consistent with the phenomenon of Lexical Conservatism (discussed in section 3.4), according to which derivational relatives can affect the phonology of a specific derivation.

Our second experiment tested whether this transderivational effect was gradient, which could potentially indicate mutual and additive reinforcement that morphological relatives exert on each other during lexical access. However, we found that the transderivational effect was categorical instead. The only verbs that significantly differed from the rest were the verbs that had 0 relatives with expected alternants in the stem-final position. This fining lends support to defining Lexical Conservatism constraints the way Steriade does, namely as negative constraints punishing forms which do not have *any* related forms with the expected alternation.

We also note that a simple theory on which speakers avoid creating novel allomorphs at all costs, producing forms without alternations or producing nothing at all (a gap) is probably too strong. In general, we do not want to say that alternations could never be projected to novel forms. It is known that certain alternations (e.g., flapping in English or vowel reduction in Russian) can be extended to novel or rare roots. The fragility of dental alternations and their sensitivity to lexical factors (the Lexical Conservatism effect) is probably due to the fact that these alternations are phonologically opaque, stem-altering, and relatively fragmented (there is no single phonological rule to perfectly capture all dental alternations). In contrast, the labial alternation which involves epenthesis at a morpheme boundary does not alter any segments of the stem and there is a single phonological rule that covers all labial consonants. These

factors are likely explanations for why labial alternations are more productive and do not lead to defectiveness.

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Rich Agreement and Dropping Patterns: *pro*-Drop, Agreement Drop, No Drop[*]

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This paper looks into patterns of possible variation in the expression of the φ features of the subject in rich-agreement languages. Based on evidence from three rich-agreement systems spoken in Poland, standard Polish, Kashubian, and Silesian, I show that in addition to the cross-linguistically widely attested subject drop, a rich-agreement language can manifest verbal-agreement drop in the presence of an overt subject. Thus, rich agreement does not in itself enforce *pro*-drop. I then offer an analysis of agreement drop, a pattern which has not received much attention so far. The paper also clarifies the status of the Avoid Pronoun Principle, that is, the principle enforcing the use of PRO or a null pronoun rather than an overt pronoun wherever possible (Chomsky 1981). I will show that conditions on subject drop may not be syntactic in nature and that the Avoid Pronoun Principle is rather a conversational/ discourse-reference-tracking requirement.

1 Expression of Subject φ in Generative Theorising

With a growing number of studies of rich-agreement languages, evidence for a correlation between the distribution of overt agreement and conditions on the use and interpretation of overt and covert pronouns has accumulated, offering an interesting data set for linguistic analysis.

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Discussing *pro*-drop languages, Chomsky (1982) suggests that pronominals are associated with phonological features only when this is required by some element of the grammar, possibly by lack of government by rich AGR, a version of his Avoid Pronoun Principle, first introduced in Chomsky 1981:65. Even though Chomsky (1981) treats the Avoid Pronoun Principle as a conversational rule and as a tendency rather than a formal requirement, some analyses of *pro*-drop explicitly aim to derive its effects within the syntactic component of the grammar. For example, in her GB analysis employing the requirements of licensing and identification of *pro* introduced in Rizzi 1986, Fernández Soriano (1989:229) suggests the condition in (1):[1]

(1) *pro* is obligatory when it is licensed and fully identified.

The condition in (1) makes the prediction that whenever verbal inflection reflects all φ features of overt pronouns in a language, an overt pronominal subject should be ungrammatical if I/AGR is a licensing head. Similarly, Roberts (2010) develops a mechanism ensuring his generalisation in (2) (Roberts 2010:76), where *pro* counts as a defective goal in *pro*-drop languages on his approach:[2]

(2) Defective goals always delete/never have a PF realisation independently of their probe.

In what follows, data from three linguistic systems of Poland, namely standard Polish (henceforth Polish), Kashubian, and Silesian will be

[1] Rizzi (1986:519–521) modifies Chomsky's (1982) theory of *pro*, postulating the following conditions on the licensing and identification of *pro*:

(i) Licensing of *pro*
pro is governed by X_y^0
(modified further into:
pro is Case-marked by X_y^0),
where the set of heads able to license *pro* is subject to cross-linguistic variation.

(ii) Identification of *pro*
a. Let X be the licensing head of an occurrence of *pro*: then *pro* has the grammatical specification of the features on X coindexed with it.
b. Assign arb to the direct θ-role.

[2] A defective goal is one which is constituted by a set which is a subset of the set constituting the probe initiating Agree.

brought to bear on the question of the limits of variation with respect to the expression of the φ features of a subject in a rich-agreement system.[3] The data will show that both logically possible patterns of subject-related-φ omission are possible, that is *pro*-drop and verbal-agreement drop. Furthermore, the option where nothing is dropped is also attested in the data (and the pronoun is neutral in information-structural terms), suggesting that conditions such as (1) and generalisations such as (2) are too strong. The original conception of the Avoid Pronoun Principle as in Chomsky 1981, relating it to conversational principles/discourse factors, rather than to syntactic conditions, might thus be more adequate in the context of *pro*-drop. The presentation of the data in section 2 is followed by a more detailed discussion of the second pattern of subject-related-φ omission, namely verbal-agreement drop, in section 3. In short, I will suggest that the dropping of agreement marking in Kashubian and Silesian results from an application of the obliteration operation to T in the post-syntactic component. This option is available when obliteration of T does not affect the verb, which has to be realised in accordance with the inflectional paradigms of a language. Section 4 concludes the paper.

2 Configurations of the Expression of Subject φ: the Case of Polish, Kashubian, and Silesian

Polish is a typical null-subject language, using overt subject pronouns only in information-structurally marked environments, as illustrated in (3)–(4):

[3] Officially, Silesian, spoken in Upper Silesia (a region between south-western Poland and the north-eastern Czech Republic), is a dialect of Polish. Kashubian, spoken in the North of Poland (Pomerelia), currently tends to be treated as an ethnolect (regional language separate from Polish). In the 2011 population census, 529,377 people declared Silesian as the main language used at home (this includes only speakers of Silesian living in Poland), of whom 126,509 declared it as the only language used at home (a vast majority of respondents declared (standard) Polish in addition). In the same census, 108,140 people declared Kashubian as the main language used at home, of whom 3,802 declared it as the only language used at home (again, a vast majority of respondents declared Polish as the other language; information available at http://stat.gov.pl/download/cps/rde/xbcr/gus/LUD_ludnosc_stan_str_dem_spo_NSP2011.pdf). Both Kashubian and Silesian used to be in close contact with German.

(3) Gdzie jest mama?
where is mum
'Where's mum?'
a. Poszła na zakupy.
went$_{SG.F}$ on shopping
'She's gone shopping.'
b. #Ona poszła na zakupy.
she went$_{SG.F}$ on shopping
'It's her who's gone shopping.' [Polish]

(4) ON poszedł na zakupy?
he went$_{SG.M}$ on shopping
'Is it him who's gone shopping?'
a. #Nie, poszła.
no went$_{SG.F}$
'No, she did.'
b. Nie, ONA poszła.
no she went$_{SG.F}$
'No, SHE did.' [Polish]

These facts are unproblematic for any implementation of the Avoid Pronoun Principle.[4] However, the issue becomes more complex when Polish is contrasted with Kashubian and Silesian. The three systems are exactly parallel in terms of the richness of verbal inflectional morphology. The finite verb inflects for person and number in the present tense (and future perfective).[5] To illustrate, Table 1 presents the Kashubian, Polish, and Silesian present tense forms of the verb *sweep*.[6]

[4] Since pronouns in stressed positions are not in competition with *pro*, which cannot receive stress, the Avoid Pronoun Principle does not apply to cases such as (4).

[5] Future perfective is constructed with the perfective form of the finite stem. Future imperfective requires the use of an auxiliary, inflecting for person and number, and the imperfective *l*-participle form, inflecting for gender and number, or the infinitive.

[6] The Kashubian pattern is from Breza 2001:173. Silesian is characterised by significant intra-dialectal variation and some patterns of verbal inflection differ for speakers from different areas. The Silesian data presented in what follows (in standard Polish orthography) which are not attributed to other sources were provided to me by speakers from the Tarnowskie Góry area.

	Kashubian	Polish	Silesian
	Singular		
1.	Zamiôtaja	zamiatam	zamiatom
2.	Zamiôtôsz	zamiatasz	zamiatosz
3.	Zamiôtô	zamiata	zamiato
	Plural		
1.	Zamiôtómë	zamiatamy	zamiatomy
2.	zamiôtôta/zamiôtôce	zamiatacie	zamiatocie
3.	Zamiôtają	zamiatają	zamiatajom

Table 1. Present tense inflection of the verb *sweep* in Kashubian, Polish, and Silesian

In the past tense, the so-called *l*-participle form of the lexical verb is used in all three systems. The *l*-participle obligatorily agrees with the subject in gender and number. The expression of the person and number features of the subject is the point of variation between the three systems which is of greatest interest from the current perspective.

In Polish, the *l*-participle is always used in combination with person/number markers in the past tense (e.g. *szedł-em* 'walked$_{SG.M\text{-}1SG}$'/ *że-m szedł* 'ŻE$_{1SG}$ walked$_{SG.M}$' ('I walked'), see (18)–(19) below). The *pro*-drop pattern is operative throughout the temporal and aspectual distinctions. However, despite the similarity in the verbal inflectional properties in the three systems discussed here (see in Table 1), only standard Polish is a canonical *pro*-drop language.

Pronominal subjects are not omitted in Kashubian, as illustrated in (5)–(6) from Cybulski & Wosiak-Śliwa 2001:186:[7]

[7] According to Cybulski & Wosiak-Śliwa (2001), the subject is omitted only in the imperative and optative mood in Kashubian, but Nomachi (2014) suggests that pronominal subjects are not fully obligatory also in the indicative mood. Even if the latter is the case, the sole fact that the pronoun need not be dropped is sufficient in the context of the current discussion. My preliminary study of portions of naturally occurring texts suggests that there is significant inter-speaker variation in this respect, with the patterns ranging from typically *pro*-drop to strictly non-*pro*-drop.

Nomachi (2014:35) notes that the third-person-plural and second-person-singular impersonal constructions require the pronoun to be dropped, or else only definite interpretation of the subject is possible. This seems to be similar to what is observed in Russian, which also is not a canonical *pro*-drop language (see Franks 1995 for discussion).

(5) Jô muszã so głowã umëc.
I have.to$_{1SG}$ self$_{DAT}$ head wash
'I have to wash my hair.' [Kashubian]

(6) Mogła ona miec tak osémdzesąt centimétrów.
could$_{SG.F}$ she have$_{INF}$ PRT 80 centimetres
'It could be about 80 centimetres.' [Kashubian]

According to Breza (2001:176), three patterns are attested in the Kashubian past tense (throughout the person/number/gender distinctions).[8] The first one, which is considered archaic and is used by elder people, involves the use of a subject pronoun, accompanied by the present tense of *bëc* 'be', inflected for person and number, and by the *l*-participle (see (7)). The second one, which is described as more recent and widespread, involves the use of a pronoun and the *l*-participle (see (8)). The third option, characteristic of South dialects, involves a pronoun, a dummy element *że* with the person/number marker attached to it in first and second person, and the *l*-participle (see (9)).[9]

[8] Yet another available option is to use the auxiliary verb *have* and the passive participle, e.g., *jô móm napiekłé* 'I have baked' (Breza 2001:176).

[9] The item *że* functions as the declarative complementiser and *ż(e)* functions as an emphatic particle. That *że* in the context discussed here is a dummy element not serving any of these functions is suggested, among others, by the fact that (i) it can co-occur with the complementiser; (ii) it can appear in root clauses, where the complementiser is always null; (iii) no emphasis is needed for it to be inserted. For some discussions of *że* support in (standard) Polish, see Witkoś 1998, Bański 2001, Migdalski 2006.

A reviewer asks if it is indeed true that *że* can be treated as a pleonastic element and does not contribute anything to meaning, not even emphasis. Even though detailed discourse analysis of larger portions of texts might be useful to answer this question with certainty, according my judgments of (standard) Polish, the difference between examples with the person/number marker attached to *że* and to the participle is in register (*że* insertion is colloquial in my judgment), but *że* in its own right (e.g. with neutral stress on all elements) does not contribute to meaning.

The pleonastic element *że* does not appear in third person because the person/number marker is null in this case. This means that *że* insertion is sensitive to the morphophonological features of the morpheme which it supports.

(7) *pronoun* + *present tense of* bëc *'be'* + l-*participle*
jô je-m gonił/ goniła
I be$_{1SG}$ chased$_{SG.M}$ chased$_{SG.F}$
'I chased' [Kashubian]

(8) *pronoun* + l-*participle*
jô robił/ robiła
I did$_{SG.M}$ did$_{SG.F}$
'I did' [Kashubian]

(9) *pronoun* + że + *person/number marker* + l-*participle*
jô że-m szedł/ szła
I ŻE$_{1SG}$ walked$_{SG.M}$ walked$_{SG.F}$
'I walked' [Kashubian]

The pattern of the expression of the past in Kashubian in (8) is the reverse of what is observed in Polish: while in both Polish and Kashubian the person feature of the subject is realised overtly only once, unlike in Polish, in Kashubian it is the subject pronoun which is overt rather than the person/number agreement marker.

The patterns in (7) and (9), taken together with the lack of *pro*-drop in the present tense in Kashubian, show that rich verbal agreement does not enforce null subjects, contra what is predicted by some analyses of *pro*-drop (see section 1; see Ackema & Neeleman 2007 for a pragmatic treatment of the relation between rich agreement and *pro*-drop). Some scepticism as to the crucial role of rich agreement in *pro*-drop has been expressed previously, for example, in Jaeggli & Safir 1989. However, the data presented here suggest that their approach is not sufficient to capture all the relevant facts, either. In particular, Jaeggli & Safir (1989) suggest that licensing null arguments crucially depends on morphological uniformity, defined as follows:

(10) *Morphological Uniformity (Jaeggli & Safir 1989:30)*
An inflectional paradigm P in a language L is morphologically uniform iff P has either only underived inflectional forms or only derived inflectional forms.

Identification is further achieved by the condition in (11):

(11) *Identification by Agreement (Jaeggli & Safir 1989:35)*
AGR can identify an empty category as thematic *pro* iff the category containing AGR Case-governs the empty category.

As noted above, inflectional paradigms in the three systems discussed here are exactly parallel (in the present tense) and the inflectional paradigms in all tenses and moods are uniform by Jaeggli & Safir's criteria, as all forms are decomposable into a stem and inflection. Furthermore, the category containing agreement features (T on current assumptions) assigns nominative to the subject in all three systems, hence the identification condition seems to be satisfied as well.

What might be relevant here is that, unlike in Polish (see (3)–(4)), an overt pronominal subject is not associated with any additional information-structural colouring in Kashubian (see Nomachi 2014, who quotes Cybulski & Wosiak-Śliwa 2001 and Duličenko 2005). It seems that the effects attributed to the Avoid Pronoun Principle might hold only of the languages in which overt pronouns are associated with specific information-structural functions (or, vice versa, specific information-structural functions can be associated with overt pronouns only in the languages which obey the Avoid Pronoun Principle). In *pro*-drop contexts, the principle might thus be reduced to the information-structural fact of the association of an overt pronoun with a pragmatically non-neutral function, that is the association with focus. In this case, an overt pronoun will need to be interpreted in accordance with the information-structural properties of a language, and hence will not be used in information-structurally neutral contexts.

Silesian shows a mixed pattern, in which the determining factor is the person and number features of the subject. My informants provide the following paradigm for the past tense of the verb *go*:[10]

[10] More research using larger portions of naturally occurring texts is needed to determine the exact conditions under which pronouns can/should be dropped in Silesian.

(12) 1SG: jo szoł/ że-ch szoł
I walked$_{SG.M}$ ŻE$_{1SG}$ walked$_{SG.M}$
2SG: ty szłe-ś/ ty że-ś szoł/ ty
you walked$_{SG.M-2SG}$ you ŻE$_{2SG}$ walked$_{SG.M}$ you
szoł że-ś
walked$_{SG.M}$ ŻE$_{2SG}$
3SG: on szoł
he walked$_{SG.M}$
1PL: my szli
we walked$_{PL.M}$
2PL: wy szli-ście/ wy-ście szli/ wy
you walked$_{PL.M-2PL}$ you$_{2PL}$ walked$_{PL.M}$ you
że-ście szli
ŻE$_{2PL}$ walked$_{PL.M}$
3PL: oni szli
they$_{M}$ walked$_{PL.M}$
'I/you$_{SG}$/he/we/you$_{PL}$/they$_{M}$ walked' [Silesian]

The data show that Silesian requires the verbal person/number marker to be dropped in first-person plural and makes the dropping of the agreement marker possible in first-person singular. Variation in the remaining environments pertains to the host to which the person/number marker attaches.

In addition, Tambor (2006:165–166) reports that two options are available in the past tense with first-person subjects.[11] In first-person singular, the subject can be dropped and the first-person singular marker *-ch* is attached to the *l*-participle or to a different host (see (13)–(14)). In first-person singular for younger speakers and first-person plural for all speakers, an overt pronoun can be accompanied only by the *l*-participle marked for number and gender (see (15)–(16)).

(13) pro-*drop* + -ch *attached to the* l-*participle*
urodził-ech się na wsi
born$_{SG.M-1SG}$ SE on village
'I was born in a village' [Silesian]

[11] Unfortunately, Tambor does not discuss other persons.

(14) pro-*drop* + -ch *attached to a non-verbal host*
dlaczego-ch sie sprowadziył do Goduli
why$_{1SG}$ SE moved$_{SG.M}$ to Godula
'why I've moved to Godula' [Silesian]

(15) *first-person singular, obligatory pronoun* + l-*participle*
jo z nióm rozmawjoł
I with her talked$_{SG.M}$
'I've talked to her' [Silesian]

(16) *first-person plural, obligatory pronoun* + l-*participle*
jag my dostali tu pszidział
when we got$_{PL.M}$ here allotment
'when we got allotment here ' [Silesian]

As illustrated in (17), the two ways of expressing first-person singular inflection in the past tense enumerated in Tambor 2006 and shown in (12) can co-exist in the same sentence:[12]

---

[12] This example is taken from Karaś (2010), http://www.dialektologia.uw.edu.pl/index.php?l1=opis-dialektow&l2=dialekt-slaski&l3=slask-srodkowy&l5=lagiewniki-slaskie-tekst4#.

Veselovská (2008:5) notes that in Czech first-person singular structures with an inflected auxiliary *be*, either the auxiliary or the pronoun can be omitted (the passive auxiliary, the copula and existential *be* cannot be omitted; see also Toman 1980):

(i) a. Já jsem chválil Petra.
I AUX$_{1SG}$ praised Peter$_{ACC}$
'I praised Peter.'
b. Chválil jsem Petra.
praised AUX$_{1SG}$ Peter$_{ACC}$
c. Já chválil Petra.
I praised Peter$_{ACC}$ [Czech]

Additionally, Věra Dvořák (p.c.) informs me that the data in (17) can be reproduced in Czech and that φ-drop is possible (though not obligatory) both in first-person singular and plural in contexts such as (12). See Kučerová2012 and references cited therein for discussions of null subjects in Czech.

The systems discussed here use the *l*-participle or the infinitive and the auxiliary *be* to form future imperfective. Dropping the auxiliary is not an option here, as it would result in a form indistinguishable from the past tense:

(ii) a. (My)bydymy cytały.
we AUX$_{1PL}$ read$_{PL.F}$
'We will read/be reading.' [Silesian]

(17) **jo** tam **zaczynoł** ty swoja robota, bo tam wtedy
I there started$_{SG.M}$ this self's job because there then
był Ośrodek Badawczo-Rozwojowy Maszyn i Urzondzyń
was centre research-development machines and devices
Walcowniczych, [...] i tam jako młody synek
rolling and there as young guy
po Politechnice Ślunskij **ze-ch przyszedł** do swojij
after polytechnic Silesian ŻE$_{1SG}$ came$_{SG.M}$ to self's
roboty, bo **ze-ch** sie nie **wyobrażoł** [...]
job because ŻE$_{1SG}$ SE not imagined$_{SG.M}$
'I started working there, because the Research and Development Centre for Machines and Rolling Devices, [...] was there then and as a young graduate of the Silesian University of Technology I came to work there, because I didn't imagine [...]' [Silesian]

Examples such as (17), where a single speaker produces two different patterns with the same person (i.e. an overt pronoun accompanied with verbal-φ drop and a null pronoun with overt verbal φ) show that the verbal-φ marker is indeed dropped rather than being simply absent from the morphological inventory of a speaker's grammar.

The patterns of expression of subject φ attested in the three systems discussed here can be summarised as follows (φ here refers to the fusional person/number marker, gender being obligatorily reflected in the fusional gender/number agreement morphology on the *l*-participle): (i) *pro*-drop and φ reflected in verbal morphology (Polish, Silesian); (ii) overt subject and φ reflected in verbal morphology (Kashubian, Silesian, and, when the subject is information-structurally marked, Polish); (iii) overt subject and verbal φ dropped (Kashubian, Silesian).

If null subjects are treated as deleted pronouns, as originally suggested by Perlmutter (1971), the data can be divided based on whether deletion applies and if so, whether the deleted element is the

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b. My ~~bydymy~~ cytały.
we AUX$_{1PL}$ read$_{PL.F}$ [hypothetical]
c. My cytały.
we read$_{PL.F}$
'We read/were reading.' [Silesian]

subject pronoun or the agreement marker.[13] Neither pattern (ii) nor pattern (iii) can be explained if the Avoid Pronoun Principle is treated as a general syntactic condition on *pro*-drop. The remaining part of this paper develops an analysis of pattern (iii), namely verbal-φ drop.

3 Verbal-φ Drop

I suggest that the dropping of verbal-φ marking in Kashubian and Silesian is possible due to the nature of the person/number inflection in the two systems. For concreteness, in the past tense the person/number marker is autonomous from the verb, unlike gender/number inflection, which is obligatory on the *l*-participle (this also holds of Polish).[14] The agreement person/number marker appears attached to the verb, to the pleonastic element *że*, or to a different pre-verbal host.[15] For the sake of direct comparison, some of the first-person singular past-tense forms in which verbal φ is expressed are provided in parallel in (18)–(20):[16]

[13] For some relevant discussion of the syntactic representation of null subjects, see, among others, Holmberg 2005, who argues that the minimalist conception of establishing agreement relations by the application of Agree requires null subjects to be analogous to overt pronouns in terms of their φ-feature specification; see, for example, Barbosa 2013 for a different view.

[14] Investigating whether this separation of person/number and number/gender inflection follows from there being two different φ probes in the clausal spine (e.g. a person/number probe in T and a gender/number probe in the Asp(ect) head) or from a process of splitting a person/number/gender φ set originating in T at the SM interface needs to be left for future research.

[15] For discussions of some phonological and morphosyntactic aspects of the person/number marker in Polish, see Embick 1995, Franks & Bański 1999, Migdalski 2006, and the references cited therein.

[16] Options available with first-person plural and second person seem to be the same in the three systems as with first-person singular, apart from first-person plural in Silesian, where person/number agreement is never overt. The third-person singular and plural morpheme is zero-realised in all three systems. Not all of the enumerated options may be available to all speakers.

(18) *φ on lexical V (Polish and Silesian)*

a. *pro* szedł-em
walked$_{SG.M\text{-}1SG}$
'I walked' [Polish]

b. *pro* szedł-ech
walked$_{SG.M\text{-}1SG}$
'I walked' [Silesian]

(19) *φ on* że *(Polish, Kashubian, Silesian)*

a. *pro* że-m szedł
ŻE$_{1SG}$ walked$_{SG.M}$
'I walked' [Polish]

b. jô że-m szedł
I ŻE$_{1SG}$ walked$_{SG.M}$
'I walked' [Kashubian]

c. (jo) że-ch szedł
I ŻE$_{1SG}$ walked$_{SG.M}$
'I walked' [Silesian]

(20) *φ on auxiliary (Kashubian)*

jô jem gonił
I be$_{1SG}$ chased$_{SG.M}$
'I chased' [Kashubian]

The pattern in which the person/number agreement marker is attached to the verb is prevalent in Polish, with the variant in which the marker is attached to a different host being perceived as colloquial. On the other hand, the latter pattern is prevalent in Silesian and it seems to be the only option possible when verbal φ is overt in Kashubian (see Breza 2001). There thus seems to be a correlation between the preference for the realisation of verbal φ on a host different than the verb and the availability of verbal-φ drop, even though this picture is complicated by the fact that verbal-φ drop in Silesian is dependent on the value of the person and number feature of the subject and is possible only in first person (and required in first person plural), whereas the realisation of person/number markers on different hosts is not constrained by the features of the subject.

In the present context, verbal-φ drop seems to be sensitive to the nature of the exponent of T rather than only to its features. That it is the autonomous nature of the person/number marker which is important here (rather than the past tense as such, for example) is suggested by there being two non-past contexts in which verbal-φ drop is attested, namely conditional mood and the present tense of *be*.

Conditional mood, which is also based on the *l*-participle, shows either the verbal-φ-drop pattern (see (21)) or the no-drop pattern (see (22)) in Kashubian in all person/number configurations (see Breza 2001:177):

(21) jô bë ucekł
I COND $run_{SG.M}$
'I would run/escape' [Kashubian]

(22) jô bë-m przëszedł
I $COND_{1SG}$ $cross_{SG.M}$
'I would cross' [Kashubian]

Similarly, *be* in the present tense in Kashubian is also attested with verbal-φ drop (in addition to forms with an overt pronoun accompanied by *be*, with the person/number marker attached either to *be* or to the pleonastic *że*; see Breza 2001:174):

(23) jô je/ jô jest
I $be_{PRSNT.SG}$ I $be_{PRSNT.SG}$
'I am' [Kashubian]

(24) të je/ të jest
you $be_{PRSNT.SG}$ you $be_{PRSNT.SG}$
'you are' [Kashubian]

Importantly, *be* is the only verb which inflects via the autonomous person/number markers rather than the regular person/number present tense inflection (see Table 1).

The same holds of Silesian, with the familiar restriction to first person (Szołtysek 2008:32):

(25) 1SG: jo je
I be$_{PRSNT.SG}$
2SG: ty-ś je
you$_{2SG}$ be$_{PRSNT.SG}$
3SG: łon/ łona/ łono je
he she it be$_{PRSNT.SG}$
1PL: my som
we be$_{PRSNT.PL}$
2PL: wy-ście som
you$_{2PL}$ be$_{PRSNT.PL}$
3PL: łoni/ łone som
they$_{M}$ they$_{F}$ be$_{PRSNT.PL}$
'I am, you are, he/she/it is, we are, you are, they are'
[Silesian]

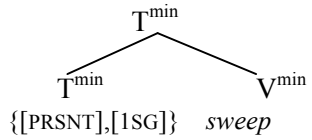
These data suggest that verbal-φ drop can apply whenever person/number agreement is expressed via person/number markers autonomous from the verb.

3.1 Analysis via T Obliteration

I suggest that verbal-φ drop in Kashubian (e.g. (8) above) and Silesian (e.g. first-person inflection in (12) and in (15)–(17) above) results from the application of obliteration (i.e. a post-syntactic operation of terminal deletion (see, e.g., Arregi & Nevins 2012 for discussion)) to T. To capture the difference between the patterns of inflection expressed directly on the verbal stem and inflection employing the person/number markers, I suggest that the former pattern involves the formation of a V-T complex head and the latter does not.[17] The formation of the V-T complex is obligatory in the present tense, except with *be*. Forms such as *zamiôtaja/zamiatam/zamiatom* 'I am sweeping/I sweep' [Kashubian/Polish/Silesian] (see Table 1) thus have the following structure:

[17] Determining whether this complex head is created as a result of V-to-T head movement or by affix hopping is irrelevant for the present purpose and will be left for future research. The diagram in (26) illustrates the former option. See, for example, Borsley & Rivero 1994; Migdalski 2006; Wiland 2009; Witkoś 1998 for different views.

(26)



In the past tense, the conditional mood, and the present tense of *be*, no V-T complex is formed. This leaves T with three options, namely, obliteration in Kashubian and in first person in Silesian; if obliteration does not apply, T attaches to a host within its clause in the post-syntactic component (either to the verb (by verb raising or by affix hopping) or to a pre-verbal constituent); or dummy-*że* insertion applies.

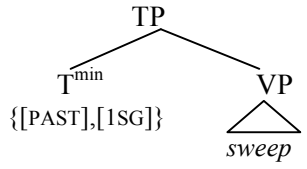
The obliteration rules can now be formalised as follows (formulation in the spirit of Arregi & Nevins 2012):[18]

(27) *Kashubian: T Obliteration*
   a. Structural description: non-branching T^{min} such that it is not dominated by a T^{min}.
   b. Structural change: delete T^{min}.

(28) *Silesian: T Obliteration*
   a. Structural description: non-branching T^{min} such that it is not dominated by a T^{min} and φ on T is [1(PL)].
   b. Structural change: delete T^{min}.

This formulation is meant to capture the fact that obliteration does not apply in cases such as (26). On the other hand, obliteration can apply in cases such as (29):

(29)



[18] A reviewer notes that obliteration provides a mechanism to capture the data, but does not provide an explanation of the relevant restrictions on its application (e.g. the person restriction in Silesian). It is not completely clear to me at this point that a deep theoretical explanation within a synchronic morphosyntactic analysis can be provided for data of this type. Investigating the possibility that it can be needs to be left for future research.

This analysis has the following theoretical consequences, unless some factors determining the particular choices can be discovered in future research: obliteration can be optional in some languages (cp. the different ways of expressing the past in Kashubian and the [1SG] variants in Silesian); if T lowering/raising precedes dummy-*że* insertion, post-syntactic lowering/raising can be optional; if dummy-*że* insertion precedes lowering/raising, insertion of a pleonastic element can be optional.

The obliteration rules derive the verbal-φ-drop pattern, raising at the same time the question of the way in which they interact with the deletion of the pronoun in the subject position, especially in Silesian, where *pro*-drop can also apply (unlike in Kashubian). Even though this issue is beyond the scope of this paper, it seems that a possible explanation of why it is either the pronoun or the agreement marker which is deleted, but not both, could rely on the observation that a first-person structure to which both *pro*-drop and obliteration would apply would be indistinguishable from third person and the first-person feature could not be identified on the basis of any overt element:[19]

(30) 1SG: jo szoł
I walked$_{SG.M}$
'I walked' [Silesian]

1SG: ~~jo~~ szoł
I walked$_{SG.M}$ [hypothetical]

3SG: szoł
walked$_{SG.M}$
'he walked' [Silesian]

[19] Similarly, with respect to the deletion of first-person singular *be* in Czech (see footnote 12), Toman (1980:307) notes that the blocking of deletion of both the pronoun and the auxiliary is due to the indistinguishability of first and third person which would result from deletion applying to both of them:

(i) a. ~~ja~~ ~~jsem~~ jedl
I am eaten
'I ate'

b. ~~on~~jedl
he eaten
'he ate' [Czech]

The application of both pronoun deletion and obliteration could thus be blocked by the principle of deletion up to recoverability, prohibiting the two operations from applying to the same structure. The important question of the nature and formalisation of this principle remains to be explored.

4 Conclusions

This paper has attempted to clarify the status of the Avoid Pronoun Principle, showing that it is not a syntactic requirement, but an interface phenomenon sensitive to the information-structural properties of (unstressed) overt and covert pronouns in a language. In addition, the data presented here have shown that given a choice between pronoun and verbal-φ drop, a language can manifest the latter, so long as the application of an obliteration rule to T does not affect the morphological realisation of the verb. Even though the realisation of the subject but not the agreement marker does not seem to be the usual case cross-linguistically (when rich verbal agreement is available), that this should be possible does not seem unexpected when the phenomenon is considered from the point of view of elliptical structures. The principle of deletion up to recoverability seems neutral as to whether it is the subject pronoun or the verbal agreement marker which is deleted, both of them reflecting overtly only two features relevant for interpretation, that is the person and number feature of the subject. The reason why the pattern in which the subject is unrealised is much more robust cross-linguistically may be due to morphological factors. In particular, the choice between deletion of the pronoun and agreement is at issue only if deletion of agreement can target the agreement marker without affecting the verb itself, a situation requiring agreement not to be expressed directly via inflection on the verb.

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Personality Disorders: The PCC and Two Kinds of Clitic Reordering in Slovenian*

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Traditionally, the *Person-Case Constraint* (PCC), also **me lui* constraint (Perlmutter 1971), is seen as a surface restriction on phonologically weak pronominal elements like clitics and weak pronouns which bans them from co-occurring when they have specific case and person values. The standard descriptive generalization for the PCC is the following:

PCC [strong version]:[1] When a weak direct object (DO) and indirect object (IO) co-occur, the DO must be 3rd person (3P) (cf. Bonet 1991: 182)

The PCC can be illustrated for Greek with (1a,b). In Greek *double-object constructions* (DOC), the IO and DO may both be expressed with pronominal clitics. However, the DO clitic is restricted to 3P. This is seen in (1a,b) where 1st/2nd person (1P/2P) DO clitics are ungrammatical.

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[1] The weak version (*weak PCC*), where 1st/2nd person weak objects may co-occur, but a 1st/2nd person weak DO cannot co-occur with a 3rd person weak IO, will not be discussed in detail. See Anagnostopoulou (2005); Bonet (1991) for discussion. Unless explicitly noted otherwise, the PCC refers to the strong version (*strong PCC*) throughout.

(1) a.* Tha **mu/su** **se/me** sistisune.
FUT 1P/2P.DAT 2P/1P.ACC introduce.3P.PL
int.: 'They will introduce you/me to me/you.'
b.* Tha **tu** **me/se** sistisune.
FUT 3P.M.DAT 1P/2P.ACC introduce.3P.PL
int.: 'They will introduce me/you to him.'
(Greek; Anagnostopoulou 2005:202)

Anagnostopoulou (2003) and Béjar and Řezáč (2003) have reanalyzed the PCC in minimalist terms as the result of locality restrictions on the operation Agree and consequently Case assignment (Chomsky 2000). But with the exception of some discussion by Anagnostopoulou (2003; 2008), the focus remains mainly on languages with rigid and predictable relative orders of weak pronominal object. This is why the discussion of PCC effects in colloquial Slovenian is relevant: object clitics in DOCs appear to occur in either IO » DO or DO » IO order, and the person restriction is different with the two orders. Furthermore, the person restriction itself is sensitive to the matrix/embedded distinction in imperatives. I argue that this shows that the PCC cannot result from case or grammatical function asymmetries. I propose instead that it arises because deficient pronouns are inherently unspecified for person feature values and must be valued via Agree with a functional head. Within this approach, the Slovenian PCC paradigm, where person restrictions are sensitive only to the relative order of clitics and sentence type, results from processes unrelated to person valuation: a reordering of object clitics in narrow syntax, and a post syntactic PF clitic reordering.

The paper is organized as follows: Section 1 presents the Slovenian PCC paradigm. Section 2 reviews an existing analysis of the PCC, shows why the Slovenian PCC paradigm is problematic for it, and presents a new account which can also derive the problematic Slovenian inverse PCC pattern. Section 3 presents an analysis of the absence of PCC effects in Slovenian matrix imperatives. Section 4 concludes the paper.

1 The Slovenian PCC Pattern

Object clitics typically cluster in the 2nd clausal position in Slovenian, and in canonical DOCs the DO clitic is accusative (ACC) while the IO

clitic is marked with dative case (DAT). For most speakers, the presence of a 3P.DAT object clitic blocks the use of a 1/2P.ACC object clitic. This ban is illustrated in (2), an example which parallels the Greek (1a).

(2) * Mama **mu** **me/te** bo predstavila.
mom 3P.M.DAT 1P/2P.ACC will introduce
int.: 'Mom will introduce me/you to him.'

A short note about the data is in order here. The bulk of the data is based on an online grammaticality survey which involved 40 native Slovenian speakers.[2] Though not reported in traditional prescriptive and descriptive grammars (Toporišič 2000, Herrity 2000), the survey showed that the order of object clitics is not fixed in colloquial Slovenian; both DAT » ACC and ACC » DAT are possible, as illustrated for two 3P objects in (3). 22/40 speakers judged both orders as grammatical in out-of-the blue contexts, and even speakers who did not fully accept (3b) in the survey, accepted it when given more specific contexts in follow up informal elicitations.

(3) a. Mama **mu** **ga** je opisala.
mom 3P.M.DAT 3P.M.ACC is described
b. Mama **ga** **mu** je opisala.
mom 3P.M.ACC 3P.M.DAT is described
'Mom will introduce me/you to him.'

The survey also revealed that despite some variation in the specific restricted combinations,[3] object order and person restrictions interact. With speakers that exhibit a *3P.DAT » 1/2P.ACC clitic ban, an equivalent of the ungrammatical (2) is possible with ACC » DAT, as illustrated in (4).

(4) Mama **me/te** **mu** bo predstavila.
mom 1P/2P.ACC 3P.M.DAT will introduce
'Mom will introduce me/you to him.'

[2] Although speakers vary in the restrictiveness of possible object clitic combinations, no clear correlation to known dialectal groups was revealed by the pilot survey. I must thus leave the issue of the geographic distribution of the restriction types for future surveys.

[3] *Strong*, *weak*, and *me-first PCC* (Nevins 2007) were attested. Some speakers also find the 2P ban stronger than the 1P ban (Anagnostopoulou (2008) also notes this for German).

But person restrictions are not entirely absent with ACC » DAT. Speakers that allow (3b) and (4) still ban *3P.ACC » 1/2P.DAT clusters, shown in (5a). The same combination is fine with DAT » ACC, as given in (5b).

(5) a. * Mama **ga** **mi/ti** bo predstavila.
mom 3P.M.ACC 1P/2P.DAT will introduce
b. Mama **mi/ti** **ga** bo predstavila.
mom 1P/2P.DAT 3P.M.ACC will introduce
'Mom will introduce him to me/you.'

For this group of speakers, combinations of 3P and 1/2P clitics pattern as a PCC pattern with the DAT » ACC order, as illustrated in (6), but with ACC » DAT the pattern is essentially an *inverse PCC*, as illustrated in (7).[4] In contrast to canonical PCC languages, Slovenian speakers with two object clitic orders show person restrictions either on the DO or IO clitic, where the restriction always applies to the linearly second clitic. The relation of the restriction to the order of object clitics crucially also holds for speakers with different person restriction patterns (see footnote 3).

(6) a. 3.DAT » 3.ACC b. 1/2.DAT » 3.ACC
c. ***1/2.DAT » 2/1.ACC** d. ***3.DAT » 1/2.ACC**
(7) a. 3.ACC » 3.DAT b. 1/2.ACC » 3.DAT
c. ***1/2.ACC » 2/1.DAT** d. ***3.ACC » 1/2.DAT**

Slovenian person restrictions differ from canonical PCC in one more way: for some speakers the restriction disappears in imperatives, where clitics typically appear post-verbally in order to satisfy the 2nd position requirement. Clitics can again occur with both DAT » ACC and ACC » DAT orders, but no person restriction applies in either, as illustrated in (8,9).[5]

[4] I set aside non-signular clitics, as they seem to pattern differently for some speakers, possibly because they are essentially homophonous with their strong counterparts. See also Ciucivara (2009) for cases where plural clitics also pattern differently in Romance.

[5] In Slovenian imperatives, 2P pronouns are substituted with reflexives. As pointed out by a reviewer, 2P pronouns in "wax museum scenarios" are an exception (see footnote 8).

(8) a. Predstavi **mu** **me**! b. Predstavi **me** **mu**!
introduce.$_{IMP}$ 3P.$_{M.DAT}$ 1P.$_{ACC}$ introduce.$_{IMP}$ 1P.$_{ACC}$ 3P.$_{M.DAT}$
'Introduce me to him!' 'Introduce me to him!'

(9) a. Predstavi **mi** **ga**! b. Predstavi **ga** **mi**!
introduce.$_{IMP}$ 1P.$_{DAT}$ 3P.$_{M.ACC}$ introduce.$_{IMP}$ 3P.$_{M.ACC}$ 1P.$_{DAT}$
'Introduce him to me!' 'Introduce him to me!'

But Slovenian imperatives can also be syntactically embedded (see, among others, Sheppard and Golden 2002). Imperatives are embedded in speech reports with the complementizer *"da"*, which occupies the 1st clausal position in C^0, causing the clitics to surface in the 2nd clausal position pre-verbally. Curiously, object clitics in this configuration again display the person restrictions observed in declaratives, as (10,11) show.[6]

(10) a. *? Rekla je, da **mu** **me** predstavi!
said is that 3P.$_{M.DAT}$ 1P.$_{ACC}$ introduce.$_{IMP}$
b. Rekla je, da **me** **mu** predstavi!
said is that 1P.$_{ACC}$ 3P.$_{M.DAT}$ introduce.$_{IMP}$
'She said that you should introduce me to him!'

(11) a. Rekla je, da **mi** **ga** predstavi!
said is that 1P.$_{DAT}$ 3P.$_{M.ACC}$ introduce.$_{IMP}$
b. *? Rekla je, da **ga** **mi** predstavi!
said is that 3P.$_{M.ACC}$ 1P.$_{DAT}$ introduce.$_{IMP}$
'She said that you should introduce me to him!'

Unlike the declarative examples, imperative examples were only checked with consultants informally. And while not all consultants void person restrictions in matrix imperatives, those who do, retain the person restriction in embedded imperatives. The fact that the variation exists independently of the declarative restriction seems to be showing that an independent phenomenon is interfering with the person restriction. An analysis of this additional asymmetry will be discussed in Section 3.

[6] Consultants perceive the person restriction as weaker than in declaratives (it seems to be, however, much stronger with feminine 3P clitics; it is unclear why this is so).

1.1 The Status of the Slovenian Person Restriction

Due to the apparent cross-linguistic robustness of the canonical PCC, one might see the Slovenian person restriction, at least with the ACC » DAT order, as an entirely separate constraint. A stronger form of this view is to do away with the PCC completely and treat both patterns as unconnected to the PCC. But recall that the pattern is identical to the PCC with the DAT » ACC order, and that the ACC » DAT order displays an exact mirror pattern. Furthermore, speakers vary with respect to the banned clitic combinations (see footnote 3) along the same lines as it has been observed for canonical PCC (Nevins 2007). Crucially, corresponding standard (with DAT » ACC) and inverse (with ACC » DAT) patterns are always exist in spite of this variation. If the Slovenian person restriction were to be treated separately from the PCC, all of these similarities would remain unexplained and attributed to an accidental similarity, I show below that it is in fact possible to treat both clitic restrictions as the same phenomenon, and that under this view the inverse PCC can be explained with an object clitic reordering at a very specific point in the derivation (unavailable in canonical PCC languages). This also means that "Person-Case Constraint" becomes a misnomer, as the constraint cannot be case-sensitive. However, I still use PCC throughout due to the term being ubiquitous and well established in the literature.

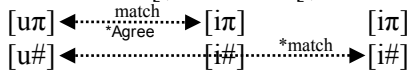
2 The PCC as an Intervention Effect

Most current syntactic approaches to the PCC link the pattern to configurations where one syntactic head must establish a long distance dependency with two arguments. In Chomsky's (2000) framework, the long distance dependency in question is Agree, and the configuration corresponds to that of one Probe and two Goals. One such analysis is that of Béjar and Řezác (2003) (B&R). B&R propose that the PCC arises due to a difference in the licensing requirements of 1P/2P and 3P features, stated in (12), which limits the distribution of person features on arguments in the aforementioned "one Probe/two Goals" configuration.

(12) *Person Licensing Condition (PLC)*:
An interpretable $1^{st}/2^{nd}$ person feature must be licensed by entering into an Agree relation with a functional category.

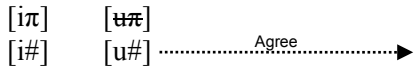
B&R crucially also assume a particular version of Agree: *Cyclic Agree*, where φ-features trigger Agree in a cyclic fashion: Person ([π]) first, followed by Number ([#]). Their derivation of the PCC is given in (13), where v^0 has an uninterpretable [π] ([uπ]) and an uninterpretable [#] feature ([u#]), both of which will act as Probes for matching interpretable features in their c-command domain. The IO and DO also both have interpretable [π] ([iπ]) as well as interpretable [#] features ([i#]), which means that the structure in (12) has a one Probe/two Goals configuration.

(13) [$_{vP}$ v^0 [$_{VP}$ DAT [$_{V'}$ V DO]]]



During the first cycle of Agree, shown in (13), the [uπ] on v^0 probes and matches the closest [iπ], which is on DAT. However, for B&R an inherent Case like DAT blocks Agree with outside Probes, so the [uπ] on v^0 cannot establish Agree with the [iπ] on DAT, and must thus receive a default value. The IO itself can still have 1/2P features, since B&R assume that they can be licensed by the inherent Case assigner itself.[7] Note also that any φ-features on DO are inaccessible for Agree with v^0 in (13) due to the presence of matching intervening features on DAT. The second cycle of Agree can only be successful if, as shown in (14), DAT moves above v^0 leaving behind a trace, which is not an intervener (Anagnostopoulou 2003; Chomsky 2000). The [u#] on v^0 can then enter Agree with the [i#] on DO, assigning it ACC Case (Chomsky 2000). But Agree is only for [#] features in this cycle, so the PLC (see (12)) cannot be satisfied for 1/2P features on DO. This derives the PCC, as the DO clitic must then be 3P.

(14) [$_{vP}$ DAT v^0 [$_{VP}$ t_{DAT} [$_{V'}$ V $\underline{ACC_{DO}}$]]]



The PCC pattern is thus predicted by B&R to arise only in cases where an intervening clitic blocks Agree for [π] features between v^0 and a structurally Case-marked clitic; which then must be 3P or the PLC would

[7] For Béjar and Řezác (2003), inherent/lexical Case is assigned via Agree with a silent applicative P^0, which is always local to the IO, and nothing can intervene between them.

not be satisfied. But recall that in Slovenian the person restriction actually occurs on the DAT clitic with the ACC » DAT clitic order, and that for B&R, 1/2P features on DAT can be licensed by the inherent Case assigner itself. So if the reordering is post-syntactic, the pattern is incorrectly predicted to be standard PCC, while if the reordering occurs in the syntax prior to the probing by v^0 there should be no restriction as DAT no longer intervenes between v^0 and ACC, and 1/2P features on DAT are licensed by inherent Case assignment. This makes the inverse PCC problematic for B&R's approach, as well as other approaches focusing on the DO/IO asymmetry, such as Anagnostopoulou (2003). We will see below, however, that by making some modifications to the one Probe/two Goals approach, the Slovenian PCC pattern including the problematic inverse PCC can in fact be derived as a syntactic intervention effect.

2.1 Clitic Person Restrictions as Failed Valuation

In the proposed alternative analysis, I depart from B&R and divorce φ-feature valuation from Case assignment. The main new assumption is, however, that the (interpretable) person features of deficient (clitic/weak) pronouns begin the derivation unvalued, and must be valued via Agree. This is inspired by the treatment of bound pronouns in Kratzer (2009), where pronouns may enter the derivation with unvalued φ-features. The proposal thus combines this intuition with the approaches to feature valuation of Pesetsky and Torrego (2007) and Bošković (2011). The specific assumptions I either adopt or propose are listed below:

[A1] Defective pronouns have unvalued [iπ] features that must be valued before Spell-Out (cf. Bošković 2011; Pesetsky and Torrego 2007);
[A2] [$i\pi_{uval}$] is valued: **(a)** via Agree with a valued [π], or **(b)** by getting a default value ([d:__]), which is 3P, when option (a) is impossible;
[A3] Unvalued features are Probes, and matching valued features act as their Goals (Bošković 2011);
[A4] Agree cannot occur between Probe and Goal in the presence of a matching intervener (Chomsky 2000);
[A5] Traces and clitic-doubled DPs do not count as interveners (Anagnostopoulou 2003; Chomsky 2000).

These assumptions derive the effect of B&R's PLC as the result of the defective pronouns [iπ] underspecification.[8] Crucially, having unvalued [iπ] does not equate to not having [iπ] features, it only means that [iπ] must acquire its value externally and may express person contrasts morphologically once valued. Similarly, 3P is not equivalent to the lack of [π] (see Nevins 2007 for arguments), it corresponds to a [π] with no positive *author* or *participant* specification. I take **[A1–5]** to hold universally, with the different PCC patterns emerging due to independent processes interacting with [π] valuation. I propose that the inverse PCC results from an object clitic reordering before a functional head with a valued [π] enters the derivation. It is unclear what specifically makes this in Slovenian. However, it has been noted in the literature that clitic placement clitic placement in Slovenian is much less restricted than in other closely related South Slavic languages. Bošković (2001) observes that among other things Slovenian clitics are: **(i)** losing a rigid 2nd position requirement in some environments, **(ii)** clitic clusters can be split up by non-clitic material, **(iii)** can under certain conditions attach both to the right (enclitics) or the left edge (proclitics) of the same host, and **(iv)** even occur in enclitic-proclitic pairs without a host at all. It is possible that the source of this uncharacteristic behavior is also the reason why object clitics may reorder analogously to full NPs in DOCs, where both object orders are also found in Slovenian. Whatever the reason behind the clitic reordering is, we have seen that it is possible, and that it changes the nature of the clitic person restriction. In the following I show how this is derived within the current approach.

2.2 Deriving Standard and Inverse PCC

The derivation of both standard and inverse PCC assumes a IO » DO base order for DOCs, with Slovenian allowing optional ACC-over-DAT clitic movement before v^0 enters the derivation.[9] The derivation of the standard PCC, observed also in canonical PCC languages like Greek and French, is given in (16), for which I assume the same structure for DOCs as Anagnostopoulou (2005); the DO is the complement of V and the IO

[8] This relates to the fact that the PCC is voided with non *de se* readings of 1P (Charnavel and Mateu 2015), which also ties to the observation of an anonymous reviewer that in so called "wax museum scenarios" 1P + 1P object clitic pairs are possible in Slovenian.

[9] The derivation of inverse PCC is also compatible with a free base-generation approach.

is in SpecApplP, and ApplP is the complement of v^0. I follow Kratzer (2009), who proposes v^0 carries valued φ-features for binding purposes. But I propose that not all φ-features of v^0 have the same status with respect to valuation; the [uπ] component of the φ-feature set on v^0 is valued, while other φ-features on v^0 distinct from [π] (henceforth [Γ]) are unvalued, and hence still function as Probes (see **[A3]**).

(16) $[_{vP}$ v^0 $[_{ApplP}$ DAT Appl^0 $[_{VP}$ V ACC $]]]$

$[u\Gamma:\_\_]$ ····Agree····▶ $[i\Gamma_{val}]$ $[i\Gamma_{val}]$

$[u\pi_{val}]$ ····value····▶ $[i\pi:\underline{1/2/3}]$ $[i\pi:\_\_]$ => $[d:\underline{3}]$

When v^0 enters the derivation in (16), the $[u\Gamma_{uval}]$ on v^0 is unvalued and must therefore probe and enter Agree with the closest available Goal, which is the $[i\Gamma_{val}]$ on DAT. After Agree is established between the two, the $[u\pi_{val}]$ feature on v^0 can also value the $[i\pi_{uval}]$ on DAT. This follows from the assumption in (17), similar to Řezác's (2004) *Maximize Agree*.

(17) If Agree is established between X^0 and Y^0 for feature [α], all $[F_{uval}]$ features on X^0 and Y^0 receive the value from matching $[F_{val}]$ on the (Agree-ing) opposing head regardless of the direction of valuation.

After the step in (15), the [uΓ] on v^0 is valued and thus no longer a Probe. The $[i\pi_{uval}]$ on ACC can then no longer be valued via Agree with $[u\pi_{val}]$ on v^0. This means ACC must get a default 3P value, which yields a traditional PCC pattern. Canonical PCC languages like Greek or French only have this pattern, but the inverse pattern is also possible in Slovenian due to the clitics reordering before v^0 is merged. This derivation is given in (18).

(18) $[_{vP}$ v^0 $[_{ApplP}$ ACC DAT Appl^0 $[_{VP}$ V t_{ACC} $]]]$

$[u\Gamma:\_\_]$ ····Agree····▶ $[i\Gamma_{val}]$ $[i\Gamma_{val}]$

$[u\pi_{val}]$ ····value····▶ $[i\pi:\underline{1/2/3}]$ $[i\pi:\_\_]$ => $[d:\underline{3P}]$

As in (17) ACC c-commands DAT before v^0 is merged, the $[u\Gamma_{uval}]$ Probe on v^0 must enter Agree with $[i\Gamma_{val}]$ on ACC (now the closest accessible Goal). Because of the condition on valuation in (17), the $[u\pi_{val}]$ on v^0 then also values the $[i\pi_{uval}]$ on ACC. The [uΓ] on v^0 is now valued and no longer a Probe, so the $[i\pi_{uval}]$ on DAT can no longer be valued via Agree, which means DAT must get a default 3P value, yielding the inverse PCC

pattern. The derivation of the inverse PCC thus requires only that the ACC-over-DAT movement that yields the ACC » DAT clitic order takes place before v^0 is merged. The absence of this type of movement in a language means that only standard PCC patterns can arise in DOCs.

The advantage of the analysis is two-fold. It can derive both the canonical PCC and inverse PCC, as it is not based around any IO/DO asymmetry, and it is not necessarily limited to the *strong PCC*[10] or person restrictions where 1P and 2P have equal status – in principle, multiple heads may bear valued [π] features, and *participant* and *author* (or *participant* and *hearer*) values may be distributed over more than one functional head. This could then derive the more complex clitic person restrictions, but the exact details need to be spelled out in future work.

3 Explaining the Imperative Asymmetry

The open issue now is that the PCC can be voided in matrix imperatives in Slovenian. Ciucivara (2009) observes a similar pattern in Romanian: in declaratives, where pronominal clitics are pre-verbal, 1P clitics must precede other pronominal clitics. This restriction is lifted in imperatives. Ciucivara proposes that the asymmetry follows from imperatives lacking a TP. Because of this, clitics do not move to TP where they would occupy a pre-verbal position and potentially give rise to the ordering restriction. Ciucivara's argumentation builds on Zanuttini's (1997) proposal of a correlation between the presence of negation and TP: in languages where negative imperatives are banned this follows from the lack of a TP in imperatives. But Slovenian imperatives can in fact occur with negation, both in matrix (19) and embedded environments (20); recall also that PCC effects are observed in embedded imperatives (see (10,11) above).

[10] In Stegovec (2015), I show that weak PCC (see footnotes 1 and 3) including the inverse pattern can also be derived within this approach. I propose that with the weak PCC [iπ] valuation is restricted to Spec-Head configurations with v^0 due to independent factors.

(19) a. Ne pokaži **mu** **ga**!
not show.IMP 3P.M.DAT 3P.M.ACC
b. Ne pokaži **ga** **mu**!
not show.IMP 3P.M.ACC 3P.M.DAT
'Don't show it to him!'

(20) a. Rekla je, da **mu** **ga** ne pokaži!
said.F.SG is that 3P.M.DAT 3P.M.ACC not show.IMP
b. Rekla je, da **ga** **mu** ne pokaži!
said.F.SG is that 3P.M.ACC 3P.M.DAT not show.IMP
'She said that you should not show it to him!'

Slovenian thus either entirely lacks true imperatives; both matrix and embedded imperatives are *surrogate imperatives* with TPs (in Zanuttini's (1997) terminology), or a different analysis for the presence of negation in imperatives is needed. In any case, the examples in (19) and (20) show that the lack of PCC effects in matrix imperatives cannot be explained in terms of the absence or presence of the TP layer.

3.1 The Greek Clitic Switch

In some varieties of Greek, object clitics may occur with both DAT » ACC and ACC » DAT orders in imperatives (21), but they are restricted to the DAT » ACC order in finite clauses (22) (see Terzi 1999; Bošković 2004).

(21) a. Diavase **mou** **to**! b. Diavase **to** **mou**!
read.IMP 1P.DAT 3P.N.ACC read.IMP 3P.N.ACC 1P.DAT
'Read it to me!' 'Read it to me!'

(22) a. **Mou** **to** diavase! b. ***To** **mou** diavase!
1P.DAT 3P.N.ACC read.IMP 3P.N.ACC 1P.DAT read.IMP
'S/he is reading it to me.' int.: 'S/he is reading it to me.'
(Greek; Bošković 2004:291–293)

Bošković (2004) proposes that the Greek clitic switch results from lower copy pronunciation (LCP) forced by an adjacency requirement between V and a functional head (Bobaljik 1995; Bošković 2001). Building on Miyoshi (2002), Bošković (2004) links the clitic switch to a particular analysis of the ban on negative imperatives in Greek (23). The ban is at its core a prohibition of negation occurring with a particular verb form. Note that in English negation is similarly banned with a particular verb

form—finite main verbs, as illustrated by (24a). In such cases English must make use of an infinitive verbal form with *Do-Support* (24b).

(23) * Den/mi diavase!
NEG read$_{IMP}$
int.: 'Don't read!' (Greek; Bošković 2004:288)

(24) * a. John not laughed.
b. John did not laugh.

Miyoshi's (2002) insight is to treat the Greek and English ban on negation as essentially the same phenomenon; the presence of negation is blocking affix hopping/PF merger.[11] The ban on negative imperatives thus results from the functional head F^0,[12] responsible for imperative formation, requiring affixation to V under PF adjacency (*Stranded Affix Filter*) in order for F^0 and V^0 to spell-out as a single word. Negation blocks their merger at PF, causing ungrammaticality (25). The ban can be voided by using a form which does not require PF merger, as in (24b).

(25) F [+affix] *NEG V
[+IMP] den/mi diaváz<u>o</u> ('read')

This analysis makes possible a uniform syntax for Greek declarative (pre-verbal) and imperative (post-verbal) clitics. In both cases, the head of the chain formed by clitic movement is in the same position (26a), which is the copy pronounced in declaratives (26b), but this copy remains unpronounced in imperatives as the PF merger of F^0 forces LCP (26c). The algorithm for copy pronunciation used here is the one argued for by Bobaljik (1995); Franks (2010): the highest copy is pronounced unless a PF violation is triggered by the position of the highest copy, in which case the next available copy in the chain must be pronounced.

[11] The account of the English ban is essentially Chomsky's (1957) analysis in terms of affix hopping, revived more recently, by a.o. Halle and Marantz (1993); Bobaljik (1995).
[12] For Miyoshi (2002) F^0 is an imperative C^0. But embedded imperatives do in fact occur crosslinguistically with both overt C^0 and imperative morphology (also in Slovenian), it is more likely that F^0 is a modal operator (cf. Kaufmann 2012) located between V^0 and C^0.

(26) a. clitic_2 V clitic_1 COPY/INTERNAL MERGE
b. clitic_2 V ~~clitic_1~~ → pre-verbal (PF)
c. $\underline{\mathbf{F^0}=}$ ~~clitic_2~~ $\underline{=\mathbf{V}}$ clitic_1 LCP → post-verbal (PF)

For Bošković (2004), clitics left adjoin to V when V moves to a c-commanding position, and the two clitic orders in Greek imperatives (see (21)) result for Bošković from an additional head-movement step of the complex head {ACC + V} before DAT merges to it. The LCP triggered by F^0 then results in the configuration given in (27a). The order preserving derivation has an additional intermediate step where {ACC + V} moves to X^0 within XP, while DAT cannot, and the order is preserved with LCP (27b). Crucially, this step is optional, but the nature of X^0 (target of the additional head-movement) is not elaborated on by Bošković (2004).

(27) a. $\mathbf{F^0}$ [{ ~~DAT~~ + { ~~ACC~~ **V** } } [{ **ACC** ~~V~~ } [**DAT** …
b. $\mathbf{F^0}$ [{~~DAT~~ {~~ACC~~ **V**} } {**DAT** + {**ACC** ~~V~~} } [{ {~~ACC~~ ~~V~~} + X^0} [~~DAT~~ …

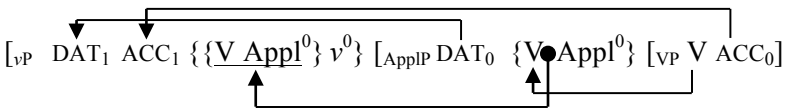
Bošković (2004) stipulates that the DAT clitic cannot adjoin to X^0 within XP due to *"Dative Sickness"* – the cross-linguistic tendency of DAT arguments to not tolerate feature checking with TP. At the end of the following section I derive a more general and principled account of the delayed clitic movement, but for now it suffices to say that the relevant generalization is not that DAT clitic movement is delayed, but that early head-movement of the linearly first clitic is consistently banned. This generalization is put to use in the next section, where the lack of PCC in Slovenian matrix imperatives is derived as the result of a PF-switch.

3.2 Interaction Between the PCC and the PF Clitic Switch

Chomsky (1995) notes that clitics are ambiguous XP/X^0 elements. If this view is correct, it also implies that it should be possible for clitics to either XP-move or head-move. Thus, if a clitic head-moves to a head X^0 (and excorporation out of complex heads is banned), the clitic can only undergo further movement as part of the complex {clitic + X^0} head. But as an XP/X^0 ambiguous element a clitic also has another option, namely: to XP-move successive cyclically before head-adjoining to its landing site. The latter has been tacitly assumed in all derivations so far, and is illustrated for ditransitive clitics in (28). Heads move successive

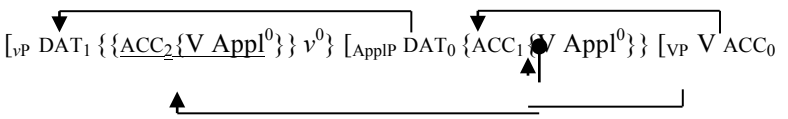
cyclically forming larger complex heads along the way, while the two clitics move like XPs to Spec*v*P essentially to use it as an escape hatch on their way to their final landing site, as *v*P is a phase (Chomsky 2000).

(28)



So far, the clitics were assumed to XP-move within *v*P in the derivation of PCC. But crucially, as we shall see, the option of head-movement of clitics inside *v*P will not affect anything in the previous discussion. In the derivation of a Slovenian ditransitive DAT » ACC imperative, illustrated in (28), the DAT clitic can only move to Spec*v*P (the phase edge) via XP-movement, while ACC can move to Spec*v*P by either: **(i)** XP-moving to Spec*v*P directly, as in (28), or **(ii)** by left adjoining to the first asymmetrically c-commanding X^0 or complex head (here: {V + $Appl^0$}) and "piggybacking" on it to v^0 (and eventually T^0), as in (29).

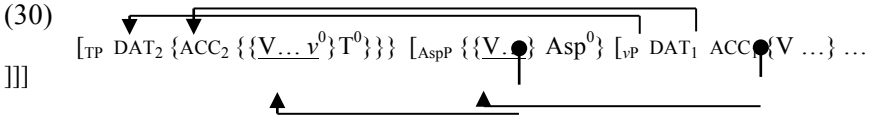
(29)



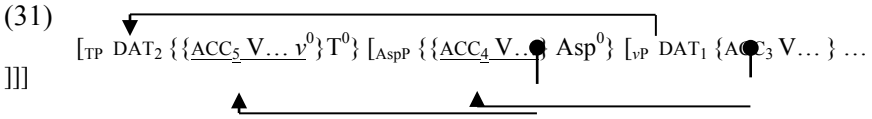
]]]

Crucially, with option (ii), head-movement occurs as early as possible, while with option (i) the clitic head-adjoins only to its final landing site. With both options the ACC clitic must leave *v*P without being valued (spelling-out as 3P) because DAT intervenes for Agree between ACC and v^0 at the point when v^0 merges. The difference between the two options will become crucial as the derivation continues. If the derivation begins as in (28), the cyclic head movement of the verbal complex must continue all the way to T^0, and both DAT and ACC directly head-adjoin to T^0, as shown in (30). But if the derivation begins as in (29), ACC is adjoined to {V + $Appl^0$}, so it can only move further as part of the complex head, as shown in (31). The DAT clitic, in contrast, adjoins directly to T^0 directly from Spec*v*P, yielding a DAT » ACC order. Note that both derivations result in the same final DAT » ACC clitic order.

(30)



(31)



And while both (30) and (31) have the same final clitic order in narrow syntax, they give rise to two distinct orders at PF under LCP. As illustrated by (32a), the derivation in (30) leads to order preservation under LCP forced by the imperative F^0. But the derivation in (31) leads to a PF clitic order switch under LCP, as illustrated by (31b).

(31)a. **F^0** [TP ~~DAT2~~ ~~ACC2~~ [**V**]] [AspP [~~V~~] [*v*P **DAT1** [**ACC3** [~~V~~]] …]]]
b. **F^0** [TP ~~DAT2~~ [~~ACC5~~ [**V**]] [AspP [**ACC4** [~~V~~]] [*v*P **DAT1** [~~ACC3~~ [~~V~~]] …]]]

This PF-switch analysis predicts the PCC should still be active in Greek imperatives. In narrow syntax, only the ACC clitic can get default 3P in Greek due to the rigid DAT » ACC order at *v*P, so the PF-switch cannot repair impossible clitic pairs. And as shown in (32), this is borne out.

(32) a. *Sistis **tu** **me**!
introduce.IMP 3P.M.DAT 1P.ACC
int.: 'Introduce me to him!'
b. *Sistis **me** **tu**!
introduce.IMP 1P.ACC 3P.M.DAT
int.: 'Introduce me to him!'

Unlike in Greek, the PCC may be voided by some speakers in matrix imperatives (see (8,9) above). This can actually be connected to the clitic reordering behind the inverse PCC. Assuming both the syntactic reordering and the PF-switch, there are four distinct derivations of ditransitive imperatives, given in (33,34). The LCP triggered by F^0 can thus obscure the order of the two highest clitic-copies (which matches the final *v*P-internal order). The four combinations in (33,34) are possible

at PF because the PF-switch can also apply to the two grammatical *v*P-internal orders: 1P.DAT » 3P.ACC and 1P.ACC » 3P.DAT.

(33) a. **F^0** [$_{TP}$ ~~1P.DAT~~$_2$ [~~3P.ACC~~$_5$ [**V**]] [$_{AspP}$ [**3P.ACC**$_4$ [~~V~~]] [$_{vP}$ **1P.DAT**$_1$ [~~3P.ACC~~$_3$ [~~V~~]] …]]]
b. **F^0** [$_{TP}$ ~~1P.DAT~~$_2$ [~~3P.ACC~~$_2$ [**V**]] [$_{AspP}$ [~~V~~] [$_{vP}$ **1P.DAT**$_1$ [**3P.ACC**$_1$ [~~V~~]] …]]]

(34) a. **F^0** [$_{TP}$ ~~1P.ACC~~$_2$ [~~3P.DAT~~$_5$ [**V**]] [$_{AspP}$ [**3P.DAT**$_4$ [~~V~~]] [$_{vP}$ **1P.ACC**$_1$ [~~3P.DAT~~$_3$ [~~V~~]] …]]]
b. **F^0** [$_{TP}$ ~~1P.ACC~~$_2$ [~~3P.DAT~~$_2$ [**V**]] [$_{AspP}$ [~~V~~] [$_{vP}$ **1P.ACC**$_1$ [**3P.DAT**$_1$ [~~V~~]] …]]]

The last piece of the puzzle is why PCC effects are observed in Slovenian embedded imperatives. We have seen in (19,20) above that both matrix and embedded negative imperatives are possible,[13] but that the position of negation is different in the two with respect to object clitics: negation precedes the verb and clitics in matrix imperatives, and comes after the clitics and before the verb in embedded ones. I take this to indicate that further clitic movement occurs in embedded imperatives to satisfy the 2nd position requirement (cf. Bošković 2001). As the highest copy must be pronounced if no PF factor interferes (Bobaljik 1995; Franks 2010), the clitic-copies that intervene between F^0 and V in (33,34) remain unpronounced, thus trivially satisfying the Stranded Affix Filter. As this further movement is order preserving, the order of clitics at PF also matches the *v*P-internal order. This means that if the derivation begins with a possible clitic combination, as in (35a), the final PF order will have to match it, but also that a PCC violating order at PF has to match a PCC violating *v*P-internal clitic order, which correctly derives the Slovenian matrix/embedded imperative PCC asymmetry.

(35) a. [$_{CP}$ C^0 [**1P**$_3$ [**3P**$_6$ [~~V~~]]] **F^0** [$_{TP}$ ~~1P~~$_2$ [~~3P~~$_5$ [**V**]] [$_{AspP}$ [~~3P~~$_4$ [~~V~~]] [$_{vP}$ ~~1P~~$_1$ [~~3P~~$_3$ [~~V~~]] …]]]
b. *[$_{CP}$ C^0 [**3P**$_3$ [**1P**$_3$ [~~V~~]]] **F^0** [$_{TP}$ ~~3P~~$_2$ ~~1P~~$_2$ [**V**] [$_{AspP}$ [~~V~~] [$_{vP}$ *~~3P~~$_1$ *~~1P~~$_3$ [~~V~~] …]]]

This analysis explains the asymmetry without a distinct syntax for imperative clitic constructions. However, it is crucial for the analysis that the option of early (or late) clitic head-adjunction is not case-sensitive (*contra* Bošković 2004). The generalization regarding when the two object clitics can undergo different types of movement pertains to

[13] The *affix hopping* analysis of the negative imperatives ban (Miyoshi 2002; Bošković 2004) does not mean there is a bidirectional correlation between the ban and LCP driven post-verbal clitics. In fact Macedonian, like Slovenian, allows both negative imperatives and post-verbal clitics derived through LCP. See Bošković (2001) for Macedonian.

structural positions; it is only possible if the XP-moving CL_1 c-commands the head-adjoining CL_2, and not vice versa. This effectively follows from a particular view of linearization. There are four logically possible options for two clitics to move from *v*P to T^0, if clitics can either head-move or XP-move according to the rules laid out above, namely: a clitic head-adjoins either: **(i)** as late as possible, or **(ii)** as soon as possible. The derivation in which both clitics only head-adjoin to T^0 after XP-moving to Spec*v*P (as late as possible) is given in (36a), the derivation in which only the lower of the two clitics (CL_2) head-adjoins to the verbal complex in *v*P (as soon as possible) is given in (36b),[14] and the derivation in which both clitics head-adjoin to the verbal complex in *v*P (as soon as possible) is given in (36c). All these derivations are possible and lead to correct predictions regarding the PF clitic switch, only (36d) must be ruled out.

(36) a. $[_{TP}\ \{CL_1\ \{CL_2\ \{\{v^0\ \ldots\}\ T^0\}\}\}\ \ldots\ [_{vP}\ CL_1\ CL_2\ \{v^0\ \ldots\}\ [\ldots]]]$

b. $[_{TP}\ \{CL_1\ \{\{CL_2\ \{v^0\ \ldots\}\}\ T^0\}\}\ \ldots\ [_{vP}\ CL_1\ \{CL_2\ \{v^0\ \ldots\}\}\ [\ldots]]]$

c. $[_{TP}\ \{\{CL_1\ \{CL_2\ \{v^0\ \ldots\}\}\}\ T^0\}\ \ldots\ [_{vP}\ \{CL_1\ \{CL_2\ \{v^0\ \ldots\}\}\}\ [\ldots]]]$

d. ***$[_{TP}$ {CL_2 {{CL_1 {v^0 …}} T^0}} … $[_{vP}$ {CL_1 {v^0 …}} [CL_2 […]]]**

Note that in (36d), CL_1 head-adjoins to *v*P to the exclusion of CL_2. As the derivation proceeds at the CP level, the CL_1 clitic moves to T^0 via successive cyclic head-movement, while CL_2 head adjoins directly to T^0, resulting in a reverse order of clitics at the vP and CP levels. This is precisely the kind of reordering banned by Fox and Pesetsky's (2005) approach to linearization. Fox and Pesetsky (2005) propose that ordering statements are determined at the phase level, and that ordering statements added in higher phases cannot contradict with existing ones; an ordering statement at the *v*P level cannot be contradicted at the CP level. This is in fact what we see in (36d), where the ordering at the CP level is CL_2 » CL_1, which conflicts with the CL_1 » CL_2 order established at the *v*P level.[15]

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[14] See Anagnostopoulou (2003) for a discussion of why *tucking in* (Richards 2001) only occurs when both elements are head-moving or XP-moving, but never with disparate kinds of movement, regardless of the order of the two movement operations. I assume, as does she, that when an element head-moves to X^0, and another element XP-moves to SpecXP, the latter must precede the head-moved element, and cannot tuck in.

[15] The cyclic linearization approach of Fox and Pesetsky (2005) also offers a straightforward explanation for why "default 3P" clitics must also move through Spec*v*P. If the final landing site of pronominal clitics is T^0, where they surface as pre-verbal, then

This section provides additional motivation for the *v*P-internal object clitic reordering proposed in Section 2. Because the reordering exists, the PF-switch can serve as a PCC repair. What seems at PF as a cluster banned by the standard PCC, may be a grammatical cluster of the inverse PCC in the syntax, and vice versa. Of course, not all speakers allow this repair, and there are at least two possible explanations. One is that it is harder processing-wise for some speakers to interpret a surface string as involving both narrow syntactic and PF reordering. The other is that the two groups of speakers actually differ in their grammars – one has true verb movement of the imperative verb (no repair), and the other produces the same PF-string via LCP (repair). The two options make different predictions and it should be possible to tease them apart in the future.

4 Conclusion

In this paper I presented a previously unattested pattern of clitic person restrictions found in Slovenian. Unlike with the canonical PCC, the person restriction applies either to the DO (as in the canonical PCC) or to the IO clitic, depending on their relative order. The latter restriction cannot be explained by standard syntactic analyses of the PCC, which are designed to only derive person restrictions on DO. I have proposed an alternative analysis where the PCC results from the failed valuation of person features on pronominal clitics. This occurs when Agree with a head bearing valued person features (v^0) is impossible due to the presence of an intervening pronominal clitic. Within this approach it is possible to derive the Slovenian *inverse* PCC as the consequence of a specific syntactic clitic reordering. Furthermore, the fact that some Slovenian speakers may void the PCC was tied to an interaction of this syntactic clitic reordering with an additional PF clitic switch. Though the full extent of variation found in Slovenian with person restrictions could not be addressed in the paper, the proposal laid the groundwork for future research focusing on the parameterization of clitic person restrictions.

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the only way for them to move to T^0 and not create a conflicting ordering statement at the CP level, is if they are ordered $CL_1 \gg CL_2 \gg V$ at the *v*P level. This can only be achieved without early head movement if CL_2 moves to Spec*v*P despite not entering Agree with v^0.

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Producing Case Errors in Russian[*]

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1 Introduction

Numerous experimental studies have been devoted to so-called attraction errors in subject–verb agreement, as in (1a). Across languages, attraction errors were shown to arise more often in production and to cause smaller effects in comprehension than errors without attraction, as in (1b) (e.g. Badecker & Kuminiak 2007; Bock & Miller 1991; Clifton et al. 1999; Dillon et al. 2013; Eberhard et al. 2005; Franck et al. 2002, 2006; Hartsuiker et al. 2003; Lorimor et al. 2008; Pearlmutter et al. 1999; Solomon & Pearlmutter 2004; Staub 2009, 2010; Tanner et al. 2014; Vigliocco et al. 1995, 1996; Wagers et al. 2009).

(1) a. *The key to the cabinets were rusty.
b. *The key to the cabinet were rusty.

[*] Experiments described in this paper were run in the Laboratory for Cognitive Studies, St.Petersburg State University. This work was supported in part by the grant 14-04-00586 from the Russian Foundation for Humanities.

Most experiments looked at number agreement, but gender agreement has also been analyzed. Many characteristics of attraction errors have been studied, so we will focus on the two that are most relevant for the present paper. Firstly, it was noted that only plural attractors cause a significant effect. Agreement errors with singular attractors, as in (2), were shown to be almost as infrequent and as easy to detect as errors without attraction. To explain this asymmetry, the singular feature is usually argued to be unmarked in some sense and thus to be unable to interfere with agreement (e.g. Eberhard et al. 2005; Franck et al. 2002; Vigliocco et al. 1995).

(2) *The keys to the cabinet was rusty.

Secondly, previous studies of languages where nouns are marked for case found that attraction was much stronger when the form of the plural attractor coincided with nominative plural, like in the German example (3a) as opposed to (3b) (Hartsuiker et al. 2003). We will further call such forms morphologically ambiguous or syncretic.

(3) a.	die	Stellungnahme	gegen	die		Demonstrationen
	the	position	against	the$_{ACC(=NOM).PL}$		demonstrations
b.	die	Stellungnahme	zu	den		Demonstrationen
	the	position	on	the$_{DAT(\neq NOM).PL}$		demonstrations

In this paper, we also study how morphological ambiguity triggers errors in production, but, unlike previous experimental studies, we analyze case. We highlight some similarities and differences between our data and existing findings on number and gender. The former let us reveal some general properties of morphological ambiguity processing, while the latter may be associated with the fact that case differs from phi-features. Case errors we are interested in have been noted in naturally occurring conversations and texts (Rusakova 2009) and have been studied experimentally in comprehension (Slioussar and Cherepovskaia 2014, 2015). We summarize the findings in the next section.

2 Previous studies of case errors analyzed in the present paper

In Russian, some adjective and participle forms are ambiguous between different cases: genitive, dative, instrumental and locative for singular feminine forms, and genitive and locative for plural forms, which are the same in all three genders. Rusakova (2009) who studied naturally occurring errors in Russian noted a number of examples like (4a–e) with case errors on nouns after such syncretic forms.

(4) a. * v predposlednej igry
in second-to-last$_{F.LOC(=GEN/DAT/INS).SG}$ game$_{F.GEN.SG}$
'in the second to last game'

b. * komitet po nauke i vyššej
committee for science$_{F.DAT.SG}$ and higher$_{F.DAT(=GEN/INS/LOC).SG}$
školy
school$_{F.GEN.SG}$
'the committee for science and higher education'

c. * obitateli pjatoj kvartire[1]
residents fifth$_{F.GEN(=DAT/INS/LOC).SG}$ apartment$_{F.DAT/LOC.SG}$
'the residents of the fifth apartment'

d. * more udovol'stvija ot tex točnyx
sea pleasure$_{GEN.SG}$ from those$_{GEN(=LOC).PL}$ precise$_{GEN(=LOC).PL}$
roditel'skix otvetax
parental$_{GEN(=LOC).PL}$ answer$_{LOC.PL}$
'a lot of pleasure from the parents' precise answers'

e. * na voennyx sborov
during military$_{PREP.PL(=GEN.PL)}$ assembly$_{GEN.PL}$
'during the military assembly'

Unfortunately, Rusakova recorded only a dozen of such errors so her materials do not let us investigate how different factors influence their frequency, in particular, the distribution of different cases and the similarities and differences with other errors following syncretic forms.

[1] Dative singular coincides with locative singular for feminine nouns, so it is impossible to tell which case was erroneously used in this example.

So we decided to study them experimentally, starting with three reading experiments (Slioussar and Cherepovskaia 2014, 2015).[2]

In all three experiments, we looked at plural syncretic forms, as in (4d–e). The first and second experiments used the self-paced reading method (allowing to measure word-by-word reading times). The third one involved a speeded grammaticality judgment task: sentences were presented word by word (every word for 500 ms), and participants were asked whether they contain a grammatical error.[3]

In the first experiment, we compared reading times for correct sentences like (5a) and sentences with case errors like (5b) and (5c). We will further call the former ambiguity-related errors and the latter control errors. We looked at prepositions taking locative DPs, as in (5a–c), genitive DPs and dative DPs (these were used as a control case because dative plural adjective forms are not syncretic).

(5) a. Listja na pešexodnyx dorožkax radujut zolotistym
leaves on pedestrian$_{LOC.PL}$ paths$_{LOC.PL}$ gladden golden$_{INS.SG}$
cvetom.
color$_{INS.SG}$
'Leaves on the pedestrian paths gladden (us) with their golden color.'

b. * Listja na pešexodnyx dorožek…
leaves on pedestrian$_{LOC(=GEN).PL}$ path$_{GEN.PL}$

c. * Listja na pešexodnyx dorožkam…
leaves on pedestrian$_{LOC(\neq DAT).PL}$ path$_{DAT.PL}$

Ambiguity-related errors caused a significantly smaller slow-down than control errors in the sentences where both genitive and locative were required. Thus, in this respect they were similar to attraction errors in number and gender subject-verb agreement. In the sentences where dative case was required, there was no difference between errors in genitive and in locative (this showed that the difference we found was

[2] We started with comprehension experiments because developing a method for triggering such errors in production took some time, and the first results are reported only in the present paper.

[3] If adult native speakers are allowed to take their time, they can find almost every grammatical error, so this method allows differentiating between errors that are more and less difficult to spot.

not caused by independent factors, e.g. by the properties of case forms such as their frequency).

In the second and third experiment, we investigated how the effect we found depends on the distance between the adjective or participle and the noun. We compared sentences like (5a–c) ('short' conditions) to sentences like (6a–c) ('long' conditions) with three words between the syncretic form and the noun. Notably, the structural distance is the same in all conditions, only the linear distance changes, and attraction effects in subject-verb agreement were demonstrated to depend only on the structural distance.

(6) a. Listja na iduščix vdol' krutogo berega
leaves on going$_{LOC.PL}$ along steep$_{GEN.SG}$ bank$_{GEN.SG}$
dorožkax radujut zolotistym cvetom.
path$_{LOC.PL}$ gladden golden$_{INS.SG}$ color$_{INS.SG}$
'Leaves on the paths going along the steep (river) bank gladden (us) with their golden color.'

b. * Listja na iduščix vdol' krutogo berega
leaves on going$_{LOC(=GEN).PL}$ along steep$_{GEN.SG}$ bank$_{GEN.SG}$
dorožek…
path$_{GEN.PL}$

c. * Listja na iduščix vdol' krutogo berega
leaves on going$_{LOC(\neq DAT).PL}$ along steep$_{GEN.SG}$ bank$_{GEN.SG}$
dorožkam…
path$_{DAT.PL}$

The same difference between ambiguity-related and control errors was observed in the short and long conditions, so the picture is again similar to subject-predicate agreement attraction. Comparing the results of self-paced reading (measuring online reactions to violations) and speeded grammaticality judgment (measuring offline effects), we found that online effects were more pronounced in the short conditions, while offline effects—in the long conditions. Apparently, the number of errors not noticed by the readers increases in the long conditions, so the differences in grammaticality judgments are inflated, while the differences in reading times are smoothed over.

Speeded grammaticality judgment also allowed for a direct comparison between sentences with prepositions taking genitive and

locative, and no differences between them were found (i.e. the effect was the same in both cases). A direct comparison of reading times was impossible because the relevant sentences contain different lexical items. The goal of our next experiments reported in the present paper was to study ambiguity-related case errors in production.

3 Experiment 1

3.1 Method

The goal of Experiment 1 was to find out whether case errors after morphologically ambiguous adjective and participle forms could be elicited experimentally and, in case of the positive answer, to analyze their distribution. We started with plural forms because the pattern of syncretism is simpler than in case of feminine singular forms and because plural forms were analyzed in comprehension experiments.

25 native speakers of Russian (14 female), aged 18–52, took part in the experiment. The materials included 40 sentences in four conditions, exemplified in (7a–d).

(7) a. Short genitive condition:
Kak izvestno, položitel'nye otzyvy ot
as known positive comments from
postojannyx klientov uveličivajut prodaži
regular$_{GEN(=LOC).PL}$ clients$_{GEN.PL}$ increase sales
'As is well known, positive feedback from regular clients increases sales.'

b. Long genitive condition:
Demonstracii protiv vyzvavšix vseobščee
demonstrations against provoking$_{GEN(=LOC).PL}$ unanimous
burnoe negodovanie arestov prodolžalis' dolgo.
violent indignation arrests$_{GEN.PL}$ continued for-a-long-time
Demonstrations against the arrests that provoked an unanimous violent indignation went on for a long time.'

c. Short locative condition:
Proverennye neskol'ko raz ispravlenija v novyx
checked several times corrections in new$_{LOC(=GEN).PL}$
učebnikax soderžat ošibku.
textbooks$_{LOC.PL}$ contain mistake
'Corrections in the new textbooks that have been checked severl times contain a mistake.'

d. Long locative condition:
Legendy ob izmenjajuščix svoj vnešnij oblik
legends about changing$_{LOC(=GEN).PL}$ their external appearance
demonax vstrečajutsja povsjudu.
demons$_{LOC.PL}$ occur everywhere
'Legends about demons changing their visual appearance can be found everywhere.'

In all target sentences, the subject was modified by a PP. In two conditions (7a–b), the preposition took a genitive DP, in two other conditions (7c–d), a locative DP. These DPs always contained a plural adjective or participle, which was morphologically ambiguous.

Like in the previous reading experiments, we included 'short' and 'long' conditions. In the short conditions (7a,c), the noun immediately followed the adjective or participle. In the long conditions (7b,d), there were three words in between (a DP in accusative or instrumental singular depending on the ambiguous adjective or participle). The predicate always contained two words. In total, all target sentences were nine words long: in the short conditions, there were three words before the subject noun (a participial construction, a parenthetical expression, etc.).

There are several methods to elicit number and gender errors in subject-predicate agreement, which have been tested in numerous production experiments since Bock and Miller 1991. However, no previous experimental studies analyzed case errors we were interested in. We tried many versions of the experimental design, providing participants with parts of sentences that they were asked to continue or to combine to get a complete sentence, presenting materials visually or aurally (see Stetsenko 2015 for more details). If the task was too easy, participants made very few errors. If the task was too difficult, participants slowed down, started thinking over their responses and made many memory-based errors, but virtually no grammatical errors.

Finally, we opted for the following design. We presented the first part of target sentences aurally (8a) and asked participants to finish them using the words on the computer screen: a noun and a two-word predicate (8b–c). To do so, participants had to inflect the noun and the verb in the predicate.

(8) a. Demonstracii protiv vyzvavšix vseobščee
demonstrations against provoking$_{GEN(=LOC).PL}$ unanimous
burnoe negodovanie…
violent indignation
b. aresty
arrests$_{NOM.PL}$
c. prodolžat'sja dolgo
continue$_{INF}$ for-a-long-time

In addition to 40 target sentences, we had 80 filler sentences. Participants were also asked to finish them inflecting provided nouns and verbs. However, there were no syncretic adjective or participle forms and nouns never had to appear in genitive or locative plural (other combinations of number and case were used). Half of the fillers resembled long experimental conditions and the other half — short conditions.

The experiment was run on a Macintosh computer using PsyScope software (Cohen et al. 1993). In every trial, participants saw a fixation point on the computer screen and heard the beginning of a sentence. Then they saw a noun and a predicate (one above the other) and pronounced a complete sentence. After that, the experimenter pressed a key, and the next trial started after a short interstimulus interval. Stimuli and fillers were presented in a pseudo-random order (with the constraint that no more than two target items occur consecutively). Before the experiment, there was a short practice session. All participants' responses were tape-recorded.

3.2 Results and discussion

All responses were transcribed and assigned into one of the following categories: (a) correct sentence; (b) repetition error (when some words that were provided were changed or omitted); (c) case error on the noun; (d) other grammatical errors (for example, one participant made a number agreement attraction error on the verb in a filler sentence). In

target sentences, case errors were the only grammatical errors, so we will further focus on them.

In total, there were 43 case errors, and in all cases, a genitive plural form was used where locative plural was required. There were three errors in the short locative condition (1.2% from all responses) and 40 errors in the long locative condition (16.0% from all responses). The proportion of errors by condition was analyzed using a 2 x 2 repeated-measures ANOVA (IBM SPSS software) with case and length as factors. Both factors were shown to be significant (for case, $F1(1,24) = 30.07$, $p < 0.01$, $F2(1,19) = 11.88$, $p < 0.01$; for length, $F1(1,24) = 34.37$, $p < 0.01$, $F2(1,19) = 12.82$, $p < 0.01$).

Let us discuss these results. Firstly, only ambiguity-related case errors were recorded, which shows that syncretism of the participle or adjective indeed increases the frequency of case errors on nouns. Secondly, there were more errors in the long sentences. This shows that these errors are not a surface phenomenon stemming from adjacency between the syncretic form and the noun.

Thirdly, the results were not parallel to our previous findings in comprehension. In comprehension, all ambiguity-related errors behaved in the same way, while in production, we found genitive errors where locative was required, but not vice versa. Of course, this does not mean that the latter type of errors does not exist (Rusakova (2009) even recorded a naturally occurring example in (4d)), but definitely points to a significant difference in frequency. We postpone further discussion until we have more data from Experiment 2 with singular syncretic forms.

Interestingly, here the picture does not coincide to what we find in case of subject-predicate agreement attraction. The absolute majority of number attraction errors are in plural, which, as we noted in the introduction, is usually explained by plural markedness[4] (e.g. Eberhard et al. 2005, Franck et al. 2002, Vigliocco et al. 1995). Applying the notion of markedness to case is less straightforward, but whatever case

[4] In semantics there is an ongoing debate whether singular or plural is the default (e.g Sauerland et al. 2005; Farkas and de Swart 2010), but it is largely ignored in psycholinguistics. Without going into details, let us note that singular is used in impersonal sentences and is morphologically unmarked in a number of languages.

hierarchy we take (e.g. Baerman et al. 2005; Bobaljik 2002; Caha 2013), genitive will be above locative.[5]

4 Experiment 2: a pilot study

4.1 Method

The goal of Experiment 2 was to elicit case errors on nouns modified by feminine singular syncretic adjective and participle forms. So far, we collected data from 20 native speakers of Russian (14 female), aged 18–34, but plan to record more participants.

The materials included 40 sentences in four conditions, exemplified in (9a–d). Experiment 1 demonstrated that the error rate is much higher when the syncretic form and the noun are separated by several words, so in this experiment, there was a two word long DP in accusative singular between them in all target sentences. Otherwise, we used the same method as in Experiment 1. We also had 80 fillers that resembled target sentences, but required different number and case on the noun that participants were supposed to modify.

(9) a. Genitive condition:
Miting protiv vyzvavšej vseobščee
meeting against provoking$_{\text{GEN(=DAT/INS/LOC).SG}}$ unanimous
negodovanie iniciativy prodolžalsja dolgo.
indignation initiative$_{\text{GEN.SG}}$ continued for-a-long-time
'The meeting against the initiative that provoked an unanimous indignation went on for a long time.'

b. Dative condition:
Poxod po porazivšej turističeskuju
hike across amazing$_{\text{DAT(=GEN/INS/LOC).SG}}$ touristic
gruppu doline byl zaxvatyvajuščim.
group valley$_{\text{DAT.SG}}$ was captivating
'The hike across the valley that amazed the tourist group was captivating.'

[5] An anonymous reviewer noted that it might be infelicitous to discuss Russian Genitive as a whole because its different uses have very different syntactic properties. However, our materials were rather homogenous in this respect.

c. Instrumental condition:
Sjužet s ispolnjajuščej ljuboe želanie
plot with fulfilling$_{INS(=GEN/DAT/LOC).SG}$ every wish
ryboj často vstrečaetsja.
fish$_{INS.SG}$ often occurs
'The plot with a fish that fulfills every wish occurs frequently.'

d. Locative condition:
Urožaj v pereživšej zasušlivoe leto
harvest in surviving$_{LOC(=GEN/DAT/INS).SG}$ droughty summer
strane okazalsja mizernym.
country$_{INS.SG}$ turned-out paltry
'The harvest in the country that survived a droughty summer turned out to be paltry.'

4.2 Results and discussion

All responses were transcribed and assigned into the same categories as in Experiment 1: (a) correct sentence; (b) repetition error (when some words that were provided were changed or omitted); (c) case error on the noun; (d) other grammatical errors. The incidence of various errors was higher than in Experiment 1, potentially due to the fact that there were no short conditions. The distribution of case errors across conditions is shown in Table 1.

Case required / case used	Genitive	Dative	Instrumental	Locative	Total
Genitive	—	25 (12.5%)	17 (8.5%)	18 (9.0%)	60
Dative or locative	8 (4.0%)	—	6 (3.0%)	—	14
Instrumental	2 (1.0%)	1 (0.5%)	—	1 (0.5%)	4
Accusative	1 (0.5%)	6 (3.0%)	4 (2.0%)	2 (1.0%)	13

Table 1. The distribution of case errors in different conditions

It was impossible to distinguish between dative and locative errors because not only feminine adjectives, but also feminine nouns have the same form in these cases in singular. Thus, we observed all possible types of ambiguity-related errors and also accusative singular errors, which could be triggered by accusative singular DPs depending on

syncretic adjectives and participles.[6] We did not perform any statistical tests because more participants need to be recorded to make the data sample large enough. However, it can already be noted that, unlike in Experiment 1, participants made not only genitive errors. But genitive errors were by far the most frequent.

5 General discussion

In this paper, we present the results of one experiment and one pilot study analyzing the production of case errors in Russian. Experimental research on such errors focused only on comprehension so far. In total, experiments show that the morphological ambiguity of the adjective or participle modifying a noun increases the number of case errors on this noun in production and influences processing of case errors in comprehension (ambiguity-related errors are missed more often and, if noticed, are less disruptive for reading).

The effect of morphological ambiguity is similar to what can be observed during subject-predicate agreement attraction. However, case errors differ from number and gender agreement errors in an important way. Genitive is higher than locative, dative and instrumental in all proposed case hierarchies, and genitive errors are the most frequent. In case of number and gender, we find more errors with marked features (plural and feminine).

Let us discuss our findings in the context of existing approaches to agreement attraction. Two major approaches can be identified in the literature. According to the first approach, which we will further call representational (e.g. Brehm & Bock 2013; Eberhard et al. 2005; Franck et al. 2002; Nicol et al. 1997; Staub 2009, 2010), agreement attraction takes place because the mental representation of the number feature of the subject NP is faulty or ambiguous. Some authors assume that the number feature can "percolate" from the embedded NP to the subject NP, which normally receives its features from its head. The others, relying primarily on the Marking and Morphing model suggested by Eberhard et al. (2005), argue that the number value of the subject NP is a continuum, i.e. it can be more or less plural. The more plural is the subject NP, the higher is the possibility of choosing a plural verb. This plurality depends

[6] Similar naturally occurring errors have been observed by Rusakova (2009).

on such properties of the subject NP as a whole and its head as collectivity, distributivity, etc.

The second approach (e.g. Badecker & Kuminiak 2007; Dillon et al. 2013; Lewis & Vasishth 2005; Solomon & Pearlmutter 2004; Wagers et al. 2009) claims that the number feature on the subject NP is always represented unambiguously and correctly, and attraction errors arise when the subject NP is accessed to determine the number on the agreeing verb because several nouns are simultaneously active. The authors adopting this approach usually assume that the agreement controller is found via cue-based retrieval (Lewis & Vasishth 2005): we query the memory with a set of cues (e.g. "number: plural", "case: nominative", etc.) and select an element that matches the maximum number of cues. This process is not error-free, and a wrong element can sometimes be retrieved.

As Wagers et al. (2009) note, two scenarios are possible both in production and in comprehension. On the one hand, cue-based retrieval may be initiated whenever we reach an agreeing verb form. On the other hand, we may predict the number of the verb relying on the subject NP and initiate the retrieval only when our expectations are violated (in comprehension, this would be the case in ungrammatical sentences, in production, this would be possible if a wrong verb form can sometimes be spuriously generated).

The retrieval approach is better suited to account for the fact that in case marking languages, significant attraction effects are observed only when the form of the attractor coincides with nominative plural. In the representational approach, it is unclear why this syncretism should influence the ambiguous representation of the number feature on the attractor or its ability to percolate.

The fact that morphological ambiguity of adjectives and participles influences the incidence of case errors and reaction to them in comprehension in a similar way can be taken as indication that we also deal with retrieval errors here. When we reach the noun, we must determine which case is necessary in production or check whether the case we see is correct in comprehension. Notably, from the syntactic point of view, we should not look at adjectives and participles to do so, which shows that the retrieval process is noisier than we could assume based on subject-verb agreement attraction data. Another new observation is that case behaves differently from phi-features: in the

latter case, the most marked features are easier to retrieve. Maybe, the reason is that case hierarchy does not rely on feature markedness.

Our data also let us make a small contribution to the discussion of ambiguity processing. For many decades, locally and globally ambiguous sentences have served as a testing ground for parsing models (Clifton & Staub 2008; Frazier & Fodor 1978; Frazier & Rayner 1982; McDonald 1994; Swets et al. 2008; van Gompel et al. 2001, 2005, among many others). The sources of ambiguity could be different, but in many cases it was created by morphologically ambiguous forms, as in the classical example in (10).

(10) The horse raced past the barn fell.

Notably, all previous studies looking at morphologically ambiguous forms from this perspective analysed constructions where at least locally, two interpretations are possible (for example, (10) remains ambiguous until the reader reaches the verb *fell*). The goal was to determine which interpretation is chosen in different constructions depending on various factors, how ambiguity resolution proceeds, how reanalysis is implemented, if it is necessary, etc.

In the sentences used in our study, the ambiguity should be resolved immediately because the preposition preceding the syncretic adjective or participle requires a certain case. Nevertheless, we demonstrated that alternative feature sets are available at the stage when cue-based retrieval is initiated at the noun. We believe that they get reactivated rather than remain active. Various studies show that, even if two interpretations are possible from the syntactic point of view, the resolution is very fast if one of them is strongly supported by other factors. In our case, no alternative interpretations are possible in principle.

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Phase by Phase Computation of Prominence in Ellipsis and PP-stranding Island Alleviation*

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On the basis of Polish data involving single and multiple sluicing remnants, this paper argues that wh-remnants in sluicing can undergo local focus-driven movement to the nearest phase edge. The proposed analysis aims to account for the asymmetries between regular wh-movement and sluicing as far as preposition stranding effects and island effects are concerned. The proposal suggests that ellipsis remnants can be licensed locally in their phase, and sluicing does not alleviate islands.

1 Introduction

Merchant (2001) observed that the distribution of wh-remnants in sluicing correlates with the distribution of wh-phrases in regular wh-movement. Languages that do not allow wh-movement out of a PP in question formation prohibit in sluicing bare wh-remnants that are case-marked by a PP. In examples (1a,b), we see that question-forming wh-movement cannot strand a preposition. In example (1c), we see that a sluice with a simple wh-remnant cannot have the preposition dropped (for clarity wh-remnants and their correlates are underlined).

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(1) *a. Maria gadała z kimś ale nie wiem kim Maria gadała z
Mary talked with someone but not know whom Mary talked with
'Mary talked with someone but I don't know whom Mary talked with.'

b. Maria gadała z kimś ale nie wiem z kim Maria gadała t
Mary talked with someone but not know with whom Mary talked
'Mary talked with someone but I do not know with whom Mary talked.'

c. Maria gadała z kimś ale nie wiem *(z) kim
Mary talked with someone but not know with whom
'Mary talked with someone but I do not know (with) whom.'

Such parallels between wh-movement and remnant distribution in sluicing have led Merchant (2001) to argue that the wh-remnant is derived via wh-movement out of a syntactic structure that undergoes subsequent ellipsis (understood as a PF operation of suppressing phonological expression of a constituent that has syntactic structure). Counterexamples to the parallelism between wh-movement and wh-remnant licensing involve complex D-linked wh-remnants, which can appear without the P licensing their case (Szczegielniak 2008).

(2) *a Maria gadała z którymś mężczyzną ale nie wiem którym$_1$
Mary talked with some man but not know which
Maria gadała z t_1 mężczyzną
Mary talked with man
'Mary talked with some man but I do not know which man she talked with.'

b. Maria gadała z którymś mężczyzną ale nie wiem [z którym
Mary talked with some man but not know with which
mężczyzną]$_1$ Maria gadała t_1
man Mary talked
'Mary talked with some man but I do not know which man she talked with.'

c. Maria gadała z którymś mężczyzną ale nie wiem (z) którym
Mary talked with some man but not know (with) who
'Mary talked with some man but I do not know (with) who.'

We can see from the contrast between (2a) and (2b) that wh-movement of a D-linked phrase cannot strand a proposition. Crucially, in (2c) we observe that a sluicing remnant can appear optionally with, or without, the proposition that licenses its case. The data in (2) breaks the parallelism between wh-movement in questions and wh-movement in sluicing. Szczegielniak (2008) proposed that (2c) can be accounted for by assuming that the underlying structure of the sluice was a copula-less cleft as in (3) with the wh-remnant receiving focus prominence marking.

?(3) Maria gadała z którymś mężczyzną ale nie wiem którym ~~to z mężczyzną gadała~~
Mary talked with some man but not know which it with man talked
'Mary talked with some man but I do not know with which man it was she talked.'

This approach has been criticized in Nykiel (2013) on the assumption that such clefts are not grammatical in Polish. The argument is primarily based on judgment questionnaire data that unfortunately does not test the whole structure in (3), but just the subordinate CP that is sluiced in isolation. There is a distinct possibility that the subordinate in isolation is degraded just as the string 'whether she danced' is bad in English unless it is a subordinate to a matrix CP. However, Nykiel's (2013) criticism is well placed because of example (4a) below. It provides clear evidence that the analysis in Szczegielniak (2008) cannot be the whole picture. Example (4a) has the whole DP as the remnant, whereas in (3) the remnant is limited to the wh-part of the D-linked structure, the nominal is elided. In (4b) we see that a cleft continuation is completely ungrammatical for the sluice in (4a). This is because we cannot cleft the whole D-linked complex, so it should not be a possible remnant. It appears we are left with no grammatical continuation for sluices like (4a) where the proposition is omitted since neither clefting or regular wh-movement out of the PP is possible. It appears we need a third type of derivation for examples like (4a).

(4) a. Maria gadała z którymś mężczyzną ale nie wiem (z) którym
Mary talked with some man but not know (with) which

mężczyzną
man
'Mary talked with some man but I do not know (with) which man.'

*b. Maria gadała z którymś mężczyzną ale nie wiem [którym mężczyzną]$_1$ {to z t_1 gadała}
Mary talked with some man but not know which man it with talked
'Mary talked with some man but I do not know with which man it was she talked.'

The data in (4) unambiguously shows that a cleft continuation is impossible for some cases of P-omission in sluicing. Furthermore, Nykiel (2013) points out that when the antecedent DP is complex enough, a simple wh-remnant can have P-omission, as shown in (5a). In example (5b) we see that a cleft continuation for (5a) is also impossible.

(5) a. Byłaś ubrana w coś czerwonego tamtej nocy, ale nie pamiętam (w) co.
were dressed in something.ACC red.ACC that night but not remember (in) what.ACC
'You were dressed in something red that night, but I don't remember (in) what.'

*b. Byłaś ubrana w coś czerwonego tamtej nocy, ale nie pamiętam co to w czerwonego byłaś ubrana tamtej nocy
were dressed in something.ACC red.ACC that night but not remember what.ACC it in red (ACC) were dressed that night
'You were dressed in something red that night, but I don't remember what it was.'

This paper proposes that the contrast in (4) and (5) is not necessarily an argument against the idea that an ellipsis site contains a fully-fledged syntactic structure. We can maintain the insight that elided structures have syntactic structure provided we examine the nature of syntactic representations that do not need to be linearized. Elided strings are not articulated, which means that whatever output linearization constrains exist, they do not need apply to elided strings. I adopt the standard model

theoretic assumptions of a phase-based syntactic derivation (Chomsky 2001). Syntactic structure is sent to the Sensory-Motor (SM) and Conceptual-Intentional (C-I) interfaces in chunks that correspond to the Spell-out Domains (SD) of phase heads that are usually associated with the v, C as well as D heads (Bošković 2014). The paper argues that ellipsis remnant licensing via focus/prominence is phase based. This remnant licensing mechanism is not constrained by linearization the way it is in non-elided structures. Crucially, I will argue that wh-remnants can be focus licensed within the nominal phase they are Merged in, unless linearization forces additional wh-movement, as will be the case with multiple remnants.

(6) Wh-remnant licensing.
- Sluiced anaphors are constrained by mutual entailment with the antecedent modulo focus (Merchant 2001).
- Elided structures are not linearized allowing focused remnants to remain within the phase that licensed their focus.
- A phase licensing a focused remnant is headed by a focus head.

Let us consider a derivation of (5a) given in (7) below.

(7) a. Byłaś ubrana w coś czerwonego tamtej nocy,
were dressed in something.ACC red.ACC that night
ale nie pamiętam (w) co.
but not remember (in) what.ACC

b. … [~~byłaś ubrana~~ [$_{PP}$~~w~~ [$_{FP}$ co$_1$^{F} [$_{XP}$ t$_1$ ~~czerwonego~~]] ~~tamtej nocy~~

The wh-remnant moves up to the edge of a Focus Phrase. Because the phase is being elided, Foc is the phase head of the nominal extended projection. I assume, following Bošković (2014), that phase heads are relative in the sense that it is the topmost head of a given domain that is a phase head. Following Gengel (2007), I assume that ellipsis targets the Spell-out domain of a phase head. However, unlike standard analyses, I propose that each phase head licenses ellipsis individually. This is a direct consequence of Spell-out and the Phase Impenetrability Condition (PIC).[1] If a given Spell-out domain is not elided at Spell-out, subsequent

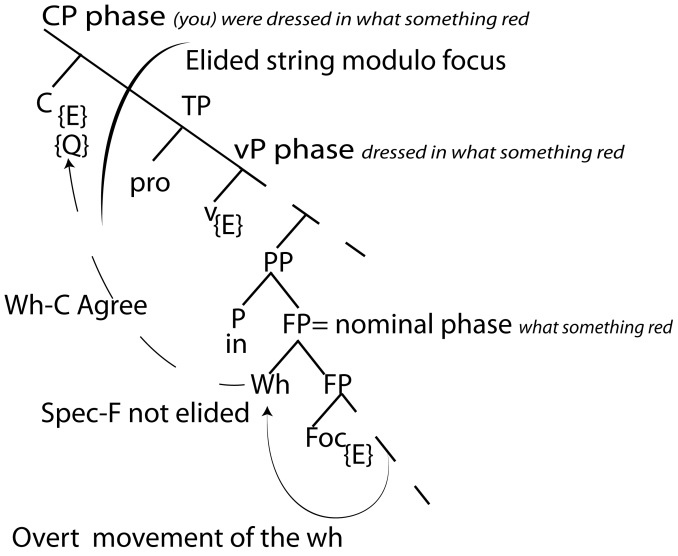
[1] PIC: Given structure [ZP Z [XP X [HP α [H YP]]], with H and Z the heads of phases: In phase α with head H, the domain of H is not accessible to operations outside α ; only H and its edge are accessible to such operations

cycles cannot access already spelled out structures. In order to assure that ellipsis is not terminated prematurely, we can modify MaxElide! (Takahashi & Fox 2005) to require that the {E} feature be propagated up the structure to phase heads that have material marked as Given by virtue of the Antecedent.

(8) a. Ellipsis is carried out phase by phase. An {E} feature (Merchant 2001) on each individual phase head licenses ellipsis in its Spell-out domain.
b. MaxElide! forces the percolation of the {E} feature to higher up phase heads whose Spell-out domain contains material that is Given by virtue of the antecedent.
c. Ellipsis does not target focused structures.
d. Focus head has to be the topmost head = phase head in a phase licensing ellipsis.

The conditions in (8) generate the following ellipsis structure of (7) shown in (9) below.

(9)



The existence of a focus projection within a nominal domain has been argued for in Nthelios (2003). The mechanism proposed here implies that

P-omission in sluicing is not achieved via movement out of PP, but via focus within the nominal and ellipsis of a discontinuous string that is Given. In order to project a focus head necessary for remnant licensing, the nominal domain needs to be complex enough to have an articulated functional architecture that includes a Focus head. Pronominals and simple wh-expressions are assumed to have insufficient projections to license a focus head within the nominal domain. For example, in Polish we can place a focus operator below a PP but not if the nominal is a pronoun.

(10) ??a. Jan zatańczył z tylko nią
Jan danced with only her
b. Jan zatańczył tylko z nią
Jan danced only with her
c. Jan zatańczył tylko z jedną dziewczyną
Jan danced only with one girl
d. Jan zatańczył z tylko jedną dziewczyną
Jan danced with only one girl

Complexity of the phase containing the remnant (measured by the complexity of the correlate) also matters, as observed in Szczegielniak (2008) and argued for in Nykiel (2013). Remnants that do not correlate with complex nominal antecedents do not allow P-omission (as in 1c vs 2c). I suggest complexity of the phase containing the remnant determines its ability to project a phase that can have a focus head. There are two possible dimensions of complexity. First, a nominal phase has to have enough functional architecture so that remnant movement to the phase edge does not violate Anti-locality (Grohmann 2003).[2] Second, I assume Givenness is presuppositional (Sauerland 2005), and focus is computed from Given material. In that sense, we need complex enough structure in a nominal phase so as to be able to license focus locally. There needs to

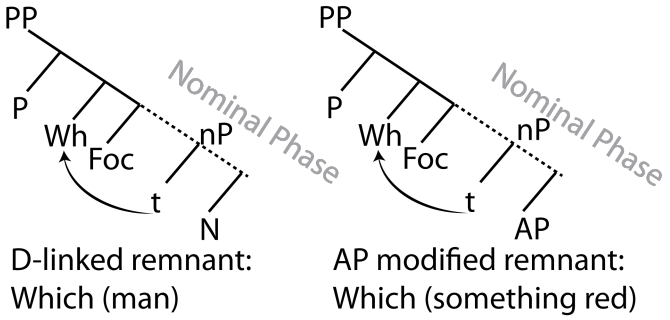
[2] A D-linked or complex wh-expression can move the Wh out of a DP and strand the remaining nominal, which suggests that Anti-locality does not prevent cyclic movement of the wh-out of the nominal phase, when the nominal is complex. If a wh-can extract out of a nominal phase, then it can also raise to the edge of it.

(i) Którego$_1$ Marek poznał [$_{DP}$ t$_1$ mężczyznę]?
Which Mark met man
'Which man did Mark meet'

be Given material in the nominal domain for focus licensing within that domain (for a discussion on the locality of Givenness marking see Kučerová 2012,Wagner 2006). The claim is that phases containing simple wh-expressions and pronouns lack sufficient functional architecture to become a focus headed phase, but a phase containing a complex wh-expression has enough structure and allow local movement below the P head.

(11) P-omission in d-linked wh as in (4a), and with AP modification (5a).

(4a) ale nie wiem (z) którym mężczyzną (5a) ale nie wiem (w) co



Nominal phase Complex enough to:
- Avoid antilocality
- License Givenness on non Focused XP's

The proposal predicts that within a complex enough phase undergoing ellipsis, remnants can move locally to a phase edge to be focused and linearized as following the antecedent. The idea is that the remnant of ellipsis can undergo local movement to the edge of a local phase headed by focus and be spelled out there. The implication is that the global outcome of sluicing can appear to target discontinuous strings that are marked as discourse Given. However, on a phase-by-phase basis, there is no discontinuous ellipsis. Within each Spell-out domain, a focused remnant is fronted to phase edge and what remains is considered Given and elided. Support for such an approach will come from the behavior of multiple wh-remnants in sluicing.

2 Multiple Remnant Sluicing in Polish

As I have shown, sluicing structures in Polish omit the proposition that case licenses a wh-remnant provided the remnant has enough structure to license focus within the nominal extended projection. However, P-omission is more constrained in constructions that involve multiple remnants. Polish allows multiple wh-remnants in sluicing as can be seen in (10) below. However, P-omission in multiple sluices can only target the first remnant provided the correlate of the wh-remnant is complex, just like in the case of P-omission with single wh-remnants.

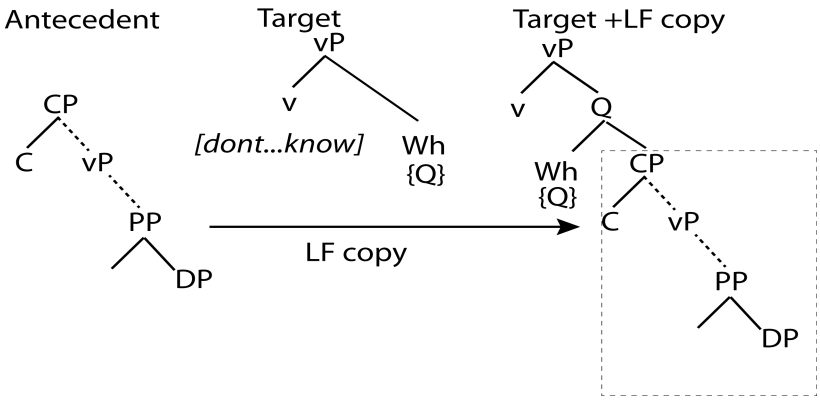
(12) Jan podszedł do jakiegoś artysty na pewnym koncercie
Jan approach to some artist on certain concert
ale nie wiem (do) którego artysty *(na) którym koncercie
but not know to which artist (on) which concert
'Jan approached some artist at some concert but not know which artist at which concert'.

The same holds for English. Multiple remnants allow P-omission on the first wh-remnant, but not on the second one (Lasnik 2013)

(13) John read about some linguist at some airport but I do not know (about) which linguist *(at) which airport

P-omission is restricted to the first remnant in both Polish and English (Lasnik 2013). Dadan (2015) argues that P-omission is possible because the ellipsis site is a composite of the remnant and an LF copy of the antecedent as shown in (14)

(14) LF copying mechanism (Dadan 2015)



His proposal captures the generalization that only the top remnant can omit a Proposition. But it does not capture that the correlate antecedent has to be complex, as seem in (14). Nor does it capture that English, a language allowing extraction out of PP's, is subjected to the same restrictions as Polish. However, the biggest problem with Dadan's account is that the LF copying mechanism that he uses does not allow for P-omission in the first remnant to occur in structures that have two remnants. This is because in his system, only a single wh-remnant can be base generated as a complement of the vP 'not know…' that connects the antecedent and sluice. In Dadan (2015) sluicing is not PF deletion of syntactic structure. Instead, he assumes that the LF of the antecedent can be copied into the ellipsis site. P-omission is achieved by relabeling the remnant from a VP inner argument to a wh-expression in Spec-CP. We obtain a wh-movement configuration without actual movement. The mechanism works well when there is one remnant. Structures with more than one remnant are problem since there are not enough positions as complements of vP. Moreover, relabeling would have to apply to multiple nodes. Unfortunately the prediction that P-omission is only possible when there is one remnant is incorrect, as shown in (11b).[3] This

[3] To be precise, Dadan (2015) claims that "Preposition omission is possible only in a *single* remnant of elliptical construction, with that single remnant located in the highest spec of CP." This is not the case as (11b) shows, multiple remnants allow P-omission on the first remnant.

is not only the case in Polish. Languages like Spanish where P-omission is also possible, although P-stranding is not, also exhibit the same pattern as shown in (15) below. The top remnant can have P-omission. This suggests that the analysis proposed in Dadan (2015) is not feasible.

(15) Juan leyó un libro sobre un político en una biblioteca, pero no
Juan read a book about some politician in some library but not
sé (sobre) qué político *(en) qué biblioteca
know about which politician (in) which library
'Juan read a book about some politician in some library but I do know which politician in which library'

Lasnik (2013) proposes that English multiple remnant sluices require the lower remnant to right adjoin to the position of the top remnant. The reason for such a claim is that only rightward movement prohibits P-stranding as seen in (15).

(16) *a. A linguist spoke about yesterday a paper on sluicing.
b. A linguist criticized yesterday a paper on sluicing.

English does not allow P-omission on the second remnant as shown in (13), thus Lasnik concludes there has to be rightward movement involved in licensing the lower remnant. Let me expand on this idea and suggest that the reason that the second remnant moves is that both remnants need to be in the same phase for linearization reasons.

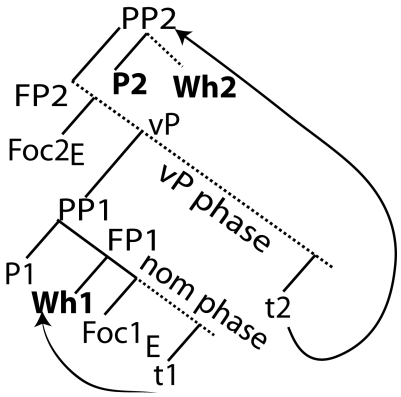
(17) Ellipsis linearization
Elided structures remain un-linearized at the interfaces. Remnants must be linearized vis a vis each other in the same phase containing both remnants.

The idea behind (17) is that linearization is Phase based as argued in Fox & Pesetsky (2005). Phase based linearization is relative to other elements the Spell-out domain this means a remnant has to be linearized in relation to some other constituent. In a bottom-up phase based derivation, the lowest remnant does not have any PF material to linearize against. It has to move out of its Spell-out domain until it finds itself in the Spell-out

domain of the first remnant. This is the reason in English the lower remnant needs to raise to the phase containing the upper remnant.
Since P-omission is impossible on the second remnant, although English allows P-stranding, we conclude that this movement involves rightward adjunction, which guarantees a linearization Remnant1<Remnant2, and prevents P-stranding.

Polish does not allow P-stranding and yet behaves exactly like English in that the second remnant cannot undergo P-omission, but the first one can. P-omission has been argued here to involve focus within the nominal extended domain. This mechanism is not available to the second remnant since it has to raise to the same Spell-out domain as the first remnant.[4,5]

(18) Derivation of multiple remnants in (12) (remnants in bold).[6]



[4] I assume that the common minimal phase containing both remnants is a vP since I do not treat PP's as phases. If it turns out the PP is a phase, then right adjunction is not to the edge of the vP phase but to the edge of PP1 phase.

[5] As has been pointed out to me by one of the reviewers, more needs to be said about FocP heading a vP domain and its potential to block A movement out of vP. For reasons of space, I assume that FocP has to head the vP phase only in ellipsis contexts. I leave the discussion of non-elided phases headed by FocP for further research.

[6] Following Fox & Pesetsky (2005), I assume that linearization can apply to elements both at the phase edge and within the spell-out domain. This allows us to linearize the second remnant right adjoined to the vP phase edge with the first remnant that remains within the vP spell-out domain since it received focus in the nominal phase edge.

There is independent evidence that multiple remnants need to be in the same phase. Island alleviation has been a hallmark property of sluicing. However, multiple remnant sluices can only alleviate islands is there is no island separating the remnants.

(19) Island alleviation with multiple remnants.
*[R1…[Ω...R2…], where Ω = island, R1, R2 = remnants

Consider the following examples involving multiple remnants. In (20) below, we see that we can have multiple wh-remnants in Polish sluicing. Moreover, both remnants are inside a relative clause island, which suggests that multiple remnants can alleviate island effects

(20) Oni zatrudnili lingwistę który podarował jakąś książkę
They hired linguist who gave some book
jakiemuś profesorowi, ale nie wiem [którą książkę]
some professor but not know which book
[któremu profesorowi]
which professor
'??They hired a linguist who gave some book to some professor but I do not know which book to which professor.'

However, when we embed the second remnant inside an Island, but have the first remnant outside an island, the sluice becomes unacceptable.

*(21) Oni zatrudnili jakiegoś lingwistę który zna jakiś dialekt, ale nie
They hired some linguist who knows some dialect but not
wiem [jakiego lingwistę] [jaki dialekt]
know which linguist which dialect
'*They hired some linguist who knows some dialect but I do not know which linguist which dialect.'

Note that Polish sluicing with single remnants alleviates relative clause islands, just like English. This can be seen in (22) below.

(22) Oni zatrudnili nowego lingwistę który zna jakiś dialect, ale nie
They hired some linguist who knows some dialect but not

wiem [jaki dialekt]
know which dialect
'They hired some linguist who knows some dialect but I do not know which dialect.'

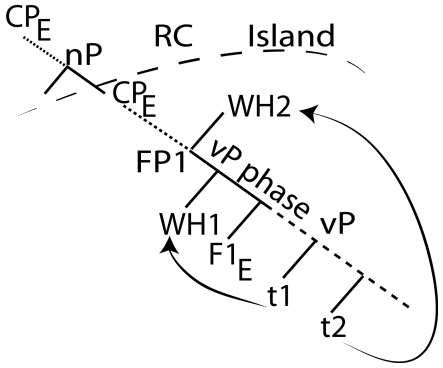
The generalization from the contrast between example (20) and (22) and (23) is that multiple wh-remnants can alleviate island violations, but only if they are generated inside the same island. When an island separates two remnants, sluicing becomes unacceptable. P-omission is not possible on the second remnant because it needs to move to the active phase of the first remnant in order to be linearized. Island alleviation is not possible when a remnant has to move out of that island to reach the first remnant. In other words, sluicing does not alleviate linearization driven movement. This is further supported by examples where we have two remnants that originate form different islands. Alleviation is again impossible.

*(23) Oni zatrudnili jakiegoś lingwistę który zna ~~jakiś dialekt~~ bo
They hired some linguist who knows some dialect because
ciągle czyta jakąś książkę o nim ale nie wiem [jaki dialekt]
constantly reads some book about it but not know which dialect
[jaką książkę]
which book
'*They hired some linguist who knows some book since he always reads some book about it but I do not know which dialect which book.'

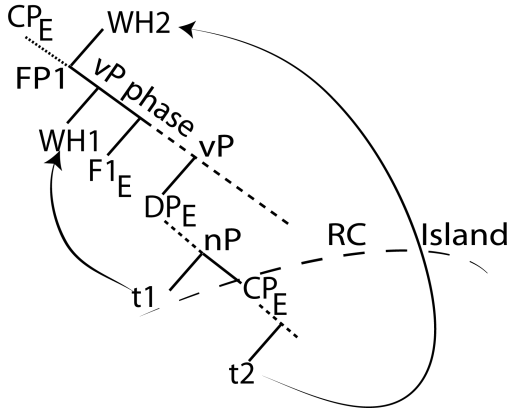
The conclusion from above discussion is that a single wh-remnant witin a PP has the option of being focused inside the nominal phase without the need for evacuation movement into the CP. This results in discontinuous ellipsis that targets constituents that are marked as Given but spares the focused wh. In the case of multiple remnants, the topmost remnant can also receive focus inside the nominal phase. However, lower down remnants need to raise to a Spell-out domain of the top remnant. Below is a derivation of the examples in (20) and (21).[7]

[7] Note that the diagrams in (24) show non PP-embedded remnants. Thus, unlike in (18), the first remnant moves to Spec-Foc of the vP domain. If the first remnants were

(24) a. Derivation of example (20) Wh1 = argument inside relative clause, Wh2 = argument inside relative clause.



b. Derivation of example (21) Wh1 = Head Noun, Wh2 = argument inside relative clause.



The underlying assumption is that remnant(s) can move to the topmost edge of an ellipsis site, but crucially they do not have to. Remnant(s) need to be focus licensed, and if there is more than one of them they need

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embedded in a PP, it would receive focus within the nominal phase. I presume that there is an economy condition that forces us to minimize the amount of Focus licensing heads. This would be a syntactic reflex of the constraint AvoidFocus! proposed in Schwarzschild (1999).

to be located in the same phase so as to be linearized. The linearization requirement accounts for the contrast between (24a) and (24b). In (24a) both remnants can move to the edge of vP phase (Spec-F) and undergo linearization. In (24b) it is impossible for the lower remnant to raise out of the relative clause island and be in the same Spell-out domain as the top remnant. This contrast indicates that sluicing does not alleviate islands.

Using data from P-omission and Island effects with multiple remnants I have argued that ellipsis does not requires evacuation of the remnants outside the elided structure. In the last section of this paper, I briefly discuss a possible mechanism for discontinuous ellipsis.

3 Discontinuous Ellipsis

Discontinuous ellipsis is needed independently of multiple wh-sluicing. In example (25a) below, taken from Bruening (2015), we have two remnants that cannot be generated via movement as shown in (25b).

(25) a. I disproved theories held by Wittgenstein this year and ~~I disproved theories held by~~ Einstein last year
*b. [Einstein]$_1$ [last year]$_2$, I disproved theories held by t_1 t_2

Examples like (25) show that we need to have a mechanism to elide a non-constituent because movement cannot evacuate the remnants from the ellipsis site. This mechanism is movement to a local phase-edge which allows remnants to be linearized vis a vis each other. In (25), a tentative analysis involves movement of 'Einstein' to a nearest phase edge, possibly the DP itself, where it is linearized as following the antecedent. The adverbial adjunct is added once the structure is complete via Late Insertion. As such, it cannot disrupt the existing linearization word order between the antecedent and the DP remnant. That is only possible if adjuncts remnants follow the argument remnant.

(26) Antecedent < DP remnant < adjunct

This is why the example below is ungrammatical, although in theory the adjunct should be able to attach at the beginning of the clause as in the antecedent.

*(27) This year I disproved theories held by Wittgenstein and last year ~~I disproved theories held by~~ Einstein

Having shown that a mechanism for discontinuous ellipsis is required for reasons independent of Polish sluicing, let me provide an outline of why phase edges play an important role in licensing ellipsis remnants. I propose that phase heads are endowed with interface features that include, among others: linearization, focus/alternatives marking, Ellipsis, Givenness, prominence. Phase based linearization has been argued by Fox and Pesetsky (2005) to force cyclic wh-movement. For example, a wh-phrase inner argument of a verb needs to move to the vP phase-edge in order to linearize as being above the verb, so as to maintain consistency when the CP is spelled out as shown in (28). Without the movement in (28a), the linear ordering would be inconsistent on a phase-by-phase basis.

(28) a. wh_1 vP […V t_1…] wh<V
b. wh_1CP… t_1vP[…V $_{t1}$…] wh<C, C<V implies wh<V

Based on such an approach, we see that in the case of sluicing linearization can be reduced to a simple rule where the remnant is linearized after the antecedent.[8] The tricky part is when we have two remnants. Following the logic of Fox and Pesetsky (2005), two remnants need to establish a respective linear on a phase-by phase basis. The need to move both remnants to a common phase predicts the inability of dropping the second PP in multiple sluices, as well as island effects if lower remnants are separated from the top one by an island. Crucially linear order can be established between the edge of a phase and its complement. In (18) the top remnant can remain within the vP since it has received focus within the nominal domain, but the lower remnant needs to undergo rightward movement to the edge of the phase containing the top remnant to receive focus and be linearized. In (24) both remnants receive focus from the Foc head in the vP domain. Thus linearization is not the sole trigger of remnant movement. It interacts with another driving force, namely focus marking since remnants need to

[8] Although there are exceptions to that order, which need to be addressed as pointed out to me by Marcel den Dikken (pc).

be marked as focused. I assume that every phase can be headed by a focus head (Bošković 2014). Crucially focus marking within an ellipsis site prevents deletion of focused material.

(32) Focus marked elements in Spec-F, F being a phase head, do not undergo PF suppression via E feature on a higher phase head, but are linearized on spell-out.

My analysis assumes focus is possible within the vP phase. This is uncontroversial. Recent work by Bošković (2014), but also Rouveret (2012) has assumed that there is a Focus phrase in the vP domain. Focus within the nominal phase, needed in my analysis for P-omission, has also been documented. For example, in Ntelitheos (2003) has argued based on Greek data that there is focus within a DP. It remains to be seen if there is a general pattern where focus marking is associated with every type of phase head, and it remains to be seen how phase based syntactic marking translates into a semantics of Alternatives as in Rooth (1992).

4 Conclusion

The paper argues that sluicing remnants can be derived via short movement to a local phase head that licenses focus. It allows for instances of phase constrained discontinuous ellipsis. I show that sluicing does not allow PP stranding, or island alleviation. Movement of the remnant can be short enough to avoid the triggering of islands because of less stringent linearization in ellipsis. It remains to be seen if we need to have an approach where there is more than one possible structure assigned to an elided anaphor, as argued in Szczegielniak (2008) and Craenenbroeck (2010). If this paper is on the right track, then this should not be the case, which leaves open the question why elided anaphors can exhibit properties of clefts, as discussed most recently in Barros (2014).

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Adverbial Left-Branch Extraction and the Structure of AP in Slavic*

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This paper investigates the structure of Slavic traditional adjective phrases (TAPs). I show there is a discrepancy in extraction of intensifying adverbs out of TAPs in the predicative and the attributive position, establishing two generalizations regarding such extraction. I argue that TAPs in different positions have different amount of structure, and that adverb extraction is sensitive to that. In particular, I argue that an adverb can extract out of a bare AP, while the extraction is blocked if there is a functional projection above the AP where the adverb originates.

(1) a. $[_{AP}$ AdvP $[_{AP}$ ….]] - *predicative and attributive*
b. $[_{XP}$ $[_{AP}$ AdvP $[_{AP}$ …]]] - *attributive*

Exploring prosodic and syntactic differences between Bosnian/ Croatian/Serbian (BCS) short and long adjectives, I provide evidence that TAPs with long adjectives have more structure than TAPs with short adjectives. I also provide an account of prosodic contrasts between long and short adjectives, which at first sight do not look systematic. I argue that these prosodic contrasts also follow from a richer structure in TAPs

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with long adjectives and that the vocabulary item realizing the functional head in long adjectives consists only of a High tone.

1 Adverbial LBE

I start by introducing a context in which intensifying adverbs can extract out of TAPs in which they originate in a number of Slavic languages. Drawing a parallel between adverb extraction and adjectival LBE, I show that what accounts for LBE in most Slavic languages can also be extended to adverb extraction in such contexts.

While extraction of leftmost elements in the nominal domain has been widely discussed ever since Ross (1967) proposed the Left Branch Condition, which blocks extraction of determiners, possessors, and adjectives out of nominal phrases in some languages,[1] extraction of intensifying adverbs has not received much attention. However, I show that this operation can give us an insight into the structure of TAPs in different positions. To start with the predicative position, a number of Slavic languages, in particular BCS, Bulgarian, Polish, Russian, and Slovenian, allow adverb extraction out of TAPs in this position, as in (2).

(2) a. Strašno je bila [t umorna]. (BCS)
terribly is been tired.$_{F.SF}$
'She was terribly tired.'

b. Užasno bjah [t umoren]. (Bulgarian)
terribly was tired
'I was terribly tired.'

c. Okropnie on był [t zmęczony]. (Polish)
terribly he was tired
'He was terribly tired.'

d. Užasno ja byl [t rad tebja videt']. (Russian)
terribly I was glad.$_{SF}$ you see
'I was very glad to see you.'

[1] Already Ross (1967) noted that this condition does not hold for Russian; it has been established subsequently that languages may allow LBE of adjectives iff they lack articles (Uriagereka 1988; Corver 1992; Bošković 2012).

e. Strašansko je bila [t utrujena]. (Slovenian)
terribly is been tired
'She was terribly tired.' [2]

The data in (2) lead to the following generalization:

(3) *Generalization I*: Slavic languages allow adverb extraction out of predicative TAPs.

Given that this operation involves extraction of a modifier out of a TAP, we seem to be dealing here with an operation that is in some respects similar to LBE in the nominal domain. I will argue below that extraction of a modifier out of the adjectival domain observes the same locality restrictions as extraction of a modifier out of the nominal domain.[3] In what follows, I will discuss some major observations about LBE and a phase-based account of such extraction before returning to the new generalization in (3).

1.1 Parallelism with Adjectival LBE

Regarding adjectival LBE in the nominal domain, Bošković (2005, 2008, 2012) establishes a correlation between LBE and the lack of articles across languages, building on Uriagereka (1988) and Corver (1992):

(4) Only languages without articles allow LBE.

[2] In addition to Slavic languages that I focus on here, Icelandic and Romanian also allow adverb extraction out of predicative TAPs (see Talić to appear on these languages).

[3] It is important to note here that the two operations do not make the same cut between Slavic languages; LBE is allowed only in Slavic languages that lack articles (Bošković 2012), and adverb extraction out of predicative TAPs is allowed in languages that lack articles, but also in languages with affixal articles like Bulgarian. Due to space limitations, I will put aside detailed discussion of Bulgarian here, noting that languages with affixal articles like Bulgarian pattern with languages without articles also in allowing reflexive possessives (Reuland 2011; Despić 2011), being insensitive to certain islands (Bošković 2008b), and being able to drop the article in certain cases (Pancheva & Tomaszewicz 2012). I refer the reader to Talić (to appear), where I discuss this in more detail (i.e. the work in question discusses why the affixal status of articles matters in some cases).

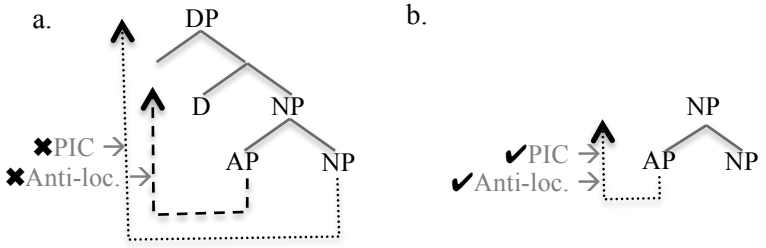
Among Slavic languages, Bošković observes that BCS, Russian, Polish, Czech, Ukrainian, and Slovenian, all of which lack articles, allow LBE. This is illustrated in (5) with a contrast between BCS, which very productively allows LBE (5a), and English, which disallows it (5b).

(5) a. Pametni su oni [t studenti]. (BCS)
smart are they students
'They are smart students.'
b. *Smart they are [t students]. (English)

Bošković (2013, 2014) argues that what is behind the split is a structural difference between nominal phrases in the two groups of languages and an interaction of locality constraints on movement, giving an account based on a contextual approach to phases. Chomsky (2000) argues that phases are locality domains. When a phase XP is completed, only the head of the phase and its edge (SpecXP/XP-adjunct) are accessible for later operations, which is referred to as the *Phase Impenetrability Condition* (PIC). Therefore, movement proceeds through phasal edges. While for Chomsky, only vP and CP function as phases regardless of the context in which they occur, there is a more recent line of research arguing that to determine whether a phrase XP is a phase or not, it is necessary to look at its syntactic context (Bobaljik and Wurmbrand 2005; Bošković 2005, 2013, 2014; Gallego and Uriagereka 2007; den Dikken 2007; Despić 2013; M.Takahashi 2011; Wurmbrand 2014, a.o.). One such approach is developed in Bošković (2013), who argues that the highest projection in the extended domain of every lexical category is a phase. Given that the amount of structure in a domain varies cross-linguistically (and within a single language), to determine whether XP is a phase or not, we need to determine whether it is the highest phrase in its domain. E.g., in the nominal domain, DP is a phase in languages with articles. However, DP is missing in languages without articles, as argued by many researchers (e.g. Fukui 1988; Corver 1992; Zlatić 1997; Chierchia 1998; Baker 2003; Bošković 2005, 2008, 2012, 2013; Marelj 2008; Despić 2011, 2013). Then, in BCS, which lacks articles, Bošković argues NP is a phase as the highest projection in this domain. What the generalization in (4) follows from is an interaction of the PIC, which rules out movement that is too long, and a constraint that prevents movement from being too short, termed as *anti-locality* by Grohmann

(2003) (see also: Bošković 1994, 2013; Abels 2003; Saito & Murasugi 1999; Boeckx 2005; Ticio 2003; a.o.). Regarding anti-locality, Bošković (1994, 2005) argues that a moving element has to cross at least one maximal projection (not just a segment). He adopts the traditional assumption that APs originate as NP adjoined. For an AP to move out of a DP phase in languages with articles, it has to move to SpecDP to satisfy the PIC, but this step is ruled out by anti-locality since it crosses only a segment of NP. Thus, in DP languages an AP cannot move out of DP without violating a locality constraint. In languages without articles, the DP layer is not projected, which makes NP a phase as the highest projection in its domain. As a result, an NP-adjoined AP originates at the edge of the phase; hence its movement does not violate any locality constraints.

(6) a. b.



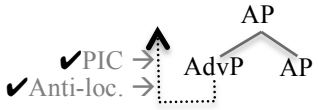
Crucially, even in languages without articles, LBE is not possible if there is a phase projected right above the NP as in BCS examples like (7). In (7), the lower NP1 is a phase and the AP is at its edge, available for movement out of this phase. However, NP2 is a phase projected by the higher noun; since the AP adjoined to NP1 is not at the edge of NP2, it has to move to SpecNP2 due to the PIC. This step, however, violates anti-locality, on a par with AP movement to SpecDP in English.

(7) *Pametnih on cijeni [$_{NP2}$ prijatelje [$_{NP1}$ t [$_{NP1}$studenata]]].(BCS)
smart he appreciates friends students
'He appreciates friends of smart smart students.'

Returning to adverb extraction out of predicative TAPs in Slavic, I propose that Slavic languages allow bare AP projections, and that predicative TAPs, in particular, are bare APs. In such APs, there is no functional projection above AP, so under the aforementioned contextual

approach to phases, AP is a phase as the highest projection in the adjectival domain.[4] On a par with APs being NP-adjoined in the nominal domain, I assume that intensifying adverbs are AP-adjoined, i.e. they are at the edge of the AP phase. As a result, an adverb can move out of a predicative AP without violating locality constraints.

(8)



We have seen above that adjectival LBE is blocked if a phase is projected right above the NP in which the AP originates (5b)/(7). A question arises here whether the same effect is observed in the adjectival domain. I turn to this next, discussing TAPs in the attributive position.

2 Adverbial LBE with Attributive TAPs

In this section I show that attributive TAPs behave differently from predicative TAPs regarding adverb extraction. I also show this difference correlates with certain morphological differences between predicative and attributive TAPs. At first, adverb extraction appears to be uniformly banned out of attributive TAPs in Slavic languages, as illustrated in (9) for BCS, Bulgarian, Polish, Russian, and Slovenian.

(9) a. *Izuzetno su kupili [t skupi] automobil. (BCS)
extremely are bought expensive car
'They bought an extremely expensive car/one of extremely expensive cars.'

b. *Izklyčitelno tya vidya [t visok] čovek. (Bulgarian)
extremely she saw tall man
'She saw an extremely tall man.'

c. *Niezwykle widziała [t wysokiego] mężczynę. (Polish)
extremely saw tall man.
'She saw an extremely tall man.'

[4] In languages like English, where adverb extraction out of AP is not possible, there is a functional projection above AP, which blocks it (see Talić (to appear) for factors that determine when the functional projection is present cross-linguistically).

d. *Očen' ona uvidela [t vysokogo] čeloveka. (Russian)
very she saw tall man
'She saw a/the very tall man.'
e. *Izjemno je kupila lep plašč. (Slovenian)
extremely is bought beautiful coat
'She bought an extremely beautiful coat.'

This may lead us to conclude that this type of extraction is uniformly banned out of Slavic attributive TAPs. I will, however, return to a more precise statement of the relevant generalization, after discussing why adverb extraction is banned in these contexts.

Given that these are attributive TAPs, such examples raise a question what is responsible for the contrast between predicative (2) and attributive (9) adjectives here. Given that in the nominal domain, the presence of additional functional structure blocks LBE, the data in (9) seem to indicate that there is some functional structure above AP in attributive TAPs. Regarding the source of this functional structure in the adjectival domain, it seems plausible that it comes from the modification itself. Specifically, functional structure is needed for the modification relation. It is well known that many languages use a separate adjectival form in the attributive position, and that this form is morphologically richer than the form used in the predicative position. To illustrate this for Slavic, BCS has long and short forms of adjectives (*poznati* – famous$_{.LF.M}$ vs. *poznat* – famous$_{.SF.M}$). The long form can be used only in the attributive position.

(10) a. poznati pjesnik. (BCS)
famous$_{.LF}$ poet
'the/a famous poet'
b.* Mak Dizdar je poznati.
Mak Dizdar is famous$_{.LF}$
Intended: 'Mak dizdar is famous.'

Russian also distinguishes long and short forms (*novyj* – new$_{.LF.M}$ vs. *nov* – new$_{.SF.M}$). The long form is also reserved for attributive use (11b). In some cases it appears the long form is used predicatively, as in (11d), since there is no overt noun following the adjective. However, it has been argued that such adjectives are followed by a generic noun meaning

'man', 'woman', 'person', or 'entity' (e.g. Bailyn 1994; Babby 2010). Then, the adjective is attributive, rather than predicative in such cases.[5]

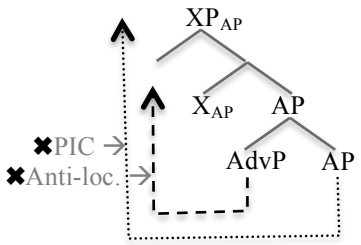
(11) a. *Nov dom stoit na gore. (Russian)
new.$_{SF}$ house stands on hill
Intended: 'The new house stands on a/the hill'
b. Novyj dom stoit na gore.
new.$_{LF}$ house stands on hill
'The new house stands on a/the hill'
c. Dom nov.
house new.$_{LF}$
'The house is new.'
d. Dom novyj.
house new.$_{LF}$
'The house is new.'

(Cinque 2010:108 from Pereltsvaig 2000)

Based on such differences between the attributive and the predicative position, it is reasonable to assume that attributive TAPs have more structure. In fact, based on a number of semantic and syntactic differences between long and short adjectives in Russian, following Rubin (1991), Bailyn (1994) argues that attributive TAPs in general must have a functional projection above AP (let us call it XP_{AP}). Under the contextual approach to phases, the additional structure extends the domain and changes the phasehood of elements in the domain. Crucially, in the presence of XP_{AP} above AP, AP ceases to be a phase; the functional projection above AP is a phase because it is the highest layer in the domain. As a result, the adverb adjoined to the AP is not at the edge of the phase any more. It is required by the PIC to move to $SpecXP_{AP}$; this step, however, violates anti-locality.

[5] There is some speaker variation here, which is rather interesting because it may be indicating an ongoing historical change. All but one of my Russian consultants found adverb extraction with a short adjective after a copula better than extraction with a long adjective. One, however, did find such extraction with a long adjective perfectly acceptable and still accepted extraction with a short adjective.

(12)



Again, what is happening here is parallel to the blocking effect on LBE in the nominal domain when a phase is projected right above NP (5b)/(7). In essence, the contrast between (2) and (9) follows from a structural difference between TAPs in these two positions and locality constraints on extraction.

2.1 BCS Prenominal Short Adjectives and AdvE

The only Slavic language investigated here that uses two adjectival forms in the attributive position is BCS. Unlike the long form, which can only be used attributively, the short adjectival form in BCS is found in the attributive position in some contexts, although it is typically used in the predicative position. Interestingly, in such contexts adverb extraction discussed above improves. Consider the contrast in (13):

(13) a. Izuzetno su kupili [t skup] automobil. (BCS)
extremely are bought expensive.$_{SF}$ car
'They bought an extremely expensive car.'
b. *Izuzetno su kupili [t skupi] automobil.
extremely are bought expensive.$_{LF}$ car
Intended: 'They bought an extremely expensive car/one of extremely expensive cars.'

Based on (9) and (13), the generalization regarding adverb extraction out of attributive TAPs is the following:

(14) *Generalization II*: Slavic languages may allow adverb extraction out of attributive TAPs in the absence of attributive adjectival morphology.

Thus, what seems to be the case here is that a typically predicative adjective (i.e. short adjective in BCS) used prenominally still projects a bare AP, rather than an AP with functional structure above it. The absence of the additional functional layer allows the adverb to move out of the AP without violating PIC/anti-locality. [6] [7]

In sum, in most cases attributive TAPs contain functional structure above AP and this blocks adverb extraction out of such TAPs. However, in the absence of attributive morphology in a language that otherwise marks the attributive/predicative contrast overtly, the functional layer is also absent from the adjectival domain and adverb extraction becomes possible. I turn now to examining the morphological difference between BCS long and short adjectives in more detail.

3 Structure-Dependent Tone in BCS Long Adjectives

In this section I examine more closely the prosody of BCS long and short adjectives and show that contrasts between the two forms also follow from a richer structure in the TAPs with long adjectives.

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[6] Note also that such cases actually raise a problem for Hiraiwa's (2005) claim that edge of the edge cannot extract (see Bošković (to appear) for additional problems).

[7] Another language that might be similar to BCS is Polish, which seems to allow such adverb extraction in sentences with the verb 'have', although it is blocked in (9c). Interestingly, BCS uses the short form of adjectives in such contexts, which may imply that Polish uses XP_{AP}s in the attributive position in the cases where BCS uses long adjectives and bare APs in the attributive position in the cases where BCS uses short adjectives, although Polish does not mark the distinction overtly. Regarding Russian speaker variation (see also ftn. 4), all but one of my Russian consultants disallow adverb extraction from attributive TAPs, indicating that they have a functional projection above AP in the attributive position; one Russian speaker has a contrast in the attributive position similar to Polish; i.e. she allows adverb extraction out of an attributive TAP in the cases where a short adjective has to be used in BCS (e.g. TAP within a predicative NP), while she disallows such extraction in the cases where in BCS it is possible to use a long adjective (e.g. TAP within a direct object NP). Pereltsvaig (2008) reports a few Russian examples with an adverb separated from an adjective, which may pattern with this speaker. This contrast implies that for these speakers the presence/absence of a functional projection above AP is not overtly marked, similar to Polish, and that attributive TAPs are bare APs in the same contexts where BCS and Polish have bare APs, but that attributive TAPs are XP_{AP}s in contexts where BCS and Polish TAPs are XP_{AP}s as well.

3.1 Short vs. Long Adjective Distinction – The Pattern

BCS is usually classified as a pitch-accent language. To understand the pattern to be introduced below, we need to keep in mind the following basic accent assignment rules that BCS employs: (i) In a word with multiple inherent High tones, the leftmost High tone is realized; (ii) If the winning High is not preceded by a vowel in the same prosodic word, it is realized as a falling accent; (iii) If the winning High is preceded by a vowel in the same prosodic word, it spreads to the preceding vowel giving it a rising accent (see e.g. Inkelas and Zec (1988)).[8]

Contemporary short/long adjective distinction is almost entirely prosodic (see Aljović 2002). The prosodic differences between the two forms at first do not look systematic. In particular, as illustrated with pairs of adjectives in (15) and (16) (all of which are DAT.SG.F), if the short form has a rising tone it becomes a falling tone in the long form, as in (15a)-(16a), (15b)-(16b); if the short form has a rising tone, it shifts one syllable to the left and remains a rising tone in the long form, as in (15c)-(16c); and the accentual difference is neutralized in (15d)-(16d).

(15)	*short*:	a. plá:v**o**:j	b. glá:dn**o**:j	c. visók**o**:j	d. l**à**bavo:j
(16)	*long*:	a. pl**à**:vo:j	b. gl**à**:dno:j	c. vís**o**ko:j	d. l**à**bavo:j
		'blue'	*'hungry'*	*'tall'*	*'loose'*

Only NOM.SG.M (and ACC.SG.M.INANIM) has an overt inflection [-i] in the long form in addition to the prosodic contrast present in other cases:[9]

(17)	*short*:	glá:d**a**n	**-rising** tone on the 1st syllable
	long:	gl**à**:dn-i	**-falling** tone on the 1st syllable
		'hungry-NOM.SG.M'	

Focusing first on the prosodic contrast in (15)-(16), the agreement suffix [o^{H}:j] has an underlying High tone. This is indicated by the rising tone on

[8] I will use the following diacritic marking in the examples: [´] = rising accent; [`] = falling accent; **bold** = locus of the winning H tone.

[9] Some BCS varieties still have different overt inflections for the two forms in Genitive, Dative, and Locative. Riđanović (2012) reports three forms of adjectives: short (nominal declension endings), long (pronominal declension endings), and mixed (pronominal declension endings). What Riđanović calls the *mixed* form is the only short form some speakers, including myself, use productively.

the vowel preceding it in (15a,b,c), which is a result of High tone spreading from [o^{H}:j]. In contrast, the High tone of the agreement suffix is not realized in (16a,b,c), so the vowel immediately preceding it does not have a rising tone in these cases. Instead, the vowel preceding [o^{H}:j] behaves as if it has its own High tone. This is indicated by a falling tone on the vowel preceding [o^{H}:j] with monosyllabic stems in (16a,b), and by a rising tone on the initial syllable with a bisyllabic stem (16c). Finally, the contrast between the two forms is neutralized in the case where the stem itself has an underlying High tone, which precedes that of the suffix. Hence, even in the short form, High tone spreading cannot take place, and both forms have an initial falling tone.

Given that this prosodic contrast marks the short/long form distinction in the most contexts, I take it to be the primary difference and for the moment put aside [-i] which occurs only in one context in addition to the prosodic differences. Descriptively, the whole pattern in (15)-(16) can be captured by assuming that there is a High tone between the adjectival stem and the agreement suffix in the long form that is absent in the short form. This raises the question of where this High tone comes from. Crucially, we have seen above that another difference between long and short form of adjectives is that phrases they project have different amount of structure. While short adjectives project bare APs and allow adverb extraction (2a)/(13a), long adjectives have a functional projection above AP that blocks adverb extraction (13b). Given that having an extra High tone and having extra structure are both characteristics of the long form, it is reasonable to suggest that this extra High tone is actually the exponent realizing the functional head X_{AP}. In particular, I take the vocabulary item realizing the functional head X in the complex adjectival head to be a phonemically null item with a High tone.

(18) $X_{AP} \rightarrow ø^{H}$

This High tone is not inherently linked to a vowel, so it links to the first vowel immediately preceding it, i.e. the final vowel of the adjectival stem. If the stem is monosyllabic, this results in a falling initial accent.

(19) a. plà:v- ø^{H} - o^{H}:j
A- X- DAT.SG.F
'blue'

b. glà:dn- ø^{H} - o^{H}:j
A- X - DAT.SG.F
'hungry'

If the adjectival stem is polysyllabic, the High tone links to the final vowel of the stem again, and it spreads further to the vowel preceding it, giving it a rising accent.

(20) vís**o**k- ø^{H}- o^{H}:j
A- X- DAT.SG.F
'tall'

Regardless of the presence of the High tone realizing X_{AP} after an adjectival stem with an inherent High tone, the High tone of the stem is realized as the leftmost High tone in the sequence. This results in a falling accent if the stem has an initial High tone (21a), or in a rising accent if the stem has a non-initial High tone (21b).

(21) a. l**à**^{H}bav- ø^{H}- o^{H}:j
A- X- DAT.SG.F
'loose'

b. márlj**i**^{H}v- ø^{H}- o^{H}:j
A- X- DAT.SG.F
'diligent'

Having introduced the linear order in which the morphemes occur in the complex adjectival head, I turn to the details of the structure.

3.2 TAPs in the Syntax and in PF

Regarding the structure of the adjectival head, I follow Distributed Morphology (DM) style approaches (e.g. Halle & Marantz 1993; Embick & Noyer 2007), where words are (for the most part) assembled by the syntax. Assuming the syntax provides input to PF and LF, elements that are present in the syntax are expected to have semantic and/or syntactic reflexes. On the other hand, elements that have neither semantic nor syntactic effect can be introduced in PF, as argued for agreement nodes (Embick & Noyer 2007). The paradigm above suggests that complex adjectival heads are partially assembled in the syntax and partially in PF.

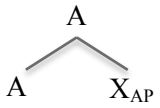
The prosodic contrast discussed above indicates that the functional head X_{AP} is placed between the adjectival stem and the agreement suffix because it disrupts the interaction between the High tone on the agreement suffix and the adjectival stem. This order of morphemes (A-X-AGR) results from the adjectival structure projected in the syntax and from nodes inserted in PF that have no semantic or syntactic effect. In particular, the adjectival stem (A) projects AP with both short and long

adjectives (22a-b). The functional head X_{AP} projects XP_{AP} above AP in the long form (22b), but not in the short form (22a). As discussed above, the presence of the functional layer above AP with long adjectives in the syntax is supported by the blocking effect it has on adverb extraction (9)/(12). The syntax then sends the following structures to PF.

(22) a. b

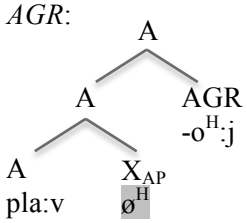
In PF, the functional head X_{AP} lowers to the adjectival stem and yields the partial morphological structure of the long adjective in (23). The lowering can take place by M-merger (Marantz 1984; Bobaljik 1995).

(23) *Long adjective after M-merger*:



Morphemes marking agreement of the adjective with the noun do not have a semantic or syntactic effect. I hence assume that they are inserted in PF. The final structure of the complex long adjectival head after Vocabulary Insertion is given in (24):

(24) *Long adjective with AGR*:

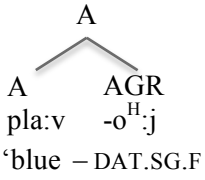


'blue – LF – DAT.SG.F

Given that the adjectival stem and the functional head X are assembled before the agreement node is introduced, this structure captures the fact that the interaction between the High tone of the agreement suffix and the final vowel of the adjectival stem is disrupted with long adjectives.

With short adjectives, the functional projection XP_{AP} is not projected. The agreement node is then attached directly to the adjectival stem in PF. With toneless adjectival stems, the first and only High tone is the High tone of the agreement suffix. Thus, the High tone can spread to the final vowel of the adjectival stem, giving it a rising accent.

(25) *Short adjective with AGR*:



Thus, the difference between long and short adjectives is that the agreement node is not immediately adjacent to the adjectival stem in long adjectives, but it is immediately adjacent to it in short adjectives. Once accent assignment rules apply, the two forms look different because of the additional High tone in the long form. This then automatically captures the whole pattern in (15)-(16).

3.3 A Case of Contextual Allomorphy

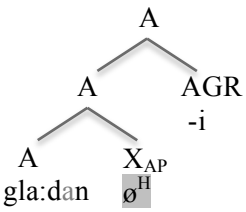
In this section I return to the suffix [-i] that occurs in NOM.SG.M in addition to the prosodic contrast discussed above. Given that prosody marks the distinction between the long and the short form in most cases, including when [-i] is present, I have argued above that a High tone is the primary exponent for the long form inflection realizing the functional head X_{AP}. The remaining questions are what the suffix [-i] marks and why it occurs in the long form and not in the short form.

In DM, rules of exponence can refer to a structural context under which a particular vocabulary item is inserted to realize some grammatical feature(s). In this respect, I suggest that [-i] is an exponent for agreement that is inserted in the presence of a functional head in the adjectival complex. More precisely, NOM.SG.M has two exponents:

(26) a. NOM.SG.M → [-i] / X___
b. NOM.SG.M → ø^{H}

The exponent in (26a) is specified to occur in the environment of X, while the exponent in (26b) can occur in any environment. The choice between them in NOM.SG.M is determined by The Elsewhere Condition (Kiparsky 1973), so (26a) occurs in the long form and (26b) in the short form. Thus, while it is not the primary exponent for long inflection, the suffix [-i] still occurs only in the presence of the functional head, and can be considered secondary exponent for the long form in NOM.SG.M.

(27)



This suggestion is supported by the fact that [-i] does not occur only to distinguish long from short adjectives. Specifically, we also find [-i] in comparatives and superlatives, which are usually claimed to have the long adjectival form. However, the distribution of long adjectives and comparatives/superlatives suggests that comparatives and superlatives are not long adjectives. Crucially, while long adjectives do not occur in the predicative position (28a), comparatives and superlatives do (28b-c).

(28) a. *Mak Dizdar je poznat-i.
Mak Dizdar is famous.LF-AGR
Intended: 'Mak Dizdar is famous.'
b. Mak Dizdar je poznatij-i od Abdulaha Sidrana.
Mak Dizdar is famous.CMPR-AGR than Abdulah Sidran
'Mak Dizdar is more famous than Abdulah Sidran.'
c. Mak Dizdar je naj-poznatij-i od svih
Mak Dizdar is most-famous.CMPR-AGR of all
bosanskih pjesnika.
Bosnian poets
'Mak Dizdar is the most famous of all Bosnian poets.'

If comparatives and superlatives are not long form adjectives, a question arises why they get the suffix [-i]. I suggest that they provide the environment for the insertion of [-i] which is chosen in the presence of a functional projection. This is precisely what is expected under Bobaljik's (2012) Containment Hypothesis, where the comparative projects a functional layer above the adjective and the superlative projects a functional layer above the comparative. Crucially, although the functional projections in comparatives/superlatives are not projected by the same functional head as the functional projection in long adjectives, they still provide a context for the insertion of the [-i] allomorph for agreement in NOM.SG.M.

5 Conclusion

I have examined the structure of TAPs in a number of Slavic languages, establishing two cross-linguistic generalizations regarding adverb extraction out of TAPs in the predicative and the attributive position. I have argued that such extraction is sensitive to the amount of structure projected in the TAP and phase-based locality constraints on extraction: adverb extraction is possible if the adverb originates in a bare AP, but it is blocked if it originates in a TAP that has functional structure above AP. I have also investigated in more detail prosodic and structural differences between BCS long and short adjectives and argued that long adjectives project TAPs that have more structure than short adjectives. I have also argued that the exponent for the functional head present in the long adjectival form is a phonemically null item with a High tone. This way, I have accounted for a number of prosodic differences between long and short adjectives which on the surface appear to be unsystematic.

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Frequency Distributions as Faithfulness Targets: Or, Why Bulgarians Feminized Turkish Nouns

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While it is commonplace for loanwords to undergo phonetic/ phonological changes in the course of adoption from the source language to another language, such changes typically involve changes that accommodate to the grammar of the borrowing language. That is, forms which initially violate the grammar of the borrowing language, are adapted so that they no longer do. In this study, I document a different type of loan adaptation, in which changes occur which cannot be attributed to such factors. Rather, final vowel quality changes apparently in order to maintain the pre-existing ratio between type frequency of grammatical gender categories in the lexicon. This pattern demonstrates that speakers are both aware of such lexicostatistical patterns, and use them in assigning categorical features such as grammatical gender.

1 Introduction

People are statistical learners *par excellence*, but the extent to which such information influences and is incorporated into grammars remains an open question. Proposals range from exemplar/usage-based models in which such influences are crucial, to substance-free models of phonology in which such factors are entirely excluded.

In this study, I demonstrate that information about the statistical likelihood of grammatical gender status influences its assignment in loanwords from Turkish to Bulgarian. This occurs even in preference to otherwise deterministic phonetic/phonological cues. This phenomenon provides evidence for the relevance of statistical data in grammar, and models it via OT gender assignment a la Rice (2006) and the Gradual Learning Algorithm (GLA: Boersma & Hayes 2001).

2 Gender in Bulgarian

Bulgarian has a three-gender system of feminine, neuter and masculine nouns. Manova and Dressler (2001) argue strongly an approach to Bulgarian gender assignment based on phonological form rather than semantic factors. The final phoneme of a noun stem determines its gender. In this system, feminine nouns typically end in /-a/, neuter nouns typically end in /-e/ or /-o/ vowels, and other nouns are masculine, typically consonant-final.

(1) Bulgarian	IPA	Gloss	Gender
a. книга	kniga	book	feminine
b. куче	kutʃe	dog	neuter
c. писмо	pismo	letter	neuter
d. кон	kon	horse	masculine

These generalizations are extremely robust. Nouns of common gender which may even refer to human males (such as *rodnina* ‘relative’) are nonetheless treated as grammatically feminine. The primary classes of exceptions are the small number of exceptional underived feminine forms do end in consonants, and a larger number of derived ones with the suffixes /-ost/ and /-est/ (Manova & Dressler 2001).

Counts from one dictionary show that 39% of included nouns are feminine, 19% are neuter, and the remaining 42% are masculine (Xeba 2012). Thus, gender categories are asymmetrically distributed in the lexicon, with masculine and feminine roots on essentially equal basis with respect to type frequency, and both with approximately double the

number of neuter roots. Masculine gender can be considered the 'default' gender if any, as it includes both the largest number of roots, and also displays the widest array of phonological variation.

3 Turkish-to-Bulgarian Loanwords and Gender

Turkish is a major source of borrowed vocabulary for Bulgarian. The syllable structure of such borrowings is typically unchanged, due to Bulgarian's more permissive consonant clusters. The phoneme inventories of Turkish and Bulgarian are also relatively well-matched, with the exception of the Turkish front rounded mid and high vowels, which are decomposed into glide+/u/ sequences in Bulgarian, as shown in (2).

(2)	Bulgarian	IPA	Turkish	Gloss
a.	кюфте	kjufte	köfte	meatballs
b.	гюбре	gjubre	gübre	fertilizer

As these examples also show, a large number of Turkish words are /e/-final. These forms could be unproblematically borrowed as neuter nouns in Bulgarian, as shown in Section 2. Typically they are – but the remainder of this study will focus on an interesting class of exceptions. For a subclass of nouns which are /e/-final in Turkish, they are unexpectedly borrowed with final /a/ in Bulgarian, with no apparent phonological motivation for this change.[1]

The relevant items come from two mini-corpora, compiled by the author, of all Bulgarian Turkish-origin nouns ending in either /e/ or /a/ either in the Turkish original form or resulting loanword, excluding words for humans, from two different sources. Mini-corpus 1 consists of 59 forms, assembled from work by Kramer (1992), Sakareva (2005) and Georgieff (2012). Mini-corpus 2 consists of 131 forms, drawn from an independent compilation of loanwords attested in the late Ottoman Bulgarian press, compiled by Gadjeva (2009).

[1] Although Turkish has a rich inflectional case system, the borrowed form is always based on the un-suffixed nominative (also non-specific accusative) form.

In Mini-corpus 1, there are 36 forms which have final /a/ in the original Turkish. Of those 36 forms, the final /a/ is deleted in one item, resulting in a consonant-final word (*çarka* 'paddlewheel' → *çark*). In one additional form, Turkish final /a/ is changed to /e/ (*parça* 'piece' → *parçe*). No other changes to Turkish /a/-final source forms are observed.

The picture is quite different for forms with final /e/ in the original Turkish. In Mini-corpus 1 there are 23 such forms. Turkish final /e/ is changed to /i/ in one item (*çerge* → *çergi* 'tent'). However, Turkish final /e/ is changed to /a/ in six items, listed in (3).

(3)	Bulgarian	IPA	Turkish	Gloss
a.	чешма	tʃeʃm**a**	çeşm**e**	fountain
b.	тенджера	tendʒer**a**	tencer**e**	cooking pan
c.	махала	maxal**a**	mahall**e**	neighborhood
d.	механа	mexan**a**	meyhan**e**	tavern
e.	вересия	veresij**a**	veresiy**e**	(financial) credit
g.	кесия	kesij**a**	kes**e**	bag[2]

While the absolute numbers of items involved are small, the changes are going primarily in one direction – from final /e/, to final /a/, rather than vice versa.

final /a/	**36**	**final /e/**	**23**
remain /a/	34	remain /e/	16
/a/ → /e/	1	/e/ → /a/	6
/a/ deleted	1	/e/ → /i/	1

Fig. 1: Treatment of Turkish final /a/ and /e/ forms

The overall effect of these changes is an increase in the number of /a/-final (presumably feminine) forms at the expense of the number of /e/-

[2] The final item also involves the introduction of the suffix /-ija/, which is used elsewhere for vowel-final loanwords from Turkish, especially those referring to human males, e.g. *neighbor*, and items with the occupational Turkish suffix /-ʤi/.

final (presumably neuter) forms. Figure 2 contains the relative percentages both before and after the vowel changes.

	Turkish	**%**	**Bulgarian**	**%**
final /a/	36	.61	40	.68
final /e/	23	.39	17	.29
Other	--	--	2	.03
total #	59		59	

Fig. 2: Final vowel percentages in Turkish source and Bulgarian output

Recall that the ratio of neuter forms to feminine forms in the Bulgarian lexicon overall is 19%/39%, equivalent to **.48**. With gender assigned to the loanword forms based on final vowel *after* the observed vowel changes, the ratio of neuter to feminine forms closely approximates this number: 17/40=**.43** neuter-to-feminine. However, if the vowels had persisted unchanged and gender was assigned in accordance with their original final vowels, as expected, the ratio would instead be 23/36=**.64** neuter-to-feminine.

Thus, the changes to the loanword final vowels brings the mini-corpus closely into line with the gender proportions in the lexicon as a whole, reported in Section 2. A binomial distribution test bears out the finding that the gender ratio in the set of resulting loanwords *after* vowel changes is from the same distribution as the gender ratio in the lexicon as a whole (p=.10, so, no significant difference between distributions). However, the same test on the gender ratio in the loanwords as they would have appeared *without* the observed modifications approximates a statistically significant difference from the ratio in the lexicon as a whole (p=.06).

The forms in Mini-corpus 2 replicate these findings. Mini-corpus 2 contains 70 forms with final /a/ in Turkish. Of these, Turkish final /a/ is changed to /e/ in only a single item (*nişasta* 'starch' → *nişaste*).

There are 61 forms with final /e/ on Turkish. Of these, Turkish final /e/ is deleted in one item, resulting in a consonant-final word (*kestane* 'chestnut' → *kestan*). A final consonant is added in one item (*sefte* 'day's first breeze' → *siftax*). But final /a/ appears in place of original final /e/ in a total of 17 items (one has both variant forms), listed in (4).

(4)	Bulgarian	IPA	Turkish	Gloss
a.	хазна	xazna	hazine	treasury
b.	везне/а	vezne/a	vezne	balance
c.	терсана	tersana	tersane	naval arsenal
d.	пейка	pejka	peyke	bench
e.	лула	lula	lüle	pipe
f.	махмудия	mahmudija	mahmudiye	type of coin
g.	бахча	baxʧa	bahçe	garden
h.	анджаклама	andʒaklama	enikleme	gadget
i.	фераджа	feradʒa	ferace	voile
j.	пенджера	pendʒera	pencere	window
k.	тенджера	tendʒera	tencere	cooking pan
l.	механа	mexana	meyhane	tavern
m.	махала	maxala	mahalle	neighborhood
n.	чешма	ʧeʃma	çeşme	fountain
o.	тенекия	tenekija	teneke	tin
p.	вересия	veresija	veresiye	(financial) credit
q.	кесия	kesija	kese	bag

Precisely the same asymmetry of changes to the final vowel is observed as in Mini-corpus 1.

final /a/	**70**	**final /e/**	**61**
remain /a/	69	remain /e/	42
/a/ → /e/	1	/e/ → /a/	17
--	--	/e/ → C	1
--	--	/e/ deleted	1

Fig. 3: Treatment of Turkish final /a/ and /e/ vowels

Only a single isolated example of loss of final /a/~feminine gender is observed, whereas the single most numerous change by far is of final /e/ (neuter) to final /a/ (feminine). Again, the overall percentage of feminine /a/-final forms increases.

	Turkish	**%**	**Bulgarian**	**%**
final /a/	70	.53	86	.66
final /e/	61	.47	43	.33
Other	--	--	2	.02
total #	131		131	

Fig. 4: Final vowel percentages in Turkish source and Bulgarian output

The resulting Bulgarian loans *with* vowel changes yield a neuter-to-feminine ratio of 43/86=.**50**, extremely close to the overall lexical ratio of **.48**. The original forms, on the other hand, would yield a ratio of 61/70=.**87.**

Once again, changes result in a close approximation to the pre-existing lexical gender ratio. In addition, the relationship among gender ratios is again statistically robust according to binomial distributional tests. The gender ratio of the modified loanwords as appearing in Bulgarian is statistically indistinguishable from that of the lexicon as a whole (p=.07, so, no significant difference between distributions). However, the gender ratio of the Turkish forms if unmodified with respect to final phoneme is significantly different (p=.0003).

This disappearance of a significant difference, replaced by a not-significantly-different distribution, is exactly what we expect given our hypothesized motivation for the final vowel changes.

4 Alternative Explanations for Gender/Vowel Changes

I have argued that the match with pre-existing lexical gender ratios provides the motivation for final vowel changes. In this section, I consider, but ultimately dismiss, other potential explanations for these changes.[3]

[3] Most of the phonetically-based alternatives were suggested by anonymous reviewers for FASL 2015, whom I thank for their suggestions. The semantics-based alternatives were suggested by audience members, whom I also thank for their insights.

Default gender cannot account for the final vowel changes, as the default gender of Bulgarian would presumably be masculine, which is both the most common gender, and the one with greatest variability in phonological form.

Semantic commonality cannot account for the changes, as there is none apparent from the list of items, repeated in (5). In any case, Manova and Dressler (2001) argue strongly against the relevance of semantic classes in Bulgarian gender assignment.

In addition, analogy with a translational equivalent from the pre-existing native lexicon also fails to account for the assignment of feminine gender/final /a/ in the exceptional cases. The examples in (5) include such translational equivalents, where identifiable.

(5)	Bulgarian (IPA)	Gloss	Translational Equivalent
a.	xazna	treasury	sɨkroviʃtnitsa, kovʧeʒniʧestvo
b.	vezne/a	balance	maʃtab
c.	tersana	naval arsenal	arsenal, oriʒie
d.	pejka	bench	skamejka, tezgjax
e.	lula	pipe	---
f.	mahmudija	type of coin	---
g.	baxʧa	garden	gradina
h.	anʤaklama	gadget	prisposoblenie
i.	feraʤa	voile	muselin
j.	penʤera	window	prozorets
k.	tenʤera	cooking pan	tigan, ʧinija, tava
l.	mexana	tavern	kriʧma, xan
m.	maxala	neighborhood	kvartal
n.	tʃeʃma	fountain	fontan, izvor
o.	tenekija	tin	kalaj, lamarina
p.	veresija	credit	kredit
q.	kesija	bag	ʧanta, torba, ʧuval

The examples in (5) demonstrate that there is no clear relationship between feminine gender in a native Bulgarian translational equivalent, and the loan nouns which unexpectedly received feminine gender. Only

one case (5g 'garden') has a single feminine noun counterpart from the native vocabulary. Others have masculine gender counterparts, or multiple possible translational equivalents of different genders. In many cases, these equivalents are themselves loans, probably later loans from French, and therefore of dubious status as possible sources for the grammatical gender of the Turkish forms.

A semantic supercategory is another potential source for analogical extension of grammatical gender (e.g., if 'utensil' is feminine, perhaps all types of utensils will also be assigned feminine gender). An appropriate semantic supercategory could be identified for only a handful of these items. For the coin name /mahmudija/, either Bulgarian *moneta* or *para* (the latter itself a Turkish borrowing) are possible, both of which would yield feminine gender for the subcategory term, as expected. However, for the 'voile' term, the large number of possible terms for the supercategory 'cloth,' which include forms from all three genders, make this factor indeterminate (these include *kɨrpa, plat, tɨkan, sukno*, and *patʃavra*). While the 'tin' term has the superordinate *metal*, this is masculine and should not lead to feminization of the subcategory term, nor should the possible supercategory 'city' (*grad*) for neighborhood. We must conclude that gender of the semantic supercategory is not playing a role in loanword gender assignment here.

Phonological factors similarly fail to explain the final vowel changes. Turkish is typically described as having final stress for nominal roots (barring certain exceptions such as for placenames and Greek/Italian loanwords), or alternatively, as stressless (Inkelas & Orgun 2003). Therefore, stress properties of the source language cannot be motivating differences in final vowel quality. In Bulgarian, on the other hand, stress is free and unpredictable, and there are even minimal pairs involving only stress placement, for example /'ko.la/ 'cola drink' versus /ko.'la/ 'automobile.' There is no restriction on final stress on the vowel /e/ or on neuter gender, as shown by such a frequent form as /mom.'tʃe/ 'young boy.' Therefore, none of these stress-related factors can be the motivation for changing the final vowel/gender in the minority of these loans.

The number of syllables in the root also cannot account for the changes, as there is a wide and relatively even spread of syllable counts in the original Turkish forms seen above. The list of examples includes 6 bisyllabic, 8 trisyllabic, and 3 quadrisyllabic forms.

The quality of the preceding consonant cannot account for the changes either, as wide variability is seen there as well, in both place and manner of articulation, as shown in Figure 2 below.

labial	alveolar				palatal			velar
m	n	r	l	s	j	ʧ	ʤ	k
2	4	2	2	1	2	1	1	2

Fig. 5: Quality of preceding consonant in vowel-changing items

Finally, additional support for the gender-based account of loanword final vowel changes in Bulgarian comes from closely-related and geographically-contiguous Macedonian. The gender system of Macedonian largely parallels that of Bulgarian. For non-humans, consonant-final nouns are masculine, /a/-final nouns are feminine, and nouns ending in other vowels are neuter.

Ten of the 17 final-vowel-changing loan items are attested in closely-related and geographically-contiguous Macedonian as well as in Bulgarian (Koneski & Toshev 1950, Kramer 1992, Friedman 2003, Netkovska 2015). These are listed in (6).

(6)	Bulgarian	IPA	Turkish	Gloss	Macedonian
a.	лула	lula	lüle	pipe	lule
b.	фераджа	feradʒa	ferace	voile	feredʒe
c.	пенджера	pendʒera	pencere	window	pendʒere
d.	тенджера	tendʒera	tencere	cook pan	tendʒere/a
e.	механа	mexana	meyhane	tavern	meana
f.	махала	maxala	mahalle	neighborhood	maalo
g.	чешма	ʧeʃma	çeşme	fountain	ʧeʃma
h.	тенекия	tenekija	teneke	tin	teneke/tenekija
i.	вересия	veresija	veresiye	credit	veresija
j.	кесия	kesija	kese	bag	kese

Four of the items maintain the Turkish source final vowel /e/, unlike the Bulgarian loans. One changes to a different vowel (/o/, also associated with neuter gender, just like the original /e/ vowel). Two more exist in variants with both /e/ (original, neuter-associated) and /a/ (changed, feminine-associated. Finally, 3 change final /e/ to /a/, just as happened to their counterparts in Bulgarian.

final /e/→/a/	**17**
unattested	7
remains /e/	4
/e/ → /a/	3
/e/ ~ /a/	2
/e/ → /o/	1

Fig. 6: Macedonian treatment of Bulgarian /e/→/a/ changers

From this variety in outcomes, a number of conclusions may be drawn. First, Macedonian and Bulgarian both borrowed, but with different lexical items ultimately surviving. Second, of the words which were borrowed in both Macedonian and Bulgarian, the same changes were not usually observed for counterpart loans. Thus, it is unlikely that some inherent property of the source forms is driving the final vowel changes. If this were the case, then this property would in all likelihood be operative in *both* Bulgarian and Macedonian, given their high degree of similarity.

5 Cross-linguistic Evidence outside Slavic

Additional support for the gender-based explanation for final vowel changes comes from very similar patterns observed in previous research on Arabic loanwords to Spanish and Portuguese, as well as on L2 Arabic data.

Epenthetic final vowels in both Spanish and Portuguese loanwords from Arabic surface as /a/ rather than default /e/ in precisely the proportions that generate a match with pre-existing lexical gender ratios. In Spanish, the percentage of feminine nouns in the lexicon (versus

masculine nouns) in diachronic corpora ranging from the 13th century to the present is relatively stable in the range of 40-49%. This is also the case for the loanwords from Arabic, for which the use of final /a/ vowels in place of typical epenthetic /e/ results in 40% feminine forms. Unexceptional use of epenthetic /e/, however, would result in the percentage of feminine nouns dipping to 36% in the loan corpus, outside the range attested for Spanish in corpora from the last eight centuries (Walter 2006).

The Portuguese data replicates this pattern. As in the Bulgarian/ Macedonian datasets, the same set of borrowings is not attested in both languages, and those which are doubly attested do not necessarily show the same gender/vowel changes. However, the separate corpus of Arabic loans in Portuguese also shows a percentage of 40-44% feminine (depending on inclusion of variant forms), versus only 34% feminine without the exceptional vowel changes (Walter 2011).

Loans going in the other direction – from Romance (primarily French, also Spanish) to (Moroccan) Arabic – exemplify a parallel pattern once again. A conspiracy of phonological processes, including final consonant deletion, epenthesis of final /a/, and simplification of nasalized vowels, as well as changing final vowel quality to /a/, results in an exact match of loanword grammatical gender proportions with pre-existing Arabic lexica (both 31%) versus the 19% feminine that the loanword corpus would otherwise contain without such changes (Walter 2011).

Finally, adult acquisition of Arabic language plurals presents a comparable pattern, in which noun roots are assigned to plural classes by advanced learners in the correct proportions, though often incorrectly for individual items (Walter 2004, 2011).

Taken together, these patterns in an unrelated set of languages and contexts from Bulgarian and Macedonian provide strong evidence that exceptional and apparently unmotivated changes to final vowel phonology may be motivated by probability-matching according to gender. This phenomenon is consistent with other work on lexico-statistical effects on categorical grammatical processes. For example, the assignment of the non-transparent voiced feature to consonants heard only in devoiced final context by both Dutch and Turkish speakers is

done according to the lexicostatistical likelihood of such consonants in final position according to place of articulation (Ernestus & Baayen 2003, Becker *et al*. 2011), rather than simply assigning the most transparent underlying representation (voicelessness). While such distributional information may be ignored when truly arbitrary, its relevance here suggests that gender distribution is one of the statistical patterns which speakers consider to be linguistically important.

6 Formalization

Rice (2006) develops a theory of optimal gender assignment employing language-specific gender assignment constraints, ranked together as a bloc. These constraints, adapted for Bulgarian, are listed in (7) below.

(7) a. *-E→M, F: A noun ending in /e/ (or /o/) is assigned neither masculine nor feminine gender
b. *-A→M, N: A noun ending in /a/ is assigned neither masculine nor neuter gender
c. *-C→F, N: A noun ending in a consonant (or vowel other than /a/, /e/ or /o/) is assigned neither feminine nor neuter gender

Markedness constraints against each gender (*Neut, *Fem, *Masc) are ranked language-specifically. Following this model, a comparable tableau for Bulgarian unproblematically generates neuter final /e/ forms and feminine final /a/ forms as expected, and as demonstrated by the tableaux in Figures 7 and 8 below, respectively.

/atabe/	*-E→M, F	*-A→M, N	*-C→F, N	FAITH	*N	*F	*M
a. → atabe N					*		
b. atabe F	*!					*	
c. ataba F				*!		*	
d. ataba N		*!		*	*		

Fig. 7: Bulgarian typical neuter gender assignment

/ataba/	*-E→M, F	*-A→M, N	*-C→F, N	FAITH	*N	*F	*M
a. atabe N				*!	*		
b. atabe F	*!			*		*	
c. → ataba F						*	
d. ataba N		*!			*		

Fig. 8: Bulgarian typical feminine gender assignment

The inclusion of gradient constraint ranking for the gender markedness constraints, following Boersma and Hayes (2001), entails the assumption that those constraints (*N, *F, *M) are initially more highly ranked, and are adjusted downwards over the course of the L1 acquisition process in response to frequency in lexical items. Stochastic ranking means that such rankings would fluctuate probabilistically based on lexical type frequency of grammatical gender classes. Therefore, high-ranked *N, militating against neuter gender assignment, could persist in some cases. This ranking would yield the Bulgarian final vowel changes in the exceptional cases, as shown by the tableau in Figure 9 below.

/atabe/	*N	*-E→M, F	*-A→M, N	*-C→F, N	FAITH	*F	*M
a. atabe N	*!						
b. atabe F		*!				*	
c. → ataba F					*	*	
d. ataba N	*!		*		*		

Fig. 9: Bulgarian exceptional feminine gender assignment

The long-term persistence of such rankings could lead to the disappearance of a grammatical gender category, as with neuter in neighboring Albanian and, perhaps eventually, Bosnian/Croatian/Serbian.

I assume the winning outputs from variable rankings as in Figure 8 are consistently selected thereafter via something like the USELISTED constraint(s) proposed by Zuraw (2000), in order for them to continue in

usage for the loan-borrowing individual and thereafter propagate through the speech community.

A final note concerns the change of gender from neuter to feminine rather than masculine. The change in vowel quality, rather than the vowel deletion which would be required for assignment of masculine gender, can be straightforwardly accounted for by the ranking of a faithfulness constraint enforcing phoneme preservation of input segments (MAX) over a constraint enforcing faithfulness to vowel quality (IDENT). This is in keeping with the tendency for loan adaptation to favor perceptibly minimal changes to source forms (for discussions and examples, see several papers in Calabrese & Wetzels 2009).

7 Conclusions

Loanwords from Turkish to Bulgarian display a pattern of apparently phonologically unnecessary final vowel changes. These changes result in a larger number of nouns with feminine gender than would otherwise be expected. The 'new' lexicon, including such borrowings, displays the same grammatical gender ratios as the 'old,' pre-borrowing lexicon. I argue that this parallelism is the driving force of such changes, rather than an accidental outcome.

This phenomenon provides additional support for the relevance of probability-matching according to lexicostatistical data in assignment of categorical morphophonological properties. Adults deploy their knowledge of distributional generalizations over the lexicon (Frisch & Zawaydeh 2001, Hudson-Kam & Newport 2005), and are motivated by such generalizations at least as much as by faithfulness to individual phonemes or derivational transparency.

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